Varve-Related Publications in Alphabetical Order (version 6 November 2016)

Please report additional references, updates, errors etc. to Arndt Schimmelmann (aschimme@indiana.edu)

Abramowicz K, Arnqvist P, Secchi P, Sjöstedt de Luna S, Vantini S, Vitelli V (2016) Clustering misaligned dependent curves applied to varved lake sediment for climate reconstruction. *Stochastic Environmental Research and Risk Assessment*, 1-15. http://dx.doi.org/10.1007/s00477-016-1287-6; Lake Kassjön, northern Sweden, functional clustering Bagging Voronoi K-Medoid Aligment (BVKMA) algorithm simultaneously clusters and aligns spatially dependent curves, nonparametric statistical method that does not rely on distributional or dependency structure assumptions.

Abril JM, Brunskill GJ (2014) Evidence that excess ^{210}Pb flux varies with sediment accumulation rate and implications for dating recent sediments. *Journal of Paleolimnology* **52**, 121-137. http://dx.doi.org/10.1007/s10933-014-9782-6; statistical analysis of radiometric dating of 10 annually laminated sediment cores from aquatic systems, constant rate of supply (CRS) model.

Abu-Jaber NS, Al-Bataina BA, Jawad Ali A (1997) Radiochemistry of sediments from the southern Dead Sea, Jordan. *Environmental Geology* **32** (4), 281-284. http://dx.doi.org/10.1007/s002540050218; Dimona, Jordan, gamma spectroscopy, lead-210, no anthropogenic contamination, calculated sedimentation rate agrees with varve record; however, see López-Merino et al. (2016) who advise caution.

Addison JA, Finney BP, Jaeger JM, Stoner JS, Norris RN, Hangsterfer A (2012) Examining Gulf of Alaska marine paleoclimate at seasonal to decadal timescales. In: (Besonen MR, ed.) *Second Workshop of the PAGES Varves Working Group*, Program and Abstracts, 17-19 March 2011, Corpus Christi, Texas, USA, 15-21. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2011_VWG_2nd_wkshp.pdf; ca. 60 cm marine sediment core from Deep Inlet in southeast Alaska, CT scan, XRF scanning, suspected varves, 1972 earthquake and tsunami caused turbidite with scouring and erosion.

Addison JA, Finney BP, Jaeger JM, Stoner JS, Norris RD, Hangsterfer A (2013) Integrating satellite observations and modern climate measurements with the recent sedimentary record: An example from Southeast Alaska. *Journal of Geophysical Research: Oceans* **118** (7), 3444-3461. http://dx.doi.org/10.1002/jgrc.20243; Gulf of Alaska, paleoproductivity, scanning XRF, Pacific Decadal Oscillation PDO, fjord, ^{137}Cs, ^{210}Pb, geochronometry, three-dimensional computed tomography, discontinuous event-based marine varve chronology spans AD ~1940–1981, Br/Cl ratios reflect changes in marine organic matter accumulation.

Afshar S (2011) High-Resolution Windows into Abrupt and Millennial-Scale Changes in Climate and Ocean since the Mid-Pliocene Transition, Santa Barbara Basin, California. M.Sc. Thesis, California State University, Long Beach, 134 p. https://docs.google.com/a/umich.edu/file/d/0B_44KqD6U_zwc0ZhcE1JTm56bXM/edit?usp=drive_web; Two high-resolution, multi-proxy records for ~ 5-kyr windows at ~ 290 ka and ~ 735 ka from marine piston cores, Santa Barbara Basin, California, abrupt millennial- to sub-millennial-scale oscillations in total organic carbon, carbonate and biogenic silica. *Note: the claimed presence of varves in deeper core sections was partially revised by Hendy et al.'s (2012) new interpretation of laminations.*

Adzic I, Marjanac T, Marjanac L (2012) Varved lacustrine sediments in the South Velebit Channel, Croatia. In: (Zolitschka B, ed.) *3rd Workshop of the PAGES Varves Working Group, Manderscheid, Germany, March 20-25, 2012, Program and Abstracts. Terra Nostra, Schriften der GeoUnion Alfred-Wegener-Stiftung* **2012/1**, 15-20. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/VWG_AbstractVolume_Final_2012.pdf; Pleistocene varved lake sediments, outcrops, ostracods, fossil flora, molluscs, Dalmatia, Europe, Adriatic Coast, Mediterranean.

Agterberg FP, Banerjee I (1969) Stochastic model for the deposition of varves in glacial lake Barlow-Ojibway, Ontario, Canada. *Canadian Journal of Earth Sciences* **6** (4), 625-652. http://dx.doi.org/10.1139/e69-061; 8 measured glacilacustrine varve sequences from Pleistocene glacial Lake Barlow–Ojibway in northern Ontario, Canada, time series analysis of varve thickness, silt (summer) and clay (winter) laminae.

Alapieti T, Saarnisto M (1981) Energy dispersive X-ray microanalysis of laminated sediments from Lake Valkiajärvi, Finland. *Bulletin of the Geological Society of Finland* **53**, 3-9. http://www.geologinenseura.fi/bulletin/archive.html; iron-meromictic, varved lake sediment, seasonal deposition of mineral matter causes accumulation of varves, iron remains low throughout the year and plays no important role in varve formation.

Alefs J, Müller J (1999) Differences in the eutrophication dynamics of Ammersee and Starnberger See (Southern Germany), reflected by the diatom succession in varve-dated sediments. *Journal of Paleolimnology* **21** (4), 395-407. http://dx.doi.org/10.1023/A:1008098118867; comparison of varved sediments from two pre-alpine lakes, Lake Ammersee, Lake Starnberger See, Bavaria.

Algeo TJ, Lyons TW (2006) Mo-total organic carbon covariation in modern anoxic marine environments: Implications for analysis of paleoredox and paleohydrographic conditions. *Paleoceanography* **21** (1), http://dx.doi.org/10.1029/2004PA001112; marine sedimentary molybdenum sulfide as a proxy for benthic redox potential, test in modern anoxic marine environments, Black Sea, Framvaren Fjord, Cariaco Basin, Saanich Inlet, Namibian Shelf.

Algeo TJ, Phillips M, Jaminski J, Fenwick M (1994) High-resolution X-radiography of laminated sediment cores. *Journal of Sedimentary Research* **64** (3a), 665-668. http://jsedres.geoscienceworld.org/content/64/3a/665.full.pdf+html; X-radiography of sediment cores at 1 mm – resolution using an X-ray oven (Faxitron) and a travelling core stage.

Algeo TJ, Woods AD (1994) Microstratigraphy of the Lower Mississippian Sunbury Shale: A record of solar-modulated climatic cyclicity. *Geology* **22** (9), 795-798. http://dx.doi.org/10.1130/0091-7613(1994)022<0795:MOTLMS>2.3.CO;2; Microstratigraphic analysis, Early Mississippian, central Appalachian basin, laminated black shale, millimeter-thick couplets of alternating thin black and thick dark gray laminae, total organic carbon, cyclicity, periodicity, X-radiograph gray-scale density, spectral analysis, ~22 yr Hale cycle, ~70-90 yr Gleissberg cycle, solar activity, high sedimentation rate 4.5 mm/yr.

Allen JRM, Brandt U, Brauer A, Hubberten HW, Huntley B, Keller J, Kraml M, Mackensen A, Mingram J, Negendank JFW, Nowaczyk NR, Oberhänsli H, Watts WA, Wulf S, Zolitschka B (1999) Rapid environmental changes in southern Europe during the last glacial period. *Nature* **400**, 740-743. http://dx.doi.org/10.1038/23432; southern Italy, lake sediment, tephrochronology, pollen, Mediterranean, lake sediment, last glacial, rapid vegetation changes, Lago Grande di Monticcio, maar lake, Basilicata.

Allen JRM, Brandt U, Brauer A, Hubberten HW, Huntley B, Keller J, Kraml M, Mingram J, Negendank JFW, Nowaczyk NR, Oberhänsli H, Watts WA, Wulf S, Zolitschka B (2001) One hundred thousand years of environmental change: new high-resolution evidence from Mediterranean lacustrine and marine sediments. *Biology and Environment: Proceedings of the Royal Irish Academy* **101B** (1-2), 157-158. http://www.ria.ie/Publications/Journals/Biology-and-Environment.aspx?page=1; http://www.jstor.org/stable/20500113; perspective on paleoclimatic value of Lago Grande di Monticchio, Italy, pollen, tephra.

Allen JRM, Watts WA, Huntley B (2000) Weichselian palynostratigraphy, palaeovegetation and palaeoenvironment; the record from Lago Grande di Monticchio, southern Italy. *Quaternary International* **73-74**, 91-110. http://dx.doi.org/10.1016/S1040-6182(00)00067-7; palynostratigraphic record from Lago Grande di Monticchio, Italy, quantitative palaeoclimate reconstructions.

Allen JRM, Watts WA, McGee E, Huntley B (2002) Holocene environmental variability—the record from Lago Grande di Monticchio, Italy. *Quaternary International* **88** (1), 69-80. http://dx.doi.org/10.1016/S1040-6182(01)00074-X; Holocene, pollen, Lago Grande di Monticchio, Italy, environmental changes, Holocene, North Atlantic teleconnection, sea-surface temperature cooling events correlate with species expansions and disappearances, human activity.

Álvarez MC, Pérez-Cruz L, Hernández-Contreras R (2012) Coccolithophore and silicoflagellate records in Middle-Late Holocene sediments from La Paz Basin (Gulf of California): Paleoclimatic implications. *Stratigraphy* **9** (2), 169-181. http://www.academia.edu/4332263/Coccolithophore_and_silicoflagellate_records_in_Middle-Late_Holocene_Sediments_from_La_Paz_Basin_Gulf_of_California_Paleoclimatic_implications; Mexico, Pacific Ocean, laminated record for the past 7256 years, ^{14}C-dated, in part suspected to represent varves.

Alvisi F, Dinelli E (2002) Evolution of sediment composition of the coastal Lake San Puoto (Latium, Italy) in the last two centuries. *Journal of Limnology* **61** (1), 15-26. http://dx.doi.org/10.4081/jlimnol.2002.15; last 200 years, laminated unit representing the last eutrophication period since ca. 1925 AD, metal fluxes for recent times.

Amann B, Lobsiger S, Fischer D, Tylmann W, Bonk A, Filipiak J, Grosjean M (2014) Spring temperature variability and eutrophication history inferred from sedimentary pigments in the varved sediments of Lake Żabińskie, north-eastern Poland, AD 1907–2008. *Global and Planetary Change* **123A**, 86-96. http://dx.doi.org/10.1016/j.gloplacha.2014.10.008; Masurian Lake District, north-eastern Poland, biogeochemical varves with highly organic late summer and winter layers separated by white layers of endogenous calcite precipitated in early summer, visible scanning reflectance spectroscopy, principal component analysis, cluster analysis, carotenoids/chlorophyll-a derivatives.

Amann B, Mauchle F, Grosjean M (2012) Quantitative summer MJJA precipitation and rainstorms from varved Lake Oeschinen, Swiss Alps: calibration and validation AD 1920-1986. In: (Zolitschka B, ed.) *3rd Workshop of the PAGES Varves Working Group, Manderscheid, Germany, March 20-25, 2012, Program and Abstracts. Terra Nostra, Schriften der GeoUnion Alfred-Wegener-Stiftung* **2012/1**, 21-23. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/VWG_AbstractVolume_Final_2012.pdf; Switzerland, calibration and verification study from varved proglacial lake Oeschinen, Bernese Swiss Alps.

Amann B, Mauchle F, Grosjean M (2014) Quantitative high-resolution warm season rainfall recorded in varved sediments of Lake Oeschinen, northern Swiss Alps: calibration and validation AD 1901-2008. *Journal of Paleolimnology* **51** (3), 375-391. http://dx.doi.org/10.1007/s10933-013-9761-3; Switzerland, lake sediment, paleotemperature, lithoclastic sediment proxies, Bernese Swiss Alps, ^{210}Pb, ^{137}Cs, flood layer chronomarkers.

Amann B, Szidat S, Grosjean M (2015) A millennial-long record of warm season precipitation and flood frequency for the North-western Alps inferred from varved lake sediments: implications for the future. *Quaternary Science Reviews* **115**, 89-100. http://dx.doi.org/10.1016/j.quascirev.2015.03.002; lacustrine varves, proglacial Lake Oeschinen, Switzerland, back to AD 884. varve thickness, flood event layers.

Ambert P, Boven A, Leroy S, Løvlie R, Seret G (1990) Révision chronostratigraphique de la séquence paléobotanique de Bernasso (Escandorgue, Midi de la France). *Comptes Rendus de l'Academie des Sciences de Paris* **311** (2), 413-419 (in French with English abstract). http://gallica.bnf.fr/ark:/12148/bpt6k5664655c/f418; http://www.em-consulte.com/revue/CRAS2A/articlesarchives/comptes-rendus-geoscience; Bernasso Massif, paleobotanical sequence, Tiglien, potassium-argon dating, paleomagnetic polarity, lava flow, Mas de Vailhé, Escandorgue Province, lake sediment, Olduvai age, central France.

Anderson RY (1961) Solar-terrestrial climatic patterns in varved sediments. *Annals of the New York Academy of Sciences* **95**, 424-439. http://dx.doi.org/10.1111/j.1749-6632.1961.tb50048.x; early summary of reported periodicities in varve sediments, with valuable listing of older varve references.

Anderson RY (1982) A long geoclimatic record from the Permian. *Journal of Geophysical Research* **87** (C9), 7285-7294. http://dx.doi.org/10.1029/JC087iC09p07285; continuous 260,000-year marine varve-based time series from Permian Castile and Bell Canyon Formations of the Delaware Basin, southeastern New Mexico, and southwestern Texas, USA, calcite-laminated anhydrite and anhydrite-laminated halite, seasonal and annual deposition of evaporates, varve thickness, calcium sulfate, calcium carbonate, organic matter, oscillations of ~100000, 20000, 2700, 200 years, sulfate, carbonate, halite.

Anderson RY (1984) Orbital forcing of evaporite sedimentation. In: (Berger AL, ed.) *Milankovitch and Climate*, part 1. Reidel, Dordrecht, pp 147-162. The link between climatic forcing and evaporates, marine varved Permian Castile Formation, precession cycle recorded as changes in calcium sulfate deposition with a period near 20000 years.

Anderson RY (1986) The varve microcosm: propagator of cyclic bedding. *Paleoceanography* **1** (4), 373-382. http://dx.doi.org/10.1029/PA001i004p00373; example of cyclic bedding in the form of marine varves from the Permian Castile formation, skipping of climatic cycles by bedding response may lead to erroneous estimates of frequency.

Anderson RY (1990) Solar-cycle modulations of ENSO: a possible source of climatic change. In: (Betancourt JL, MacKay AM, eds.) *Proceedings of the Sixth Annual Pacific Climate (PACLIM) Workshop*, March 5-8, 1989, *Interagency Ecological Studies Program for the Sacramento-San Joaquin Estuary Technical Report* **23**, 77-81. http://www.worldcat.org/title/proceedings-of-the-sixth-annual-pacific-climate-paclim-workshop-asilomar-california-march-5-8-1989/oclc/22743042; historical data of El Niño dating back to 1525, historical sunspot data dating back to 1700, strong relationship between sunspot number and the frequency of El Niño.

Anderson RY (1991) Solar variability captured in climatic and high-resolution paleoclimatic records: a geologic perspective. In: (Sonett CP, Giampapa MS, Mathews MS, eds.) *The Sun in Time*. University of Arizona Press, Tucson, pp. 543-561. ISBN-13: 9780816512973 ISBN: 0816512973; marine varves.

Anderson RY (1993) The varve chronometer in Elk Lake: Record of climatic variability and evidence for solar-geomagnetic-^{14}C-climate connection. In: (Bradbury JP, Dean WE, eds.) Elk Lake, Minnesota: evidence for rapid climate change in the north-central United States. *The Geological Society of America*, *Special Paper* **276**, 336 pp. http://www.worldcat.org/title/elk-lake-minnesota-evidence-for-rapid-climate-change-in-the-north-central-united-states/oclc/27676675; http://specialpapers.gsapubs.org/content/by/year; varve thickness, regional surface winds, periodicities of ~200, 40-50, and 20-25 years suggest that solar-geomagnetic events affect cosmic particle flux and tropospheric winds, Medieval Warm Epoch, Little Ice Age.

Anderson RY (1996) Seasonal sedimentation: a framework for reconstructing climatic and environmental change. In: (Kemp AES, ed.) *Palaeoclimatology and Palaeoceanography from Laminated Sediments*. *Geological Society Special Publication* **116**, London, 1-16. http://dx.doi.org/10.1144/GSL.SP.1996.116.01.02; varve correlations across basins, climate forcing, solar influence, sediment trap.

Anderson RY, Bradbury JP, Dean WE, Stuiver M (1993) Chronology of Elk Lake sediments: Coring, sampling, and time-series construction. In: (Bradbury JP, Dean WE, eds.) Elk Lake, Minnesota: evidence for rapid climate change in the north-central United States. *The Geological Society of America*, *Special Paper* **276**, 37-43. http://www.worldcat.org/title/elk-lake-minnesota-evidence-for-rapid-climate-change-in-the-north-central-united-states/oclc/27676675; http://specialpapers.gsapubs.org/content/by/year; 22 m of piston cores and freeze cores, varve counting, 10,400-year time-series, radiocarbon, pollen zones.

Anderson RY, Dean WE (1988) Lacustrine varve formation through time. *Palaeogeography, Palaeoclimatology, Palaeoecology* **62** (1-4), 215-235. http://dx.doi.org/10.1016/0031-0182(88)90055-7; different types of varved sediments through time, iron-rich laminations were common in the middle Precambrian, glaciolacustrine varves, carbonate-rich varves in the Precambrian and Phanerozoic, diatom laminae.

Anderson RY, Dean WE (1995) Filling the Delaware Basin: hydrologic and climatic controls on the Permian Castile Formation varved evaporite. In: Scholle PA, Peryt TM, Ulmer-Scholle DS, Eds.), *The Permian of Northern Pangea.* New York, Springer, Vol. 2, pp. 61-78. http://dx.doi.org/10.1007/978-3-642-78590-0_4; Upper Permian (Ochoan), western Texas, southeastern New Mexico, "deep-water" marine evaporate, laterally persistent annual laminations, 200 000-yr annual record of climatic variability, varved limestone, varved anhydrite, varved halite.

Anderson RY, Dean WE, Bradbury JP (1993) Elk Lake in perspective. In: (Bradbury JP, Dean WE, eds.) Elk Lake, Minnesota: evidence for rapid climate change in the north-central United States. *The Geological Society of America*, *Special Paper* **276**, 1-6. http://www.worldcat.org/title/elk-lake-minnesota-evidence-for-rapid-climate-change-in-the-north-central-united-states/oclc/27676675; http://specialpapers.gsapubs.org/content/by/year; North-central Minnesota, Clearwater County. dimictic, hard water, varved record, postglacial lake, prairie lake, and modern mesic forest lake.

Anderson RY, Dean WE, Bradbury JP, Love D (1985) Meromictic lakes and varved lake sediments in North America. *U.S. Geological Survey Bulletin* **1607**, 19 pp. http://pubs.usgs.gov/bul/1607/report.pdf; lake sediment, survey of about 160 lakes in North America that are meromictic and (or) have laminated sediments.

Anderson RY, Dean WE Jr, Kirkland DW, Snider HI (1972) Permian Castile varved evaporite sequence, West Texas and New Mexico. *Geological Society of America Bulletin* **83** (1), 59-86. http://dx.doi.org/10.1130/0016-7606(1972)83[59:PCVESW]2.0.CO;2; marine varves are correlative for distances up to 113 km, 260,000-varve sequence, Bell Canyon Formation = about 50,850 varve couplets, etc., Castile, Salado.

Anderson RY, Gardner JV, Hemphill-Haley E (1989) Variability of the late Pleistocene-early Holocene oxygen-minimum zone off northern California. In: (Peterson DH, ed.) *Aspects of Climate Variability in the Pacific and the Western Americas*, American Geophysical Union, *Geophysical Monograph* **55**, 75-84. http://dx.doi.org/10.1029/GM055p0075; varves older than 25,000 BP, oxygen minimum zone (OMZ) index, bioturbation, late Pleistocene-Holocene, marine sediment, wind-stress regime.

Anderson RY, Hemphill Haley E, Gardner JV (1987) Persistent late Pleistocene-Holocene seasonal upwelling and varves off the coast of California. *Quaternary Research* **28** (2), 307-313. http://dx.doi.org/10.1016/0033-5894(87)90069-X; varves older than 25,000 BP, oxygen minimum zone (OMZ), bioturbation, marine sediment, wind-stress regime, dark laminae enriched in terrigenous material from winter, light laminae enriched in siliceous phytoplankton from summer upwelling, seasonal production of siliceous phytoplankton, seasonal flux of terrigenous clastic material produced varved sediments, continental slope off California, late Pleistocene to mid-Holocene, upwelling.

Anderson RY, Kirkland DW (1960) Origin, varves, and cycles of Jurassic Todilto formation, New Mexico. *Bulletin of American Association of Petroleum Geologists.* **44** (1), 37-52. http://aapgbull.geoscienceworld.org/content/44/1/37.abstract; marine varved sequence of limestone and gypsum, northwestern New Mexico, periodicities10-13-year sunspot cycle, 60-, 85-, 170-, and 180-year cycles, varved cycle is nearly complete in the Todilto sequence and is present in the Green River basin of Colorado and Wyoming, the Delaware basin of Texas and New Mexico, the Paradox basin of Utah and the Four Corners region, and in most other evaporite deposits.

Anderson RY, Kirkland DW (1966) Intrabasin varve correlation. *Geological Society of America Bulletin* **77** (3), 241-256. http://dx.doi.org/10.1130/0016-7606(1966)77%5B241:IVC%5D2.0.CO;2; marine and lacustrine varve correlation techniques applied to 4 sedimentary basins, Pleistocene lake in Texas, Jurassic Todilto Formation of New Mexico, Todilto sections, bituminous calcite and anhydrite laminae in Permian Castile Formation of Texas, Permian Zechstein Formation in Germany.

Anderson RY, Linsley BK, Gardner JV (1990) Expression of seasonal and ENSO forcing in climatic variability at lower than ENSO frequencies: evidence from Pleistocene marine varves off California. *Palaeogeography, Palaeoclimatology, Palaeoecology* **78** (3-4), 287-300. http://dx.doi.org/10.1016/0031-0182(90)90218-V; Upper Pleistocene, marine sediment, upper continental slope, off northern and central California, alternations of varved and bioturbated sediments, El Niño and anti-El Niño (ENSO) circulation.

Anderson NJ, Korsman T, Renberg I (1994) Spatial heterogeneity of diatom stratigraphy in varved and non-varved sediments of a small, boreal-forest lake. *Aquatic Sciences* **56** (1), 40-58. http://dx.doi.org/10.1007/BF00877434; Sweden, spatial and temporal heterogeneity of recent diatom stratigraphy, dimictic lake Kassjön, varves confined to water depths >10 m, freeze cores, transect covering varved and non-varved sediments, mass accumulation, loss-on-ignition (LOI).

Anderson NJ, Odgaard BV, Segerström U, Renberg I (1996) Climate-lake interactions recorded in varved sediments from a Swedish boreal forest lake. *Global Change Biology* **2** (4), 399-405. http://dx.doi.org/10.1111/j.1365-2486.1996.tb00090.x; Lake Kassjön, Våsterbotten, climate change, diatom, lake sediment, paleolimnology, species diversity, 1100-year long record, lake ecosystem response to climate and catchment change, tree-ring records of the same geographical area, pollen reflect agricultural development, Little Ice Age.

Andrén T (1996) The Younger Dryas-Preboreal transition as recorded in varved glacial clay sequences in the NW Baltic Sea. *GFF* **118** (supplement 004), 79. http://dx.doi.org/10.1080/11035899609546378

Andrén T, Andrén E, Berglund BE, Yud SY (2007) New insights on the Yoldia Sea low stand in the Blekinge archipelago, southern Baltic Sea. *GFF* **129** (4), 277-285. http://dx.doi.org/10.1080/11035890701294277; Järnavik bay, Blekinge archipelago, pollen, diatoms, chemical properties, lowermost unit weakly varved and homogeneous clay deposited during the end of the brackish phase of the Yoldia Sea.

Andrén T, Björck J, Johnsen S (1999) Correlation of Swedish glacial varves with the Greenland (GRIP) oxygen isotope record. *Journal of Quaternary Science* **14** (4), 361-371. http://dx.doi.org/10.1002/

(SICI)1099-1417(199907)14:4<361::AID-JQS446>3.0.CO;2-R; mean varve thickness curve for part of the Swedish varve chronology from the northwestern Baltic proper, correlation with $\delta^{18}O$ from GRIP ice-core using the Younger Dryas–Preboreal climate shift, pollen analyses, suggesting a large error in the Swedish varve chronology in the part younger than ca. 10300 clay-varve yr BP.

Andrén T, Lindeberg G, Andrén E (2002) Evidence of the final drainage of the Baltic Ice Lake and the brackish phase of the Yoldia Sea in glacial varves from the Baltic Sea. *Boreas* **31** (3), 226-238. http://dx.doi.org/10.1111/j.1502-3885.2002.tb01069.x; Baltic Sea, Yoldia Sea, clay-varve chronology, varve thickness, correlation with Swedish Time Scale, 11530 to 10250 varve years BP, grain size, chemistry, diatoms, color.

Andrén T, Sohlenius G (1995) Late Quaternary development of the north-western Baltic Proper — Results from the clay-varve investigation. *Quaternary International* **27**, 5-10. http://dx.doi.org/10.1016/1040-6182(94)00055-A; late glacial, calcareous micro-fossils, mineral magnetic properties, measurements of clay-varves, correlation between brackish water ostracods and foraminifera and a distinct change in mineral magnetic parameters, Yoldia Sea stage is 60 to 120 clay-varve years, Baltic Sea, Sweden.

Anhäuser T, Sirocko F, Greule M, Esper J, Keppler F (2014) D/H ratios of methoxyl groups of the sedimentary organic matter of Lake Holzmaar (Eifel, Germany): A potential palaeoclimate/-hydrology proxy. *Geochimica et Cosmochimica Acta* **142**, 39-52. http://dx.doi.org/10.1016/j.gca.2014.08.001; hydrogen stable isotopes, entire Holocene and part of the Late Glacial (until 13,650 years BP), proxy for the hydrogen isotopic value of lake water primarily controlled by temperature, transition from the Holocene to the Late Glacial period, Younger Dryas.

Anters E (1930) H. J. Fraser. An experimental study of varve deposition. *Geologiska Föreningen i Stockholm Förhandlingar* **52** (1), 144-145. http://dx.doi.org/10.1080/11035893009454844; description of Fraser's (1929) experiment.

Antevs E (1922) The recession of the last ice sheet in New England. *American Geographical Society Research Series* **11**, 120 pp. http://www.archive.org/details/recessionlastic00antegoog; http://books.google.com/books?id=gO8bAAAAMAAJ&oe=UTF-8; http://www.worldcat.org/title/recession-of-the-last-ice-sheet-in-new-england/oclc/519311&referer=brief_results; historic book, glacial clay varves, New England, North America.

Antevs E (1928) The last glaciation, with special reference to the ice sheet in northeastern North America. *American Geographical Society Research Series* **17**, 292 p.

Antevs E (1932). Late-glacial clay chronology of North America. *Annual Report of the Board of Regents of the Smithsonian Institution* **1931**, 313-324. U.S. Government Printing Office, Washington D.C., publication 3142. http://www.biodiversitylibrary.org/item/35625#page/366/mode/1up; early comprehensive, historical overview of glacio-lacustrine varves in North America.

Antevs E (1935) Telecorrelations of varve curves. *Geologiska Föreningen i Stockholm Förhandlingar* **57** (1), 47-58. http://dx.doi.org/10.1080/11035893509444913; hypothesis of solar-induced teleconnections between varve sequences.

Anthony RS (1977) Iron-rich rhythmically laminated sediments in Lake of the Clouds, northeastern Minnesota. *Limnology and Oceanography* **22** (1), 45-54. http://www.aslo.org/lo/toc/vol_22/issue_1/0045.pdf; lacustrine varves, vivianite, limonite, siderite.

Appleby PG, Oldfield F, Thompson R, Huttunen P, Tolonen K (1979) ^{210}Pb dating of annually laminated sediments from Finland. *Nature* **280**, 53-55. http://dx.doi.org/10.1038/280053a0; ^{210}Pb-derived estimates of lake sediment age are compared with ages calculated directly by counting of annual laminations.

Ariztegui D, Anselmetti, FS (2010) Annually resolved environmental history of Lake Butrint (Albania) for the last 300 years. In: (Ojala AEK, Kosonen E, eds.) *First Workshop of the PAGES Varves Working Group (Palmse, Estonia, April 7-9, 2010), Programme and Abstracts*, Geological Survey of Finland, Espoo, Finland, 27-28. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2010-VWG-1st-wkshp.pdf; ~300 years of modern varves, anthropogenic perturbations along the coast of the Ionian Sea, organic-rich carbonate couplets and detritus-dominated clay layers, cesium-137, varve counting, image analysis, high-resolution μX-ray fluorescence, varve thickness, robust age model covering the last 259 years, earthquake-induced mass wasting event layers fit historically reported earthquakes, carbon stable isotope ratio, eutrophication, oxygen stable isotope ratios of authigenic carbonates indicate salinization, interdecadal cyclicity, eastern Mediterranean.

Ariztegui D, Anselmetti FS, Robbiani JM, Bernasconi SM, Brati E, Gilli A, Lehmann M (2010) Natural and human-induced environmental change in Southern Albania for the last 300 years – Constraints from the Lake Butrint sedimentary record. *Global and Planetary Change* **71**, 183-192. http://dx.doi.org/10.1016/j.gloplacha.2009.11.016; Lake Butrint, Albania, 'salt water' lake sediment, Ionian Sea, Mediterranean, eutrophication in 20th Century, carbon stable isotopes, oxygen stable isotopes, authigenic carbonate, marine influence.

Ariztegui D, Bösch P, Davaud E (2007) Dominant ENSO frequencies during the Little Ice Age in Northern Patagonia: The varved record of proglacial Lago Frías, Argentina. *Quaternary International* **161** (1),

46-55. http://dx.doi.org/10.1016/j.quaint.2006.10.022; ENSO, El Niño, Little Ice Age, Lago Frías, Argentina, South America, proglacial lake, lake sediment, Patagonia, Tronador ice cap, solar cycles.

Arnaud F, Serralongue J, Winiarski T, Desmet M, Paterne M (2006) Pollution au plomb dans la Savoie antique (II–IIIe s. apr. J.-C.) en relation avec une installation métallurgique de la cité de Vienne (Lead pollution in antique Savoy (2nd–3rd centuries AD) in relation with a metallurgical settlement of the city of Vienne). *Comptes Rendus Geoscience* **338** (4), 244-252. http://dx.doi.org/10.1016/j.crte.2005.11.008; varve record of Lake Anterne (NW French Alps), Roman period, lead pollution, town of Passy, City of Vienne, metallurgical activity, lead smelter.

Arthur MA, Dean WE, Neff ED, Hay BJ, King J, Jones G (1994) Varve calibrated records of carbonate and organic carbon accumulation over the last 2000 years in the Black Sea. *Global Biogeochemical Cycles* **8** (2), 195-217. http://dx.doi.org/10.1029/94GB00297; basinwide Holocene environmental history, box cores recovered flocculent surface layer ("fluff"), sediment trap, light and dark laminae couplets represent marine varves, varve chronology, *Emiliania huxleyi* first observed 1.63 ka (1633±100 yr B.P.), accumulation rates of carbonate and organic carbon.

Asikainen CA, Francus P, Brigham-Grette J. (2006) Sedimentology, clay mineralogy and grain-size as indicators of 65 ka of climate change from El'gygytgyn Crater Lake, Northeastern Siberia. *Journal of Paleolimnology* **37** (1), 105-122. http://dx.doi.org/10.1007/s10933-006-9026-5; magnetic susceptibility, grain size, clay mineralogy, low susceptibility intervals correlate with cold (glacial-like) conditions when perennial ice-cover resulted in anoxia and the dissolution of magnetic carrier minerals, bioturbation index co-varies with total organic carbon (TOC) and magnetic susceptibility, Younger Dryas, Bölling/Allerød, Chukotka, clay mineralogy.

Åskelsson J (1930) On two varve diagrams from Iceland. *Geologiska Föreningen i Stockholm Förhandlingar* **52** (2), 214-218. http://dx.doi.org/10.1080/11035893009445924; presumed short varve sequences from Tindafjöll, Sólheimar in Árnessysla, Iceland.

Athearn W (1965) Sediment cores from the Cariaco Trench, Venezuela. *Woods Hole Oceanographic Institution, Technical Report* **65-37**, 20 p. Note: Woods Hole Oceanographic Institution makes available pre-1990 reports upon request: https://darchive.mblwhoilibrary.org/handle/1912/554; report on the RN Atlantis cruise to the Cariaco Basin, description of sediment types.

Augustsson A, Peltola P, Bergbäck B, Saarinen T, Haltia-Hovi E (2010) Trace metal and geochemical variability during 5,500 years in the sediment of Lake Lehmilampi, Finland. *Journal of Paleolimnology* 44 (4), 1025-1038. http://dx.doi.org/10.1007/s10933-010-9471-z; element concentrations, accumulation rates, concentration profiles differed among elements, principal components analysis (PCA), lake sediments may not properly reflect the history of atmospheric metal deposition in remote areas, trace metals, pollution.

Axelsson V (2002) Monitoring sedimentation by radiographic core-to-core correlation. *Geo-Marine Letters* **21** (4), 236-244. http://dx.doi.org/10.1007/s00367-001-0084-4; correlation of sedimentation units between sediment cores, Sweden, X-radiography, radiographic images, X-ray densitometry, stereo-radiography, core-to-core correlation, quantification of sedimentation rates.

Axelsson V, El-Daoushy F (1989) Sedimentation in the Edsviken Bay. Studied by the X-ray radiographic and the Pb-210 methods. *Geografiska Annaler, Series A, Physical Geography* **71** (1-2), 87-93. http://www.jstor.org/stable/521011?seq=1#page_scan_tab_contents; Mono and stereoradiographs of modern varved marine sediment, western Baltic Sea, ^{210}Pb, Sweden, Scandinavia.

Babalola LO, Patterson RT, Prokoph A (2013) Foraminiferal evidence of a Late Holocene westward shift of the Aleutian low pressure system. *The Journal of Foraminiferal Research* **43** (2), 127-142. http://dx.doi.org/10.2113/gsjfr.43.2.127; late Holocene, 1090 to ~4560 cal. yr BP, glacier-carved Frederick Sound, Seymour-Belize Inlet Complex, British Columbia, fjord, partially varved, marine.

Baier J, Lücke A, Negendank JFW, Schleser GH, Zolitschka B (2004) Diatom and geochemical evidence of mid-to late Holocene climatic changes at Lake Holzmaar, West-Eifel (Germany). *Quaternary International* **113**, 81–96. http://dx.doi.org/10.1016/S1040-6182(03)00081-8; Lake Holzmaar, Eifel, Germany, diatom productivity, geochemistry, stable carbon isotopes, organic matter, Holocene, climatic changes, human impact, lake sediment, pollen, archaeology, Iron Age.

Baier J, Negendank JFW. Zolitschka B (2004) Mid- to late Holocene lake ecosystem response to catchment and climatic changes – a detailed varve analysis of Lake Holzmaar, Germany. In: (Fischer H, Kumke T, Lohmann G, Flöser G, Miller H, von Storch H, Negendank JFW, eds.) *The Climate in Historical Times - Towards a Synthesis of Holocene Proxy Data and Climate Models.* Springer Verlag, Berlin, 195-208. http://www.worldcat.org/search?qt=worldcat_org_all&q=978-3-540-20601-9; mid- to late Holocene, diatoms, chrysophytes, water circulation, paleoclimate, human impact, seasonal resolution, Iron Age.

Bałaga K, Goslar T, Kuc T (1998) 7.9. A comparative study on the Late Glacial/early Holocene climatic changes recorded in laminated sediments of Lake Perespilno - introductory data. In: (Ralska-Jasiewiczowa M, Goslar T, Madeyska T, Starkel L, eds.) *Lake Gościąż, Central Poland, a*

Monographic Study. Part I, 175-185. W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków. http://www.worldcat.org/title/lake-gosciaz-central-poland-a-monographic-study/oclc/41879724/editions; Late Galcial varves, stable isotopes, Younger Dryas, Poland.

Balco G, Schaefer JM (2006) Cosmogenic-nuclide and varve chronologies for the deglaciation of southern New England. *Quaternary Geochronology* **1** (1), 15-28. http://dx.doi.org/10.1016/j.quageo.2006.06.014; exposure ages of boulders from the Ledyard and Old Saybrook Moraines, Connecticut, comparison with varve chronology, varve year–calendar year offset has been overestimated by several hundred years, Connecticut, last glacial maximum, deglaciation.

Bank TL, Kukkadapu RK, Madden AS, Ginder-Vogel MA, Baldwin ME, Jardine PM (2008) Effects of gamma-sterilization on the physico-chemical properties of natural sediments. *Chemical Geology* **251** (1-4), 1-7. http://dx.doi.org/10.1016/j.chemgeo.2008.01.003; gamma-irradiation, sediment sterilization, uranium sorption/reduction experiments on sterilized and non-sterilized sediments, γ-irradiation induced significant physico-chemical changes in sediment, γ-irradiation produced a significant decrease in cation exchange capacity and affected organic and inorganic fractions, γ-irradiation induced iron reduction.

Banks MR, Loveday JL, Scott DL (1955) Permian varves from Wynyard, Tasmania. *Papers and Proceedings of the Royal Society of Tasmania* **89**, 203-218. http://eprints.utas.edu.au/13961/1/1955_Banks_Permian_Varves_Wynyard.pdf; Thinly laminated mudstones are presumed to be varves, associated with tillite.

Barrell J (1917) Rhythms and the measurements of geologic time. *Bulletin of the Geological Society of America* **28** (1), 745-904. http://dx.doi.org/10.1130/GSAB-28-745; early thoughts about laminations: "Nature vibrates with rhythms, climatic and diastrophic, those finding stratigraphic expression ranging in period from the rapid oscillation of surface waters, recorded in ripple-mark, to those long-deferred stirrings of the deep imprisoned titans which have divided earth history into periods and eras..." etc.

Barron JA, Bukry D (2007) Solar forcing of Gulf of California climate during the past 2000 yr suggested by diatoms and silicoflagellates. *Marine Micropaleontology* **62** (2), 115-139. http://dx.doi.org/10.1016/j.marmicro.2006.08.003; marine varve records of the past 2000 yr from Guaymas Basin, Carmen Basin, Pescadero Basin, Mexico, biogenic laminae contain diatoms and silicoflagellates, Medieval Climate Anomaly shows reduced productivity, solar variability appears to be driving productivity cycles.

Barron JA, Bukry D, Bischoff JL (2004) High resolution paleoceanography of the Guaymas Basin, Gulf of California, during the past 15,000 years. *Marine Micropaleontology* **50** (3-4), 185-207. http://dx.doi.org/10.1016/S0377-8398(03)00071-9; Deep Sea Drilling Project DSDP Site 480, diatoms, silicoflagellates, ICP-AES geochemical analyses, marine sediment.

Barry S, Filippi M, Talbot M, Johnson T (2004) Sedimentology and geochronology of Late Pleistocene and Holocene sediments from Northern Lake Malawi. *The East African Great Lakes: Limnology, Palaeolimnology and Biodiversity. Advances in Global Change Research* **12**, Part 5, 369-391. http://dx.doi.org/10.1007/0-306-48201-0_15; North Basin of Lake Malawi, East Africa, volcanic ash beds, magnetic susceptibility, lead-210, varve counting, radiocarbon dating, ~24,000 year record, southern tropics.

Barnekow L (2000) Holocene regional and local vegetation history and lake-level changes in the Torneträsk area, northern Sweden. *Journal of Paleolimnology* **23** (4), 399-420. http://dx.doi.org/10.1023/A:1008171418429; pollen, macrofossil analyses, radiocarbon, six lakes in Torneträsk area, Holocene vegetation history, Abisko valley, varved lake sediment in Lake Vuolep Njakajaure.

Barnekow L, Possnert G, Sandgren P (1998) AMS ^{14}C chronologies of Holocene lake sediments in the Abisko area, northern Sweden – a comparison between dated bulk sediment and macrofossil samples. *GFF* **120** (1), 59-67. http://dx.doi.org/10.1080/11035899801201059; AMS-radiocarbon dates of bulk sediment compared terrestrial plant macrofossils, ages of the radiocarbon dated terrestrial macrofossils are in close agreement with the lamina chronology in Lake Vuolep Njakajaure, bulk sediment samples always give erroneous older radiocarbon ages.

Battarbee RW (1981) Diatom and Chrysophyceae microstratigraphy of the annually laminated sediments of a small meromictic lake. Uppsala, Societas Upsaliensis pro Geologia Quaternaria, *Striae* **14**, 105-109. Additional information needed: Electronic link? Keywords?

Baumgartner TR (1988) *High Resolution Paleoclimatology from the Varved Sediments of the Gulf of California*. Ph.D. dissertation, Corvalis, Oregon State University, 287 p. http://proquest.umi.com/pqdlink?did=752307991&sid=5&Fmt=2&clientId=12010&RQT=309&VName=PQD; http://www.worldcat.org/title/high-resolution-paleoclimatology-from-the-varved-sediments-of-the-gulf-of-california/oclc/17668985; marine sediment, Gulf of California, winter/spring coastal upwelling, summer/fall fluvial discharge, El Niño years are associated with greater preservation of siliceous assemblages, instrumental records of sea level.

Baumgartner T, Christensen N (1978) An improved cross-correlation technique for cross-dating varve series taken from different sediment coring sites within a small study area. *Ciencias Marinas* **5** (1), 119-136. http://www.cienciasmarinas.com.mx/index.php/cmarinas/issue/view/31/showToc; technique for cross-correlation of

two varve records for quality control of varve-counting, cross-dating, detection of false and missing varves, Guaymas Basin slope, Gulf of California, Mexico, marine sediment.

Baumgartner T, Christensen N Jr (1985) Coupling of the Gulf of California at large-scale interannual climatic variability. *Journal of Marine Research* **43** (4), 825-848. http://dx.doi.org/10.1357/002224085788453967; cross-dating of individual varves, Pacific Ocean, interannual ocean climate in Gulf of California related to variability of El Niño/Southern Oscillation, North Equatorial Countercurrent, North Equatorial Current, Costa Rica Current.

Baumgartner T, Ferreira-Bartrina V, Schrader H, Soutar A (1985) A 20-year varve record of siliceous phytoplankton variability in the central Gulf of California. *Marine Geology* **64**, 113-129. http://dx.doi.org/10.1016/0025-3227(85)90163-X; marine sediment, Pacific, Gulf of California, siliceous plankton, diatom, Guaymas Basin, varve stratigraphy 1953 through 1972, lead-210, thorium-228, El Niño/Southern Oscillation.

Baumgartner TR, Ferreira-Bartrina V, Cowen J, Soutar A (1991) Reconstruction of a 20th century varve chronology from the central Gulf of California. In: (Dauphin P, Simoneit B, eds.) *The Gulf and Peninsular Province of the Californias*. *American Association of Petroleum Geologists Memoir* **47**, 603-616. http://search.datapages.com/data/specpubs/history1/data/a114/a114/0001/0600/0603.htm; marine sediment, 70.5 year varve chronology from the central Gulf of California, box cores, Guaymas Basin, lead-210 dating, Mexico, Pacific.

Baumgartner TR, Ferreira-Bartrina V, Moreno-Hentz P (1991) Varve formation in the central Gulf of California: a reconsideration of the origin of the dark laminae from the 20th century varve record. In: (Dauphin P, Simoneit B, eds.) *The Gulf and Peninsular Province of the Californias*. *American Association of Petroleum Geologists Memoir* **47**, 617-635. http://search.datapages.com/data/specpubs/history1/data/a114/a114/0001/0600/0617.htm; marine sediment, varve formation, central Gulf of California, box cores, Guaymas Basin, Mexico, Pacific, no strong relationship between mass flux and discharge of rivers, eolian transport processes, desert dust.

Baumgartner TR, Michaelsen J, Thompson LG, Shen GT, Soutar A, Casey RE (1989) The recording of interannual climatic change by high-resolution natural systems: Tree-rings, coral bands, glacial ice layers, and marine varves. In: (Peterson DH, ed.) *Aspects of Climate variability in the Pacific and the Western Americas*. American Geophysical Union, *Geophysical Monograph* **55**, 1-14. http://dx.doi.org/10.1029/GM055p0001; climatic variability, El Niño-Southern Oscillation, North America, Mexico, Santa Barbara Basin, Gulf of California, climatic forcing.

Baumgartner TR, Soutar A, Ferreira-Bartrina V (1992) Reconstruction of the history of the Pacific sardine and northern anchovy populations over the past two millenia from sediments of the Santa Barbara basin, California. *California Cooperative Oceanic Fisheries (CalCOFI) Investigations Report* **33**, 24-40. http://www.calcofi.org/publications/calcofireports/v33/Vol_33_Baumgartner_etal.pdf; North America, marine sediment, Pacific Ocean, California Current, fish scales, sardine, anchovy, reconstruction of fish stocks. *Note that the varve chronology of the last 2,000 years was revised by Hendy et al. (2012) leading to potentially different interpretations.*

Baumgartner TR, Soutar A, Riedel W (1992) Natural time scales of variability in coastal pelagic fish populations of the California Current over the past 1500 years: response to global climate change and biological interaction. *California Sea Grant Biennial Report of Completed Projects* **1992-94**, 31-37. http://www.worldcat.org/title/california-sea-grant-biennial-report-of-completed-projects-1992-94/oclc/35852104; Santa Barbara Basin, California, North America, marine sediment, Pacific Ocean, Northern anchovy, Pacific sardine, fish scales, sardine, anchovy, reconstruction of fish stocks. *Note that the varve chronology of the last 2,000 years was revised by Hendy et al. (2012) leading to potentially different interpretations.*

Beaufort L (Ed.) (2002) Cruise report MD 126 MONA Images VIII, Marges Ouest Nord Américaines. Institut Polaire Français Paul-Emile Victor (IPEV), Technopôle Brest-Iroise, France. http://epic.awi.de/34709/1/images-08.pdf; Guaymas Basin, marine varves, Gulf of California, Mexico.

Behl RJ, Kennett JP (1996) Brief interstadial events in the Santa Barbara basin, NE Pacific, during the past 60 kyr. *Nature* **379**, 243-246. http://dx.doi.org/10.1038/379243a0; Santa Barbara Basin, California, North America, marine sediment, Pacific Ocean, recognition of Dansgaard–Oeschger events in the form of laminated (i.e. partially varved) sediment intervals versus massive intervals. *Note: this paper was published before the recognition that not all laminated sediment in Santa Barbara Basin is necessarily varved; the recognition has no impact on the paper's conclusions.*

Beierle BD, Lamoureux SF, Cockburn JMH, Spooner I (2002) A new method for visualizing sediment particle size distributions. *Journal of Paleolimnology* **27** (2), 279-283. http://dx.doi.org/10.1023/A:1014209120642; grain size, particle size distribution (PSD), method of surface plots of grain size data, PSD surface plots increase the potential utility of grain size as a paleoenvironmental proxy for identifying changes in clastic and organic depositional processes.

Belbin SP (1994) A new standard method of impregnation using crystic resin. *Journal of Sedimentary Research* **64** (3a), 673. http://jsedres.geoscienceworld.org/content/64/3a/673.full.pdf+html; resin impregnation after exchange of water with acetone.

Belmaker R, Stein M, Beer J, Christl M, Fink D, Lazar B (2014) Beryllium isotopes as tracers of Lake Lisan (last Glacial Dead Sea) hydrology and the Laschamp geomagnetic excursion. *Earth and Planetary Science Letters* **400**, 233-242. http://dx.doi.org/10.1016/j.epsl.2014.05.049; cosmogenic isotope ^{10}Be, lacustrine varved sediment, precursor of the Dead Sea, detrital sediments and primary (evaporitic) aragonites, rapid change in the ^{10}Be production rate during the Laschamp geomagnetic excursion; however, see López-Merino et al. (2016) who advise caution.

Benda L (1974) Die Diatomeen der niedersächsischen Kieselgur-Vorkommen, palökologische Befunde und Nachweis einer Jahresschichtung. *Geologisches Jahrbuch* **A 21**, 171-197. http://www.schweizerbart.de/publications/list/series/geoljba?sort=volume&topic=&page=1; diatomite, Pleistocene, Holsteinian Interglacial, Eemian Interglacial, lake sediment, Germany, Lower Saxony, diatom, identification of varves.

Benner JS, Ridge JC, Knecht RJ (2009) Timing of post-glacial reinhabitation and ecological development of two New England, USA, drainages based on trace fossil evidence. *Palaeogeography, Palaeoclimatology, Palaeoecology* **272** (3-4), 212-231. http://dx.doi.org/10.1016/j.palaeo.2008.10.029; Pleistocene glaciolacustrine varves, Connecticut, Merrimack River valley, timeline for reinhabitation of New England by fish and invertebrates, Lake Hitchcock, paleoecology, *Broomichnium*, biogeography, refugia.

Benner JS, Ridge JC, Taft NK (2008) Late Pleistocene freshwater fish (Cottidae) trackways from New England (USA) glacial lakes and a reinterpretation of the ichnogenus *Broomichnium* Kuhn. *Palaeogeography, Palaeoclimatology, Palaeoecology* **260** (3-4), 375-388. http://dx.doi.org/10.1016/j.palaeo.2007.12.004; Late Pleistocene trace fossils from glaciolacustrine varves of Connecticut River Valley, glacial Lake Hitchcock, reinhabitation of freshwater fish (cottids) from a Wisconsinan glacial refugium.

Benoit G, Rozan TF (2001) ^{210}Pb and ^{137}Cs dating methods in lakes: A retrospective study. *Journal of Paleolimnology* **25** (4), 455-465. http://dx.doi.org/10.1023/A:1011179318352; test of mobility of lead-210, cesium-137, Connecticut, USA, three lakes, peaks in concentrations of trace metals, sediment focusing, geochronology.

Bentley SJ, Sheremet A (2003) New model for the emplacement, bioturbation, and preservation of fine-scaled sedimentary strata. *Geology* **31** (8), 725-728. http://dx.doi.org/10.1130/G19578.1; quantitative one-dimensional model for the formation and preservation of sedimentary fabric based on interacting sedimentation and bioturbation, event layer, preservation of varves.

Berger WH, Schimmelmann A, Lange CB (2004) Tidal cycles in the sediments of Santa Barbara Basin. *Geology* **32** (4), 329-332. http://dx.doi.org/10.1130/G20249.2; California, North America, marine sediment, Pacific Ocean, California Current, varve thickness, fish scales, solar forcing, tidal cycles. *Note that the varve chronology of the last 2,000 years was revised by Hendy et al. (2012) leading to potentially different interpretations.*

Berger WH, von Rad U (2002) Decadal to millennial cyclicity in varves and turbidites from the Arabian Sea: hypothesis of tidal origin. *Global and Planetary Change* 34 (3-4), 313-325. http://dx.doi.org/10.1016/S0921-8181(02)00122-4; Late Holocene, ~5000 year varve record, oxygen-minimum zone (OMZ) off Pakistan, varve thickness, periodicity, autocorrelation, Fourier analysis, lunar perigee cycle, tidal cycles, marine sediment.

Berggren AM, Aldahan A, Possnert G, Haltia-Hovi E, Saarinen T (2010) ^{10}Be and solar activity cycles in varved lake sediments, AD 1900-2006. *Journal of Paleolimnology* **44** (2), 559–569. http://dx.doi.org/10.1007/s10933-010-9437-1; annually resolved record of ^{10}Be in varved lake sediments, Lake Lehmilampi, Finland, focus on the last 100 years, sunspots, solar activity.

Berglund M (2004) Holocene shore displacement and chronology in Ångermanland, eastern Sweden, the Scandinavian glacio-isostatic uplift centre. *Boreas* **33** (1), 48-60. http://dx.doi.org/10.1111/j.1502-3885.2004.tb00995.x; glacial clay varve dating, lake sediment, Holocene, shore displacement, lake isolation, crustal uplift.

Bergström R (1968) Stratigrafi och isrecesion i södra Västerbotten. *Sveriges Geologiska Undersökning*, Series C, **634**, 1-76, ISSN 0082-0024. *Årsbok / Sveriges Geologiska Undersökning* **63** (5), ISSN 0082-0016. Stratigraphy of glaciolacustrine varves and ice recession in the southern part of Västerbotten County, Sweden.

Bernhard JM, Visscher PT, Bowser SS (2003) Submillimeter life positions of bacteria, protists, and metazoans in laminated sediments of the Santa Barbara Basin. *Limnology and Oceanography* **48** (2), 813-828; http://dx.doi.org/10.4319/lo.2003.48.2.0813; California, Pacific Ocean, life positions of microbes within marine anoxic sediment,submillimeter distributions of eukaryotic nanobiota and meiofauna, microelectrode profiles, mosaic of chemically heterogeneous microhabitats exist in vertical and horizontal dimensions.

Besonen, MR (ed.) (2012) Second Workshop of the PAGES Varves Working Group, Program and Abstracts, 17-19 March 2011, Corpus Christi, Texas, USA. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2011_VWG_2nd_wkshp.pdf; compilation of abstracts.

Besonen M, Bradley RS, Mudelsee M, Abbott MB, Francus P (2008) A 1,000-year, annually-resolved record of hurricane activity from Boston, Massachusetts. *Geophysical Research Letters* **35**, L14705. http://dx.doi.org/10.1029/2008GL033950; lake sediment, Lower Mystic Lake, Boston, Massachusetts, North America, flood layer, history and frequency of hurricanes.

Besonen MR, Patridge W, Bradley RS, Francus P, Stoner JS, Abbott MB (2008) A record of climate over the last millennium based on varved lake sediments from the Canadian High Arctic. *The Holocene* **18** (1), 169-180. http://dx.doi.org/10.1177/0959683607085607: Lower Murray Lake, northern Ellesmere Island, Nunavut, Canada, scan images, backscattered electron images, varve thickness, grain size, North America, diatom.

Besré F, Occhietti S (1990) Les varves de Deschaillons, les rhythmites du Saint-Maurice et les rhythmites de Leclercville, Pleistocène supérieur, vallée du Saint-Laurent, Québec. *Géographie physique et Quaternaire* **44** (2), 181-198. http://dx.doi.org/10.7202/032817ar; central St. Lawrence Valley, Canada, glaciolacustrine varves overlying the St. Pierre Sediments are named the St. Maurice Rhythmites.

Bigler C, Gälman V, Maier D, Renberg I (2012) Calibrating the biological record in Nylandssjön: Diatom assemblages in the water column, sediment traps and varves since 2001. In: (Zolitschka B, ed.) *3rd Workshop of the PAGES Varves Working Group, Manderscheid, Germany, March 20-25, 2012, Program and Abstracts. Terra Nostra, Schriften der GeoUnion Alfred-Wegener-Stiftung* **2012/1**, 25-27. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/VWG_AbstractVolume_Final_2012.pdf; calibration biological proxies with data from plankton surveys, sediment traps and varves from Lake Nylandssjön, diatoms, northern Sweden. *Note: see also pages 65-67 in the same issue.*

Bigler C, von Gunten L, Lotter AF, Hausmann S, Blass A, Ohlendorf C, Sturm M (2007) Quantifying human-induced eutrophication in Swiss mountain lakes since AD 1800 using diatoms. *The Holocene* **17** (8), 1141-1154. http://dx.doi.org/10.1177/0959683607082555; diatom assemblage, Switzerland, Alps, Europe, Lake St. Moritz, Lake Silvaplana, land use, waste water management, human impact, lake sediment.

Biondi F, Lange CB, Hughes MK, Berger WH (1997) Inter-decadal signals during the last millennium (AD 1117-1992) in the varve record of Santa Barbara basin, California. *Geophysical Research Letters* **24** (2), 193-196. http://dx.doi.org/10.1029/96GL03813; varve thickness, interdecadal oscillation, singular spectrum analysis, inter-decadal oscillations. *Note that the varve chronology of the last 2,000 years was revised by Hendy et al. (2012) leading to potentially different interpretations. Biondi et al. (1997) reported a significant change around 1600 AD, which roughly coincides with the transition from older laminated to younger varved sediment.*

Bird BW, Abbott MB, Finney BP, Kutchko B (2009) A 2000 year varve-based climate record from the central Brooks Range, Alaska. *Journal of Paleolimnology* **41**(1), 25-41. http://dx.doi.org/10.1007/s10933-008-9262-y; lake sediment, late Holocene, Arctic, glacial-fed Blue Lake, varve-thickness tracks summer temperature recorded at Atigun Pass, varve-inferred summer temperatures, Medieval Warm Period, Little Ice Age, North America.

Bird BW, Abbott MB, Rodbell DT, Vuille M (2011) Holocene tropical South American hydroclimate revealed from a decadally resolved lake sediment $\delta^{18}O$ record. *Earth and Planetary Science Letters* **310**, 192-202. http://dx.doi.org/10.1016/j.epsl.2011.08.040; Laguna Pumacocha, Andean, South America, authigenic calcite, oxygen isotopes, summer monsoon, precessional forcing, lake sediment, abrupt climate change.

Bird BW, Abbott MB, Vuille M, Rodbell DT, Stansell ND, Rosenmeier MF (2011) A 2,300-year-long annually resolved record of the South American summer monsoon from the Peruvian Andes. *Proceedings of the National Academy of Sciences, PNAS* **108** (21), 8583-8588. http://dx.doi.org/10.1073/pnas.1003719108; Laguna Pumacocha, high-altitude lacustrine varves, South America, Medieval Climate Anomaly, Little Ice Age, oxygen isotopes, authigenic calcite; this article contains supporting information online at http://www.pnas.org/content/suppl/2011/05/03/1003719108.DCSupplemental.

Bird DF, Juniper SK, Ricciardi-Rigault M, Martineu P, Prairie YT, Calvert SE (2001) Subsurface viruses and bacteria in Holocene/Late Pleistocene sediments of Saanich Inlet, BC: ODP Holes 1033B and 1034B, Leg 169S. *Marine Geology* **174** (1-4), 227-239. http://dx.doi.org/10.1016/S0025-3227(00)00152-3; marine sediment, biogenic gases hydrogen, methane, carbon monoxide, ATPs, microbial abundance downcore.

Birks HJB, Lotter AF (1994) The impact of the Laacher See Volcano (11 000 yr B.P.) on terrestrial vegetation and diatoms. *Journal of Paleolimnology* **11**, 313-322. http://dx.doi.org/10.1007/BF00677991; pollen, tephra, late glacial, diatoms, volcano, Eifel, Germany.

Björck J (1999) The Allerød-Younger Dryas pollen zone boundary in an 800-year varve chronology from southeastern Sweden. *GFF* **121** (4), 287-292. http://dx.doi.org/10.1080/11035899901214287; close to the late Weichselian Fennoscandian ice sheet margin and the Baltic Ice Lake, 350 yr varved clay sequences, vegetation changes.

Björck J, Possnert G, Schoning K (2001) Early Holocene deglaciation chronology in Västergötland and Närke, southern Sweden — biostratigraphy, clay varve, ^{14}C and calendar year chronology. *Quaternary Science Reviews* **20** (12), 1309-1326. http://dx.doi.org/10.1016/S0277-3791(00)00168-2; marine calcareous fossils, varve counting, radiocarbon dating, pollen stratigraphy, varves ~11,500 to 11,200 calendar years BP, deglaciation, corresponding varve ages in the Swedish Time Scale are ~700–800 years younger, Lake Vättern, 10–50 year marine ingression into Baltic basin prior to Yoldia Sea brackish phase, ~140 years before deglaciation of Närke Strait.

Björck S, Dennegård B, Sandgren P (1990) The marine stratigraphy of the Hanö Bay, SE Sweden, based on different sediment stratigraphic methods. *Geologiska Föreningen i Stockholm Förhandlingar* **112**

(3), 265-280. http://dx.doi.org/10.1080/11035899009454774; most complete stratigraphies at depths greater than 75 m, clayey diamicton is overlain by grey varved clay and reddish varved clay, glaciolacustrine deposition probably occurred during the Baltic Ice Lake (BIL) stage and possibly also during the earliest part of the Yoldia stage.

Björck S, Digerfeldt G (1989) Lake Mullsjön - a key site for understanding the final stage of the Baltic Ice Lake east of Mt. Billingen. *Boreas* **18** (3), 209-219. http://dx.doi.org/10.1111/j.1502-3885.1989.tb00394.x; deglaciation, end moraine, Sweden, Lake Mullsjon, Late Weichselian sediment, varved clay, lithology, grainsize, varve chronology, pollen, Younger Dryas cooling, pollen.

Blais-Stevens A, Bornhold BD, Kemp AES, Dean JM, Vaan AA (2001) Overview of Late Quaternary stratigraphy in Saanich Inlet, British Columbia: results of Ocean Drilling Program Leg 169S. *Marine Geology* **174** (1-4), 3-20. http://dx.doi.org/10.1016/S0025-3227(00)00139-0; British Columbia, Canada, Pacific Ocean, marine productivity, terrestrial vegetation, progressive anoxia in bottom waters and varve deposition began about 7000 ^{14}C yr ago, varve counts between marker horizons.

Blais-Stevens A, Clague JJ, Bobrowsky PT, Patterson RT (1997) Late Holocene sedimentation in Saanich Inlet, British Columbia, and its paleoseismic implications. *Canadian Journal of Earth Sciences* **34** (10), 1345-1357. http://dx.doi.org/10.1139/e17-107; 8 piston cores of marine sediment spanning the last 1500 years, cesium-137, 210Pb, 14C ages, varve counts to date and correlate massive layers, not all massive layers correlate from core to core and are seismically generated deposits.

Blais-Stevens A, Rogers GC, Clague JJ (2011) A revised earthquake chronology for the last 4,000 years inferred from varve-bounded debris-flow deposits beneath an inlet near Victoria, British Columbia. *Bulletin of the Seismological Society of America* **101** (1), 1-12. http://dx.doi.org/10.1785/0120090360; reanalysis of varve chronology improves uncertainty estimates on ages of prehistoric debris-flow deposits (DFDs) in the last 4000 yr., Saanich Inlet, marine sediment.

Blanchet CL, Tjallingii R, Frank M, Lorenzen J, Reitz A, Brown K, Feseker T, Brückmann W (2013) High- and low-latitude forcing of the Nile River regime during the Holocene inferred from laminated sediments of the Nile deep-sea fan. *Earth and Planetary Science Letters* **364**, 98-110. http://dx.doi.org/10.1016/j.epsl.2013.01.009; Holocene reconstruction of Nile River discharge, Africa, Egypt, 6-m long sediment core collected on the Nile deep-sea fan, partially laminated and even seasonally varved due to deposition from hyperpycal flows.

Blass A, Anselmetti FS, Ariztegui D (2003) 60 years of glaciolacustrine sedimentation in Steinsee (Sustenpass, Switzerland) compared with historic events and instrumental meteorological data. In: (Ariztegui FS, Wildi W, eds.) *Lake Systems from Ice Age to Industrial Time*. *Eclogae Geologicae Helvetiae* **96** Special Issue, S59-S72. http://dx.doi.org/10.5169/seals-169044; lake sediment, Lake Steinsee, cesium-137, glacial varves, turbidite, European Alps.

Blass A, Bigler C, Grosjean M, Sturm M (2007) Decadal-scale autumn temperature reconstruction back to AD 1580 inferred from varved sediments of Lake Silvaplana (southeastern Swiss Alps). *Quaternary Research* **68** (2), 184-195. http://dx.doi.org/10.1016/j.yqres.2007.05.004; Upper Engadine, Switzerland, diatoms, silica flux, Little Ice Age, Maunder Minimum, lake sediment.

Blass A, Grosjean M, Livingstone DM, Sturm M (2008) Signature of explosive volcanic eruptions in the sediments of a high-altitude Swiss lake. *Journal of Paleolimnology* **39** (1), 35-42. http://dx.doi.org/10.1007/s10933-007-9093-2; Lake Silvaplana, Switzerland, Swiss Alps, Upper Engadine, grain-size, fluvial transport, lake sediment.

Blass A, Grosjean M, Troxler A, Sturm M (2007) How stable are twentieth-century calibration models? A high-resolution summer temperature reconstruction for the eastern Swiss Alps back to AD 1580 derived from proglacial varved sediments. *The Holocene* **17** (1), 51-63. http://dx.doi.org/10.1177/0959683607073278; Lake Silvaplana, Switzerland, annual sediment mass accumulation rate, local summer air temperature, sediment trap, lake sediment, tree-rings, sediment transport mechanisms, Maunder Minimum, Little Ice Age, Holocene, climate reconstruction.

Blockley SEP, Bronk Ramsey C, Lane CS, Lotter AF (2008) Improved age modelling approaches as exemplified by the revised chronology for the Central European varved lake Soppensee. *Quaternary Science Reviews* **27**, 61-71. http://dx.doi.org/10.1016/j.quascirev.2007.01.018; Bayesian age modelling, Lake Soppensee, Switzerland, radiocarbon, Laacher See tephra, lake sediment.

Bluszcz P, Kirilova E, Lotter AF, Ohlendorf C, Zolitschka B (2008) Global radiation and onset of stratification as forcing factors of seasonal carbonate and organic matter flux dynamics in a hypertrophic hardwater lake (Sacrower See, Northeastern Germany). *Aquatic Geochemistry* **14** (1), 73-98. http://dx.doi.org/10.1007/s10498-008-9026-3; sediment trap, dimictic hardwater lake, comparison with limnological and meteorological parameters, biochemical calcite precipitation, organic matter production, total particle flux, dominated by autochthonous organic matter and biochemically precipitated calcite, lake sediment, water column stratification, diatoms.

Bluszcz P, Lücke A, Ohlendorf C, Zolitschka B (2009) Seasonal dynamics of stable isotopes and element ratios in authigenic calcites during their recipitation and dissolution, Sacrower See (northeastern

Germany). *Journal of Limnology* **68** (2), 257-273. http://dx.doi.org/10.4081/jlimnol.2009.257; seasonal evolution of chemical and physical water properties, particle fluxe, oxygen and carbon stable isotopes, strontium/calcium and magnesium/calcium ratios in authigenic calcites, sediment trap, eutrophy during spring and summer.

Bocxlaer BV, Verschuren D, Schettler G, Kröpelin S (2011) Modern and early Holocene mollusc fauna of the Ounianga lakes (northern Chad): implications for the palaeohydrology of the central Sahara. *Journal of Quaternary Science* **26** (4), 433-447. http://dx.doi.org/10.1002/jqs.1469; freshwater molluscs, zoochory, African Humid Period, fresh and saline lakes of Ounianga Kebir and Serir with varved sediment, gastropods, bivalve.

Bodbacka L (1987) Sediment accumulation in Lakes Lilla Ullfjärden and Stora Ullfjärden, Sweden. Paleolimnology IV. *Developments in Hydrobiology* **37**, 337-342. http://dx.doi.org/10.1007/978-94-009-4047-5_44; X-ray radiography, varve record since 1977, effect of eutrophication, oxygen deficit in Lilla Ullfjärden since ca. 1885.

Bode GW (1973) Appendix II: Carbon and carbonate analyses, Leg 15. In: (Edgar NT, Kaneps AG, Herring JR, eds.) *Initial Reports of the Deep Sea Drilling Project* **15**, Washington, U.S. Government Printing Office, 1129-1137. http://dx.doi.org/10.2973/dsdp.proc.15.app2.1973; organic carbon and carbonate analyses, Cariaco Basin, 3 samples within the upper 8 meters, Holocene, tropical Atlantic.

Boës X, Fagel N (2005) Impregnation method for detecting annual laminations in sediment cores: An overview. *Sedimentary Geology* **179** (3-4), 185-194. http://dx.doi.org/10.1016/j.sedgeo.2005.05.001; review of impregnation methodology, post-treatment disturbances, polymerization, thin section, varve dating, epoxy resin.

Boës X, Fagel N (2008) Relationships between southern Chilean varved lake sediments, precipitation and ENSO for the last 600 years. *Journal of Paleolimnology* **39** (2), 237-252. http://dx.doi.org/10.1007/s10933-007-9119-9; El Niño Southern Oscillation (ENSO), South America, Chile, varve-thickness record, Lago Puyehue (40° S), the last 600 years, annual sediment accumulation rate, varve-counting, thin sections, varve thickness correlates with austral autumn/winter precipitation, Medieval Warm Period, spectral analysis.

Boës X, Fagel N (2008) Timing of the late glacial and Younger Dryas cold reversal in southern Chile varved sediments. *Journal of Paleolimnology* **39** (2), 267-281. http://dx.doi.org/10.1007/s10933-007-9118-x; Southern Hemisphere, last deglaciation, southern Chile, varve chronology, Lago Puyehue, continuous ~17,100 to 10,800 cal. year BP varve-thickness measurements, thin section, Lake District, grey scale, termination I, Younger Dryas.

Boës X, Rydberg J, Martínez-Cortizas A, Bindler R, Renberg I (2011) Evaluation of conservative lithogenic elements (Ti, Zr, Al, and Rb) to study anthropogenic element enrichments in lake sediments. *Journal of Paleolimnology* **46**, 75-87. http://dx.doi.org/10.1007/s10933-011-9515-z; lake sediment, heavy metal, pollution history, reference elements, titanium (Ti), zirconium (Zr), aluminum (Al), rubidium (Rb), freeze core, Lake Nylandssjön, Sweden, X-ray fluorescence (XRF) spectroscopy, anthropogenic lead (Pb), diagenesis, enrichment factor.

Boespflug X, Long BFN, Occhietti S (1995) CAT-scan in marine stratigraphy - a quantitative approach. *Marine Geology* **122** (4), 281-301. http://dx.doi.org/10.1016/0025-3227(94)00129-9; computed axial tomography, pseudo-3D representation of sedimentary cores, tomodensitometer (CAT-scanner), Illinoian-Sangamonian transition series from St. Lawrence estuary in Québec, Canada, bed thickness and numerical processing of CT number series are used to characterize lamina, sub-annual longer periodicities, annual light-dark rhythmites.

Böll A, Lückge A, Munz P, Forke S, Schulz H, Ramaswamy V, Rixen T, Gaye B, Emeis KC (2014) Late Holocene primary productivity and sea surface temperature variations in the northeastern Arabian Sea: Implications for winter monsoon variability. *Paleoceanography* **29** (8), 778–794. http://dx.doi.org/10.1002/2013PA002579; high-resolution record of winter monsoon variability for the late Holocene via alkenone-derived sea surface temperature (SST) variations and proxies of primary productivity (organic carbon and $\delta^{15}N$) in a well-laminated marine sediment core from the Pakistan continental margin, since 400 BC.

Bollmann J, Quinn PS, Vela M, Brabec B, Brechner S, Cortés MY, Hilbrecht H, Schmidt DN, Schiebel R, Thierstein HR (2004) Automated particle analysis: calcareous microfossils. In: (Francus P, ed.) *Image Analysis, Sediments and Paleoenvironments. Developments in Paleoenvironmental Research*, vol. 7. Springer, Dordrecht, 229-252. http://dx.doi.org/10.1007/1-4020-2122-4; automated image acquisition, automated classification, neural networks, particle recognition, automated microscopy, microfossils, morphometry, calcareous nannofossils, planktic foraminifera, SEM, light microscopy.

Böning P, Bard E, Rose J (2007) Toward direct, micron-scale XRF elemental maps and quantitative profiles of wet marine sediments. *Geochemistry Geophysics Geosystems* **8** (5), Q05004, 14 pp. http://dx.doi.org/10.1029/2006GC001480; micro-XRF scanner, high-resolution XRF analysis, major elementa, trace elements, 100-µm resolution, XRF whole-core scanner (XRF-S) with 5-mm resolution, continuous element profiles.

Bonk A, Kinder M, Enters D, Grosjean M, Meyer-Jacob C, Tylmann W (2016) Sedimentological and geochemical responses of Lake Żabińskie (north-eastern Poland) to erosion changes during the last millennium. *Journal of Paleolimnology* **56** (2), 239-252. http://dx.doi.org/10.1007/s10933-016-9910-6; 1000-year-long limnic varve sequence, varve thickness, sediment accumulation rate, scanning XRF, loss on ignition, biogenic silica, major phases of erosion in catchment influenced lake sedimentation.

Bonk A, Tylmann W, Amannn B, Enters D, Grosjean M (2015) Modern limnology, sediment accumulation and varve formation processes in Lake Żabińskie, northeastern Poland: comprehensive process studies as a key to understand the sediment record. *Journal of Limnology* **74** (2). http://dx.doi.org/10.4081/jlimnol.2014.1117; eutrophic hardwater lake, Masurian Lake District, 2-year detailed observations.

Borell R, Offerberg J (1955) Geokronologiska undersökningar inom Indalsälvens dalgång mellan Bergeforsen och Ragunda. *Sveriges geologiska undersökning. Ser. Ca. Avhandlingar och uppsatser i 4*, Norstedt, 42 p. Attempt to revise some of DeGeer's varve chronologies by 84 varve years; citicized by DeGeer (1957).

Boygle J (1993) The Swedish varve chronology - a review. *Progress in Physical Geography* **17** (1), 1-19. http://dx.doi.org/10.1177/030913339301700101; review up to Cato, 1986, Sweden, lacustrine varves.

Bracewell RN (1988) Spectral analysis of the Elatina series. *Solar Physics Volume* **116** (1), 179-194. http://dx.doi.org/10.1007/BF00171722; Elatina formation, South Australia, late Precambrian, laminae grouped in cycles of ~12 suggestive of solar cycle, Fourier analysis, importance for solar physics.

Bracewell RN (1988) The impact of varves on solar physics. *Solar Physics* **117** (2), 261-267. http://dx.doi.org/10.1007/BF00147247; 680-million year old varves cover thousands of solar cycles, review of earlier work.

Bradbury P, Cumming B, Laird K (2002) A 1500-year record of climatic and environmental change in Elk Lake, Minnesota III: measures of past primary productivity. *Journal of Paleolimnology* **27** (3), 321-340. http://dx.doi.org/10.1023/A:1016035313101; diatom analysis, natural and human-caused shifts in primary productivity for the past 1500 years, sunspot cycle periodicities, Late Holocene.

Bradbury JP, Dean WE (eds.) (1993) Elk Lake, Minnesota: evidence for rapid climate change in the north-central United States. *The Geological Society of America*, *Special Paper* **276**, 336 pp. http://www.worldcat.org/title/elk-lake-minnesota-evidence-for-rapid-climate-change-in-the-north-central-united-states/oclc/27676675; http://specialpapers.gsapubs.org/content/by/year; Elk Lake has an exceptionally long and well-preserved varve record across three stages: postglacial lake, prairie lake, and modern mesic forest lake; the volume contains 20 contributions about the paleoenvironment and paleoclimate of Elk Lake, pigments, limnology, climate, carbon and oxygen stable isotope ratios, chrysophycean cysts, vegetation history, fire history.

Bradbury JP, Dean WE, Anderson RY (1993) Holocene climatic and limnologic history of the north-central United States as recorded in the varved sediments of Elk Lake, Minnesota: A synthesis. In: (Bradbury JP, Dean WE, eds.) Elk Lake, Minnesota: evidence for rapid climate change in the north-central United States. *The Geological Society of America*, *Special Paper* **276**, 309-328. http://www.worldcat.org/title/elk-lake-minnesota-evidence-for-rapid-climate-change-in-the-north-central-united-states/oclc/27676675; http://specialpapers.gsapubs.org/content/by/year; synthesis and integration of multidisciplinary contributions about the paleoenvironment and paleoclimate of Elk Lake of the past 10 ka.

Bradley RS, Retelle MJ, Ludlam SD, Hardy DR, Zolitschka B, Lamoureux SF, Douglas MSV (1996) The Taconite Inlet Lakes Project: a systems approach to paleoclimatic reconstruction. *Journal of Paleolimnology* **16** (2), 97-110. http://dx.doi.org/10.1007/BF00176930; density-stratified (meromictic) lakes around Taconite Inlet, Ellesmere Island, Northwest Territories, Canada, lakes C1, C2 and C3 contain varved sediments, climatic controls on varve formation, lake C2 provides proxy record of summer temperature, arctic.

Bradley WH (1929) The varves and climate of the Green River epoch. *United States Geological Survey Professional Paper* **168**, 87-110. http://uwlib5.uwyo.edu/omeka/items/show/4423; Green River formation, Eocene, Colorado, Utah, Wyoming, fine-grained shales contain varves, speculative paleoclimate reconstruction.

Bradley WH (1937) Non-glacial varves with selected bibliography. *National Research Council Annual Report. Report of the Committee on the measurement of geologic time*, 32-42. http://books.google.com/books?id=ckIrAAAAYAAJ&pg=PA32&lpg=PA32&dq=Non-glacial+varves+with+selected+bibliography&source=bl&ots=CLdYwL_qr8&sig=XHq__YtW7RKQl6RC7isJEYkLIB8&hl=en&sa=X&ei=PWMRUIj7JMbErQHu6YHQCw&ved=0CFAQ6AEwAA#v=onepage&q=Non-glacial%20varves%20with%20selected%20bibliography&f=false; review of 1930s' knowledge about non-glacial varves, large list of early relevant publications, including many of De Geer on p. 12-13.

Brandt U, Nowaczyk NR, Ramrath A, Brauer A, Mingram J, Wulf S, Negendank JFW (1999) Palaeomagnetism of Holocene and late Pleistocene sediments from Lago di Mezzano and Lago Grande di Monticchio (Italy): initial results. *Quaternary Science Reviews* **18** (7), 961-976. http://dx.doi.org/10.1016/S0277-3791(99)00008-6; Holocene, Pleistocene, paleomagnetism, lake sediment.

Brännvall ML, Bindler R, Emteryd O, Renberg I (2001) Four thousand years of atmospheric lead pollution in northern Europe: a summary from Swedish lake sediments. *Journal of Paleolimnology* **25**, 421-435. http://dx.doi.org/10.1023/A:1011186100081; large paleolimnological study of the pre-industrial and industrial history of atmospheric lead pollution deposition in Sweden, lake sediment, lead concentrations, lead isotope ratios $^{206}Pb/^{207}Pb$, 31 lakes, one lake in north-west Russia, four lakes with varves, Lake Norrtjärnsjön, Lake Kassjön, Lake Koltjärn, Lake Grånästjärn, lead stable lead isotopes, atmospheric deposition, pollution history.

Brännvall ML, Bindler R, Renberg I, Emteryd O, Bartnicki J, Billström K (1999) The Medieval metal industry was the cradle of modern large-scale atmospheric lead pollution in northern Europe.

Environmental Science & Technology **33**, 4391-4395. http://dx.doi.org/10.1021/es990279n; heavy metals, pollution, atmospheric deposition, lead concentrations, stable lead isotope ratios $^{206}Pb/^{207}Pb$, lake sediment, four lakes in northern Sweden, Lakes Kassjön, Lake Norrtjärnsjön, Lake Koltjärn, Lake Grånästjärn, atmospheric lead pollution for the last 3000 years, airborne pollution from Greek and Roman cultures 2000 years ago, Medieval pollution.

Brännvall ML, Kurkkio H, Bindler R, Emteryd O, Renberg I (2001) The role of pollution versus natural geological sources for lead enrichment in recent lake sediments and surface forest soils. *Environmental Geology* **40**, 1057-1065. http://dx.doi.org/10.1007/s002540100260; atmospheric deposition, lead concentrations, stable lead isotope ratios $^{206}Pb/^{207}Pb$, lake sediment, lakes in northern Sweden, Lakes Kassjön, Lake Koltjärn, atmospheric lead pollution.

Brauer A (2004) Annually laminated lake sediments and their palaeoclimatic relevance. In: (Fischer H, Kumke T, Lohmann G, Flöser G, Miller H, von Storch H, Negendank JFW, eds.) *The Climate in Historical Times. Towards a Synthesis of Holocene Proxy Data and Climate Models*, (GKSS School of Environmental Research), Springer-Verlag, 111-129. http://www.worldcat.org/search?qt=worldcat_org_all&q=978-3-540-20601-9; review of varved lake sediments' role in paleoclimatology, history of varve research, factors influencing varve deposition, various proxies, microfacies.

Brauer A, Allen JRM, Mingram J, Dulski P, Wulf S, Huntley B (2007) Evidence for last interglacial chronology and environmental change from Southern Europe. *Proceedings of the National Academy of Sciences of the United States of America (PNAS)* **104** (2), 450-455. http://dx.doi.org/10.1073/pnas.0603321104; Lago Grande di Monticchio, southern Italy, interglacial, deglaciation, leads and lags, lake sediment, Mediterranean.

Brauer A, Casanova J (2001) Chronology and depositional processes of the laminated sediment record from Lac d'Annecy, French Alps. *Journal of Paleolimnology* **25** (2), 163-177. http://dx.doi.org/10.1023/A:1008136029735; France, European Alps, Last Glacial Maximum, Holocene, varve counting, radiocarbon, clastic varves, carbonate varves, stable isotopes.

Brauer A, Dulski P (2010) Combing varve micro-facies analyses and μ-XRF element scanning. In: (Ojala AEK, Kosonen E, eds.) *First Workshop of the PAGES Varves Working Group (Palmse, Estonia, April 7-9, 2010), Programme and Abstracts*, Geological Survey of Finland, Espoo, Finland, 13-16. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2010-VWG-1st-wkshp.pdf; lake sediment, combination of high-resolution XRF geochemical scanning and micro-facies imaging, resolution of major element data, examples from European maar lakes, transition into Younger Dryas in Meerfelder Maar, demise of last interglacial in Lago Grande di Monticcio.

Brauer A, Dulski P, Mangili C, Mingram J, Liu J (2009) The potential of varves in high-resolution paleolimnological studies. *PAGES News* **17** (3), 96-98. http://pastglobalchanges.org/download/docs/newsletter/2009-3/Special_section/Science_Highlights/Brauer_etal_2009-3(96-98).pdf; high-resolution X-ray fluorescence, micro-facies analysis, thin section, varve counting.

Brauer A, Endres C, Günter C, Litt T, Stebich M, Negendank JFW (1999) High resolution sediment and vegetation responses to Younger Dryas climate change in varved lake sediments from Meerfelder Maar, Germany. *Quaternary Science Reviews* **18** (3), 321-329. http://dx.doi.org/10.1016/S0277-3791(98)00084-5; Younger Dryas, lake sediment, Late Allerød to the Preboreal, diatoms, erosion.

Brauer A, Endres C, Negendank JFW (1999) Lateglacial calendar year chronology based on annually laminated sediments from Lake Meerfelder Maar, Germany. *Quaternary International* **61** (1), 17-25. http://dx.doi.org/10.1016/S1040-6182(99)00014-2; Eifel, glacial/interglacial transition, diatomaceous organic varves, diatom blooms, tephra layers, Younger Dryas, teleconnection, Lateglacial.

Brauer A, Endres C, Zolitschka B, Negendank JFW (2000) AMS radiocarbon and varve chronology from the annually laminated sediment record from Lake Meerfelder Maar, Germany. *Radiocarbon* **42** (3), 355-368. https://journals.uair.arizona.edu/index.php/radiocarbon/article/view/3828; Eifel, Holocene, missing varves, comparison with Lake Holzmaar, AMS dating, radiocarbon, planar bedding structure, sedimentary structure.

Brauer A, Günter C, Johnsen SJ, Negendank JFW (2000) Land-ice teleconnections of cold climatic periods during the last Glacial/Interglacial transition. *Climate Dynamics* **16** (2-3), 229-239. http://dx.doi.org/10.1007/s003820050016; Meerfelder Maar, cold events, Younger Dryas.

Brauer A, Hajdas I, Blockley SPE, Bronk Ramsey C, Christl M, Ivy-Ochs S, Moseley GE, Nowaczyk NN, Rasmussen SO, Roberts HM, Spötl C, Staff RA, Svensson A (2014) The importance of independent chronology in integrating records of past climate change for the 60-8 ka INTIMATE time interval. *Quaternary Science Reviews* **106**, 47-66. http://dx.doi.org/10.1016/j.quascirev.2014.07.006; overview of dating techniques, radiocarbon, ^{230}Th disequilibrium, luminescence, cosmogenic nuclides, incremental varve counting, recommendations for minimum standards of uncertainty and age datum reporting.

Brauer A, Hajdas I, Negendank JFW, Rein B, Vos H, Zolitschka B (1994) Warvenchronologie - Eine Methode zur absoluten Datierung und Rekonstruktion kurzer und mittlerer solarer Periodizitäten.

Geowissenschaften **12** (10-11), 325-332 (in German with English abstract). http://www.worldcat.org/title/geowissenschaften/oclc/6211943; Eifel, Germany, map of maar lakes, Lago di Monticchio, Italy, Lake Holzmaar, solar periodicities, biogenic and lithogenic/clastic varves, varve chronology, thin section, spectral analysis.

Brauer A, Haug GH, Dulski P, Sigman DM, Negendank JFW (2008) An abrupt wind shift in western Europe at the onset of the Younger Dryas cold period. *Nature Geoscience* **1** (8), 520-523. http://dx.doi.org/10.1038/ngeo263; Lake Meerfelder Maar, Eifel, Germany, storminess, North Atlantic westerlies, deglaciation.

Brauer A, Litt T, Negendank JFW, Zolitschka B (2001) Lateglacial varve chronology and biostratigraphy of lakes Holzmaar and Meerfelder Maar, Germany. *Boreas* **30** (1), 83-88. http://dx.doi.org/10.1111/j.1502-3885.2001.tb00991.x; Lake Holzmaar, Eifel, pollen, varve counting, core correlation, palynostratigraphy.

Brauer A, Mangili C, Moscariello A, Witt A (2008) Palaeoclimatic implications from micro-facies data of a 5900 varve time series from the Piànico interglacial sediment record, southern Alps. *Palaeogeography, Palaeoclimatology, Palaeoecology* **259** (2-3), 121-135. http://dx.doi.org/10.1016/j.palaeo.2007.10.003; Piànico paleolake, European Alps, lake sediment, authigenic calcite, wavelet analysis, solar activity, debris flows.

Brauer A, Mingram J, Frank U, Günter C, Schettler G, Wulf S, Zolitschka B, Negendank JFW (2000) Abrupt environmental oscillations during the Early Weichselian recorded at Lago Grande di Monticchio, Southern Italy. *Quaternary International* **73/74**, 79-90. http://dx.doi.org/10.1016/S1040-6182(00)00066-5; lake sediment, teleconnections to Mediterranean and Atlantic.

Brauer A, Negendank JFW (2002) The value of annually laminated lake sediments in palaeoenvironment reconstruction. *Quaternary International* **88** (1), 1-3. http://dx.doi.org/10.1016/S1040-6182(01)00067-2; introduction to special issue about varved lake sediments.

Brauer A, Wulf S, Mangili C, Appelt O, Moscariello A (2007) Reply: Tephrochronological dating of varved interglacial lake deposits from Piànico-Sèllere (Southern Alps, Italy) to around 400 ka. *Journal of Quaternary Science* **22** (4), 415-418. http://dx.doi.org/10.1002/jqs.1102; reply to criticism of Pinti et al. (2007) about the disputed age of paleolake Piànico. Pinti et al. (2001) had relied on K/Ar chronology whereas Brauer et al. (2007) used tephrochronology.

Brauer A, Wulf S, Mangili C, Moscariello M (2007) Tephrochronological dating of varved interglacial lake deposits from Piànico-Sèllere (Southern Alps, Italy) to around 400 ka. *Journal of Quaternary Science* **22** (1), 85-96. http://dx.doi.org/10.1002/jqs.1014; paleolake Piànico, Italy, new dating by tephrochronology. This study was subsequently criticized by Pinti et al. (2007), and the critique was rebutted by Brauer et al. (2007; see above).

Breckenridge A (2007) The Lake Superior varve stratigraphy and implications for eastern Lake Agassiz outflow from 10,700 to 8900 cal ybp (9.5–8.0 ^{14}C ka). *Palaeogeography, Palaeoclimatology, Palaeoecology* **246** (1), 45-61. http://dx.doi.org/10.1016/j.palaeo.2006.10.026; glaciolacustrine varves, recession of Laurentide Ice Sheet (LIS), time series analysis of varve thickness, Lake Agassiz, carbonate sediment.

Breckenridge A, Johnson TC, Beske-Diehl S, Mothersill JS (2004) The timing of regional Lateglacial events and post-glacial sedimentation rates from Lake Superior. *Quaternary Science Reviews* **23** (23-24), 2355-2367. http://dx.doi.org/10.1016/j.quascirev.2004.04.007; paleomagnetic records of secular variation (PSV), North America, glaciolacustrine varve thickness, Lake Nipigon, Nakina moraine.

Breckenridge A, Lowell TV, Evans G (2012) Recent progress on the Glacial Lake Ojibway varves. In: (Besonen MR, ed.) *Second Workshop of the PAGES Varves Working Group*, Program and Abstracts, 17-19 March 2011, Corpus Christi, Texas, USA, 23-27. http://pastglobalchanges.org/download/docs/working_groups/vwg/2011_2nd_VWG_workshop_programs_and_abstracts.pdf; Quebec/Ontario border, Canada, failure of Laurentide Ice Shield, correlation of lacustrine varve thickness records, Cochrane ice readvance, Glacial Lake Agassiz, correlation with Lake Superior varve sequence.

Breckenridge A, Lowell TV, Fisher TG, Yu S (2010) A late Lake Minong transgression in the Lake Superior basin as documented by sediments from Fenton Lake, Ontario. *Journal of Paleolimnology* **47** (3), 313-326. http://dx.doi.org/10.1007/s10933-010-9447-z; Fenton Lake and other sites in the Lake Superior basin, black sapropelic silt, lake level, Lake Agassiz.

Breckenridge A, Lowell TV, Stroup JS, Evans G (2012) A review and analysis of varve thickness records from glacial Lake Ojibway (Ontario and Quebec, Canada). *Quaternary International* **260**, 43-54. http://dx.doi.org/10.1016/j.quaint.2011.09.031; varve thickness, Laurentide Ice Sheet, early Holocene, ice readvanced during Cochrane, ~50 anomalously thick varves, sudden increase in varve thickness at year 1528 is a regional stratigraphic marker possibly coinciding with 9040 cal BP.

Brenner WW (2001) Distribution of organic walled microfossils within single lamina from the Gotland Basin, and their environmental evidence. *Baltica* **14**, 34–39. http://eurekamag.com/research/018/763/018763479.php; Litorina Sea, Baltic Sea, marine varves.

Briner JP, Young NE, Thomas EK, Stewart HAM, Losee S, Truex S (2011) Varve and radiocarbon dating support the rapid advance of Jakobshavn Isbræ during the Little Ice Age. *Quaternary Science Reviews* **30**, 2476-2486. http://dx.doi.org/10.1016/j.quascirev.2011.05.017; western Greenland, lake sediment, Little Ice Age, Holocene, glacier.

Brinkhuis H, Schouten S, Collinson ME, Sluijs A, Sinninghe Damsté JS, Dickens GR, Huber M, Cronin TM, Onodera J, Takahashi K, Bujak JP, Stein R, van der Burgh J, Eldrett JS, Harding IC, Lotter AF, Sangiorgi F, van Konijnenburg-van Cittert H, de Leeuw JW, Matthiessen J, Backman J, Moran K, Expedition 302 Scientists (2006) Episodic fresh surface waters in the Eocene Arctic Ocean. *Nature* **441**, 606- 609. http://dx.doi.org/10.1038/nature04692; marine sediments containing Azolla fern remains show alternating laminae of dark organic-rich and lighter siliceous laminae that are interpreted to be varves.

Briskin M, Robins J, Riedel WR, Booker R (1986) Magnetic resonance imaging analyses of varved marine sedimentary records of the Gulf of California. *Geophysical Research Letters* **13** (8), 753-756. http://dx.doi.org/10.1029/GL013i008p00753; marine sediment, comparison of Nuclear Magnetic Resonance NMR imaging to X-ray analysis.

Britt SL, Bottjer DJ, Fischer AG, Flocks JG, Gorsline DS (1992) X-radiography of horizontal core slabs; a method for greater retrieval of sediment core data. *Journal of Sedimentary Research* **62** (4), 718-744. http://jsedres.geoscienceworld.org/content/62/4/718.full.pdf+html; slicing of unconsolidated marine Santa Monica Basin sediment from Soutar box core, in preparation for X-radiography.

Brocard G, Adatte T, Magand O, Pfeifer HR, Bettini A, Arnaud F, Anselmetti FS, Moran-Ical S. (2014) The recording of floods and earthquakes in Lake Chichój, Guatemala during the twentieth century. *Journal of Paleolimnology* **52** (3), 155-169. http://dx.doi.org/10.1007/s10933-014-9784-4; Laguna or Lake Chichój, deep permanent lake in the central highlands of Guatemala, ^{210}Pb and ^{137}Cs inventories, varve counting, turbidites and flood layers.

Brodie I, Kemp AES (1994) Variation in biogenic and detrital fluxes and formation of laminae in late Quaternary sediments from the Peruvian coastal upwelling zone. *Marine Geology* **116** (3-4), 385-398. http://dx.doi.org/10.1016/0025-3227(94)90053-1; marine sediment, back scattered electron imagery (BSEI), intermittently laminated sediments, episodic major diatom bloom events, upwelling.

Brodie I, Kemp AES (1995) Pelletal structures in Peruvian upwelling sediments. *Journal of the Geological Society of London* **152**,141-150. http://dx.doi.org/10.1144/gsjgs.152.1.0141; Late Quaternary marine sediments from the Peru upwelling zone, backscattered electron imagery, pellets and aggregate structures, meiofauna, polychaete worms, agglutinating foraminifera.

Bronk Ramsey C, Staff RA, Bryant CL, Brock F, Kitagawa H, van der Plicht J, Schlolaut G, Marshall MH, Brauer A, Lamb HF, Payne RL, Tarasov PE, Haraguchi T, Gotanda K, Yonenobu H, Yokoyama Y, Tada R, Nakagawa T (2012) A complete terrestrial radiocarbon record for 11.2 to 52.8 kyr B.P. *Science* **338** (6105), 370-374. http://dx.doi.org/10.1126/science.1226660; Lake Suigetsu sediment, Japan, ~50,000 year varve record, leaves and seeds provide detailed radiocarbon record for improving the radiocarbon dating accuracy, connection between global atmospheric and regional marine radiocarbon levels. See perspective of article by Reimer (2012).

Brooks CEP (1928) The problem of the varves. *Quarterly Journal of the Royal Meteorological Society* 54 (225), 64-70. http://dx.doi.org/10.1002/qj.49705422510; Lake Ragunda, central Sweden, glaciolacustrine varve record.

Brooks CEP (1949) *Climate Through the Ages; A Study of the Climatic Factors and Their Variations.* London, Ernest Benn, 347 p. http://www.worldcat.org/title/climate-through-the-ages-a-study-of-the-climatic-factors-and-their-variations/oclc/85813; Holocene, European historic records on palaeoclimate, dry and wet periods, their correlation with varve counts in Saki Lake (referring to work by Shostakovich V, 1934).

Brooks GR (2016) A varve record of Lake Ojibway glaciolacustrine deposits from Lac Dasserat, northwestern Quebec, Canada. *Geological Survey of Canada, Open File* **8089**, 15 pp. (1 sheet). http://dx.doi.org/10.4095/299013; cores from six sites within ~3 km^2 at Lac Dasserat, varve thickness of 546 couplets, Timiskaming varve series.

Brooks GR, Medioli BE, Telka AM (2012) Evidence of early Holocene closed-basin conditions in the Huron-Georgian basins from within the North Bay outlet of the upper Great Lakes. *Journal of Paleolimnology* **47** (3), 469-492. http://dx.doi.org/10.1007/s10933-010-9408-6; French River, North Bay, Ontario, Canada, Muskrat Bay, Crombie Bay, Deep Bay, glaciolacustrine varves, Lake Huron, Holocene water levels.

Brown FS, Baedecker MJ, Nissenbaum A, Kaplan IR (1972) Early diagenesis in a reducing fjord, Saanich Inlet, British Columbia – III. Changes in organic constituents of sediment. *Geochimica et Cosmochimica Acta* **36** (11), 1185-1203. http://dx.doi.org/10.1016/0016-7037(72)90045-2; organic compounds, marine sediment, comparison of nearshore deposits to basin center deposits, Canada, Pacific, chlorins, amino acids, fatty acids, aliphatic straight chain hydrocarbons, aromatic hydrocarbon perylene, fulvic acids, humic acids, isoprenoid hydrocarbons, pristane, phytane, carbon stable isotopes.

Brüchert V, Pratt LM, Anderson TF, Hoffmann SR (1995) Abundance and isotopic composition of organic and inorganic sulfur species in laminated and bioturbated sediments from Hole 893A, Santa Barbara Basin. In: (Kennett JP, Baldauf JG, Lyle M, eds.), *Proceedings of the Ocean Drilling Program, Scientific Results* **146** (Pt. 2), 219-229. http://www-odp.tamu.edu/publications/146_2_SR/VOLUME/CHAPTERS/sr146pt2_16.pdf; marine partially varved or laminated sediment, sulfur stable isotopes, California, Pacific Ocean.

Brugal JP, Ambert P, Bandet Y, Leroy S, Roiron P, Suc JP, Vernet JL (1990) Mammifères et végétaux du maar pliocène final de Nogaret (Escandorgue, Hérault, France). *Géobios* **23** (2), 231-247 (in French with English abstract). http://dx.doi.org/10.1016/S0016-6995(06)80054-9; potassium-argon dating, macroflora, pollen, Tiglian, Nogaret maar, Pliocene.

Bruland K (1974) *Lead-210 Geochronology in the Coastal Marine Environment*. Ph.D. dissertation, University of California at San Diego (UCSD), 106 p. http://www.worldcat.org/title/pb-210-geochronology-in-the-coastal-marine-environment/oclc/34249601; http://proquest.umi.com/pqdweb?did=757768901&sid=1&Fmt=1&clientId=12010&RQT=309&VName=PQD; dating of marine varved sediments representing the past 112 years using excess Pb-210, Mazatlan Slope, Guaymas Basin, Gulf of California, Radium-226, Thorium-228, Saanich Inlet.

Brumsack HJ (1989) Geochemistry of recent TOC-rich sediments from the Gulf of California and the Black Sea. *Geologische Rundschau* **78** (3), 851-882. http://dx.doi.org/10.1007/BF01829327; Major and minor element geochemistry (including Ag, As, Ba, Cd, Co, Cr, Cu, Mn, Mo, Ni, Pb, Sr, V, Zn), marine sediment, Gulf of California, anoxia traps redox sensitive and/or stable sulfide forming elements, sapropel.

Brunck H, Sirocko F, Albert J (2016) The ELSA-Flood-Stack: A reconstruction from the laminated sediments of Eifel maar structures during the last 60 000 years. *Global and Planetary Change* **142**, 136-146. http://dx.doi.org.proxyiub.uits.iu.edu/10.1016/j.gloplacha.2015.12.003; German Eifel maars, lacustrine varves, flood frequency record for the last 60 000 years, high flood activity related to Greenland Stadials or anthropogenic impact, low vegetation coverage main cause for flood layers, precipitation plays secondary role.

Brunnberg L, Possnert G (1992) Radiocarbon dating of the Goti-Finiglacial boundary of the Swedish Time Scale. *Boreas* **21** (1), 89-96. http://dx.doi.org/10.1111/j.1502-3885.1992.tb00015.x; revision of the Swedish Time Scale, clay-varve chronology, Sweden, AMS, radiocarbon reservoir effect.

Brunnberg L (1995) Clay-varve chronology and deglaciation during the Younger Dryas and Preboreal in the Middle Swedish ice marginal zone. Ph.D. thesis, Stockholm University, Quaternaria, Series A 2, 1-94. http://bolin.su.se/data/Brunnberg-Varve; ice recession, drainage of Baltic Ice Lake, marine influence, Swedish time scale.

Bukry D (1974) Coccoliths as paleosalinity indicators - evidence from the Black Sea. In: (Degens E, Ross D, eds.) *The Black Sea - Geology, Chemistry, and Biology*. *American Association of Petroleum Geologists Memoir* **20**, 353-363. http://www.worldcat.org/title/black-sea-geology-chemistry-and-biology/oclc/969800; Black Sea sediment divided into three units based on coccoliths and sediment type, increasing salinity of the Black Sea during the Holocene, in part marine.

Bukry D, King SA, Horn MK, Manheim FT (1970) Geological significance of coccoliths in fine- grained carbonate bands of postglacial Black Sea sediments. *Nature* **226**, 156-158. http://dx.doi.org/10.1038/226156a0; light-coloured bands and darker bands imaged via scanning electron and light microscopy, Holocene coccoliths are the overwhelmingly dominant constituents in the light bands, whereas Cretaceous and Eocene coccoliths are important components of the carbonate in the darker matrix, in part marine sediment.

Bull D, Kemp AES (1995) Composition and origins of laminae in late Quaternary and Holocene sediments from the Santa Barbara Basin. In: (Kennett JP, Baldauf JG, Lyle M, eds.), *Proceedings of the Ocean Drilling Program, Scientific Results* **146** (Pt. 2), 77-87. http://www-odp.tamu.edu/publications/146_2_SR/VOLUME/CHAPTERS/sr146pt2_06.pdf; marine sediment, Pacific, California, North America, backscattered electron imaging (BSEI), origins of laminae, simplest lamination type comprises silt-rich, silt-poor couplets which originate from seasonal variation in the supply of silt to the basin; second lamination type contains an additional lamina of diatom ooze to form terrigenous sediment-diatomaceous triplets, diatom flux, upwelling-driven primary productivity.

Bull D, Kemp AES (1996) Composition and origins of laminae in late Quaternary and Holocene sediments from the Santa Barbara Basin. In: (Kemp AES, ed.) *Palaeoclimatology and Palaeoceanography from Laminated Sediments*. *Geological Society Special Publication* **116**, London, 143-156. http://dx.doi.org/10.1144/GSL.SP.1996.116.01.13; marine sediment, Pacific, California, North America, backscattered electron imaging (BSEI), origins of laminae, simplest lamination type comprises silt-rich, silt-poor couplets which originate from seasonal variation in the supply of silt to the basin; second lamination type contains an additional lamina of diatom ooze to form terrigenous sediment-diatomaceous triplets, diatom flux, upwelling-driven primary productivity.

Bull D, Kemp AES, Weedon GP (2000) A 160-k.y.-old record of El Niño-Southern Oscillation in marine production and coastal runoff from Santa Barbara Basin, California, USA. *Geology* **28** (11), 1007-1011. http://dx.doi.org/10.1130/0091-7613(2000)28<1007:AKROEN>2.0.CO;2; 160,000 year laminated sediment record analyzed using scanning electron microscope techniques, presumed interannual variability of marine production and

coastal runoff, backscatter electron imagery to measure components of varves, periodicities of 3.1 and 8.4 yr in terrigenous series, periodicities of 3.5 and 7.6 yr in diatomaceous series, El Niño, cross-spectral analysis of the terrigenous and diatomaceous records, El Niño has been a persistent feature of late Quaternary climate variability; the study incorrectly assumes the presence of varves; see Schimmelmann et al. (2013) http://dx.doi.org/10.1080/11035897.2013.773066.

Burke IT, Grigorov I, Kemp AES (2002) Microfabric study of diatomaceous and lithogenic deposition in laminated sediments from the Gotland Deep, Baltic Sea. *Marine Geology* **183** (1-4), 89-105. http://dx.doi.org/10.1016/S0025-3227(01)00250-X; anoxic marine diatomaceous sediments at intervals throughout the last 8000 yr, scanning electron microscope study, couplets, triplets and quadruplets of diatomaceous and lithogenic laminae are observed with an average thickness of approximately 700 µm, diagenetic Ca-rhodochrosite laminae, diatom assemblages suggest that bundles of laminae represent varves, varve record often interrupted by diffusely laminated and homogenous sediments.

Burke IT, Kemp AES (2002) Microfabric analysis of Mn-carbonate laminae deposition and Mn-sulfide formation in the Gotland Deep, Baltic Sea. *Geochimica et Cosmochimica Acta* **66** (9), 1589-1600. http://dx.doi.org/10.1016/S0016-7037(01)00860-2; manganese-carbonate laminae, marine varves in Littorina sequence, kutnahorite laminae occur within varves only as a winter-early spring deposit, benthic foraminifera tests encrusted in kutnahorite, hexagonal γ-Mn-sulfide pseudomorphs.

Burke IT, Kemp AES (2004) A mid-Holocene geochemical record of saline inflow to the Gotland Deep, Baltic Sea. *The Holocene* **14** (6), 940-948. http://dx.doi.org/10.1191/0959683604hl773rp; manganese-enrichment in Gotland Deep marine sediments linked to periodic inflows of saline water from the North Sea, linked to North Atlantic atmospheric conditions, scanning electron microscope, Mn-enrichments, potential annual record of variation in saline inflow, spectral analysis.

Butz C, Grosjean M, Fischer D, Wunderle S, Tylmann W, Rein B (2015) Hyperspectral imaging spectroscopy: a promising method for the biogeochemical analysis of lake sediments. *Journal of Applied Remote Sensing* **9** (1), 096031. http://dx.doi.org/10.1117/1.JRS.9.096031; sediment-core-scanning imaging spectrometry for analysis of fresh sediment cores, visual to near-infrared range (400 to 1000 nm), organic limnic varved sediments of Lake Jaczno, north-east Poland, pigment bacteriopheophytin a (BPhe a) diagnostic for anoxia in lakes.

Butz C, Grosjean M, Poraj-Górska A, Enters D, Tylmann W (2016) Sedimentary Bacteriopheophytin a as an indicator of meromixis in varved lake sediments of Lake Jaczno, north-east Poland, CE 1891–2010. *Global and Planetary Change* **144**, 109-118. http://dx.doi.org/10.1016/j.gloplacha.2016.07.012; high-resolution (70 × 70 µm/pixel) calibrated hyperspectral imaging of varved lake sediment to investigate meromixis and hypolimnetic anoxia, to quantitatively map the spatial distribution of Bacteriopheophytin a (Bphe a) at very high sub-varve (i.e. seasonal) resolution.

Byrne JV, Emery KO (1960) Sediments of the Gulf of California. *Bulletin of the Geological Society of America* **71** (7), 983-1010. http://dx.doi.org/10.1130/0016-7606(1960)71[983:SOTGOC]2.0.CO;2; early publication mentioning marine annually laminated sediment in the Gulf of California, Mexico.

Byrne R (1982) Preliminary pollen analysis of Deep Sea Drilling Project leg 64, hole 480, cores 1-11. In: (Curry JR, Moore DG, eds.) *Initial Reports of the Deep Sea Drilling Project* **64**, part 2: Washington, U.S. Government Printing Office, 1225-1237. http://dx.doi.org/10.2973/dsdp.proc.64.162.1982; Gulf of California, marine sediment, largely varved cores, variable pollen concentrations.

Byrne R, Mudie P, Soutar A (1990) A pollen/dinoflagellate chronology for DSDP Site 480, Gulf of California. In: (Betancourt JL, MacKay AM, eds.) *Proceedings of the Sixth Annual Pacific Climate (PACLIM) Workshop*, March 5-8, 1989, *California Department of Water Resources, Interagency Ecological Studies Program Technical Report* **23**, 105-110. http://worldcat.org/oclc/22743042; http://www.worldcat.org/title/proceedings-of-the-sixth-annual-pacific-climate-paclim-workshop-asilomar-california-march-5-8-1989/oclc/22743042; acritarchs, dating of DSDP cores from sites 479 and 480, marine sediment.

Çağatay MN, Öğretmen N, Damcı E, Stockhecke M, Sancar Ü, Eriş KK, Özeren S (2014) Lake level and climate records of the last 90 ka from the Northern Basin of Lake Van, eastern Turkey. *Quaternary Science Reviews* **104**, 97-116. http://dx.doi.org/10.1016/j.quascirev.2014.09.027; ICDP cores from Northern Basin, lake level and climatic changes related to orbital and North Atlantic, laminated sediments with high TOC, TIC, Ca/Fe, $\delta^{18}O$ and $\delta^{13}C$, anti-phase to Dead Sea Basin (Lake Lisan) in the Levant.

Caissie BE, Brigham-Grette J, Lawrence KT, Herbert TD, Cook MS (2010) Last Glacial Maximum to Holocene sea surface conditions at Umnak Plateau, Bering Sea, as inferred from diatom, alkenone, and stable isotope records. *Paleoceanography* **25** (1), PA1206. http://dx.doi.org/10.1029/2008PA001671; deglaciation was characterized by laminated, partially varved intervals with productive and diverse diatom assemblages.

Caldenius, CRC (1932) Las glaciaciones Cuaternarias en la Patagonia y Tierra del Fuego, una investigación regional, estratigráfica y geocronológica; una comparación con la escala geocronológica Sueca. *Dirección general de minas y geología*, Buenos Aires, Brazil, Publicación no. **95**, 1-164. http://mla-s1-p.mlstatic.com/las-glaciaciones-cuaternarias-en-patagonia-tierra-del-fuego-4078-MLA123821844_6018-F.jpg; https://catalyst.library.jhu.edu/catalog/bib_910828

Caldenius C (1938) Carboniferous varves, measured at Paterson, New South Wales. *Geologiska Föreningen i Stockholm Förhandlingar* **60** (3), 349-364. http://dx.doi.org/10.1080/11035893809445008; presumed varves in the Kuttung series, at Seaham, and at Paterson.

Caldenius C (1960) The zero-year varve of the Swedish Geological Time Scale. A rectification. *Geologiska Föreningen i Stockholm Förhandlingar* **82** (1), 126-133. http://dx.doi.org/10.1080/11035896009455371

Calvert P (1964) Factors affecting the formation of laminated diatomaceous sediments in the Gulf of California. In: (van Andel TH, Shor GG, eds.) *Marine Geology of the Gulf of California; A Symposium*. *American Association of Petroleum Geologists Memoir* **3**, 311- 330. http://www.worldcat.org/title/marine-geology-of-the-gulf-of-california-a-symposium/oclc/270910; Guaymas Basin, San Pedro Martir Basin, oxygen content, oxygen minimum zone, Pacific Ocean, Mexico.

Calvert SE (1966) Origin of diatom-rich, varved sediments from the Gulf of California. *Journal of Geology* **64**, 546-565. http://www.jstor.org/stable/30059298; light versus dark laminae in central Gulf of California, silica content is constant, terrigenous content varies due to flooding, marine sediment.

Calvert SE, Fontugne MR (1987) Stable carbon isotopic evidence for the marine origin of the organic matter in the Holocene Black Sea sapropel. *Chemical Geology* **66** (3-4), 315-322. http://dx.doi.org/10.1016/0168-9622(87)90051-0; planktonic organic carbon, terrestrial organic carbon. high-resolution profiles of carbon isotopic composition of organic matter, marine sediment.

Calvert S, Vogel J, Southon J (1987) Carbon accumulation rates and the origin of the Holocene sapropel in the Black Sea. *Geology* **15** (10), 918-921. http://dx.doi.org/10.1130/0091-7613(1987)15<918:CARATO>2.0.CO;2; radiocarbon, marine sapropel formation ended earlier in shallow waters than in the deep basin, radiocarbon chronology.

Campagne P, Crosta X, Schmidt S, Noëlle Houssais M, Ther O, Massé G (2016) Sedimentary response to sea ice and atmospheric variability over the instrumental period off Adélie Land, East Antarctica. *Biogeosciences* **13** (14), 4205-4218. http://dx.doi.org/10.5194/bg-13-4205-2016; marine varves, diatoms, Southern Ocean, 1970–2010 CE diatom-specific biomarker record (highly branched isoprenoids, major element abundances, comparison to meteorological data refines the relationships between proxies and environmental conditions and siliceous productivity over the last decades.

Cane T, Rohling EJ, Kemp AES, Cooke S, Pearce RB (2002) High-resolution stratigraphic framework for Mediterranean sapropel S5: defining temporal relationships between records of Eemian climate variability. *Palaeogeography, Palaeoclimatology, Palaeoecology* **183** (1-2), 87-101. http://dx.doi.org/10.1016/S0031-0182(01)00461-8; onset of S5 in marine ODP site 967C (Eratosthenes seamount) was 1–6 centuries delayed relative to the onsets in more westerly sites, varve count.

Caniupán M, Villaseñor T, Pantoja S, Lange CB, Vargas G, Muñoz P, Salamanca M (2009) Temporal changes in phytoplankton productivity over the last ~200 years recorded from Mejillones Bay laminated sediments (Spanish title: Sedimentos laminados de la Bahía Mejillones como registro de cambios temporales en la productividad fitoplanctónica de los últimos ~200 años). *Revista Chilena de Historia Natural* **82**, 83-96 (in Spanish with English abstract). http://dx.doi.org/10.4067/S0716-078X2009000100006; Peru, Pacific, marine sediment, organic carbon, chlorins, alkenones, biogenic opal.

Card VM (1997) Varve-counting by the annual pattern of diatoms accumulated in the sediment of Big Watab Lake, Minnesota, AD 1837–1990. *Boreas* **26** (2), 103-112. http://dx.doi.org/10.1111/j.1502-3885.1997.tb00657.x; lake sediment, varve-counting, Minnesota, USA, North America, freeze-core, epoxy embedding, thin-section, pollen, marker layers.

Carpentier B, Gely JP, Huc AY, Durand B, Blanc-Valleron MM, Ansart M (1991) Use of organic carbon content as a chronostratigraphic tool. *Palaeogeography, Palaeoclimatology, Palaeoecology* **88** (3-4), 231-237. http://dx.doi.org/10.1016/0031-0182(91)90067-2; Mulhouse potash basin, upper Eocene to lower Oligocene, France, lithology and organic carbon content express recurrent sequences that are presumed to represent varves.

Carr SJ, Lee JA (1998) Thin-section production of diamicts: problems and solutions. *Journal of Sedimentary Research* **68** (1), 217-222. http://jsedres.geoscienceworld.org/content/68/1/217; epoxy or crystic resin impregnation, flowchart of procedural steps to generate thin sections.

Carrivick JL, Tweed FS (2013) Proglacial lakes: character, behaviour and geological importance. *Quaternary Science Reviews* **78**, 34-52. http://dx.doi.org/10.1016/j.quascirev.2013.07.028; geomorphological, sedimentological, chemical and biological characteristics.

Carstensen J, Andersen JH, Gustafsson BG, Conley DJ (2014) Deoxygenation of the Baltic Sea during the last century. *Proceedings of the National Academy of Sciences of the United States of America (PNAS)* **111** (15), 5628-5633. http://dx.doi.org/10.1073/pnas.1323156111; Baltic Sea is the largest anthropogenically induced hypoxic area in the world, 10-fold increase of hypoxia in the Baltic Sea, references to varves and laminations.

Casey RE, Weinheimer AL, Nelson CO (1989) California El Niños and related changes of the California Current System from recent and fossil radiolarian records. In: (Peterson DH, ed.) *Aspects of Climate variability in the Pacific and the Western Americas*. American Geophysical Union, *Geophysical Monograph* **55**, 85-92. http://dx.doi.org/10.1029/GM055p0085; El Niño, Santa Barbara Basin, Pacific, North America, marine sediment.

Casey RE, Weinheimer, AL, Nelson C, Albin J, Beauchamp D, Carpenter D, O'Brien K (1990) El Niño reconstructions and confirmation of a PanCalifornian model via radiolarian evidence. In: (Betancourt JL, MacKay AM, eds.) *Proceedings of the Sixth Annual Pacific Climate (PACLIM) Workshop*, March 5-8, 1989, *California Department of Water Resources, Interagency Ecological Studies Program Technical Report* **23**, 87-90. http://worldcat.org/oclc/22743042; http://www.worldcat.org/title/proceedings-of-the-sixth-annual-pacific-climate-paclim-workshop-asilomar-california-march-5-8-1989/oclc/22743042; radiolarian flux of Holocene marine sediments from Santa Barbara Basin 1960-1964 and 1980-1986, radiolarians from varved Pleistocene and non-varved Neogene sediments from coast of northern California, radiolarian flux dependent on strength of El Niño, but the site location ultimately controls radiolarian flux.

Cato I (1985) The definitive connection of the Swedish geochronological time scale with the present, and the new date of the zero year in Döviken, northern Sweden. *Boreas* **14** (2), 117-122. http://dx.doi.org/10.1111/j.1502-3885.1985.tb00901.x; http://onlinelibrary.wiley.com/doi/10.1111/j.1502-3885.1985.tb00901.x/pdf; update of the Swedish geochronological time scale, clay varve counts, Ångermanälven river valley, solving a 75-year old problem by correlating varved clayey-silty sequences.

Cato I (1987) On the definitive connection of the Swedish time scale with the present. *Sveriges geologiska undersökning*, Series Ca - Avhandlingar och uppsatser I A4 **68**, 54-55. Uppsala, Sweden.

Cato I (1998) Ragnar Lidén's postglacial varve chronology from the Ångermanälven valley, northern Sweden. *Sveriges geologiska undersökning* **88**, 82 pp., ISBN 91-7158-573-7; describes previously unpublished results of Lidén's investigation, shore displacement curve, 7522 varves, postglacial varve chronology, varve thickness diagrams.

Chambers MH, Lawrence DSL, Sellwood BW, Parker A (2000) Annual layering in the Upper Jurassic Kimmeridge clay formation, UK, quantified using an ultra-high resolution SEM-EDX investigation. *Sedimentary Geology* **137** (1-2), 9-23. http://dx.doi.org/10.1016/S0037-0738(00)00092-0; SEM-EDX documentation of sub-mm laminations of coccolith-rich and coccolith-poor couplets, hypothesis of varves where calcium peaks correspond to annual bloom of coccolithophorids, predominantly anoxic paleoenvironment, possible evidence of sun-spot cycles.

Chang AS, Patterson RT, McNeely R (2003) Seasonal sediment and diatom record from late Holocene laminated sediments, Effingham Inlet, British Columbia, Canada. *Palaios* **18** (6), 477-494. http://dx.doi.org/10.1669/0883-1351(2003)018<0477:SSADRF>2.0.CO;2; 5500 years of laminated diatomaceous sediments, varves, couplets containing a terrigenous and diatomaceous lamina pair.

Chang J, Yortsos YC (1994) Lamination during silica diagenesis - effects of clay content and Ostwald ripening. *American Journal of Science* **294** (2), 137-172. http://dx.doi.org/10.2475/ajs.294.2.137; Miocene marine Monterey Formation, California, mathematic model suggests self-organization leading to laminations based on silica diagenesis, transition from opal-A to opal-CT via dissolution and reprecipitation.

Chang L, Vasiliev I, van Baak C, Krijgsman W, Dekkers MJ, Roberts AP, Fitz Gerald JD, van Hoesel A, Winklhofer M (2014) Identification and environmental interpretation of diagenetic and biogenic greigite in sediments: A lesson from the Messinian Black Sea. *Geochemistry, Geophysics, Geosystems* **15**, 3612-3627. http://dx.doi.org/10.1002/2014GC005411; Mio-Pliocene outcrop sediments of the former Black Sea, Taman Peninsula, Russia, lacustrine or marine (?) varves, magnetic analyses and transmission electron microscope (TEM).

Chela-Flores J, Jerse G, Messerotti M, Tuniz C (2008) Astronomical and astrobiological imprints on the fossil records: A review. *From Fossils to Astrobiology. Cellular Origin, Life in Extreme Habitats and Astrobiology* **12**, Part 3, 5, 389-408. http://dx.doi.org/10.1007/978-1-4020-8837-7_19; relevance of lake varve records in astronomy and astrobiology.

Chen RF, Bada JL (1989) Seawater and porewater fluorescence in the Santa Barbara Basin. *Geophysical Research Letters* **16** (7), 687-690. http://dx.doi.org/10.1029/GL016i007p00687; Pacific, marine sediment, fluorescence of porewater, arine humic substances.

Cheshire H, Thurow J, Nederbragt AJ (2005) Late Quaternary climate change record from two long sediment cores from Guaymas Basin, Gulf of California. *Journal of Quaternary Science* **20** (5), 457-469. http://dx.doi.org/10.1002/jqs.944; Mexico, marine varves, below the last glacial period, laminated record of MIS 5 allows comparison with the Holocene.

Chondrogianni C, Ariztegui D, Rolph T, Juggins S, Shemesh A, Rietti-Shati M, Niessen F, Guilizzoni P, Lami A, McKenzie JA, Oldfield F (2004) Millennial to interannual climate variability in the Mediterranean during the Last Glacial Maximum. *Quaternary International* **122**, 31-41. http://dx.doi.org/

10.1016/j.quaint.2004.01.029; late Pleistocene, periodicities, Lake Albano, Italy, lake sediment, Last Glacial Maximum, North Atlantic Oscillation NAO.

Chow TJ, Bruland KW, Bertine K, Soutar A, Koide M, Goldberg ED (1973) Lead pollution: records in southern California coastal sediments. *Science* **181** (4099), 551-552. http://dx.doi.org/10.1126/science.181.4099.551; heavy metal, pollution, marine sediment, Pacific, California, anthropogenic lead flux, Santa Barbara Basin.

Chu G, Liu J, Liu D (2000) Discrimination of two kinds of sedimentary laminae in maar lakes of China. *Chinese Science Bulletin* **45** (24), 2292-2295. http://dx.doi.org/10.1007/BF02886371; varve formation and preservation in maar lakes, diatomaceous annual laminations in maar lakes in northeast China.

Chu G, Liu J, Schettler G, Li J, Sun Q, Gu Z, Lu H, Liu Q, Liu T (2005) Sediment fluxes and varve formation in Sihailongwan, a maar lake from northeastern China. *Journal of Paleolimnology* **34**, 311-324. http://dx.doi.org/10.1007/s10933-005-4694-0; diatoms, chrysophyte stomatocysts, summer monsoon, organic matter, siliciclastics, lake sediment trap.

Chu G, Sun Q, Li S, Lin Y, Wang X, Xie M, Shang W, Li A, Yang K (2013) Minor element variations during the past 1300 years in the varved sediments of Lake Xiaolongwan, north-eastern China. *GFF, special issue "Varve Genesis, Chronology and Paleoclimate"* **135** (3-4), 265-272. http://dx.doi.org/10.1080/11035897.2013.788550; synchrotron radiation X-ray fluorescence for nondestructive in situ analysis of elements, 1300 year time-series from varved lake sediments , Medieval Warm Period, Little Ice Age, principal component analysis, spectral analysis.

Chu G, Sun Q, Rioual P, Boltovskoy A, Liu Q, Sun P, Han J, Liu J (2008) Dinocyst microlaminations and freshwater "red tides" recorded in Lake Xiaolongwan, northeastern China. *Journal of Paleolimnology* **39**, 319–333. http://dx.doi.org/10.1007/s10933-007-9106-1; dinoflagellate cysts, sediment trap, lake sediment, cesium-137, lead-210, red tide.

Chu G, Sun Q, Wang X, Li D, Rioual P, Qiang L, Han J, Liu J (2009) A 1600 year multiproxy record of paleoclimatic change from varved sediments in Lake Xiaolongwan, northeastern China. *Journal of Geophysical Research* **114**, D22108. http://dx.doi.org/10.1029/2009JD012077; carbon stable isotope ratio, nitrogen stable isotope ratio, dinoflagellates, organic geochemistry, historical documents, solar forcing, drought, Medieval Warm Period, Little Ice Age, dinocyst varves, paleoclimatic changes.

Chu G, Sun Q, Wang X, Liu M, Lin Y, Xie M, Shang W, Liu J (2012) Seasonal temperature variability during the past 1600 years recorded in historical documents and varved lake sediment profiles from northeastern China. *The Holocene* **22** (7), 785-792. http://dx.doi.org/10.1177/0959683611430413; lake sediment, Lake Sihailongwan, alkenone unsaturation index, paleotemperature, Little Ice Age, Medieval Warm Period, documentary evidence, seasonal temperature, atmosphere-ocean circulation.

Chu G, Sun Q, Yang K, Li A, Yu X, Xu T, Yan F, Wang H, Liu M, Wang X, Xie M, Lin Y, Liu Q (2011) Evidence for decreasing South Asian summer monsoon in the past 160 years from varved sediment in Lake Xinluhai, Tibetan Plateau. *Journal of Geophysical Research* **116**, D02116. http://dx.doi.org/10.1029/2010JD014454; lake sediment, spectral analysis, ENSO periodicities, South Asia monsoon, glacial varves, varve thickness, South Asia monsoon.

Chu G, Sun Q, Xie M, Lin Y, Shang W, Zhu Q, Shan Y, Xu D, Rioual P, Wang L, Liu J (2014) Holocene cyclic climatic variations and the role of the Pacific Ocean as recorded in varved sediments from northeastern China. *Quaternary Science Reviews* **102**, 85-95. http://dx.doi.org/10.1016/j.quascirev.2014.08.008; *n*-alkane and compound-specific carbon isotope record of the past 9 ka, monsoon and Pacific SST affect varve deposition in Lake Xiaolongwan, spectral analysis on $\delta^{13}C$ time series, periodicities. Corrigendum published in 2015, *Quaternary Science Reviews* **111**, 113. A sentence about wavelet power spectrum was revised: http://dx.doi.org/10.1016/j.quascirev.2015.01.008;

Chu Q, Sun Q, Zhaoyan G, Rioual P, Qiang L, Kaijun W, Han J, Liu J (2009) Dust records from varved lacustrine sediments of two neighboring lakes in northeastern China over the last 1400 years. *Quaternary International* **194**, 108-118. http://dx.doi.org/10.1016/j.quaint.2008.08.005; dust storms, lake sediment, historical documents, maar lakes, minerogenic sediment, Medieval Warm Period, Lake Sihailongwan, Lake Xiaolongwan.

Chow TJ, Bruland KW, Bertine K, Soutar A, Koide M, Goldberg ED (1973) Lead pollution: Records in Southern California coastal sediments. *Science* **181** (4099), 551-552. http://www.jstor.org/stable/1736508; anthropogenic lead flux 1900-1972 in varved Santa Barbara Basin marine sediment, lead isotopic composition, lead derived mainly from the combustion of lead additives in gasoline.

Clark JS (1988) Stratigraphic charcoal analysis on petrographic thin sections: Application to fire history in northwestern Minnesota. *Quaternary Research* **30** (1), 81-91. http://dx.doi.org/10.1016/0033-5894(88)90089-0; 350 yr varved lake sediment, comparison with fire scars on red pine trees, pollen.

Clark JS (1993) Fire, climate change, and forest processes during the past 2000 years. In: (Bradbury JP, Dean WE, eds.) Elk Lake, Minnesota: evidence for rapid climate change in the north-central United States. *The Geological Society of America*, *Special Paper* **276**, 295-308. http://www.worldcat.org/title/elk-

lake-minnesota-evidence-for-rapid-climate-change-in-the-north-central-united-states/oclc/27676675; http://specialpapers.gsapubs.org/content/by/year; Elk Lake varved sediment, Minnesota, USA, charcoal in varve-dated sediment.

Clark JS, Hussey T, Royall PD (1996) Presettlement analogs for Quaternary fire regimes in eastern North America. *Journal of Paleolimnology* **16** (1), 79-96. http://dx.doi.org/10.1007/BF00173273; Wisconsin, New York, reference set of charcoal series, analog method for identifying analogs for past fire regimes, based on comparisons of distributions of charcoal accumulation rates from annually laminated sediments using a Kolmogorov-Smirnov two-sample D statistic, thin section analysis of varved sediments from small lakes.

Clark JS, Merkt J, Müller H (1989) Post-glacial fire, vegetation, and human history on the northern Alpine forelands, south-western Germany. *Journal of Ecology* **77** (4), 897-925. http://www.jstor.org/stable/2260813; varved Lake Schleinsee, cultivation practice, charcoal, thin section, pollen, Iron Age, Roman times, Bronze Age.

Clark JS, Royall PD (1994) Pre-industrial particulate emissions and carbon sequestration from biomass burning in North America. *Biogeochemistry* **23** (1), 35-51. http://dx.doi.org/10.1007/BF00001306; charcoal, fire emissions, sediment charcoal, thin section, varved lake sediments along transect NW Minnesota to NE Maine, variability in land use, emissions of large > 10µm diameter charcoal decreased during the twentieth century.

Clet M (1989) Palynologie de rythmites du Pléistocene supérieur, Leclercville, vallée moyenne du Saint-Laurent, Canada. *Bulletin de l'Association Française pour l'Etude du Quaternaire* **26** (26-4), 225-237. http://www.persee.fr/web/revues/home/prescript/article/quate_0004-5500_1989_num_26_4_1912; Québec, Canada, last interglacial, Saint-Lawrence valley, seasonal laminations indicative of a shallow lake, surrounded by coniferal forest, cool climate, pollen.

Cockburn JMH, Lamoureux SF (2007) Century-scale variability in late-summer rainfall events recorded over seven centuries in subannually laminated lacustrine sediments, White Pass, British Columbia. *Quaternary Research* **67** (2), 193-203. http://dx.doi.org/10.1016/j.yqres.2006.10.003; Canada, North America, lake sediment, Summit Lake, 700-yr varve record, glacier melt event, late-summer rainfall event, Little Ice Age, glacier advance, climate change, precipitation, subannual sedimentary units.

Cockburn JMH, Lamoureux SF (2008) Inflow and lake controls on short-term mass accumulation and sedimentary particle size in a High Arctic lake: implications for interpreting varved lacustrine sedimentary records. *Journal of Paleolimnology* **40** (3), 923-942. http://dx.doi.org/10.1007/s10933-008-9207-5; Canadian High Arctic, rate of sediment accumulation changed over short distances down-lake, grain size measures may not be representative proxies of inflow competence, grain size indices based on a measure of the coarser fraction may be more appropriate link between contemporary runoff processes and sedimentary characteristics.

Cocquyt C, Israël Y (2004) A microtome for sectioning lake sediment cores at a very high resolution. *Journal of Paleolimnology* **32** (3), 301-304. http://dx.doi.org/10.1023/B:JOPL.0000042995.59566.85; method for subsectioning, resolution down to 100 µm, diatom analysis.

Cohen AS, Lezzar KE, Cole J, Dettman D, Ellis GS, Eagle Gonneea M, Plisnier PD, Langenberg V, Blaauw M, Zilifi D (2006) Late Holocene linkages between decade–century scale climate variability and productivity at Lake Tanganyika, Africa. *Journal of Paleolimnology* **36** (2), 189-209. http://dx.doi.org/10.1007/s10933-006-9004-y; Kalya slope, near-annually resolved lake sediment paleoclimate record ~2,840 to 1,420 cal. yr BP, time series analyses, periodicities at interannual to centennial time scales, consistent with El Niño (ENSO) and PDO forcing and impact on East African climate.

Comboul M, Emile-Geay J, Evans MN, Mirnateghi N, Cobb KM, Thompson DM (2014) A probabilistic model of chronological errors in layer-counted climate proxies: applications to annually banded coral archives. *Climate of the Past* **10**, 825-841. http://dx.doi.org/10.5194/cp-10-825-2014; model considers both missing and doubly counted increments, error rates, applicable to varve counting.

Conley DJ, Björck S, Bonsdorff E, Carstensen J, Destouni G, Gustafsson BG, Hietanen S, Kortekaas M, Kuosa H, Meier HEM, Müller-Karulis B, Nordberg K, Norkko A, Nürnberg G, Pitkänen H, Rabalais NN, Rosenberg R, Savchuk OP, Slomp CP, Voss M, Wulff F, Zillén L (2009) Hypoxia-Related Processes in the Baltic Sea. *Environmental Science & Technology* **43** (10), 3412-3420. http://dx.doi.org/10.1021/es802762a; anthropogenic eutrophication, overview on laminated and varved sediment.

Conley DJ, Carstensen J, Aigars J, Axe P, Bonsdorff E, Eremina T, Haahti BM, Humborg C, Jonsson P, Kotta J, Lännegren C, Larsson U, Maximov A, Rodriguez Medina M, Lysiak-Pastuszak E, Remeikaitė Nikienė N, Walve J, Wilhelms S, Zillén L (2011) Hypoxia is increasing in the Coastal Zone of the Baltic Sea. *Environmental Science & Technology* **45**, 6777-6783. http://dx.doi.org/10.1021/es201212r; widespread unprecedented occurrence of hypoxia in Baltic Sea, 115 sites identified with hypoxia during the period 1955–2009 increasing the a global total to ca. 500 sites, with the Baltic Sea coastal zone containing over 20% of all known sites worldwide.

Cook TL (2012) Extreme depositional events in the context of annually resolved records of sediment accumulation. In: (Besonen MR, ed.) *Second Workshop of the PAGES Varves Working Group*, Program and Abstracts, 17-19 March 2011, Corpus Christi, Texas, USA, 28-32. http://

pastglobalchanges.org/download/docs/meeting-products/abstracts/2011_VWG_2nd_wkshp.pdf; 5,221 year varve record, Lower Murray Lake, Ellesmere Island, Canadian Arctic, varve thickness, event deposits.

Cook TL, Bradley RS, Stoner JS, Francus P (2008) Five thousand years of sediment transfer in a high arctic watershed recorded in annually laminated sediments from Lower Murray Lake, Ellesmere Island, Nunavut, Canada. *Journal of Paleolimnology* **41**, 77-94. http://dx.doi.org/10.1007/s10933-008-9252-0; associated data are available from the online data repository: ftp://ftp.ncdc.noaa.gov/pub/data/paleo/paleolimnology/northamerica/canada/ellesmere/lower-murray2008.txt; Lake sediment, Holocene, annual mass accumulation, temperature reconstruction, Little Ice Age.

Cook MS, Keigwin LD, Sancetta CA (2005) The deglacial history of surface and intermediate water of the Bering Sea. *Deep Sea Research Part II: Topical Studies in Oceanography* **52** (16-18), 2163-2173. http://dx.doi.org/10.1016/j.dsr2.2005.07.004; lamination (varve) occurrence contemporaneous with laminated sediments from the California margin and Gulf of California, due to low-oxygen conditions at intermediate depths in the North Pacific Ocean.

Cooper MC, O'Sullivan PE (1998) The laminated sediments of Loch Ness, Scotland: Preliminary report on the construction of a chronology of sedimentation and its potential use in assessing Holocene climatic variability. *Palaeogeography, Palaeoclimatology, Palaeoecology* **140** (1-4), 23-31. http://dx.doi.org/10.1016/S0031-0182(98)00023-6; laminated sediments, North Atlantic Ocean, Backscatter Scanning Electron Microscopy (BSEM), couplets of dark clay-rich sediments thought to be deposited from spring to autumn, pale silt-rich layers believed to represent sedimentation through winter, X-ray densitometry, difficult count the laminations, floating chronologies.

Cooper MC, O'Sullivan PE, Harkness DD, Lawson EM, Bull D, Kemp AES, Peglar SM, Mathews NM, Jones RI, Shine AJ (1998) ^{14}C dating of laminated sediments from Loch Ness, Scotland. *Radiocarbon* **40** (2), 781-793. https://journals.uair.arizona.edu/index.php/radiocarbon/article/view/3754; AMS radiocarbon dating of 6-m sediment core, Late Pleistocene and the first ca. 7500 yr of the Holocene, suggestion of varves, pollen, laminations due to winter floods, varve chronology for the Holocene.

Cooper MC, O'Sullivan PE, Shine AJ (2000) Climate and solar variability recorded in Holocene laminated sediments - a preliminary assessment. *Quaternary International* **68-71**, 363-371. http://dx.doi.org/10.1016/S1040-6182(00)00059-8; 1321–1963 AD laminations in lake sediment from Loch Ness, Scotland, United Kingdom, lamination thickness correlates with the number of ice weeks off Iceland, the index of the North Atlantic Oscillation (NAO), and with Zurich sunspot number, power spectra, low frequencies compatible with the NAO, the "11-year" sunspot cycle, the Hale (or "double sunspot") cycle, and the Gleissberg (88 year) solar cycle, solar variability.

Corella JP, Brauer A, Mangili C, Morellón M, Valero-Garcés BL (2010) Climate fluctuations in Western Mediterranean during the last 1.5 ka: the varved record of Lake Montcortès (NE Spain). In: (Ojala AEK, Kosonen E, eds.) *First Workshop of the PAGES Varves Working Group (Palmse, Estonia, April 7-9, 2010), Programme and Abstracts*, Geological Survey of Finland, Espoo, Finland, 33-34. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2010-VWG-1st-wkshp.pdf; Pyrenees, the last 3.500 cal years, karstic lake sediment, turbidite, calcite laminae, Iberian-Roman Period, Little Ice Age, Medieval Climate Anomaly, Mediterranean, Pyrenees, human impact.

Corella JP, Brauer A, Mangili C, Rull V, Vegas-Vilarrúbia T, Morellón M, Valero-Garcés BL (2012) The 1.5-ka varved record of Lake Montcortès (southern Pyrenees, NE Spain). *Quaternary Research* **78** (2), 323–332. http://dx.doi.org/10.1016/j.yqres.2012.06.002; 1548-year karstic varved record, northern Spain, biogenic varves composed of calcite, organic matter and detrital laminae and turbidite layers, human impact, Medieval Climate Anomaly, Little Ice Age, Pre-Pyrenees.

Corella JP, El Amrani A, Sigró J, Morellón M, Rico E, Valero-Garcés BL (2011) Recent evolution of Lake Arreo, northern Spain: influences of land use change and climate. *Journal of Paleolimnology* 46 (3), 469-485. http://dx.doi.org/10.1007/s10933-010-9492-7; 60 year-reconstruction of depositional history, sedimentology, geochemistry, diatom, instrumental climate data (1952–2007), limnological monitoring, discontinuous varve counts, cesium-137, radiocarbon, varved facies intercalated with fine turbidite deposits, Northern Iberia, land use.

Corella JP, Benito G, Rodriguez-Lloveras X, Brauer A, Valero-Garcés BL (2014) Annually-resolved lake record of extreme hydro-meteorological events since AD 1347 in NE Iberian Peninsula. *Quaternary Science Reviews* **93**, 77–90. http://dx.doi.org/10.1016/j.quascirev.2014.03.020; extreme rainfall events interpreted from detrital layers and turbidites interbedded within a varved sediment record since the 14th century in Montcortés Lake, NE Spain, high-resolution geochemical and sedimentological analyses.

Corella JP, Moreno A, Morellón M, Valentí R, Giralt S, Rico MT, Pérez-Sanz A, Valero-Garcés BL (2011) Climate and human impact on a meromictic lake during the last 6,000 years (Montcortès Lake, Central Pyrenees, Spain). *Journal of Paleolimnology* **46** (3), 351-367. http://dx.doi.org/10.1007/s10933-010-9443-3; the last 6,000 cal years, karstic lake sediment, turbidite, calcite laminae, Iberian-Roman Period, Little Ice Age, Medieval Climate Anomaly, Mediterranean, Pyrenees, human impact.

Cosentino D, Cipollari P, Lo Mastro S, Giampaolo C (2005) High-frequency cyclicity in the latest Messinian Adriatic foreland basin: Insight into palaeoclimate and palaeoenvironments of the Mediterranean

Lago-Mare episode. *Sedimentary Geology* **178** (1-2), 31-53. http://dx.doi.org/10.1016/j.sedgeo.2005.03.010; Late Messinian Lago-Mare deposits, high-frequency cyclicity, Mediterranean Basin, Adriatic side of the central Apennines, Italy, Fonte dei Pulcini section (SE Majella Mts.), 53 meters of millimeter- and centimeter-scale white-and-dark couplets forming varves, geochemistry, mineralogy (XRD analyses), micropaleontology, SEM and microprobe, spectral analyses, cyclicities, sunspot solar activity, Messinian salinity crisis.

Courtney Mustaphi C (2009) *Analysis of Laminated Sediments from Lake DV09, Northern Devon Island, Nunavut, Canada.* M.Sc. thesis, University of Ottawa. http://www.ruor.uottawa.ca/en/handle/10393/19603; lake sediment, Little Ice Age, Medieval Warm Period, 1600-year record.

Courtney Mustaphi CJ, Gajewski K (2013) Holocene sediments from a coastal lake on northern Devon Island, Nunavut, Canada. *Canadian Journal of Earth Sciences* **50** (5), 564-575. http://dx.doi.org/10.1139/cjes-2012-0143; Lake DV09, ~1600 year reconstruction of lake ontogeny through analysis and interpretation of sediment stratigraphy, very fine laminae interpreted as varves.

Cowan EA (2001) Late Pleistocene glacimarine record in Saanich Inlet, British Columbia, Canada. *Marine Geology* **174** (1-4), 43-57. http://dx.doi.org/10.1016/S0025-3227(00)00141-9; Sites 1033 and 1034, fjord, glacimarine clastic varves, calving tidewater glacier.

Cowan EA, Cai J, Powell RD, Clark JD, Pitcher JN (1997) Temperate glacimarine varves; an example from Disenchantment Bay, Southern Alaska. *Journal of Sedimentary Research* **67** (3), 536-549. http://dx.doi.org/10.1306/D42685C7-2B26-11D7-8648000102C1865D; marine calving embayment, glacimarine varves, turbidite, sediment accumulation, Hubbard Glacier, lead-210.

Cowan EA, Powell RD (2007) High frequency climate signals in fjord sediments of Glacier Bay National Park, Alaska. In: (Piatt JF, Gende SM, Eds.), *Proceedings of the Fourth Glacier Bay Science Symposium*, October 26-28, 2004; *U.S. Geological Survey Scientific Investigations Report* **2007-5047**, 46-49. http://pubs.usgs.gov/sir/2007/5047/; fjord, tidewater glaciers, glacimarine clastic varves.

Cowan EA, Seramur, KC, Cai J, Powell RD (1999) Cyclic sedimentation produced by fluctuations in meltwater discharge, tides and marine productivity in an Alaskan fjord. *Sedimentology* **46** (6), 1109-1126. http://dx.doi.org/10.1046/j.1365-3091.1999.00267.x; modern glacimarine clastic varves, adjacent to Muir Glacier, cyclicity, tidal rhythmite thickness, ^{210}Pb dating.

Cowie G (2005) The biogeochemistry of Arabian Sea surficial sediments: A review of recent studies. *Progress in Oceanography* **65** (2-4), 260–289. http://dx.doi.org/10.1016/j.pocean.2005.03.003; dynamic benthic system, seasonal variability in productivity and carbon flux, laminated marine sediments only at the core of the oxygen minimum zone on the Indian and Pakistan margins.

Craig AJ (1972) Pollen influx to laminated sediments: a pollen diagram from northeastern Minnesota. *Ecology* **53** (1), 46-57. http://dx.doi.org/10.2307/1935709; Lake of the Clouds, Boundary Waters Canoe Area, North America, 9,349 varves, alternating dark organic and light layers.

Crausbay SD, Russell JM, Schnurrenberger DW (2006) A ca. 800-year lithologic record of drought from sub-annually laminated lake sediment, East Java. *Journal of Paleolimnology* **35** (3), 641-659. http://dx.doi.org/10.1007/s10933-005-4440-7; sub-annually laminated sediment from Ranu Lamongan, maar lake on island of Java, environmental variability over 800 years, low Mg-calcite Mg-calcite, aragonite, oxygen stable isotope ratios, correlated with ENSO, Mg/Ca ratio, multi-decadal droughts, Indo-Pacific.

Cronin TM, Rayburn JA, Guilbault JP, Thunell R, Franzi DA (2012) Stable isotope evidence for glacial lake drainage through the St. Lawrence Estuary, eastern Canada, ~13.1–12.9 ka. *Quaternary International* **260**, 55-65. http://dx.doi.org/10.1016/j.quaint.2011.08.041; postglacial varved clays of alternating lacustrine and marine origin deposited during the transition from glacial Lake Vermont to Champlain Sea, Champlain-St. Lawrence Valley, Younger Dryas.

Croudace IW, Rindby A, Rothwell RG (2006) ITRAX: description and evaluation of a new multi-function X-ray core scanner. *Geological Society, London, Special Publications* **267**, 51-63. http://dx.doi.org/10.1144/GSL.SP.2006.267.01.04; automated multi-function core scanning instrument, records optical, radiographic and elemental variations from sediment half cores up to 1.8 m long at a resolution as fine as 200 µm.

Crowell JC, Frakes LA (1971) Late Paleozoic glaciation: Part IV, Australia. *Geological Society of America Bulletin* **82** (9), 2515-2540. http://dx.doi.org/10.1130/0016-7606(1971)82[2515:LPGPIA]2.0.CO;2; glaciation in late Paleozoic, mention several suspected varve occurrences.

Crowley KD, Duchon CE, Rhi J (1986) Climate record in varved sediments of the Eocene Green River Formation. *Journal of Geophysical Research* **91** (D8), 8637-8647. http://dx.doi.org/10.1029/JD091iD08p08637; time series of 1469, 1869, and 4158 varve thickness measurements from the Eocene Green River Formation, Colorado, statistical techniques to characterize climate variations, Fourier spectra, maximum entropy spectra, nonperiodic and weakly predictive climate during the time periods corresponding to deposition of the varves.

Crusius J, Anderson RF (1992) Inconsistencies in accumulation rates of Black Sea sediments inferred from records of laminae and ^{210}Pb. *Paleoceanography* **7** (2), 215-227. http://dx.doi.org/10.1029/92PA00279; AMS radiocarbon dating does not compare well with marine varve counts [Degens et al., 1980; Hay, 1988], sediment accumulation rate, lead-210, dating discrepancy exists because (a) it is difficult to count very fine laminae and (b) because a complete couplet is not deposited every year; estimate of the age of a distinct black marker horizon across the entire abyssal plain to be 150 ± 8 years (deposited in 1838 ± 8 A.D.).

Crusius J, Anderson RF (1995) Evaluating the mobility of ^{137}Cs, $^{239+240}$Pu and ^{210}Pb from their distributions in laminated lake sediments. *Journal of Paleolimnology* **13** (2), 119-141. http://dx.doi.org/10.1007/BF00678102; post-depositional mobility of ^{137}Cs cesium, $^{239+240}$Pu plutonium, ^{210}Pb lead-210, use of varved lake sediments for superior chronologic control, no evidence of mobility of ^{210}Pb, significant mobility of ^{137}Cs, $^{239+240}$Pu is a more reliable sediment chronometer than ^{137}Cs because it is significantly less mobile, radionuclides.

Crusius J, Anderson RF (1995) Sediment focusing in six small lakes inferred from radionuclide profiles. *Journal of Paleolimnology* **13** (2), 119-141. http://dx.doi.org/10.1007/BF00678103; boundary scavenging, radionuclides, ^{137}Cs cesium, $^{239+240}$Pu plutonium, ^{210}Pb lead-210, use of varved lake sediments for superior chronologic control, lakes 111, 227 and Dark Lake have varved sediment (Crusius and Anderson, 1995).

Cukur D, Krastel S, Schmincke HU, Sumita M, Tomonaga Y, Çağatay MN (2014) Water level changes in Lake Van, Turkey, during the past ca. 600 ka: climatic, volcanic and tectonic controls. *Journal of Paleolimnology* **52** (3), 201-214. http://dx.doi.org/10.1007/s10933-014-9788-0; seismic reflection profiles to infer past changes in lake level and changes in climate, volcanism, and regional tectonics since the formation of the lake ca. 600 ka ago.

Cuven S, Francus P, Lamoureux SF (2010) Estimation of grain size variability with micro X-ray fluorescence in laminated lacustrine sediments, Cape Bounty, Canadian High Arctic. *Journal of Paleolimnology* **44** (3), 803-817. http://dx.doi.org/10.1007/s10933-010-9453-1; Arctic lake sediment, Itrax™ Core Scanner, micro X-ray fluorescence (μ-XRF) measurements, comparison with standard geochemical methods, inductively coupled plasma–atomic emission spectrometry (ICP-AES), energy dispersive spectroscopy (EDS), relationship between chemical profiles and grain size using laser particle-size analysis, thin section image analysis techniques, link between grain size and relative abundance of several elements, K/Ti ratio is the best marker of the upper varve boundary.

Cuven S, Francus P, Lamoureux S (2011) Mid to Late Holocene hydroclimatic and geochemical records from the varved sediments of East Lake, Cape Bounty, Canadian High Arctic. *Quaternary Science Reviews* **30** (19-20), 2651-2665. http://dx.doi.org/10.1016/j.quascirev.2011.05.019; Melville Island, 4200 year-long clastic varve record, micro X-ray fluorescence (μ-XRF), progression from marine in the mid-Holocene, to estuarian from 2195 BC to 243 AD, to fully lacustrine source after 244 AD, correlation with local meteorological data, varve thickness correlates with snow depth and Sept–May temperatures, paleoclimatic reconstruction, Little Ice Age.

Czernik J (2009) Radiocarbon dating of Late Glacial sediments of Lake Miłkowskie by accelerator mass spectrometry. *Acta Palaeobotanica* **49** (2), 337–352. http://www.ib-pan.krakow.pl/pubs-pdf/Acta%20Palaeobotanica/2009/Ac49-2_s337-352.pdf; radiocarbon, AMS dating of plant macrofossils, lake sediments, chronology, macrofossils, Poland, biogenic varves in top section, minerogenic varves below,Allerød/Younger Dryas.

Czymzik M, Brauer A, Dulski P, Plessen B, Naumann R, von Grafenstein U, Scheffler R (2013) Orbital and solar forcing of shifts in Mid- to Late Holocene flood intensity from varved sediments of pre-alpine Lake Ammersee (southern Germany). *Quaternary Science Reviews* **61**, 96-110. http://dx.doi.org/10.1016/j.quascirev.2012.11.010; ~5500 varve years contain 1573 flood layers, microfacies, geochemistry, deposition predominantly during spring and summer, orbital summer forcing, centennial-scale solar activity minima.

Czymzik M, Dreibrodt S, Feeser I, Adolphi F, Brauer A (2016) Mid-Holocene humid periods reconstructed from calcite varves of the Lake Woserin sediment record (north-eastern Germany). *The Holocene* **26** (6), 935-946. http://dx.doi.org/10.1177/0959683615622549; time-series of lacustrine varve properties and geochemistry AD 2010–1923, and 6400–4950 varve years before present, microfacies analyses, x-ray fluorescence (μ-XRF) scanning, microscopic varve chronology, ^{14}C dating.

Czymzik M, Dulski P, Plessen B, von Grafenstein U, Naumann R, Brauer A (2010) A 450 year record of spring-summer flood layers in annually laminated sediments from Lake Ammersee (southern Germany). *Water Resources Research* **46**, W11528. http://dx.doi.org/10.1029/2009WR008360; Bavaria, lake sediment, microscopic varve counting, flood layers, Little Ice Age.

Czymzik M, Muscheler R, Brauer A (2016) Solar modulation of flood frequency in central Europe during spring and summer on interannual to multi-centennial timescales. *Climate of the Past* **12**, 799-805. http://dx.doi.org/10.5194/cp-12-799-2016; solar forcing of flood frequency, southern Germany, 5500-year flood layer record from varved sediments of Ammersee, floods lag the solar signal by 2–3 years and are more frequent during low solar activity.

Czymzik M, Muscheler R, Brauer A, Adolphi F, Ott F, Kienel U, Dräger N, Słowiński M, Aldahan A, Possnert G (2015) Solar cycles and depositional processes in annual ^{10}Be from two varved lake sediment records. *Earth and Planetary Science Letters* **428**, 44-51. http://dx.doi.org/10.1016/j.epsl.2015.07.037; calibration study, lakes Tiefer See in Germany and Czechowskie in Poland, 1983–2009 time-series, solar activity reconstruction.

Dallimore A, Jmieff DG (2010) Canadian west coast fjords and inlets of the NE Pacific Ocean as depositional archives. In: (Howe JA, Austin WEN, Forwick M, Paetzel M, Eds.) *Fjord Systems and Archives. Geological Society of London, Special Publications* **344**, 143-162. http://dx.doi.org/10.1144/SP344.12; summary of Canadian west coast fjord environments, (1) mainland fjords drain high mountains and ice fields with sediment input from snowmelt and glacier runoff in spring and summer, (2) inlets on Vancouver Island are in a milder marine climate, sediment input mostly during rains of autumn and winter, shallow sills at the mouth of some Vancouver Island inlets trigger anoxic bottom waters, marine mixed varves.

Dallimore A, Thomson RE, Bertram MA (2005) Modern to Late Holocene deposition in an anoxic fjord on the west coast of Canada: Implications for regional oceanography, climate and paleoseismic history. *Marine Geology* **219** (1), 47-69. http://dx.doi.org/10.1016/j.margeo.2005.05.003; marine sediment, Effingham Inlet, Pacific, Vancouver Island, British Columbia, 6000 yr record, annual changes in surface productivity, coastal upwelling, turbidite, seismic event, El Niño, La Niña, fjord, regime shift.

Damaschke M, Sulpizio R, Zanchetta G, Wagner B, Böhm A, Nowaczyk N, Rethemeyer J, Hilgers A (2013) Tephrostratigraphic studies on a sediment core from Lake Prespa in the Balkans. *Climate of the Past* **9** (1), 267-287. http://dx.doi.org/10.5194/cp-9-267-2013; use of varve chronologies for tephrostratigraphy.

Darin AV, Kalugin IA (2010) Geochemical indicators of climate change in lacustrine varves Central Asia. *First Workshop of the PAGES Varves Working Group* (Palmse, Estonia, April 7-9, 2010), 35-38. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2010-VWG-1st-wkshp.pdf; geochemical indicators for climate change, lake sediment, trace elements, last millennium, Lake Kucherla (Gorny Altai), Lake Shira (Khakassia), Lake Telmen (Mongolia), XRF analysis and synchrotron radiation, time series, transfer function for temperature reconstruction.

Darin AV, Kalugin IA, Ivanov EI, Karabanov EB, Osuhovskaya YN, Ovchinnikov DV, Shaporenko AD (2008) Geochemical indicators of climate change in the sediments of Lake Telmen (Northern Mongolia), according to SKAN RFA SR. *Digest Reports of the XVII International Synchrotron Radiation Conference*, Novosibirsk, July 15-20, 2008, abstracts, 6-19 (in Russian). Дарьин АВ, Калугин ИА, Иванов ЕИ, Карабанов ЕБ, Осуховская ЮН, Овчинников ДВ, Шапоренко АД (2008) Геохимические индикаторы климата в тонкоструктурированных осадках оз. Телмен (Северная Монголия) по данным СКАН РФА СИ. *Digest Reports of the XVII International Synchrotron Radiation Conference*, Novosibirsk, July 15-20, 2008, abstracts, 6-19. http://ssrc.inp.nsk.su/Conf/SR2008/contents.pdf; additional information needed: Electronic link? Keywords?

Dar'in AV, Kalugin IA, Maksimov MA, Tretyakov GA, Rakshun YaV (2013) Scanning X-ray fluorescence microanalysis of annual layers in samples of Lake Shira bottom sediments. *Bulletin of the Russian Academy of Sciences. Physics* **77** (2), 185–187. Originally published in Russian in 2013: *Izvestiya Rossiiskoi Akademii Nauk. Seriya Fizicheskaya* **77** (2), 207–209. http://dx.doi.org/10.3103/S1062873813020111; trace element composition of annual layers in lake sediment in Khakassia, synchrotron radiation from the BINP VEPP-3 storage ring.

Dar'in AV, Kalugin IA, Rakshun YaV (2013) Scanning X-ray microanalysis of bottom sediments using synchrotron radiation from the BINP VEPP-3 storage ring. *Bulletin of the Russian Academy of Sciences. Physics*, **77** (2), 182–184. Originally published in Russian in 2013: *Izvestiya Rossiiskoi Akademii Nauk. Seriya Fizicheskaya* **77** (2), 204–206. http://dx.doi.org/10.3103/S106287381302010X; measuring picogram concentrations of elements with micrometer spatial resolution, time-series of geochemical indicators of paleoclimate in Central Asia.

Dar'in AV, Kalugin IA, Rakshun YaV (2013) Studying variations in the elemental composition of annual layers in microsections of Lake Teletskoye sediments by means of scanning X-ray fluorescent microanalysis using synchrotron radiation. *Bulletin of the Russian Academy of Sciences. Physics* **77** (2), 188–190. Originally published in Russian in 2013: *Izvestiya Rossiiskoi Akademii Nauk. Seriya Fizicheskaya* **77** (2), 210–211. http://dx.doi.org/10.3103/S1062873813020123; measuring concentrations of more than 15 elements, geochemical indicators reflecting the rhythm of annual precipitation.

Darin A, Kalugin I, Maksimov M, Maksimova N, Markovitch T, Rakshun Y, Zizak I, Simon R, Goettlicher J (2012) Microanalytical study of annual layers in recent sediments of Lake Shira (Khakassia). In: (Zolitschka B, ed.) *3rd Workshop of the PAGES Varves Working Group, Manderscheid, Germany, March 20-25, 2012, Program and Abstracts. Terra Nostra, Schriften der GeoUnion Alfred-Wegener-Stiftung* **2012/1**, 29-31. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/VWG_AbstractVolume_Final_2012.pdf; internal structure of varves measured via X-Ray Fluorescent Synchrotron Radiation (XRF SR) scanning microanalysis of epoxy-embedded sediment, spatial resolution up to 20-25 µm, elemental analyses.

Darin A, Kalugin I, Maksimova N, Ovchinnikov D, Vologina E, Rudaya N, Ptitsyn AL, Reshetova SV, Rakshun Y, Zolotarev K (2010) High-resolution reconstruction of climate change in Central Asia over the past millennium. *SGEM 2010, 10th International Multidisciplinary Scientific GeoConference*, 20-26 June, Bulgaria, Sofia, *Conference Proceedings* **1**, 55-59. http://www.sgem.org/sgemlib/spip.php?article533;

SRXRF scanning, geochemical indicators, geochemical and biological proxies in varved lake sediment, tree-ring width chronology, Lake Teletskoe (Altai), Lake Kucherla (Altai), Lake Baikal, Lake Arahlei (Chita), scanning X-ray fluorescent analysis with synchrotron radiation, trace elements from K to U, radiocarbon, lead-210, cesium-137, instrumental data, transfer functions, reconstruction of annual temperature and precipitation.

Darin AV, Kalugin IA, Shaporenko AD, Chen J, Xiao T (2008) Climate change reconstruction on Central and Southern Asia regions by highresolution study of Mountain lakes bottom sediments of Russia and China. *Digest Reports of the XVII International Synchrotron Radiation Conference*, Novosibirsk, July 15-20, abstracts, 6-15. http://ssrc.inp.nsk.su/Conf/SR2008/index.html; additional information needed: Electronic link? Keywords?

Darin AV, Kalugin IA, Tretyakov GA, Maksimova NV, Rakshun YaV (2011) Geochemistry of the annual cycle of sedimentation in Central Asia varved lakes. *Geology of the Seas and Oceans*, vol. 3. *Proceedings of the XIX International Conference on Marine Geology*, Moscow, Nov. 14-18. 2011, 20-24 (in Russian). (Дарьин АВ, Калугин ИА, Третьяков ГА, Максимова НВ, Ракшун ЯВ (2011) Геохимия годового цикла осадкообразования в варвных озерах Центрально-Азиатского региона. Геология морей и океанов. Т. III: Материалы XIX Международной науч. конф. (Школы) по морской геологии (Москва, 14-18 нояб. 2011 г.), 20-24.) Additional information needed: Electronic link? Keywords?

Darin AV, Rakshun YaV (2010) Scanning X-ray microanalysis of natural samples using synchrotron radiation (SR) of the VEPP-3 BINP and focusing X-ray optics. Synchrotron radiation in the Earth Sciences: 3rd School for Young Professionals, Novosibirsk, 11-15 October. Collection of lectures, 8-15 (in Russian). (Дарьин АВ, Ракшун ЯВ (2010) Сканирующий рентгенофлуоресцентный микроанализ природных образцов с использованием синхротронного излучения (СИ) из накопителя ВЭПП-3 ИЯФ СО РАН и фокусирующей рентгеновской оптики. Синхротронное излучение в науках о Земле: 3-я Школа молодых специалистов, Новосибирск, 11-15 октября 2010 г. Сборник лекций, 8-15.) Additional information needed: Electronic link? Keywords?

Daryin AV, Kalugin IA, Smolyaninova LG, Zolotarev KV, Vologina EG, Ptitsyn AB, Andreev AA, Tserendash N (2006) Geochemical time series from lake sediments of the Central Asia as chronologic evidence of environmental change over the Late Holocene. *Chinese Journal of Geochemistry* **25** supplement, 6. http://dx.doi.org/10.1007/BF02839742; lake sediment, human impact, less pollution in mountain lakes of Siberia and Mongolia, transfer function, Lake Naikal, Lake Teletskoye in Altai Mountains, Lake Arahlei in Chita area, Lake Hovsgol in Mongolia, Lake Hoton-nur in Mongolian Altai Mountains, geochemical and microfossil parameters, XRF scanning, Holocene.

Daryin AV, Saarinen TJ (2006) Geochemical records seasonal climate variability from varved lake sediments. *Chinese Journal of Geochemistry* **25** supplement, 6-7. http://dx.doi.org/10.1007/BF02839743; more than 50 lakes with varved records found in Finland, varve thickness, X-ray density, mineral content, grain size, geochemical parameters, XRF scanning, Lake Lehmilampi, epoxy impregnation.

David TWE (1922) The "varve shales" of Australia. *American Journal of Science* **3** (14), 115-116. http://dx.doi.org/10.2475/ajs.s5-3.14.115; (available via Google Books, search for 'The varved shale of Australia'). ~4000 paired laminations in marine Lower Carboniferous shales presumed to be varves, Tapley's Hill Shale, near Adelaide, South Australia.

Davies A, Kemp AES, Pälike H (2011) Tropical ocean-atmosphere controls on inter-annual climate variability in the Cretaceous Arctic. *Geophysical Research Letters* **38**, L03706. http://dx.doi.org/10.1029/2010GL046151; 1000-year varve time series of inter-annual and decadal scale climate variability from Arctic Ocean, periodicities in the quasi-biennial oscillation and El Niño - Southern Oscillation (ENSO) band, marine sediment.

Davies A, Kemp AES, Pike J (2009) Late Cretaceous seasonal ocean variability from the Arctic. *Nature* **460**, 254-258. http://dx.doi.org/10.1038/nature08141; seasonally resolved Cretaceous sedimentary record from the Alpha ridge of the Arctic Ocean, biological carbon pump, diatom, production occurred within stratified water column, marine sediment, seasonal sea ice signal in varves.

Davies A, Kemp AES, Weedon GP, Barron JA (2012) El Niño-Southern Oscillation variability from the Late Cretaceous Marca Shale of California. *Geology* **40** (1), 15-18. http://dx.doi.org/10.1130/G32329.1; seasonal-scale reconstruction of water column flux events, diatoms, paleo–North American Monsoon, time series, periodicities in the quasi-biennial (2.1–2.8 yr) and low-frequency (4.1–6.3 yr) bands both characteristic of ENSO forcing, does not support the theory of a "permanent El Niño in periods of warmer climate, marine sediment.

Davies MH, Mix AC, Stoner JS, Addison JA, Jaeger J, Finney B, Wiest J (2011) The deglacial transition on the southeastern Alaska Margin: Meltwater input, sea level rise, marine productivity, and sedimentary anoxia. *Paleoceanography* **26** (2), PA2223. http://dx.doi.org/10.1029/2010PA002051; laminated opal-rich intervals record episodes of high productivity during the last deglaciation here at 14,790 ± 380 to 12,990 ± 190 cal years B.P. and 11,160 ± 130 to 10,750 ± 220 cal years B.P.

de Jong R, Kamenik C, Grosjean M (2013) Cold-season temperatures in the European Alps during the past millennium: variability, seasonality and recent trends. *Quaternary Science Reviews* **82**, 1–12.

http://dx.doi.org/10.1016/j.quascirev.2013.10.007; proxy-based, quantitative reconstruction of cold-season (mean October to May) air temperatures covering nearly the entire last millennium (AD 1060–2003, some hiatuses) based on subfossil chrysophyte stomatocyst remains in the varved sediments of high-Alpine Lake Silvaplana, eastern Swiss Alps. (46°27'N, 9°48'W, 1791 m a.s.l.), 5-yr resolution, Little Ice Age, since AD 1980 summer and cold season temperatures show a simultaneous, strong increase, which is unprecedented in the context of the last millennium.

Dean JM, Kemp AES (2004) A 2100 year BP record of the Pacific Decadal Oscillation, El Niño Southern Oscillation and Quasi-Biennial Oscillation in marine production and fluvial input from Saanich Inlet, British Columbia. *Palaeogeography, Palaeoclimatology, Palaeoecology* **213** (3-4), 207-229. http://dx.doi.org/10.1016/j.palaeo.2004.05.001; scanning electron microscopy, spectral analysis, varves may contain up to 22 sub-laminae due to seasonal-scale processes, sediment flux, 2000 consecutive varves, Quasi-Biennial Oscillation (QBO), El Niño Southern Oscillation (ENSO), Pacific Decadal Oscillation (PDO), La Niña, Pacific Northwest Index (PNI), marine sediment.

Dean JM, Kemp AES, Bull D, Pike J, Petterson G, Zolitschka B (1999) Taking varves to bits: Scanning electron microscopy in the study of laminated sediments and varves. *Journal of Paleolimnology* **22** (2), 121-136. http://dx.doi.org/10.1023/A:1008069514445; scanning electron microscopy (SEM), six case studies from lacustrine and marine settings, imaging of clastic and biogenic fabric types, seasonal faunal successions, seasonal and inter-annual variability, backscattered electron imagery, marine sediment.

Dean JM, Kemp AES, Pearce RB (2001) Palaeo-flux records from electron microscope studies of Holocene laminated sediments, Saanich Inlet, British Columbia. *Marine Geology* **174** (1-4), 139-158. http://dx.doi.org/10.1016/S0025-3227(00)00147-X; ODP Leg 169S, scanning electron microscope, varves form couplets, varves may contain up to 19 sub-laminae recording sub-seasonal to seasonal-scale processes, laminae fabrics, unique massive interval for inter-site correlation, marine sediment.

Dean WE (1993) Physical properties, mineralogy, and geochemistry of Holocene varved sediments from Elk Lake, Minnesota. In: (Bradbury JP, Dean WE, eds.) Elk Lake, Minnesota: evidence for rapid climate change in the north-central United States. *The Geological Society of America*, *Special Paper* **276**, 135-157. http://www.worldcat.org/title/elk-lake-minnesota-evidence-for-rapid-climate-change-in-the-north-central-united-states/oclc/27676675; http://specialpapers.gsapubs.org/content/by/year; mineral components of varves, geochemical characteristics, clastic influx into Elk Lake, climatically sensitive elements.

Dean W (2002) A 1500-year record of climatic and environmental change in ElkLake, Clearwater County, Minnesota II: geochemistry, mineralogy, and stable isotopes. *Journal of Paleolimnology* **27** (3), 301-319. http://dx.doi.org/10.1023/A:1016054522905; 1500 year record of authigenic or biogenic ($CaCO_3$, biogenic SiO_2, organicmatter, iron and manganese oxyhydroxides, and iron phosphate) varves, periodicity of ~400 years, wind-borne, eolian influx, carbon stable isotope ratios, oxygen stable isotope ratios, geochemistry.

Dean WE (2006) The geochemical record of the last 17,000 years in the Guaymas Basin, Gulf of California. *Chemical Geology* **232** (3-4), 87-98. http://dx.doi.org/10.1016/j.chemgeo.2006.02.017; calcium carbonate, organic carbon, cadmium, molybdenum, Pacific Ocean, marine varves, North America, Mexico, sediments deposited over the last 17,000 years in the western Guaymas Basin can be divided into five intervals, oxygen minimum zone.

Dean WE, Anderson RY (1973) Trace and minor element variations in the Permian Castile Formation, Delaware basin, Texas and New Mexico, revealed by varve calibration. *4th Symposium on Salt, Cleveland, Northern Ohio Geological Society* 275-285. Additional information needed: Electronic link? Keywords?

Dean WE, Anderson RY (1974) Application of some correlation coefficient techniques to time-series analysis. *Mathematical Geology* **6** (4), 363-372. http://dx.doi.org/10.1007/BF02082357; sliding correlation technique allows detailed stratigraphic correlation over entire basins, value for correlation of stratigraphic sequences such as varves and turbidites, autocorrelation, cross-correlation, time series.

Dean WE, Anderson RY (1978) Salinity cycles: Evidence for subaqueous deposition of Castile Formation and lower part of Salado Formation, Delaware Basin, Texas and New Mexico. In: Austin GS, compiler), *Geology and Mineral Deposits of Ochoan Rocks in Delaware Basin and Adjacent Areas*. *New Mexico Bureau of Mines and Mineral Resources Circular* **159**, 15-20. Additional information needed: Electronic link? Keywords?

Dean W, Anderson R, Bradbury JP, Anderson D (2002) A 1500-year record of climatic and environmental change in Elk Lake, Minnesota I: Varve thickness and gray-scale density. *Journal of Paleolimnology* **27** (3), 287-299. http://dx.doi.org/10.1023/A:1016062207440; continuously varved and complete Holocene section, varve components are predominantly autochthonous ($CaCO_3$, organic matter, biogenic silica, iron andmanganese minerals), varves contain minor wind-borne (eolian) detrital-clastic (aluminosilicate) component, singular spectrum analysis (SSA) and wavelet analysis of varve thickness, periodicities of ~10, 22, 40, and 90 years, solar activity.

Dean WE, Arthur MA (2011) Geochemical characteristics of Holocene laminated sapropel (Unit II) and underlying lacustrine Unit III in the Black Sea. *U.S. Geological Survey Open-File Report* **2010-1323**, 29p. http://pubs.usgs.gov/of/2010/1323/pdf/OF10-1323.pdf; 1988 R/V Knorr expeditions, all Holocene and upper Pleistocene sections, photographs of some cores; Unit 1 and Unit 2 of the late Holocene contain marine varves.

Dean WE, Gardner JV, Anderson RY (1994) Geochemical evidence for enhanced preservation of organic matter in the oxygen minimum zone of the continental margin of northern California during the Late Pleistocene. *Paleoceanography* **9** (1), 47-61. http://dx.doi.org/10.1029/93PA02829; Pacific Ocean off California and Oregon, oxygen minimum zone (OMZ) between 600 and 1200 m, laminated and varved sediments are preserved in upper Pleistocene sections, Point Conception, upper Pleistocene varved marine sediments contain more abundant lipid-rich "sapropelic" (type II) organic matter than the overlying bioturbated, oxidized Holocene sediments, preservation.

Dean WE, Megard RO (1993) Environment of deposition of $CaCO_3$ in Elk Lake, Minnesota. In: (Bradbury JP, Dean WE, eds.) *Elk Lake, Minnesota: Evidence for Rapid Climate Change in the North-Central United States. The Geological Society of America, Special Paper* **276**, 97-114. http://dx.doi.org/10.1130/SPE276-p97; lacustrine varves, seasonal deposition of high-Mg calcite and dolomite in addition to low-Mg calcite, manganese carbonate (rhodochrosite).

Dean WE, Pride C, Thunell R (2004) Geochemical cycles in sediments deposited on the slopes of the Guaymas and Carmen Basins of the Gulf of California over the last 180 years. *Quaternary Science Reviews* **23** (16-17), 1817-1833. http://dx.doi.org/10.1016/j.quascirev.2004.03.010; box cores, marine varves, Pacific Ocean, Mexico, North America, molybdenum, sulfate reduction, bottom waters of the Gulf have became more oxygenated over the last 100 years, box core, cyclicity with periodicities of 10–20 years, 20-year cycles in the more mafic components (e.g., titanium, particularly in sediments deposited during the 19th century), titanium cycles in agreement with warm phases of the Pacific Decadal Oscillation (PDO), El Niño, higher winter precipitation, riverine influx of volcanic rock debris from Sierra Madre.

Dearing JA, Zolitschka B (1999) System dynamics and environmental change: an exploratory study of Holocene lake sediments at Holzmaar, Germany. *The Holocene* **9** (5), 531-540. http://dx.doi.org/10.1191/095968399674019258; disorder maximization, self-organization, linear process-response, stochastic, self- organized criticality, frequency distributions, time-series, diatom productivity, sediment flux, Holocene, human influence.

De Batist M, Fagel N, Loutre MF, Chapron E (2008) A 17,900-year multi-proxy lacustrine record of Lago Puyehue (Chilean Lake District): introduction. *Journal of Paleolimnology* **39** (2), 151-161. http://dx.doi.org/10.1007/s10933-007-9113-2; record since Last Glacial Maximum,radiocarbon, lead-210, cesium-137, varve-counting for the past 600 years, sedimentology, mineralogy, grain-size, geochemistry, organic geochemistry, C/N ratios, carbon stable isotopes, loss-on-ignition, magnetic susceptibility, diatom, palynology, periodicities similar to those associated with the El Niño Southern Oscillation and the Pacific Decadal Oscillation, deglaciation, South America.

Debret M, Desmet M, Balsam W, Copard Y, Francus P, Laj C (2006) Spectrophotometer analysis of Holocene sediments from an anoxic fjord: Saanich Inlet, British Columbia, Canada. *Marine Geology* **229** (1-2), 15-28. http://dx.doi.org/10.1016/j.margeo.2006.01.005; marine varves, high-resolution spectrophotometry, effect of post-drilling oxidation and water loss, first derivative value at 675 nm as a proxy for changes in organic matter content, terrestrially derived organic matter, upwelling, method to identify sediment composition, reconstruction of paleoenvironments, reflectance, diatom.

de Diego T, Douglas RG (1999) Oxygen-related sediment microfabrics in modern "black shales", Gulf of California, Mexico. *Journal of Foraminiferal Research* **29** (4) 453-464. http://jfr.geoscienceworld.org/content/29/4/453.full.pdf+html; dark colored, thinly bedded, marine organic-rich muds accumulating under low oxygen conditions in slope basins in the Gulf of California are modern ''black shales'' with features similar to black shales found in the Cretaceous, x-radiography, repeated shifts from laminated to semi-laminated or bioturbated sedimentation in the past several hundred years, Alfonso Basin, varve counts, lead-210, slope sediments off Santa Rosalia, microfabrics, shifts in seafloor oxygen concentration.

Deevey ES (1953) Paleolimnology and climate. In: (Harlow S, ed.) *Climatic Change, Evidence, Causes, and Effects*, 273-318. Harvard University Press, Cambridge, Massachusetts. http://www.abebooks.com/PALEOLIMNOLOGY-CLIMATE-Deevey-Edward-Shapley-Harlow/5861489504/bd; additional information needed: Electronic link? Keywords?

Défarge C, Trichet J, Jaunet AM, Robert M, Tribble J, Sansone FJ (1996) Texture of microbial sediments revealed by cryo-scanning electron microscopy. *Journal of Sedimentary Research* **66** (5), 935-947. http://dx.doi.org/10.1306/D4268446-2B26-11D7-8648000102C1865D; SEM equipped with a freeze-drying sample preparation device, microstructural imaging, bacterial carbonate bodies and carbonate-impregnated cyanobacterial sheaths.

De Geer EH (1918) Bibliographia De Geeriana. Professor Gerard De Geers publikationer 1881–1918. *Geologiska Föreningen i Stockholm Förhandlingar* **40** (5), 809-852. http://dx.doi.org/10.1080/11035891809445907; De Geer's early publications.

De Geer EH (1943) Exakt geokronologisk förbindelse Sverige — Finland. *Geologiska Föreningen i Stockholm Förhandlingar* **65** (3), 225-240. http://dx.doi.org/10.1080/11035894309451809; geochronological linkage between varve sequences in Sweden and Finland.

De Geer EH (1951) De Geer's chronology confirmed by radioactive carbon, C 14. *Geologiska Föreningen i Stockholm Förhandlingar* **73** (3), 517-518. http://dx.doi.org/10.1080/11035895109452843; early radiocarbon dating of moraines agrees with De Geers varve ages.

De Geer EH (1951) Conclusions from C 14 and De Geer's chronology Daul-Gotiglacial, with datings. *Geologiska Föreningen i Stockholm Förhandlingar* **73** (4), 557-570. http://dx.doi.org/10.1080/11035895109452854; asserting simultaneous last E—W and N—S Pleistocene deglaciations back to 20,000 B.P.

De Geer EH (1954) Skandinaviens Geokronologi. Belyst av den svenska tidskalan jämte en karta med varv-daterade tusenärslinjer B. P. för den baltiska deglaciationen i kort sammanfattning. *Geologiska Föreningen i Stockholm Förhandlingar* **76** (2), 299-329. http://dx.doi.org/10.1080/11035895409453542; brief account of the 1954 state-of-the art of varve measurements from Sweden and vicinity.

De Geer EH (1957) Old and new datings of Swedish ice lakes and the thermals of Bölling and Alleröd. *Geologiska Föreningen i Stockholm Förhandlingar* **79** (1), 93-100. http://dx.doi.org/10.1080/11035895709449124; criticizes Borell and Offerberg (1955) for trying to revise the Storedan and Singsån by 84 varve years.

De Geer G (1884). Lecture at the Geological Society in Stockholm on "ishavslerans varvighet". *Geologiska Föreningen i Stockholm Förhandlingar* **7**. Page numbers? This citation seems to err with regard to volume number or journal title.

De Geer G (1908) On late Quaternary time and climate. *Geologiska Föreningens i Stockholm Förhandlingar* (*GFF*) **30** (7), 459-464. http://dx.doi.org/10.1080/11035890809445600

De Geer G (1912) A geochronology of the last 12000 years. *Compte Rendu 11 Congress Geologique International*, *11th International Geological Congress (1910), Stockholm, Sweden*, vol. 1, 241-253. http://dx.doi.org/10.1007/BF01802565; French version: http://www.worldcat.org/title/compte-rendu-de-la-xie-session-du-congres-geologique-international-stockholm-1910/oclc/03564824; http://catalog.hathitrust.org/api/volumes/oclc/3564824.html; German reprint in 1912 with English translation: *Geologische Rundschau* **3** (7), 457-471; http://www.worldcat.org/wcpa/ow/187196329; another reprint in International Journal of earth Sciences 91, supplement 1 (2002), s100-s110, http://dx.doi.org/10.1007/s00531-002-0287-6; Historic account of varve recognition and technique development.

De Geer G (1916) Om internationell användning av den svenska kvartärkronologien. *Geologiska Föreningens i Stockholm Förhandlingar* (*GFF*) **38**, 17-21. This citation seems to err with regard to volume number or journal title.

De Geer G (1921) Correlation of late glacial annual clay-varves in North America with the Swedish time scale. *Geologiska Föreningens i Stockholm Förhandlingar* (*GFF*) **43** (1-2), 70-73. http://dx.doi.org/10.1080/11035892109443889

De Geer G (1926) On the solar curve as dating the Ice Age, the New York moraine and Niagara Falls through the Swedish time scale. *Geografiska Annaler (Stockholm)* **8**, 253-283. http://dx.doi.org/10.2307/519727; historical attempt to correlate Swedish varve patterns with North American patterns.

De Geer G (1927) Late glacial clay varves in Argentina measured by Dr Carl Caldenius, dated and connected with the solar curve through the Swedish timescale. *Geografiska Annaler (Stockholm)* **9**, 1-8. http://dx.doi.org/10.2307/519677;

De Geer G (1928) Geochronology. *Antiquity* **2** (7), 308-318. http://antiquity.ac.uk/ant/002/Ant0020308.htm; additional information needed: Electronic link? Keywords?

De Geer G (1929) Solar registration by Pre-Quaternary varve-shales. *Geografiska Annaler*, Stockholm, **11**, 242-246. http://www.jstor.org/discover/10.2307/519409?uid=2129&uid=2&uid=70&uid=4&sid=21104132910781; attempt to interpret varved shales in terms of pre-Quaternary, Permian to 'Permo-Carbonic' solar-induced deglaciations.

De Geer G (1934) Geology and geochronology. *Geografiska Annaler* **16**, 1-52. http://www.jstor.org/stable/520089; explains the historic basics of varve chronologies and "transmarine teleconnections".

De Geer G (1935) Dating of the Ice Age in Scotland. *Transactions of the Glasgow Geological Society* **19**, 335-339. http://dx.doi.org/10.1144/transglas.19.2.335; attempt to use Scottish glacial varves for correlations.

De Geer G (1935) Dating of Late-Glacial clay varves in Scotland. *Proceedings of the Royal Society of Edinburgh* **55**, 23-26. Additional information needed: Electronic link? Keywords?

De Geer G (1935) Teleconnections contra so-called telecorrelations. *Geologiska Föreningens i Stockholm Förhandlingar* (*GFF*) **57** (2), 341-346. http://dx.doi.org/10.1080/11035893509445981

De Geer G (1937) New geochronologic possibilities. *Geologiska Föreningen i Stockholm Förhandlingar* **59** (3), 314-316. http://dx.doi.org/10.1080/11035893709444961; mention of varved glacial clays in Puget Sound area, Beacon Hill, near Seattle, Washington.

De Geer G (1938) Varve datings contra suppositions. *Geologiska Föreningen i Stockholm Förhandlingar* **60** (2), 236-242. http://dx.doi.org/10.1080/11035893809444998; seismic events being recorded in varved sediments.

De Geer G (1940) Geochronologia Suecia Principles. *Kungliga Svenska Vetenskapsakademiens Handlingar*, 3rd, **18** (6), 1-360. "From the obvious similarity with the regular, annual rings of the trees I got at once the impression that both ought to be annual deposits" (1940, p. 13). Additional information needed: Electronic link? Keywords?

Degens E, Michaelis W, Garrasi C, Mopper K, Kempe S, Ittekkot V (1980) Warven-chronologie und frühdiagenetische Umsetzungen organischer Substanzen holozäner Sedimente des Schwarzen Meeres. *Neues Jahrbuch für Geologie und Paläontologie Monatshefte* **5**, 65-86 (in German). Marine sediment. Additional information needed: Electronic link? Keywords?

Degens ET, Prashnowsky A, Emery KO, Pimenta J (1961) Organic materials in recent and ancient sediments. Part II: Amino acids in marine sediments of Santa Barbara basin, California. *Neues Jahrbuch für Geologie und Paläontologie, Monatshefte*, 413-426. http://www.worldcat.org/title/neues-jahrbuch-fur-geologie-und-palaontologie-monatshefte/oclc/1759692; additional information needed: Volume number? Electronic link? Keywords? Marine sediment, Pacific Ocean.

Degens ET, Reuter JH, Shaw KNF (1964) Biochemical compounds in offshore California sediments and sea waters. *Geochimica et Cosmochimica Acta* **28** (1), 45-66. http://dx.doi.org/10.1016/0016-7037(64)90054-7; amino acids, sugars, marine sediment, diagenesis, Santa Barbara Basin, California, Pacific.

Degens ET, Ross DA (1972) Chronology of the Black Sea over the last 25,000 years. *Chemical Geology* **10** (1), 1-16. http://dx.doi.org/10.1016/0009-2541(72)90073-3; coccolith, organic matter, carbonate, Late Pleistocene, Holocene, sapropel, overview on sediment units, in part marine.

Degens ET, Stoffers P (1976) Stratified waters as a key to the past. *Nature* **263**, 22-27. *Note: copy and paste the following URL directly into your browser; clicling may not work:* http://dx.doi.org/10.1038/263022a0; sapropel formation began 2,300 years after forming on the bottom of the Black Sea, marine sediment; a comparison of modern sediments with sediments formed since the Cambrian reveals that the ancient sea has been stratified a number of times.

Degens ET, Stoffers P (1980) Environmental events recorded in Quaternary sediments of the Black Sea. *Journal of the Geological Society of London* **137**, 131-138. http://dx.doi.org/10.1144/gsjgs.137.2.0131; bituminous marine megavarves deposited in Cromerian time can be considered an intermediate between sapropel and oil shale, sapropels formed in anoxic deep water, megavarves represent a transtional facies.

Degens ET, Stoffers P, Golubić S, Dickman MD (1978) 14. Varve chronology: estimated rates of sedimentation in the Black Sea deep basin. In: (Ross DA, Neprochnov YP, Supko PR, eds.) *Initial Reports of the Deep Sea Drilling Project* **42**, part 2, Washington, U.S. Government Printing Office, 499- 508. http://dx.doi.org/10.2973/dsdp.proc.42-2.114.1978; discussion of varve types and their implication in estimating rates of sedimentation in the Black Sea Basin, in part marine.

de Jong R, Kamenik C, Westover K, Grosjean M (2013) A chrysophyte stomatocyst-based reconstruction of cold-season air temperature from Alpine Lake Silvaplana (AD 1500–2003); methods and concepts for quantitative inferences. *Journal of Paleolimnology* **50** (4), 519-533. http://dx.doi.org/10.1007/s10933-013-9743-5. Proxy for past cold-season temperature variability in high-Alpine regions, sub-fossil algal remains of Chrysophyceae and Synurophyceae, quantitative 5-year-resolution cold-season (Oct–May) temperature reconstruction since 1500 AD, Switzerland.

Delaney C (2010) The potential for constructing varve chronologies and reconstructing ice dynamics using MIS Stage 2 ice-contact lake deposits in Ireland and Great Britain. In: (Ojala AEK, Kosonen E, eds.) *First Workshop of the PAGES Varves Working Group (Palmse, Estonia, April 7-9, 2010), Programme and Abstracts*, Geological Survey of Finland, Espoo, Finland, 39-41. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2010-VWG-1st-wkshp.pdf; glaciolacustrine sediments, proglacial lakes, Irish Midlands, Paleolake Riada has varves below Holocene, Rossendale Plateau, southern Pennines, England, ice-dammed paleolake, Irwell valley.

Dela Pierre F, Clari P, Natalicchio M, Ferrando S, Giustetto R, Lozar F, Lugli S, Manzi V, Roveri M, Violanti D (2014) Flocculent layers and bacterial mats in the mudstone interbeds of the Primary Lower Gypsum unit (Tertiary Piedmont basin, NW Italy): Archives of palaeoenvironmental changes during the Messinian salinity crisis. *Marine Geology* **355**, 71-87. http://dx.doi.org/10.1016/j.margeo.2014.05.010; marine varves in the mudstone, late Miocene, 5.97–5.60 Ma, Mediterranean, precessional insolation maxima, irregular alternation of cm-thick grey terrigenous laminae and whitish sub mm-thick wrinkled dolomite-rich laminae, peloidal layers, fecal pellets, diatom-rich aggregates, marine snow floccules, remains of Beggiatoa-mats.

DeMaster DJ (1978) ^{210}Pb, ^{32}Si, and ^{14}C chronologies in a varved Gulf of California sediment core. *EOS (American Geophysical Union Transactions)* **59** (12), 1118 (abstract O 205). http://dx.doi.org/10.1029/EO059i012p01235; excess ^{210}Pb, marine varve chronology, sediment accumulation rate of 0.19 cm/yr in a one meter long box core, varve thickness unchanged over the entire length of the core, indicating a constant rate of sediment accumulation, ^{32}Si specific activities measured on biogenic silica from sequential layers, half life of ^{32}Si calculated to 276+32 years; ^{14}C measurements on the organic fraction.

DeMaster DJ (1980) The half life of ^{32}Si determined from a varved Gulf of California sediment core. *Earth and Planetary Science Letters* **48** (1), 209-217. http://dx.doi.org/10.1016/0012-821X(80)90182-X; the half life of silicon-32 is 272 ± 32 years based on a marine varved sedimentary record in the Gulf of California, excess ^{210}Pb, varve chronology, sediment accumulation rate of 0.19 cm/yr in a one meter long box core, varve thickness unchanged over the entire length of the core, indicating a constant rate of sediment accumulation, ^{32}Si specific activities measured on biogenic silica from sequential layers, half life of ^{32}Si calculated to 276+32 years.

DeMaster DJ, Turekian KK (1987) The radiocarbon record in varved sediments of Carmen Basin, Gulf of California: a measure of upwelling intensity variation during the past several hundred years. *Paleoceanography* **2** (3), 249-254. http://dx.doi.org/10.1029/PA002i003p00249; Pacific, marine sediment, Mexico, upwelling intensity.

Denis D, Crosta X, Zaragosi S, Romero O, Martin B, Mas V (2006) Seasonal and subseasonal climate changes recorded in laminated diatom ooze sediments, Adélie Land, East Antarctica. *The Holocene* **16** (8), 1137-1147. http://dx.doi.org/10.1177/0959683606069414; Dumont d'Urville Trough, MD 130–Images X-CADO cruise, two 30 cm long sequences of thin sections from colder Neoglacial and the warmer Hypsithermal alternating light-green and dark-green laminae, varves.

Desloges JR (1999) Geomorphic and climatic interpretations of abrupt changes in glaciolacustrine deposition at Moose Lake, British Columbia, Canada. *GFF* **121** (3), 202-207. http://dx.doi.org/10.1080/11035899901213202; Holocene, basal diamicts unconformably overlain by turbidites in ice-dammed lake during final retreat of Wisconsinan ice, transition from the Altithermal to Neoglacial coincident with the formation of varves, upper Fraser and Moose river watersheds, comparison of the sediment record with tree-rings.

Desloges JR, Gilbert R (1994) Sediment source and hydroclimatic inferences from glacial lake sediments: the postglacial sedimentary record of Lillooet Lake, British Columbia. *Journal of Hydrology* **159** (1-4), 375-393. http://dx.doi.org/10.1016/0022-1694(94)90268-2; Canada, glaciolacustrine varves accumulate at a rate of up to 28 mm year−1 in the north and decline to less than 0.9 mm year−1 in the south.

de Vicente I, Cattaneo K, Cruz-Pizarro L, Brauer A, Guilizzoni P (2006) Sedimentary phosphate fractions related to calcite precipitation in an eutrophic hardwater lake (Lake Alserio, Northern Italy). *Journal of Paleolimnology* **35** (1), 55-64. http://dx.doi.org/10.1007/s10933-005-6786-2; hard water lake, sedimentary phosphate, authigenic carbonate, coprecipitation, phosphate, lake sediment, Europe.

De Vries TJ, Schrader H (1981) Variation of upwelling/oceanic conditions during the latest Pleistocene through Holocene off the central Peruvian coast; a diatom record. *Marine Micropaleontology* **6** (2), 157-167. http://dx.doi.org/10.1016/0377-8398(81)90003-7; diatoms in partly laminated or varved Holocene and late Pleistocene marine sediments on the upper continental slope of central Peru.

Dewey ER, Vaux JE (1972) The 17 1/3-year cycle in Lake Saki varves 2295 B.C.-A.D. 1894. *Journal of Interdisciplinary Cycle Research* **3** (3-4), 329-344. http://dx.doi.org/10.1080/09291017209359343

Díaz-Ochoa, JA, Lange CB, Pantoja S, De Lange GJ, Gutiérrez D, Muñoz P, Salamanca M (2009) Fish scales in sediments from off Callao, central Peru. *Deep Sea Research II* **56** (16), 1124-1135. http://dx.doi.org/10.1016/j.dsr2.2008.09.015; oxygen minimum zone, redox-sensitive trace elements, molybdenum, clupeoid fish, Pacific, marine sediment, fish scales, phosphorus, lead-210, radiocarbon, anchovy, hake, oxygen mínimum zone.

Díaz-Ochoa JA, Pantoja S, De Lange GJ, Lange CB, Sánchez GE, Acuña VR, Muñoz P, Vargas G (2011) Oxygenation variability in Mejillones Bay, off northern Chile, during the last two centuries. *Biogeosciences* **8** (1), 137-146. http://dx.doi.org/10.5194/bg-8-137-2011; marine sediment, anoxia, molybdenum, lycopane index, bottom water oxygenation, biogenic opal, Peru Chile Current, Pacific.

Diedrich KE, Loso MG (2012) Transient impacts of Little Ice Age glacier expansion on sedimentation processes at glacier-dammed Iceberg Lake, southcentral Alaska. *Journal of Paleolimnology* **48** (1), 115-132. http://dx.doi.org/10.1007/s10933-012-9614-5; proglacial lake with 1,500+ year glaciolacustrine varve record, complicated by a history of episodic lake-level changes associated with fluctuations in ice-dam thickness and position, radiocarbon, correlations among cores, description of ~1,000 years of stratigraphy, Little Ice Age (LIA) glacial advance.

Diester-Haass L, Meyers PA, Rothe P (1986) Light-dark cycles in opal-rich sediments near the Plio-Pleistocene boundary, DSDP Site 532, Walvis Ridge continental terrace. *Marine Geology* **73** (1-2), 1-23. http://dx.doi.org/10.1016/0025-3227(86)90108-8; DSDP Core 532B-17, off Namibia, southern Africa, marine varved sediment, light-dark cycles in sediment color correlate with variations in carbonate, opal, organic carbon, and terrigenous components, Benguela Current, upwelling.

Digerfelt G, Battarbee RW, Bengtsson L (1975) Report of annually laminated sediment in Lake Järlesjön, Nacka, Stockholm. *Geologiska Föreningens i Stockholm Förhandlingar* **97** (1), 29-40. http://dx.doi.org/10.1080/11035897509455470; lake sediment, Sweden, microscopic examination, X-radiographic analysis, varve-counting, cesium-137 analysis, four marker clay layers are exactly dated.

Domack EW (1984) Rhythmically bedded glaciomarine sediments on Whidbey Island, Washington. *Journal of Sedimentary Research* **54** (2), 589-602. http://dx.doi.org/10.1306/212F847C-2B24-11D7-8648000102C1865D; late Pleistocene glaciomarine sediments, Washington state, USA, rhythmical bedding interpreted as varves, seasonal fluctuations of meltwater discharge.

Donegan DP (1981) *Modern and Ancient Marine Rhythmites from the Sea of Conez and California Continental Borderland: A Sedimentological Study.* M.Sc. thesis, Corvallis, Oregon State University, 123 p. http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/27604/DoneganDavid1982.pdf?sequence=3; differences between the light and dark marine laminae of varved sediments from the Gulf of California, comparison of varves in Gulf of California with those in Santa Barbara Basin and the Miocene Monterey Formation.

Donegan DP, Schrader H (1981) Modern analogues of the Miocene diatomaceous Monterey shale of California: evidence from sedimentologic and micropaleontologic study. In: (Garrison R, Pisciotta K, eds.) *The Monterey Formation and Related Siliceous Rocks of California*. *Society of Economic Paleontologists and Mineralogists Special Publication, Pacific Section*, 149-157. Marine rhythmites from the Gulf of California were compared to varves of the Santa Barbara Basin. Additional information needed: Electronic link? Keywords?

Donegan D, Schrader H (1982) Biogenic and abiogenic components of laminated hemipelagic sediments in the central Gulf of California. *Marine Geology* **48** (3-4), 215-237. http://dx.doi.org/10.1016/0025-3227(82)90098-6; marine sediment, Pacific, difference between light and dark laminae, mode of deposition, oxygen minimum zone intersects the sediment—water interface, Guaymas Basin, opal micro-floral assemblage, textural character, trace metal and bulk chemical (Cu, Mn, Fe, Ni, Zn, Ca, K, Al, SiO2 and C-org) content, mineralogy, diatom, light laminae apparently represent sedimentation during the dry winter season of northwesterly winds, whereas the dark laminae represent the wet summer season of southeasterly winds.

Dörfler W, Feeser I, van den Bogaard C, Dreibrodt S, Erlenkeuser H, Kleinmann A, Merkt J, Wiethold J (2012) A high-quality annually laminated sequence from Lake Belau, Northern Germany: Revised chronology and its implications for palynological and tephrochronological studies. *The Holocene* **22** (12), 1413-1426. http://dx.doi.org/10.1177/0959683612449756; Holocene, human impact, 9400-yr varve chronology, radiocarbon, heavy metal pollution history, has been established, covering the last 9400 years, revised chronology suggests dates ~260 years older, land-use history, pollen stratigraphy, tephra, cryptotephra, new dates for Lairg B, Hekla 4, Hekla 3.

Douglas R, Gonzalez-Yajimovich O, Ledesma-Vazquez J, Staines-Urias F (2007) Climate forcing, primary production and the distribution of Holocene biogenic sediments in the Gulf of California. *Quaternary Science Reviews* **26** (1-2), 115-129. http://dx.doi.org/10.1016/j.quascirev.2006.05.003; Mexico, marine sediment, Pacific Ocean, overview of climatic and oceanographic conditions causing hypoxia and laminations in hemipelagic biosiliceous-rich muds beneath upwelling areas, Guaymas Basin, Carmen Basin, depositional cycles.

Douglas RG, Gorsline D, Grippo A, Granados I, Gonzalez-Yajimovich O (2001) Holocene Ocean-Climate Variations in Alfonso Basin, Gulf of California, Mexico. In: (West GJ, Buffaloe LD, Eds.) *Proceedings of the Eighteenth Annual Pacific Climate (PACLIM) Workshop*, California Department of Water Resources, *Technical Report* **68** *of the Interagency Ecological Program for the San Francisco Estuary*, p. 7-20. http://meteora.ucsd.edu/paclim/1Douglas_et_al.pdf; spectral analysis of high-resolution laminated sediment record, decadal to millennial scale variations in sedimentation and biogenic production, terrigenous- and carbonate-rich marine sediment, presumably partly varved, low amounts of organic carbon and biogenic silica.

Drake DE, Fleischer P, Kolpack RL (1979) Transport and deposition of flood sediment, Santa Barbara Channel, California. In: (Kolpack RL, ed.) *Biological and Oceanographical Survey of the Santa Barbara Channel Oil Spill, 1969-1970*, Vol. 2, Chap. 5, 95-113, Alan Hancock Foundation, University of Southern California, Los Angeles. http://www.worldcat.org/title/biological-and-oceanographical-survey-of-the-santa-barbara-channel-oil-spill-1969-1970/oclc/524549; additional information needed: Keywords? Marine sediment, Pacific.

Dreibrodt S (2005) Detecting heavy precipitation events during the Holocene from soils, gully fills, colluvia and lake sediments – examples from the Lake Belauer See catchment (northern Germany). *Zeitschrift der Deutschen Gesellschaft für Geowissenschaften* **156** (4), 573–588. http://dx.doi.org/10.1127/1860-1804/2005/0156-0573; extraordinarily heavy precipitation events recorded in lake sediment, see update by Dörfler et al., 2012.

Dreibrodt S, Bork HR (2005) Historical soil erosion and landscape development at Lake Belau (North Germany) – A comparison of colluvial deposits and lake sediments. In: (Völkel J, ed.) *Colluvial Sediments, Flood Loams and Peat Bogs. Kolluvien, Auensedimente und Moore*, ISBN 978-3-443-21139-4, *Zeitschrift für Geomorphologie* Supplement **139**, 101–128. See update by Dörfler et al., 2012. Additional information needed: Electronic link? Keywords?

Dreibrodt S, Bork HR (2006) Integrative Analysen von Böden und Sedimenten zur Rekonstruktion der holozänen Landschaftsgeschichte – das Beispiel Belauer See (Schleswig-Holstein). In: (Bork HR, Hagedorn J, eds.) *Der Wandel der Erdoberfläche im vergangenen Jahrtausend*. Leopoldina-Meeting

vom 21. bis 23. April 2005 in Kiel, Germany. *Nova Acta Leopoldina* **94** (346), 213–240. http://www.leopoldina.org/en/publications/scientific-journals/nova-acta-leopoldina/; see update by Dörfler et al., 2012. Additional information needed: Electronic link? Keywords?

Dreibrodt S, Bork HR, Brauer A, Negendank JFW (2003) Der Einfluss der Landnutzung auf die Sedimentation jahresgeschichteter Oberflächensedimente in zwei Becken des Woseriner Sees (Mecklenburg-Vorpommern). In: (Bork HR, Schmidtchen G, Dotterweich M, eds.) *Bodenbildung, Bodenerosion und Reliefentwicklung im Mittel- und Jungholozän Deutschlands*. Forschungen zur Deutschen Landeskunde 253, Flensburg, Deutsche Akademie für Landeskunde, 229-249 (in German). http://www.worldcat.org/title/bodenbildung-bodenerosion-und-reliefentwicklung-im-mittel-und-jungholozan-deutschlands/oclc/237807112; two neighboring hard-water lakes in North Germany, land use changes reflected in varves 1944-1998 AD, microfacies, geochemical proxies, Holzsee, the influence of agriculture on Hofsee is seasonally different.

Dreibrodt S, Wiethold J (2015) Lake Belau and its catchment (northern Germany): A key archive of environmental history in northern central Europe since the onset of agriculture. *The Holocene* **25** (2), 296-322. http://dx.doi.org/10.1177/0959683614558648; lacustrine varves of Lake Belau, Schleswig-Holstein, northern Germany, radiocarbon data, Icelandic tephra, middle Neolithic, Bronze Age, Iron Age, medieval times.

Duman M (1994) Late Quaternary chronology of the southern Black Sea basin. *Geo-Marine Letters* **14** (4), 272-278. http://dx.doi.org/10.1007/BF01274063; varve counting in southeastern Black Sea cores shows the chronology of the O_2/H_2S interface, Holocene sapropel along the eastern margin ranges from 4000 to 1000 yr BP in deep water and 2500—1000 yr BP in shallower water, marine sapropel formation started at 3650 yr BP at a water depth of 2200 m.

Dunbar RB (1983) Stable isotope record of upwelling and climate from Santa Barbara basin, California. In: (Thiede J, Suess E, eds.) *Coastal Upwelling, its Sedimentary Record. Part B: Sedimentary Records of Ancient Coastal Upwelling*, 217-246. Plenum Press, New York. http://www.worldcat.org/title/coastal-upwelling-its-sediment-record/oclc/9440953; oxygen and carbon stable isotopes, foraminifera, sea surface temperature, and upwelling, marine sediment, Pacific.

Duphorn K, Kögler FC, Stay B (1979) Late-glacial varved clays in the Bornholm Basin and Hanö Bay. *Boreas* **8** (2), 137-140. http://dx.doi.org/10.1111/j.1502-3885.1979.tb00793.x; varve thickness, lithology, clay varves, Baltic Ice Lake, Late Weichselian.

Duphorn K, Stay B, Stiller D (1979) Deglaciation of the Bara Basin near Malmö, Sweden. *Boreas* **8** (2), 141-144. http://dx.doi.org/10.1111/j.1502-3885.1979.tb00794.x; clay varve, Sweden.

Dzens-Litovsky AI (1934) Complex hydrogeological study of salt and mud lakes and lagoons. In: *Trudy 1 Vsesoyuznogo Gydrogeologicheskogo S'ezda,* 159-196, Moscow, ONTI (in Russian). (Дзенс-Литовский АИ (1934) Комплексное гидрогеологическое изучение соляных и грязевых озер и лиманов. *Труды 1-ого Всесоюзного Гидрогеологического Съезда*,159-196. Москва, ОНТИ). Holocene, salt lakes of Crimea, Ukraine, lithology, geochemistry, origin of the lakes, origin of varves in the Crimean lakes, varve counts. Additional information needed: Electronic link?

Dzens-Litovsky AI (1936) Geological age of the bottom salt deposits of mineral lakes and lagoons. *Priroda* **12** (in Russian). (Дзенс-Литовский АИ (1936) Геологический возраст донных солевых отложений минеральных озер. *Природа* **12**). Holocene, salt lakes of Crimea, Ukraine, lithology, varve counts, dry and wet periods, origin of thick salt bed in lake sequences. Additional information needed: Electronic link? Keywords?

Ebert T, Trauth MH (2015) Semi-automated detection of annual laminae (varves) in lake sediments using a fuzzy logic algorithm. *Palaeogeography, Palaeoclimatology, Palaeoecology* **435**, 272-282. http://dx.doi.org/10.1016/j.palaeo.2015.05.024; fuzzy systems simulate the flexible human varve counting decision, adaptive neuro fuzzy inference system (ANFIS) to detect varves on the basis of a digital images, Meerfelder Maar, landslide-dammed lake in the Quebrada de Cafayate of Argentina, comparison with manual varve counts.

Eckert S, Brumsack H-J, Severmann S, Schnetger B, März C (2013) Establishment of euxinic conditions in the Holocene Black Sea. *Geology* **41**, p. 431-434. http://dx.doi.org/10.1130/G33826.1; evolution of suboxic chemocline in Black Sea based on 7 marine sediment cores.

Edgar NT, Saunders JB, Donnelly TW, Schneidermann N, Maurasse F, Bolli HM, Hay WM, Riedel WR, Premoli Silva I, Boyce RE, Prell W (1973) Site 147. In: (Edgar NT, Kaneps AG, Herring JR, eds.) *Initial Reports of the Deep Sea Drilling Project* **15**, Washington, U.S. Government Printing Office, 169-215. http://www.deepseadrilling.org/15/volume/dsdp15_03.pdf; the upper 8 meters at this site in the Cariaco Basin represents the Holocene, tropical Atlantic Ocean.

Eggermont H, Verschuren D, Fagot M, Rumes B, Bocxlaer BV, Kröpelin S (2008) Aquatic community response in a groundwater-fed desert lake to Holocene desiccation of the Sahara. *Quaternary Science Reviews* **27** (25-26), 2411-2425. http://dx.doi.org/10.1016/j.quascirev.2008.08.028; laminated sediment, hypersaline oasis lake, Ounianga region, northeastern Chad, Africa, groundwater-fed aquatic ecosystem, reconstruction of long-term changes in zoobenthos and zooplankton communities of Lake Yoa, chironomid-based salinity reconstruction.

Einsele G (2000) Sediments of adjacent seas and estuaries. In: (Einsele G, ed.) *Sedimentary Basins*. Springer, 166-181. http://link.springer.com/chapter/10.1007/978-3-662-04029-4_4; review of marine and glacimarine varve deposition mechanisms with many references.

Ekdahl EJ, Teranes JL, Guilderson TP, Turton CL, McAndrews JH, Wittkop CA, Stoermer EF (2004) Prehistorical record of cultural eutrophication from Crawford Lake, Canada. *Geology* **32** (9), 745-748. http://dx.doi.org/10.1130/G20496.1; anthropogenic eutrophication, North America, diatom, rotifers, organic and inorganic carbon accumulations, carbon isotope ratios, 1000 yr sediment core, Ontario, Iroquoian settlement, ecological disturbance.

Elbert J, Grosjean M, von Gunten L, Urrutia R, Fischer D, Wartenburger R, Ariztegui D, Fujak M, Hamann Y (2012) Quantitative high-resolution winter (JJA) precipitation reconstruction from varved sediments of Lago Plomo 47°S, Patagonian Andes, AD 1530 – 2001. *The Holocene* **22** (4), 465-474. http://dx.doi.org/10.1177/0959683611425547; South America, precipitation reconstruction, limnic varves, lake sediment, lead-210, cesium-137, scanning x-ray fluorescence, varve thickness, mass accumulation rate, scanning reflectance spectroscopy, Holocene, Little Ice Age. Accessory data are available on the following NOAA-website: ftp://ftp.ncdc.noaa.gov/pub/data/paleo/paleolimnology/southamerica/chile/plomo2012.txt; see also pdf of extended abstract in: (Zolitschka B, ed.) *3rd Workshop of the PAGES Varves Working Group, Manderscheid, Germany, March 20-25, 2012, Program and Abstracts. Terra Nostra, Schriften der GeoUnion Alfred-Wegener-Stiftung* **2012/1**, 31-33. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/VWG_AbstractVolume_Final_2012.pdf.

Elbert J, Jacques-Coper M, Van Daele M, Urrutia R, Grosjean M (2013) A 1500 yr warm-season temperature record from varved Lago Plomo, Northern Patagonia (47° S) and implications for the Pacific Decadal Oscillation (PDO). *Climate of the Past Discussion* **9**, 1771-1801. http://dx.doi.org/10.5194/cpd-9-1771-2013; 1500 yr long warm season temperature varve record, pronounced sub-decadal–multi-decadal variability, warm and cold intervals.

Elverhøi A, Liestøl O, Nagy J (1980) Glacial erosion, sedimentation and microfauna in the inner part of Kongsfjorden, Spitsbergen. *Norsk Polarinstitutt Skrifter* **172**, 33-62.

Elverhøi A, Lønne Ø, Seland R (1983) Glaciomarine sedimentation in a modern fjord environment, Spitsbergen. *Polar Research* **1** (2), 127-150. http://dx.doi.org/10.1111/j.1751-8369.1983.tb00697.x; Svalbard, Kongsfjorden, postulated glacimarine varves in 'unit IVb' with distinct dark sulfide-stained laminae that have been interpreted as annual markers due to OM-rich diatomaceous spring bloom deposits interspersed between clastic laminae.

Emeis KC, Struck U, Leipe T, Ferdelman TG (2009) Variability in upwelling intensity and nutrient regime in the coastal upwelling system offshore Namibia: results from sediment archives. *International Journal of Earth Sciences (Geologische Rundschau)* **98** (2), 309-326. http://dx.doi.org/10.1007/s00531-007-0236-5; marine sediment, presumed varves, Africa, interannual to interdecadal changes in upwelling intensity over the last 100 years, attempts to correlate proxy records from sediments with observational time series and regional climate reconstructions not successful.

Emmer E, Thunell RC (2000) Nitrogen isotope variations in Santa Barbara Basin sediments: Implications for denitrification in the eastern tropical North Pacific during the last 50,000 years. *Paleoceanography* **15** (4), 377-387. http://dx.doi.org/10.1029/1999PA000417; nitrogen isotope variations in marine, partially varved sediment.

England A, Eastwood WJ, Roberts CN, Turner R, Haldon JF (2008) Historical landscape change in Cappadocia (central Turkey): a palaeoecological investigation of annually laminated sediments from Nar lake. *The Holocene* **18** (8), 1229-1245. http://dx.doi.org/10.1177/0959683608096598; pollen, stable isotopes, charcoal, lake sediment, documentary and archaeological evidence, environmental changes and their causes from late Antiquity (AD 300) to the present day, human impact, vegetation change, historical evidence, climate change, landscape change, late Holocene, Nar Gölü.

Enkin RJ, Dallimore A, Baker J, Southon JR, Ivanochko T (2014) A new high-resolution radiocarbon Bayesian age model of the Holocene and Late Pleistocene from core MD02-2494 and others, Effingham Inlet, British Columbia, Canada; with an application to the paleoseismic event chronology of the Cascadia Subduction Zone. *Canadian Journal of Earth Sciences* **50** (7), 746-760. http://dx.doi.org/10.1139/cjes-2012-0150; 42 m varved marine sediments record from the present to about 14 ka 14C BP (17 ka cal BP). anchored by recent freeze core, Mazama Ash, varve counting. 21 Effingham seismite ages are 169 ± 206 years older than turbidite ages estimated largely by radiocarbon analysis of foraminifera.

Enters D, Dörfler W, Zolitschka B (2008) Historical soil erosion and land-use change during the last two millennia recorded in lake sediments of Frickenhauser See, northern Bavaria, central Germany. *The Holocene* **18** (2), 243-254. http://dx.doi.org/10.1177/0959683607086762; 2000-year, 1275 cm long lacustrine sediment record, human land-use history derived from pollen analysis.

Enters D, Kirchner G, Zolitschka B (2006) Establishing a chronology for lacustrine sediments using a multiple dating approach - a case study from the Frickenhauser See, central Germany. *Quaternary Geochronology* **1** (4), 249-260. http://dx.doi.org/10.1016/j.quageo.2007.01.005; 17 AMS ^{14}C dates in the last 2000 years, cesium-137, lead-210, age–depth modelling, radiocarbon, lake sediment.

Enters D, Kirilova E, Lotter AF, Lücke A, Parplies J, Jahns S, Kuhn G, Zolitschka B (2010) Climate change and human impact at Sacrower See (NE Germany) during the past 13,000 years: a geochemical record. *Journal of Paleolimnology* **43**, 719-737.http://dx.doi.org/10.1007/s10933-009-9362-3; lake sediment, human impact, Brandenburg, Laacher See Tephra, radiocarbon, XRF logging, carbon and nitrogen stable isotopes, pollen, Younger Dryas, sulphur, Bronze Age, Iron Age, Holocene, diatoms, geochemistry, environmental reconstruction.

Erten HN, von Gunten HR, Rössler E, Sturm M (1985) Dating of sediments from Lake Zurich (Switzerland) with ^{210}Pb and ^{137}Cs. *Swiss Journal of Hydrology* **47** (1), 5-11. http://dx.doi.org/10.1007/BF02538179; varve counting and other data caution about ^{210}Pb dating technique.

Escobedo DK (2009) Extreme Erosional Events Recorded by Flood Deposits in the Late Quaternary Santa Barbara Basin, Coastal Southern California. M.Sc. Thesis, California State University, Long Beach, 101 p. https://docs.google.com/a/umich.edu/file/d/0B_44KqD6U_zwUXRTTWt0ZWhBSG8/edit?usp=drive_web; ~700,000 yr record of gray marine sediment layers interspersed in olive, partially laminated and varved sediment. *Note: the claimed presence of varves in deeper core sections was partially revised by Hendy et al.'s (2012) new interpretation of laminations.*

Escutia C, Brinkhuis H, Klaus A, IODP Expedition 318 Scientists (2011) IODP Expedition 318: from greenhouse to icehouse at the Wilkes Land Antarctic margin. *Scientific Drilling* **12**, 15-23. http://www.sci-dril.net/12/15/2011/sd-12-15-2011.pdf; Integrated Ocean Drilling Program (IODP) Expedition 318, glacial history, middle Eocene to Holocene marine sediments, dynamics of ice sheets produced marine varves of the last deglaciation ~10,000 y ago.

Esparza-Alvarez MA, Herguera JC, Lange C (2007) Last century patterns of sea surface temperatures and diatom (<38 µm) variability in the Southern California current. *Marine Micropaleontology* **64** (1-2), 18-35. http://dx.doi.org/10.1016/j.marmicro.2007.01.001; diatoms, ENSO, Pacific Decadal Oscillation PDO, upwelling, San Lazaro Basin, Baja California, Mexico, Pacific, El Niño, marine sediment.

Expedition 318 Scientists (2011) Site U1357. In: (Escutia, C., Brinkhuis, H., Klaus, A., Expedition 318 Scientists), *Proceedings of the Integrated Ocean Drilling Program (IODP)* **318**, Tokyo (Integrated Ocean Drilling Program Management International, Inc.). http://dx.doi.org/10.2204/iodp.proc.318.105.2011; Integrated Ocean Drilling Program Site U1357 (Site ADEL-01B), Adélie Basin Holocene marine section, Antarctic continental shelf off the Wilkes Land margin, varves to near-annual diatom ooze layers averaging 2 cm for the past ~10,000 years.

Eyles N (1993) Earth's glacial record and its tectonic setting. *Earth-Science Reviews* **35**, 1-248. http://dx.doi.org/10.1016/0012-8252(93)90002-O; in-depth review of the sedimentary record of glaciations throughout geological history, many references to glacilacustrine and glacimarine varves.

Eynaud F, Zaragosi S, Scourse JD, Mojtahid M, Bourillet JF, Hall IR, Penaud A, Locascio M, Reijonen A (2007) Deglacial laminated facies on the NW European continental margin: The hydrographic significance of British-Irish Ice Sheet deglaciation and Fleuve Manche paleoriver discharges. *Geochemistry, Geophysics, Geosystems* **8** (6), Q06019. http://dx.doi.org/10.1029/2006GC001496; Atlantic, deglacial seasonal turbidity currents deposited deep-sea clastic glaciomarine varves on levees in turbidite systems, Celtic-Armorican margin, Bay of Biscay off France.

Fagel N, Boës X, Loutre MF (2008) Climate oscillations evidenced by spectral analysis of Southern Chilean lacustrine sediments: the assessment of ENSO over the last 600 years. *Journal of Paleolimnology* **39** (2), 253-266. http://dx.doi.org/10.1007/s10933-007-9116-z; Chilean Lake District, Lago Puyehue, varved cores, periodicities, varve chronology, cesium-137, lead-210, chronostratigraphical markers, cores span 294 ± 18 and 592 ± 9 years, spectral analysis, Blackman–Tukey, Maximum Entropy, Multi-Taper Methods (MTM), singular spectrum analysis, evolutive MTM, wavelet analyses, El Niño Southern Oscillation, Pacific Decadal Oscillation, Little Ice Age.

Fairbridge RW (1947) Possible causes of intraformational disturbances in the Carboniferous varve rocks of Australia. *Journal and Proceedings of the Royal Society of New South Wales* **81**, 99-121. http://www.biodiversitylibrary.org/item/174128#page/9/mode/1up; detailed description of partial deformation of presumed glacimarine clastic varved sediment, Hunter River Valley.

Fan P, Rex RW, Cook HE, Zemmels I (1973) X- Ray mineralogy of the Caribbean Sea - Leg 15. In: (Edgar NT, Kaneps AG, Herring JR, eds.) *Initial Reports of the Deep Sea Drilling Project* **15**, Washington, U.S. Government Printing Office, 847-927. http://dx.doi.org/10.2973/dsdp.proc.15.125.1973; X-ray mineralogy, site 147 Cariaco Basin ('Venezuelan Basin'), marine varved sediment.

Farr KM, Jones DM, O'Sullivan PE, Eglinton G, Tarling DH, Hedges REM (1991) Palaeolimnological studies of laminated sediments from the Shropshire-Cheshire meres. *Hydrobiologia* **214** (1), 279-292. http://dx.doi.org/10.1007/BF00050962; Ellesmere Mere, Rostherne Mere, Berrington Pool, Shropshire-Cheshire meres, English Midlands, United Kingdom, laminations may be varves over 250 years, fine resolution diatom and other microfossil analysis, seasonal signals from algal blooms are preserved, lipid biomarkers, paleomagnetism.

Feeser I, Dörfler W, Czymzik M, Dreibrodt S (2016) A mid-Holocene annually laminated sediment sequence from Lake Woserin: The role of climate and environmental change for cultural development during the Neolithic in Northern Germany. *The Holocene* **26** (6), 947-963. http://dx.doi.org/

10.1177/0959683615622550; lacustrine varve ecord for reconstruction of environmental and land-use change during ca. 7000–4000 cal. BP, pollen, human impact.

Field DB (2004) Variability in vertical distributions of planktonic foraminifera in the California Current: Relationships to vertical ocean structure. *Paleoceanography* **19**, PA2014, 22 pp. http://dx.doi.org/10.1029/2003PA000970; Santa Barbara Basin, marine sediment, Pacific, planktonic foraminifera, oxygen isotope ratios, past changes in hydrographic structure.

Field DB, Baumgartner TR (2000) A 900 year stable isotope record of interdecadal and centennial change from the California Current. *Paleoceanography* **15** (6), 695-708. http://dx.doi.org/10.1029/1999PA000480; Santa Barbara basin, California, marine sediment, interdecadal and centennial record (5 yr intervals) of foraminiferal oxygen isotope record, *Neogloboquadrina dutertrei. Note: the findings of this study were partially revised by Hendy et al.'s (2012) new chronology for deeper sediment.*

Field DB, Baumgartner TR, Charles CD, Ferreira-Bartrina V, Ohman MD (2006) Planktonic foraminifera of the California Current reflect 20th-Century warming. *Science* **311** (5757), 63-66. http://dx.doi.org/10.1126/science.1116220; Santa Barbara Basin, marine sediment, Soutar box core, Pacific, variations in planktonic foraminifera from varved sediments spanning the past 1400 years, warming trend superimposed on decadal-scale fluctuations, 20th-century warming has already affected lower trophic levels of the California Current. Supporting material: www.sciencemag.org/cgi/content/full/311/5757/63/DC1. *Note: the findings of this study were partially revised by Hendy et al.'s (2012) new chronology for deeper sediment.*

Finocchiaro F, Langone L, Colizza E, Fontolan G, Giglio F, Tuzzi E (2005) Record of the early Holocene warming in a laminated sediment core from Cape Hallett Bay (Northern Victoria Land, Antarctica). *Global and Planetary Change* **45** (1-3), 193-206. http://dx.doi.org/10.1016/j.gloplacha.2004.09.003; Ross Sea, marine varved diatomaceous ooze >9.5–9.4 ka BP linked to early Holocene warming and open marine conditions.

Finsinger W, Bigler C, Krähenbühl U, Lotter AF, Ammann B (2006) Human impacts and eutrophication patterns during the past ~200 years at Lago Grande di Avigliana (N. Italy). *Journal of Paleolimnology* **36**, 55–67. http://dx.doi.org/10.1007/s10933-006-0002-x; Piedmont, eutrophication, lake sediment, pollen, land use change, phosphorus, varve counts, thin sections, lead-210, radium-226, cesium-137, validation.

Finsinger W, Fonville T, Kirilova E, Lami A, Guilizzoni P, Lotter AF (2014) A long-term multi-proxy record of varved sediments highlights climate-induced mixing-regime shift in a large hard-water lake ~5000 years ago. *Journal of Limnology* **73** (2), 211-222. http://dx.doi.org/10.4081/jlimnol.2014.907; lacustrine varves, terrestrial and aquatic ecosystem dynamics from 6200 to 4800 cal BP, pollen, diatoms, pigments, charcoal, geochemistry, Lago Grande di Avigliana, Italian Alps, Italy, precipitation of iron sulfides.

Fisher CG (1990) Bibliography and inventory of Holocene varved and laminated marine sediments. *NOAA Paleoclimate Publications Series Report* No. **1**, Boulder, Colorado, 107 pp. http://www.worldcat.org/title/bibliography-and-inventory-of-holocene-varved-and-laminated-marine-sediments/oclc/27359455; bibliography, marine sediment.

Fleischer P (1972) Mineralogy and sedimentation history, Santa Barbara basin, California. *Journal of Sedimentary Petrology* **42** (1), 49-58. http://dx.doi.org/10.1306/74D72487-2B21-11D7-8648000102C1865D; source areas of lithic components, marine sediment, Holocene, turbidite, flood layer, Santa Clara River, gray layer, Pacific.

Flower RJ, Keatings K, Hamdan M, Hassan FA, Boyle JF, Yamada K, Yasuda Y (2012) The structure and significance of early Holocene laminated lake sediments in the Faiyum Depression (Egypt) with special reference to diatoms. *Diatom Research* **27** (3), 127-140. http://dx.doi.org/10.1080/0269249X.2012.703624; Lake Qarun, 3 sediment cores, varved diatom marl sediments, seasonal diatom succession, northeast Africa.

Flower RJ, Simola H (1990) Diatoms in a short sediment core from Lake Höytiäinen, Finland: ecological implications of lake level lowering in 1859 AD. In: Simola H (ed.), *Proceedings of the Tenth International Diatom Symposium* (p. 433-441). Sven Koeltz, Koenigstein. Needs additional information, link.

Föllmi KB, Cramp A, Föllmi KE, Alexandrovich JM, Brunner C, Burckle LH, Casey M, deMenocal P, Dunbar RB, Grimm KA, Holler P, Ingle JC Jr., Kheradyar T, McEvoy J, Nobes DC, Stein R, Tada R, von Breymann MT, White LD (1992) 32. Dark-light rhythms in the sediments of the Japan Sea: Preliminary results from Site 798, with some additional results from Sites 797 and 799. In: (Pisciotto, K.A., Ingle, J.C,Jr., von Breymann, M.T., Barron, J., et al., Eds.) *Proceedings of the Ocean Drilling Program, Scientific Results* **127/128**, Pt. 1, 559-576. http://www-odp.tamu.edu/publications/127128SR_1/VOLUME/CHAPTERS/sr127128_32.pdf; Ocean Drilling Program Legs 127 and 128, third-order rhythms appear as laminated or thinly bedded dark-light couplets (2-15 mm) and may represent marine varves.

Förster MW, Sirocko F (2016) The ELSA tephra stack: Volcanic activity in the Eifel during the last 500,000 years. *Global and Planetary Change* **142**, 100-107. http://dx.doi.org/10.1016/j.gloplacha.2015.07.012; review of tephra in German varved maars, Eifel, tephra types, correlation for 220 ka, intense volcanism correlated with climate change.

Fortin D, Francus P, Archives Group (2012) Grand Lake, a new clastic varve record from eastern Canada. In: (Besonen MR, ed.) *Second Workshop of the PAGES Varves Working Group*, Program and Abstracts, 17-19 March 2011, Corpus Christi, Texas, USA, 33-34. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2011_VWG_2nd_wkshp.pdf; boreal region of Quebec-Labrador, Canada, 300+ m deep lake, clastic varves.

Fox BRS, Wartho J, Wilson GS, Lee DE, Nelson FE, Kaulfuss U (2015) Long-term evolution of an Oligocene/Miocene maar lake from Otago, New Zealand. *Geochemistry, Geophysics, Geosystems* **16**, 59-76. http://dx.doi.org/doi:10.1002/2014GC005534; Foulden Maar, volcanic maar, South Island of New Zealand, diatomite, turbidites, lacustrine varves deposited over several tens of thousands of years in the latest Oligocene/earliest Miocene, magnetic signal dominated by pseudo-single domain pyrrhotite.

France I, Duller AWG, Duller GAT (2004) Software aspects of automated recognition of particles: the example of pollen. In: (Francus P, ed.) *Image Analysis, Sediments and Paleoenvironments. Developments in Paleoenvironmental Research*, vol. 7. Springer, Dordrecht, 253-272. http://dx.doi.org/10.1007/1-4020-2122-4; acquisition of microscopic images, feature extraction, example of pollen classification using a neural network, pollen, automation, microfossil, autofocus.

Francke A, Wennrich V, Sauerbrey M, Juschus O, Melles M, Brigham-Grette J (2013) Multivariate statistic and time series analyses of grain-size data in quaternary sediments of Lake El'gygytgyn, NE Russia. *Climate of the Past* **9**, 2459-2470. http://dx.doi.org/10.5194/cp-9-2459-2013; lacustrine varves, coarser sediments during warm periods, principal component analysis (PCA).

Francois R (1988) A study on the regulation of the concentrations of some trace-metals (Rb, Sr, Zn, Pb, Cu, V, Cr, Ni, Mn and Mo) in Saanich Inlet sediments, British-Columbia, Canada. *Marine Geology* **83** (1-4), 285-308. http://dx.doi.org/10.1016/0025-3227(88)90063-1; trace metal enrichment in the anoxic central basin, Ba, Ni, V, Cr, Zn, Pb, Cu and Mo enriched in the marine anoxic ooze, Mo showed the largest enrichment in the anoxic sediments.

Francus P (1998) An image-analysis technique to measure grain-size variation in thin sections of soft elastic sediments. *Sedimentary Geology* **121** (3-4), 289-298. http://dx.doi.org/10.1016/S0037-0738(98)00078-5; simple and fast image-analysis technique, grain-size variation in thin sections of soft clastic sediments, optical and backscattered electron microscope photographs are digitised from thin sections, cut by freeze-drying to avoid disturbing the sediments, granulometry.

Francus P (ed.) (2004) *Image Analysis, Sediments and Paleoenvironments. Developments in Paleoenvironmental Research*, vol. 7. Springer, Dordrecht, 330 pp. http://dx.doi.org/10.1007/1-4020-2122-4; book offering collection of methods papers for image analysis.

Francus P, Asikainen CA (2001) Sub-sampling unconsolidated sediments: a solution for the preparation of undisturbed thin-sections from clay-rich sediments. *Journal of Paleolimnology* **26** (3), 323-326. http://dx.doi.org/10.1023/A:1017572602692; ' electro-osmosis'-based sub-sampling technique for clay-rich sediments, resin impregnation.

Francus P, Bradley RS, Abbott MB, Patridge W, Keimig F (2002) Paleoclimate studies of minerogenic sediments using annually resolved textural parameters. *Geophysical Research Letters* **29** (20), 1998. http://dx.doi.org/10.1029/2002GL015082; lake sediment, Canada, High Arctic, image analysis, thin-sections, grain-size analysis.

Francus P, Bradley RS, Lewis T, Abbott M, Retelle M, Stoner JS (2008) Limnological and sedimentary processes at Sawtooth Lake, Canadian High Arctic, and their influence on varve formation. *Journal of Paleolimnology* **40** (3), 963-985. http://dx.doi.org/10.1007/s10933-008-9210-x; South Sawtooth Lake, northern Ellesmere Island, Nunavut, Canada, varves deposited in the distal basin primarily formed by the settling of overflows and interflows, thin-section, six facies represent different limnological processes, image analysis.

Francus P, Bradley RS, Thurow JW (2004) An introduction to image analysis, sediments and paleoenvironments. In: (Francus P, ed.) *Image Analysis, Sediments and Paleoenvironments. Developments in Paleoenvironmental Research*, vol. 7. Springer, Dordrecht, 1-7. http://dx.doi.org/10.1007/1-4020-2122-4; visual information, quantification, image acquisition, image processing, image measurement, quality control, neural networks.

Francus P, Cosby CA (2001) Sub-sampling unconsolidated sediments: A solution for the preparation of undistrubed thin-sections from clay-rich sediments. *Journal of Paleolimnology* **26** (3), 323-326. http://dx.doi.org/10.1023/A:1017572602692; electro-osmosis, sub-sampling technique for clay-rich sediments, thin-section, impregnation with resin.

Francus P, Keimig F, Besonen M (2002) An algorithm to aid varve counting and measurement from thin-sections. *Journal of Paleolimnology* **28** (2), 283-286. http://dx.doi.org/10.1023/A:1021624415920; imaging software, varve thickness, digital image, scanner.

Francus P, Lamb H, Nakagawa T, Marshall M, Brown E, Suigetsu 2006 Project Members (2009) The potential of high-resolution X-ray fluorescence core scanning: Applications in paleolimnology. *PAGES*

Newsletter **17** (3), 93-95. http://pastglobalchanges.org/download/docs/newsletter/2009-3/Special_section/Science_Highlights/Francus_etal_2009-3(93-95).pdf; XRF, core scanner, high-resolution chemical analysis, Lake Bramant, France, European Alps, lead, Bronze and Roman periods.

Francus P, Pirard E (2004) Testing for sources of errors in quantitative image analysis. In: (Francus P, ed.) *Image Analysis, Sediments and Paleoenvironments. Developments in Paleoenvironmental Research*, vol. 7. Springer, Dordrecht, 87-102. http://dx.doi.org/10.1007/1-4020-2122-4; preparation errors, integration errors (sampling), analysis errors, quality control, robustness, phase analysis, size, shape, classification.

Francus P, Ridge JC, Johnson MD (2013) The rise of varves. *GFF, special issue "Varve Genesis, Chronology and Paleoclimate",* **135** (3-4), 229-230. http://dx.doi.org/10.1080/11035897.2013.833548; introduction to special volume about varves offers a historical time-line of important advances

Francus P, Saarinen T (1999) Advances in varved sediment studies help paleoclimate reconstructions. *EOS Transaction of the American Geophysical Union (AGU)* **80** (37), 422-424. http://dx.doi.org/10.1029/99EO00312; definition of varve, relevant proxy data (e.g., pollen, diatoms, stable isotope geochemistry, microchemical analysis), value of varves.

Francus P, von Suchodoletz H, Dietze M, Donner RV, Bouchard F, Roy AJ, Fagot M, Verschuren D, Kröpelin S (2013). Varved sediments of Lake Yoa (Ounianga Kebir, Chad) reveal progressive drying of the Sahara during the last 6100 years. *Sedimentology* **60** (4), 911-934. http://dx.doi.org/10.1111/j.1365-3091.2012.01370.x; hypersaline, continuous 6100 year long continental record, reconstruction of the Mid to Late Holocene history, petrographic and SEM examination of thin sections, X-ray diffraction, X-radiography, granulometry, loss on ignition and magnetic susceptibility, micro-X-ray fluorescence core scanning, aeolian input, brine evolution, paleoredox.

Fraser HJ (1929) An experimental study of varve deposition. *Transactions of the Royal Society of Canada* **23,** Sect. 4, 49-60. Additional information needed: Keywords? Link?

Freytet P, Verrecchia EP (2002) Lacustrine and palustrine carbonate petrography: an overview. *Journal of Paleolimnology* **27** (2), 221-237. http://dx.doi.org/10.1023/A:1014263722766; lacustrine limestones, lacustrine fabrics (varved, laminated, homogeneous, etc.), detailed description of carbonate features under different regimes, paleolakes.

Friedrich M, Kromer B, Kaiser KF, Spurk M, Hughen KA, Johnsen SJ (2001) High-resolution climate signals in the Bølling–Allerød Interstadial (Greenland Interstadial 1) as reflected in European tree-ring chronologies compared to marine varves and ice-core records. *Quaternary Science Reviews* **20** (11), 1223-1232. http://dx.doi.org/10.1016/S0277-3791(00)00148-7; a 1051-year tree-ring chronology from Central and Southern Europe's Late Glacial was radiocarbon-dated and wiggle-matched to the INTCAL98 calibration curve, then compared with the marine varve record of the Cariaco Basin.

Fritz SC (2008) Deciphering climatic history from lake sediments. *Journal of Paleolimnology* **39** (1), 5-16. http://dx.doi.org/10.1007/s10933-007-9134-x; review and discussion of non-linear and non-stationary factors affecting lacustrine sedimentation, also about varves.

Frolow V (1946) Analyse de la sèrie des varves du lac Malinovoić. *Comptes Rendus de l'Academie des Sciences de Paris* **222**, 669-672. http://www.em-consulte.com/revue/CRAS2A/articlesarchives/comptes-rendus-geoscience; Additional information needed: Keywords?

Fromm E (1938) Geochronologisch datierte Pollendiagramme und Diatomeenanalysen aus Angermanland. *Geologiska Föreningens i Stockholm Förhandlingar* **60**, 365-381. Additional information needed: Keywords? Link?

Fromm E (1985) Chronological calculation of the varve zero in Sweden. *Boreas* **14** (2), 123-125. http://dx.doi.org/10.1111/j.1502-3885.1985.tb00902.x; revised calculation of zero age of the Swedish time scale using varve diagrams (Eiden 1913; Borell & Offerberg 1955) confirms the earlier calculation by E. Nilsson (1960, 1968). The age of the zero, including 365 additional years for the extension of the time scale to present time (Cato 1985), should be historical – 7,288 (9,238 B.P.).

Fuhrmann A, Fischer T, Lücke A, Brauer A, Zolitschka B, Horsfield B, Negendank JFW, Schleser G H, Wilkes H (2004) Late Quaternary environmental and climatic changes in central Europe as inferred from the composition of organic matter in annually laminated maar lake sediments. *Geochemistry Geophysics Geosystems* **5** (11), Q11015. http://dx.doi.org/10.1029/2004GC000763; carbon stable isotopes, elemental analysis, maceral analysis, vitrinite reflectance, organic matter, lake sediment, Eifel, Germany, hydrogen index, pyrolysates, terrigenous macerals, alkylphenols, Peniglacial, Younger Dryas, maar lakes, organic geochemistry.

Fukusawa H (1999) Varved lacustrine sediments in Japan: Recent progress. *The Quaternary Research (Daiyonki-Kenkyu)* **38** (3), 237-243. https://www.jstage.jst.go.jp/article/jaqua1957/38/3/38_3_237/_pdf; lacustrine sediments, southwestern Japan, Lake Suigetsu, LakeTougouike, eolian dust from Chinese Loess Plateau.

Fulton JM, Arthur MA, Freeman KH (2012) Black Sea nitrogen cycling and the preservation of phytoplankton δ^{15}N signals during the Holocene. *Global Biogeochemical Cycles* **26**, GB2030. http://dx.doi.org/10.1029/2011GB004196; nitrogen fixation, nitrogen stable isotopes, Holocene, Black Sea, sedimentary pigments.

Gajewski K, Hamilton PB, McNeely R (1997) A high resolution proxy-climate record from an arctic lake with annually-laminated sediments on Devon Island, Nunavut, Canada. *Journal of Paleolimnology* **17** (2), 215-225. http://dx.doi.org/10.1023/A:1007984617675; varves in the deepest part of the basin, lead-210, 14 cm encompass 150 years, dark layers represent biogenic components deposited in summer, light inorganic layers represent clastic deposition from allochthonous sources, diatom, varve thickness, Canadian Arctic Archipelago.

Gall JC, Duringer P, Krumbein W, Paicheler JC (1994) Impact des écosystèmes microbiens sur la sédimentation. Impact of microbial ecosystems on sedimentation. *Palaeogeography, Palaeoclimatology, Palaeoecology* **111**(1-2), 17-28 (in French with English abstract). http://dx.doi.org/10.1016/0031-0182(94)90345-X; microbial communities intervene in the biostructuration of sediments by active mineral deposition, particle trapping and sediment stabilisation, biomineralisation, phosphatogenesis, biogenic carbonate, microbial systems are excellent and sensitive paleoecological indicators.

Galloway JM, Babalola LO, Patterson RT, Roe HM (2010) A high-resolution marine palynological record from the central mainland coast of British Columbia, Canada: Evidence for a mid-late Holocene dry climate interval. *Marine Micropaleontology* **75** (1-4), 62-78. http://dx.doi.org/10.1016/j.marmicro.2010.03.001; marine varves in Frederick Sound in the Seymour–Belize Inlet Complex, varves consist of light-colored diatom-rich summer and dark-colored mineral-rich winter laminae, most common from ~2840 cal. yr BP to ~1820 cal. yr BP.

Galloway JM, Wigston A, Patterson RT, Swindles GT, Reinhardt E, Roe HM (2013) Climate change and decadal to centennial-scale periodicities recorded in a late Holocene NE Pacific marine record: Examining the role of solar forcing. *Palaeogeography, Palaeoclimatology, Palaeoecology* **386**, 669-689. http://dx.doi.org/10.1016/j.palaeo.2013.06.031; Frederick Sound in the Seymour-Belize Inlet Complex of British Columbia, Canada, laminated (presumably varved) intervals are most common from ~2948–2708 cal. yr BP to ~1992–1727 cal. yr BP, spectral and wavelet analyses are compared to sunspot number data of Solanki et al. (2004).

Gälman V, Petterson G, Renberg I (2006) A comparison of sediment varves (1950-2003 AD) in two adjacent lakes in northern Sweden. *Journal of Paleolimnology* **35**, 837-853. http://dx.doi.org/10.1007/s10933-005-5952-x; Lake Koltjärnen, Lake Nylandssjön, comparison of basins of Lake Nylandssjön, varve thickness, water content, annual accumulation rate, organic matter and nitrogen, grey-scale curves, lake productivity, land-use, climate change, image analysis.

Gälman V, Rydberg J, Bigler C (2009) Decadal diagenetic effects on δ^{13}C and δ^{15}N studied in varved lake sediment. *Limnology and Oceanography* **54** (3), 917-924. http://dx.doi.org/10.4319/lo.2009.54.3.0917; lake sediment, long-term 27 yr effects of sediment aging on stable carbon and nitrogen isotope values, collection of eight freeze cores from 1979 to 2007, Lake Nylandssjön, Sweden, δ^{13}C increased by 0.4–1.5% during the first 5 yr, δ^{15}N gradually decreased by 0.3–0.7% over the entire 27-yr period.

Gälman V, Rydberg J, Shchukarev A, Sjöberg S, Martínez-Cortizas A, Bindler R, Renberg I (2009) The role of iron and sulfur in the visual appearance of lake sediment varves. *Journal of Paleolimnology* **42** (1), 141-153. http://dx.doi.org/10.1007/s10933-008-9267-6; role of iron (Fe) and sulfur (S) in the appearance of varves in sediments from Lake Nylandssjön in northern Sweden, freeze cores from 1979 to 2004, long-term changes in iron and sulfur during diagenesis, X-ray fluorescence spectroscopy (XRF), modelling of Fe and S, iron cycling.

Gälman V, Rydberg J, Sjöstedt de-Luna S, Bindler R, Renberg I (2008) Carbon and nitrogen loss rates during aging of lake sediment: Changes over 27 years studied in varved lake sediment. *Limnology and Oceanography* **53** (3), 1076-1082. http://dx.doi.org/10.4319/lo.2008.53.3.1076; freeze core, Lake Nylandssjön, Sweden, long-term loss of carbon (C) and nitrogen (N) from 1979 to 2007 as sediment ages, 23% loss of C and 35% loss of N, C:N ratio changes.

Gan SQ, Scholz CA (2012) A batch method for retrieving primary and derived datasets of laminae in sediment core images. In: (Besonen MR, ed.) *Second Workshop of the PAGES Varves Working Group*, Program and Abstracts, 17-19 March 2011, Corpus Christi, Texas, USA, 35-40. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2011_VWG_2nd_wkshp.pdf; algorithm for lamina analyses, batch method to identify laminae and extract lamina properties automatically from sediment core images, image enhancement, 2-D lamina connectivity analyses.

Gardner JV, Hemphill-Haley E (1986) Evidence for a stronger oxygen-minimum zone off central California during late Pleistocene to early Holocene. *Geology* **14** (8), 691-694. http://dx.doi.org/10.1130/0091-7613(1986)14<691:EFASOZ>2.0.CO;2; 18 marine deep-sea cores collected along the central California continental slope have 'varve-like' sediment at depth, last global deglaciation to early Holocene, oxygen-minimum zone along the northeastern Pacific Ocean was stronger than at present, intensified upwelling.

Gaye-Haake B, Lahajnar N, Emeis K-C, Unger D, Rixen T, Suthhof A, Ramaswamy V, Schulz H, Paropkari AL, Guptha MVS, Ittekkot V (2005) Stable nitrogen isotopic ratios of sinking particles and sediments from the northern Indian Ocean. *Marine Chemistry* **96** (3-4), 243-255. http://dx.doi.org/10.1016/j.marchem.2005.02.001; nitrogen stable isotope ratios in modern marine laminated to varved sediments, Bay of Bengal, Arabian Sea.

Gebhardt AC, Francke A, Kuck J, Sauerbrey M, Niessen F, Wennrich V, Melles M (2013) Petrophysical characterization of the lacustrine sediment succession drilled in Lake El'gygytgyn, Far East Russian

Arctic. *Climate of the Past* **9**, 1933-1947. http://dx.doi.org/10.5194/cp-9-1933-2013; lacustrine varves, subunits Ia and Ib, lacustrine part shows five different statistical clusters relating to redox-condition vs. input-type diagram, total organic carbon content , magnetic susceptibility, Si / Ti ratio representing more clastic or more biogenic input.

Gerasimenko NP (2007) Environmental-climatic changes in Ukraine during the last 2.5 thousands years. In: *Istorychna geografia: pochatok XXI storichya*, 41-53. Vinnytsa, Teza (in Ukrainian). (Герасименко НП (2007) Ландшафтно-кліматичні зміни на території України за останні 2,5 тис. років. Історична географія: початок XXI сторіччя, 41-53. Вінниця, Теза). Late Holocene, Saki Lake, pollen, dry/wet and cool/warm periods, correlation with paleoclimatic records from Ukraine. Additional information needed: Electronic link?

Gerasimenko N (2009) Cyclicity in pollen-fall derived from the steppe and mountain forest of the Crimea, Ukraine. In: *The 7th International Meeting of Pollen Monitoring Programme*, extended abstracts, Thessaloniki, 16-18. Saki Lake, monthly observation on pollen-fall, comparison with meteorological data from the Saki station and with past pollen redords in varved beds. Additional information needed: Electronic link?

Gerasimenko N, Kukla G (1998) Past droughts in Eastern Ukraine recorded by pollen and salts in lake Saki in Crimea. In: *High-Resolution Lake Sediment Records in Climate and Environment Variability Studies. 6th Workshop of the European Lake Drilling Programme ELDP*. Progamme, List of Participants, Abstracts, Excursion Guide. May 11-16, 2001, GFZ Potsdam, Germany, *Terra Nostra* **1998/6**, 45-48. Holocene, the Saki lake varves, pollen, dry and wet periods, correlation with long record of meteorological observation from the steppe of Ukraine. Additional information needed: Electronic link?

Gerasimenko N, Subetto D (2007) Vegetational and climatic changes in the South-Western Crimea during the Middle-Late Holocene, based on pollen study of the Lake Saki. In: (Gilbert A, Yanko-Hombach V, eds.)*The Third Plenary Meeting and Field Trip of IGCP-521 Project "Black Sea - Mediterranean Corridor During the Last 30 ky: Sea Level Change and Human Adaptation*", Gelendzik-Kerch, extended abstracts, 69-70. Ukraine, lake sediment, radiocarbon dating, pollen, paleoclimatic changes. Additional information needed: Electronic link?

Gerasimenko N, Subetto D (2011) Pollen data from the Saki Lake as an indicator of the Holocene environmental changes in the South-Western Crimea. In: (Yanko-Hombach V, Afanasyeva M, eds.) *6th International Conference "Environmental Micropaleontology, Microbiology and Meiobenthology"*, extended abstracts, Moscow, Paleontological Institute of Russian Academy of Sciences. Radiocarbon dating, pollen, climatic cyclicity, correlation with Black Sea level changes. Additional information needed: Electronic link?

Gerasimenko N, Subetto D, Bakhmutov V, Dubis L (2012) Late-Middle Holocene climatic oscillations recorded in pollen from annual laminated deposits of Saki Lake (Ukraine). In: (Besonen MR, ed.) *Second Workshop of the PAGES Varves Working Group*, Program and Abstracts, 17-19 March 2011, Corpus Christi, Texas, USA, 41-43. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2011_VWG_2nd_wkshp.pdf; Crimean peninsula, up to 8.5 m lake sediment.

Gerasimenko N, Subetto D, Bakhmutov V, Dubis L, Gladyrevska M (2011) New data on the Middle and Late Holocene environmental changes from the Saki Lake, Crimea (Ukraine). In: (Gilbert A, Yanko-Hombach V, eds.) *The Sixth Plenary Meeting and Field Trip of IGCP-521 Project "Black Sea - Mediterranean Corridor During the Last 30 ky: Sea Level Change and Human Adaptation"*, Gelendzik-Kerch, extended abstracts, 92-93. Radiocarbon dating, magnetostratigraphy, pollen, quartz micromorphology, climatic cyclicity. Additional information needed: Electronic link?

Geyh MA, Merkt J, Müller H (1970) ^{14}C-Datierung limnischer Sedimente und die Eichung der ^{14}C-Zeitskala. *Naturwissenschaften* **57** (12), 564-567. http://dx.doi.org/10.1007/BF00598790; radiocarbon calibration using varves from Lake Schleinsee, southern Germany near Bodensee, comparison with tree rings, varve counting.

Geyh MA, Merkt J, Müller H (1971) Sediment-, Pollen- und Isotopenanalysen an jahreszeitlich geschichteten Ablagerungen im zentralen Teil des Schleinsees. *Archiv für Hydrobiologie* **69** (3), 366-399. http://www.ingentaconnect.com/content/schweiz/afh; additional information needed: Electronic link? Keywords?

Geyh MA, Merkt J, Müller H, Streif H (1974) Reconstitutions paléoclimatiques et paléoécologiques à partir de l'étude des sédiments lacustres de l'Allemagne Méridionale. *XIII ièmes Journées de l'Hydraulique,* Question 1, Rapport 7, 1-7. Additional information needed: Electronic link? Keywords?

Gierga M, Hajdas I, van Raden UJ, Gilli A, Wacker L, Sturm M, Bernasconi SM, Smittenberg RH (2016) Long-stored soil carbon released by prehistoric land use: Evidence from compound-specific radiocarbon analysis on Soppensee lake sediments. *Quaternary Science Reviews* **144**, 123-131. http://dx.doi.org/10.1016/j.quascirev.2016.05.011; individual biomarkers, lacustrine varves, Switzerland, long-chain *n*-alkanes, high-resolution macrofossil dating.

Giguet-Covex C, Arnaud F, Poulenard J, Enters D, Reyss JL, Millet L, Lazzaroto J, Vidal O (2010) Sedimentological and geochemical records of past trophic state and hypolimnetic anoxia in large, hard-water Lake Bourget, French Alps. *Journal of Paleolimnology* **43** (1), 171-190. http://dx.doi.org/10.1007/s10933-009-9324-9; sedimentological, geochemical and particle-size analyses for 100-yr reconstruction of trophic state and hypolimnetic anoxia in Lake Bourget, French Alps, lead-210, cesium-137, americium-241, biochemical varves in the upper sediment profile, varves are triplets composed of a diatom layer (spring lamina), a bio-precipitated calcite-rich layer (spring/summer lamina), and a layer rich in organic matter and detrital particles (winter lamina), onset of eutrophication at AD 1943±1 year, persistent anoxia began in AD 1960, particle size, phosphorus, major elements.

Gilbert GK (1895) Sedimentary measurement of Cretaceous time. *Journal of Geology* **3**, 121-127. http://www.jstor.org/stable/10.2307/30054556; Colorado, base of Rocky Mountains, laminated shales. Additional information needed: Electronic link? Keywords?

Gilbert R (2015) Paleoclimatology – Varves. *Encyclopedia of Atmospheric Sciences* (Second Edition), 411-414, Elsevier. http://www.sciencedirect.com/science/article/pii/B9780123822253003054; this is a revision of the previous edition article by A Weinheimer and F Biondi, volume 4, pp 1680–1685, © 2003, Elsevier Ltd.

Gilbert R, Crookshanks S, Hodder KR, Spagnol J, Stull RB (2006) The record of an extreme flood in the sediments of montane Lillooet Lake, British Columbia: Implications for paleoenvironmental assessment. *Journal of Paleolimnology* **35** (4), 737-745. http://dx.doi.org/10.1007/s10933-005-5152-8; October 2003 produced a large flood in rivers in the Cordillera of southwestern British Columbia, Canada, flood sediment deposited in the varved sediment of Lillooet Lake is distinguished by stratigraphy, color, texture, magnetic properties, and organic content, recognition of rare events in the stratigraphic record offers a means of assessing the impact of extreme hydroclimatic events.

Gilbert R, Desloges JR, Clague JJ (1997) The glacilacustrine sedimentary environment of Bowser Lake in the northern Coast Mountains of British Columbia, Canada. *Journal of Paleolimnology* **17** (3), 331-346. http://dx.doi.org/10.1023/A:1007900411724; fiord lake, Canada, Holocene fill consisting mainly of silt and clay varves, glacilacustrine sediments, jökulhlaups, sediment transport and deposition.

Giralt S, Julià R, Klerkx J, Riera S, Leroy S, Buchaca T, Catalan J, Batist M, Beck C, Bobrov V, Gavshin V, Kalugin I, Sukhorukov F, Brennwald M, Kipfer R, Peeters F, Lombardi S, Matychenkov V, Romanovsky V, Podsetchine V, Voltattorni N (2004) 1,000-year environmental history of Lake Issyk-Kul. In: (Nihoul JCJ, Zavialov PO, Micklin PP, eds.) *Dying and Dead Seas, Climatic Versus Anthropic Causes*; Kluwer Academic Publishers, *NATO ASI* Series, **36**, 253-285. http://dx.doi.org/10.1007/978-94-007-0967-6_10; Kyrgyzstan, lake water level, lake sediment, Tien Shan Mountains, Central Asia, saline water, pollen.

Glaser PH, Griffith M (2007) A field extruder for rapidly sectioning near-surface cores from lakes and wetlands. *Journal of Paleolimnology* **38** (3), 459-466. http://dx.doi.org/10.1007/s10933-006-9078-6; fine-sectioning of cores in the field while improving volumetric-sampling accuracy, coring, sectioner, equipment, volumetric sampling.

Glenn CR, Arthur MA (1985) Sedimentary and geochemical indicators of productivity and oxygen contents in modern and ancient basins: The Holocene Black Sea as the "type" anoxic basin. *Chemical Geology* **48**, 325-354. http://dx.doi.org/10.1016/0009-2541(85)90057-9; marine black shale, mineralogic sedimentary components, accumulation rates of organic carbon, total phosphorus, reduced sulfur over the past 7000 yr, biologic productivity, sulfate-reducing bacteria.

Glenn CR, Kelts K (1991) Sedimentary rhythms in lake deposits. In: (Einsele G, Ricken W, Seilacher A, eds.), *Cycles and Events in Stratigraphy*. Springer-Verlag, Berlin Heidelberg, p. 188-221. Additional information needed: Electronic link? Keywords?

Glur L, Stalder NF, Wirth SB, Gilli A, Anselmetti FS (2015) Alpine lacustrine varved record reveals summer temperature as main control of glacier fluctuations over the past 2250 years. *The Holocene* **25** (2), 280-287. http://dx.doi.org/10.1177/0959683614557572; lacustrine varve record of particle-mass accumulation rates of Lake Trüebsee (Central Swiss Alps), Titlis Glacier, Lower Grindelwald Glacier, advances of Titlis Glacier occurred during the grand solar minima Dalton, Maunder, Spörer, Wolf.

Godsey HS, Moore TC Jr., Rea DK, Shane LCK (1999) Post-Younger Dryas seasonality in the North American midcontinent region as recorded in Lake Huron varved sediments. *Canadian Journal of Earth Sciences* **36** (4), 533-547. http://dx.doi.org/10.1139/e99-005; northwestern Lake Huron, sequence of red and gray glaciolacustrine varves, lake sediments, postglacial and early Holocene, 264 couplets, image-analysis technique, oxygen stable isotope ratio, time-series analysis of varve thickness data, spectral density, El Niño - Southern Oscillation (ENSO), quasi-biennial oscillation (QBO), early Holocene, Great Lakes, Canada.

González-Yajimovich OE (2004) *Holocene Sedimentation in the Southern Gulf of California and its Climatic Implications.* Ph.D. Dissertation, University of Southern California, 211 p. oxygen minimum zone OMZ, 7000 to 9000 yr coverage, laminated (possibly varved) marine sediment, varve count on x-radiographs.

González-Yajimovich O, Douglas RG, Gorsline DS (2005) The preserved carbonate record in Holocene sediments of the Alfonso and Pescadero basins, Gulf of California, Mexico. *Proceedings of the*

Geologists' Association **116** (3-4), 315-330. http://dx.doi.org/10.1016/S0016-7878(05)80050-1; oxygen minimum zone OMZ, 7000 to 9000 yr coverage, laminated (possibly varved) marine sediment.

Gorsline DS, Nava-Sanchez E, Murillo de Nava J (1996) A survey of occurrences of Holocene laminated sediments in California Borderland Basins: products of a variety of depositional processes. In: (Kemp AES, ed.) *Palaeoclimatology and Palaeoceanography from Laminated Sediments*. *Geological Society Special Publication* **116**, London, 93-110. http://dx.doi.org/10.1144/GSL.SP.1996.116.01.10; marine sediment, Santa Barbara Basin, turbidite, comparison with other regional basins, Pacific Ocean, bottom water.

Goslar T (1998) 6.1. Floating varve chronology of the Lake Gościąż. In: (Ralska-Jasiewiczowa M, Goslar T, Madeyska T, Starkel L, eds.) *Lake Gościąż, Central Poland, a Monographic Study*. Part I, 97-99. W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków; additional information needed: Electronic link? Keywords?

Goslar T, Pazdur A, Pazdur MF, Arnold M, Hajdas I (1998) 6.2.Correlation of radiocarbon and varve chronologies of Lake Gościąż. In: (Ralska-Jasiewiczowa M, Goslar T, Madeyska T, Starkel L, eds.), *Lake Gościąż, Central Poland, a Monographic Study*. Part I, 100-103. W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków; additional information needed: Electronic link? Keywords?

Goslar T (1998) 6.3. The record of laminae thickness of the Lake Gościąż sediments, and its correlation with absolutely dated tree-ring width sequences. In: (Ralska-Jasiewiczowa M, Goslar T, Madeyska T, Starkel L, eds.) *Lake Gościąż, Central Poland, a Monographic Study*. Part I, 104-109. W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków http://www.worldcat.org/title/lake-gosciaz-central-poland-a-monographic-study/oclc/41879724/editions; additional information needed: Electronic link? Keywords?

Goslar T (1998) 6.4. Absolute age of floating varve chronology of Lake Gościąż. In: (Ralska-Jasiewiczowa M, Goslar T, Madeyska T, Starkel L, eds.) *Lake Gościąż, Central Poland, a Monographic Study*. Part I, 110-111. W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków; additional information needed: Electronic link? Keywords?

Goslar T (1998) 7.2. Late-Glacial sediments of Lake Gościąż – chronological background. In: (Ralska-Jasiewiczowa M, Goslar T, Madeyska T, Starkel L, eds.) *Lake Gościąż, Central Poland, a Monographic Study*. Part I, 119-123. W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków; additional information needed: Electronic link? Keywords?

Goslar T (1998) 8.1. Holocene sediments of Lake Gościąż - chronological background. In: (Ralska-Jasiewiczowa M, Goslar T, Madeyska T, Starkel L, eds.) *Lake Gościąż, Central Poland, a Monographic Study*. Part I, 187-195. W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków; additional information needed: Electronic link? Keywords?

Goslar T (1998) 9.2.1. Archive data and economic-social background to the anthropogenic changes in the Lake Gościąż region from 1700AD till today. In: (Ralska-Jasiewiczowa M, Goslar T, Madeyska T, Starkel L, eds.) *Lake Gościąż, Central Poland, a Monographic Study*. Part I, 297-300. W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków; additional information needed: Electronic link? Keywords?

Goslar T (1998) 9.2.2. Chronological base - reconstruction of yearly cycles in the Lake Gościąż youngest sediments. In: (Ralska-Jasiewiczowa M, Goslar T, Madeyska T, Starkel L, eds.) *Lake Gościąż, Central Poland, a Monographic Study*. Part I, 301-309. W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków; additional information needed: Electronic link? Keywords?

Goslar T (1998) 9.2.3. Anthropogenic changes in the chemical composition of the Lake Gościąż sediments. In: (Ralska-Jasiewiczowa M, Goslar T, Madeyska T, Starkel L, eds.) *Lake Gościąż, Central Poland, a Monographic Study*. Part I, 310-317 . W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków; additional information needed: Electronic link? Keywords?

Goslar T, Arnold M, Bard E, Kuc T, Pazdur MF, Ralska-Jasiewiczowa M, Różański K, Tisnerat N, Walanus A, Wicik B, Więckowski K (1995) High concentration of atmospheric ^{14}C during the Younger Dryas cold episode. *Nature* **377**, 414-417. http://dx.doi.org/10.1038/377414a0; Lake Gościąż, lake sediment, Poland, high radiocarbon abundance during Younger Dryas, reduced ventilation of deep ocean, reduced North Atlantic Deep Water formation. Note: the findings were partially revised by Goslar et al. (2000).

Goslar T, Arnold M, Pazdur MF (1995) The Younger Dryas cold event - was it synchronous over the North Atlantic region? *Radiocarbon* **37** (1), 63-70. https://journals.uair.arizona.edu/index.php/radiocarbon/article/view/1647; Lake Holzmaar, Germany, Lake Soppensee, Switzerland, Poland, Lake Gościąż, lake sediment, Arctic, Greenland, ice cores, planar bedding structures, upper Weichselian, Atlantic Ocean, Europe, Pleistocene, Cenozoic, Quaternary, radiocarbon.

Goslar T, Arnold M, Pazdur MF (1998) 7.7. Variations of atmospheric ^{14}C concentrations at the Pleistocene/Holocene transition. In: (Ralska-Jasiewiczowa M, Goslar T, Madeyska T, Starkel L, eds.) *Lake Gościąż, Central Poland, a Monographic Study*. Part I, 162-170. W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków. http://www.worldcat.org/title/lake-gosciaz-central-poland-a-monographic-study/oclc/41879724/editions; additional information needed: Electronic link? Keywords?

Goslar T, Arnold M, Tisnerat-Laborde N, Czernik J, Więckowski K (2000) Variations of Younger Dryas atmospheric radiocarbon explicable without ocean circulation changes. *Nature* **403**, 877-880. Cosmic rays, Holocene, solar magnetic field, Lake Gościąż, Lake Perespilno, Poland, solar activity, no need to involve ocean circulation. Additional information needed: Electronic link?

Goslar T, Arnold M, Tisnerat-Laborde N, Hatté C, Paterne M, Ralska-Jasiewiczowa M (2000) Radiocarbon calibration by means of varves versus ^{14}C ages of terrestrial macrofossils from Lake Gościąż and Lake Perespilno, Poland. *Radiocarbon* **42** (3), 335-348. https://journals.uair.arizona.edu/index.php/radiocarbon/article/view/3826; late glacial, Lake Suigetsu, Japan, Cariaco Basin, Caribbean Sea, planar bedding structures, upper Weichselian, Younger Dryas, Allerød, Atlantic Ocean, Holocene, correlation, teleconnection, Europe, Pleistocene, Asia, Cenozoic, Quaternary, radiocarbon.

Goslar T, Bałaga K, Arnold M, Tisnerat N, Starnawska E, Kuźniarski M, Chróst L, Walanus A, Więckowski K (1999) Climate-related variations in the composition of the Late Glacial and early Holocene sediments of Lake Perespilno (eastern Poland). *Quaternary Science Reviews* **18** (7), 899-911. http://dx.doi.org/10.1016/S0277-3791(99)00004-9; lake sediment, Older Dryas, Preboreal, varve chronology, pollen, radiocarbon, comparison with Lake Gościąż, Allerød, Younger Dryas, Holocene.

Goslar T, Kuc T, Ralska-Jasiewiczowa M, Różański K, Arnold M, Bard E, van Geel B, Pazdur MF, Szeroczyńska K, Wicik B, Więckowski K, Walanus A (1993) High-resolution lacustrine record of the Late Glacial/Holocene transition in Central Europe. *Quaternary Science Reviews* **12** (5), 287-294. http://dx.doi.org/10.1016/0277-3791(93)90037-M; Lake Gościąż, Poland, Europe, last deglaciation, Younger Dryas.

Goslar T, Pazdur A, Pazdur MF (1992) Isotopic composition of carbon in the youngest part of the laminated sediment of Lake Gosciaz. In: (Saarnisto M, Kahra A, eds.) *Proceedings of the Workshop at Lammi Biological Station 4-6 June, 1990. Geological Survey of Finland, Special Paper* **14**, 87-93. http://arkisto.gtk.fi/sp/sp14/sp_014.pdf; carbon isotopes in carbonate and radiocarbon, fast variations in initial ^{14}C activity of both organic and carbonate carbon; organic ^{14}C more variable than carbonate ^{14}C, geochronology, Quaternary, Poland, varved lake sediment, Lake Gościąż.

Goslar T, Pazdur A, Pazdur MF, Arnold M, Hajdas I (1998) 6.2. Correlation of radiocarbon and varve chronologies of Lake Gościąż. In: (Ralska-Jasiewiczowa M, Goslar T, Madeyska T, Starkel L, eds.) Lake Gościąż, Central Poland, a Monographic Study. Part I, 100-103. W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków. http://www.worldcat.org/title/lake-gosciaz-central-poland-a-monographic-study/oclc/41879724/editions; additional information needed: Electronic link? Keywords?

Goslar T, Ralska-Jasiewiczowa M, Kuc T, Arnold M, van Geel B, Hajdas I, Pazdur MF, Walanus A, Wicik B, Więckowski K (1994) Climatic and radiocarbon variations around the Late Glacial/Holocene boundary derived from studies of annually laminated sediments of Lake Gościąż, Poland. In: *Alfred Wegener Conference "Climate Dynamics Recorded in Long Continental High Resolution Time Series since the Last Interglacial"*. Abstracts. GFZ Potsdam, September 28 - Oktober 2, 1994, Berlin, *Terra Nostra* **1/94**, 42-47. http://www.worldcat.org/title/terra-nostra/oclc/39064859; additional information needed: Electronic link? Keywords?

Goslar T, Ralska-Jasiewiczowa M, van Geel B, Łącka B, Szeroczyńska K, Chróst L, Walanus A (1999) Anthropogenic changes in the sediment composition of Lake Gościąż (central Poland), during the last 330 yrs. *Journal of Paleolimnology* **22** (2), 171-185. http://dx.doi.org/10.1023/A:1008096032117; Europe, historic evidence, pollen, heavy metals, lake sediment.

Graham IJ, Alloway BV, Cochran UA, Cook RA, Ditchburn RG, Mildenhall DC, Morgenstern U, Prior C (2005) Sedimentology, geochronology and micropaleontology of post- and immediately pre-European Lake Tekapo sediment (based on analysis of core L1395). *Institute of Geological & Nuclear Sciences science report 2005/34.* Institute of Geological & Nuclear Sciences Limited, Lower Hutt, New Zealand, 82 pp. Glacial lake sediment, varve counting, New Zealand, missing varves, Waitaki catchment, pollen disoersal, diatoms.

Granar L (1956) Dating of recent fluvial sediments from the estuary of the Ångerman River (the period 1850-1950 A.D.). *Geologiska Föreningens i Stockholm Förhandlingar* **78** (4), 654-658. http://dx.doi.org/10.1080/11035895609453419; Nyland Fjord, Sweden, ~1000 varves, covariation between annual discharge maxima of the Ångerman river and varve thickness.

Grant CW (1991) *Lateral and Vertical Distributions of Bacterial Mats (Beggiatoa spp.) in Santa Barbara Basin, California: A Modern Analog for Organic-rich Facies of the Monterey Formation*. M.S. thesis,

California State University, Long Beach, 201 pp. http://www.worldcat.org/title/lateral-and-vertical-distributions-of-filamentous-bacterial-mats-beggiatoa-spp-in-santa-barbara-basin-california-a-modern-analog-for-organic-rich-facies-of-the-monterey-formation/oclc/24595418; detailed thesis with many illustrations; Santa Barbara Basin discussed as presumed modern analog for Monterey Formation, marine sediment, Pacific.

Gravenor CP, Symons DTA, Coyle DA (1984) Errors in the anisotropy of magnetic susceptibility and magnetic remanence of unconsolidated sediments produced by sampling methods. *Geophysical Research Letters* **11** (9), 836-839. http://dx.doi.org/10.1029/GL011i009p00836; glacial varves were subsampled into plastic cubical containers, anisotropy of magnetic susceptibility, serious magnetic artifacts may result from the way how the cube was pressed into the soft sediment.

Greenwalt D, Labandeira C (2013) The amazing fossil insects of the Eocene Kishenehn Formation in Northwestern Montana. *Rocks & Minerals* **88** (5), 434-441. http://dx.doi.org/10.1080/00357529.2013.809972; laminated fissile oil shale, possibly marine varves.

Gregory TR (2012) *Holocene Sea Ice-Ocean-Climate Variability from Adélie Land, East Antarctica.* Doctoral Dissertation, Cardiff University, 237 p. http://orca.cf.ac.uk/41566/1/Tom%20Gregory%20thesis.pdf; East Antarctica, marine varves, subannually resolved marine sediment cores MD03-2601, IODP- 318-U1357B, Dumont d'Urville Trough, epoxt resin-embedded polished thin sections, diatom, microfabric, SEM backscattered electron imagery.

Grelaud M, Schimmelmann A, Beaufort L (2009) Coccolithophore response to climate and surface hydrography in Santa Barbara Basin, California, AD 1917 – 2004. *Biogeosciences* **6**, 2025-2039. http://www.biogeosciences.net/6/2025/2009/bg-6-2025-2009.pdf; North America, marine sediment, Pacific Ocean, California Current, varve thickness, solar forcing, spectral analysis, ENSO, El Niño, Pacific Decadal Oscillation, acidity, pCO_2, sea surface temperature.

Grigorov I, Pearce RB, Kemp AES (2002) Southern Ocean laminated diatom ooze: mat deposits and potential for palaeo-flux studies, ODP Leg 177, Site 1093. *Deep-Sea Research II: Topical Studies in Oceanography* **49** (16), 3391-3407. http://dx.doi.org/10.1016/S0967-0645(02)00089-9; laminated diatom ooze, scanning electron microscope (SEM), optical microscopy, Polar Front hydrography, diatom mats, laminae succession points to a possible annual couplet/triplet succession of laminae, suggests exceptionally high local sedimentation rates.

Grimm KA (1992) 31. High-resolution imaging of laminated biosiliceous sediments and their paleoceanographic significance (Quaternary, Site 798, Oki Ridge, Japan Sea). In: (Pisciotto KA, Ingle JC Jr., von Breymann MT, Barron J, et al., eds.), *Proceedings of the Ocean Drilling Program, Scientific Results* **127/128**, Pt. 1, 547-557. http://www-odp.tamu.edu/publications/127128SR_1/VOLUME/CHAPTERS/sr127128_31.pdf; marine sediment, epoxy-impregnation, preparation and analysis of weakly consolidated, laminated hemipelagic sediment for visual microanalysis from a single 7 cm^3 sediment sample, subsamples for petrographic, backscattered electron, and secondary electron microscopy.

Grimm KA (1992) 4. Preparation of weakly consolidated, laminated hemipelagic sediment for high-resolution visual microanalysis: an analytical method. In (Pisciotto KA, Ingle JC Jr., von Breymann MT, Barron J, eds.) *Proceedings of the Ocean Drilling Program (ODP), Scientific Results* **127/128**, Part 1, 57-62. http://dx.doi.org/10.2973/odp.proc.sr.127128-1.115.1992; method for preparation and analysis of weakly consolidated, laminated hemipelagic sediment for visual microanalysis, isopropyl alcohol, drying, SPURR epoxy resin impregnation, polishing.

Grimm KA, Lange CB, Gill AS (1996) Biological forcing of hemipelagic sedimentary laminae: evidence from ODP Site 893, Santa Barbara Basin, California. *Journal of Sedimentary Research* **66** (3), 613-624. http://dx.doi.org/10.1306/D42683C4-2B26-11D7-8648000102C1865D; diatoms, production vs. preservation, biosiliceous laminae, X-radiography, scanning electron microanalysis, hemipelagic marine sediment, upwelling.

Grimm KA, Lange CB, Gill AS (1997) Self-sedimentation of phytoplankton blooms in the geologic record. *Sedimentary Geology* **110** (3-4), 151-161. http://dx.doi.org/10.1016/S0037-0738(97)00048-1; marine laminated sediments; diatoms; sedimentary processes; paleoecology; geophysiology, phytoplankton blooms, self-sedimentation, aggregation.

Grimm KA, Orange DL (1997) Synsedimentary fracturing, fluid migration, and subaqueous mass wasting; intrastratal microfractured zones in laminated diatomaceous sediments, Miocene Monterey Formation, California, U.S.A. *Journal of Sedimentary Research* **67** (3), 601-613. http://dx.doi.org/10.1306/D42685E5-2B26-11D7-8648000102C1865D; laminated marine diatomaceous sediment, North America, intrastratal microfractured zones, vergence direction permits estimation of paleoslope direction.

Grönlund E (1991) Sediment characteristics in relation to cultivation history in two varved lake sediments from East Finland. *Hydrobiologia* **214** (1), 137-142. http://dx.doi.org/10.1007/BF00050942; Lake Heinälampi, Lake Suurjärvi sediment quality variables and pollen analysis data, changes in agricultural land-use patterns studied with canonical correspondence analysis (CCA).

Grönlund E (1995) A palaeoecological study of land-use history in East Finland. PhD dissertation, *Publications in Science*, *Joensuun Yliopisto: Joensuun Yliopiston luonnontieteellisiä julkaisuja* **31**, University of Joensuu, 74 p.

Grönlund E, Simola H, Huttunen P (1986) Paleolimnological reflections of fiber-plant retting in the sediment of a small clear-water lake. *Hydrobiologia* **143** (1), 425-431. http://dx.doi.org/10.1007/BF00026693; Lake Likolampi, kettle-hole lake, Ilomantsi, Finland, about 390 varves, chrysophyte statospores, pollen, eutrophication, *Drepanocladus.*

Grönlund E, Simola H, Uimonen-Simola P (1990) Early agriculture in the Eastern Finnish Lake District. *Norwegian Archaeological Review* **23** (1-2), 79-85. http://dx.doi.org/10.1080/00293652.1990.9965510; pollen analysis of varves from 10 lakes, Finland.

Grosjean M. Amann**,** Butz C, Rein B, Tylmann W (2014) Hyperspectral imaging: a novel, non-destructive method for investigating sub-annual sediment structures and composition. In: (Zolitschka B, Pike J, von Gunten L, Kiefer T, eds.), *Annual Recorders of the Past. Past Global Changes, PAGES Magazine* **22** (1), 10-11. http://pastglobalchanges.org/products/pages-magazine/3752-22-1-annual-recorders-of-the-past; rapid and cost-effective way of generating records of sediment properties and composition at the micrometer-scale. Photopigments and clay minerals detected using this method can reflect temperature, precipitation or runoff and primary production in lake sediments.

Gross MG (=Meredeth Grant) (1967) Concentrations of minor elements in diatomaceous sediments of a stagnant fjord. In: (Lauff GH, ed.) *Estuaries. American Association for the Advancement of Sciences, Publication* **83**, 273-282. Canada, Pacific Ocean, minor elements in sill and nearshore marine sediments and central basin sediments, Saanich Inlet, light colored laminae are formed by seasonal production pulses of diatom frustules. Additional information needed: Electronic link?

Gross MG, Gucluer SM, Creager JS, Dawson WA (1963) Varved marine sediments in a stagnant fjord. *Science* **141** (3584), 918-919. http://www.jstor.org/stable/1712310; http://dx.doi.org/10.1126/science.141.3584.918; Canada, Pacific Ocean, marine sediment, diatom species distribution, Saanich Inlet, one species of diatom dominates the assemblages in the light colored laminae, three species of diatoms dominate the assemblages in the dark colored laminae.

Gruber N, Wehrli B, Wüest A (2000) The role of biogeochemical cycling for the formation and preservation of varved sediments in Soppensee (Switzerland). *Journal of Paleolimnology* **24** (3), 277-291. http://dx.doi.org/10.1023/A:1008195604287; anoxia, lake sediment, Lake Soppensee, European Alps, carbon cycle, oxygen cycle, seasonal observations of temperature, conductivity, dissolved oxygen and dissolved inorganic carbon 1980 to 1993, calcite precipitation, model calculations.

Gruszka B (2007) The Pleistocene glaciolacustrine sediments in the Bełchatów mine (central Poland): Endogenic and exogenic controls. *Sedimentary Geology* **193** (1-4), 149-166. http://dx.doi.org/10.1016/j.sedgeo.2006.01.008; Quaternary overburden of Bełchatów outcrop contains five glaciolacustrine units, Pleistocene varves.

Gruszka B, van Loon AJ (2007) Pleistocene glaciolacustrine breccias of seismic origin in an active graben (central Poland). *Sedimentary Geology* **193** (1-4), 93-104. http://dx.doi.org/10.1016/j.sedgeo.2006.01.009; varved glaciolacustrine Early Saalian sediment in Bełchatów mine (central Poland), description of deformations, half-varve deformation affects clayey lamina of a varve, multi-varve deformation affects several varves, clast-supported breccia beds with varve fragments in a quasi-horizontal position within a clayey matrix, deformed beds resulting from subsequent plastic deformation and folding, deformed beds are interpreted as seismites derived from earthquakes related to deep graben structure.

Gucluer SM (1962) *Recent Sediment in Saanich Inlet, British Columbia*. M.Sc. thesis, Seattle, University of Washington, 119 p. Keywords: Canada, Pacific Ocean, difference between light and dark laminae.

Gucluer SM, Gross MG (1964) Recent marine sediments in Saanich Inlet, a stagnant marine basin. *Limnology and Oceanography* **9** (3), 359-376. http://www.jstor.org/stable/2833480; http://www.aslo.org/lo/toc/vol_9/issue_3/; Canada, Pacific Ocean, comparison of nearshore, sill, and central basin sediments, difference between light and dark laminae.

Guilizzoni P, Lami A, Marchetto A, Jones V, Manca M, Bettinetti R (2002) Palaeoproductivity and environmental changes during the Holocene in central Italy as recorded in two crater lakes (Albano and Nemi). *Quaternary International* **88** (1), 57-68. http://dx.doi.org/10.1016/S1040-6182(01)00073-8; central Italy, Lake Albano, Lake Nemi, organic matter, dry density, pigments, diatoms, lake productivity, Holocene, statistical analysis (CONstrained Incremental Sum of Square cluster analysis, CONISS), Bronze Age, diatoms, Cladocera, eutrophication.

Guilizzoni P, Marchetto A, Lami A, Brauer A, Vigliotti L, Musazzi S, Langone L, Manca M, Lucchini F, Calanchi N, Dinelli E, Mordenti A (2006) Records of environmental and climatic changes during the late Holocene from Svalbard: palaeolimnology of Kongressvatnet. *Journal of Paleolimnology* **36** (4), 325-351. http://dx.doi.org/10.1007/s10933-006-9002-0; Arctic, Lake Kongressvatnet, western Spitsbergen, cesium-137, lead-210, varve counting, paleomagnetic correlation, varve thickness, pigments, organic geochemistry, diatoms, sulfur bacteria, Little Ice Age, Medieval Warm Period, Cladocera.

Gutiérrez D, Sifeddine A, Reyss JL, Vargas G, Velazco F, Salvatteci R, Ferreira V, Ortlieb L, Field D, Baumgartner T, Boussafir M, Boucher H, Valdés J, Marinovic L, Soler P, Tapia P (2006) Anoxic sediments off Central Peru record interannual to multidecadal changes of climate and upwelling ecosystem during the last two centuries. *Advances in Geosciences* **6**, 119-125. http://www.adv-geosci.net/

6/119/2006/adgeo-6-119-2006.pdf; upper continental Peruvian margin, oxygen minimum zone, Pacific ocean, PALEOPECES project, light laminae dominated by detrital and terrigenous material, dark laminae with more amorphous biogenic silica, finely laminated sequence may include marine varves, northern Humboldt upwelling system.

Guyard H, Chapron E, St-Onge G, Anselmetti FS, Arnaud F, Magand O, Francus P, Mélières MA (2007) High-altitude varve records of abrupt environmental changes and mining activity over the last 4000 years in the Western French Alps (Lake Bramant, Grandes Rousses Massif). *Quaternary Science Reviews* **26** (19-21), 2644-2660. http://dx.doi.org/10.1016/j.quascirev.2007.07.007; proglacial Lake Bramant, France, Holocene, human activity, ITRAX (high-resolution continuous microfluorescence-X), CAT-Scan (computerized axial tomography), turbidite triggered by AD 1822 earthquake, archaeological data, mining activity, Roman civilization apogee, Early Bronze Age, lead, copper, glacier advance, St. Sorlin glacier.

Guyard H, Chapron E, St-Onge G, Labrie J (2013) Late-Holocene NAO and ocean forcing on high-altitude proglacial sedimentation (Lake Bramant, Western French Alps). *The Holocene* **23** (8), 1163-1172. http://dx.doi.org/10.1177/0959683613483616; proglacial Lake Bramant, France, Holocene, varves reflect glacier mass balance in the watershed, clastic sedimentation over the last 4150 years, pluridecadal variability at frequencies compatible with NAO.

Haenssler E, Nadeau MJ, Vött A, Unkel I (2013) Natural and human induced environmental changes preserved in a Holocene sediment sequence from the Etoliko Lagoon, Greece: New evidence from geochemical proxies. *Quaternary International* **308-309**, 89-104. http://dx.doi.org/10.1016/j.quaint.2012.06.031; Aetolia, natural and anthropogenic imprints in the sedimentary marine varve record, varve counting.

Hagadorn JW, Flocks JG, Stott LD, Gorsline DS (1993) A simple method to obtain high-resolution (millimeter-thick) samples from laminated sediments. *Journal of Sedimentary Research* **63** (4), 755-758. http://jsedres.geoscienceworld.org/content/63/4/755.full.pdf+html; method for high-resolution subsampling of unconsolidated marine sediment slab from Soutar box core, Santa Monica Basin.

Håkansson S (1971) Absolute chronology of the Late-Quaternary for southern Sweden — A brief review. *Geologiska Föreningen i Stockholm Förhandlingar* **93** (3), 477-493. http://dx.doi.org/10.1080/11035897109455380; History of the Post-glacial chronology in S. Sweden, Holst, De Geer, Nilsson, Swedish varve chronology, Berglund's pollen study.

Hajdas I, Beer J, Bonani G, Lotter A, Sturm M, Wölfli W (1991) ^{14}C measurements on laminated lake sediments. *Radiocarbon* **33** (2), 205-206. https://journals.uair.arizona.edu/index.php/radiocarbon/article/view/1406; Soppensee, lake sediment, Switzerland, Europe, Cenozoic, Quaternary, geochronology, radiocarbon ^{14}C. *Note: see update by Hajdas et al. (2000)*.

Hajdas I, Bonani G, Goslar T (1995) Radiocarbon dating in the Gościąż Lake floating varve chronology. *Radiocarbon* **37** (1), 71-74. https://journals.uair.arizona.edu/index.php/radiocarbon/article/view/1648; Poland, Lake Gościąż, planar bedding structures, Holocene, lake sediment, Europe, Cenozoic, Quaternary.

Hajdas I, Bonani G, Zolitschka B (2000) Radiocarbon dating of varve chronologies: Soppensee and Holzmaar lakes after ten years. *Radiocarbon* **42** (3), 349-353. https://journals.uair.arizona.edu/index.php/radiocarbon/article/view/3827; radiocarbon-dated varve chronology, Lake Soppensee, Lake Holzmaar, plant macrofossils, Weichselian, Younger Dryas, Germany, Switzerland, radiocarbon ^{14}C.

Hajdas I, Bonani G, Zolitschka B, Brauer A, Negendank JFW (1998) ^{14}C ages of terrestrial macrofossils from Lago Grande di Monticchio (Italy). *Radiocarbon* **40** (2), 803-807. https://journals.uair.arizona.edu/index.php/radiocarbon/article/view/3756; Lago Grande di Monticchio, maar, Vulture Mountain, lake sediment, tephrochronology, chronostratigraphy, planar bedding structures, sedimentary structures, Italy, Southern Europe, Mediterranean, Holocene, accelerator mass spectroscopy, Pleistocene, Europe, Cenozoic, Quaternary, radiocarbon.

Hajdas I, Ivy SD, Beer J, Bonani G, Imboden D, Lotter AF, Sturm M, Suter M (1993) AMS radiocarbon dating and varve chronology of Lake Soppensee: 6000 to 12 000 ^{14}C years BP. *Climate Dynamics* **9** (3), 107-116. http://dx.doi.org/10.1007/BF00209748; Switzerland, AMS dating, radiocarbon, Younger Dryas, tree rings, ash layer, tephra, Laacher See tephra, Alps, lake sediment.

Hajdas I, Ivy-Ochs, SD, Bonani G, Fischer A, Leroy SAG, Lotter AF, Zolitschka B (1995) Dating the Younger Dryas in lake sediments - comparison of different records. *Verhandelingen der Koninklijke Nederlandse Akademie van Wetenschappen*, Afdeeling Natuurkunde, Reeks 1, **44**, 179-181. http://www.dwc.knaw.nl/DL/publications/PU00011187.pdf; Lake Soppensee, Switzerland, Lake Holzmaar, Eifel, Germany, tree rings, multidisciplinary dating approach.

Hajdas I, Ivy-Ochs SD, Bonani G, Lotter AF, Zolitschka B, Schlüchter C (1995) Radiocarbon age of the Laacher See Tephra: 11,230 ± 40 BP. *Radiocarbon* **37** (2), 149-154. https://journals.uair.arizona.edu/index.php/radiocarbon/article/view/1658; radiocarbon, Eifel, Germany, just before Younger Dryas, plant macrofossils, Lake Soppensee, Holzmaar, Schlakenmehrener Maar.

Hajdas I, Michczynski A (2010) Age-depth model of Lake Soppensee (Switzerland) based on the high-resolution ^{14}C chronology compared with varve chronology. *Radiocarbon* **52** (3), 1027-1040. https://

journals.uair.arizona.edu/index.php/radiocarbon/article/view/3601; radiocarbon ages of macrofossils, age-depth model, Vasset/Killian tephra, Lacher See tephra, Holocene lake sediment, pollen.

Hajdas I, Zolitschka B, Ivy-Ochs SD, Beer J, Bonani G, Leroy SAG, Negendank JW, Ramrath M, Suter M (1995) AMS radiocarbon dating of annually laminated sediments from Lake Holzmaar, Germany. *Quaternary Science Reviews* **14** (2), 137-143. http://dx.doi.org/10.1016/0277-3791(94)00123-S; varve chronology, Younger Dryas.

Hallam A, Bradshaw MJ (1979). Bituminous shales and oolitic ironstones as indicators of transgressions and regressions. *Journal of the Geological Society* **136**, 157-164. http://dx.doi.org/10.1144/gsjgs.136.2.0157; Jurassic postulated marine varves eustatic model characterised by moderately rapid rises and falls of sea level, separated by longer phases of stillstand. This study was criticized by Wignall et al. (2005) who claim that silt laminae event beds are recording a much more aperiodic style of deposition than varves: Wignall PB, Newton RJ, Little CTS (2005) The timing of paleoenvironmental change and cause-and-effect relationships during the Early Jurassic mass extinction in Europe. *American Journal of Science* **305**, 1014-1032. http://dx.doi.org/10.2475/ajs.305.10.1014.

Haltia-Hovi E, Nowaczyk N, Saarinen T (2010) Holocene palaeomagnetic secular variation recorded in multiple lake sediment cores from eastern Finland. *Geophysical Journal International* **180** (2), 609-622. http://dx.doi.org/10.1111/j.1365-246X.2009.04456.x; environmental magnetism, paleomagnetic secular variation (PSV), Europe, Holocene, Lake Lehmilampi, Lake Kortejärvi, characteristic remanent magnetization (ChRM), magnetite, North Karelian stack, geomagnetic field models.

Haltia-Hovi E, Nowaczyk N, Saarinen T (2011) Environmental influence on relative palaeointensity estimates from Holocene varved lake sediments in Finland. *Physics of the Earth and Planetary Interiors* **185** (1-2), 20-28. http://dx.doi.org/10.1016/j.pepi.2010.12.002; relative magnetic paleointensity from two small lakes, Lake Lehmilampi, Lake Kortejärvi, eastern Finland, 5100 and 3700-year varved sediment, magnetic mineralogy dominated by single and pseudo single domain magnetite, normalised records were carrying an environmental imprint contaminating centennial features, Holocene.

Haltia-Hovi E, Nowaczyk N, Saarinen T, Plessen B (2010) Magnetic properties and environmental changes recorded in Lake Lehmilampi (Finland) during the Holocene. *Journal of Paleolimnology* **43** (1), 1-13. http://dx.doi.org/10.1007/s10933-009-9309-8; standard mineral magnetic measurements, magnetic susceptibility, Holocene sediment cores from Lake Lehmilampi, clastic-organic varves in deep basin, Finland, the last ~9,700 years, total organic carbon (TOC), Lake Lehmilampi connected with Lake Pielinen, magnetic mineralogy dominated by ferrimagnetic minerals, magnetosome production in Lake Lehmilampi controlled by lake productivity.

Haltia-Hovi E, Saarinen T, Kukkonen M (2007) A 2000-year record of solar forcing on varved lake sediment in eastern Finland. *Quaternary Science Reviews* **26** (5-6), 678-689. http://dx.doi.org/10.1016/j.quascirev.2006.11.005; Lake Lehmilampi, digital image analysis, varve thickness, varve count record, solar forcing, Medieval Climate Anomaly, Little Ice Age.

Hambley GW, Lamoureux SF (2006) Recent summer climate recorded in complex varved sediments, Nicolay Lake, Cornwall Island, Nunavut, Canada. *Journal of Paleolimnology* **35** (3), 629-640. http://dx.doi.org/10.1007/s10933-005-4302-3; Arctic, lake sediment, snowmelt, rhtymites, turbidites.

Hang T (1997) Clay varve chronology in the eastern Baltic area. *GFF* **119** (4), 295-300. http://www.tandfonline.com/doi/abs/10.1080/11035899709546491; clay varve chronologies of the Eastern Baltic and NW Russia, revised Swedish Time Scale and correlation with Swedish and Finnish clay varve chronologies, dating of Markov's chronologies for St. Petersburg area and southern Karelia via Sauramo's chronology for Finland, rate of ice recession, Weichselian, deglaciation.

Hang T (2001) *Proglacial Sedimentary Environment, Varve Chronology and Late Weichselian Development of the Lake Peipsi, Eastern Estonia.* Ph.D. dissertation, Stockholm University, Academitryck AB, Sweden. Quaternaria A: 11,. 44 p. http://en.scientificcommons.org/31642572; northwestern Russia, reflection profiling, paleomagnetism, clay-varve chronology, deglaciation chronology, linking of Swedish Time Scale with Finnish clay-varve chronology, Neva chronology, Sauramo's chronology for southern Finland, Luga chronology.

Hang T (2003) A local clay-varve chronology and proglacial sedimentary environment in glacial Lake Peipsi, eastern Estonia. *Boreas* **32** (2) 416-426. http://dx.doi.org/10.1111/j.1502-3885.2003.tb01094.x; varve thickness variations, marker varves, 375-year floating varve chronology.

Hang T, Kohv M (2012) Clay varve chronology and the sedimentary environment at the eastern Baltic Sea coast in Estonia. In: (Zolitschka B, ed.) *3rd Workshop of the PAGES Varves Working Group, Manderscheid, Germany, March 20-25, 2012, Program and Abstracts. Terra Nostra, Schriften der GeoUnion Alfred-Wegener-Stiftung* **2012/1**, 39-42. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/VWG_AbstractVolume_Final_2012.pdf; Lake Peipsi depression, Baltic Ice Lake, 570 consecutive varves.

Hang T, Kohv M (2013) Glacial varves at Pärnu, south-western Estonia: a local varve chronology and proglacial sedimentary environment. *GFF, special issue "Varve Genesis, Chronology and*

Paleoclimate" **135** (3-4), 273-281. http://dx.doi.org/10.1080/11035897.2013.775598; 584-yr glacial lake varve chronology, varve thickness changes, Pandivere–Neva (>13 300 yr BP) belt of ice-recessional formations, Baltic Ice Lake.

Hang T, Kohv M, Pai K, Tuvikene T (2010) Proglacial varves indicate the stagnation of ice terminus during the formation of Pandivere-Neva ice marginal formations in eastern Baltic. In: (Lorenz S, Lampe R, eds.) *Ice, Water, Humans - Quaternary Landscape Evolution in the Peribaltic Region*. 12th Annual meeting of the INQUA Peribaltic working group, Greifswald, Germany, 13-17 September 2010, 28-29. http://www4.ut.ee/orb.aw/class=file/action=preview/id=881156/Proceedings+DEUQUA+%26+Perib+2010.pdf; western Estonia, Pärnu Bay, late Weichselian glaciolacustrine varved clay or silt, Baltic Ice Lake, 565 year varve chronology.

Hang T, Ojala A, Kohv M, Tuvikene T (2011) Varve chronology and proglacial sedimentary environment in Pärnu area western Estonia. In: (Johansson P, Lunkka JP, Sarala P, eds.) *Late Pleistocene Glacigenic Deposits from the Central Part of the Scandinavian Ice Sheet to Younger Dryas End Moraine Zone*, INQUA Peribaltic Working Group Meeting and Excursion, Northern Finland, 12-17 June 2011, Geological Survey of Finland, Rovaniemi, 94-95. http://www4.ut.ee/orb.aw/class=file/action=preview/id=1036851/Excursion+Guide+%26+Abstracts-Rovaniemi+2011.pdf; Weichselian geglaciation, varve chronology, varve thickness, 570 consecutive varves, magnetostratigraphy.

Hang T, Talviste P, Reinson R, Kohv M (2007) Proglacial sedimentary environment in Pärnu area, western Estonia as derived from the varved clay studies. In: (Johansson P, Sarala P, eds.) *Applied Quaternary Research in the Central Part of Glaciated Terrain.* Espoo, Geological Survey of Finland, *Special Paper* **46** (79 - 86). http://arkisto.gtk.fi/sp/sp46.pdf; http://arkisto.gtk.fi/sp/sp46/sp46_pages_79_86.pdf; Late Weichselian varved clays, grain-size, varve thickness, glaciolacustrine sediment, Pleistocene, Weichselian.

Hanson MA, Lian OB, Clague JL (2012) The sequence and timing of large late Pleistocene floods from glacial Lake Missoula. *Quaternary Science Reviews* **31**, 67-81. http://dx.doi.org/10.1016/j.quascirev.2011.11.009; Washington, varved sequence from Lake Missoula compared to sediments at Ninemile Creek 26 km to the northwest, draining of glacial Lake Missoula repeatedly exposed the lake floor and caused erosion and deformation of varved glaciolacustrine sediment, desiccation cracks, varve counting constrains the age of the floods to 15.1 ± 0.6 ka at the base of Ninemile exposure, and 14.8 ± 0.7 and 12.6 ± 0.6 ka at rail line exposure.

Hardisty DS, Riedinger N, Planavsky NJ, Asael D, Andrén T, Jørgensen BB, Lyons TW (2016) A Holocene history of dynamic water column redox conditions in the Landsort Deep, Baltic Sea. *American Journal of Science* **316** (8), 713-745. http://dx.doi.org/10.2475/08.2016.01; Integrated Ocean Drilling Program (IODP) Expedition 347, deepest and one of the most reducing sub-basins in the Baltic Sea, degree and frequency of natural anoxia through the Holocene, marine discontinuous varves, molybdenum isotopes.

Hardy DR, Bradley RS, Zolitschka B (1996) The climatic signal in varved sediments from Lake C2, northern Ellesmere Island, Canada. *Journal of Paleolimnology* **16** (2), 227-238. http://dx.doi.org/10.1007/BF00176938; recent 40 year varve record, varve chronology, thin section, adjustmemt of varve-count chronology, Arctic lake sediment.

Harrison BK, Myrbo A, Flood BE, Bailey JV (2016) Identification of subannual patterns in microbial community signatures from individual sedimentary laminae using a freeze-coring approach. *Limnology and Oceanography* **61** (2), 735-747. http://dx.doi.org/10.1002/lno.10250; varved sediments from two lakes in Minnesota, bacterial DNA analyses, seasonal changes in cell transport from the water column impart a residual molecular signature on subsurface communities.

Hart JK (1992) Sedimentary environments associated with Glacial Lake Trimingham, Norfolk, UK. *Boreas* **21** (2), 119-136. http://dx.doi.org/10.1111/j.1502-3885.1992.tb00020.x; United Kingdom, Europe, proglacial lake sedimentation for approximately 2000 years, change from proximal to distal varve sequences, Anglian glaciations.

Hasholt B, Nielsen N, Hansen BU, Humlum O, Rasch M, Wichmann Matthiessen C (1995) Varves in a Proglacial Lake, Sermilik, South East Greenland/Meterological Observations at Arctic Station, Qeqertarsuaq (Godhavn), Central West Greenland/Den Danske Nationalkomité for Geografi 1994–95. *Geografisk Tidsskrift - Danish Journal of Geography* **95** (1), 92-106. http://dx.doi.org/10.1080/00167223.1995.10649367; X-radiography of 3 cores from a proglacial lake, laminations interpreted as 5 to 23 varves, potential comparison with data from meteorological station at the Arctic Station, Qeqertarsuaq (Godhavn).

Hausmann S, Lotter AF, van Leeuwen JNF, Ohlendorf C, Lemcke G, Grönlund E, Sturm M (2002) Interactions of climate and land use documented in the varved sediments of Seebergsee in the Swiss Alps. *The Holocene* **12** (3), 279-289. http://dx.doi.org/10.1191/0959683602hl544rp; Lake Seebergsee, Switzerland, European Alps, tree-line ecotone, lake sediment, multi-proxy, high-resolution, diatoms, lead-210, cesium-137, Little Ice Age, phosphorus, oligotrophication, land use change, eutrophication, transfer function, late Holocene.

Hausmann S, van Leeuwen J, Lotter AF, Ohlendorf C, Sturm M (1999) Étude à haute résolution des derniers siècles dans les sédiments laminés du lac subalpin de Seeberg (Suisse). *Cryptogamie Algologie* **20**, 111-112. Additional information needed: Electronic link? Keywords?

Hay BJ (1988) Sediment accumulation in the central western Black Sea over the past 5100 years. *Paleoceanography* **3** (4), 491-508. http://dx.doi.org/10.1029/PA003i004p00491; marine varve composition, sedimentologic differences relate to climate and sea level, particle flux, mass accumulation rate, appearance of *Emiliania huxleyi*.

Hay B, Honjo S (1989) Particle deposition in the present and Holocene Black Sea. *Oceanography*, April 1989, 26-31. http://www.tos.org/oceanography/issues/issue_archive/issue_pdfs/2_1/2.1_hay_honjo.pdf; overview paper about Black Sea sedimentation, sediment traps, in part marine.

Hay MB, Dallimore A, Cooke K, Enkin RJ (2011) A 1200-year marine record of environmental conditions in Frederick Sound, British Columbia. *Proceedings – GeoHydro 2011. Joint Meeting of the IAH and CANQUA*, Québec (Québec), 5 p. http://www.uqac.ca/murray_hay/wp-content/uploads/2011/11/GeoHydro2011_MBHayetal_final.pdf; laminated marine sequences (probably partially varves) over a 1200 year period.

Heideman M, Menounos B, Clague JJ (2015) An 825-year long varve record from Lillooet Lake, British Columbia, and its potential as a flood proxy. *Quaternary Science Reviews* **126**, 158-174. http://dx.doi.org/10.1016/j.quascirev.2015.08.017; Canada, anomalously thick clastic lacustrine varves, comparison of river discharge dating back to 1914 to varve thickness, some thick varves attributed to landslides in the watershed.

Heim C, Nowaczyk NR, Negendank JFW, Leroy SAG, Ben-Avraham Z (1997) Near East desertification: Evidence from the Dead Sea. *Naturwissenschaften* **84** (9), 398-401. http://dx.doi.org/10.1007/s001140050416; Israel, lake sediment, pollen, lake level, civilization, radiocarbon; see López-Merino et al. (2016) who advise caution about the presence of varves in the Dead Sea.

Heimhofer U, Ariztegui D, Lenniger M, Hesselbo SP, Martill DM, Rios-Netto AM (2010) Deciphering the depositional environment of the laminated Crato fossil beds (Early Cretaceous, Araripe Basin, North-eastern Brazil). *Sedimentology* **57** (2), 677-694. http://dx.doi.org/10.1111/j.1365-3091.2009.01114.x; South America, authigenic calcite, lake sediment, micro-XRF scanning, carbon stable isotopes, oxygen stable isotopes, Nova Olinda Member.

Heinsalu A (2010) Different aquatic ecosystem response to the 8.2 ka cooling event: two diatom-based high-resolution case studies of varved sediments in southern Estonia and central southern Finland. In: (Ojala AEK, Kosonen E, eds.) *First Workshop of the PAGES Varves Working Group (Palmse, Estonia, April 7-9, 2010), Programme and Abstracts*, Geological Survey of Finland, Espoo, Finland, 51-54. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2010-VWG-1st-wkshp.pdf; synthesis of pollen-based temperature reconstructions in northern Europe, spatial pattern for 8200 cal yr BP, Lake Rõuge Tõugjärv, Lake Nautajärvi.

Hendy IL, Dunn L, Schimmelmann A, Pak DK (2013) Resolving varve and radiocarbon chronology differences during the last 2000 years in the Santa Barbara Basin sedimentary record, California. *Quaternary International* **310**, 155-168. http://dx.doi.org/10.1016/j.quaint.2012.09.006; California Current, marine sediment prior to 18th century was not continuously varved, but instead was occasionally merely laminated, leading to incorrect varve count-ages, radiocarbon dating of terrestrial macrofossils, drought periods may have starved the basin of sediment and provided insufficient lithic material to deposit winter laminae.

Hernández JMA (2016) A ^{210}Pb-based chronological model for recent sediments with random entries of mass and activities: Model development. *Journal of Environmental Radioactivity* **151** (1), 64-74. http://dx.doi.org/10.1016/j.jenvrad.2015.09.018; ^{210}Pb-based dating tool is possible with restrictive assumptions on flux and SAR; TERESA ^{210}Pb dating tool based on stochastic law; unsupported ^{210}Pb vs. mass depth profiles.

Hethke M, Fürsich FT, Jiang B, Pan Y (2013) Seasonal to sub-seasonal palaeoenvironmental changes in Lake Sihetun (Lower Cretaceous Yixian Formation, NE China). *International Journal of Earth Sciences* **102**, Issue (1), 351-378. http://dx.doi.org/10.1007/s00531-012-0799-7; thin-sections, high-resolution study of fossiliferous varves, six microfacies, siliciclastic laminae, lacustrine chemical precipitates, framboid replacement of organic tissue, preservation of clam-shrimp carapaces, insect fossils.

Heusser L (1978) Pollen in Santa Barbara Basin, California: a 12,000-yr record. *Geological Society of America Bulletin* **89**, 673-678. http://dx.doi.org/10.1130/0016-7606(1978)89<673:PISBBC>2.0.CO;2; climatic change, palynomorphs, paleoecologic changes of the past 12,000 yr, marine sediment, Pacific.

Heusser LE (1982) Pollen analysis of laminated and homogeneous sediment from the Guaymas Basin, Gulf of California. In: (Blakeslee JB, Platt LW, Stout LN, eds.) *Initial Reports of the Deep Sea Drilling Project* **64**, Part 2, 1217-1223. U.S. Government Printing Agency, Washington. http://dx.doi.org/10.2973/dsdp.proc.64.161.1982; DSDP Site 480, 152 meters of varved sediments on the slope of Guaymas Basin, marine sediment, Pacific Ocean.

Heydari E, Wade WJ, Anderson LC (1997) Depositional environments, organic carbon accumulation, and solar-forcing cyclicity in Smackover Formation lime mudstones, northern Gulf Coast. *American Association of Petroleum Geologists Bulletin* **81** (5), 760-774. http://aapgbull.geoscienceworld.org/content/81/5/760; Upper Jurassic, Gulf of Mexico, North America, basal laminated lithofacies consists of organic- and siliciclastic-rich lamina-sets that alternate with organic-poor carbonate lamina-sets that are composed of lamina couplets interpreted to be

varves, anoxia, cycles in basal laminated lithofacies contain an average of 12 or 24 varves, sunspots, Hale solar cycle, solar forcing, flood-drought climatic variations.

Hicks S, Miller U, Saarnisto M, (eds.) (1994) Laminated Sediments. PACT, Belgium, 148 pp. http://www.univeur.org/cuebc/index.php/en/pact-2/73-41-laminated-sediments. Additional information needed: Electronic link? Keywords?

Higgins MB, Robinson RS, Carter SJ, Pearson A (2010) Evidence from chlorin nitrogen isotopes for alternating nutrient regimes in the Eastern Mediterranean Sea. *Earth and Planetary Science Letters* **290** (1-2), 102-107. http://dx.doi.org/10.1016/j.epsl.2009.12.009; nitrogen stable isotopes of chlorins (i.e. degradation products of chlorophyll) in marine laminated to varved (?) sediment reflect the isotopic composition of nutrient nitrogen, Integrated Ocean Drilling Program Sites 964 and 969, sapropel events 2, 3, 4 and 5 (~ 100–170 ka), sapropels were characterized by enhanced diazotrophy, enhanced production combined with stratification promoted and maintained anoxic deep waters.

Hilfinger IV MF, Mullins HT, Burnett A, Kirby ME (2001) A 2500 year sediment record from Fayetteville Green Lake, New York: evidence for anthropogenic impacts and historic isotope shift. *Journal of Paleolimnology* **26** (3), 293-305. http://dx.doi.org/10.1023/A:1017560300681; meromictic lake, land use, eutrophication, airborne lead pollution, oxygen stable isotope ratios of calcite, varves and environmental change ~150-200 years ago.

Hitchcock E (1841) Final report on the geology of Massachusetts. Amherst, J.S. and C. Adams, p. 350-422. http://catalog.hathitrust.org/Record/001114972, description of rhythmic, glacial-lake sediments as annual layers.

Hodder KR (2009) Flocculation: a key process in the sediment flux of a large, glacier-fed lake. *Earth Surface Processes and Landforms* **34**, 1151-1163. http://dx.doi.doc/10.1002/esp.1807; flocculation of clay speeds deposition of lacustrine varves in glacier-fed Lillooet Lake, British Columbia, Canada.

Hodder KR, Gilbert R, Desloges JR (2007) Glaciolacustrine varved sediment as an alpine hydroclimatic proxy. *Journal of Paleolimnology* **38** (3), 365-394. http://dx.doi.org/10.1007/s10933-006-9083-9; negative correlation between temperature and varve record from Mud Lake, British Columbia, six systems defining process-network, varved glaciolacustrine sediment, hydroclimatic proxy.

Hoffmann P, Pätzold J (2002) The stabilisation of wet sediment cores by means of a polyethylene glycol/freeze-drying treatment for display and permanent storage. *Geo-Marine Letters* **21** (4), 245-252. http://dx.doi.org/10.1007/s00367-001-0085-3; reversible method to transform waterlogged sediment cores into dry and stable specimens, archiving, stabilization, wet sediment core segments are bath-impregnated with polyethylene glycol (PEG), freeze-drying, PEG forms bonding porous structure, impregnation times vary from 2 weeks for coarse sand to 6–10 weeks for more compacted sediments, color changes, the processed samples are lighter in appearance and the contrasts are enhanced, PEG can be re-dissolved and washed out of the sediments.

Hogbom AG (1889) Om relationen mellan kalcium-och magnesiumkarbonat i qvartara aflagringar. *Geologiska Föreningens i Stockholm Förhandlingar* **11**, 263-273. Additional information needed: Keywords? Link?

Hollander DJ, McKenzie JA, Hsu KJ, Huc AY (1993) Application of an eutrophic lake model to the origin of ancient organic-carbon-rich sediments. *Global Biogeochemical Cycles* **7** (1), 157-179. http://dx.doi.org/10.1029/92GB02831; integrated isotopic and organic geochemical approach, annual productivity/eutrophication cycle, Lake Greifen, Switzerland, hydrogen indices (HI) of kerogen, carbon stable isotope ratios of carbonates and organic matter, productivity and preservation of organic matter, application of model to Jurassic sequences, high primary bioproductivity in Kimmeridge Clay Formation, United Kingdom, anoxic bottom water conditions for early Toarcian shales, France.

Hollander DJ, McKenzie JA, ten Haven HL (1992) A 200 year sedimentary record of progressive eutrophication in lake Greifen (Switzerland): Implications for the origin of organic-carbon-rich sediments. *Geology* **20** (9), 825-828. http://dx.doi.org/10.1130/0091-7613(1992)020<0825:AYSROP>2.3.CO;2; agricultural activity, enhanced total organic carbon, organic-carbon accumulation rates, hydrogen indices (HI) of kerogens, carbon stable isotope ratios of carbonates and organic matter, changes in productivity and preservation of organic matter.

Holmden C, Amini M, Francois R (2015) Uranium isotope fractionation in Saanich Inlet: A modern analog study of a paleoredox tracer. *Geochimica et Cosmochimica Acta* **153**, 202-215. http://dx.doi.org/10.1016/j.gca.2014.11.012; marine varve chronology of the last 50 years used, British Columbia, Canada.

Holmquist B, Wohlfarth B (1998) An evaluation of the Late Weichselian Swedish varve chronology based on cross-correlation analysis. *GFF* **120** (1), 35-46. http://dx.doi.org/10.1080/11035899801201035; some visual 'correlations' of varve-thickness diagrams are statistically weak or invalid and need to be corroborated.

Hom W, Risebrough RW, Soutar A, Young DR (1974) Deposition of DDE and polychlorinated biphenyls in dated sediments of the Santa Barbara Basin. *Science* **184** (4142), 1197-1199. http://dx.doi.org/10.1126/science.184.4142.1197; California, polychlorinated biphenyls (PCB) first appeared in 1952 varve, progressive increase through 1967, marine sediment, Pacific.

Homann M, Kleinmann A, Merkt J, Müller H, Schwarz C (1995) Rasche Klimaänderungen, Dauern von Klimaphasen, Klimainterpretation von langen Zeitreihen aus feingeschichteten Seeablagerungen. Abschlußbericht - Archivbericht no. 113516, Niedersächsisches Landesamt für Bodenkunde, Hannover, Germany, 80 pp., unpublished. Additional information needed: Keywords?

Homann M, Merkt J (1991) Hochauflösende Zeitreihen aus jahreszeitlich geschichteten Seesedimenten. Abschlußbericht - Archivbericht no. 108658, Niedersächsisches Landesamt für Bodenkunde, Hannover, Germany, 761 pp., unpublished. Additional information needed: Keywords?

Hörnsten Å (1964) Ångermanlands Kustland Undér Isavsmältningsskedet. *Geologiska Föreningen i Stockholm Förhandlingar* **86** (2), 181-205. http://dx.doi.org/10.1080/11035896409448897; Holocene shoreline of the Bothnian Sea in ångermanland, Finiglacial coastal area, evaluation of shore line in northeast ångermanälven by glacial varved clays, pollen, diatoms, paleosalinity.

Hsü KJ, McKenzie JA (1985) Swiss lakes as a geological laboratory. Part II: Varves. *Naturwissenschaften* **72** (7), 365-371. http://dx.doi.org/10.1007/BF00410599; carbonate varves, glacio-lacustrine varves, Lake Zurich, Züricher See, Greifensee, Lake Greifen, Switzerland, Europe.

Hubeny JB, King JW, Cantwell M (2009) Anthropogenic influences on estuarine sedimentation and ecology: examples from the varved sediments of the Pettaquamscutt River Estuary, Rhode Island. *Journal of Paleolimnology* **41** (2), 297-314. http://dx.doi.org/10.1007/s10933-008-9226-2; anthropogenic influence, 17th century European land clearance, 1950s increased residential development in the watershed, cultural eutrophication apparent in both stable nitrogen isotope values as well as in productivity proxies.

Hubeny JB, King JW, Reddin M (2011) Northeast US precipitation variability and North American climate teleconnections interpreted from late Holocene varved sediments. *Proceedings of the National Academy of Sciences of the United States of America (PNAS)* **108** (44), 17895-17900. http://dx.doi.org/10.1073/pnas.1019301108; two varved marine sediment records spanning the last millennium from Rhode Island and New York, North America, teleconnection patterns.

Hughen K (1996) The potential for palaeoclimate records from varved Arctic lake sediments: Baffin Island, Eastern Canadian Arctic. In: (Kemp AES, ed.) *Palaeoclimatology and Palaeoceanography from Laminated Sediments*. *Geological Society Special Publication* **116**, London, 57-72. http://dx.doi.org/10.1144/GSL.SP.1996.116.01.07; tidewater lakes, Canada, Arctic climatic change, freeze-core, Upper Soper Lake, Ogac Lake, Winton Bay Lake, varve counts in both Ogac and Winton Bay Lakes.

Hughen KA (2014) Marine varves. In: (Rink WJ, Thompson J., Eds.) *Encyclopedia of Scientific Dating Methods*, 1-8, Springer, Netherlands. http://link.springer.com/referenceworkentry/10.1007/978-94-007-6326-5_162-1; brief review of history, formation, types of marine varves, dating, and applications.

Hughen KA, Overpeck JT, Anderson RF (2000) Recent warming in a 500-year palaeotemperature record from varved sediments, Upper Soper Lake, Baffin Island, Canada. *The Holocene* **10** (1), 9-19. http://dx.doi.org/10.1191/095968300676746202; 500-year record of temperature change in the Arctic, radiometric dating using lead-210 and plutonium, construction of a palaeotemperature record, global warming, climate change.

Hughen KA, Overpeck JT, Anderson RF, Williams KM (1996) The potential for palaeoclimate records from varved Arctic lake sediments: Baffin Island, Eastern Canadian Arctic. *Geological Society, London, Special Publications* **116**, 57-71. http://dx.doi.org/10.1144/GSL.SP.1996.116.01.07; tidewater lakes, Canada, Arctic climatic change, freeze-core, Upper Soper Lake, Ogac Lake, Winton Bay Lake.

Hughen KA, Overpeck JT, Lehman SJ, Kashgarian M, Southon J, Peterson LC, Alley R, Sigman DM (1998) Deglacial changes in ocean circulation from an extended radiocarbon calibration. *Nature* **391**, 65-68. *Note: copy and paste the following URL directly into your browser; clicking the link may not work:* http://dx.doi.org/10.1038/34150; effort to extend ^{14}C timescale, Cariaco Basin marine varved sediments, Caribbean Sea.

Hughen KA, Overpeck JT, Peterson LC, Anderson RF (1996) The nature of varved sedimentation in the Cariaco Basin, Venezuela, and its palaeoclimatic significance. In: (Kemp AES, ed.) *Palaeoclimatology and Palaeoceanography from Laminated Sediments*. *Geological Society Special Publication* **116**, London, 171-183. http://dx.doi.org/10.1144/GSL.SP.1996.116.01.15; 12 600 radiocarbon-year varve record from the anoxic Cariaco Basin, Brazil, marine sediment, Intertropical Convergence Zone (ITCZ), tropical North Atlantic, regional upwelling, runoff from northern South America, X-ray images, thin section, varve thickness, Younger Dryas.

Hughen KA, Overpeck JT, Peterson LC, Trumbore S (1996) Rapid climate changes in the tropical Atlantic region during the last deglaciation. *Nature* **380**, 51-54. http://dx.doi.org/10.1038/380051a0; Cariaco Basin, Venezuela, marine varves, Younger Dryas synchronous oscillations with with climate changes at high latitudes.

Hughen K, Southon J, Lehman S, Bertrand C, Turnbull J (2006) Marine-derived ^{14}C calibration and activity record for the past 50,000 years updated from the Cariaco Basin. *Quaternary Science Reviews* **25**

(23-24), 3216-3227. http://dx.doi.org/10.1016/j.quascirev.2006.03.014; Cariaco Basin, Venezuela, South America, tropical Atlantic Ocean, expanded ^{14}C varve chronology is tied to ^{230}Th-dated Hulu Cave speleothem records, from 45 to 15 ka Δ14C remains anomalously high, indicating that the distribution of radiocarbon among ocean reservoirs was different.

Hughen KA, Southon JR, Lehman SJ, Overpeck JT (2000) Synchronous radiocarbon and climate shifts during the last deglaciation. *Science* **290** (5498), 1951-1954. http://dx.doi.org/10.1126/science.290.5498.1951; Cariaco Basin, Venezuela, South America, tropical Atlantic Ocean, marine varve chronology for calibration of the ^{14}C time scale across deglaciation (15,000 to 10,000 years ago), Younger Dryas, radiocarbon, beryllium-10, abrupt shifts in deep ocean ventilation.

Hughen KA, Zolitschka B (2007) Varved marine sediments. In: (Elias SA, ed.) *Encyclopedia of Quaternary Science*. Elsevier; Amsterdam, 3114-3123. http://dx.doi.org/10.1016/B0-44-452747-8/00064-8; overview on annually laminated sediments, history of marine varves, classification and micromorphology, independent dating, geochronology, paleoclimatology, paleoseismology, archaeology, formation, preservation, varve counting, description of the most common types of varves, methods of analysis, chronology construction, environmental application.

Hughes GB, Giegengack R, Kritikos HN (2003) Modern spectral climate patterns in rhythmically deposited argillites of the Gowganda Formation (Early Proterozoic), southern Ontario, Canada. *Earth and Planetary Science Letters* **207** (1-4), 13-22. http://dx.doi.org/10.1016/S0012-821X(02)01155-X; drop stones and layered sedimentary couplets suggest formation in a glaciolacustrine environment, spectral analysis, frequency spectrum of thickness measurements, Early Proterozoic climatic variability if laminations are varves, climate theory for Early Proterozoic.

Huguet C, Schimmelmann A, Thunell, Lourens LJ, Sinninghe Damsté JS, Schouten S (2007) A study of the TEX_{86} paleothermometer in the water column and sediments of the Santa Barbara Basin, California. *Paleoceanography* **22** (3), PA3203. http://dx.doi.org/10.1029/2006PA001310; abstract: http://www.agu.org/pubs/crossref/2007/2006PA001310.shtml; North America, marine sediment, Pacific Ocean, California Current, TEX_{86} paleothermometer, varve thickness, Crenarchaeota, sea surface temperature. *Note that subsequent radiocarbon compound-specific studies proved that a significant fraction of biomarkers derives from older, re-suspended sediments. Mixing of old with new biomarkers influences the biochemical signal in accumulating varves (e.g., Mollenhauer and Eglinton, 2007).*

Hülsemann J, Emery KO (1961) Stratification in recent sediments of Santa Barbara Basin as controlled by organisms and water character. *Journal of Geology* **69** (3), 279-290. http://www.jstor.org/stable/30065813; marine sediment, California, piston cores, alternations between bioturbation and lamination, preservation of varves, turbidite, bedding types, dark laminae deposited in winter during stronger rainfall and stream runoff, Pacific.

Huntley B, Watts WA, Allen JRM, Zolitschka B (1999) Palaeoclimate, chronology and vegetation history of the Weichselian Lateglacial: comparative analysis of data from three cores at Lago Grande di Monticchio, southern Italy. *Quaternary Science Reviews* **18** (7), 945-960. http://dx.doi.org/10.1016/S0277-3791(99)00007-4; pollen, Lateglacial, plant macrofossils, palaeovegetation.

Huss-Danell K, Uliassi D, Renberg I (1997) River and lake sediments as sources of infective *Frankia (Alnus)*. *Plant and Soil* **197** (1), 35-39. http://www.ingentaconnect.com/content/klu/plso/1997/00000197/00000001/00148364; Lake Kassjön, Sweden, lake sediment, *Alnus*, bioassay, inoculum.

Huttunen P (1980) Early land use, especially the slash-and-burn cultivation in the commune of Lammi, southern Finland, interpreted mainly using pollen and charcoal analyses. *Acta Botanica Fennica* **113**, 1-45. http://www.worldcat.org/title/acta-botanica-fennica/oclc/1460855; pollen, charcoal, lake sediment, land-use, Lake Lovojärvi, Taka-killo.

Huttunen P, Tolonen K (1977) Human influence in the history of Lake Lovojärvi, S. Finland. *Finskt Museum* **1975**, 68-105. http://www.muinaismuistoyhdistys.fi/index.html; pollen, animal microfossils, land-use, Lammi.

Hynynen J, Palomäki A, Meriläinen JJ, Witick A, Mäntykoski K (2004) Pollution history and recovery of a boreal lake exposed to a heavy bleached pulping effluent load. *Journal of Paleolimnology* **32** (4), 351-374. http://dx.doi.org/10.1007/s10933-004-0266-y; pulp mill discharges on Lake Lievestuoreenjärvi, five developmental ecological phases, eutrophication and pollution, deposition of laminations considered as varves, chironomids, diatom, Finland.

Hyttinen O, Salonen VP, Kaakinen A (2011) Depositional evidence of water-level changes of the Baltic Ice Lake in southern Finland during the Younger Dryas/Holocene transition. *GFF* **133** (1-2), 77-88. http://dx.doi.org/10.1080/11035897.2011.562303; Jokela, Koria, Salpausselkä end moraine, Baltic Ice Lake varved sediments, freshwater and brackish water varves, Finnish clay-varve chronology, Baltic Sea basin, incursion of brackish water.

Ikehara K, Ohkushi K, Shibahara A, Hoshiba M (2006) Change of bottom water conditions at intermediate depths of the Oyashio region, NW Pacific over the past 20,000 yrs. *Global and Planetary Change* **53** (1-2), 78-91. http://dx.doi.org/10.1016/j.gloplacha.2006.01.011; marine sediment cores from south of eastern and central Hokkaido, Japan, occasional past laminations or varves.

Irmler R (2003) Seesedimente als natürliches Archiv zur Erstellung eines Murkalenders am Beispiel des Pragser Wildsees (Norditalien). Dissertation, Friedrich-Schiller-Universität Jena, Germany, 96 p. (in German). http://www.db-thueringen.de/servlets/DerivateServlet/Derivate-2418/Irmler.pdf; varve record in lake that was

naturally produced by a landslide, 500 to 1800 BP, flood layers and turbidites, no recognizable correlation with other paleoclimate records, Italy.

Irmler R, Daut G, Mäusbacher R (2006) A debris flow calendar derived from sediments of lake Lago di Braies (N. Italy). *Geomorphology* **77** (1-2), 69-78. http://dx.doi.org/10.1016/j.geomorph.2006.01.013; high resolution 2250 year record of debris flow events in varve record, neither a debris flow magnitude–frequency relationship nor a strong reaction of debris flow activity to past climate changes was identifiable.

Ising J (2001) Late Weichselian pollen stratigraphy, clay varve chronology and palaeomagnetic secular variations in Lake Bolmen, Småland, south Sweden. *Boreas* **30** (3), 189-204. http://dx.doi.org/10.1111/j.1502-3885.2001.tb01222.x; pollen, glacial varve chronology, paleomagnetic measurements, Late Weichselian, lake sediment, southwestern Smaland, Sweden, 930 varves from 14 400 to 11 300 calendar years BP, varve thickness, Older Dryas, transition to the Holocene, deglaciation, paleomagnetic stratigraphic correlation.

Isla FI, Espinosa M (2008) Ciclicidad de los depósitos glacilacustres del Cerro Rigal, Epuyén, NO de Chubut. (Cyclicity of glaciolacustrine deposits from Cerro Rigal, Epuyén, NW Chubut, Argentina.) *Revista de la Asociación Geológica Argentina* **63** (1), 102-109 (in Spanish with English abstract). http://www.scielo.org.ar/pdf/raga/v63n1/v63n1a11.pdf; glacial lake, cyclicity, Patagonia, Andean, glacial varve, Pleistocene varbe sequence, varve thickness, grain size, ENSO effect.

Itkonen A, Salonen VP (1994) The response of sedimentation in three varved lacustrine sequences to air temperature, precipitation and human impact. *Journal of Paleolimnology* **11** (3), 323-332. http://dx.doi.org/10.1007/BF00677992; human activity, Finland, high-resolution sediment sequences of Lake Päijänne, Lake Pääjärvi, Lake Pyhäjärvi, varve records, accumulation rates, organic carbon, biogenic silica, correlation between instrumental records of temperature and precipitation and varve thickness. Warm winter months indicating a short ice-cover period have the strongest control on varve thickness.

Jaakkola T, Tolonen K, Huttunen P, Leskinen S (1983) The use of fallout ^{137}Cs and ^{239,240}Pu for dating of lake sediments. *Hydrobiologia* **103** (1), 15-19. http://dx.doi.org/10.1007/BF00028422; varved sediments in Finnish Lake Laukunlampi, Lake Lovojärvi, Lake Pääjärvi, maxima in certain years, migration of ^{239,240}Pu and ^{137}Cs, agreement between radiometric dates and varve counts for the past 25 years, Finland.

Jackson MJ (1985) Mid-proterozoic dolomitic varves and microcycles from the McArthur basin, Northern Australia. *Sedimentary Geology* **44** (3-4), 301-326. http://dx.doi.org/10.1016/0037-0738(85)90017-X; middle Proterozoic Wollogorang Formation, dolomitic black shale facies, distinctive laminations and microcycles of alternating organic-rich mudstone and organic-poor dolostone, thinnest laminations interpreted as chemical varves; varve thickness, 7- to 11-year and - 300-year periods, possibly sunspot-related processes.

Järnefors B (1956) Isrecessionen inom Uppsalaområdet. *Geologiska Föreningen i Stockholm Förhandlingar* **78** (2), 301-315. http://dx.doi.org/10.1080/11035895609452335; drilling through glacial varved clay to constrain ice recession, varve thickness correlation, Sweden.

Järnefors B (1963) Lervarvskronologien och isrecessionen i östra Mellansverige. *Sveriges geologiska undersökning*, Ser. C; Avhandlingar och uppsatser, no. **594**, 1-67. *Årsbok* **57** (1963) no. 5, Stockholm, Sweden. https://openlibrary.org/works/OL5571638W/Lervarvskronologien_och_isrecessionen_i_o%CC%88stra_Mellansverige Additional information needed

Jenny JP, Arnaud F, Alric B, Dorioz JM, Sabatier P, Meybeck M, Perga ME (2014) Inherited hypoxia : A new challenge for reoligotrophicated lakes under global warming. *Global Biogeochemical Cycles* **28** (12), 1413-1423. http://dx.doi.org/doi:10.1002/2014GB004932; lacustrine varves in 3 French perialpine lakes, geochemistry, quantitative reconstruction of hypoxia and flood regime at annual resolution (1880-2010 AD), factors driving hypoxia are assessed with generalized additive models over the Holocene and the last 130 years.

Jenny JP, Arnaud F, Dorioz JM, Covex CG, Frossard V, Sabatier P, Millet L, Reyss JL, Tachikawa K, Bard E, Pignol C, Soufi F, Romeyer O, Perga ME (2013) A spatiotemporal investigation of varved sediments highlights the dynamics of hypolimnetic hypoxia in a large hard-water lake over the last 150 years. *Limnology and Oceanography* **58** (4), 1395-1408. http://dx.doi.org/10.4319/lo.2013.58.4.1395; 40 cores in subalpine Lake Bourget in French Alps, annual-to-decadal oscillations of hypoxia, hypoxia since AD 1933 due to eutrophication.

Jilbert T, de Lange G, Reichart GJ (2008) Fluid displacive resin embedding of laminated sediments: preserving trace metals for high-resolution paleoclimate investigations. *Limnology & Oceanography Methods* **6**, 16-22. http://dx.doi.org/10.4319/lom.2008.6.16; water, acetone and Spurr epoxy embedding of anoxic sediment under reduced oxygenation to retain redox sensitive metals.

Johnson KM, Grimm KA (2001) Opal and organic carbon in laminated diatomaceous sediments: Saanich Inlet, Santa Barbara Basin and the Miocene Monterey Formation. *Marine Geology* **174** (1-4), 159-175. http://dx.doi.org/10.1016/S0025-3227(00)00148-1; multi-tracer geochemical approach, total organic carbon, opal, C:N ratios, δ^{13}C of organic matter, kerogen type, major and minor element abundances, Saanich Inlet and SBB are not appropriate modern analogs for the Monterey Formation, marine sediment.

Johnson MD, Addis KL, Ferber LR, Hemstad CB, Meyer GN, Komai LT (1999) Glacial Lake Lind, Wisconsin and Minnesota. *Geological Society of America Bulletin* **111** (9), 1371-1386. http://dx.doi.org/10.1130/0016-7606(1999)111<1371:GLLWAM>2.3.CO;2; Wisconsinan St. Croix River valley, Wisconsinan glaciation, red varved silt and clay not part of glacial Lake Grantsburg (as suggested by others), varve correlations indicate that the Superior lobe retreated about 200 m/yr, uniform winter-clay thickness suggests thermal stratification of glacial Lake Lind.

Johnson MD, Hemstad C (1998) Glacial Lake Grantsburg: a short-lived lake recording the advance and retreat of the Grantsburg sublobe. In: (Patterson CJ, Wright HE Jr., eds.) *Contributions to Quaternary Studies in Minnesota: Minnesota Geological Survey Report of Investigation* **49**, 49-60. Available by Google books: http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CCsQFjAA&url=http%3A%2F%2Fconservancy.umn.edu%2Fbitstream%2F60828%2F1%2Fmgs-269.pdf&ei=4vB8U5rnDs6ZqAax5IDIDQ&usg=AFQjCNGndCmNZCEnLA8cFEi8TRX3-pclhg&sig2=fqljU9BXBJaSh3jul4AGrw&bvm=bv.67229260,d.b2k; Glacial Lake Grantsburg formed as the Grantsburg sublobe advanced in eastcentral Minnesota and dammed the ancestral St. Croix River, red varved clay of Glacial Lake Lind, varve sedimentology indicates ice-advance rate of 3-7 km/yr, varves indicate that Glacial Lake Grantsburg lasted about 100 years.

Johnson MD, Kylander ME, Casserstedt L, Wiborgh H, Björck S (2013) Varved glaciomarine clay in central Sweden before and after the Baltic Ice Lake drainage: a further clue to the drainage events at Mt Billingen. *GFF, special issue "Varve Genesis, Chronology and Paleoclimate"* **135** (3-4), 293-307. http://dx.doi.org/10.1080/11035897.2013.819032; Glaciomarine clay west of Mt Billingen, central Sweden, contains distinct varve units, separated by a sand layer deposited in the North Sea during the catastrophic drainage of the Baltic Ice Lake (BIL), stratigraphy suggests that the BIL drainage lasted < 1 year.

Johnson MD, Ståhl Y (2008) Sedimentology, stratigraphy, age, and paleoecology of marine varved clay in the Middle Swedish end-moraine zone – a final report to the Swedish Geological Survey (SGU). Earth Sciences Centre Göteborg University C84 2008, 54 pp. http://www.sgu.se/dokument/fou_extern/Johnson.pdf; Billingen, ice-margin positions during Younger Dryas, rhythmically bedded sediment grading from gray up to red, varved clay deposited in a harsh, arctic marine environment.

Johnson MD, Ståhl Y (2010) Stratigraphy, sedimentology, age and palaeoenvironment of marine varved clay in the Middle Swedish end-moraine zone. *Boreas* **39** (2), 199-214. http://dx.doi.org/10.1111/j.1502-3885.2009.00124.x; deglaciation, middle Swedish end-moraine zone, varved inter-moraine flats, foraminifera, ostracods, arctic marine sediment, Younger Dryas.

Johnson MD, Ståhl Y, Larsson O, Seger S (2010) New exposures of Baltic Ice Lake drainage sediments, Götene, Sweden. *GFF* **132** (1), 1-12. http://dx.doi.org/10.1080/11035891003597067; construction of highway E20 near Götene revealed sand overlain and underlain by varved clay, at Pellagården varved marine clay, varves represent deglacial marine sediment deposited in 40–50 m deep water.

Johnson TC, Barry SL, Chan Y, Wilkinson P (2001) Decadal record of climate variability spanning the past 700 yr in the Southern Tropics of East Africa. *Geology* **29** (1), 83-86. http://dx.doi.org/10.1130/0091-7613(2001)029<0083:DROCVS>2.0.CO;2; biogenic silica profiles, lake sediments from northern Lake Malawi, Nyasa, the past 700 yr, primary productivity, diatom productivity, Little Ice Age.

Johnston WA (1922) Sedimentation in Lake Louise, Alberta, Canada. *American Journal of Science* **4** (23), 376-386. Available as Google book: http://books.google.com/books?id=RjcdX34OnBUC&pg=PA376&lpg=PA376&dq=Sedimentation+in+Lake+Louise,+Alberta,+Canada&source=bl&ots=cAlF4-ZUfE&sig=kahzqrlurFRktraSjucJNP_cBDA&hl=en&sa=X&ei=C3zqU9K0JsyayAT6t4CYAw&ved=0CB8Q6AEwAA#v=onepage&q=Sedimentation%20in%20Lake%20Louise%2C%20Alberta%2C%20Canada&f=false; Seasonal banding of glacial clays.

Jokinen S (1992) Human influence in the vicinity of Lake Lauttolampi (Sotkamo) as revealed by pollen and diatoms in the laminated sediment. In: (Saarnisto M, Kahra A, eds.) *Proceedings of the Workshop at Lammi Biological Station 4-6 June, 1990. Geological Survey of Finland, Special Paper* **14**, 113. http://arkisto.gtk.fi/sp/sp14/sp_014.pdf; Finland, varved lake sediment, human influence, Lake Lauttolampi, Sotkamo, pollen, diatoms.

Jokinen SA, Virtasalo JJ, Kotilainen AT, Saarinen T (2015) Varve microfabric record of seasonal sedimentation and bottom flow-modulated mud deposition in the coastal northern Baltic Sea. *Marine Geology* **366**, 79-96. http://dx.doi.org/10.1016/j.margeo.2015.05.003; eutrophication-induced hypoxia, microfabric, coastal Gulf of Finland and Archipelago Sea, X-radiography, SEM of samples in epoxy resin. diatom-rich biogenic laminae, lateral transport and deposition from near-bottom flows, ^{137}Cs dating.

Jones MD, Leng MJ, Roberts N, Türkeş M, Moyeed R (2005) A coupled calibration and modelling approach to the understanding of dry-land lake oxygen isotope records. *Journal of Paleolimnology* **34** (3), 391-411. http://dx.doi.org/10.1007/s10933-005-6743-0; Nar Gölü, Turkey, varved lake sediment, oxygen stable isotopes, validation with instrumental records, calibration.

Jones MD, Roberts CN, Leng MJ, Türkeş M (2006) A high-resolution late Holocene lake isotope record from Turkey and links to North Atlantic and monsoon climate. *Geology* **34** (5), 361-364. http://dx.doi.org/10.1130/G22407.1; proxy record of precipitation and evaporation, the past 1700 yr, oxygen stable isotopes, central Turkey, Indian monsoon, Eastern Mediterranean, lake sediments, North Sea–Caspian pattern.

Jones R, Chambers FM, Benson-Evans K (1991) Heavy metals (Cu and Zn) in recent sediments of Llangorse Lake, Wales: non-ferrous smelting, Napoleon and the price of wheat — a palaeoecological study. *Hydrobiologia* **214** (1), 149-154. http://dx.doi.org/10.1007/BF00050944; Cu and Zn contamination began during the 18th century via aerial transport from smelters 80 km upwind during the Industrial Revolution.

Jonsson PO (1992) Large-scale changes of contaminants in Baltic Sea sediments during the twentieth century. Doctoral thesis at Uppsala University. *Acta Universitatis Upsaliensis*, *Comprehensive Summaries of Uppsala Dissertations from the Faculty of Science* **407**. Uppsala. 52 pp, ISSN 0282-7468; https://www.researchgate.net/publication/29723696_Large-scale_changes_of_contaminants_in_Baltic_Sea_sediments_during_the_twentieth_century; laminated sediments in the Baltic proper, 25 % naturally laminated, eutrophication.

Jonsson P, Eckhéll J, Larsson P (2000) PCB and DDT in laminated sediments from offshore and archipelago areas of the NW Baltic Sea. *Ambio* **24**, 268–276. http://dx.doi.org/10.2307/4315037; surficial varved marine sediments contain anthropogenic toxins.

Juillet A, Labeyrie L, Schrader H (1983) Oxygen isotope composition of diatom and silicoflagellate assemblage changes in the Gulf of California: A 700 year upwelling study. In: (Thiede J, Suess E, eds.) *Coastal Upwelling: Its Sedimentary Record*. New York, Plenum Press, 277-294. Oxygen isotopes from diatoms, silicoflagellate assemblages, history of upwelling, marine sediment, Pacific. Additional information needed: Electronic link?

Juillet-Leclerc A, Schrader H (1987) Variations of upwelling intensity recorded in varved sediment from the Gulf of California during the past 3,000 years. *Nature* **329**, 146-149. http://dx.doi.org/10.1038/329146a0; oxygen isotopes, diatom silica, sea surface temperature, changes in trade-wind intensity, Pacific Ocean, Mexico, Guaymas Basin, North America, marine sediment.

Junge FW, Böttger T (1994) Isotope geochemical studies on carbonates of Quaternary glacio-lacustrine lake sediments as indicators of paleoenvironment. *Isotopenpraxis Isotopes in Environmental and Health Studies* **30** (1), 9-21. http://dx.doi.org/10.1080/00211919408046708; Selected silty “summer” and argillaceous “winter” layers of profiles of the rhythmically bedded glacio-lacustrine ice-marginal lake sediment of the Dehlitz-Leipzig varved clay (Leipziger Tieflandsbucht, Central Germany), osygen and carbon isotope compositions of carbonate and organic fraction.

Junge FW, Böttger T (1996) Komplexe Untersuchungen zur quartären Eisstausee-Entwicklung in Mitteldeutschland. *Isotopes in Environmental and Health Studies* **32** (4), 363-386. http://dx.doi.org/10.1080/10256019608234029; grain size, micromorphology, varve correlation, carbon and oxygen stable isotopes, ice-dammed lake sediments of the Dehlitz-Leipzig, varved clay, Elsterian Scandinavian inland-ice sheet.

Junge FW (1998) Die Bändertone Mitteldeutschlands und angrenzender Gebiete: ein regionaler Beitrag zur quartären Stausee-Entwicklung im Randbereich des elsterglazialen skandinavischen Inlandeises. Naturkundliches Museum Maritianum. *Altenburger naturwissenschaftliche Forschungen* **9**, 210 pp. Habilitation Dissertation, Jena University (in German). Reviewed in the *Journal of Quaternary Science* (2000) **15** (5), 563-564; http://dx.doi.org/10.1002/1099-1417(200007)15:5<563::AID-JQS520>3.0.CO;2-V laminated lake clays of the Leipzig region, varve counting constrains ice dynamics, comparison of varve record to the varved sediments of other regions in Germany.

Kaal J, Martínez Cortizas A, Rydberg J, Bigler C (2015) Seasonal changes in molecular composition of organic matter in lake sediment trap material from Nylandssjön, Sweden. *Organic Geochemistry* **83-84**, 253-262. http://dx.doi.org/10.1016/j.orggeochem.2015.04.005; Pyrolysis GC–MS of sediment trap organic matter (OM) from varved lake, summer and spring samples mainly algal and arthropod origin, winter traps enriched in degraded material.

Kalugin I, Darin A, Rogozin D, Tretyakov G (2013) Seasonal and centennial cycles of carbonate mineralisation during the past 2500 years from varved sediment in Lake Shira, South Siberia. *Quaternary International* **290-291**, 245-252. http://dx.doi.org/10.1016/j.quaint.2012.09.016; carbonate biochemical mineralization in Shira Lake shows seasonal and centennial pulses, scanning X-ray fluorescence for sub-millimeter microstratigraphic study, geochemical oscillations of microelement content (Rb, Ti, Ca, Sr, Br, XRD), hydrometeorological time series over the last 2500 years.

Kalugin I, Darin A, Tretyakov G, Rogozin D (2012) Seasonal and centennial Sr-anomalies in carbonate sediments as an environmental proxy for Lake Shira (South Siberia) during the last 2500 years. In: (Zolitschka B, ed.) *3rd Workshop of the PAGES Varves Working Group, Manderscheid, Germany, March 20-25, 2012, Program and Abstracts. Terra Nostra, Schriften der GeoUnion Alfred-Wegener-Stiftung* **2012/1**, 43-47. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/VWG_AbstractVolume_Final_2012.pdf; 2450 varves, cesium-137, lead-210, micro-XRF via synchrotron radiation (scan XRF SR).

Kalugin I, Selegei V, Goldberg E, Seret G (2005) Rhythmic fine-grained sediment deposition in Lake Teletskoye, Altai, Siberia, in relation to regional climate change. *Quaternary International* **136** (1),

5-13. http://dx.doi.org/10.1016/j.quaint.2004.11.003; 800-year varve sequence, lake sediment, cesium-137, radiocarbon, comparison with meteorological records.

Kamenik C, Baumann E, de Jong R, Grosjean M (2010) Effects of cold-season climate changes versus anthropogenic nutrient inputs on chrysophyte stomatocyst assemblages (AD 1940 - 2004) in annually laminated sediments of high-Alpine Lake Silvaplana (Switzerland). *Nova Hedwigia*, Beiheft **136**, 103-115. *ISBN 978-3-443-51058-9*. Chrysophyte stomatocysts, varved lake sediment, cold season climate, anthropogenic nutrient input, multivariate statistics. Additional information needed: Electronic link?

Kämpf L, Mueller P, Höllerer H, Plessen B, Naumann R, Thoss H, Güntner A, Merz B, Brauer A (2015) Hydrological and sedimentological processes of flood layer formation in Lake Mondsee. *The Depositional Record* **1** (1), 18-37. http://dx.doi.org/10.1002/dep2.2; 3-year hydro-sedimentary monitoring, flood layers in meso-scale peri-Alpine lake with varved sediment in Upper Austria.

Kanamaru K (2011) Annual to seasonal resolution analysis of late Pleistocene and Holocene sediment in Saanich Inlet, British Columbia, Canada. PhD Thesis, University of Massachusetts, Amherst. *Electronic Doctoral Dissertations for UMass Amherst*, Paper AAI3445165. http://scholarworks.umass.edu/dissertations/AAI3445165/; sediment provenance in Saanich Inlet with seasonal to sub-seasonal resolution, paleoclimatic variations between 10700 and 2150 14C calibrated (cal) a BP (= cal yr BP).

Kanamaru K, Francus P (2012) Annual to seasonal resolution analysis of Late Pleistocene and Holocene sediment in Saanich Inlet, British Columbia, Canada. In: (Besonen MR, ed.) *Second Workshop of the PAGES Varves Working Group*, Program and Abstracts, 17-19 March 2011, Corpus Christi, Texas, USA, 45-48. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2011_VWG_2nd_wkshp.pdf; marine sediment, late Pleistocene to early Holocene, investigation of varved character.

Kanamaru K, Francus P, François R, Besonen M, Laj C (2013) New insight into Saanich Inlet varved sediments (British Columbia, Canada) from micro-scale analysis of sedimentary facies and micro-XRF core scanning analyses. *GFF, special issue "Varve Genesis, Chronology and Paleoclimate"* **135** (3-4), 316-339. http://dx.doi.org/10.1080/11035897.2013.833430; late Pleistocene and Holocene partially varved marine sediments in Saanich Inlet, British Columbia, Itrax micro-X-ray fluorescence core scanning with a resolution of 100 µm, image analysis of backscattered scanning electron images, energy dispersive spectrometry using a scanning electron microscope, identification of 9 sedimentary facies.

Kato M, Fukusawa H, Yasuda Y (2003) Varved lacustrine sediments of Lake Tougou-ike, Western Japan, with reference to Holocene sea-level changes in Japan. *Quaternary International* **105** (1), 33-37. http://dx.doi.org/10.1016/S1040-6182(02)00148-9; 18 m non-glacial biochemical varves, diatom productivity, varve counting, time resolution on the order of individual years, authigenic iron mineral content of the sediment as a proxy for relative sea-level.

Kato M, Tanimura Y, Fukusawa H (2004) Survival strategy of diatom species living on now-depositing non-glacial varves. *Quaternary International* **123-125**, 21-26. http://dx.doi.org/10.1016/j.quaint.2004.02.004; freshwater diatom *Aulacoseira subarctica* occurred dominantly in varved sediment from Lake Suigetsu, central Japan, survival during environmental changes, seawater invasion, and strengthened stratification since 17th century, resting strategy.

Katsuta N, Takano M, Kawakami S, Togami S, Fukusawa H, Kumazawa M, Yasuda Y (2007) Advanced micro-XRF method to separate sedimentary rhythms and event layers in sediments: Its application to lacustrine sediment from Lake Suigetsu, Japan. *Journal of Paleolimnology* **37** (2), 259-271. http://dx.doi.org/10.1007/s10933-006-9028-3; analytical method for distinguishing regular varves from event layers (turbidite, flood layer, tephra) via scanning X-ray analytical microscopy (SXAM), profiles of seven elements Al, Si, K, Ca, Ti, Mn, and Fe, volcanic ash layers, earthquakes, recurrence interval of turbidites, tephrochronology, Sompi event analysis.

Katz A, Kolodny N (1989) Hypersaline brine diagenesis and evolution in the Dead Sea-Lake Lisan system (Israel). *Geochimica et Cosmochimica Acta* **53** (1), 59-67. http://dx.doi.org/10.1016/0016-7037(89)90272-X; Pleistocene lacustrine varved sediments; see López-Merino et al. (2016) who advise caution about the presence of varves in the Dead Sea.

Kaufman CA, Lamoureux SF, Kaufman DS (2011) Long-term river discharge and multidecadal climate variability inferred from varved sediments, southwest Alaska. *Quaternary Research* **76** (1), 1-9. http://dx.doi.org/10.1016/j.yqres.2011.04.005; sedimentological analyses of 289 varves (AD 1718–2006) of Shadow Bay, southwest Alaska, hydroclimate variability, grain size, varve thickness, increased varve thickness and total annual discharge associated with warm Pacific Decadal Oscillation PDO and strengthened Aleutian Low.

Kawakami I, Matsuo M, Kato M, Fukusawa H (2004) Chronology and sedimentation process of varved lacustrine sediment in Lake Fukami, central Japan. *Quaternary International* **123-125**, 27-34. http://dx.doi.org/10.1016/j.quaint.2004.02.005; 196 varves in the upper 2 m in monomictic lake in southern part of Nagano Prefecture, some layers indicate clastic particles supplied by floods and earthquakes, correlation between meteorological records and total carbon flux, varve chronology, pyrite and siderite, X-ray powder diffraction analysis.

Kelts K, Niemitz J (1982) Preliminary sedimentology of Late Quaternary diatomaceous muds from Deep Sea Drilling Project site 480, Guaymas Basin Slope, Gulf of California. In: (Curry JR, Moore DG, eds.) *Initial Reports of the Deep Sea Drilling Project* **64**, part 2, Washington, U.S. Government Printing Office, 1191-1210. http://dx.doi.org/10.2973/dsdp.proc.64.159.1982; description of marine sediments of DSDP sites 479 and 480, sedimentological background, planktonic diatoms, silicoflagellates, radiolarians, benthic and planktonic foraminifers, terrigenous olive brown silty clay, thin turbidites, phosphatic concretions, fish debris, ash layer, diagenetic dolomite, laminated sections correspond to upwelling.

Kemp AES (1990) Sedimentary fabrics and variation in lamination style in Peru continental margin upwelling sediments. In: (Suess E, von Huene R, et al., eds.) *Proceedings of the Ocean Drilling Program (ODP), Scientific Results* **112**, College Station, Texas, 43-58. http://dx.doi.org/10.2973/odp.proc.sr.112.135.1990; backscattered electron imagery of polished, resin-impregnated marine sediment, complex sediment microfacies, planktonic fecal pellets, terrigenous sediment aggregates, variation in composition, spacing, thickness of laminae, diatom bloom events, varve-type laminations in sequences older than ~100 k.y.

Kemp AES (1991) Silurian pelagic and hemipelagic sedimentation and palaeoceanography. In: (Bassett MG, Lane PD, Edwards D, eds.) *The Murchison Symposium. Special Paper in Palaeontology* **44**, 261-300. http://www.palass.org/beta/eps/shop/product/pid-77/; distribution and sedimentology of mid Silurian pelagic and hemipelagic marine facies of the Caledonian-Appalachian belt, Llandovery mudstones alternating with black shales, periodic organic-rich deposition, Wenlock deposition of irregularly laminated muddy siltstones, commonly comprising discontinuous silt/clay couplets, as background (hemipelagic) sediments throughout Iapetus basins, microfabrics, anoxic basinal environments.

Kemp AES (1995) Laminated sediments from coastal and open ocean upwelling systems: what variability do they record? In: (Summerhayes CP, Emeis KC, Angel MV, Smith RL, Zeitzschel B, eds.) *Upwelling in the Ocean: Modern Processes and Ancient Records. Dahlem Workshop Report* **ES18**, John Wiley & Sons, Chichester, 239-257. http://www.amazon.com/Upwelling-Ocean-Processes-Ancient-Records/dp/0471960411; laminated marine sediments below coastal and open ocean upwelling, western North American upwelling zones, El Niño, oscillations, cycles in fish populations, equatorial ocean laminated sediments contain a record that is quasi-seasonal but which relates to the activity of equatorial instability waves.

Kemp AES (ed.) (1996) *Palaeoclimatology and Palaeoceanography from Laminated Sediments. Geological Society Special Publication* **116**, London, 258 pp. http://sp.lyellcollection.org/content/116/1/local/front-matter.pdf; http://sp.lyellcollection.org/content/116/1; ISBN 1-897799-67-5; many chapters, emphasis on marine sediments.

Kemp AES (1996) Laminated sediments as palaeo-indicators. In: (Kemp AES, ed.) *Palaeoclimatology and Palaeoceanography from Laminated Sediments. Geological Society Special Publication* **116**, London, 258 pp., vii-xii. http://sp.lyellcollection.org/content/116/1/local/front-matter.pdf; http://dx.doi.org/10.1144/GSL.SP.1996.116.01.01; introduction to lacustrine and marine laminated sediments as paleo-indicators.

Kemp AES (2001) Marine mats. In: (Steele JH, Thorpe SA, Turekian KK, eds.) *Encyclopedia of Ocean Sciences*. San Diego, California, Academic Press, 1641-1644. http://dx.doi.org/10.1006/rwos.2001.0219; diatom mats, may mimick varves, but are not necessarily annual events.

Kemp AES (2003) Evidence for abrupt climate changes in annually laminated marine sediments. *Philosophical Transactions of the Royal Society of London A* **361** (1810), 1851-1870. http://dx.doi.org/10.1098/RSTA.2003.1247; Review of principles of varve formation in marine and lacustrine settings.

Kemp AES (2014) Seasonal laminae in marine sediments: applications and potential. In: (Zolitschka B, Pike J, von Gunten L, Kiefer T, eds.), *Annual Recorders of the Past. Past Global Changes, PAGES Magazine* **22** (1), 14-15. http://pastglobalchanges.org/products/pages-magazine/3752-22-1-annual-recorders-of-the-past; laminated marine sediments, seasonal resolution, scanning electron microscope techniques.

Kemp AES, Baldauf JG (1993) Vast Neogene laminated diatom mat deposits from the eastern equatorial Pacific Ocean. *Nature* **362**, 141-144. http://dx.doi.org/10.1038/362141a0; upwelling region, increased equatorial primary production between 15 and 4.4 million years ago, diatom *Thalassiothrix* mats, marine sediment.

Kemp AES, Baldauf JG, Pearce RB (1995) Origins and paleoceanographic significance of laminated diatom ooze from the eastern equatorial Pacific Ocean. In: (Pisias NG, Mayer LA, Janecek TR, Palmer-Julson A, van Andel TH, eds.) *Proceedings of the Ocean Drilling Program (ODP), Scientific Results* **138**. College Station, Texas, 641-645. http://dx.doi.org/10.2973/odp.proc.sr.138.134.1995; ODP Leg 138 sites and several Deep Sea Drilling Project (DSDP) Leg 85 marine sites, massive and episodic flux of mats of the diatom *Thalassiothrix longissima*, possibly "fall out" from major frontal systems generated during La Nina (anti-El Nino) events.

Kemp AES, Baldauf JG, Pearce RB (1996) Origins and palaeoceangraphic significance of laminated daitom ooze from the Eastern Equatorial Pacific Ocean. In: (Kemp AES, ed.) *Palaeoclimatology and Palaeoceanography from Laminated Sediments. Geological Society Special Publication* **116**, London, 243-252. http://dx.doi.org/10.1144/GSL.SP.1996.116.01.19; laminated diatom ooze, ODP Leg 138, DSDP Leg 85, massive and episodic flux of diatom mats, rapid mat deposition, high strength of diatom mat meshwork, marine sediment.

Kemp AES, Davies A, Pike J, Pälike H (2010) Palaeoclimatic and palaeoceanographic variability from Late Cretaceous marine varve records. In: (Ojala AEK, Kosonen E, eds.) *First Workshop of the PAGES Varves Working Group (Palmse, Estonia, April 7-9, 2010), Programme and Abstracts*, Geological Survey of Finland, Espoo, Finland, 55-56. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2010-VWG-1st-wkshp.pdf; seasonally resolved marine sediments from the Alpha Ridge, Arctic Ocean, diatom production within stratified water column, time series analysis, periodicities.

Kemp AES, Dean J, Pearce RB, Pike J (2001) Recognition and analysis of bedding and sediment fabric features. In: (Last WM, Smol JP, eds.) *Tracking Environmental Change Using Lake Sediments, Volume 2: Physical and Geochemical Methods*, Dordrecht, Kluwer Academic Publishers, 7-22. http://books.google.com/books/about/Tracking_Environmental_Change_Using_Lake.html?id=4hvacQAACAAJ; http://eprints.soton.ac.uk/12678/; physical and geochemical analytical techniques in paleolimnology, many of the techniques described can also be applied to glacial, marine, etc. environments.

Kemp AES, Grigorov I, Pearce RB, Naveira Garabato AC (2010) Migration of the Antarctic Polar Front through the mid-Pleistocene transition: evidence and climatic implications. *Quaternary Science Reviews* **29** (17-18), 1993-2009. http://dx.doi.org/10.1016/j.quascirev.2010.04.027; Southern Ocean, marine laminated diatom mat deposits, Ocean Drilling Program Sites 1091, 1093, 1094, circumpolar biogenic opal belt, early/mid Pleistocene, paleoceanographic changes in circulation and currents.

Kemp AES, Pearce RB, Grigorov I, Rance J, Lange CB, Quilty P, Salter I (2006) Production of giant marine diatoms and their export at oceanic frontal zones: Implications for Si and C flux from stratified oceans. *Global Biogeochemical Cycles* **20**, GB4S04, http://dx.doi.org/10.1029/2006GB002698; *Rhizosolenia* spp., *Thalassiothrix* spp., *Ethmodiscus rex* may become concentrated at oceanic frontal zones and subsequently form episodes of mass flux to the sediment leading to deposition of laminated marine sediment.

Kemp AES, Pearce RB, Koizumi I, Pike J, Rance SJ (1999) The role of mat-forming diatoms in the formation of Mediterranean sapropels. *Nature* **398**, 57-61. http://dx.doi.org/10.1038/18001; origins of sapropels, marine sediment, Mediterranean, late Quaternary laminated sapropel in which the annual flux cycle has been preserved, mat-forming and other colonial forms of diatoms, reconstructed fluxes of organic-carbon and opal, electron-microscopic analysis.

Kemp AES, Pearce RB, Pike J, Marshall JEA (1998) 27. Microfabric and microcompositional studies of Pliocene and Quaternary sapropels from the eastern Mediterranean. In: (Robertson AHF, Emeis KC, Richter C, Camerlenghi A, eds.) *Proceedings of the Ocean Drilling Program (ODP), Scientific Results* **Leg 160**, 349-364. http://dx.doi.org/10.2973/odp.proc.sr.160.068.1998; origins of sapropels, marine sediment, Mediterranean, mat-forming and other colonial forms of diatoms, reconstructed fluxes of organic-carbon and opal, electron-microscopic analysis of microfabric, terrigenous silty clay, organic (carbon) material, diatoms, opal is rarely present, silica dissolution, "remnant" fabric, bottom-water anoxia, models of sapropel formation involving increased nutrient input and water column stratification.

Kemp AES, Pike J, Pearce RB, Lange CB (2000) The "Fall dump" - a new perspective on the role of a "shade flora" in the annual cycle of diatom production and export flux. *Deep-Sea Research II* **47** (9-11), 2129-2154. http://dx.doi.org/10.1016/S0967-0645(00)00019-9; concept developed from the analysis of laminated marine sediments, diatom flux, scanning electron microscope techniques, sediment trap, diatoms able to generate substantial production at depth, may represent a "shade flora" adapted to grow in low-light conditions and/or to regulate their buoyancy to move between a deep nutrient source and the euphotic zone, "fall dump" is the sedimentation of a long-lived episode of production (lasting the duration of the seasonal thermocline) and triggered by the fall/winter mixing that breaks down stratification, may produce much of export production.

Kempe S, Degens E (1979) Varves in the Black Sea and in Lake Van (Turkey). In: (Schlüchter C, ed.) *Moraines and Varves: Origin, Genesis, Classification*. Proceedings of an INQUA Symposium on Genesis and Lithology of Quaternary Deposits, Zurich 10-20 September, 1978. Rotterdam, A.A. Balkema, 309-319. Brief summary of marine varves of the Black Sea. Additional information needed: Electronic link? Keywords?

Kempe S, Landmann G, Müller G (2002) A floating varve chronology from the last glacial maximum terrace of Lake Van/Turkey. *Zeitschrift für Geomorphologie N. F.* Supplement **126**, 97-114. http://www.geo.tu-darmstadt.de/media/geowissenschaften/fachgebiete/allgemeinegeologie/forschungsseiten_1/lakes/geomorphfloatingchronology.pdf; Eastern Anatolia, tephra, lake sediment, lake level changes, microprobe measurements, thin-section profiles, varve counts, floating 606-varve chronology from lake terrace at Güselsu.

Kennedy JA, Brassell SC (1992) Molecular records of twentieth century El Niño events in laminated sediments from the Santa Barbara basin. *Nature* **357**, 62-64. http://dx.doi.org/10.1038/357062a0; marine sediment, Pacific, California, El Niño, alkenone, *Emiliana huxleyi*, coccolithophorid. *Note that subsequent radiocarbon compound-specific studies proved that a significant fraction of biomarkers derives from older, re-suspended sediments. Mixing of old with new biomarkers influences the biochemical signal in accumulating varves (e.g., Mollenhauer and Eglinton, 2007).*

Kennedy JA, Brassell SC (1992) Molecular stratigraphy of the Santa Barbara basin: comparison with historical records of annual climate change. *Organic Geochemistry* **19** (1-3), 235-244. http://dx.doi.org/

10.1016/0146-6380(92)90040-5; abundance profiles of alkenones and sterols, sea surface temperature, phytoplankton productivity, El Niño, dinosterol, brassicasterol, cholesterol. *Note that subsequent radiocarbon compound-specific studies proved that a significant fraction of biomarkers derives from older, re-suspended sediments. Mixing of old with new biomarkers influences the biochemical signal in accumulating varves* (*Mollenhauer and Eglinton, 2007).*

Kennett JP, Ingram BL (1995) A 20,000-year record of ocean circulation and climate change from the Santa Barbara basin. *Nature* **377**, 510-514. http://dx.doi.org/10.1038/377510a0; Pacific Ocean, oscillations of the benthic environment between low-oxygen conditions (laminated sediments) during periods of warm climate, and higher-oxygen conditions (non-laminated, bioturbated sediments) during cool intervals.

Kerfoot WC, Lauster G, Robbins JA (1994) Paleolimnological study of copper mining around Lake Superior: Artificial varves from Portage Lake provide a high resolution record. *Limnology and Oceanography* **39** (3), 649-669. http://www.aslo.org/lo/toc/vol_39/issue_3/0649.pdf; Keweenaw Peninsula, Michigan, North America, copper mine tailings were dumped 1850 – 1968, Portage Lake, Keweenaw Waterway, artificially varved lake sediments.

Kienel U, Dulski P, Ott F, Lorenz S, Brauer A (2013) Recently induced anoxia leading to the preservation of seasonal laminae in two NE-German lakes. *Journal of Paleolimnology* **50** (4), 535-544. http://dx.doi.org/10.1007/s10933-013-9745-3; recent lake sediments, eutrophication, iron-sulfide framboids, calcite varves, Lake Tiefer See near Klocksin developed anoxia in 1924, Lake Tiefer See in the Uckermark developed varves after 1967.

Kienel U, Schwab MJ, Schettler G (2005) Distinguishing climatic from direct anthropogenic influences during the past 400 years in varved sediments from Lake Holzmaar (Eifel, Germany). *Journal of Paleolimnology* **33** (3), 327-347. http://dx.doi.org/10.1007/s10933-004-6311-z; varve chronology, Lake Holzmaar, Eifel, Germany, microfacies analysis, thin section, climatic variability, anthropogenic activities, response of lake to environmental changes, correspondence analysis, diatom, fuzzy clustering, historical data, Little Ice Age, maar lake, sunspot minima.

Kienel U, Vos H, Dulski P, Lücke A, Moschen R, Nowaczyk NR, Schwab MJ (2013) Modification of climate signals by human activities recorded in varved sediments (AD 1608–1942) of Lake Holzmaar (Germany). *Journal of Paleolimnology* **50** (4), 561-575. http://dx.doi.org/10.1007/s10933-013-9749-z; lake sediments, Eifel, documentary data on human activities, long-term data from the Historical Climate Database (HISKLID), 1608–1942 AD, subannual chemical element counts, multiannual organic matter data (TOC, TN, isotope ratios), principal component analysis.

Kienel U, Wulf Bowen S, Byrne R, Park J, Böhnel H, Dulski P, Luhr JF, Siebert L, Haug GH, Negendank JFW (2009) First lacustrine varve chronologies from Mexico: impact of droughts, ENSO and human activity since AD 1840 as recorded in maar sediments from Valle de Santiago. *Journal of Paleolimnology* **42** (4), 587-602. http://dx.doi.org/10.1007/s10933-009-9307-x; varve chronologies Hoya La Alberca (AD 1852–1973) and Hoya Rincón de Parangueo (AD 1839–1943), tephra, element chemistry, drought, human impact, El Niño, Mexico, Valle de Santiago, lake sediment, tephra, lead-210, varve thickness, micro X-ray fluorescence spectrometry.

Kilian MR, van der Plicht J, van Geel B, Goslar T (2002) Problematic ^{14}C-AMS dates of pollen concentrates from Lake Gosciaz (Poland). *Quaternary International* **88** (1), 21-26. http://dx.doi.org/10.1016/S1040-6182(01)00070-2; macrofossils, radiocarbon, mid-Holocene, Lake Gosciaz, Poland, ages of pollen concentrates do not support the varve chronology, probably due to an as yet not fully explained reservoir effect.

Kind J, van Raden UJ, García-Rubio I, Gehring AU (2012) Rock magnetic techniques complemented by ferromagnetic resonance spectroscopy to analyse a sediment record. *Geophysical Journal International* **191** (1), 51-63. http://dx.doi.org/10.1111/j.1365-246X.2012.05620.x; ferromagnetic resonance (FMR) spectroscopy analysis, lacustrine varves, Lake Soppensee, Central Switzerland, colonization of magnetotactic bacteria (MTB).

Kinder M, Tylmann W, Enters D, Piotrowska N, Poręba G, Zolitschka B (2013) Construction and validation of calendar-year time scale for annually laminated sediments – an example from Lake Szurpiły (NE Poland). *GFF, special issue "Varve Genesis, Chronology and Paleoclimate"* **135** (3-4), 248-257. http://dx.doi.org/10.1080/11035897.2013.785015; 12.39 m of varved organic-carbonaceous gyttja occasionally interrupted by turbidites and massive sand layers, 8410-year long varve chronology, varve counts, ^{210}Pb, ^{137}Cs, AMS ^{14}C dating, missing varves identified as a result of erosional processes related to turbidite deposition.

Kinder M, Tylmann W, Ohlendorf C, Zolitschka B (2008) Laminowane osady denne jeziora Szurpiły jako podstawa rekonstrukcji zmian środowiska przyrodniczego w północno-wschodniej Polsce. In: (Florek W, Kaczmarzyk J. eds.) *Współczesne problemy geomorfologii*, *Landform Analysis* **9**, 241-246 (in Polish). http://geoinfo.amu.edu.pl/sgp/LA/LA09/LA9_61.pdf; varved lake sediments, XRF scanning, northeastern Poland.

King SC, Kemp AES, Murray JW (1995) Benthic foraminifer assemblages in Neogene laminated diatom ooze deposits in the eastern equatorial Pacific Ocean (Site 844). In: (Pisias NG, Mayer LA, Janecek TR, Palmer-Julson A, van Andel TH, eds.) *Proceedings of the Ocean Drilling Program (ODP), Scientific Results* **138**, College Station, Texas, 665-673. http://dx.doi.org/10.2973/odp.proc.sr.138.137.1995; laminated *Thalassiothrix* diatom mat deposits in Neogene marine sediments from the eastern equatorial Pacific Ocean, diatom meshwork was of sufficient tensile strength and impenetrability to suppress infaunal benthic activity.

King SC, Murray JW, Kemp AES (1998) Palaeoenvironments of deposition of Neogene laminated diatom mat deposits from the eastern equatorial Pacific from studies of benthic foraminifera (sites 844, 849, 851). *Marine Micropaleontology* **35** (3-4), 161-177. http://dx.doi.org/10.1016/S0377-8398(98)00020-6; *Thalassiothrix longissima* forming marine laminated diatom mat deposits, 15 to 4.8 m.y. ago, benthic foraminifera used to reconstruct benthic environment, preservation of lamination in the diatom mat deposits is due to the physical exclusion of macro endobenthos rather than oxygen depletion of the bottom waters.

King SC, Pearce RB, Kemp AES, Baldauf JG, Murray JW (1996) An integrated micropalaeontological and sedimentological study of mid-Miocene, deep-sea laminated diatom ooze (ODP Leg 138 Site 844). In: (Whatley RC, Moguilevsky A, eds.) *Microfossils and Oceanic Environments*. University of Wales, Aberystwyth-Press, 47-62. http://www.worldcat.org/title/microfossils-and-oceanic-environments/oclc/36148611; this paper has been superseded by King et al. 1998, marine sediment.

Kipp N, Towner D (1975) The last millennium of climate: foraminiferal records from coastal basin sediments. *Proceedings of the WMO/IAMAP Symposium on Long-term Climatic Fluctuations (18-23 August 1975, Noreich, United Kingdom)*, *World Meteorological Organization, Publication* **421**, 119-126. [ISBN: 978-92-631-0421-2]. http://library.wmo.int/opac/index.php?lvl=notice_display&id=7449; planktonic foraminifera, sea surface temperature, Cariaco Basin, tropical Atlantic Ocean, Venezuela. Additional information needed: Keywords?

Kirilova EP, Bluszcz P, Heiri O, Cremer H, Ohlendorf C, Lotter AF, Zolitschka B (2008) Seasonal and interannual dynamics of diatom assemblages in Sacrower See (NE Germany): a sediment trap study. *Hydrobiologia* **614** (1), 159-170. http://dx.doi.org/10.1007/s10750-008-9504-z; sediment trap, comparison with limnological and meteorological data, Canonical Correspondence Analysis, precipitation, air and water temperatures, epilimnetic calcium, pH, and total phosphorus concentrations together explained 70% of the variance of the diatom data.

Kirilova EP, Heiri O, Bluszcz P, Zolitschka B, Lotter AF (2011) Climate-driven shifts in diatom assemblages recorded in annually laminated sediments of Sacrower See (NE Germany). *Aquatic Sciences* **73** (2), 201-210. http://dx.doi.org/10.1007/s00027-010-0169-0; diatoms, decadal-scale patterns, lake sediment, meteorological changes.

Kirilova E, Heiri O, Enters D, Cremer H, Lotter AF, Zolitschka B, Hübener T (2009) Climate-induced changes in the trophic status of a Central European lake. *Journal of Limnology* **68** (1), 71-82. http://dx.doi.org/10.4081/jlimnol.2009.71; Lake Sacrower See, Germany, phosphorus, lake sediment, diatom transfer function, chironomid assemblages, Younger Dryas eutrophic and anoxic, Bronze Age human impact, productivity.

Kirkland DW (2003) An explanation for the varves of the Castile evaporites (Upper Permian), Texas and New Mexico, USA. *Sedimentology* **50** (5), 899-920. http://dx.doi.org/10.1046/j.1365-3091.2003.00588.x; laterally persistent marine varves in Castile evaporites occur as singlets (calcite laminae), couplets (calcite laminae interstratified with anhydrite laminae), thick couplets (calcite laminae interstratified with thin anhydrite beds) and triplets (calcite and anhydrite laminae interstratified with thin halite beds) in a deep (initially ≈550 m), persistently stratified, saline lake separated from the ocean by a reef, different varve types recur with a period of 1800–3000 years reflecting climatic changes on a millennial time scale.

Kitagawa H, van der Plicht J (1998) A 40,000-year varve chronology from Lake Suigetsu, Japan: extension of the ^{14}C calibration curve. *Radiocarbon* **40** (1), 505-515. https://journals.uair.arizona.edu/index.php/radiocarbon/article/view/2037; accelerator mass spectrometric (AMS) radiocarbon, terrestrial macrofossil samples, calibration curve, Pleistocene, Cenozoic, Quaternary, absolute age.

Kitagawa H, van der Plicht J (2000). Atmospheric radiocarbon calibration beyond 11,900 cal BP from Lake Suigetsu laminated sediments. *Radiocarbon* **42** (3), 370-381. https://journals.uair.arizona.edu/index.php/radiocarbon/article/view/3829; updated atmospheric radiocarbon calibration from varved sediments from Lake Suigetsu (LS), central Japan, extending the radio-carbon time scale beyond the tree ring calibration range that reaches 11,900 cal BP, increased density of ^{14}C measurements for terrestrial macrofossils.

Klaminder J, Appleby P, Crook P, Renberg I (2012) Post-deposition diffusion of ^{137}Cs in lake sediment: Implications for radiocaesium dating. *Sedimentology* **59** (7), 2259-2267. http://dx.doi.org/10.1111/j.1365-3091.2012.01343.x; radiocaesium in lake sediments infers ages of sediment deposited from nuclear bomb testing or the 1986 Chernobyl accident, varved lake sediments have a clear and well-resolved peak in the 1986 varve, Chernobyl ^{137}Cs incorporated into the 1986 varve diffused downwards, the weapons fallout marker is likely to be of little use for determining ^{137}Cs dates in areas strongly affected by high levels of Chernobyl fallout.

Klee R, Schmidt R (1987) Eutrophication of Mondsee (Upper Austria) as indicated by the diatom stratigraphy of a sediment core. *Diatom Research* **2** (1), 55-76. http://dx.doi.org/10.1080/0269249X.1987.9704985; analysis of a 36 cm in situ frozen sediment core, eutrophic state beginning in 1968 characterized by the onset of a marked light/dark lamination corresponding to mass expansion of *Tabellaria flocculosa var. asteronelloides*, seasonal cycles of the diatoms, onset of the re-oligotrophication in 1981 reflected by the diatoms.

Kleinmann A (with palynological contribution from H. Freund) (2004) Zeitlich hochauflösende Rekonstruktion der Klimavarianz in Mitteleuropa mit Hilfe von Jahreszeitlich geschichteten

Seesedimenten des Holozän: Vergleich N- und S-Deutschland. Unpublished final report (Archivbericht), Niedersächsisches Landesamt für Bodenkunde, Hannover, Germany, 26 pp. (in German). Additional information needed: Keywords?

Kleinmann A, Küster HJ, Merkt J, Müller H (2002) Laminierte Seesedimente als Archive für Untersuchungen der Änderungen der Umweltbedingungen während Spätglazial und Holozän. Deutsche Forschungsgemeinschaft (DFG) unpublished final report (Archivbericht), Niedersächsisches Landesamt für Bodenkunde, Hannover, Germany, 38 pp. (in German). Additional information needed: Keywords?

Kleinmann A, Merkt J (1996) Laminierte Seesedimente als Archive für Untersuchungen der Änderungen von Umweltbedingungen während Spätglazial und Holozän. Second work report (2. Arbeitsbericht), unpublished, Niedersächsisches Landesamt für Bodenkunde, Hannover, Germany, 10 pp. (in German). Additional information needed: Keywords?

Kleinmann A, Merkt J, Müller H (2001) Rapid short term variations and response of proxies during the older Holocene. In: *High-Resolution Lake Sediment Records in Climate and Environment Variability Studies. 6th Workshop of the European Lake Drilling Programme ELDP*. Progamme, List of Participants, Abstracts, Excursion Guide. May 11-16, 2001, GFZ Potsdam, Germany, *Terra Nostra* **2001/3**, 112-114. Additional information needed: Electronic link? Keywords?

Kleinmann A, Merkt J, Müller H, Küster H (2000) Holocene lake-level changes in N- and S-Germany. In: (Andres, W, ed.) *Final Colloquium of the DFG Priority Programme "Changes of the Geo- Biosphere During the Last 15.000 Years"*, Bonn. http://dx.doi.org/10013/epic.31687.d001; Lake Hämelsee, varved sediment, Germany, color poster featuring profiles of geochemistry, biological proxies, carbon and oxygen stable isotope ratios of siderite.

Kleinmann A, Merkt J, Müller H, Pohl W (2002) Klimavariabilität im Spät- und Postglazial nach lakustrischen Warven. Abschlußbericht (Bundesministerium für Bildung und Forschung), Archivbericht Tagebuch-No. 249/02, Niedersächsisches Landesamt für Bodenkunde, Hannover, Germany, 63 pp. (in German). Additional information needed: Keywords?

Klisch M (2009) Kompleksowe badania izotopowe laminowanych osadów jeziora Gościąż (A comprehensive isotopic investigation of laminated sediments of Lake Gościąż). Ph.D. dissertation, Akademia Górniczo-Hutnicza im. Stanisława Staszica w Krakówie, Kraków, Poland, 111 pp. (in Polish). https://docs.google.com/file/d/0B3RylZ-mb9R-ODAwMDhjZTYtYWM1OS00YWEyLTg5YjctODNjZDQyZTJiODdh/edit; high-resolution multiproxy climate reconstructions from varved lake in Poland, oxygen isotopes in calcite and aquatic cellulose, reconstruction of absolute temperature of lake water, comparison of two geothermometers, carbon and nitrogen cycles for five representative periods from Younger Dryas to late Holocene, Younger Dryas/Preboreal transition, verification of archival isotopic data for calcite encompassing 12000 years. See also Rozanski et al. 2010.

Kocurek G, Carr M, Ewing R, Havholm KG, Nagar YC, Singhvi AK (2007) White Sands Dune Field, New Mexico: Age, dune dynamics and recent accumulations. *Sedimentary Geology* **197** (3-4), 313-331. http://dx.doi.org/10.1016/j.sedgeo.2006.10.006; Tularosa Basin, New Mexico, USA, gypsum accumulation as dune field from deflation of Pleistocene Lake Otero, dune sets show annual cycles, interdune laminations show light/dark couplets interpreted as annual varves, dry/wet portions of the year, wet aeolian system, interdune varves.

Kögler FC, Larsen B (1979) The West Bornholm basin in the Baltic Sea: geological structure and Quaternary sediments. *Boreas* **8** (1), 1-22. http://dx.doi.org/10.1111/j.1502-3885.1979.tb00427.x; Europe, Scandinavia, varved clays.

Kohv M, Hang T (2012) Varve correlation as a tool to understand inner mechanism of slope failures. In: (Zolitschka B, ed.) *3rd Workshop of the PAGES Varves Working Group, Manderscheid, Germany, March 20-25, 2012, Program and Abstracts. Terra Nostra, Schriften der GeoUnion Alfred-Wegener-Stiftung* **2012/1**, 49-50. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/VWG_AbstractVolume_Final_2012.pdf; core-to-core correlation of varved sequences to characterize geomechanical slope failure, Pärnu, eastern Baltic coast, Estonia.

Kohv M, Hang T, Talviste P, Kalm V (2010) Analysis of a retrogressive landslide in glaciolacustrine varved clay. *Engineering Geology* **116** (1-2), 109-116. http://dx.doi.org/10.1016/j.enggeo.2010.07.012; Estonia, glaciolacustrine varved clays, slope failure, Audru landslide, varve correlation was used to localize the failure zone and estimate the extent of the displaced material within the landslide body, Eastern Baltic.

Koide M, Bruland KW, Goldberg ED (1973) Th-228/Th-232 and Pb-210 geochronologies in marine and lake sediments. *Geochimica et Cosmochimica Acta* **37** (5), 1171-1187. http://dx.doi.org/10.1016/0016-7037(73)90054-9; marine sediments, lake sediments, thorium isotopes, lead 210, thorium-228, thorium-232, geochronology, Santa Barbara Basin, Gulf of California, Pacific.

Koide M, Goldberg ED, Hodge VF (1980) ^{241}Pu and ^{241}Am in sediments from coastal basins off California and Mexico. *Earth and Planetary Science Letters* **48** (2), 250-256. http://dx.doi.org/10.1016/0012-821X(80)90188-0; Santa Barbara Basin, Pacific, California, marine sediment, plutonium and americium in varved sediment.

Koide M, Soutar A, Goldberg ED (1972) Marine geochronology with ^{210}Pb. *Earth and Planetary Science Letters* **14** (3), 442-446. http://dx.doi.org/10.1016/0012-821X(72)90146-X; lead-210, Santa Barbara Basin, marine sediment, geochronology, annual flux.

Köppen V (1928) Mehrjährige Temperaturschwankungen vor 8 bis 18 Jahrtausenden. *Meteorologische Zeitschrift* **45**, 263-265 (in German). Additional information needed: Electronic link? Keywords?

Korn H (1938) Schichtung und absolute Zeit. *Neues Jahrbuch der Mineralogie Geologie Paläontologie* **74A**, 50-186 (in German). Additional information needed: Electronic link? Keywords?

Korn H, Martin M (1951) Cyclic sedimentation in varved sediments of the Nama system in South-West Africa. *Transactions of the Geological Society of South Africa* **54**, 65-67. Additional information needed: Electronic link? Keywords?

Kotilainen AT, Vallius H, Ryabchuk D (2007) Seafloor anoxia and modern laminated sediments in coastal basins of the eastern Gulf of Finland, Baltic Sea. *Geological Survey of Finland Special Paper* **45**, 49–62. Baltic Sea, many basins have been continuously or seasonally anoxic for at least 10 years, overall shallowing of anoxia since 1950's, marine varves also in the shallower basins.

Koutsodendris A, Brauer A, Pälike H, Müller UC, Dulski P, Lotter AF, Pross J (2011) Sub-decadal- to decadal-scale climate cyclicity during the Holsteinian interglacial (MIS 11) evidenced in annually laminated sediments. *Climate of the Past* **7**, 987–999. http://dx.doi.org/10.5194/cp-7-987-2011; lake sediment, Marine Isotope Stage 11, microfacies analysis, Dethlingen, northern Germany, varve thickness, solar cycles, spectral analysis.

Koutsodendris A, Brauer A, Zacharias I, Putyrskaya V, Klemt E, Sangiorgi F, Pross J (2015) Ecosystem response to human- and climate-induced environmental stress on an anoxic coastal lagoon (Etoliko, Greece) since 1930 AD. *Journal of Paleolimnology* **53** (3), 255-270. http://dx.doi.org/10.1007/s10933-014-9823-1; anthropogenic impact, Mediterranean Sea, marine varves covering the last ~80 years, microfacies and μ-XRF analyses, varve counting and ^{137}Cs dating.

Koutsodendris A, Müller UC, Pross J, Brauer A, Kotthoff U, Lotter AF (2010) Vegetation dynamics and climate variability during the Holsteinian interglacial based on a pollen record from Dethlingen (northern Germany). *Quaternary Science Reviews* **29** (23-24), 3298-3307. http://dx.doi.org/10.1016/j.quascirev.2010.07.024; lake sediment, pollen, palynology, temperate forest, Marine Isotope Stage 11, Dethlingen, northern Germany.

Koutsodendris A, Pross J, Müller UC, Brauer A, Fletcher WJ, Kühl N, Kirilova E, Verhagen FTM, Lücke A, Lotter AF (2012) A short-term climate oscillation during the Holsteinian interglacial (MIS 11c): An analogy to the 8.2 ka climatic event? *Global and Planetary Change* **92-93**, 224-235. http://dx.doi.org/10.1016/j.gloplacha.2012.05.011; lake sediment, pollen, palynology, temperate forest, Marine Isotope Stage 11c, Dethlingen, northern Germany, 220 years of rapid climatic change, abrupt cooling, meltwater discharge, diatoms, oxygen stable isotope ratio of biogenic silica.

Krishnaswami S, Lal D, Amin BS, Soutar A (1973) Geochronological studies in Santa Barbara Basin: Fe-55 as a unique tracer for particulate setting. *Limnology and Oceanography* **18** (5), 763-770. http://www.aslo.org/lo/toc/vol_18/issue_5/0763.pdf; California Borderland, Pacific, marine varved sediment enables the development of nuclear geochronological techniques, iron-55.

Kristiansson J (1983) Varved sediments and the Swedish time scale. *Geologiska Föreningen i Stockholm Förhandlingar* **104** (3), 273-275. http://dx.doi.org/10.1080/11035898309455276; historical overview.

Kristiansson J (1986) The ice recession in the southeastern part of Sweden. A varve- chronological time scale for the latest part of the Late Weichselian. Ph.D. thesis, Stockholm University, Kvartärgeol. Inst., Rap. **7**, 1-132. Additional information needed: Electronic link? Keywords?

Kröpelin S (2007) High-resolution climate archives in the Sahara (Ounianga, Chad). In: (Bubenzer O, Bolten A, Darius F, eds.) *Atlas of Cultural and Environmental Change in Arid Africa*. *Africa Praehistorica* **21**, 56-57. Additional information needed: Electronic link? Keywords?

Kröpelin S (2008) Seen in der Sahara. *Forschung* **3/2008**, 4-9 (in German). http://www.uni-koeln.de/sfb389/sonstiges/kroepelin/227%20200809%20forschung_2008_3%20Kroepelin%20Seen%20in%20der%20Sahara.pdf; North Africa, Sahara, Holocene, lake sediment, Chad.

Kröpelin S (2009) Lakes in the Sahara. *German Research* **2/2009**, 4-9. http://www.sfb806.uni-koeln.de/images/idoblog/upload/108/200909_DFG_german_research_2_09_Lakes_in_the_Sahara.pdf; North Africa, Sahara, Holocene, lake sediment, Chad.

Kröpelin S, Verschuren D, Lézine AM, Eggermont H, Cocquyt C, Francus P, Cazet JP, Fagot M, Rumes B, Russell JM, Darius F, Conley DJ, Schuster M, von Suchodoletz H, Engstrom DR (2008) Climate-driven ecosystem succession in the Sahara: the past 6000 years. *Science* **320** (5877), 765-768. http://dx.doi.org/10.1126/science.1154913; North Africa, Sahara, Holocene, 6000-year paleoenvironmental reconstruction, northern Chad, progressive drying of the regional terrestrial ecosystem, large-scale dust mobilization, lake sediment.

Kuehn H, Lembke-Jene L, Gersonde R, Esper O, Lamy F, Arz H, Kuhn G, Tiedemann R (2014) Laminated sediments in the Bering Sea reveal atmospheric teleconnections to Greenland climate on millennial to decadal timescales during the last deglaciation. *Climate of the Past* **10**, 2215-2236. http://dx.doi.org/10.5194/cp-10-2215-2014; marine varves during the last glacial termination, alternation between predominantly terrigenous and diatom-dominated opal sedimentation, spring/summer productivity events related to the retreating sea ice margin.

Kuenen PH (1951) Mechanics of varve formation and the action of turbidity currents. *Geologiska Föreningen i Stockholm Förhandlingar* **73** (1), 69-83. http://dx.doi.org/10.1080/11035895109453484. Additional information needed: Electronic link? Keywords?

Kulbe T, Anselmetti F, Cantonati M, Sturm M (2005) Environmental history of Lago di Tovel, Trento, Italy, revealed by sediment cores and 3.5 kHz seismic mapping. *Journal of Paleolimnology* **34** (3), 325-337. http://dx.doi.org/10.1007/s10933-005-5022-4; Proxy data from 30 sediment cores of Lago di Tovel, laminated sediments dated by ^{210}Pb and ^{137}Cs below mass-flow deposits.

Kulbe T, Niederreiter R (2003) Freeze coring of soft surface sediments at a water depth of several hundred meters. *Journal of Paleolimnology* **29** (2), 257-263. http://dx.doi.org/10.1023/A:1023209632092; freeze corer for water depth of up to 1000 meters, successful test at 200 m depth, high pressure resistant housing with vacuum insulated jacket for ethanol which can be chilled by separate cooling agents, electrical pump, freezing wedge 100 cm long.

Kurnakov NS, Kuznetsov VG, Dzens-Litovsky AI, Ravich MI (1935) *Salt Lakes of the Crimea*. Moscow-Leningrad (in Russian). (Курнаков НС, Кузнецов ВГ, Дзенс-Литовский АИ, Равич МИ (1935) *Соляные озера Крыма*. Москва-Ленинград). Keywords: Holocene, Ukraine, annually laminated saline lake deposits, lithology.

Kwiecien O (2009) Paleoenvironmental changes in the Black Sea region during the last 26,000 years: a multi-proxy study of lacustrine sediments from the western Black Sea. Helmholtz-Zentrum Potsdam, *Deutsches GeoForschungsZentrum – GFZ Scientific Technical Report* **STR09/01**, 98p. Dissertation. http://bib.gfz-potsdam.de/pub/str0901/0901.pdf; marine varves; improved chronostraphigraphical framework for the glacial lacustrine unit.

Lajat M, Saliot A, Schimmelmann A (1990) Free and bound lipids in recent (1835-1987) sediments from Santa Barbara Basin. *Organic Geochemistry* **16**, 793-803. http://dx.doi.org/10.1016/0146-6380(90)90118-J; California, North America, marine sediment, Pacific Ocean, California Current, lipids, varve thickness, sterols, biodegradation, fatty acids, El Niño. Note that subsequent radiocarbon compound-specific studies proved that a significant fraction of biomarkers derives from older, re-suspended sediments. *Note that subsequent radiocarbon compound-specific studies proved that a significant fraction of biomarkers derives from older, re-suspended sediments. Mixing of old with new biomarkers influences the biochemical signal in accumulating varves (e.g., Mollenhauer and Eglinton, 2007).*

Lajeunesse P, Allard M (2003) Late Quaternary deglaciation, glaciomarine sedimentation and glacioisostatic recovery in the Rivière Nastapoka area, eastern Hudson Bay, northern Québec. *Géographie physique et Quaternaire* **57** (1), 65-83. http://dx.doi.org/10.7202/010331ar; postulated ice-distal glaciomarine varves, Canada, ~7.7 to 7.3 cal ka BP in unit 'De2b', some intervals contain alternating light clastic laminae and black, sulfide-stained laminae with a postulated annual sedimentation rate of 5 to 10 cm.

Lamb HH (1977) *Climate: Present, Past and Future*, vols. 1 and 2. London, Methuen. http://www.taylorandfrancis.com/books/details/9780415679503/; http://www.taylorandfrancis.com/books/details/9780415682237/; http://www.worldcat.org/title/climate-present-past-and-future/oclc/428098; classic textbooks about paleoclimate research.

Lami A, Niessen F, Guilizzoni P, Masaferro J, Belis CA (1994) Palaeolimnological studies of the eutrophication of volcanic Lake Albano (Central Italy). *Journal of Paleolimnology* **10** (3), 181-197. http://dx.doi.org/10.1007/BF00684032; 300-yr eutrophication history, varve counts (calcite/diatom couplets), fossil pigments, geochemistry, chironomids, carotenoid astaxanthin, dinoxanthin, eutrophication.

Lamoureux SF (1994) Embedding unfrozen lake sediments for thin section preparation. *Journal of Paleolimnology* **10** (2), 141-146. http://dx.doi.org/10.1007/BF00682510; method for subsampling and embedding unfrozen sediments, final thin sections preserve very fine structural detail without interruption due to ice-crystal casts, dewatering with acetone, embedding with Spurr epoxy resin.

Lamoureux S (1999) Spatial and interannual variations in sedimentation patterns recorded in nonglacial varved sediments from the Canadian High Arctic. *Journal of Paleolimnology* **21** (1), 73-84. http://dx.doi.org/10.1023/A:1008064315316; Nicolay Lake, Cornwall Island, Nunavut, Canada, annual sediment accumulation during the last 197 years, hydroclimatic reconstruction, turbidity currents, deposition patterns, principal component analysis.

Lamoureux SF (1999) Catchment and lake controls over the formation of varves in monomictic Nicolay Lake, Cornwall Island, Nunavut. *Canadian Journal of Earth Sciences* **36** (9), 1533-1546. http://dx.doi.org/10.1139/e99-040; thin-section, cesium-137, lead-210Pb, lake sediment, subannual rhythmites, varve formation.

Lamoureux SF (2000) Five centuries of interannual sediment yield and rainfall-induced erosion in the Canadian High Arctic recorded in the lacustrine varves. *Water Resources Research* **36** (1), 309-318. http://dx.doi.org/10.1029/1999WR900271; 487-year varve record, Nicolay Lake, Nunavut, Canada, rhythmites, storms, more frequent extremes and increased variance during 17th and 19th centuries, Little Ice Age.

Lamoureux SF (2001) Varve chronology techniques. In: (Last WM, Smol JP, eds.) *Developments in Paleoenvironmental Research (DPER) Volume 1: Tracking Environmental Change Using Lake Sediments: Basin analysis, Coring, and Chronological Techniques*. Kluwer, Dordrecht, 247-260. http://dx.doi.org/10.1007/0-306-47669-X_11; history of lake varve research, annually-laminated sediments, dating, chronology, errors, cross dating, methods.

Lamoureux SF (2010) The environmental signal contained in nonglacial Arctic varves: lessons from seven years of intensive lake and watershed process research. In: (Ojala AEK, Kosonen E, eds.) *First Workshop of the PAGES Varves Working Group (Palmse, Estonia, April 7-9, 2010), Programme and Abstracts*, Geological Survey of Finland, Espoo, Finland, 59-60. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2010-VWG-1st-wkshp.pdf; overview on non-glacial varved lake sediment, Canadian High Arctic, Cape Bounty Arctic Watershed Observatory, Melville Island, snowmelt, sediment trap, clastic laminae, seasonal anoxica.

Lamoureux SF, Bollmann J (2004) Image acquisition. In: (Francus P, ed.) *Image Analysis, Sediments and Paleoenvironments. Developments in Paleoenvironmental Research*, vol. 7. Springer, Dordrecht, 11-34. http://dx.doi.org/10.1007/1-4020-2122-4; image acquisition, sample preparation for image acquisition, acquisition methods, digital photography, analog photography, scanning, X-radiography, scanning electron microscope, color, light filtering.

Lamoureux SF, Bradley RS (1996) A late Holocene varved sediment record of environmental change from northern Ellesmere Island, Canada. *Journal of Paleolimnology* **16** (2), 239-255. http://dx.doi.org/10.1007/BF00176939; Arctic meromictic Lake C2, intra-lake correlation of varves, composite record of varve records, cross-dating, Little Ice Age, ice shelves.

Lamoureux SF, England JH, Sharp MJ, Bush ABG (2001) A varve record of increased 'Little Ice Age' rainfall associated with volcanic activity, Arctic Archipelago, Canada. *The Holocene* **11** (2), 243-249. http://dx.doi.org/10.1191/095968301668776315; Nicolay Lake, Canadian High Arctic, major summer rainfall events over the last five centuries, Little Ice Age, proxy air temperature, volcanic activity, climatic variability.

Lamoureux SF, Francus P (2014) Layers within layers: quantifying seasonal versus event processes in Arctic clastic varved sediments. In: (Zolitschka B, Pike J, von Gunten L, Kiefer T, eds.), *Annual Recorders of the Past. Past Global Changes, PAGES Magazine* **22** (1), 6-7. http://pastglobalchanges.org/products/pages-magazine/3752-22-1-annual-recorders-of-the-past; interpretation of Arctic clastic varved sediments, micro-sedimentological and micro-geochemical analyses.

Lamoureux SF, Gilbert R (2004) A 750-yr record of autumn snowfall and temperature variability and winter storminess recorded in the varved sediments of Bear Lake, Devon Island, Arctic Canada. *Quaternary Research* **61** (2), 134-147. http://dx.doi.org/10.1016/j.yqres.2003.11.003; High Arctic, proglacial Bear Lake, 750 yr varve record, primary climate signal in varves is varying autumn snow pack that controls nival discharge in the following year, Baffin Bay region, lake sediment, underflows, niveo-aeolian sediment, climate change.

Lamoureux SF, Steward KA, Forbes AC, Fortin D (2006) Multidecadal variations and decline in spring discharge in the Canadian middle Arctic since 1550 AD. *Geophysical Research Letters* **33**, L02403. http://dx.doi.org/10.1029/2005GL024942; Sanagak Lake, lake sediment, Canada, middle Arctic, reconstruction of spring discharge, spectral analysis, Atlantic Multidecadal Oscillation, snow melt.

Landmann G (1996) *Van See/Türkei: Sedimentologie, Warvenchronologie und regionale Klimageschichte seit dem Spätpleistozän.* PhD dissertation, Universität Hamburg, Fachbereich Geowissenschaften, 123 pp. (in German). http://tubiblio.ulb.tu-darmstadt.de/39355/; http://www.geo.tu-darmstadt.de/media/geowissenschaften/fachgebiete/allgemeinegeologie/forschungsseiten_1/lakes/diss.pdf; Lake Van, Turkey, alkaline lake sediment, tephra layers, turbidites, varve counts, varve chronology 14 570 ± 1.4 % years, Younger Dryas, lake level reconstruction.

Landmann G, Abu Qudaira GM, Shawabkeh K, Wrede V, Kempe S (2002) Geochemistry of the Lisan and Damya Formations in Jordan, and implications for palaeoclimate. *Quaternary International* **89** (1), 45-57. http://dx.doi.org/10.1016/S1040-6182(01)00080-5; Geochemical, mineralogical and sedimentological investigations of lake sediments from Lake Lisan and Damya Formations of the Jordan Rift Valley, transgressive depositional cycles, gypsum precipitation, lake level reconstruction, drought signal for the entire region.

Landmann G, Kempe S (2002) Seesedimente als Klimaarchiv - Fallbeispiele: Van See und Totes Meer. In: (Rosendahl W, Hoppe A, eds.) *Angewandte Geowissenschaften in Darmstadt - Schriftenreihe der deutschen Geologischen Gesellschaft* **15**, 129-143 (in German with English abstract). http://www.worldcat.org/title/angewandte-geowissenschaften-in-darmstadt/oclc/248722676/editions; Eastern Anatolia, Turkey, tephra, lake sediment, Lake Van, Lake Lisan, Dead Sea, lake level changes, precipitation; see López-Merino et al. (2016) who advise caution about the presence of varves in the Dead Sea.

Landmann G, Kempe S (2005) Annual deposition signal versus lake dynamics: Microprobe analysis of Lake Van (Turkey) sediments reveals missing varves in the period 11.2–10.2 ka BP. *Facies* **51** (1-4), 135-145. http://dx.doi.org/10.1007/s10347-005-0062-9; Eastern Anatolia, Turkey, tephra, lake sediment, Lake Van, lake level changes, microprobe measurements, thin-section profiles, varve counts, magnesite, protodolomite.

Landmann G, Kempe S (2012) Annual deposition signal versus lake dynamics: Does density stratification prevent varve formation at Lake Van (Turkey) in the period 10.7-8.2 ka BP? In: (Besonen MR, ed.) *Second Workshop of the PAGES Varves Working Group*, Program and Abstracts, 17-19 March 2011, Corpus Christi, Texas, USA, 51-55. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2011_VWG_2nd_wkshp.pdf; microprobe analysis of thin-sections, new varve count based on alternating Ca and Si peaks 11 – 10 ka BP, history of stratification.

Landmann G, Kempe S (2012) Lake Van, Turkey: Evidence for a lake level drop of 500 m in the period 20-15 ka BP. In: (Zolitschka B, ed.) *3rd Workshop of the PAGES Varves Working Group, Manderscheid, Germany, March 20-25, 2012, Program and Abstracts. Terra Nostra, Schriften der GeoUnion Alfred-Wegener-Stiftung* **2012/1**, 54-58. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/VWG_AbstractVolume_Final_2012.pdf; soda lake, Eastern Anatilian High Plateau, regression.

Landmann G, Reimer A, Kempe S (1996) Climatically induced lake level changes at Lake Van, Turkey, during the Pleistocene/Holocene Transition. *Global Biogeochemical Cycles* **10** (4), 797-808. http://dx.doi.org/10.1029/96GB02347; opal, aragonite/calcite ratio, lake level change. Eastern Anatolia, Turkey, tephra, lake sediment, Lake Van, pyroclastic material, ash layer, Younger Dryas. continuously varved record back to 14,570 yr BP, Mediterranean region, pollen.

Landmann G, Reimer A, Lemcke G, Kempe S (1996) Dating Late Glacial abrupt climate changes in the 14,570 yr long continuous varve record of Lake Van, Turkey. *Palaeogeography, Palaeoclimatology, Palaeoecology* **122**, 107-118. http://dx.doi.org/10.1016/0031-0182(95)00101-8; Eastern Anatolia, Turkey, tephra, lake sediment, Lake Van, pyroclastic material, ash layer, Younger Dryas. continuously varved record back to 14,570 yr BP, Mediterranean region, Younger Dryas, Oldest Dryas, Bølling, abrupt transitions, geochemical parameters, organic and inorganic carbon, opal, major elements (Si, Ca, Mg, Al), pollen.

Landmann G, Steinhauser G, Sterba JH, Kempe S, Bichler M (2011) Geochemical fingerprints by activation analysis of tephra layers in Lake Van sediments, Turkey. *Applied Radiation and Isotopes* **69**, 929-935. http://dx.doi.org/10.1016/j.apradiso.2011.02.004; Neutron Activation, Eastern Anatolia, Turkey, tephra, lake sediment, Lake Van, pyroclastic material, ash layer.

Lane CS, Blockley SPE, Bronk Ramsey C, Lotter AF (2011) Tephrochronology and absolute centennial scale synchronisation of European and Greenland records for the last glacial to interglacial transition: A case study of Soppensee and NGRIP. *Quaternary International* **246**, 145-156. http://dx.doi.org/10.1016/j.quaint.2010.11.028; Lake Soppensee, Switzerland, Europe, Alps, tephrostratigraphy, Laacher See Tephra, Vedde Ash layers, Bayesian age-model, radiocarbon, Younger Dryas, Late Quaternary.

Lane CS, Brauer A, Blockley SPE, Dulski P (2013) Volcanic ash reveals time-transgressive abrupt climate change during the Younger Dryas. *Geology* **41** (12), 1251-1254. http://dx.doi.org/10.1130/G34867.1; atmospheric proxy signals of the resumption of thermohaline circulation midway through the Younger Dryas occurred 100 yr before deposition of ash from the Icelandic Vedde eruption in a German varve lake record, and 20 yr after the same isochron in western Norway, synchronization of two high-resolution continental records uses Vedde Ash layer (12,140 ± 40 varve yr B.P.).

Lane CS, Brauer A, Martín-Puertas C, Blockley SPE, Smith VC, Tomlinson EL (2015) The Late Quaternary tephrostratigraphy of annually laminated sediments from Meerfelder Maar, Germany. *Quaternary Science Reviews* **122**, 192-206. http://dx.doi.org/10.1016/j.quascirev.2015.05.025; Eifel, lacustrine varves throughout the Last Glacial to Interglacial transition (LGIT) and most of the Holocene, Ulmener Maar Tephra, Laacher See Tephra, 15 cryptotephra layers, Vedde Ash, Neapolitan Yellow Tuff.

Lang A, Zolitschka B (2001) Optical dating of annually laminated lake sediments. A test case from Holzmaar/Germany. *Quaternary Science Reviews* **20** (5-9), 737-742. http://dx.doi.org/10.1016/S0277-3791(00)00067-6; optical dating feasibility study for varved lake sediments, infrared, results are promising only for sediments with high amounts of clastic components.

Lange CB, Berger WH, Burke SK, Casey RE, Schimmelmann A, Soutar A, Weinheimer AL (1987) El Niño in Santa Barbara Basin: Diatom, Radiolarian and Foraminiferan responses to the "1983 El Niño"

event. *Marine Geology* **78**, 153-160. http://dx.doi.org/10.1016/0025-3227(87)90074-0; California, North America, marine sediment, Pacific Ocean, California Current, varve thickness, El Niño, diatoms, radiolarian, foraminifera.

Lange CB, Burke SK, Berger WH (1990) Biological production off Southern California is linked to climatic change. *Climatic Change* **16** (3), 319-329. http://dx.doi.org/10.1007/BF00144507; marine sediment, Santa Barbara Basin, California Current, decreased biological production, Pacific, El Niño, diatoms, foraminifera, 1970s climate regime shift.

Lange CB, Schimmelmann A (1994) Seasonal resolution of laminated sediments in Santa Barbara Basin: Its significance in paleoclimatic studies. In: (Redmond KT, Tharp VL, eds.) *Proceedings of the Tenth Annual Pacific Climate (PACLIM) Workshop*, April 4-7, 1993, *California Department of Water Resources, Interagency Ecological Studies Program Technical Report* **36**, 83-92. http://worldcat.org/oclc/30418485; California, North America, marine sediment, Pacific Ocean, California Current, varve thickness, El Niño, diatoms, radiolarian, foraminifera, Soutar box core, resin-impregnated sediment, thin-section, photomicrograph, back-scattered electron microscopic image, seasonal laminations, XRD elemental analysis.

Lange CB, Schimmelmann A (1995) Hole 893A: X-radiography of selected, predominantly varved intervals at Hole 893A. In: (Kennett JP, Baldauf JG, Lyle M, eds.) *Proceedings of the Ocean Drilling Program (ODP), Scientific Results*, vol. **146** (pt. 2), College Station, Texas, 333-346. http://www-odp.tamu.edu/publications/146_2_SR/VOLUME/CHAPTERS/sr146pt2_26.pdf; Santa Barbara Basin, California, marine sediment, Pacific Ocean, California Current, varve thickness, El Niño, sediment slabs, Ocean Drilling Program, piston core, chronostratigraphy. *Note: the findings of this study were partially revised by Hendy et al.'s (2012) new chronology.*

Lange CB, Schimmelmann A, Yasuda MK, Berger WH (1996) Marine varves off southern California. *Scripps Institution of Oceanography (SIO) Reference Series* **96-22**. University of California, San Diego, 55 p. Keywords: literature review, Santa Barbara Basin, California, North America, marine sediment, Pacific Ocean, California Current, varve thickness, El Niño, diatoms, radiolaria, foraminifera. *Note: the findings of this study were partially revised by Hendy et al.'s (2012) new chronology.*

Lange CB, Schimmelmann A, Yasuda MK, Berger WH (1999) Paleoclimatic significance of marine varves off southern California. In (Rose MR, Wigand PE, eds.) *Proceedings of the Southern California Climate Symposium 25 October 1991, Trends and Extremes of the Past 2000 Years*. Natural History Museum of Los Angeles County, Technical Reports, Number *11*, pp. 45-92. http://worldcat.org/oclc/43054226; literature review, Santa Barbara Basin, California, North America, marine sediment, Pacific Ocean, California Current, varve thickness, El Niño, diatoms, radiolarian, foraminifera. *Note: the findings of this study were partially revised by Hendy et al.'s (2012) new chronology.*

Lange CB, Weinheimer AL, Reid FMH, Thunell RC (1997) Sedimentation patterns of diatoms, radiolarians, and silicoflagellates in Santa Barbara Basin, California. *California Cooperative Oceanic Fisheries Investigations (CalCOFI) Reports* **38**, 161-170. http://www.calcofi.org/publications/calcofireports/v38/Vol_38_Lange_etal.pdf; marine sediment, Pacific, sediment traps, lithogenic flux, plankton, diatoms, radiolarians, silicoflagellates, upwelling vs. non-upwelling conditions, preservation.

Langrock R (2011) Some applications of nonlinear and non-Gaussian state–space modelling by means of hidden Markov models. *Journal of Applied Statistics* **38** (12), 2955-2970. http://dx.doi.org/10.1080/02664763.2011.573543; Nonlinear and non-Gaussian state–space models (SSMs) fitted to time series, homogeneous and seasonal time series, glacial varve data, Poisson, Bernoulli, gamma and Student-t distributions, approximated likelihood of a finite-state hidden Markov model (HMM).

Lapointe F, Francus P, Lamoureux SF, Saïd M, Cuven S (2012) 1750 years of large rainfall events inferred from particle size at East Lake, Cape Bounty, Melville Island, Canada. *Journal of Paleolimnology* **48** (1), 159-173. http://dx.doi.org/10.1007/s10933-012-9611-8; grain-size, image analysis system, scanning electron microscope, particle-size distribution, coarse grain size correlated with summer rainfall , instrumental data from nearby stations, varve thickness weakly correlated with particle-size distribution, High-Arctic.

Larocque I, Grosjean M, Heiri O, Bigler C, Blass A (2009) Comparison between chironomid-inferred July temperatures and meteorological data AD 1864 –2001 from varved Lake Silvaplana, Switzerland. *Journal of Paleolimnology* **41** (2), 329-342. http://dx.doi.org/10.1007/s10933-008-9228-0; late Holocene, non-biting midges, meteorological data, numerical methods, dating errors, chironomids, Engadine, Alps, Europe, lake sediment, reconstruction of mean July air temperature.

Larocque-Tobler I, Filipiak J, Tylmann W, Bonk A, Grosjean M (2015) Comparison between chironomid-inferred mean-August temperature from varved Lake Żabińskie (Poland) and instrumental data since 1896 AD. *Quaternary Science Reviews* **111**, 35-50. http://dx.doi.org/10.1016/j.quascirev.2015.01.001; lacustrine varves, chironomids, reconstructed mean-August air temperature since 1896 AD at annual (1949–2011 AD) and at 3–4 year resolutions (1896–1948 AD), transfer functions for temperatures in northeastern Canada and Poland.

Larocque-Tobler I, Grosjean M, Heiri O, Trachsel M (2009) High-resolution chironomid-inferred temperature history since ad 1580 from varved Lake Silvaplana, Switzerland: comparison with local and regional reconstructions. *The Holocene* **19** (8), 1201-1212. http://dx.doi.org/10.1177/0959683609348253;

late Holocene, non-biting midges, meteorological data, chironomids, Engadine, European Alps, Europe, lake sediment, reconstruction of mean July air temperature, validation with early instrumental data, dendrochronology, biogenic silica.

Larocque-Tobler I, Grosjean M, Heiri O, Trachsel M, Kamenik C (2010) Thousand years of climate change reconstructed from chironomid subfossils preserved in varved lake Silvaplana, Engadine, Switzerland. *Quaternary Science Reviews* **29** (15-16), 1940-1949. http://dx.doi.org/10.1016/j.quascirev.2010.04.018; subfossil chironomids (non-biting midges) from varved Lake Silvaplana, European Alps, reconstruction of mean July air temperatures during the last millennium, Medieval Climate Anomaly (MCA), Little Ice Age.

Larocque-Tobler I, Grosjean M, Kamenik C (2011) Calibration-in-time versus calibration-in-space (transfer function) to quantitatively infer July air temperature using biological indicators (chironomids) preserved in lake sediments. *Palaeogeography, Palaeoclimatology, Palaeoecology* **299** (1-2), 281-288. http://dx.doi.org/10.1016/j.palaeo.2010.11.008; late Holocene, non-biting midges, Lake Silvaplana, Engadine, Switzerland, European Alps, lake sediment, reconstruction of mean July air temperature, two models for reconstructions over 1000 years.

Larocque-Tobler I, Quinlan R, Stewart MM, Grosjean M (2011) Chironomid-inferred temperature changes of the last century in anoxic Lake Seebergsee, Switzerland: assessment of two calibration methods. *Quaternary Science Reviews* **30** (13-14), 1770-1779. http://dx.doi.org/10.1016/j.quascirev.2011.04.008; late Holocene, non-biting midges, European Alps, lake sediment, reconstruction of mean July air temperature, comparison of two models for reconstructions, anoxia.

Larocque-Tobler I, Stewart MM, Quinlan R, Trachsel M, Kamenik M, Grosjean M (2012) A last millennium temperature reconstruction using chironomids preserved in sediments of anoxic Seebergsee (Switzerland): consensus at local, regional and Central European scales. *Quaternary Science Reviews* **41**, 18 May 2012, 49-56. http://dx.doi.org/10.1016/j.quascirev.2012.03.010; late Holocene, non-biting midges, Lake Seebergsee, comparison with Lake Silvaplana, European Alps, lake sediment,anoxia, reconstruction of mean July air temperature, comparison of two models for reconstructions, Little Ice Age, Medieval Climate Anomaly.

Larsen CPS, Pienitz R, Smol JP, Moser KA, Cumming BF, Blais JM, Macdonald GM, Hall RI (1998) Relations between lakemorphometry and the presence of laminated lake sediments: a re-examination of Larsen and Macdonald (1993). *Quaternary Science Reviews* **17** (8), 711-717. http://dx.doi.org/10.1016/S0277-3791(97)00043-7; empirical test of a published equation which relates lake surface area and maximum lake depth to the presence or absence of laminated lake sediments, 297 lake dataset from New York State and six regions in Canada, deeper lakes are more likely to contain laminated lake sediments than shallower lakes, many factors other than lake morphometry affect the formation and preservation of laminated sediments.

Larsen CPS, MacDonald GM (1993) Lake morphometry, sediment mixing and the selection of sites for fine resolution palaeoecological studies. *Quaternary Science Reviews* **12** (9), 781-792. http://dx.doi.org/10.1016/0277-3791(93)90017-G; model and equations of lake depth and area determine whether the sediments of a lake will likely be massive or annually laminated.

Larsen DJ, Miller GH, Geirsdóttir A, Thordarson T (2011) A 3000-year varved record of glacier activity and climate change from the proglacial lake Hvítárvatn, Iceland. *Quaternary Science Reviews* **30** (19-20), 2715-2731. http://dx.doi.org/10.1016/j.quascirev.2011.05.026; proglacial lake, reconstruction of regional climate variability and glacial activity for the past 3000 years, sedimentological analysis, tephrostratigraphy, master varve chronology, Langjökull ice cap, clastic varve thickness, ice-rafted debris, total organic carbon, C/N ratio of sedimentary organic matter, Little Ice Age, glacier erosion, soil erosion, Holocene , Medieval Warm Period.

Larsen E, Stalsberg MK (2004) Younger Dryas glaciolacustrine rhythmites and cirque glacier variations at Kråkenes, western Norway: depositional processes and climate. *Journal of Paleolimnology* **31** (1), 49-61. http://dx.doi.org/10.1023/B:JOPL.0000013282.14240.e5; west coast of Norway, deposition of glaciolacustrine sediments during Younger Dryas, varves and other rhythmites, Younger Dryas/Preboreal transition, cirque glaciation.

Last WM (2001) Mineralogical analysis of lake sediments. In: (Last WM, Smol J, eds.), *Tracking Environmental Change Using Lake Sediments.* Chapter 6, Kluwer Academic Publishers, Doordrecht, The Netherlands, pp. 143-187. http://link.springer.com/chapter/10.1007%2F0-306-47670-3_6#page-1

Lauterbach S, Brauer A, Andersen N, Danielopol DL, Dulski P, Hüls M, Milecka K, Namiotko T, Obremska M, von Grafenstein, U. and DecLakes Participants (2011) Environmental responses to Lateglacial climatic fluctuations recorded in the sediments of pre-Alpine Lake Mondsee (northeastern Alps). *Journal of Quaternary Science* **26** (3), 253-267. http://dx.doi.org/10.1002/jqs.1448; Upper Austria, European Alps, decadal to sub-annual resolution, μ-XRF element scanning, carbon geochemistry, stable isotope measurements on ostracods, pollen, thin sections for microfacies analysis, Holocene chronology via microscopic varve counting, AMS radiocarbon dating of terrestrial plant macrofossils, oxygen stable isotope ratio wiggle matching with Greenland NGRIP record, Younger Dryas.

Lauterbach S, Brauer A, Andersen N, Danielopol DL, Dulski P, Hüls M, Milecka K, Namiotko T, Plessen B, von Grafenstein U, DecLakes Participants (2010) Multi-proxy evidence for early to mid-Holocene environmental and climatic changes in northeastern Poland. *Boreas* **40** (1), 57–72. http://dx.doi.org/10.1111/j.1502-3885.2010.00159.x; Lake Hańcza, lake sediment, radiocarbon dating of plant macrofossils, varve thickness,

varve chronology, pollen, biochemical calcite precipitation, oxygen isotope ratios of endogenic calcite and ostracod valves, regional eastern European atmospheric circulation pattern, westerlies, decay of the ice sheet.

Lazar B, Sivan O, Yechieli Y, Levy EJ, Antler G, Gavrieli I, Stein M (2014) Long-term freshening of the Dead Sea brine revealed by porewater Cl^- and $\delta^{18}O$ in ICDP Dead Sea deep-drill. *Earth and Planetary Science Letters* **400**, 94-101. http://dx.doi.org/10.1016/j.epsl.2014.03.019; history of the deepest part of the lake by chemical and isotopic composition of pore-fluids from cores drilled during 2011 by ICDP, evolution of water mass (hypolimnion) of Lake Lisan (the last glacial predecessor of the modern Dead Sea), lacustrine varves, Israel; see López-Merino et al. (2016) who advise caution about the presence of varves in the Dead Sea.

Leach CJ, Wagner T, Jones M, Juggins S, Stevenson AC (2008) Rapid determination of total organic carbon concentration in marine sediments using Fourier transform near-infrared spectroscopy (FT-NIRS). *Organic Geochemistry* **39** (8), 910-914. http://dx.doi.org/10.1016/j.orggeochem.2008.04.012; calibrations between spectra and concentrations of total organic carbon (TOC) in marine sediments, ODP 664 (oxic Quaternary, low TOC, deep sea ooze), ODP 959 (anoxic Cretaceous black shale) , provides higher resolution data without additional time consuming and expensive traditional analyses, good correlations achieved between measured and FT-NIRS predicted concentrations.

Leavitt PR, Carpenter SR (1989) Effects of sediment mixing and benthic algal production on fossil pigment stratigraphies. *Journal of Paleolimnology* **2** (2), 147-158. http://dx.doi.org/10.1007/BF00177044; fine-interval analysis of cores in a transect across the basin of Paul Lake, Michigan, USA, annually resolved profiles (1957–1986) of carotenoids and chlorophyll a from varved sediments, mixing of sediment.

Leemann A, Niessen F (1994) Varve formation and the climatic record in an Alpine proglacial lake: calibrating annually-laminated sediments against hydrological and meteorological data. *The Holocene* **4** (1), 1-8. http://dx.doi.org/10.1177/095968369400400101; formation of varves in proglacial Lake Oeschinensee, Switzerland, European Alps, calibrations of last three decades of varves against hydrological and meteorological instrumental data, sediment trap, varve thickness is a function of the annual discharge of suspended load from the catchment, correlation with summer air temperature.

Lehndorff E, Wolf M, Litt T, Brauer A, Amelung W (2015) 15,000 years of black carbon deposition – A post-glacial fire record from maar lake sediments (Germany). *Quaternary Science Reviews* **110**, 15-22. http://dx.doi.org/10.1016/j.quascirev.2014.12.014; Meerfelder Maar, Holzmaar, charcoal, throughout the Holocene, molecular fire markers, benzene polycarboxylic acids (BPCAs), lacustrine varves.

Lekens WAH, Sejrup HP, Haflidason H, Petersen GØ, Hjelstuen B, Knorr G (2005) Laminated sediments preceding Heinrich event 1 in the Northern North Sea and Southern Norwegian Sea: Origin, processes and regional linkage. *Marine Geology* **216** (1-2), 27-50. http://dx.doi.org/10.1016/j.margeo.2004.12.007; rapidly deposited laminated sediments dated between 18 and 21 cal. ka BP in the Northern North Sea and the Southern Norwegian Sea, glacimarine varves are suggested by radiocarbon dating and cyclic changes in planktonic foraminifera and lithological parameters, presumed suspension meltwater plume deposits.

Leonard EM (1986) Varve studies at Hector Lake, Alberta, Canada, and the relationship between glacial activity and sedimentation. *Quaternary Research* **25** (2), 199-214. http://dx.doi.org/10.1016/0033-5894(86)90057-8; Banff National Park, Alberta, relationship between glacial activity and outwash sedimentation, varves in lake sediments, cesium-137.

Leonard EM (1997) The relationship between glacial activity and sediment production: evidence from a 4450-year varve record of neoglacial sedimentation in Hector Lake, Alberta, Canada. *Journal of Paleolimnology* **17** (3), 319-330. http://dx.doi.org/10.1023/A:1007948327654; Neoglacial interval, comparison of glaciolacustrine varve record with regional glacial history, Canadian Rocky Mountains, Holocene.

Leroy SAG (2010) Pollen analysis of core DS7-1SC (Dead Sea) showing intertwined effects of climatic change and human activities in the Late Holocene. *Journal of Archaeological Science* **37** (2), 306-316. http://dx.doi.org/10.1016/j.jas.2009.09.042; Dead Sea, pollen, human impact, Holocene, Israel, vegetation 2500-year record, high-resolution palynological study of individual laminae (aragonite and gypsum in the summer versus detritics in winter) confirms the seasonal character of the laminae, but throws a note of caution as for their regular annual character; see López-Merino et al. (2016) who advise caution about the presence of varves in the Dead Sea.

Leroy SAG, Bookman R, López-Merino L, Epshtein V, Eshel A (2012) Resolving the deposition pattern of the Dead Sea laminae and its implication for understanding hydro-climatic short-term variations in the Levant. In: (Besonen MR, ed.) *Second Workshop of the PAGES Varves Working Group*, Program and Abstracts, 17-19 March 2011, Corpus Christi, Texas, USA, 56-60. http://pastglobalchanges.org/download/docs/working_groups/vwg/2011_2nd_VWG_workshop_programs_and_abstracts.pdf; chemical laminae of inorganic origin, Nahal Ze'elim delta, sampling of outcrop, Hellenistic highstand, pollen; see López-Merino et al. (2016) who advise caution about the presence of varves in the Dead Sea.

Leroy SAG, Marco S, Bookman R, Miller CS (2010) Impact of earthquakes on agriculture during the Roman-Byzantine period from pollen records of the Dead Sea laminated sediment. *Quaternary Research* **73** (2), 191-200. http://dx.doi.org/10.1016/j.yqres.2009.10.003; Dead Sea, pollen, human impact, Roman-

Byzantine period, Holocene, Israel, seismically triggered turbidites, Ze'elim gully; see López-Merino et al. (2016) who advise caution about the presence of varves in the Dead Sea.

Leroy SAG, Roiron P (1996) Latest Pliocene pollen and leaf floras from Bernasso paleolake (Escandorgue Massif, Hérault, France). *Review of Palaeobotany and Palynology* **94** (3-4), 295-328. http://dx.doi.org/10.1016/S0034-6667(96)00016-4; Bernasso Massif, paleocanyon, paleobotanical sequence, pollen, leaf fossils, Late Pliocene, potassium-argon dating, Escandorgue Province, lake sediment, Olduvai age, central France.

Leroy S, Seret G (1992) Duration and vegetation dynamic of the Nogaret Interglacial (~1.9 Ma, S of France): Tentative correlation with Stage 75. In: (Kukla G, Went E, eds.) *Start of a Glacial, Proceedings of the Mallorca NATO ARW*, NATO ASI Series I, **3**, 113-125, Springer Verlag, Heidelberg. http://www.worldcat.org/title/start-of-a-glacial/oclc/26587896; Nogaret maar, southern France, lake sediment, Nogaret Interglacial 35,000 years, 2.0 to 1.7 Ma, transition steppe to deciduous forest.

Leroy SAG, Zolitschka B, Negendank JW, Seret G (2000) Palynological analyses in the laminated sediment of Lake Holzmaar (Eifel, Germany): duration of Lateglacial and Preboreal biozones. *Boreas* **29** (1), 52-71. http://dx.doi.org/10.1111/j.1502-3885.2000.tb01200.x; lake sediment, Holocene, Older Dryas, Younger Dryas, pollen, continuous varve chronology for the last 3500 varve years, floating varve chronology back to more than 22500 vy BP, palynology, environmental changes, biozonation for Lake Holzmaar below the Laacher See Tephra, 15 pollen subzones grouped in four biozones defined by cluster analysis, Bølling, Allerød 883-vy-long, Preboreal 702-yr-long, the chronology of Holzmaar may require revision below the middle of the Younger Dryas, comparison with the varve record of Meerfelder Maar suggests adding 320 varve years below 12025 varve years.

Leventer A, Crosta X, Pike J (2010) Holocene marine diatom records of environmental change. In: (Smol JP, Stoermer EF, eds.) *The Diatoms: Applications for the Environmental and Earth Sciences* (2nd edition), Cambridge University Press, Cambridge, UK, 400-422. http://www.worldcat.org/title/diatoms-applications-for-the-environmental-and-earth-sciences/oclc/669127009; this review uses laminated/varved sediments as a major case study.

Leventer A, Domack E, Dunbar R, Pike J, Stickley C, Maddison E, Brachfeld S, Manley P, McClennen C (2006) Marine sediment record from the East Antarctic margin reveals dynamics of ice sheet recession. *GSA Today* **16** (12), 4-10. http://dx.doi.org/10.1130/GSAT01612A.1; laminated/varved marine sediment units identify mechanisms of Antarctic ice sheet recession, jumbo piston cores from four sites along the East Antarctic margin (Iceberg Alley, Nielsen Basin, Svenner Channel, Mertz-Ninnis Trough), deglaciation, transition between the Last Glacial Maximum and the Holocene is characterized by varved couplets deposited during a short interval of extremely high primary productivity in a fjordlike setting, diatom, radiocarbon-based chronologies.

Lewis T, Francus P, Bradley RS (2009) Recent occurrence of large jökulhlaups at Lake Tuborg, Ellesmere Island, Nunavut. *Journal of Paleolimnology* **41** (3), 491-506. http://dx.doi.org/10.1007/s10933-008-9240-4; Canada, jökulhlaups in 2003, 1993, and 1960, response to recent warming, varve record correlates with a previous record from Lake Tuborg, sediment microstructure, particle size, ice-dammed lake above Lake Tuborg (the source of the jökulhlaups) likely drained completely and catastrophically, Canadian High Arctic.

Lewis T, Francus P, Bradley RS, Kanamaru K (2010) An automated system for the statistical analysis of sediment texture and structure at the micro scale. *Computers & Geosciences* **36** (10), 1374-1383. http://dx.doi.org/10.1016/j.cageo.2010.03.018; automated statistical analyses of particles, macro code, produces continuous downcore stratigraphies, 'raw data' for algorithm checking, image analysis, particle size.

Lewy Z (2009) Early Precambrian banded iron formations: Biochemical precipitates from highly evaporated hydrothermal solutions of polar region lakes. *Carbonates and Evaporites* **24** (1), 1-15. http://dx.doi.org/10.1007/BF03228053; BIFs accumulated during the Lower Precambrian in shallow depositional settings in lakes of warm hydrothermal solutions undergoing intensive evaporation and mineral concentration in cold Polar Regions, after half a year of insolation, cyanobacteria oxygenic photosynthesis deposited iron oxides with silica (geyserite) followed by a lamina of silica only, forming recurrent annual varves.

Li C, Sessions AL, Valentine DL, Thiagarajan N (2011) D/H variation in terrestrial lipids from Santa Barbara Basin over the past 1400 years: A preliminary assessment of paleoclimatic relevance. *Organic Geochemistry* **42** (1), 15-24. http://dx.doi.org/10.1016/j.orggeochem.2010.09.011; terrestrial leaf wax lipids, up to 1400 year old marine sediment, Santa Barbara Basin, hydrogen stable isotope ratio D/H, *n*-alkane, *n*-alkanoic acids, Southern California winter Palmer Drought Severity Index, tree ring. *Note: the findings of this study were partially affected by Hendy et al.'s (2012) new chronology*.

Li YL (2014) Micro- and nanobands in late Archean and Palaeoproterozoic banded-iron formations as possible mineral records of annual and diurnal depositions. *Earth and Planetary Science Letters* **391**, 160-170. http://dx.doi.org/10.1016/j.epsl.2014.01.044; marine Precambrian banded-iron formation (BIF), fine-grained hematite, microbands of chert/jasper may represent possible annual depositions.

Li YM, Ferguson DK, Wang YF, Li CS (2010) Paleoenvironmental inferences from diatom assemblages of the middle Miocene Shanwang Formation, Shandong, China. *Journal of Paleolimnology* **43** (4), 799-814. http://dx.doi.org/10.1007/s10933-009-9369-9; light and dark couplets in the Shanwang Formation are thought to

represent varves, reconstruction of past conditions in the lake, 19 lithologic layers with five zones, water pH, total phosphorus (TP), total organic carbon (TOC).

Liden R (1913) Geokronologiska studier ofver det finiglaciala skedet I Ångermanland. *Sveriges Geologiska Undersökning* Ca-9, 1-39. Additional information needed. Key words? Link?

Liden R (1938) Den senkvartara strandforskjutningens forlopp och kronologi i Ångermanland. *Geologiska Föreningen i Stockholm Förhandlingar* **60**, 397-404. Additional information needed. Key words? Link?

Lidz L, Charm WB, Ball MM, Valdes S (1969) Marine basins off the coast of Venezuela. *Bulletin of Marine Science* **19** (1), 1-17. http://www.ingentaconnect.com/content/umrsmas/bullmar/1969/00000019/00000001/art00001; physiographic setting of Cariaco Basin compared to Santa Barbara Basin, description of sediment cores.

Lima AL, Bergquist BA, Boyle EA, Reuer MK, Dudas FO, Reddy CM, Eglinton TI (2005) High-resolution historical records from Pettaquamscutt River basin sediments: 2. Pb isotopes reveal a potential new stratigraphic marker. *Geochimica et Cosmochimica Acta* **69** (7), 1813-1824. http://dx.doi.org/10.1016/j.gca.2004.10.008; see companion paper below; high-resolution record of Pb deposition in Rhode Island over the past 250 yr providing regional marker.

Lima AL, Hubeny JB, Reddy CM, King JW, Hughen KA, Eglinton TI (2005) High-resolution historical records from Pettaquamscutt River basin sediments: 1. ^{210}Pb and varve chronologies validate record of ^{137}Cs released by the Chernobyl accident. *Geochimica et Cosmochimica Acta* **69** (7), 1803-1812. http://dx.doi.org/10.1016/j.gca.2004.10.009; anoxic varved sediments from a coastal environment in southern Rhode Island, cesium-137, USA, different methods for calculating lead-210 chronology, independent varve counting.

Lincoln SA, Hubeny JB, King JW (2006) A Microscopic characterization of varved sediments, Pettaquamscutt River Estuary, RI. *Geological Society of America Northeastern Section – 41st Annual Meeting* (20–22 March 2006), *Abstracts with Programs* **38** (2), 14. https://gsa.confex.com/gsa/2006NE/finalprogram/abstract_101083.htm; Rhode Island, USA, North America, marine varves, ^{210}Pb, ^{137}Cs, light clastic-dominated laminae, dark biogenic-dominated laminae, back scatter SEM.

Lindeberg G, Ringberg B (1999) Image analysis of rhythmites in proximal varves in Blekinge, southeastern Sweden. *GFF* **121** (3), 182-186. http://dx.doi.org/10.1080/11035899901213182; Image analysis, proximal varves in the bottom bed of the Bredåkra glaciolacustrine delta, greyscale and color profiling on digital images, summer layers consist of ca. 50 diurnal couplets during intense melting period of c. 50 days during the Late Weichselian deglaciation of the Bölling Chronozone (G1-1e).

Lindqvist JK, Lee DR (2009) High-frequency paleoclimate signals from Foulden Maar, Waipiata Volcanic Field, southern New Zealand: An Early Miocene varved lacustrine diatomite deposit. *Sedimentary Geology* **222** (1-2), 98-110. http://dx.doi.org/10.1016/j.sedgeo.2009.07.009; varved diatomite near Dunedin maybe more than 100 m thick, South Island, mid-latitude seasonal climate variation during latest Oligocene-early Early Miocene, maar-floored lake, excellent fish and plant preservation, varve thickness periodicity of 3–10 years compares with Quaternary records of El Niño–Southern Oscillation variability, biogenic varves, sediment gravity flows.

Linsley BK, Anderson RY, Gardner JV (1990) Rapid δ^{18}O and δ^{13}C isotopic shifts in late Pleistocene marine varves on the California margin. In: (Betancourt JL, MacKay AM, eds.) *Proceedings of the Sixth Annual Pacific Climate (PACLIM) Workshop, March 5-8, 1989, Interagency Ecological Studies Program for the Sacramento-San Joaquin Estuary Technical Report* **23**, 83-86. http://www.worldcat.org/title/proceedings-of-the-sixth-annual-pacific-climate-paclim-workshop-asilomar-california-march-5-8-1989/oclc/22743042; additional information needed: Electronic link? Keywords?

Lischke H, Lotter AF, Fischlin A (2002) Untangling a Holocene pollen record with forest model simulations and independent climate data. *Ecological Modelling* **150** (1-2), 1-21. http://dx.doi.org/10.1016/S0304-3800(02)00013-3; pollen, lake sediment, vegetation dynamics, forest modelling, Holocene, Central Swiss Plateau, Alps, Europe, Younger Dryas, Lake Soppensee.

Lister GS, Giovanoli F, Eberli G, Finckh P, Finger W, He Q, Heim C, Hsü KJ, Kelts K, Peng C, Sidler C, Zhao X (1983) Late Quaternary sediments in Lake Zürich, Switzerland. *Environmental Geology* **5** (4), 191-205. http://dx.doi.org/10.1007/BF02414864; post-glacial sediments, diatom-calcite varves.

Litt T, Brauer A, Goslar T, Lotter A, Merkt J, Ralska-Jasiewiczowa M (2001) Correlation of large-scale climate events during the Lateglacial and early Holocene as inferred from the study of annually laminated lake sediments in Europe. In: *High-Resolution Lake Sediment Records in Climate and Environment Variability Studies. 6th Workshop of the European Lake Drilling Programme ELDP*. Progamme, List of Participants, Abstracts, Excursion Guide. May 11-16, 2001, GFZ Potsdam, Germany, *Terra Nostra* **2001/3**, 26-32. Additional information needed: Electronic link? Keywords?

Litt T, Brauer A, Goslar T, Merkt J, Bałaga K, Müller H, Ralska-Jasiewiczowa M, Stebich M, Negendank JFW (2001) Correlation and synchronisation of Lateglacial continental sequences in northern central

Europe based on annually laminated lacustrine sediments. *Quaternary Science Reviews* **20** (11), 1233-1249. http://dx.doi.org/10.1016/S0277-3791(00)00149-9; Weichselian Lateglacial, Germany, Meerfelder Maar, Eifel, Hämelsee, Lower Saxony, Lake Gościąż, Poland, Lake Perespilno, varve chronology, tephrochronology, palynostratigraphy, stable isotopes, Younger Dryas, Preboreal, correlation, teleconnections.

Litt T, Pickarski N, Heumann G, Stockhecke M, Tzedakis PC (2014) A 600,000 year long continental pollen record from Lake Van, eastern Anatolia (Turkey). *Quaternary Science Reviews* **104**, 30-41. http://dx.doi.org/10.1016/j.quascirev.2014.03.017; International Continental Scientific Drilling Program (ICDP), 219 m long continental pollen record, Ahlat Ridge.

Litt T, Schölzel C, Kühl N, Brauer A (2009) Vegetation and climate history in the Westeifel Volcanic Field (Germany) during the past 11 000 years based on annually laminated lacustrine maar sediments. *Boreas* **38** (4), 679-690. http://dx.doi.org/10.1111/j.1502-3885.2009.00096.x; Lake Holzmaar, Lake Meerfelder Maar, Eifel, Holocene, reconstruction of vegetation, human impact, climate, high-resolution pollen data, palynology, thermophilous trees, orbital forcing, Europe.

Little SH, Vance D, Lyons TW, McManus J (2015) Controls on trace metal authigenic enrichment in reducing sediments: Insights from modern oxygen-deficient settings. *American Journal of Science* **315** (2), 77-119. http://dx.doi.org/10.2475/02.2015.01; see front cover image http://www.ajsonline.org/content/315/2.cover-expansion for two marine varved slabs from box cores collected at ~2000 m water depth and ~200 km apart in the Black Sea.

Liu J, Lin Z, Zhang H, Han BP (2012) Hydrodynamic change recorded by diatoms in sediments of Liuxihe Reservoir, southern China. *Journal of Paleolimnology* **47** (1), 17-27. http://dx.doi.org/10.1007/s10933-011-9543-8; reservoirs have hydrodynamic characteristics intermediate between those of rivers and lakes, diatom assemblage, varve counting, strong thermal stratification for 10 months of the year preserves varves.

Liu X, Colman SM, Brown ET, Minor EC, Li H (2013) Estimation of carbonate, total organic carbon, and biogenic silica content by FTIR and XRF techniques in lacustrine sediments. *Journal of Paleolimnology* **50**, 387-398. http://dx.doi.org/10.1007/s10933-013-9733-7; Fourier transform infrared spectroscopy (FTIR) and scanning X-ray fluorescence (XRF), relative abundances of carbonates, organic matter, biogenic silica, Lake Malawi, Lake Qinghai, calcium:titanium (Ca/Ti), incoherent:coherent X-ray scatter intensities (Inc/Coh), silicon:titanium (Si/Ti), the relationship between XRF-ratios or FTIR-absorbances and abundances of corresponding sedimentary components can vary with sediment source and lithology.

Liukkonen M, Kairesalo T, Haworth E (1997) Changes in the diatom community, including the appearance of *Actinocyclus normanii* f. *subsalsa*, during the biomanipulation of Lake Vesijärvi, Finland. *European Journal of Phycology* **32** (4), 353-361. http://dx.doi.org/10.1080/09670269710001737289; eutrophication due to sewage until after 1976, diatom in varved sediment, Laitialanselkä least polluted basin of the lake, Lahti city.

Liukkonen M, Kairesalo T, Keto J (1993) Eutrophication and recovery of Lake Vesijärvi (south Finland): Diatom frustules in varved sediments over a 30-year period. *Hydrobiologia* **269-270** (1), 415-426. http://dx.doi.org/10.1007/BF00028039; eutrophication by sewage from the City of Lahti for 60 years until 1976, varved bottom sediment from the Enonselkä basin, less eutrophic Laitialanselkä basin.

Livingstone SJ, Cofaigh CÓ, Evans DJA, Palmer A (2010) Sedimentary evidence for a major glacial oscillation and proglacial lake formation in the Solway Lowlands (Cumbria, UK) during Late Devensian deglaciation. *Boreas* **39** (3), 505-527. http://dx.doi.org/10.1111/j.1502-3885.2010.00149.x; glacial deposits, northwest England, United Kingdom, laminated glaciolacustrine sediments, at one location the laminated sediments are interpreted as varves, proglacial lake, Solway Basin, lake existed for at least 261 years.

Livingstone DM, Hajdas I (2001) Climatically relevant periodicities in the thickness of biogenic carbonate varves in Soppensee, Switzerland (9740-6870 calendar yr BP). *Journal of Paleolimnology* **25** (1), 17-24. http://dx.doi.org/10.1023/A:1008131815116; thickness of 2717 biogenic carbonate varves, power spectrum using classical FFT methods, periodicities, solar forcing, Schwabe sunspot cycle.

Londovist J (1985) The 1984 symposium on clay-varve chronology in Stockholm. *Boreas* **14** (2), 97-99. http://dx.doi.org/10.1111/j.1502-3885.1985.tb00894.x; 1984 centenary of Gerard De Geer's invention of the clay-varve dating method, history of original varve research methods as an introduction to papers presented at a meeting.

López-Buendía AM (1998) A new method for the preparation of peat samples for petrographic study by transmitted and reflected light microscopy. *Journal of Sedimentary Research* **68** (1), 214-217. http://jsedres.geoscienceworld.org/content/68/1/214.full.pdf+html; method of epoxy impregnation of sediment, fixation of the organic matter with formaldehyde, chemical dehydration with ethanol, impregnation with conventional epoxy or polyester waxes, addition of acetone for reduction of the viscosity, overview on methods for removal of water.

López-Merino L, Leroy SAG, Eshel A, Epshtein V, Belmaker R, Bookman R (2016) Using palynology to re-assess the Dead Sea laminated sediments – Indeed varves? *Quaternary Science Reviews* **140**, 49-66. http://dx.doi.org/10.1016/j.quascirev.2016.03.024; lacustrine Dead Sea high-stand mm-scale laminated sections consisting of alternating detrital and authigenic aragonite laminae; pollen and other evidence shows that the Holocene Ze'elim Formation cannot be considered as varves, prompting a re-evaluation of older Quaternary laminated sequences.

Lorenzoni L, Benitez-Nelson CR, Thunell RC, Hollander D, Varela R, Astor Y, Audemard FA, Muller-Karger FE (2012) Potential role of event-driven sediment transport on sediment accumulation in the Cariaco Basin, Venezuela. *Marine Geology* **307-310**, 105-110. http://dx.doi.org/10.1016/j.margeo.2011.12.009; density flow, Cariaco Basin, CARIACO Ocean Time-Series site, sediment flux, organic matter, C/N ratio, carbon and nitrogen stable isotope ratios, episodic event, sediment transport, sediment density flow, Manzanares Submarine Canyon.

Loso MG (2009) Summer temperatures during the Medieval Warm Period and Little Ice Age inferred from varved proglacial lake sediments in southern Alaska. *Journal of Paleolimnology* **41** (1), 117-128. http://dx.doi.org/10.1007/s10933-008-9264-9; Holocene, paleoclimate, glacial lake, Little Ice Age, Medieval Warm Period, glacier-dammed Iceberg Lake, Bagley Icefield, chronology of varve thickness 442–1998 AD, reconstruction of melt-season temperature, tree-ring-based temperature proxy.

Loso MG, Anderson RS, Anderson SP, Reimer PJ (2006) A 1500-year record of temperature and glacial response inferred from varved Iceberg Lake, southcentral Alaska. *Quaternary Research* **66** (1), 12-24. http://dx.doi.org/10.1016/j.yqres.2005.11.007; AD 442 to 1998 varve thickness chronology from glacier-dammed Iceberg Lake, southern Alaska icefields, varve thickness correlated with Northern Hemisphere temperature trends and ~600 yr long local tree ring width chronology, Medieval Warm Period, Arctic climate, glacial lake, Little Ice Age.

Lotter AF (1989) Evidence of annual layering in Holocene sediments of Soppensee, Switzerland. *Aquatic Sciences* **51** (1), 19-30. http://dx.doi.org/10.1007/BF00877778; 6000 years of varves in Lake Soppensee, European Alps, Allerød to Atlantic, dark organic diatom-rich winter/spring layer, light calcite summer layer, pollen, thin-sections, micro-structure, lake sediment.

Lotter AF (1991) How long was the Younger Dryas? Preliminary evidence from annually laminated sediments of Soppensee (Switzerland). *Hydrobiologia* **214**, 53-57. http://dx.doi.org/10.1007/BF00050931; Lake Soppensee, European Alps, varve chronology, Younger Dryas, AMS radiocarbon dating, plant remains.

Lotter AF (1991) Absolute dating of the late-glacial period in Switzerland using annually laminated sediments. *Quaternary Research* **35** (3), 321-330. http://dx.doi.org/10.1016/0033-5894(91)90048-A; Lake Rotsee, AMS radiocarbon dating, Lake Soppensee, European Alps, Younger Dryas, Bølling, Allerød, varve counts.

Lotter AF (1998) The recent eutrophication of Baldeggersee (Switzerland) as assessed by fossil diatom assemblages. *The Holocene* **8** (4), 395-405. http://dx.doi.org/10.1191/095968398674589725; Lake Baldeggersee, European Alps, lake sediment, eutrophication, human impact, phosphorus, partitioning of variance.

Lotter AF (1999) Late-glacial and Holocene vegetation history and dynamics as shown by pollen and plant macrofossil analyses in annually laminated sediments from Soppensee, central Switzerland. *Vegetation History and Archaeobotany* **8** (3), 165-184. http://dx.doi.org/10.1007/BF02342718; Lake Soppensee, European Alps, lake sediment, pollen, 15,000 year record, biostratigraphy, vegetation history, plant macrofossils, radiocarbon, varve count, Iron Age, Older Dryas, Younger Dryas, Neolithic.

Lotter AF (2001) The palaeolimnology of Soppensee (Central Switzerland), as evidenced by diatom, pollen, and fossil-pigment analyses. *Journal of Paleolimnology* **25** (1), 65-79. http://dx.doi.org/10.1023/A:1008140122230; Lake Soppensee, European Alps, lake sediment, diatom, chlorophytes, spores of macrophytes, phosphorus.

Lotter AF, Ammann B, Beer J, Hajdas I, Sturm M (1992) A step towards an absolute time-scale for the Late-Glacial: annually laminated sediments from Soppensee (Switzerland). In: (Bard E, Broecker W, eds.) *The Last Deglaciation: Absolute and Radiocarbon Chronologies*. NATO ASI Series I, **2**, 45-68. http://www.worldcat.org/title/last-deglaciation-absolute-and-radiocarbon-chronologies/oclc/25508583; AMS radiocarbon stratigraphy of terrestrial plant remains, correlation with floating varve chronology that is based on playnostratigraphy.

Lotter AF, Ammann B, Hajdas I, Sturm M, van Leeuwen J (1996) Faulenseemoos revisited: New results from an old site. In: (Robertsson AM, Hackens T, Hicks S, Risberg J, Åkerlund A, eds.) *Landscapes and Life*. *European Study Group on Physical, Chemical and Mathematical Techniques applied to Archaeology* (*PACT)* **50**, 133-144. http://cat.inist.fr/?aModele=afficheN&cpsidt=2877837; re-investigation of "classical site of limnic laminations", pollen, magnetic susceptibility, late glacial, Europe, Switzerland. microstratigraphy, pollen curve of beech, the re-investigatioin did not yield evidence for expected late-glacial laminated sediments.

Lotter AF, Ammann B, Sturm M (1992) Rates of change and chronological problems during the late-glacial period. *Climate Dynamics* **6** (3-4), 233-239. http://dx.doi.org/10.1007/BF00193536; AMS radiocarbon dating, plant macrofossils, lake sediment, lake Rotsee, Lake Soppensee, Switzerland, Alps, Europe, varve chronology.

Lotter AF, Anderson NJ (2012) Limnological responses to environmental changes at inter-annual to decadal time-scales. In: (Birks HJB, Lotter AF, Juggins S, Smol JP, eds.) *Tracking Environmental Change Using Lake Sediments: Data Handling and Numerical Techniques*. *Developments in Paleoenvironmental Research* **5**, 557-578. http://www.worldcat.org/title/tracking-environmental-change-using-lake-sediments-volume-5-data-handling-and-statistical-techniques/oclc/761381847; three case studies on lake sediment, Lake Baldeggersee, Switzerland, Europe Alps, Lake Kassjön, Sweden, Lake Holzmaar, Eifel, Germany, climate change, eutrophication, Laacher See tephra, land use, tree rings.

Lotter AF, Birks HJB (1997) The separation of the influence of nutrients and climate on the varve time-series of Baldeggersee, Switzerland. *Aquatic Sciences* **59** (4), 362-375. http://dx.doi.org/10.1007/BF02522364; lake sediment, variance partitioning, redundancy analysis, multiple linear regression, eutrophication, freeze-core, Lake Baldeggersee, Switzerland, European Alps, varve thickness, annual precipitation versus summer precipitation.

Lotter AF, Birks HJB, Hofmann W, Marchetto A (1997) Modern diatom, cladocera, chironomid, and chrysophyte cyst assemblages as quantitative indicators for the reconstruction of past environmental conditions in the Alps. 1. Climate. *Journal of Paleolimnology* **18**, 395-420. http://dx.doi.org/10.1023/A:1007982008956; transect of 68 small lakes along an altitudinal gradient from 300 to 2350 m, Switzerland, 43 environmental variables, physical limnology, geography, catchment characteristics, climate, water chemistry, canonical correspondence analyses (CCA), Monte Carlo permutation tests, transfer functions for individual proxies, cross-validation, summer temperature, training set.

Lotter AF, Birks HJB, Zolitschka B (1995) Late-glacial pollen and diatom changes in response to two different environmental perturbations: volcanic eruption and Younger Dryas cooling. *Journal of Paleolimnology* **14**, 23-47. http://dx.doi.org/10.1007/BF00682592; pollen, diatoms, lake sediment, Laacher See Tephra, variance partitioning, redundancy analysis, sequence slitting, Lake Holzmaar, Eifel, Germany, biostratigraphy suggests a volcanic-induced response on productivity of the lake.

Lotter AF, Eicher U, Siegenthaler U, Birks HJB (1992) Late-glacial climatic oscillations as recorded in Swiss lake sediments. *Journal of Quaternary Science* **7** (3), 187-204. http://dx.doi.org/10.1002/jqs.3390070302; pollen assemblage zones, late-glacial, Switzerland, European Alps, oxygen stable isotope ratio profile correlates with Greenland Dye 3 record, lake sediment, four distinct phases of climate oscillations 13 000 to 9500 yr BP, Younger Dryas, Aegelsee, Faulenseemoos, Gerzensee, Rotsee, Soppensee.

Lotter AF, Kienast F (1990) Validation of a forest succession model by means of annually laminated sediments. In: (Saarnisto M, Kahra A, eds.) *Proceedings of the Workshop at Lammi Biological Station, 4-6 June, 1990*, *Geological Survey of Finland, Special Paper* **14**, 25-31. http://arkisto.gtk.fi/sp/sp14/sp_014.pdf; Lake Soppensee, varve chronology, Switzerland, pollen analysis, Holocene, forest successions, lake sediment, pollen diagrams.

Lotter AF, Lemcke G (1999) Methods for preparing and counting biochemical varves. *Boreas* **28**, 243-252. http://dx.doi.org/10.1111/j.1502-3885.1999.tb00218.x; lake sediment, comparison of 4 methods of preparation and counting of biochemical varves, counting error, embedding methods, shock-freeze, freeze-dry, water-acetone-epoxy-exchange, image analysis software, varve counting, Lake Soppensee, Switzerland.

Lotter AF, Merkt J, Sturm M (1997) Differential sedimentation versus coring artifacts: a comparison of two widely used piston-coring methods. *Journal of Paleolimnology* **18** (1), 75-85. http://dx.doi.org/10.1023/A:1007929422169; parallel piston cores taken with Kullenberg and Livingstone piston corers, eutrophic Soppensee, Switzerland, varved lake sediment, different core recoveries attributed to differential gas expansion, sediment accumulation rates require high-resolution temporal framework, e.g. by annual laminations, thin section, X-radiographs.

Lotter AF, Renberg I, Hansson H, Stöckli R, Sturm M (1997) A remote controlled freeze corer for sampling unconsolidated surface sediments. *Aquatic Sciences* **59** (4), 295-303. http://dx.doi.org/10.1007/BF02522360; http://dx.doi.org/1015-1621/97/040295-09 sediment corer, wedge-shaped freeze-corer, useful in deep water, core up to 1 m long, alcohol chilled with dry ice.

Lotter AF, Sturm M (1994) High-resolution paleoenvironmental studies: an editorial note. *Journal of Paleolimnology* **11** (3), 311-312. http://dx.doi.org/10.1007/BF00677990; introduction to special issue, meaning of "high-resolution".

Lotter AF, Sturm M (1994) The study of environmental dynamics by means of laminated sediments: results from Switzerland. In: (Hicks S, Miller U, Saarnisto M, eds.) *Laminated Sediments*. *European Study Group on Physical, Chemical and Mathematical Techniques applied to Archaeology (PACT)* **41**, 15-24. http://www.univeur.org/UserFiles/File/Download%20pdf/Pact%2041/03%20Lotter.pdf; history of lake varve research, overview on different types of varves, Lake Brienzersee, Lake Greifensee, Lake Soppensee.

Lotter AF, Sturm M, Teranes JL, Wehrli B (1997) Varve formation since 1885 and high-resolution varve analyses in hypertrophic Baldeggersee (Switzerland). *Aquatic Sciences* **59** (4), 304-325. http://dx.doi.org/10.1007/BF02522361; lake sediment, Lake Baldeggersee, Switzerland, European Alps, eutrophication, grain-size, geochemistry, time-series, freeze-core, turbidites, cesium-137, phosphorus correlates with grain size of calcite crystals.

Lottermoser BG, Oberhänsli R, Zolitschka B, Negendank JFW, Schütz U, Boenecke J (1993) Environmental geology and geochemistry of lake sediments (Holzmaar, Eifel, Germany). *Lecture Notes in Earth Sciences* **49**, 305-316. http://dx.doi.org/10.1007/BFb0117603; heavy metals, trace elements, Holocene, late Pleistocene, diatom, varve chronology, element fluxes, accumulation rate, human settlement, deforestation, agricultural activities, Iron Age, Middle Ages, tephrochronology, geochemistry, fuel combustion, ore processing.

Lottermoser BG, Schütz U, Boenecke J, Oberhänsli R, Zolitschka B, Negendank JFW (1997) Natural and anthropogenic influences on the geochemistry of Quaternary lake sediments from Holzmaar,

Germany. *Environmental Geology* **31** (3-4), 236-247. http://dx.doi.org/10.1007/s002540050185; heavy metals, trace elements, pollution, Holocene, late Pleistocene, diatom, element fluxes, accumulation rate, soil erosion, human settlement, deforestation, agricultural activities, Iron Age, Middle Ages.

Løvlie R, Leroy S, Ambert P (1992) Magnetostratigraphic relationships of igneous rocks within the Bernasso sedimentary sequence. *Paleontologia i Evolució* **24/25**, 47-51. http://brunel.academia.edu/SuzanneLeroy/Papers/136619/Lovlie_R._Leroy_S._and_Ambert_P._1992._Magnetostratigraphic_relationships_of_igneous_rocks_within_the_Bernasso_sedimentary_sequence; paleobotanical sequence, potassium-argon dating, paleomagnetic polarity, lava flow, Mas de Vailhé, Escandorgue Province, lake sediment, Olduvai age, France, Europe.

Lücke A, Brauer A (2004) Biogeochemical and micro-facial fingerprints of ecosystem response to rapid Late Glacial climatic changes in varved sediments of Meerfelder Maar (Germany). *Palaeogeography, Palaeoclimatology, Palaeoecology* **211** (1-2), 139-155. http://dx.doi.org/10.1016/j.palaeo.2004.05.006; Younger Dryas, Preboreal, stable carbon isotopes, stable nitrogen isotopes, micro-facies, Lake Meerfelder Maar, Eifel, lake sediment, Allerød interstadial to the Younger Dryas stadial and into the early Holocene.

Lücke A, Brauer A, Kleinmann A, Merkt J, Schleser GH (2005) Abrupt climate changes of the Late Glacial and seasonality: Evidences from varved lake sediments of Western Europe. In: *The Climate of the Next Millennia in the Perspective of Abrupt Climate Change During the Late Pleistocene - PAGES/ DEKLIM Conference*, 7-10 March, 2005, Mainz, Germany, Abstracts Volume 162-163. Additional information needed: Electronic link? Keywords?

Lücke A, Schleser GH, Zolitschka B, Negendank JFW (2003) A Lateglacial and Holocene organic carbon isotope record of lacustrine palaeoproductivity and climatic change derived from varved lake sediments of Lake Holzmaar, Germany. *Quaternary Science Reviews* **22** (5-7)**,** 569-580. http://dx.doi.org/10.1016/S0277-3791(02)00187-7; Eifel, total organic matter content, total nitrogen content, stable organic carbon isotopes, algal lacustrine primary production, ecosystem reorganizations, deforestation, reforestation, runoff changes, human impact.

Lückge A, Reinhardt L, Andruleit H, Doose-Rolinski H, von Rad U, Schulz H, Treppke U (2002) Formation of varve-like laminae off Pakistan: decoding 5 years of sedimentation. *Geological Society, London, Special Publications* **195**, 421-431. http://dx.doi.org/10.1144/GSL.SP.2002.195.01.23; Holocene marine sediments from the northeastern Arabian Sea near Pakistan, heavy rainfall and flood events cause deposition of light-colored laminae during winter, dark biogenic laminae.

Lüder B, Kirchner G, Lücke A, Zolitschka B (2006) Palaeoenvironmental reconstructions based on geochemical parameters from annually laminated sediments of Sacrower See (northeastern Germany) since the 17th century. *Journal of Paleolimnology* **35** (4), 897-912. http://dx.doi.org/10.1007/s10933-005-6188-5; hardwater lake, Brandenburg, multi-proxy study of five short sediment cores, varve chronology, lead-210, cesium-137, calcite, anoxia during thermal summer stratification, biogenic varves, carbon isotopes, eutrophication.

Ludlam SD (1981) Sedimentation rates in Fayetteville Green Lake, New York, U.S.A. *Sedimentology* **28** (1), 85-96. http://dx.doi.org/10.1111/j.1365-3091.1981.tb01665.x; varves allow determination if the sedimentation rate, but measurements are made complicated by turbidites.

Ludlam SD (1984) Fayetteville Green Lake, New York, U.S.A.: VII. Varve chronology and sediment focusing. *Chemical Geology* **44** (1-3), 85-100. http://dx.doi.org/10.1016/0009-2541(84)90068-8; varve chronology back to 1900 AD, dated stratigraphic markers, meromictic lake, correlation with earlier chronology, varve sedimentation rates.

Ludlam SD, Feeney S, Douglas MSV (1996) Changes in the importance of lotic and littoral diatoms in a high arctic lake over the last 191 years. *Journal of Paleolimnology* **16** (2), 187-204. http://dx.doi.org/10.1007/BF00176935; diatom habitat preferences and community associations, varve-counted dates of major turbidites relate to exceptionally thick varves and the concentration of valves, concentration of valves appears to be a proxy for sediment deposition from turbidity currents.

Lundqvist J (1975) Ice recession in central Sweden, and the Swedish Time Scale. *Boreas* **4** (1), 47-54. http://dx.doi.org/10.1111/j.1502-3885.1975.tb00678.x; critique of Järnefors' (1973) revision of the Swedish Time Scale, based on varve chronology, possible error in time scale which in southern Sweden may exceed 1000 years.

Lundqvist J (1980) The deglaciation of Sweden after 10,000 B.P. *Boreas* **9** (4), 229-238. http://dx.doi.org/10.1111/j.1502-3885.1980.tb00699.x; review of deglaciation, Sweden, north of the Middle Swedish End Moraines, deglaciation clay-varve method and radiocarbon dating.

Mackiewicz NE, Powell RD, Carlson PR, Molnia BF (1984) Interlaminated ice-proximal glacimarine sediments in Muir Inlet, Alaska. *Marine Geology* **57** (1-4), 113–147. http://dx.doi.org/10.1016/0025-3227(84)90197-X; glacimarine varves, propose unusual nomenclature of cyclopel.

Mackin JH (1948) Possible sun-spot cycle in pre-Wisconsin varves in the Puget area, Washington. *Geological Society of America Bulletin* **59** (12), 1376. http://bulletin.geoscienceworld.org/content/59/12/1307.full.pdf+html; varved clay about 140 feet thick includes about 470 paired summer and winter layers, 20 to 30 sandy basal varves disturbed, periodicity of varve thickness, 11-year sun-spot cycle.

Mackintosh AN, Verleyen E, O'Brien PE, White DA, Jones RS, McKay R, Dunbar R, Gore DB, Fink D, Post AL, Miura H, Leventer A, Goodwin I, Hodgson DA, Lilly K, Crosta X, Golledge NR, Wagner B, Berg S, van Ommen T, Zwartz D, Roberts SJ, Vyverman W, Masse G (2014) Retreat history of the East Antarctic Ice Sheet since the Last Glacial Maximum. *Quaternary Science Reviews* **100**, 10-30. http://dx.doi.org/10.1016/j.quascirev.2013.07.024; review of geological East Antarctic ice sheet history since ~30,000 years BP, Adélie Basin marine varves.

MacLeod A, Brunnberg L, Wastegård S, Hang T, Matthews IP (2014) Lateglacial cryptotephra detected within clay varves in Östergötland, south-east Sweden. *Journal of Quaternary Science* **29** (7), 605-609. http://dx.doi.org/10.1002/jqs.2738; 710-year-long floating varve chronology, tephra analyses, rhyolitic Vedde Ash testifies to Younger Dryas age of varve series, direct correlation of Swedish varved clay with other records of equivalent resolution.

MacLeod A, Palmer A, Lowe J, Rose J, Bryant C, Merritt J (2011) Timing of glacier response to Younger Dryas climatic cooling in Scotland. *Global and Planetary Change* **79** (3-4), 264-274. http://dx.doi.org/10.1016/j.gloplacha.2010.07.006; readvance of glacial ice during Younger Dryas, glaciolacustrine varve and radiocarbon evidence that the last glacier to occupy the Loch Lomond area achieved its maximum extent late in Younger Dryas, climate change and glacier response, Bayesian-based age modelling.

Macumber AL, Patterson RT, Neville LA, Falck H (2011) A sledge microtome for high resolution subsampling of freeze cores. *Journal of Paleolimnology* **45** (2), 307-310. http://dx.doi.org/10.1007/s10933-010-9487-4; microtome subsamples at mm to sub-mm resolution without sediment loss and cross-contamination.

Maddison EJ, Pike J, Dunbar R (2012) Seasonally laminated diatom-rich sediments from Dumont d'Urville Trough, East Antarctic Margin: Late-Holocene Neoglacial sea-ice conditions. *The Holocene* **22** (8), 857-875. http://dx.doi.org/10.1177/0959683611434223; diatom-rich laminated marine sediments from Dumont d'Urville Trough, East Antarctic Margin, Antarctica, changes in environmental conditions on the continental shelf from 1136 to 3122 cal. yr BP, scanning electron microscope backscattered electron imagery (BSEI), secondary electron imagery, diatom, formation of each of 9 lamina types is controlled by seasonal changes in sea ice cover, nutrient levels and water column stability, sea ice cover.

Maddison EJ, Pike J, Leventer A, Domack EW (2005) Deglacial seasonal and sub-seasonal diatom record from Palmer Deep, Antarctica. *Journal of Quaternary Science* **20**, 435-446. http://dx.doi.org/10.1002/jqs.947; Antarctic Peninsula, diatoms, marine laminated sediments, palaeoceanography, Palmer Deep, 4.4 m thick laminated diatom ooze deposited during the last deglaciation, ODP Site 1098, SEM backscattered electron imagery, secondary electron imagery, sub-seasonal sub-laminae, tidal cycles, high storm intensities and/or intrusion of Circumpolar Deep Water onto the continental shelf.

Maddison EJ, Pike J, Leventer A, Dunbar R, Brachfeld S, Domack EW, Manley P, McClennen C (2006) Post-glacial seasonal diatom record of the Mertz Glacier Polynya, East Antarctica. *Marine Micropaleontology* **60** (1), 66-88. http://dx.doi.org/10.1016/j.marmicro.2006.03.001; marine sediment, ultra-high-resolution post-glacial laminated sediment record from Mertz Ninnis Trough, East Antarctic Margin (EAM), Antarctica, SEM backscattered electron imagery, secondary electron imagery, quantitative diatom abundance, four biogenic diatom ooze laminae types, one diatom-bearing terrigenous lamina type, one diatom-bearing terrigenous sub-lamina type, lamina types are controlled by seasonal changes in nutrients, oceanographic regimes and Mertz Glacier Polynya dynamics.

Madeja J (2012) Local Holocene vegetation changes and settlement history based on pollen analysis of Lake Kwiecko sediments, West-Pomeranian. *Acta Palaeobotanica* 52(1), 105–125. http://www.ib-pan.krakow.pl/pubs-pdf/Acta%20Palaeobotanica/2012/Acta52-1_s105-125.pdf; Holocene palynology, vegetation changes, settlement history, West-Pomeranian Lake District, Lake Kwiecko, Poland, laminated sediment with indication of varving.

Magaritz M, Anderson RY, Holser WT, Saltzman ES, Garber J (1983) Isotope shifts in the late Permian of the Delaware basin, Texas, precisely timed by varved sediments. *Earth and Planetary Science Letters* **66**, 111–124. http://dx.doi.org/10.1016/0012-821X(83)90130-9; postulated marine varved sediments from the Upper Permian in Delaware Basin, Texas, USA, correlation with similar records from Zechstein Basin.

Maher LJ, Heiri O, Lotter AF (2012) Assessment of uncertainties associated with palaeolimnological laboratory methods and microfossil analysis. In: (Birks HJB, Lotter AF, Juggins S, Smol JP, eds.) *Tracking Environmental Change Using Lake Sediments: Data Handling and Numerical Techniques. Developments in Paleoenvironmental Research* **5**, 143-166. http://dx.doi.org/10.1007/978-94-007-2745-8_6; accuracy, confidence limits, errors, inter-laboratory comparison, microfossil counts, precision, random error, repeatability, reproducibility, systematic error, trueness, varve count, uncertainty, method validation, statistics, error assessment, pollen, diatoms, computer software sources.

Maier DB, Rydberg J, Bigler C, Renberg I (2013) Compaction of recent varved lake sediments. *GFF, special issue "Varve Genesis, Chronology and Paleoclimate"* **135** (3-4), 231-236. http://dx.doi.org/10.1080/11035897.2013.788551; comparison of 13 stored freeze cores sampled from 1979 to 2012 in Nylandssjön (northern Sweden), decreasing thickness of varves changed when overlain by new varves, even after 33 years still continued compaction, increasing dry-bulk density of the sediment, year-to-year variation in varve thickness is preserved.

Manalt F, Beck C, Disnar JR, Deconinck JF, Recourt P (2001) Evolution of clay mineral assemblages and organic matter in the late glacial-Holocene sedimentary infill of Lake Annecy, (northwestern Alps): paleoenvironmental implications. *Journal of Paleolimnology* **25** (2), 179-192. http://dx.doi.org/10.1023/A:1008140114714; varves in several units of 44 m core, sediment texture (optical microscopy and laser microgranulometry), clay mineral assemblages (CMA by XRD), organic matter (OM by Rock-Eval pyrolysis), Late Würmian to Holocene, European Alps, France, deglaciation.

Mangili C, Brauer A, Moscariello A, Naumann R (2005) Microfacies of detrital event layers deposited in Quaternary varved lake sediments of the Piànico-Sèllere Basin (northern Italy). *Sedimentology* **52** (5), 927-943. http://dx.doi.org/10.1111/j.1365-3091.2005.00717.x; endogenic calcite, intra-basin correlation, interglacial paleolake, detrital layers, microfacies analysis, varve counting, micro-erosion, extreme precipitation events.

Mangili C, Brauer A, Plessen B, Dulski P, Moscariello A, Naumann R (2010) Effects of detrital carbonate on stable oxygen and carbon isotope data from varved sediments of the interglacial Piànico palaeolake (Southern Alps, Italy). *Journal of Quaternary Science* **25** (2), 135-145. http://dx.doi.org/10.1002/jqs.1282; detrital versus endogenic calcite, northern Italy, Quaternary, interglacial paleolake, Piànico-Sèllere Basin, detrital layers, microfacies analysis, X-ray diffraction, micro-X-ray fluorescence, oxygen isotopes, covariance, calcite varves, detrital layers, stable carbon isotopes, stable oxygen isotopes, Marine Isotope Stage 11, surface erosion events.

Mangili C, Brauer A, Plessen B, Moscariello A (2007) Centennial-scale oscillations in oxygen and carbon isotopes of endogenic calcite from a 15,500 varve year record of the Piànico interglacial. *Quaternary Science Reviews* **26** (13-14), 1725-1735. http://dx.doi.org/10.1016/j.quascirev.2007.04.012; endogenic calcite, northern Italy, Quaternary, interglacial paleolake, Piànico-Sèllere Basin, detrital layers, oxygen isotopes, oscillations, intra-glacial cimate dynamics, calcite varves, detrital layers, Marine Isotope Stage 11.

Mangili C, Plessen B, Wolff C, Brauer A (2010) Climatic implications of annual to decadal resolution stable isotope data from calcite varves of the Piànico interglacial lake record, Southern Alps. *Global and Planetary Change* **71** (3-4), 168-174. http://dx.doi.org/10.1016/j.gloplacha.2010.01.027; Quaternary, interglacial paleolake, Piànico-Sèllere Basin, oxygen isotopes, oscillations, intra-glacial cimate dynamics, calcite varves, Marine Isotope Stage 11, sampling resolution, endogenic calcite, spectral analysis, short-term oscillation, Italy, North Atlantic Oscillation.

Mann M, Beer J, Steinhilber F, Christl M (2012) ^{10}Be in lacustrine sediments - a record of solar activity? *Journal of Atmospheric and Solar-Terrestrial Physics* **80**, 92-99. http://dx.doi.org/10.1016/j.jastp.2012.03.011; beryllium-10, singular-spectrum analysis, solar activity, Lake Zurich, Lake Baldeggersee, Switzerland.

Manucharyan GE, Fedorov AV (2014) Robust ENSO across a wide range of climates. *Journal of Climate* **27** (15), 5836-5850. http://dx.doi.org/10.1175/JCLI-D-13-00759.1; six reported marine and lacustrine varve records used as evidence for El Niño–Southern Oscillation stability from the late Cretaceous to the Holocene.

Marjanac L, Marjanac T (2012) Distribution of Pleistocene glaciolacustrine deposits in southwestern Croatia. In: (Zolitschka B, ed.) *3rd Workshop of the PAGES Varves Working Group, Manderscheid, Germany, March 20-25, 2012, Program and Abstracts. Terra Nostra, Schriften der GeoUnion Alfred-Wegener-Stiftung* **2012/1**, 59-63. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/VWG_AbstractVolume_Final_2012.pdf; review, listing, references, and maps about varved glaciolacustrine sediments in SW Croatia.

Marshall CJ (2012) Sedimentation in an Active Fold and Thrust Belt, From 1 Ma to Present, Santa Barbara Channel, California. M.Sc. Thesis, California State University, Long Beach, 79 p. https://docs.google.com/a/umich.edu/file/d/0B_44KqD6U_zwTHZZSmpDb1Jyck0/edit?usp=drive_web; Santa Barbara Basin, California, Pacific Ocean, marine sedimentation since 1 Ma, depocenter evolution reflects growth history of faults and folds, elated subsidence, changes in sedimentation rates reflect diversion of Santa Clara River sediment from Santa Barbara to Santa Monica basin, Hueneme Fan, Anacapa Ridge anticline. *Note: the claimed presence of varves in deeper core sections was partially revised by Hendy et al.'s (2012) new interpretation of laminations.*

Marshall M, Schlolaut G, Nakagawa T, Brauer A, Lamb H, Staff R, Bronk Ramsey C, Brock F, Bryant C, Yokoyama Y, Tada R, Haraguchi T, Suigetsu 2006 project members (2010) Suigetsu Varves 2006: utilising µXRF and X-radiography for varve counting. In: (Ojala AEK, Kosonen E, eds.) *First Workshop of the PAGES Varves Working Group (Palmse, Estonia, April 7-9, 2010), Programme and Abstracts*, Geological Survey of Finland, Espoo, Finland, 63-65. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2010-VWG-1st-wkshp.pdf; Lake Suigetsu, radiocarbon, varve counting, XRF scanning, X-radiography.

Marshall M, Schlolaut G, Nakagawa T, Lamb H, Brauer A, Staff R, Bronk Ramsey C, Tarasov P, Gotanda K, Haraguchi T, Yokoyama Y, Yonenobu H, Tada R, Suigetsu 2006 Project Members (2012) A novel approach to varve counting using µXRF and X-radiography in combination with thin-section microscopy, applied to the Late Glacial chronology from Lake Suigetsu, Japan. *Quaternary Geochronology* **13**, 70-80. http://dx.doi.org/10.1016/j.quageo.2012.06.002; SG06 Project, high resolution X-ray fluorescence (µXRF) and X-radiography for varve counting, alongside conventional varve counting by thin-section microscopy.

Martin H (1964) Beobachtungen zum Problem der jung-Präkambrischen glazialen Ablagerungen in Südwestafrika. *Geologische Rundschau* **54** (1), 115-127. http://dx.doi.org/10.1007/BF01821173; Late Precambrian Numees Formation, Namibia, southwest Africa, laminated siltstones resembling glacial varved rocks, dropstones, presumed glacial varves, Buschmannsklippe Formation.

Martinez NC, Murray RW, Thunell RC, Peterson LC, Muller-Karger F, Astor Y, Varela HR (2007) Modern climate forcing of terrigenous deposition in the tropics (Cariaco Basin, Venezuela). *Earth and Planetary Science Letters* **264** (3-4), 438-451. http://dx.doi.org/10.1016/j.epsl.2007.10.002; marine varves, Atlantic Ocean, fluvial sediments, Saharan dust.

Martín-Puertas C, Brauer A, Dulski P (2012) Climate change around 2800 cal yr BP as reflected in varved sediments from Lake Meerfelder Maar. In: (Besonen MR, ed.) *Second Workshop of the PAGES Varves Working Group*, Program and Abstracts, 17-19 March 2011, Corpus Christi, Texas, USA, 62-64. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2011_VWG_2nd_wkshp.pdf; Spörer-type sunspot minimum, Homeric Minimum, climate oscillation 2765-2600 cal yr BP, Eifel region, Germany, varve counting, micro-XRF, thin-section.

Martin-Puertas C, Brauer A, Dulski P, Brademann B (2012) Testing climate-proxy stationarity throughout the Holocene: an example from the varved sediments of Lake Meerfelder Maar (Germany). *Quaternary Science Reviews* **58**, 56-65. http://dx.doi.org/10.1016/j.quascirev.2012.10.023; Last Glacial/Interglacial transition back to ~1500 years BP, varve counting, microfacies and micro-XRF analyses, carve structure and thickness and geochemical composition, winter minerogenic influx into the lake reflected by Ti intensities, Si/Ti ratio indicates diatom concentration, higher values of the Si/Ti ratio together with thicker varves interpreted as wind-stress phases.

Martin-Puertas C, Brauer A, Wulf S, Ott F, Lauterbach S, Dulski P (2014) Annual proxy data from Lago Grande di Monticchio (southern Italy) between 76 and 112 ka: new chronological constraints and insights on abrupt climatic oscillations. *Climate of the Past* **10**, 2099-2114, http://dx.doi.org/10.5194/cp-10-2099-2014; sub-annual element scanner data, pollen assemblage, six major abrupt stadial oscillations during the early phase of the last glaciation, chronology MON-2014, tephrochronology, Mediterranean.

Martin-Puertas C, Matthes K, Brauer A, Muscheler R, Hansen F, Petrick C, Aldahan A, Possnert G, van Geel B (2012) Regional atmospheric circulation shifts induced by a grand solar minimum. *Nature Geoscience* **5**, 397-401. http://dx.doi.org/10.1038/ngeo1460; solar radiation, ultraviolet, Holocene, Meerfelder Maar, lake sediment, beryllium-10, wind strength, solar activity, grand solar minimum 2800 years ago, abrupt climate change.

Martín-Puertas C, Rach O, Dulski P, Brauer A (2010) Mid-Holocene climate variability from Meerfelder Maar (Western Europe). In: (Ojala AEK, Kosonen E, eds.) *First Workshop of the PAGES Varves Working Group (Palmse, Estonia, April 7-9, 2010), Programme and Abstracts*, Geological Survey of Finland, Espoo, Finland, 67-71. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2010-VWG-1st-wkshp.pdf; Eifel, Germany, lake sediment, high resolution research through the mid-Holocene, varve thickness, μ-XRF data, Atlantic/sub-Boreal transition.

Martín-Puertas C, Valero-Garcés BL, Brauer A, Mata MP, Delgado-Huertas A, Dulski P (2009) The Iberian–Roman Humid Period (2600–1600 cal yr BP) in the Zoñar Lake varve record (Andalucía, southern Spain). *Quaternary Research* **71** (2), 108-120. http://dx.doi.org/10.1016/j.yqres.2008.10.004; Holocene, lake sediment, Mediterranean region, varve chronology, Spain, solar variability, Iberian–Roman humid period, varve chronology, radiocarbon, AMS dating, varve thickness, geochemical proxies, solar cycles.

Matherne A (1982) *Paleoceanography of the Gulf of California: A 350-Year Diatom Record*. M.Sc. thesis, Corvallis, Oregon, Oregon State University, 111 p. http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/28047/MatherneAnneMarie1982.pdf?sequence=3; diatom assemblage, ~350 marine varves, Pacific.

Matsumoto E, Wong CS (1977) Heavy metal sedimentation in Saanich Inlet measured with ^{210}Pb technique. *Journal of Geophysical Research* **82** (34), 5477-5482. http://dx.doi.org/10.1029/JC082i034p05477; marine varves, British Columbia, Canada.

Mauchle F (2010) The modern sediments of Lake Oeschinen (Swiss Alps) as an archive for climatic and meteorological events. Master thesis, University of Bern, Switzerland, 69 p. http://www.climatestudies.unibe.ch/students/theses/msc/40.pdf; varved lake sediment, clastic (minerogenic) varves, μ-XRF mapping, Bernese Alps, Switzerland, sediment traps, 80-yr varve record, flood layers, turbidites.

McAndrews JH, Turton CL (2007) Canada geese dispersed cultigen pollen grains from prehistoric Iroquoian fields to Crawford Lake, Ontario, Canada. *Palynology* **31** (1), 9-18. http://dx.doi.org/10.1080/01916122.2007.9989631; varved and AMS-dated sediment contains fossil pollen, native Iroquoian farming ca. AD 1268 to 1520, onset of varve preservation coincides with the occurrences of pollen grains of *Zea* (maize) etc., dung from wild Canada geese who foraged in Iroquoian fields, ingested pollen and spores before flying to the lake.

McArthur JM, Algeo TJ, van de Schootbrugge B, Li Q, Howarth RJ (2008) Basinal restriction, black shales, Re-Os dating, and the Early Toarcian (Jurassic) oceanic anoxic event. *Paleoceanography* **23** (4), http://

dx.doi.org/10.1029/2008PA001607; comparsions among Lower Toarcian black shales, Cleveland Basin, Yorkshire, United Kingdom, Posidonia shale, Germany, Switzerland, some black shales show alternating dark organic-rich and lighter siliceous laminae that have been interpreted as marine varves; give citations about conflicting interpretations, e.g.: Posidonia shale is not varved according to: Röhl HJ, Schmid-Röhl A, Oschmann W, Frimmel A, Schwark L (2001) The Posidonia shale (lower Toarcian) of SW Germany: An oxygen depleted ecosystem controlled by sealevel and palaeoclimate. *Palaeogeography, Palaeoclimatology, Palaeoecology* **169** (3-4), 273-299. http://dx.doi.org/10.1016/S0031-0182(01)00201-2; Lower Toarcian Posidonia Shale laminations reflect events at intervals of several tens to hundreds of years.

McElhinny MW, Opdyke ND (1968) Paleomagnetism of some Carboniferous glacial varves from central Africa. *Journal of Geophysical Research* **73** (2), 689-696. http://dx.doi.org/10.1029/JB073i002p00689; 5 sites from Dwyka (Carboniferous), glacial varves in Rhodesia, Zambia, southern Tanzania, Permo-Carboniferous poles from Africa and Australia, upper Paleozoic polar movement from west to east across Gondwanaland.

Mcguire RH (1957) A study of some Lake Missoula varves. *The Compass of Sigma Gamma Epsilon* **34** (3), 197-204. http://books.google.com/books/about/The_Compass_of_Sigma_Gamma_Epsilon.html?id=cjcaAQAAIAAJ; Additional information needed: Electronic link? Keywords?

McKay N, Overpeck JT, Shanahan TM, Peck JA, King JW, Scholz CA, Heil CW (2012) An initial comparison of Eemian and Holocene varve structure and variability in the Lake Bosumtwi drill core record. In: (Besonen MR, ed.) *Second Workshop of the PAGES Varves Working Group*, Program and Abstracts, 17-19 March 2011, Corpus Christi, Texas, USA, 67-68. http://pastglobalchanges.org/download/docs/working_groups/vwg/2011_2nd_VWG_workshop_programs_and_abstracts.pdf; southern Ghana, Africa, impact crater, hydrologically closed, meromictic and typically anoxic, 2600 yr varve record, dicontinuouskly varved down to 1.07 Myr.

McNish AG, Johnson EA (1938) Magnetization of unmetamorphosed varves and marine sediments. *Terrestrial Magnetism and Atmospheric Electricity* **43** (4), 401-407. http://dx.doi.org/10.1029/TE043i004p00401; early work on magnetic properties of varved sediments, early paleomagnetic methods.

McQuoid MR, Hobson LA (1997) A 91-year record of seasonal and interannual variability of diatoms from laminated sediments in Saanich Inlet, British Columbia. *Journal of Plankton Research* **19** (2), 173-194. http://plankt.oxfordjournals.org/content/19/2/173.full.pdf; marine sediment, annual sampling 1900-1991, diatom stratigraphy related to sea surface temperature, salinity, sea level.

McQuoid MR, Whiticar MJ, Calvert SE, Pedersen TF (2001) A post-glacial isotope record of primary production and accumulation in the organic sediments of Saanich Inlet, ODP Leg 169S. *Marine Geology* **174** (1-4), 273-286. http://dx.doi.org/10.1016/S0025-3227(00)00155-9; marine sediment, paleoproduction, total organic carbon contents and stable carbon isotope ratio, ODP Holes 1033B and 1034B, differences in organic $\delta^{13}C_{org}$ between light and dark laminae are related to seasonal variations in species composition temperature and nutrient conditions.

Megard RO, Bradbury JP, Dean WE (1993) Climatic and limnologic setting of Elk Lake. In: (Bradbury JP, Dean WE, eds.) Elk Lake, Minnesota: evidence for rapid climate change in the north-central United States. *The Geological Society of America*, *Special Paper* **276**, 19-36. http://www.worldcat.org/title/elk-lake-minnesota-evidence-for-rapid-climate-change-in-the-north-central-united-states/oclc/27676675; http://specialpapers.gsapubs.org/content/by/year; calcium and magnesium bicarbonate in water, low-magnesium calcite precipitate in laminations, diatoms, iron hydroxide, varve deposition.

Mehl J, Merkt J (1992) X-ray radiography applied to laminated lake sediments. In: (Saarnisto M, Kahra A, eds.) *Proceedings of the Workshop at Lammi Biological Station 4-6 June, 1990*. *Geological Survey of Finland, Special Paper* **14**, 77-85. http://arkisto.gtk.fi/sp/sp14/sp_014.pdf; X-radiography methods of 1-2 mm slices of laminated sediment, impregnation techniques with epoxy resin, comparison with thin section.

Meili M, Jonsson P, Carman R (2000) PCB Levels in laminated coastal sediments of the Baltic Sea along gradients of eutrophication revealed by stable isotopes ($\delta^{15}N$, $\delta^{13}C$). *Ambio* **29**, 282-287. http://www.jstor.org/stable/4315040; laminated and varved marine sediments were found to be common, eutrophication, Stockholm watershed.

Melles M, Brigham-Grette J, Minyuk P, Koeberl K, Andreev A, Cook T, Fedorov G, Gebhardt C, Haltia-Hovi E, Kukkonen M, Nowaczyk N, Schwamborn G, Wennrich V, the El´gygytgyn Scientifc Party (2011) The Lake El'gygytgyn Scientific Drilling Project – Conquering Arctic Challenges through Continental Drilling. *Scientific Drilling* **11**, 29-40. http://dx.doi.org/10.2204/iodp.sd.11.03.2011; lacustrine varves, International Continental Scientific Drilling Program (ICDP), northeastern Siberia, gravelly and sandy alluvial fan deposits in ice-rich permafrost.

Melles M, Brigham-Grette J, Minyuk PS, Nowaczyk NR, Wennrich V, DeConto RM, Anderson PM, Andreev AA, Coletti A, Cook TL, Haltia-Hovi E, Kukkonen M, Lozhkin AV, Rosén P, Tarasov P, Vogel H, Wagner B (2012) 2.8 million years of arctic climate change from Lake El'gygytgyn, NE Russia. *Science* **337** (6092), 315-320. http://dx.doi.org/10.1126/science.1222135; continuous, high-resolution lacustrine record.

Mellström A, Nilsson A, Stanton T, Muscheler R, Snowball I, Suttie N (2014) Post-depositional remanent magnetization lock-in depth in precisely dated varved sediments assessed by archaeomagnetic field

models. *Earth and Planetary Science Letters* **410**, 186-196. http://dx.doi.org/10.1016/j.epsl.2014.11.016; palaeomagnetic records, varved lakes Kälksjön and Gyltigesjön, Sweden, ^{14}C wiggle-matching improves varve chronology 3000 to 2000 cal BP, palaeomagnetic secular variation, re-alignment of magnetic particles can take place in upper sediment.

Menounos B, Clague JJ (2008) Reconstructing hydro-climatic events and glacier fluctuations over the past millennium from annually laminated sediments of Cheakamus Lake, southern Coast Mountains, British Columbia, Canada. *Quaternary Science Reviews* **27** (7-8), 701-713. http://dx.doi.org/10.1016/j.quascirev.2008.01.007; North America, late Holocene environmental conditions, rhythmically varved clayey silt, seven types of varves, couplet thickness, different types of floods, glacier runoff, Little Ice Age, glacier activity, thickest varves coincide with times of rapid glacier retreat and periods when air temperatures were warmer than average.

Menounos B, Schiefer E, Slaymaker O (2006) Nested temporal suspended sediment yields, Green Lake Basin, British Columbia, Canada. *Geomorphology* **79** (1-2), 114-129. http://dx.doi.org/10.1016/j.geomorph.2005.09.020; rainstorm in 1991 delivered more suspended sediment to Green Lake Basin than any other event in the last 3000 years, sediment-transport regime is supply limited, sediment yield, varved lake sediment.

Mensing SA (1998) 560 years of vegetation change in the region of Santa Barbara, California. *Madroño* **45** (1), 1-11. http://www.calbotsoc.org/madrono.html; pollen, vegetation changes, European settlement. *Note: the findings of this study were partially revised by Hendy et al.'s (2012) new chronology.*

Mensing SA, Michaelsen J, Byrne R (1999) A 560-year record of Santa Ana fires reconstructed from charcoal deposited in the Santa Barbara Basin, California. *Quaternary Research* **51** (3), 295-305. http://dx.doi.org/10.1006/qres.1999.2035; Santa Ana winds, fire history, marine sediment AD 1425 to 1985, Chumash period, Spanish/Early American period, pollen, precipitation reconstructed from tree rings, large fires at the end of wet periods and beginning of droughts. *Note: the findings of this study were partially revised by Hendy et al.'s (2012) new chronology.*

Meriläinen JJ, Hynynen J, Palomäki A, Mäntykoski K, Witick A (2003) Environmental history of an urban lake: a palaeolimnological study of Lake Jyväsjärvi, Finland. *Journal of Paleolimnology* **30** (4) , 387-406. http://dx.doi.org/10.1023/B:JOPL.0000007229.46166.59; diatoms, chironomids, chemical stratigraphy over 200 years of 32 elements, organic pollutants, PCB, DDT, town of Jyväskylä established on the lake shore in 1837, lake received untreated municipal wastewater until 1977, eutrophication ca. 1950 - 1965, severe pollution ca. 1966 to early 1990s.

Meriläinen JJ, Kustula V, Witick A, Haltia-Hovi E, Saarinen T (2010) Pollution history from 256 BC to AD 2005 inferred from the accumulation of elements in a varve record of Lake Korttajärvi in Finland. *Journal of Paleolimnology* **44** (2), 531-545. http://dx.doi.org/10.1007/s10933-010-9435-3; varved lake sediment, varve counting (256 BC to AD 2005), metallurgical activities of the Roman Empire, accumulation rates of individual elements (Cd, Sn, Pb, Si, Ni, B, Cu, Zn, Sr, Na, K, Sb, Ca, Cr, U, Mg), earliest lead pollution AD 1055–1141, trace elements.

Merkt J (1971) Zuverlässige Auszählungen von Jahresschichten in Seesedimenten mit Hilfe von Groß-Dünnschliffen. (Reliable counting of annually laminated layers of lake sediments by means of long-sized thin sections.) *Archiv für Hydrobiologie* **69** (2), 145-154. http://www.ingentaconnect.com/content/schweiz/afh; Additional information needed: Electronic link? Keywords?

Merkt J (1975) Interpretation der älteren Sedimente von Schleinsee, Degersee und Muttelsee hinsichtlich ihrer Bildungsbedingungen und ihre Eignung für die Korrelationsforschung. Final report part B - Archivbericht, Niedersächsisches Landesamt für Bodenkunde, Hannover, Germany, 25 pp. (IN German). Additional information needed: Keywords?

Merkt J (1994) The Allerød - duration and climate as derived from laminated lake sediments. In: *Alfred Wegener Conference "Climate Dynamics Recorded in Long Continental High Resolution Time Series since the Last Interglacial"*. Abstracts. GFZ Potsdam, September 28 - Oktober 2, 1994, Berlin. *Terra Nostra* **1/94**, 59-63. Additional information needed: Electronic link? Keywords?

Merkt J, Kleinmann A (1995) Klimavariabilität im Spätglazial und im Holozän aus jahreszeitlich geschichteten Seeablagerungen. Unpublished annual report 1995, Terrestrische Päläoklimatologie, Arbeitsgruppe Hannover, Niedersächsisches Landesamt für Bodenkunde, Hannover, Germany, 9 pp. (in German). Additional information needed: Electronic link? Keywords?

Merkt J, Müller H (1978) Paläolimnologie des Schleinsees. In: (Schreiner A, ed.) *Geologische Karte von Baden-Württemberg*, sheet 8323 Tettnang, 29-31. Stuttgart, Germany. Additional information needed: Electronic link? Keywords?

Merkt J, Müller H (1995) Laminated sediments from Neolithic to the Hallstatt period in South Germany. *European Study Group on Physical, Chemical and Mathematical Techniques Applied to Archaeology (PACT)* **41** (II.1), 101-116. http://rdap02pxdu.dev.oclc.org:6251/identities/lccn-n82-79995; Additional information needed: Electronic link? Keywords?

Merkt J, Müller H (1997) Absolute chronology of the Holocene and the Lateglacial from stacked sections of varved lake sediments from north Germany. In: *7th International Symposium on Palaeolimnology*,

Abstract Volume, *Würzburger Geographische Manuskripte* **41**, 137-138. Additional information needed: Electronic link? Keywords?

Merkt J, Müller H (1999) Varve chronology and palynology of the Lateglacial in Northwest Germany from lacustrine sediments of Hämelsee in Lower Saxony. *Quaternary International* **61** (1), 41-59. http://dx.doi.org/10.1016/S1040-6182(99)00016-6; Lake Hämelsee is a dolina from a collapse over Permian salt at the end of the Pleniglacial, 18 m of lacustrine sediment, multidisciplinary studies of the microfacies from thin sections, geochemistry, pollen, rotifer, Lateglacial biozones, rapid climatic changes, Allerød sediment 625 yr seasonally varved, Laacher-See tephra (12,900 cal BP) had a 10 yr impact on the climate, 50 yr transition from Allerød to Younger Dryas, abrupt change at the end of the Lateglacial (11,560 cal BP) occurred within less than 10 yr.

Merkt J, Müller H, Knabe W, Müller P, Weiser T (1993) The early Holocene Saksunarvatn tephra found in lake sediments in NW Germany. *Boreas* **22** (2), 93-100. http://dx.doi.org/10.1111/j.1502-3885.1993.tb00168.x; basaltic tephra layer found in four lakes in northwest Germany, pollen, age about 8700 BP, Saksunarvatn tephra had been first found on the Faroe Islands.

Merkt J, Müller H, Streif H (1979) Stratigraphische Korrelierung spät- und postglazialer limnischer Sedimente in Seebecken Südwestdeutschlands. Unpublished final report part A, Archivbericht no. 83028, Niedersächsisches Landesamt für Bodenkunde, Hannover, Germany, 74 pp. (in German). Additional information needed: Electronic link? Keywords?

Merkt J, Streif H (1970) Stechrohr-Bohrgeräte für limnische und marine Lockersedimente. *Geologisches Jahrbuch* **88**, 137-148. Additional information needed: Electronic link? Keywords?

Meszczankin T, Noryśkiewicz B (2000) Processes that can disturb the chronostratigraphy of laminated sediments and pollen deposition. *Journal of Paleolimnology* **23** (2), 129-140. http://dx.doi.org/10.1023/A:1008074701468; lake morphometry, total sedimentation, pollen sedimentation, resuspension, laminated sediments, chronostratigraphy, sediment trap, Lake Gościąż, Poland, resuspension of pollen grains diminishes the chronostratigraphic value of pollen analyses.

Meyer KJ (1974) Pollenanalytische Untersuchungen und Jahresschichtenzählungen an der Holstein-zeitlichen Kieselgur von Hetendorf. *Geologisches Jahrbuch* **A 21**, 87-105. http://www.schweizerbart.de/publications/list/series/geoljba?sort=volume&topic=&page=1; diatomite, pollen, Pleistocene, Holsteinian Interglacial, lake sediment, Germany, Lower Saxony, varve count.

Meyer MC, Faber R, Spötl C (2006) The WinGeol Lamination Tool: new software for rapid, semi-automated analysis of laminated climate archives. *The Holocene* **16** (5), 753-761. http://www.uibk.ac.at/geologie/pdf/meyer2006_wingeol.pdf; digital image analysis, algorithm, RGB curve, software, annual lamination, thin section, transmitted-light, epifluorescence microscopy, automation, C++, semi-automatical measurement of lamina thickness.

Meyer-Jacob C, Vogel H, Gebhardt AC, Wennrich V, Melles M, Rosén P (2014) Biogeochemical variability during the past 3.6 million years recorded by FTIR spectroscopy in the sediment record of Lake El'gygytgyn, Far East Russian Arctic. *Climate of the Past* **10**, 209-220. http://dx.doi.org/10.5194/cp-10-209-2014; Fourier transform infrared spectroscopy, lacustrine varves, quantitative determination of biogenic silica, total organic carbon (TOC), total inorganic carbon.

Meyers PA, Ishiwatari R (1993) Lacustrine organic geochemistry — an overview of indicators of organic matter sources and diagenesis in lake sediments. *Organic Geochemistry* **20** (7), 867-900. http://dx.doi.org/10.1016/0146-6380(93)90100-P; review paper, lake sediments; carbon isotopes, C/N ratios, biomarkers, pigments, humic substances, lignin, diagenesis, paleolimnology, four examples include varves in Lake Greifen, Switzerland.

Meyers PA, Lallier-Vergés E (1999) Lacustrine sedimentary organic matter records of Late Quaternary paleoclimates. *Journal of Paleolimnology* **21** (3), 345-372. http://dx.doi.org/10.1023/A:1008073732192; review of different bulk organic matter proxies of climate change in tropical and temperate sedimentary records ranging in age from 10-500 ka, Rock-Eval hydrogen indices, organic C/N ratios, carbon stable isotope ratios, organic carbon mass accumulation rates, hydrogen stable isotope ratios, nitrogen stable isotope isotopes, pollen, organic petrography.

Michaelsen J (1985) An automated method for measuring thicknesses of layered sediments. *Mathematical Geology* **17** (7), 729-742. http://dx.doi.org/10.1007/BF01031613; varve thicknesses, automated method, digitizing an X-radiographic image, two-dimensional optical density field, filtration to enhance varve signal, definition of line segments as varve boundaries, example of thin laminae from the Gulf of California (Deep Sea Drilling Project Hole 480), Fourier analysis.

Mieszczankin T (1997) A spacio-temporal pattern of pollen sedimentation in a dimictic lake with laminated sediments. *Water, Air, & Soil Pollution* **99** (1-4), 587-592. http://dx.doi.org/10.1023/A:1018320329646; Lake Gościąż, Poland, resuspension accounts for half of the sedimentation rate in the deepest region; pollen flux in bottom sediment traps 4x higher than in upper traps, resuspension and resedimentation affect record of events in laminated sediment.

Miettinen JO, Simola H, Grönlund E, Lahtinen J, Niinioja R (2005) Limnological effects of growth and cessation of agricultural land use in Ladoga Karelia: sedimentary pollen and diatom analyses. *Journal of Paleolimnology* **34** (2), 229-243. http://dx.doi.org/10.1007/s10933-005-2542-x; history of eutrophication in 6 lakes, District of Sortavala, Karelian Republic, Russia, former Finnish territory, diatom assemblages, total phosphorus.

Migowski C, Agnon A, Bookman R, Negendank JFW, Stein M (2004) Recurrence pattern of Holocene earthquakes along the Dead Sea transform revealed by varve-counting and radiocarbon dating of lacustrine sediments. *Earth and Planetary Science Letters* **222** (1), 301-314. http://dx.doi.org/10.1016/j.epsl.2004.02.015; high-resolution Holocene seismic history of Dead Sea Transform (DST), lake sediment, radiocarbon dating and annual laminae counting yield excellent agreement between disturbed sedimentary structures (identified as seismites) and the historical earthquake record, 53 Holocene seismites indicate varying recurrence intervals of seismic activity between a few and 1000 years, paleoseismology, Anatolian block; see López-Merino et al. (2016) who advise caution about the presence of varves in the Dead Sea.

Milana JP, Lopez S (1998) Solar cycles recorded in Carboniferous glacimarine rhythmites (Western Argentina): relationships between climate and sedimentary environment. *Palaeogeography, Palaeoclimatology, Palaeoecology* **144** (1-2), 37-63. http://dx.doi.org/10.1016/S0031-0182(96)00037-5; rhythmite succession interpreted as glaciomarine varves, 5 varve-types in Río Francia section, San Juan, 3 units of 1028, 690, 465 varves, time series, varve thickness, periodicity, grain size, dropstone frequency, spectral analysis, Hale cycle, sunspot cycles.

Mildenhall DC, Cochran UA, Cook RA (2006) Reconnaissance sediment and microfossil analyses of a laminated short piston core from Lake Tekapo, South Island, New Zealand. *New Zealand Journal of Geology and Geophysics* **49** (4), 463-476. http://dx.doi.org/10.1080/00288306.2006.9515181; 2.2 m piston core with ca. 100 yr varve sequence, diatoms, spores, pollen.

Millet L, Arnaud F, Heiri O, Magny M, Verneaux V, Desmet M (2009) Late-Holocene summer temperature reconstruction from chironomid assemblages of Lake Anterne, northern French Alps. *The Holocene* **19** (2), 317-328. http://dx.doi.org/10.1177/0959683608100576; chironomid-based reconstruction of late-Holocene temperature in 8 m presumably varved sediment core covering the last 1800 years, chironomid fauna, Dark Age Cold Period (DACP), the Medieval Warm Period (MWP), Little Ice Age (LIA).

Mingram J (1998) Laminated Eocene maar-lake sediments from Eckfeld (Eifel region, Germany) and their short-term periodicities. *Palaeogeography, Palaeoclimatology, Palaeoecology* **140** (1-4), 289-305. http://dx.doi.org/10.1016/S0031-0182(98)00021-2; Eocene, lake sediment, periodicity, maar lakes, paleolimnology, Eocene, comparison of sediment types and lake development of a Tertiary (subtropical) maarlake with recent maarlakes, origin of laminations, periodicities, laminated oils hales, partly laminated bituminous siltstones, turbidites, diatomaceous laminites, organic carbon ca. 8.5%, darker and lighter sublaminae, probably varves, counting of ca. 700 oil shale laminae.

Mingram J, Allen JRM, Brüchmann C, Liu J, Luo X, Negendank JFW, Nowaczyk N, Schettler G (2004) Maar- and crater lakes of the Long Gang Volcanic Field (N.E. China)—overview, laminated sediments, and vegetation history of the last 900 years. *Quaternary International* **123-125**, 135-147. http://dx.doi.org/10.1016/j.quaint.2004.02.014; 8 maar- or crater lakes with water depths between 15 and 127 m examined, pollen of the last 900 years in Lake Sihailongwan show stable vegetation cover, except for the last 150 years with increasing anthropogenic influence, no evidence for Little Ice Age.

Mingram J, Negendank JFW, Brauer A, Berger D, Hendrich A, Köhler M, Usinger H (2007) Long cores from small lakes—recovering up to 100 m-long lake sediment sequences with a high-precision rod-operated piston corer (Usinger-corer). *Journal of Paleolimnology* **37** (4), 517-528. http://dx.doi.org/10.1007/s10933-006-9035-4; versatile piston corer for recovering continuous sediment sequences with superior accuracy and quality, up to 95 m, examples of lake sediment profiles.

Mingram J, Schettler G, Nowaczyk N, Luo X, Lu H, Liu J, Negendank JFW (2004) The Huguang maar lake — a high-resolution record of palaeoenvironmental and palaeoclimatic changes over the last 78,000 years from South China. *Quaternary International* **122** (1), 85-107. http://dx.doi.org/10.1016/j.quaint.2004.02.001; 78,000 year record of magnetic susceptibility, some 'varve-like laminae', the last 4000 years enhanced human activity.

Möbius J, Gaye B, Lahajnar N, Bahlmann E, Emeis KC (2011) Influence of diagenesis on sedimentary $\delta^{15}N$ in the Arabian Sea over the last 130 kyr. *Marine Geology* **284** (1–4), 127–138. http://dx.doi.org/10.1016/j.margeo.2011.03.013; diagenesis, paired data of $\delta^{15}N$ and amino acid composition of marine sediment samples, Ocean Drilling Program (ODP) Hole 772 B, Hole 724 C on Oman Margin, coastal upwelling, glacial–interglacial cycles, role of N_2-fixation during glacial stages, amino acid indices mirror organic matter quality, nitrogen stable isotope ratios.

Möbius J, Lahajnar N, Emeis KC (2010) Diagenetic control of nitrogen isotope ratios in Holocene sapropels and recent sediments from the Eastern Mediterranean Sea. *Biogeosciences* **7**, 3901-3914. http://www.biogeosciences.net/7/3901/2010/bg-7-3901-2010.pdf; http://dx.doi.org/10.5194/bg-7-3901-2010; marine laminated (varved ?) sediment, enhanced organic matter preservation under anoxic conditions, sinking particles, surface sediments, eight spatially distributed core records of the youngest sapropel S1 (10–6 ka) and older sapropels (S5, S6).

Moernaut J, Van Daele, M, Heirman K, Fontijn K, Strasser M, Pino M, Urrutia R, De Batist M (2014) Lacustrine turbidites as a tool for quantitative earthquake reconstruction: New evidence for a variable rupture mode in south central Chile. *Journal of Geophysical Research: Solid Earth* **119** (3), 1607–1633. http://dx.doi.org/10.1002/2013JB010738; varved sediment from lakes Villarrica and Calafquén, Chilean Lake District, lacustrine turbidites, paleoseismic record.

Mojtahid M, Eynaud F, Zaragosi S, Scourse J, Bourillet JF, Garlan T (2005) Palaeoclimatology and palaeohydrography of the glacial stages on Celtic and Armorican margins over the last 360 000 yrs. *Marine Geology* **224** (1-4), 57-82. http://dx.doi.org/10.1016/j.margeo.2005.07.007; Celtic margin, Bay of Biscay, Atlantic, off France, postulated deep-sea varves formed by an annual cycle of meltwater and iceberg release from the disintegrating BIS generating cascading plumes of dense turbid meltwater coeval with IRD release.

Mollenhauer G, Eglinton TI (2007) Diagenetic and sedimentological controls on the composition of organic matter preserved in California Borderland Basin sediments. *Limnology and Oceanography* **52** (2), 558-576. http://dx.doi.org/10.4319/lo.2007.52.2.0558; compound-specific radiocarbon (^{14}C) contents, stable carbon isotopes, lipid biomarkers, alkenones, fatty acids, Santa Barbara Basin, Pacific Ocean, marine sediment, radiocarbon, planktic foraminifera, alkenones are systematically depleted in radiocarbon with respect to foraminifera, preferential preservation of terrestrially derived fatty acids, short-chain fatty acids tend to be more ^{14}C-enriched relative to alkenones in core-top sediments, longer-chain homologues are generally the most radiocarbon depleted lipids, lower ^{14}C content of more refractory compounds reflects a larger proportion of laterally supplied preaged material, selective degradation.

Moller TF (2012) Formation and paleoclimatic interpretation of a continuously laminated sapropel S_5: a window to the climate variability during the Eemian interglacial in the Eastern Mediterranean. Dissertation University of Tübingen, Germany, 153 p. https://publikationen.uni-tuebingen.de/xmlui/handle/10900/49701; marine varves, Levantine Basin, annual blooms of mat-forming diatoms, wavelet analysis.

Möller H (1962) Annuella och interannuella ändmoräner. *Geologiska Föreningen i Stockholm Förhandlingar* **84** (2), 134-143. http://dx.doi.org/10.1080/11035896209449211; 'De Geer moraines' (introduced by Hoppe, 1959), varve-measurements within a De Geer moraine series.

Moor HC, Schaller T, Sturm M (1996) Recent changes in stable lead isotope ratios in sediments of Lake Zug, Switzerland. *Environmental Science & Technology* **30** (10), 2928–2933. http://dx.doi.org/10.1021/es950895t; profiles of P and $^{206}Pb/^{207}Pb$ ratios in sediment cores, relationship to Pb emissions from gasoline.

Moore JJ, Hughen KA, Miller GH, Overpeck JT (2001) Little Ice Age recorded in summer temperature reconstruction from varved sediments of Donard Lake, Baffin Island, Canada. *Journal of Paleolimnology* **25** (4), 503-517. http://dx.doi.org/10.1023/A:1011181301514; clastic varved sediments, Cape Dyer, 1250 yr record of decadal-to-centennial scale climate variability, summer melting of the Caribou Glacier, radiocarbon date on moss fragments in agreement with varve-count age, varve thickness correlates with average summer temperature from nearby Cape Dyer, varve thickness was used to reconstruct average summer temperatures for the past 1250 years, abrupt shifts and large amplitude decadal-to-centennial scale variability, Little Ice Age.

Morellón M, Anselmetti FS, Ariztegui D, Brushulli B, Sinopoli G, Wagner B, Sadori L, Gilli A, Pambuku A (2016) Human–climate interactions in the central Mediterranean region during the last millennia: The laminated record of Lake Butrint (Albania). *Quaternary Science Reviews* **136**, 134-152. http://dx.doi.org/10.1016/j.quascirev.2015.10.043; 'marine lake', sedimentology, high-resolution elemental geochemistry, pollen, 12 m long sediment core, AMS radiocarbon, ^{137}Cs dating, reconstruction of paleoenvironment.

Morford JL, Russell AD, Emerson S (2001) Trace metal evidence for changes in the redox environment associated with the transition from terrigenous clay to diatomaceous sediment, Saanich Inlet, BC. *Marine Geology* **174** (1-4), 355-369. http://dx.doi.org/10.1016/S0025-3227(00)00160-2; redox-sensitive trace metals (Mn, V, Mo, U, Cd and Re) in sediments from ODP Leg 169S Hole 1033B, British Columbia, marine varves. See also: http://dx.doi.org/10.1016/S0025-3227(00)00159-6

Mörner NA (1975) Palaeomagnetism and the relation between the Bredåkra delta and the Fjärås Stadial and the Gothenburg Magnetic Excursion. *Geologiska Föreningen i Stockholm Förhandlingar* **97** (3), 298-301. http://dx.doi.org/10.1080/11035897509454317; Gothenburg Magnetic Excursion in Fjärås Stadial 12,350–12,400 BP, 3 varved clay sequences. Note: This work has been criticized by Ringberg (1976), prompting a reply by Mörner (1976).

Mörner NA (1975) The genesis of the Bredåkra delta and its relation to the Fjärås Stadial. *Geologiska Föreningen i Stockholm Förhandlingar* **97** (3), 294-297. http://dx.doi.org/10.1080/11035897509454316; revision of Ringberg's idea that the Bredåkra delta (in south-eastern Sweden) was deposited right in front of the receding ice for topographical reasons. Note: This work has been criticized by Ringberg (1976), prompting a reply by Mörner (1976).

Mörner NA (1976) The genesis of the Bredåkra delta and its relation to the Fjärås Stadial: A reply. *Geologiska Föreningen i Stockholm Förhandlingar* **98** (1), 87-88. http://dx.doi.org/10.1080/11035897609454347; Mörner's correlation between the Fjärås Stadial and the Bredåkra delta was criticized by Ringberg (1976), prompting this rebuttal.

Mörner NA (1977) Varve chronology on Södertörn: Recording and dating of the "drainage" of the Baltic Ice Lake and correlation with the Finnish varve chronology. *Geologiska Föreningen i Stockholm Förhandlingar* **99** (4), 423-425. http://dx.doi.org/10.1080/11035897709455050; Short-distance varve correlations across the Södertörn area have extended the continuous Swedish Time Scale back to about varve -1500 (about 10,400 B.P.). Varve -1073 (= 9,965 varves B.P.) is represented by a distinct drainage varve and a change from diatact to symict varves, recording the "drainage" of the Baltic Ice Lake at Billingen and the invasion of the sea into the Baltic.

Mörner NA (1978) Varves and varved clays. *Encyclopedia of the Earth Sciences*, VIA Sedimentology (R.W. Fairbridge, ed.), 841-843.

Mörner NA (1978) Annual and inter-annual magnetic variations in varved clay. *Journal of Interdisiplinary Cycle Research* **9** (3), 229-241. http://dx.doi.org/10.1080/09291017809359640; Swedish foil piston corer, paleomagnetism in 3 Swedish varved clay cores, 11-yr sunspot cyclicity in magnetic records.

Mörner NA (1979) The Fennoscandian uplift and Late Cenozoic geodynamics: geological evidence. *GeoJournal* **3** (3), 287-318. http://dx.doi.org/10.1007/BF00177634; varve-dated sea level curve of Lidén (1938), evidence from Finland, Sweden, Fennoscandian Shield, postglacial uplift.

Mörner NA, Sylwan C (1989) Detailed paleomagnetic record for the last 6300 years from varved lake deposits in northern Sweden. In: *Geomagnetism and Paleomagnetism* (Lowes F, et al., eds.), 63-70. Kluwer, Dordrecht.

Mörner NA (1995) The Baltic Ice Lake-Yoldia Sea transition. *Quaternary International* **27**, 95-98. http://dx.doi.org/10.1016/1040-6182(94)00065-D; Baltic Ice Lake, Yoldia Sea, Ancylus Lake, Littorina Sea are the 4 classical stages in the postglacial evolution of the Baltic basin; 300 years of 'Yoldia' Lake stage suggested between Baltic Ice Lake and Yoldia Sea right after the drainage of the Baltic Ice Lake and before the ingression of salt water.

Mörner NA (1996) Liquefaction and varve deformation as evidence of paleoseismic events and tsunamis. The autumn 10,430 BP case in Sweden. *Quaternary Science Reviews* 15 (8-9), 939-948. http://dx.doi.org/10.1016/S0277-3791(96)00057-1; liquefaction and deformation of varves provide information on paleoseismic events, varve chronology, liquefaction structures and seismic varve deformation dated to autumn 10,430 varve years BP.

Mörner NA (2003) Paleoseismicity of Sweden - a novel paradigm. A contribution to INQUA from its Sub-commission on Paleoseismology, Reno 2003, 320 pp., P&G-print, Stockholm. ISBN-91-631-4072-1.

Mörner NA (2005) An interpretation and catalogue of paleoseismicity in Sweden. *Tectonophysics* **408** (1-4), 265-307. http://dx.doi.org/10.1016/j.tecto.2005.05.039; 44 paleoseismic events in Sweden, varve-dating of evidence often allows high precision, paleoseismology, liquefaction, tsunamis, varve chronology, deglaciation, uplift.

Mörner NA, Sun G (2008) Paleoearthquake deformations recorded by magnetic variables. *Earth and Planetary Science Letters* **267** (3-4), 495-502. http://dx.doi.org/10.1016/j.epsl.2007.12.002; seismic liquefaction, distinction between plastic and liquefied deformations using paleomagnetic methods, seismomagnetization.

Mörner NA (2011) Paleoseismology: The application of multiple parameters in four case studies in Sweden. *Quaternary International* **242** (1), 65-75. http://dx.doi.org/10.1016/j.quaint.2011.03.054; dating of paleoearthquakes with varves.

Mörner NA (2013) Drainage varves, seismites and tsunamites in the Swedish Varve Chronology. *GFF, special issue "Varve Genesis, Chronology and Paleoclimate"* **135** (3-4), 308-315. http://dx.doi.org/10.1080/11035897.2013.764546; testing of possible synchroneity of deformations and turbidites over wide areas using varves, high-magnitude earthquakes, varve events previously interpreted as "drainage varves" are seismically induced marker-beds and should be renamed seismites; layers formed by tsunamis should be termed tsunamites.

Mörner NA (2014) Varve chronology. In: (Mörner NA, ed.) *Geochronology - Methods and Case Studies*. Chapter 3, pp. 73-87, InTech, ISBN: 978-953-51-1643-1. http://dx.doi.org/10.5772/58630. Available from: http://www.intechopen.com/books/geochronology-methods-and-case-studies/varve-chronology

Morris RJ, Niemi Å, Niemistö L, Poutanen EL (1988) Sedimentary record of seasonal production and geochemical fluxes in a nearshore coastal embayment in the northern Baltic Sea. *Finnish Marine Research* **256**, 77-94. Additional information needed. Link? Keywords? Marine varves.

Moscariello A, Ravazzi C, Brauer A, Mangili C, Chiesa S, Rossi S, de Beaulieu JL, Reille M (2000) A long lacustrine record from the Piànico-Sèllere Basin (Middle-Late Pleistocene, Northern Italy). *Quaternary International* **73/74**, 47-68. http://dx.doi.org/10.1016/S1040-6182(00)00064-1; Middle–Upper Pleistocene, lake sediment, varved carbonates, pollen, microstratigraphy.

Moser KA, Smol JP, MacDonald GM, Larsen CPS (2002) 19th century eutrophication of a remote boreal lake: a consequence of climate warming? *Journal of Paleolimnology* **28** (2), 269-281. http://dx.doi.org/10.1023/A:1021635024757; ~200-year varved sediment record from Rainbow Lake A, northern boreal forest, Wood Buffalo National Park, northern Alberta, Northwest Territories, Canada, diatom assemblages, biogenic silica concentrations, total phosphorus, Arctic.

Mudie PJ, Rochon A, Levac E (2002) Palynological records of red tide-producing species in Canada: past trends and implications for the future. *Palaeogeography, Palaeoclimatology, Palaeoecology* **180** (1-3), 159-186. http://dx.doi.org/10.1016/S0031-0182(01)00427-8; varved marine sediments in Saanich Inlet, British Columbia, and the Santa Barbara Basin off California, harmful algal blooms on Pacific coast of Canada, Holocene history of harmful phytoplankton species examined using ultra-high resolution studies of dinoflagellate cysts as a proxy for 'red tide' production,

paleoecological transfer functions, changes in sea surface temperature and salinity, 10 500-yr Pacific record shows that the largest blooms occurred during the early Holocene, modern disequilibrium of the natural ecosystem structure.

Muller G, Stoffers P (1974) Mineralogy and petrology of Black Sea Basin sediments. In: (Degens ET, Ross DA, eds.) *The Black Sea – Geology, Chemistry, and Biology*. *American Association of Petroleum Geologists Memoir* **20**, 200-248. http://www.worldcat.org/title/black-sea-geology-chemistry-and-biology/oclc/969800; marine sediment, geographic distribution of minerals across the Black Sea.

Müller H (1962) Pollenanalytische Untersuchung eines Quartärprofils durch die spät- und nacheiszeitlichen Ablagerungen des Schleinsees (Südwestdeutschland). *Geologisches Jahrbuch* **79**, 493-526. Additional information needed: Electronic link? Keywords?

Müller H (1965) Eine pollenanalytische Neubearbeitung des Interglazial-Profils von Bilshausen (Unter-Eichsfeld). *Geologisches Jahrbuch* **83**, 327-352. Additional information needed: Electronic link? Keywords?

Müller H (1974) Pollenanalytische Untersuchungen und Jahresschichtenzählungen an der holstein-zeitlichen Kieselgur von Munster-Breloh. *Geologisches Jahrbuch* **A 21**, 107-140 (in German with English abstract). http://www.schweizerbart.de/publications/list/series/geoljba?sort=volume&topic=&page=1; varved sections of diatomite from Munster-Breloh in Germany, varve counts, pollen, Lower Saxony.

Müller H (1974) Pollenanalytische Untersuchungen und Jahresschichtenzählungen an der eem-zeitlichen Kieselgur von Bispingen/Luhe. *Geologisches Jahrbuch* **A 21**, 149-169 (in German with English abstract). http://www.schweizerbart.de/publications/list/series/geoljba?sort=volume&topic=&page=1; three varved sections of diatomite from Bispingen at the river Luhe in Germany cover the entire Eemian Interglacial, varve counts, pollen, Lower Saxony.

Müller H (1992) Climate changes during and at the end of the Interglacials of the Cromerian Complex. In: (Kukla G, Went E, eds.) *Start of a Glacial, Proceedings of the Mallorca NATO ARW*, NATO ASI Series I, **3**, 113-125, Springer Verlag, Heidelberg. http://www.worldcat.org/title/start-of-a-glacial/oclc/26587896; Additional information needed: Electronic link? Keywords?

Munoz A, Ojeda J, Sánchez-Valverde B (2002) Sunspot-like and ENSO/NAO-like periodicities in lacustrine laminated sediments of the Pliocene Villarroya Basin (La Rioja, Spain). *Journal of Paleolimnology* **27** (4), 453-463. http://dx.doi.org/10.1023/A:1020319923164; 1745 varves in the Villarroya Pliocene Basin, Spain, periodicities of about 12, 6–7 and 2–3 years, sunspot cycles, El Niño-Southern Oscillation (ENSO), North Atlantic Oscillation (NAO), Quasi-biennial Oscillation (QBO).

Munz PM, Siccha M, Lückge A, Böll A, Kucera M, Schulz H (2015) Decadal-resolution record of winter monsoon intensity over the last two millennia from planktonic foraminiferal assemblages in the northeastern Arabian Sea. *The Holocene* http://dx.doi.org/10.1177/0959683615591357;

Murray DW (1982) *Paleo-oceanography of the Gulf of California Based on Silicoflagellates from Marine Varved Sediments*. M.Sc. thesis, Corvallis, Oregon, Oregon State University, 129 p. http://www.worldcat.org/title/paleo-oceanography-of-the-gulf-of-california-based-on-silicoflagellates-from-marine-varved-sediments/oclc/8571919; marine sediment, silicoflagellate assemblages, productivity, influence from equatorial waters, California Current, Mexico, Pacific Ocean.

Murton DK, Murton JB (2012) Middle and Late Pleistocene glacial lakes of lowland Britain and the southern North Sea Basin. *Quaternary International* **260**, 115-142. http://dx.doi.org/10.1016/j.quaint.2011.07.034; review of sedimentary and geomorphic evidence for main glacial lakes inferred during the Middle and Late Pleistocene, Lake Bosworth, low-level Lake Humber, varve chronologies have been correlated with the Greenland ice-core record.

Musa Bandowe BA, Srinivasan P, Seelge M, Sirocko F, Wilcke W (2014) A 2600-year record of past polycyclic aromatic hydrocarbons (PAHs) deposition at Holzmaar (Eifel, Germany). *Palaeogeography, Palaeoclimatology, Palaeoecology* **401**, 111–121. http://dx.doi.org/10.1016/j.palaeo.2014.02.021; composition patterns of PAHs, charcoal, C, N, S, δ^{13}C, δ^{15}N, δ^{34}S, limnic varves.

Musgrave RJ, Fussell MS (2011) Paleosecular variation during the Kiaman Superchron: a 1150 year record from glacial varves of the Seaham Formation, New South Wales. *Australian Journal of Earth Sciences* **58** (4), 375-389. http://dx.doi.org/10.1080/08120099.2011.574735; Abercrombie Quarry, Kiaman Superchron, characteristic remanence directions from 11 sites spanning 1150 varves.

Myrbo A (2008) Sedimentary and historical context of eutrophication and remediation in urban Lake McCarrons (Roseville, Minnesota). *Lake and Reservoir Management* **24** (4), 349-360. http://dx.doi.org/10.1080/07438140809354845; geochemical analyses of varved sediments in eutrophic and oligomictic lake.

Naeher S, Gilli A, North RP, Hamann Y, Schubert CJ (2013) Tracing bottom water oxygenation with sedimentary Mn/Fe ratios in Lake Zurich, Switzerland. *Chemical Geology* **352**, 125-133. http://dx.doi.org/10.1016/j.chemgeo.2013.06.006; redox dynamics of manganese in varved lake sediment, high-resolution XRF core scanning,

bi-annual lamination and calcite precipitation cycles, Mn maxima coincide with annual maximum deep-water oxygen spring concentrations, Fe signal due to calcite dilution, semi-quantitative reconstruction of bottom water oxygenation.

Naeher S, Niemann H, Peterse F, Smittenberg RH, Zigah PK, Schubert CJ (2014) Tracing the methane cycle with lipid biomarkers in Lake Rotsee (Switzerland). *Organic Geochemistry* **66**, 174-181. http://dx.doi.org/10.1016/j.orggeochem.2013.11.002; varved lake sediment, glycerol dialkyl glycerol tetraethers (GDGTs), lipid biomarkers, fatty acids (FAs), sterols, hopanoids, phytol, acetoclastic methanogens, eutrophication, methanogenesis.

Naeher S, Smittenberg RH, Gilli A, Kirilova EP, Lotter AF, Schubert CJ (2012) Impact of recent lake eutrophication on microbial community changes as revealed by high resolution lipid biomarkers in Rotsee (Switzerland). *Organic Geochemistry* **49**, 86-95. http://dx.doi.org/10.1016/j.orggeochem.2012.05.014; eutrophication, microbial community, lipid biomarkers, trace metals, Lake Rotsee, diatoms, bacterial biomass, methanogenic Archaea, altered BIT index (BITCH) indicates changes in terrestrial organic matter supply.

Naeher S., Suga H, Ogawa NO, Takano Y, Schubert CJ. Grice K, Ohkouchi N (2016a) Distributions and compound-specific isotopic signatures of sedimentary chlorins reflect the composition of photoautotrophic communities and their carbon and nitrogen sources in Swiss lakes and the Black Sea. *Chemical Geology* **443**, 198-209. http://dx.doi.org/10.1016/j.chemgeo.2016.04.029; lacustrine and marine varves, tetrapyrrole pigments (i.e. intact chlorophylls and bacteriochlorophylls, pheopigments), carbon and nitrogen isotopes, Switzerland, Lake Zurich, phototrophic sulfur bacteria.

Naeher S., Suga H, Ogawa NO, Takano Y, Schubert CJ. Grice K, Ohkouchi N (2016b) Compound-specific carbon and nitrogen isotopic compositions of chlorophyll a and its derivatives reveal the eutrophication history of Lake Zurich (Switzerland). *Chemical Geology* **443**, 210-219. http://dx.doi.org/10.1016/j.chemgeo.2016.09.005; distribution and carbon and nitrogen isotopic composition of chlorins in varved lacustrine sediment.

Nagashima K, Suzuki Y, Irino T, Nakagawa T, Tada R, Hara Y, Yamada K, Kurosaki Y (2016) Asian dust transport during the last century recorded in Lake Suigetsu sediments. *Geophysical Research Letters* **43**, 2835-2842. http://dx.doi.org/10.1002/2015GL067589; central Japan, lake sediment, decreased deposition flux of eolian dust during the last century.

Nakagawa T, Gotanda K, Haraguchi T, Danhara T, Yonenobu H, Brauer A, Yokoyama Y, Tada R, Takemura K, Staff RA, Payne R, Bronk Ramsey C, Bryant C, Brock F, Schlolaut G, Marshall M, Tarasov P, Lamb H, Suigetsu 2006 Project Members (2012) SG06, a fully continuous and varved sediment core from Lake Suigetsu, Japan: stratigraphy and potential for improving the radiocarbon calibration model and understanding of late Quaternary climate changes. *Quaternary Science Reviews* **36**, 12 March 2012, 164-176. http://dx.doi.org/10.1016/j.quascirev.2010.12.013; Lake Suigetsu, central Japan, lake sediment, radiocarbon, preliminary lithostratigraphic description of overlapping cores.

Nakagawa T, Kitagawa H, Yasuda Y, Tarasov PE, Gotanda K, Sawai Y (2005) Pollen/event stratigraphy of the varved sediment of Lake Suigetsu, central Japan from 15,701 to 10,217 SG vyr BP (Suigetsu varve years before present): Description, interpretation, and correlation with other regions. *Quaternary Science Reviews* **24** (14-15), 1691-1701. http://dx.doi.org/10.1016/j.quascirev.2004.06.022; reconstructed deglacial climate history, climate in Japan was linked to low-latitude Pacific Sea Surface Temperatures, orbital forcing, Younger Dryas.

Nakagawa T, Suigetsu 2006 Project Members (2012) Lake Suigetsu 2006 varved sediment core project. *PAGES news* **20** (2), 70-71. http://pastglobalchanges.org/download/docs/newsletter/2012-2/PAGESnews_2012_270-71_Nakagawa.pdf

Nakagawa T, Suigetsu 2006 Project Members (2014) High-precision sampling of laminated sediments: Strategies from Lake Suigetsu. In: (Zolitschka B, Pike J, von Gunten L, Kiefer T, eds.), *Annual Recorders of the Past. Past Global Changes, PAGES Magazine* **22** (1), 12-13. http://pastglobalchanges.org/products/pages-magazine/3752-22-1-annual-recorders-of-the-past; high-precision depth control is an absolute necessity for varve studies; effective solutions to the most common problems related to core preparation and archiving.

Nederbragt AJ, Francus P, Bollmann J, Soreghan MJ (2004) Image calibration, filtering and processing. In: (Francus P, ed.) *Image Analysis, Sediments and Paleoenvironments. Developments in Paleoenvironmental Research*, vol. 7. Springer, Dordrecht, 35-58. http://dx.doi.org/10.1007/1-4020-2122-4; image pre-processing, color information and calibration, image processing, metadata, size, color, grey-scale, contrast, brightness, filtering, edge detection, segmentation.

Nederbragt AJ, Thurow JW (2001) A 6000 yr varve record of Holocene climate in Saanich Inlet, British Columbia, from digital sediment colour analysis of ODP Leg 169S cores. *Marine Geology* **174**, 95-110. http://dx.doi.org/10.1016/S0025-3227(00)00144-4; high-resolution grey-value time series, digital images of varved marine sediment, ODP Sites 1033 and 1034, ~6000 yr long varve record with annual resolution, correlation of cores via massive beds (turbidites) and characteristic varve patterns, varve-count age-scale calibrated with radiocarbon ages, ODP Leg 169S record virtually complete, temporal variation in varve thickness reflects regional precipitation history, thick varves represent wet conditions, Roman Warm Period, Little Ice Age, Holocene, Saanich Inlet, digital sediment color analysis.

Nederbragt AJ, Thurow JW (2004) Digital sediment colour analysis as a method to obtain high resolution climate proxy records. In: (Francus P, ed.) *Image Analysis, Sediments and Paleoenvironments. Developments in Paleoenvironmental Research*, vol. 7. Springer, Dordrecht, 105-124. http://dx.doi.org/10.1007/1-4020-2122-4; extracting color data, light correction, RGB to L∗a∗b∗ conversion, mosaicking, comparison with other methods, digital image, still camera, light correction, color calibration, CIE L∗a∗b∗.

Nederbragt AJ, Thurow J (2005) Amplitude of ENSO cycles in the Santa Barbara Basin, off California, during the past 15 000 years. *Journal of Quaternary Science* **20** (5), 447-456. http://dx.doi.org/10.1002/jqs.946; marine 'varve' thickness time series from ODP Site 893 interpreted in terms of strength of El Niño/Southern Oscillation (ENSO) cycles; the study incorrectly assumes the presence of varves; see Schimmelmann et al. (2013) http://dx.doi.org/10.1080/11035897.2013.773066.

Negendank JFW, Zolitschka B, Rein B, Brauer A, Brüchmann C, Sanchez A, Vos H (1999) Varves and solar variability (Lake Holzmaar, Eifel, Germany). *Bulletin de la Société belge de Géologie* **106**, 53-61. http://www.worldcat.org/title/bulletin-de-la-societe-belge-de-geologie/oclc/263600499/editions; early Holocene, biological productivity controls lake sedimentation, non-linear phase-oriented varve thickness, solar periodicities, spectral analysis.

Negri A (1996) Possible origin of laminated sediments of the anoxic Bannock Basin (eastern Mediterranean). *Geo-Marine Letters* **16** (2), 101-107. http://dx.doi.org/10.1007/BF02202604; nannofossils, microfossils, Libeccio Basin, marine sediment, comparison with similar laminated sediments from anoxic basins in Black Sea and Gulf of Mexico, cyclic productivity changes, periodicity of ca. 80 yr may be related to solar activity, Wolf-Gleissberg cycles, Nile discharge.

Netto RG, Benner JS, Buatois LA, Uchman A, Mángano MG, Ridge JCC, Kazakauskas V, Gaigalas A (2012) Glacial Environments. *Developments in Sedimentology* **64**, 299-327. http://dx.doi.org/10.1016/B978-0-444-53813-0.00011-3; review of sedimentary conditions in glacial environments, glacilacustrine and glacimarine varves.

Neugebauer I, Brauer A, Dräger N, Dulski P, Wulf S, Plessen B, Mingram J, Herzschuh U, Brande A (2012) A Younger Dryas varve chronology from the Rehwiese palaeolake record in NE-Germany. *Quaternary Science Reviews* **36**, 12 March 2012, 91-102. http://dx.doi.org/10.1016/j.quascirev.2011.12.010; micro-facies, micro-XRF, Younger Dryas, north-eastern Germany, Rehwiese paleolake, floating varve chronology from late Allerød to the early Holocene, Laacher See tephra.

Neugebauer I, Brauer A, Schwab MJ, Dulski P, Frank U, Hadzhiivanova E, Kitagawa H, Litt T, Schiebel V, Taha N, Waldmann ND, DSDDP Scientific Party (2015) Evidences for centennial dry periods at ~3300 and ~2800 cal. yr BP from micro-facies analyses of the Dead Sea sediments. *The Holocene* **25** (8), 1358-1371. http://dx.doi.org/10.1177/0959683615584208; partially varved lake sediment, Mediterranean region, flood and dust events ca. 3300 and 2800 cal. yr BP, thin section, micro-X-ray fluorescence (μ-XRF), magnetic susceptibility, grain size, palynology, dry periods at ~3500–3300 and ~3000–2400 cal. yr BP, Homeric Grand Solar Minimum ca. 2800 cal. yr BP; see López-Merino et al. (2016) who advise caution about the presence of varves in the Dead Sea.

Neugebauer I, Brauer A, Schwab MJ, Waldmann ND, Enzel Y, Kitagawa H, Torfstein A, Frank U, Dulski P, Agnon A, Ariztegui D, Ben-Avraham Z, Goldstein SL, Stein M, DSDDP Scientific Party (2014) Lithology of the long sediment record recovered by the ICDP Dead Sea Deep Drilling Project (DSDDP). *Quaternary Science Reviews* **102**, 149-165. http://dx.doi.org/10.1016/j.quascirev.2014.08.013; quasi-continuous ~450 m record covering two glacial–interglacial cycles including transitions; see López-Merino et al. (2016) who advise caution about the presence of varves in the Dead Sea.

Neumann FH, Kagan EJ, Leroy SAG, Baruch U (2010) Vegetation history and climatic fluctuations on a transect along the Dead Sea west shore and their impact on past societies over the last 3500 years. *Journal of Arid Environments* **74** (7), 756-764. http://dx.doi.org/10.1016/j.jaridenv.2009.04.015; climatic fluctuations on a 75 km long transect on the western Dead Sea shore, pollen and sedimentological data from Mount Sedom, Ein Boqueq, Ein Gedi, Ze'elim, Ein Feshkha. Middle Bronze Age, Iron Age, Hellenistic to Byzantine Period, high lake level of Dead Sea signals increased precipitation, Mediterranean, Holocene, Israel; see López-Merino et al. (2016) who advise caution about the presence of varves in the Dead Sea.

Neumann T, Stögbauer A, Walpersdorf E, Stüben D, Kunzendorf H (2002) Stable isotopes in recent sediments of Lake Arendsee, NE Germany: response to euthrophication and remediation measures. *Palaeogeography, Palaeoclimatology, Palaeoecology* **178** (1-2), 75-90. http://dx.doi.org/10.1016/S0031-0182(01)00403-5; 70-year varve counting and $^{137}Cs/^{210}Pb$ dating, changes in productivity and eutrophication in response to nutrient loading, carbon and nitrogen stable isotope ratios, dominance of air nitrogen fixation of cyanobacteria blooms during the last decades, effect of artificial drainage of nearby wetland.

Newhall CG, Paull CK, Bradbury JP, Higuera-Gundy A, Poppe LJ, Self S, Bonar Sharpless N, Ziagos J (1987) Recent geologic history of lake Atitlán, a caldera lake in western Guatemala. *Journal of Volcanology and Geothermal Research* **33** (1-3), 81-107. http://dx.doi.org/10.1016/0377-0273(87)90055-2; probably more than 35,000 years of deposition, 300 m deep lake with relatively flat floor, piston cores from deep basins record ca. 2,000 years of unusually rapid sedimentation (ca. 0.5 cm/yr).

Ndiaye M, Davaud E, Ariztegui D, Fall M (2012) A semi automated method for laminated sediments analysis. *International Journal of Geosciences* **3**, 206-210. http://dx.doi.org/10.4236/ijg.2012.31023; software program, laminae counting, laminae thickness, spectral analysis, wavelet analysis, automated counting; the software can be downloaded from: http://archive-ouverte.unige.ch/vital/access/manager/Repository/unige:717

Niemelä J (1971) Die quartäre Stratigraphie von Tonablagerungen und der Rückzug des Inlandseises zwischen Helsinki und Hämeenlinna in Südfinnland. *Geological Survey of Finland, Bulletin* **253**, 1-79. Additional information needed: Keywords? Link?

Niessen F, Lister G, Giovanoli F (1992) Dust transport and palaeoclimate during the Oldest Dryas in Central Europe — implications from varves (Lake Constance). *Climate Dynamics* **8** (2), 71-81. http://dx.doi.org/10.1007/BF00209164; seasonal loess deposits in proglacial lake, Germany, Bavaria, Last Glacial, Oldest Dryas chronozone, sedimentology of varves, eolian transport, volcanic glass intraclasts.

Nijampurkar VN, Rao DK, Oldfield F, Renberg I (1998) The half-life of ^{32}Si: a new estmate based on varved lake sediments. *Earth and Planetary Science Letters* **163**,191-196. http://dx.doi.org/10.1016/S0012-821X(98)00186-1; cosmic ray, cosmogenic, silicon-32, half-life of ^{32}Si ddetermined to be 178 ± 10 years, Lake Kassjön, north Sweden, geochronometer, geochronology, biogenic structures.

Nilsson M, Renberg I (1990) Viable endospores of *Thermoactinomyces vulgaris* in lake sediments as indicators of agricultural history. *Applied and Environmental Microbiology* **56** (7), 2025-2028. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC184555/; endospores of bacteria of the genus *Thermoactinomyces* with extreme longevity were isolated from 9,000-year-old varved sediments from Lake Judesjön, Lake Kassjön, Lake Koltjärn, Sweden, relationship between concentrations of dormant endospores and the extent of agriculture in the catchments of the lakes, bacteria could be used as a paleoindicator for agricultural activity, potential for evolutionary studies.

Nipkow F (1920) Vorläufige Mitteilungen über Untersuchungen des Schlammabsatzes im Zürichsee. *Schweizerische Zeitschrift für Hydrologie* **1** (1-2), 100-122 (in German). http://dx.doi.org/10.1007/BF02485147; "Preliminary communication about studies of sedimentary mud in Lake Zurich". First report about laminated sediment in Lake Zurich.

Nipkow HF (1927) *Über das Verhalten der Skelette planktischer Kieselalgen im geschichteten Tiefenschlamm des Zürich- und Baldeggersees.* PhD Dissertation, ETH Zürich. http://dx.doi.org/10.3929/ethz-a-000115971; Additional information needed: Keywords?

Noël M (1975) The palaeomagnetism of varved clays from Blekinge, southern Sweden. *Geologiska Föreningen i Stockholm Förhandlingar* **97** (4), 357-367. http://dx.doi.org/10.1080/11035897509454326; palaeomagnetism of 2 varved clay cores, Swedish varve chronology, Laschamp geomagnetic event.

Noël M (1976) The palaeomagnetism of varved clays from Blekinge, southern Sweden. A reply. *Geologiska Föreningen i Stockholm Förhandlingar* **98** (3), 284-285. http://dx.doi.org/10.1080/11035897609454385; asserts that Thompson's (1976) arguments depend on features of the Blekinge data taken out of context and on a misunderstanding of the magnetisation processes in these sediments.

Norton SA, Kahl JS (1991) Progress in understanding the chemical stratigraphy of metals in lake sediments in relation to acidic precipitation. *Hydrobiologia* **214** (1), 77-84. http://dx.doi.org/10.1007/BF00050935; lead-210 dating of relatively unpolluted lake sediment, development of chronology of atmospheric deposition of trace elements related to air pollution, net fluxes of trace metals from natural and anthropogenic sources, metal mobility during acidification, value of varved sediment.

Nowaczyk NR, Haltia EM, Ulbricht D, Wennrich V, Sauerbrey MA, Rosén P, Vogel H, Francke A, Meyer-Jacob C, Andreev AA, Lozhkin AV (2013) Chronology of Lake El'gygytgyn sediments – a combined magnetostratigraphic, palaeoclimatic and orbital tuning study based on multi-parameter analyses. *Climate of the Past* **9**, 2413-2432. http://dx.doi.org/10.5194/cp-9-2413-2013; lacustrine varves, International Continental Scientific Drilling Program (ICDP) Site 5011-1, Far East Russian Arctic, magnetostratigraphy, age model, orbitally tuned ages for 8 tephras.

Nuhfer EB, Anderson RY, Bradbury JP, Dean WE (1993) Modern sedimentation in Elk Lake, Clearwater County, Minnesota. In: (Bradbury JP, Dean WE, eds.) Elk Lake, Minnesota: evidence for rapid climate change in the north-central United States. *The Geological Society of America*, *Special Paper* **276**, 75-96. http://www.worldcat.org/title/elk-lake-minnesota-evidence-for-rapid-climate-change-in-the-north-central-united-states/oclc/27676675; http://specialpapers.gsapubs.org/content/by/year; sediment trap, microlaminae, thin section, varves.

Nussbaumer SU, Steinhilber F, Trachsel M, Breitenmoser P, Beer J, Blass A, Grosjean M, Hafner A, Holzhauser H, Wanner H, Zumbuehl HJ (2011) Alpine climate during the Holocene: a comparison between records of glaciers, lake sediments and solar activity. *Journal of Quaternary Science* **26** (7), 703-713. http://dx.doi.org/10.1002/jqs.1495; comparison among records, European Alps, Lake Silvaplana, mass accumulation rate, biogenic silica concentration, glacier length changes, Mer de Glace, Unterer Grindelwaldgletscher, Grosser Aletschgletscher, Gornergletscher, solar activity, Hallstatt periodicity, Maunder Minimum.

Nykänen M, Vakkilainen K, Liukkonen M, Kairesalo T (2009) Cladoceran remains in lake sediments: a comparison between plankton counts and sediment records. *Journal of Paleolimnology* **42** (4), 551-570. http://dx.doi.org/10.1007/s10933-008-9304-5; year-to-year and seasonal comparisons of contemporary zooplankton data and cladoceran remains in varves of Lake Vesijärvi, southern Finland, deposition of remains differed significantly among taxa, some species are under-represented in sediment due to poor preservation, results of cladoceran analyses should be expressed in several ways (relative abundances, per unit dry weight, per unit organic matter, net accumulation values), taphonomy.

O'Brien NR (1996) Shale lamination and sedimentary processes. In: (Kemp AES, ed.) *Palaeoclimatology and Palaeoceanography from Laminated Sediments*. *Geological Society Special Publication* **116**, London, 23-36. http://dx.doi.org/10.1144/GSL.SP.1996.116.01.04; common lamination signatures in shale, microfabric, Proterozoic, Palaeozoic, Mesozoic, X-radiography, thin-section, photomicrographs, scanning electron microscopy, bottom flowing currents produce features of fine to thick laminae, deposition from low-density bottom currents and turbidity currents.

Ó Cofaigh C, Dowdeswell JA (2001) Laminated sediments in glacimarine environments: diagnostic criteria for their interpretation. *Quaternary Science Reviews* **20** (13), 1411-1436. http://dx.doi.org/10.1016/S0277-3791(00)00177-3; review of processes that form laminated glacimarine sediments, diagnostic criteria, iscrimination between glacimarine and glacilacustrine rhythmites, ice-dynamics, basal thermal regime.

O'Connell JM, Tunnicliffe V (2001) The use of sedimentary fish remains for interpretation of long-term fish population fluctuations. *Marine Geology* **174** (1–4), 177–195, http://dx.doi.org/10.1016/S0025-3227(00)00149-3; marine sediment, Pacific, Saanich Inlet, fish scales, population fluctuations, Pacific herring and hake, poor scale recovery, fragmented bones, Holocene. See also: http://dx.doi.org/10.1016/S0025-3227(00)00150-X

Ohlendorf C, Gebhardt C, Hahn A, Kliem P, Zolitschka, the PASADO science team (2011) The PASADO core processing strategy - Sediment core treatment in an interdisciplinary deep lake drilling project. *Sedimentary Geology* **239** (1-2), 104-115. http://dx.doi.org/10.1016/j.sedgeo.2011.06.007; ICDP (International Continental Scientific Drilling Program) expedition no. 5022, recommended techniques to process varved sediment.

Ohlendorf C, Niessen F, Weissert H (1997) Glacial varve thickness and 127 years of instrumental climate data: A comparison. *Climatic Change* **36** (3-4), 391-411. http://dx.doi.org/10.1023/A:1005376913455; glacial varves from Lake Silvaplauna, High Alpine proglacial lake, European Alps, Switzerland, comparison with glacier monitoring data and instrumental climate data from1864 to 1990, varve thickness correlates with mean summer temperature.

Ohlendorf C, Sturm M, Hausmann S (2003) Natural environmental changes and human impact reflected in sediments of a high alpine lake in Switzerland. *Journal of Paleolimnology* **30** (3), 297-306. http://dx.doi.org/10.1023/A:1026032829150; Lake Sägistalsee, European Alps, 9050 years of continuously laminated sediment, human-induced environmental changes as early as 4300 cal. BP, erosion events, changes in vegetation cover and land use, Roman forest clearance, Bronze Age, mineralogy, grain size.

Ojala AEK (2001) *Varved Lake Sediments in Southern and Central Finland: Long Varve Chronologies as a Basis for Holocene Palaeoenvironmental Reconstructions.* PhD thesis, *Geological Survey of Finland*, *Miscellaneous Publications*, 41 pp. http://arkisto.gtk.fi/ej/ej41.pdf; lake sediment, physical properties, magnetic properties, paleomagnetism, image analysis, X-ray analysis, backscattering, varve chronology, Holocene, Lake Nautajärvi, Lake Valkiajärvi, Pirkanmaa, clastic-organic varves, X-ray densitometry, Backscattered Scanning Electron microscope Images (BSEI), thin section, varve calculation errors.

Ojala AEK (2004) Application of X-ray radiography and densitometry in varve analysis. In: (Francus P, ed.) *Image Analysis, Sediments and Paleoenvironments. Developments in Paleoenvironmental Research*, vol. 7. Springer, Dordrecht, 187-202. http://dx.doi.org/10.1007/1-4020-2122-4; examples from Lake Nautajärvi, clastic-organic varves, Finland, X-ray densitometry, digital image analysis, line-scan.

Ojala AEK, Alenius T (2005) 10 000 years of interannual sedimentation recorded in the Lake Nautajärvi (Finland) clastic-organic varves. *Palaeogeography, Palaeoclimatology, Palaeoecology* **219** (3-4), 285-302. http://www.sciencedirect.com/science/article/pii/S0031018205000180; http://dx.doi.org/10.1016/j.palaeo.2005.01.002; deposition, varve components, climate change, Holocene, Finland, Lake Nautajärvi, pollen.

Ojala AEK, Alenius T, Seppä H, Giesecke T (2008) Integrated varve and pollen-based temperature reconstruction from Finland: evidence for Holocene seasonal temperature patterns at high latitudes. *The Holocene* **18** (4), 529-538. http://hol.sagepub.com/content/18/4/529.abstract; http://dx.doi.org/10.1177/0959683608089207; lake sediment, varves, pollen, seasonal climate, temperature reconstruction, paleoclimate, Lake Nautajärvi, Finland, Holocene.

Ojala AEK, Bigler C, Weckström J (2014) Understanding varve formation processes from sediment trapping and limnological monitoring. In: (Zolitschka B, Pike J, von Gunten L, Kiefer T, eds.), *Annual Recorders of the Past. Past Global Changes, PAGES Magazine* **22** (1), 8-9. http://pastglobalchanges.org/products/pages-magazine/3752-22-1-annual-recorders-of-the-past; sediment trapping and monitoring of lacustrine varves, seasonal deposition of the abiotic and biotic components within varved lakes in Sweden and Finland.

Ojala AEK, Francus P (2002) Comparing X-ray densitometry and BSE-image analysis of thin section in varved sediments. *Boreas* **31** (1), 57-64. http://onlinelibrary.wiley.com/doi/10.1111/j.1502-3885.2002.tb01055.x/pdf; http://dx.doi.org/10.1111/j.1502-3885.2002.tb01055.x; lake sediment, X-ray radiography, digital image analysis, line-scan, Lake Nautajärvi, Finland, backscattered scanning electron microscopy.

Ojala AEK, Francus P, Zolitschka B, Behl R, Besonen M, Lamoureux S (2012) The fidelity of sediment varve chronologies – a review. In: (Besonen MR, ed.) *Second Workshop of the PAGES Varves Working Group*, Program and Abstracts, 17-19 March 2011, Corpus Christi, Texas, USA, 71-73. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2011_VWG_2nd_wkshp.pdf; recommended standardized guidelines for recording and establishing an appropriate varve chronology.

Ojala AEK, Francus P, Zolitschka B, Besonen M, Lamoureux SF (2012) Characteristics of sedimentary varve chronologies - A review. *Quaternary Science Reviews* **43**, 45-60. http://dx.doi.org/10.1016/j.quascirev.2012.04.006; review of varve chronologies, varve data base, worldwide distribution of varved sediment records, fidelity of varve chronologies.

Ojala AEK, Heinsalu A, Kauppila T, Alenius T, Saarnisto M (2008) Characterizing changes in the sedimentary environment of a varved lake sediment record in southern central Finland around 8000 cal. yr BP. *Journal of Quaternary Science* **23** (8), 765-775. http://onlinelibrary.wiley.com/doi/10.1002/jqs.1157/abstract; http://dx.doi.org/10.1002/jqs.1157; Holocene, diatoms, pollen.

Ojala AEK, Heinsalu A, Saarnisto M, Tiljander M (2005) Annually laminated sediments date the drainage of the Ancylus Lake and early Holocene shoreline displacement in central Finland. *Quaternary International* **130** (1), 63-73. http://www.sciencedirect.com/science/article/pii/S1040618204001119; http://dx.doi.org/10.1016/j.quaint.2004.04.032; paleomagnetic secular variations (PSV), isolation, shoreline displacement, Holocene, Lake Nautajärvi, Lake Korttajärvi, Lake Alimmainen Savijärvi.

Ojala AEK, Kosonen E (2010) *First Workshop of the PAGES Varves Working Group (Palmse, Estonia, April 7-9, 2010), Programme and Abstracts.* Geological Survey of Finland, Espoo, Finland, 130 pp. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2010-VWG-1st-wkshp.pdf; pdf copies of all extended abstracts from oral and poster presentations.

Ojala AEK, Kosonen E, Kihlman S (2010) Studies of Lake Nautajärvi varved sediment record – chronology and environmental interpretations. In: (Ojala AEK, Kosonen E, eds.) *First Workshop of the PAGES Varves Working Group (Palmse, Estonia, April 7-9, 2010), Programme and Abstracts*, Geological Survey of Finland, Espoo, Finland, 75-82. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2010-VWG-1st-wkshp.pdf; overview on results from Lake Nautajärvi, Finland, proxy record of winter precipitation and temperature via catchment runoff and erosion, clastic-biogenic varves.

Ojala AEK, Kosonen E, Weckström J, Korkonen S, Korhola A (2013) Seasonal formation of clastic-biogenic varves: the potential for palaeoenvironmental interpretations. *GFF, special issue "Varve Genesis, Chronology and Paleoclimate"* **135** (3-4), 237-247. http://dx.doi.org/10.1080/11035897.2013.801925; clastic-biogenic varved lake sediments from Nautajärvi, Finland, seasonal sedimentation of different varve components and palaeolimnological indicators (diatoms, chrysophycaean cysts) using near-bottom sediment-trap monitoring.

Ojala AEK, Launonen I, Holmström L, Tiljander M (2015) Effects of solar forcing and North Atlantic oscillation on the climate of continental Scandinavia during the Holocene. *Quaternary Science Reviews* **112**, 153-171. http://dx.doi.org/10.1016/j.quascirev.2015.01.021; lakes Nautajärvi and Korttajärvi, Finland, 10,000-year-long lacustrine varved records, periodicities, solar variability, North Atlantic ocean–atmosphere circulation patterns.

Ojala AEK, Saarinen T (2002) Palaeosecular variation of the Earth's magnetic field during the last 10000 years based on the annually laminated sediment of Lake Nautajärvi, central Finland. *The Holocene* **12** (4), 391-400. http://hol.sagepub.com/content/12/4/391.full.pdf+html; http://dx.doi.org/10.1191/0959683602hl551rp; digital image analysis, x-ray radiography, paleomagnetism, mineral magnetism, paleomagnetic secular variations (PSV), Holocene.

Ojala AEK, Saarinen T, Salonen VP (2000) Preconditions for the formation of annually laminated lake sediments in southern and central Finland. *Boreal Environment Research* **5**, 243-255. http://www.borenv.net/BER/pdfs/ber5/ber5-243s.pdf; lake sediment, Boreal, Finland.

Ojala AEK, Saarnisto M (1999) Comparative varve counting and magnetic properties of the 8400-yr sequence of an annually laminated sediment in Lake Valkiajärvi, Central Finland. *Journal of Paleolimnology* **22** (4), 335-348. http://www.springerlink.com/content/kx2k5556786833vl/ http://dx.doi.org/10.1023/A:1008064613031; meromictic lake sediment, environmental magnetism, pollen stratigraphy, Europe.

Ojala AEK, Tiljander M (2003) Testing the fidelity of sediment chronology: comparison of varve and paleomagnetic results from Holocene lake sediments from central Finland. *Quaternary Science Reviews* **22** (15-17), 1787-1803. http://dx.doi.org/10.1016/S0277-3791(03)00140-9; http://www.sciencedirect.com/science/article/pii/S0277379103001409; digital image analysis, paleomagnetism, mineral magnetism, paleomagnetic secular variations (PSV), Holocene, Lake Nautajärvi, Lake Korttajärvi, Lake Alimmainen Savijärvi.

Olausson E, Olsson IU (1969) Varve stratigraphy in a core from the Gulf of Aden. *Palaeogeography, Palaeoclimatology, Palaeoecology* **6**, 87-193. http://dx.doi.org/10.1016/0031-0182(69)90006-6; marine sediment, yearly fluctuations of eolian matter input into the Gulf of Aden, microstratification with an average thickness of 1 mm, varve stratigraphy connected to radiocarbon time scale, inverse correlation between aeolian matter and phosphate, Late Pleistocene, Red Sea, Flandrian transgression (= main Postglacial eustatic rise of sea level).

Oldfield F, Berthier F (2001) The multi-proxy late-Pleistocene and Holocene record from the sediments of the Grand Lac d'Annecy, eastern France. *Journal of Paleolimnology* **25** (2), 133-135. http://dx.doi.org/10.1023/A:1008138618831; synopsis of multidisciplinary research results, introduction to special issue.

Oldfield F, Crooks PRJ, Harkness DD, Petterson G (1997) AMS radiocarbon dating of organic fractions from varved lake sediments: an empirical test of reliability. *Journal of Paleolimnology* **18** (1), 87-91. http://dx.doi.org/10.1023/A:1007985119922; varved sediments from Lake Kassjön, Sweden, testing radiocarbon AMS ^{14}C dating accuracy and precision of chronologies over the last 1000 years, results consistent in soft-water lake sediments, organic fractions typically give significantly older radiocarbon dates than expected, carbon reservoir effect, resuspension.

Olsson IU, El-Daoushy F, Vasari Y (1983) Säynäjälampi and the difficulties inherent in the dating of sediments in a hard-water lake. *Hydrobiologia* **103** (1), 5-14. http://dx.doi.org/10.1007/BF00028421; significant ^{14}C reservoir age of up to 1100 years, ^{210}Pb, pollen analysis does not give any reliable indication of agriculture.

Ortiz JD, O'Connell S (2004) Toward a non-linear grayscale calibration method for legacy photographic collections. In: (Francus P, ed.) *Image Analysis, Sediments and Paleoenvironments. Developments in Paleoenvironmental Research*, vol. 7. Springer, Dordrecht, 125-141. http://dx.doi.org/10.1007/1-4020-2122-4; grayscale analysis, nonlinear correction method, grayscale image analysis, non-invasive sampling, Deep Sea Drilling Program, Ocean Drilling Program, JOIDES Resolution, ODP Leg 100, ODP Leg 162, sediment core photography, marine stratigraphy.

Orvis KH, Baumgartner TR, Byrne R, Wright LD (1990) A modern pollen record from the central Gulf of California. In: (Betancourt JL, MacKay AM, eds.) *Proceedings of the Sixth Annual Pacific Climate (PACLIM) Workshop, March 5-8, 1989*, *Interagency Ecological Studies Program for the Sacramento-San Joaquin Estuary Technical Report* **23**, 101-104. http://www.worldcat.org/title/proceedings-of-the-sixth-annual-pacific-climate-paclim-workshop-asilomar-california-march-5-8-1989/oclc/22743042; marine sediment, Guaymas Basin slope, pollen counts from 1967 to 1978, human disturbance, Baja California, Mexico, Pacific.

O'Sullivan PE (1983) Annually-laminated lake sediments and the study of Quaternary environmental changes - a review. *Quaternary Science Reviews* **1** (4), 245-313. http://dx.doi.org/10.1016/0277-3791(83)90008-2; primary locations in Eastern North America, Europe, Africa, formation of annual laminations in freshwater lakes, four main types of laminations (here termed ferrogenic, calcareous, biogenic and clastic), geochronology, climatic change, vegetation history, fire history, sediment flux, rates of erosion from catchments, pollution, eutrophication, acid rain.

O'Sullivan PE (1992) Studies of varved sedinents in the Shropshire – Cheshire meres, UK. In: (Saarnisto M, Kahra A, eds.) *Proceedings of the Workshop at Lammi Biological Station 4-6 June, 1990*. *Geological Survey of Finland, Special Paper* **14**, 33-46. http://arkisto.gtk.fi/sp/sp14/sp_014.pdf; frozen and soft mud cores from Ellesmere Mere, Rostherne Mere and Berrington Pool contain laminations that might be varves, preserved signals of seasonality, more than 17% organic matter in Ellesmere, extractable lipid fraction, United Kingdom, Great Britain.

O'Sullivan PE, Moyeed R, Cooper MC, Nicholson MJ (2002) Comparison between instrumental, observational and high resolution proxy sedimentary records of Late Holocene climatic change—a discussion of possibilities. *Quaternary International* **88** (1), 27-44. http://dx.doi.org/10.1016/S1040-6182(01)00071-4; discussion of variability, long-term changes are known only from proxies, whereas shorter periodicities are identified in instrumental and observational data, less well known centennial periodicities in varved lake sediments.

Ott F, Wulf S, Serb J, Słowiński M, Obremska M, Tjallingii R, Błaszkiewicz M, Brauer A (2016) Constraining the time span between the Early Holocene Hässeldalen and Askja-S Tephras through varve counting in the Lake Czechowskie sediment record, Poland. *Journal of Quaternary Science* **31** (2), 103-113. http://dx.doi.org/10.1002/jqs.2844; lacustrine varves, differential dating via varve counting, early Holocene.

Outridge PM, Stern GA, Hamilton PB, Percival JB, McNeely R, Lockhart WL (2005) Trace metal profiles in the varved sediment of an Arctic lake. *Geochimica et Cosmochimica Acta* **69** (20), 4881-4894. http://dx.doi.org/10.1016/j.gca.2005.06.009; 1,300 year record of metal accumulation from lake sediment on Devon Island in the Canadian High Arctic, concentration profiles of metals, mercury correlates with total diatom abundance over the last 400 yrs.

Overpeck JT, Peterson LC, Kipp N, Imbrie J, Rind D (1989) Climate change in the circum-North Atlantic region during the last deglaciation. *Nature* **338**, 553-557. http://dx.doi.org/10.1038/338553a0; marine sediment, Atlantic, Cariaco Basin, upwelling, tropical North Atlantic, abrupt climate change during the last glacial-to-interglacial transition.

Pacton M, Gorin GE, Fiet N (2008) Unravelling the origin of ultralaminae in sedimentary organic matter: the contribution of bacteria and photosynthetic organisms. *Journal of Sedimentary Research* **78** (10), 654-667. *Note: copy and paste the following URL directly into your browser, because clicking may not work:* http://dx.doi.org/10.2110/jsr.2008.075; preservation pathways, selective preservation of organic molecules and biomarkers, transmission

electron microscopy, four possible origins of ultralaminae, algal and bacterial cell walls, thylakoids, and filamentous organisms, importance of ultralaminae for paleoenvironmental interpretation.

Page MJ, Trustrum NA, DeRose RC (1994) A high resolution record of storm-induced erosion from lake sediments, New Zealand. *Journal of Paleolimnology* **11** (3), 333-348. http://dx.doi.org/10.1007/BF00677993; erosion by cyclonic storms and vegetation changes, Lake Tutira, Lake Waikopiro, Hawke's Bay, pollen, cesium-137, varved organic-rich sediments, eutrophication, correlation between storm sediment thickness and total storm rainfall.

Palmer AP, MacLeod A, Lowe JJ, Rose J (2010) Microfacies analysis of clastic laminated sediments and the discrimination of clastic varves using thin section micromorphology: examples from Lochaber, Scotland. In: (Ojala AEK, Kosonen E, eds.) *First Workshop of the PAGES Varves Working Group (Palmse, Estonia, April 7-9, 2010), Programme and Abstracts*, Geological Survey of Finland, Espoo, Finland, 83-84. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2010-VWG-1st-wkshp.pdf; United Kingdom, lake sediment, thin section, micromorphology, microfacies, glaciolacustrine varves.

Palmer AP, Rose J, Lowe JJ, Walker MJC (2008) Annually laminated Late Pleistocene sediments from Llangorse Lake, South Wales, UK: a chronology for the pattern of ice wastage. *Proceedings of the Geologists' Association* **119** (3-4), 245-258. http://dx.doi.org/10.1016/S0016-7878(08)80304-5; microfacies analysis, 574 glaciolacustrine varves, micromorphological investigation of mineral-laminated lake proglacial sediments, United Kingdom, Dimlington Stadial, varve thickness.

Palmer AP, Rose J, Rasmussen SO (2012) Evidence for phase-locked changes in climate between Scotland and Greenland during GS-1 (Younger Dryas) using micromorphology of glaciolacustrine varves from Glen Roy. *Quaternary Science Reviews* **36**, 114-123. http://dx.doi.org/10.1016/j.quascirev.2011.12.003; Scotland, United Kingdom, glaciolacustrine varves, Europe, comparison with Greenland ice core, sea ice in North Atlantic, Younger Dryas.

Panyushkina I, Shishov V, Kalugin I (2012) Evaluation of temperature signal in combined records of tree-ring widths and laminated lake sediments from the Russian Altai. In: (Besonen MR, ed.) *Second Workshop of the PAGES Varves Working Group*, Program and Abstracts, 17-19 March 2011, Corpus Christi, Texas, USA, 74-77. http://pastglobalchanges.org/download/docs/working_groups/vwg/2011_2nd_VWG_workshop_programs_and_abstracts.pdf; larch *Larix sibirica*, Teletskoe lake, Rb/Sr, bromine, X-ray density XRD.

Paquette N, Gajewski K (2013) Climatic change causes abrupt changes in forest composition, inferred from a high-resolution pollen record, southwestern Quebec, Canada. *Quaternary Science Reviews* **75**, 169-180. http://dx.doi.org/10.1016/j.quascirev.2013.06.007; lacustrine pollen profile in varved sediments sampled at continuous 10-year intervals and spanning the past 1000 years, responses to climate change and anthropogenic activity.

Parplies J, Lücke A, Vos H, Mingram J, Stebich M, Radtke U, Han J, Schleser GH (2008) Late glacial environment and climate development in northeastern China derived from geochemical and isotopic investigations of the varved sediment record from Lake Sihailongwan (Jilin Province). *Journal of Paleolimnology* **40** (1), 471-487. http://dx.doi.org/10.1007/s10933-007-9176-0; total organic carbon (TOC), total nitrogen, nitrogen stable isotope ratio, carbon stable isotope ratio, 16,500 to 9,500 yr BP, C/N ratio, productivity of lacustrine algae in relation to input of terrigenous organic matter, East Asian monsoon.

Patterson RT, Kumar A (2002) Post-glacial paleoceanographic history of Saanich Inlet, British Columbia, based on foraminiferal proxy data. *Journal of Foraminiferal Research* **32** (2), 110-125. http://dx.doi.org/10.2113/0320110; 5 benthic foraminiferal biofacies characterize the late Pleistocene to Recent at ODP Sites 1033B and 1034B (Leg 169S), latest Pleistocene, ~14,000 years BP, to the earliest Holocene, marine sediment, Pacific.

Patterson RT, Prokoph A, Kumar A, Chang AS, Roe HM (2005) Late Holocene variability in pelagic fish scales and dinoflagellate cysts along the west coast of Vancouver Island, NE Pacific Ocean. *Marine Micropaleontology* **55** (3-4), 183-204. http://dx.doi.org/10.1016/j.marmicro.2005.02.006; Effingham Inlet, Vancouver Island, British Columbia, ~500–5300 years BP record of paleoproductivity in the North American Coastal Upwelling Domain, fish scales, principal components analysis, wavelet and spectral analyses.

Patterson RT, Prokoph A, Reinhardt E, Roe HM (2007) Climate cyclicity in late Holocene anoxic marine sediments from the Seymour–Belize Inlet Complex, British Columbia. *Marine Geology* **242** (1-3), 123-140. http://dx.doi.org/10.1016/j.margeo.2007.04.003; Alison Sound, Canada, 23% laminated intervals, couplets of light diatom-rich summer laminae, dark mineral-rich winter laminae, probably marine varves, most common in portions of the core deposited during regional neoglaciation between ~ 3150 and 2700 yr BP, wavelet and spectral time-series analysis, cycles, Pacific Decadal Oscillation (PDO), solar irradiance cyclicity.

Patterson RT, Prokoph A, Wright C, Chang AS, Thomson RE, Ware DM (2004) Holocene solar variability and pelagic fish productivity in the NE Pacfic. *Palaeontologica Electronica* **7** (4), 1–17. http://palaeo-electronica.org/2004_1/fish2/fish2.pdf; marine varves, Pacific Ocean, Effingham Inlet, Vancouver Island, British Columbia, fish scales from 693 cm segment of a 1125 cm piston core, 1,800-4,700 yr BP, Northern Anchovy, Pacific Herring, spectral analysis

and continuous (Morlet) wavelet transform analysis, populations cycle independently at decadal to centennial scales, Gleissberg solar cycle.

Pazdur A, Fontugne MR, Goslar T, Pazdur MF (1995) Lateglacial and Holocene water-level changes of the Gościąż Lake, Central Poland, derived from carbon isotope studies of laminated sediment. *Quaternary Science Reviews* **14** (2), 125-135. http://dx.doi.org/10.1016/0277-3791(94)00124-T; radiocarbon, carbon stable isotope ratios, organic and carbonate fractions of laminated sediment of Lake Gościąż, varve counting, varve chronology, reconstruction of lake level during the Lateglacial and Holocene, similarities with Swedish lakes and general agreement with available records from European lakes.

Peacock JD (2003) Late Devensian marine deposits (Errol Clay Formation) at the Gallowflat Claypit, eastern Scotland: new evidence for the timing of ice recession in the Tay Estuary. *Scottish Journal of Geology* **39** (1), 1-10. http://dx.doi.org/10.1144/sjg39010001; Late Devensian arctic marine deposits at the Gallowflat Claypit between Perth and Dundee are correlated with the type succession at nearby Inchcoonans, but include an expanded basal glaciomarine unit with rhythms interpreted as symmict varves. Laminated silt–clay couplets are thought to be tidal.

Pearce RB, Kemp AES, Baldauf JG, King SC (1995) High-resolution sedimentology of laminated diatomaceous sediments from the Eastern Equatorial Pacific Ocean. In: (Pisias NG, Mayer LA, Janecek TR, Palmer-Julson A, van Andel TH, eds.) *Proceedings of the Ocean Drilling Program (ODP), Scientific Results* **138**. College Station, Texas, 647-663. http://dx.doi.org/10.2973/odp.proc.sr.138.135.1995; scanning electron microscope (SEM)-based analyses of laminated diatom oozes of ODP Leg 138, three major laminae types, pennate diatom mats, *Thalassiothrix longissima*, marine sediment.

Pearce RB, Kemp AES, Koizumi I, Pike J, Cramp A, Rowland SJ (1998) 28. A lamina-scale, SEM-based study of a late Quaternary diatom-ooze sapropel from the Mediterranean Ridge, Site 971. In: (Robertson AHF, Emeis KC, Richter C, Camerlenghi A, eds.) *Proceeding of the Ocean Drilling Program (ODP), Scientific Results*, **Leg 160**, 333-348. http://dx.doi.org/10.2973/odp.proc.sr.160.016.1998; scanning electron microscopy, late Quaternary sapropel from moat of Napoli mud volcano, sapropel, organic-rich diatom ooze, opal, Mediterranean, Italy, back-scattered electron imagery, epoxy resin-impregnated thin section, seasonal-scale mass sedimentation of diatoms, diatom mats, marine sediment.

Pearson EJ, Juggins S, Tyler J (2014) Ultrahigh resolution total organic carbon analysis using Fourier Transform Near Infrarred Reflectance Spectroscopy (FT-NIRS). *Geochemistry, Geophysics, Geosystems* **15** (1), 292-301. http://dx.doi.org/10.1002/2013GC004928; NIR, Lake Suigetsu, Japan, test of robustness of method to reconstruct % total organic carbon (TOC), spectra pretreatment, statistical approaches.

Pearson SJ, Marshall JEA, Kemp AES (2004) The White Stone Band of the Kimmeridge Clay Formation, an integrated high-resolution approach to understanding environmental change. *Journal of the Geological Society of London* **161**, 675-683. http://dx.doi.org/10.1144/0016-764903-089; a marine laminated Jurassic mudrock shows Milankovitch Band climatic cyclicity, backscattered electron imagery, palynofacies, fabric analysis, coccolith-rich and organic-matter-rich layers, photic zone extended into the euxinic water column, sulfurization increased sequestration of carbon.

Pedersen JBT, Kroon A, Jakobsen BH, Mernild SH, Andersen TJ, Snowman Andresen C (2013) Fluctuations of sediment accumulation rates in front of an Arctic delta in Greenland. *The Holocene* **23** (6), 860-868. http://dx.doi.org/10.1177/0959683612474480; delta of Mittivakkat Glacier meltwater river, Sermilik Fjord, SE Greenland, automated marine varve counting technique validated with ^{210}Pb, covering the last two centuries, sediment delivery from a glacial drainage basin to a fjord.

Pędziszewska A, Tylmann W, Witak M, Piotrowska N, Maciejewska E, Latałowa M (2015) Holocene environmental changes reflected by pollen, diatoms, and geochemistry of annually laminated sediments of Lake Suminko in the Kashubian Lake District (N Poland). *Review of Palaeobotany and Palynology* **216**, 55-75. http://dx.doi.org/10.1016/j.revpalbo.2015.01.008; Pollen, non-pollen palynomorphs (NPPs), diatoms, and geochemistry of partially varved lake sediments used to reconstruct post-glacial environmental changes of northern Poland in the Baltic region.

Peglar SM (1993) The mid-Holocene *Ulmus* decline at Diss Mere, Norfolk, UK: a year-by-year pollen stratigraphy from annual laminations. *The Holocene* **3** (1), 1-13. http://dx.doi.org/10.1177/095968369300300101; annual laminations, lake sediment, pollen analysis, mid-Holocene 'elm decline', elm disease, human activity, charcoal, 3 m of annually laminated sediments in Diss Mere, United Kingdom, human disturbance, decrease of *Ulmus* at Diss Mere consistent with pathogenic attack.

Peglar SM, Fritz SC, Alapieti T, Saarnisto M, Birks HJB (1984) Composition and formation of laminated sediments in Diss Mere, Norfolk, England. *Boreas* **13** (1), 13-28. http://dx.doi.org/10.1111/j.1502-3885.1984.tb00054.x; varved lake sediment deposited between about 2,500 and 5,500 years BP in Diss Mere, Norfolk, England, energy-dispersive X-ray microanalysis, pale laminae consist primarily of calcium carbonate, dark laminae contain mainly Fe, S, Si, and dark organic material, diatom, pollen.

Pérez-Cruz L, Urrutia-Fucugauchi J (2010) Holocene laminated sediments from the southern Gulf of California: geochemical, mineral magnetic and microfossil study. *Journal of Quaternary Science* **25** (6), 989-1000. http://dx.doi.org/10.1002/jqs.1386; Holocene laminated sequence from the Alfonso Basin, northern Bay of La Paz, Gulf of California, authors suggest that dark/light laminae result from oceanographic and climatic cyclic processes forming a non-annual depositional system, in contrast to the varved sediments characteristic of the central Gulf of California basins.

Perga ME, Frossard V, Jenny JP, Alric B, Arnaud F, Berthon V, Black JL, Domaizon I, Giguet-Covex C, Kirkham A, Magny M, Manca M, Marchetto A, Millet L, Paillès C, Pignol C, Poulenard J, Reyss JL, Rimet F, Sabatier P, Savichtcheva O, Sylvestre F, Verneaux V (2015) High-resolution paleolimnology opens new management perspectives for lakes adaptation to climate warming. *Frontiers in Ecology and Evolution* **3**: 72. http://dx.doi.org/10.3389/fevo.2015.00072; synthesis of research on >150 yr-long varved records from perialpine lakes Geneva, Annecy, and Bourget; ecological responses to anthropogenic eutrophication, re-oligotrophication.

Perkins JA, Sims JD (1983) Correlation of Alaskan varve thickness with climatic parameters, and use in paleoclimatic reconstruction. *Quaternary Research* **20** (3), 308-321. http://dx.doi.org/10.1016/0033-5894(83)90015-7; Skilak Lake, Alaska, presumed varve thickness in relation to mean annual temperature and mean annual cumulative snowfall. *Note: Stihler et al. (1992) showed that the laminations in Skilak Lake are not varves:* http://dx.doi.org/10.1130/0091-7613(1992)020<1019:VCVTAC>2.3.CO;2.

Persson J, Jonsson P (2000) Historical development of laminated sediments - an approach to detect soft sediment ecosystem changes in the Baltic Sea. *Marine Pollution Bulletin* **40** (2), 122-134. http://dx.doi.org/10.1016/S0025-326X(99)00180-0; marine varves as a tool for establishing effect-related water quality criteria for eutrophicated Baltic Sea, St. Anna archipelago.

Peterson LC, Haug GH, Hughen KA, Röhl U (2000) Rapid changes in the hydrologic cycle of the tropical Atlantic during the last glacial. *Science* **290** (5498), 1947-1951. http://dx.doi.org/10.1126/science.290.5498.1947; color reflectance, major element chemistry from Cariaco Basin off the coast of northern Venezuela, marine varves, abrupt shifts in the hydrologic cycle of the tropical Atlantic during the past 90,000 years.

Petterson G (1996) Varved sediments in Sweden: a brief review. In: (Kemp AES, ed.) *Palaeoclimatology and Palaeoceanography from Laminated Sediments*. *Geological Society Special Publication* **116**, London, 73-78. http://dx.doi.org/10.1144/GSL.SP.1996.116.01.08; review, lake sediment, Sweden, glacial clay-varves, varves in estuarine, marine and lacustrine environments.

Petterson G, Odgaard BV, Renberg I (1999) Image analysis as a method to quantify sediment components. *Journal of Paleolimnology* **22** (4), 443-455. http://dx.doi.org/10.1023/A:1008070811190; lake sediment, annual accumulation rates, minerogenic matter, organic matter, biogenic silica, varve thickness, Lake Kassjön, northern Sweden.

Petterson G, Renberg I, Geladi P, Lindberg A, Lindgren F (1993) Spatial uniformity of sediment accumulation in varved lake sediments in northern Sweden. *Journal of Paleolimnology* **9** (3), 195-208. http://dx.doi.org/10.1007/BF00677213; image analysis, sediment accumulation, northern Swedish varved lake sediments, Lake Kassjön, limited spatial variability of sediment accumulation, freeze core, Lake Nylandssjön, varves acquire their appearance at sediment-water interface during sedimentation, varve structures are preserved during diagenetic processes, varve thickness.

Petterson G, Renberg I, Sjöstedt-de Luna S, Arnqvist P, Anderson NJ (2010) Climatic influence on the inter-annual variability of late-Holocene minerogenic sediment supply in a boreal forest catchment. *Earth Surface Processes and Landforms* **35**, 390-398. http://dx.doi.org/10.1002/esp.1933; image analysis, climate change, snow melt, temperature, minerogenic matter accumulation rate, sediment supply, stream erosion, lake sediment, Lake Kassjön, Sweden, grey-scale variation, varve thickness, 4486 BC – AD 1900, periodicities.

Pichevin L, Ganeshram RS, Reynolds BC, Prahl F, Pedersen TF, Thunell R, McClymont EL (2012) Silicic acid biogeochemistry in the Gulf of California: Insights from sedimentary Si isotopes. *Paleoceanography* **27**, PA2201, 14 pp. http://dx.doi.org/10.1029/2011PA002237; silicic acid, iron limitation, upwelling, marine sediment, sediment trap, nutrient profiles, high resolution sedimentary records, silicon isotopes, biogenic silica, Gulf of California, Guaymas Basin, increased opal burial during the Holocene, the Bølling-Allerød and the last glacial period.

Pickarski N, Kwiecien O, Djamali M, Litt T (2015) Vegetation and environmental changes during the last interglacial in eastern Anatolia (Turkey): a new high-resolution pollen record from Lake Van. *Palaeogeography, Palaeoclimatology, Palaeoecology* **435**, 145-158. http://dx.doi.org/10.1016/j.palaeo.2015.06.015; lacustrine core from 357 m deep Ahlat Ridge, varve chronology, pollen, stable oxygen isotope and XRF data, 135 to 110 ka.

Pickrill RA, Irwin J (1983) Sedimentation in a deep glacier-fed lake – Lake Tekapo, New Zealand. *Sedimentology* **30** (1), 63-75. http://dx.doi.org/10.1111/j.1365-3091.1983.tb00650.x; lake varves, annual varve thickness and semi-annual varve frequency determined by variations in the discharge of the Godley River.

Pike J, Bernhard JM, Moreton SG, Butler IB (2001) Microbioirrigation of marine sediments in dysoxic environments: implications for early sediment fabric formation and diagenetic processes. *Geology* **29**

(10), 923-926. http://dx.doi.org/10.1130/0091-7613(2001)029<0923:MOMSID>2.0.CO;2; bioturbation of megafauna and macrofauna, effects of meiofauna largely ignored, Santa Barbara Basin, California, Pacific, Palmer Deep, west Antarctic Peninsula, nematode burrows, nematode populations and their burrows abundant to at least 3 cm depth, scanning electron microscopy, widespread sediment redistribution without significant lamina disruption, early sediment fabric production, geochemical processes, diagenetic reactions.

Pike J, Crosta X, Maddison EJ, Stickley CE, Denis D, Barbara L, Renssen HJ (2009) Observations on the relationship between Antarctic coastal diatoms *Thalassiosira antarctica* Comber and *Porosira glacialis* (Grunow) Jørgensen and sea ice concentrations during the Late Quaternary. *Marine Micropaleontology* **73** (1-2), 14-25. http://dx.doi.org/10.1016/j.marmicro.2009.06.005; late Quaternary seasonally laminated marine diatom ooze from coastal Antarctic sites, sub-laminae dominated by specific diatoms are nearly always deposited as the last sediment increment of the year, Dumont d'Urville Trough, Adélie Land, mid-Holocene autumnal sub-laminae dominated by certain diatom species, Svenner Channel, Princess Elizabeth Land, diatom climate proxy, East Antarctica, sea ice.

Pike J, Kemp AES (1996) Preparation and analysis techniques for studies of laminated sediments. In: (Kemp AES, ed.) *Palaeoclimatology and Palaeoceanography from Laminated Sediments*. *Geological Society Special Publication* **116**, London, 37-48. http://dx.doi.org/10.1144/GSL.SP.1996.116.01.05; summary of techniques used for marine laminated sediment fabric investigation, scanning electron microscopy, backscattered electron imagery produces preserved flux data on intra-annual time-scales, preparation methods for thin sections.

Pike J, Kemp AES (1996) Records of seasonal flux in Holocene laminated sediments, Gulf of California. In: (Kemp AES, ed.) *Palaeoclimatology and Palaeoceanography from Laminated Sediments*. *Geological Society Special Publication* **116**, London, 157-170. http://dx.doi.org/10.1144/GSL.SP.1996.116.01.14; Holocene, Guaymas Basin, Mexico, marine varve couplets due to alternation of diatom- and terrigenous-rich sediment reflecting winter and summer flux, backscattered electron imagery (BSEI), three-component pattern of sedimentation is preserved: (1) lithogenic lamina of clays, silt and minor diatomaceous material during summer and autumn wet season; (2) mixed flora diatomaceous lamina during early winter; (3) near-monospecific flora lamina of *Chaetoceros* resting spores or *Skeletonema costatum* from end of spring coastal upwelling bloom, sediment trap, high-resolution paleoceanaographic and paleoclimatic reconstructions, Holocene.

Pike J, Kemp AES (1996) Silt aggregates in laminated marine sediment produced by agglutinated foraminifera. *Journal of Sedimentary Research* **66** (3), 625-631. http://dx.doi.org/doi:10.1306/D42683C9-2B26-11D7-8648000102C1865D; fabric studies, Miocene to Holocene hemipelagic and pelagic marine sediments, backscattered electron imagery, exotic aggregates of well to poorly sorted silt-size particles, multi-chambered agglutinated foraminifera, collapsed or compacted tests of agglutinated foraminifera, stratigraphic range Cambrian to Recent.

Pike J, Kemp AES (1997) Early Holocene decadal-scale ocean variability recorded in Gulf of California laminated sediments. *Paleoceanography* **12** (2), 227-238. http://dx.doi.org/10.1029/96PA03132; scanning electron microscopy, Holocene marine laminated sediment from Guaymas Basin, Gulf of California, Pacific, Mexico, up to five depositional events per year, backscattered electron imagery, photomosaic analysis, diatom mat laminae, periodicities in the deposition of mat laminae at ~50 years, ~11 years, and 22–24 years, ~50-year cycle in fish populations related to changing North Pacific ocean/atmosphere circulation, California Current, solar cycles.

Pike J, Kemp AES (1999) Diatom mats in Gulf of California sediments: Implications for the paleoenvironmental interpretation of laminated sediments and silica burial. *Geology* **27** (4), 311-314. http://dx.doi.org/10.1130/0091-7613(1999)027<0311:DMIGOC>2.3.CO;2; Pacific, diatom mats, Guaymas Basin, Mexico, microfabric and micropaleontological analyses, marine sediment.

Pike J, Leng MJ, Swann GEA, Snelling A (2010) Late Quaternary marine varves from the Antarctic Margin: diatom silica oxygen isotope records. In: (Ojala AEK, Kosonen E, eds.) *First Workshop of the PAGES Varves Working Group (Palmse, Estonia, April 7-9, 2010), Programme and Abstracts*, Geological Survey of Finland, Espoo, Finland, 85-87. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2010-VWG-1st-wkshp.pdf; Antarctica, silica oxygen isotope ratios, Southern Ocean, deglacial varves, Palmer Deep.

Pike J, Moreton SG, Allen CS (2001) 18. Data Report: Microfabric analysis of postglacial sediments from Palmer Deep, western Antarctic Peninsula. In: (Barker PF, Camerlenghi A, Acton GD, Ramsay ATS, eds.) *Proceedings ODP, Scientific Results*, **Leg 178**, 1-17. http://dx.doi.org/10.2973/odp.proc.sr.178.226.2001; http://www-odp.tamu.edu/publications/178_SR/chap_18/chap_18.htm; Antarctica, Ocean Drilling Program Site 1098, last glacial maximum to Holocene, preliminary results of high-resolution microscale marine sediment fabric study, previous interpretation as being varved is most likely correct, strong interannual variability affecting the laminations.

Pike J, Stickley CE (2007) Diatom records: Marine laminated sediments. In: (Elias S, ed.) *Encyclopedia of Quaternary Science*, Elsevier, 557-566. http://dx.doi.org/10.1016/B0-44-452747-8/00238-6; history of marine laminated sediment research, nature of diatom records from Quaternary laminated marine sediments, marine diatom ooze, sedimentary preservation of the seasonal succession of surface water diatom blooms, semi-enclosed seas (e.g., Gulf of California, Mexico), silled basins (e.g., Santa Barbara Basin, California margin and Iceberg Alley, MacRobertson Shelf, Antarctica), open continental margin (e.g., Peru margin).

Pike J, Stickley CE (2013) Diatom records: Marine laminated sediments. In: (Elias SA, ed.) *Encyclopedia of Quaternary Science* (2nd Edition), Elsevier, pp. 554-561. [ISBN: 9780444536426] history of marine laminated sediment research, nature of diatom records from Quaternary laminated marine sediments, marine diatom ooze, sedimentary preservation of the seasonal succession of surface water diatom blooms, semi-enclosed seas (e.g., Gulf of California, Mexico), silled basins (e.g., Santa Barbara Basin, California margin and Iceberg Alley, MacRobertson Shelf, Antarctica), open continental margin (e.g., Peru margin).

Pilskaln CH, Pike J (2001) Formation of Holocene sedimentary laminae in the Black Sea and the role of the benthic flocculent layer. *Paleoceanography* **16** (1), 1-19. http://dx.doi.org/10.1029/1999PA000469; geochemical data, backscattered electron imagery (BSEI), sedimentological relationships between the benthic flocculent layer and the formation of underlying laminated unit I sediments, permanent benthic fluff layer as a geochemical transition layer, all sedimentary particles are hydraulically sorted and subject to dissolution or organic remineralization prior to deposition in varve, particle residence time within the benthic fluff layer is key factor in determining sedimentary microfabric and geochemical composition of laminated unit I sediments, marine.

Piper DZ (2016) Geochemistry of the Black Sea during the last 15 kyr: A protracted evolution of its hydrography and ecology. *Paleoceanography* **31** (8), 1117-1137. http://dx.doi.org/10.1002/2016PA002949; marine varves, review of history, oxygenation, biogeochemistry.

Pirard E (2004) Image measurements. In: (Francus P, ed.) *Image Analysis, Sediments and Paleoenvironments. Developments in Paleoenvironmental Research*, vol. 7. Springer, Dordrecht, 59-86. http://dx.doi.org/10.1007/1-4020-2122-4; digital imaging and sampling theory, intensity and color analysis, blob analysis, structural analysis, statistics, diameter, mathematical morphology, stereology, size, shape, roundness, covariance.

Pisias NG (1978) *Paleoceanography of the Santa Barbara Basin and the California Current during the jast 8,000 years*. Ph.D. dissertation, University of Rhode Island. http://www.worldcat.org/title/paleoceanography-of-the-santa-barbara-basin-and-the-california-current-during-the-last-8000-years/oclc/4788056; radiolarian assemblages, sea surface temperature, dynamic height anomalies, paleoceanic currents, marine sediment, Pacific.

Pisias NG (1978) Paleoceanography of the Santa Barbara basin during the last 8000 years. *Quaternary Research* **10** (3), 366-384. http://dx.doi.org/10.1016/0033-5894(78)90027-3; radiolarian assemblages, paleotemperature, California, Pacific Ocean, Holocene, marine sediment.

Pisias NG (1979) Model for paleoceanographic reconstructions of the California Current during the last 8000 years. *Quaternary Research* **11** (3), 373-386. http://dx.doi.org/10.1016/0033-5894(79)90081-4; sea surface temperature, microfossils, Santa Barbara Basin, Pacific Ocean, Holocene, historical sea surface temperature records, marine.

Pitkänen A, Lehtonen H, Huttunen P (1999) Comparison of sedimentary microscopic charcoal particle record in a small lake with dendrochronological data: evidence for the local origin of microscopic charcoal produced by forest fires of low intensity in eastern Finland. *The Holocene* **9** (5), 559-567. http://dx.doi.org/10.1191/095968399670319510; microscopic charcoal, lake sediment, past 520 years of varves, forest fires, fire history, late Holocene.

Plassen L, Vorren TO, Forwick M (2004) Integrated acoustic and coring investigation of glacigenic deposits in Spitsbergen fjords. *Polar Research* **23** (1), 89-110. http://dx.doi.org/10.1111/j.1751-8369.2004.tb00132.x; Svalbard, glacial retreat from their Neoglacial maximum positions around 1900 AD, tidewater glacier-influenced inlet Tempelfjorden of the fjord Isfjorden, Spitsbergen, distal glacimarine sediments comprise stratified clayey silt with low ice-rafted debris, glacimarine varves in stratified sediments.

Pokras EM, Winter A (1987) Variability of Holocene diatom assemblages in laminated sediments near Walvis Bay, southwest Africa. *Marine Geology* **76**, 185-194. http://dx.doi.org/10.1016/0025-3227(87)90028-4; Silica-rich muds along the southwest African coast, postulated late Holocene varves contain light biogenic austral spring and summer laminae reflecting strong upwelling and productivity, dark winter laminae indicate reduced upwelling.

Poth D, Negendank JFW (1993) Paleoclimate reconstruction at the Pleistocene/Holocene transition — A varve dated microstratigraphic record from Lake Meerfelder Maar (Westeifel, Germany) - A contribution to the discussion on the Younger Dryas climatic oscillation. *Paleolimnology of European Maar Lakes, Lecture Notes in Earth Sciences* **49/1993**, 209-222. http://dx.doi.org/10.1007/BFb0117598; accumulation rates, structure of varves, proof of rapid climatic variations at the Pleistocene/Holocene transition10,610 varve years BP, Younger Dryas, early Holocene warming and regeneration of soils and vegetation.

Power MJ, Whitlock C, Bartlein P, Stevens LR (2006) Fire and vegetation history during the last 3800 years in northwestern Montana. *Geomorphology* **75** (3-4), 420-436. http://dx.doi.org/10.1016/j.geomorph.2005.07.025; Foy Lake, USA, North America, charcoal and pollen data in partially varved sediment, activities of Euro–Americans led to decline in forest cover between AD 1880 and 1970, land use.

Prasad S, Baier J (2014) Tracking the impact of mid- to late Holocene climate change and anthropogenic activities on Lake Holzmaar using an updated Holocene chronology. *Global and Planetary Change* **122**, 251-264. http://dx.doi.org/10.1016/j.gloplacha.2014.08.020; updated chronology of Lake Holzmaar, Germany, case

studies identifying “missing or “miscounted” varves, regional climate, impact of mid-Holocene cooling on lake eutrophicity, decoupling the climate and anthropogenic impact around the Iron Age.

Prasad S, Brauer A, Rein B, Negendank JFW (2006) Rapid climate change during the early Holocene in western Europe and Greenland. *The Holocene* **16** (2), 153-158. http://dx.doi.org/10.1191/0959683606hl916ft; microfacies, Lake Holzmaar, Germany, Eifel, Holocene, decadal to century-scale climate variability, varve thickness, precipitation regimes, climate oscillations.

Prasad S, Vos H, Negendank N, Waldmann N, Goldstein SL, Stein M (2004) Evidence from Lake Lisan of solar influence on decadal- to centennial-scale climate variability during marine oxygen isotope stage 2. *Geology* **32** (7), 581-584. http://geology.gsapubs.org/content/32/7/581; varved lacustrine sediments of Lake Lisan, Dead Sea Rift, for ca. 26.2–17.7 (calendar) ka, floating varve chronology anchored to radiometric dates, small ice-rafting and Heinrich events in the North Atlantic are associated with Eastern Mediterranean arid intervals, seasonal sub-laminae, periodicities centered at 1500 yr, 500 yr, 192 yr, 139 yr, 90 yr, and 50–60 yr, solar forcing, Near East; see López-Merino et al. (2016) who advise caution about the presence of varves in the Dead Sea.

Prasad S, Witt A, Kienel U, Dulski P, Bauer E, Yancheva G (2009) The 8.2 ka event: Evidence for seasonal differences and the rate of climate change in western Europe. *Global and Planetary Change* **67** (3-4), 218-226. http://dx.doi.org/10.1016/j.gloplacha.2009.03.011; varved sediments from Lake Holzmaar, Eifel, Germany, differences in duration and onset time of changes in summer temperature and winter rainfall during the 8.2 ka event, solar variability, changes in North Atlantic thermohaline circulation, North Atlantic Oscillation (NAO), wavelet analyses of seasonal laminae, solar variability.

Prashnowsky A, Degens ET, Emery KO, Pimenta J (1961) Organic materials in recent and ancient sediments. Part I: sugars in marine sediment of Santa Barbara basin, California. *Neues Jahrbuch für Geologie und Paläontologie, Monatshefte*, 400-413. http://www.worldcat.org/title/neues-jahrbuch-fur-geologie-und-palaontologie-monatshefte/oclc/1759692; additional information needed: Electronic link? Keywords?

Pratt LM, Claypool GE, King JD (1986) Geochemical imprint of depositional conditions on organic matter in laminated-bioturbated interbeds from fine-grained marine sequences. *Marine Geology* **70** (1-2), 67-84. http://dx.doi.org/10.1016/0025-3227(86)90089-7; laminated organic-rich marine shales, Cretaceous, Devonian, deposited in epicontinental and oceanic settings, biomarker compounds, biomarker indices, early diagenetic conditions, pristane/phytane ratio, hopanes, hopenes, sterenes, diasterenes, polycyclic hydrocarbons.

Prauss ML (2002) Recent global warming and its influence on marine palynology within the central Santa Barbara Basin, offshore Southern California, U.S.A. *Palynology* **26** (1), 217-238. http://dx.doi.org/10.1080/01916122.2002.9989573; Santa Barbara Basin sediment from 1883 to 1992, dinocyst associations.

Principato SM (2004) X-ray radiographs of sediment cores: a guide to analyzing diamicton. In: (Francus P, ed.) *Image Analysis, Sediments and Paleoenvironments. Developments in Paleoenvironmental Research*, vol. 7. Springer, Dordrecht, 165-185. http://dx.doi.org/10.1007/1-4020-2122-4; image acquisition, image processing, image measurement, advantages of using image analysis,drawbacks to image analysis, example of five diamicton units from North Atlantic continental margins, glacial marine sediments, Iceland.

Prokoph A, Patterson RT (2004) From depth scale to time scale: transforming sediment image color data into a high-resolution time series. In: (Francus P, ed.) *Image Analysis, Sediments and Paleoenvironments. Developments in Paleoenvironmental Research*, vol. 7. Springer, Dordrecht, 143-164. http://dx.doi.org/10.1007/1-4020-2122-4; wavelet analysis, image processing, methodology and testing, marine laminated sediments from the west coast of Vancouver Island, NE Pacific Ocean, image color time-series, wavelet transform.

Rach O, Brauer A, Wilkes H, Sachse D (2014) Delayed hydrological response to Greenland cooling at the onset of the Younger Dryas in western Europe. *Nature Geoscience* **7**, 109-112. http://dx.doi.org/10.1038/ngeo2053; hydrogen stable isotope ratios of lipid biomarkers from varved sediments from Lake Meerfelder Maar, cooling 12,850 years ago and 170 years later.

Ralska-Jasiewiczowa M, Goslar T, Madeyska T, Starkel L (eds.) (1998) *Lake Gościąż, Central Poland, a Monographic Study*. W. Szafer Institute of Botany, Polish Academy of Sciences, Krakow, 340 pp. http://www.worldcat.org/title/lake-gosciaz-central-poland-a-monographic-study/oclc/41879724; lacustrine sedimentation, palaeogeography, pollen, tectonics, Cenozoic, Holocene, Poland, Central Europe.

Ralska-Jasiewiczowa M, Goslar T, Różański K, Wacnik A, Czernik J, Chróst L (2003) Very fast environmental changes at the Pleistocene/Holocene boundary, recorded in laminated sediments of Lake Gościąż, Poland. *Palaeogeography, Palaeoclimatology, Palaeoecology* **193** (2), 225-247. http://dx.doi.org/10.1016/S0031-0182(03)00227-X; Europe, Pleistocene/Holocene transition, pollen, stable isotopes, geochemistry, abrupt climate change, lake level, biological productivity.

Ralska-Jasiewiczowa M, van Geel B, Goslar T, Kuc T (1992) The record of the Late Glacial/Holocene transition in the varved sediments of lake Gosciaz, central Poland. In: (Robertsson AM, Rindgberg B, Miller U, Brunnberg L, eds.) *Quaternary Stratigraphy, Glacial Morphology and Environmental Changes*. *Sveriges Geologiska Undersokning* **C81**, 257-268. http://www.worldcat.org/title/quaternary-

stratigraphy-glacial-morphology-and-environmental-changes/oclc/28903346; combined palynological and oxygen stable isotope records of carbonates from Allerød, Younger Dryas and early Holocene, pollen diagrams.

Ramrath A, Nowaczyk NR, Negendank JFW (1999) Sedimentological evidence for environmental changes since 34,000 years BP from Lago di Mezzano, central Italy. *Journal of Paleolimnology* **21** (4), 423-435. http://dx.doi.org/10.1023/A:1008006424706; petrography, dry densitity, total organic carbon, 34,000 yr record, floating varve chronology, radiocarbon, Late Pleistocene, Late Glacial, Younger Dryas, Holocene, sedimentation pattern strongly influenced by human impact since 3700 varve years BP, Bronze Age settlement.

Ramrath A, Zolitschka B, Wulf S, Negendank JFW (1999) Late Pleistocene climatic variations as recorded in two Italian maar lakes (Lago di Mezzano, Lago Grande di Monticchio). *Quaternary Science Reviews* **18** (7), 977-992. http://dx.doi.org/10.1016/S0277-3791(99)00009-8; sediment profiles from two maar lakes, Italy, minerogenic and biogenic sediment accumulation rates, radiocarbon ages, varve counting, calculation of sedimentation rates, tephrochronology, possible teleconnections with late Pleistocene glacial events in central Italy with North Atlantic (Heinrich events), oxygen stable isotope data from Greenland ice cores, North Atlantic climatic forcing, Dansgaard–Oeschger cycles.

Räsänen M, Tolonen K (1983) Changes in diatom flora deposited annually during the freshening of the impounded, sea-bay of Gennarbyviken in southern Finland. *Hydrobiologia* **103** (1), 147-152. http://link.springer.com/article/10.1007%2FBF00028443; diatoms in an varved anoxic mud deposited after the impoundment of the sea-bay of Gennarbyviken, decrease in salinity in the basin reflected by diatoms.

Raspopov OM, Dergachev VA, Ogurtsov MG, Kolström T, Jungner H, Dmitriev PB (2011) Variations in climate parameters at time intervals from hundreds to tens of millions of years in the past and its relation to solar activity. *Journal of Atmospheric and Solar-Terrestrial Physics* **73** (2-3), 388-399. http://dx.doi.org/10.1016/j.jastp.2010.02.012; varved sediment analyzed to reveal periodicities in climatic processes at tens to hundreds of millions of years, periodicities are compared with solar and climatic periodicities observed at present, solar activity.

Rasser MW, Bechly G, Böttcher R, Ebner M, Heizmann EPJ, Höltke O, Joachim C, Kern AK, Kovar-Eder J, Nebelsick JH, Roth-Nebelsick A, Schoch RR, Schweigert G, Ziegler R (2013) The Randeck Maar: Palaeoenvironment and habitat differentiation of a Miocene lacustrine system. *Palaeogeography, Palaeoclimatology, Palaeoecology* **392**, 426-453. http://dx.doi.org/10.1016/j.palaeo.2013.09.025; South Germany, fauna and flora of Early/Middle Miocene, fossil lagerstätte, palaeoenvironmental model, insect and plant fossils, laminated lake sediment is probably varved.

Rattigan JH (1967) Depositional, soft sediment and post-consolidation structures in a Palaeozoic aqueoglacial sequence. *Journal of the Geological Society of Australia* **14** (1), 5-18. http://dx.doi.org/10.1080/00167616708728639; laminite sequences in an Australian, Palaeozoic, glaciolacustrine basin.

Raubitschek S, Lücke A, Schleser GH (1999) Sedimentation patterns of diatoms in Lake Holzmaar, Germany - (on the transfer of climate signals to biogenic silica oxygen isotope proxies). *Journal of Paleolimnology* **21** (4), 437-448. http://dx.doi.org/10.1023/A:1008022532458; seasonal diatom signal in Lake Holzmaar, Eifel, sediment traps at 3 different lake depths, influence of sediment focusing and resuspension of bottom sediments, temperature recorded by oxygen stable isotope ratios of diatom valves.

Rayburn JA, Cronin TM, Franzi DA, Knuepfer PLK, Willard DA (2011) Timing and duration of North American glacial lake discharges and the Younger Dryas climate reversal. *Quaternary Research* **75** (3), 541-551. http://dx.doi.org/10.1016/j.yqres.2011.02.004; Champlain Valley, northeastern USA, varve chronology, sedimentation rates, comparison of proglacial lake discharge record in the Champlain and St. Lawrence valleys to paleoclimate records from Greenland Ice cores and Cariaco Basin, Younger Dryas, foraminifera.

Rayburn JA, Vollmer FW (2013) ANTEVS: a quantitative varve sequence cross-correlation technique with examples from the Northeastern USA. *GFF, special issue "Varve Genesis, Chronology and Paleoclimate"* **135** (3-4), 282-292. http://dx.doi.org/10.1080/11035897.2013.801924; numerical techniques assist in finding and evaluating correlations relative to the North American Varve Chronology (NAVC), time-series Fourier analysis and cross-correlation implemented in program ANTEVS (Automatic Numerical Time-series Evaluation of Varve Sequences).

Reeds CA (1923) Seasonal records of geologic time. *Natural History. The Journal of The American Museum of Natural History* **XXIII** (4), 370-380. http://hdl.handle.net/2246/6400; varved glacial clays from New Haven, Connecticut, Triassic red sandstone from Little Ferry, New Jersey, historic overview of varves.

Reeds CA (1926) The varved clays at Little Ferry, New Jersey. *American Museum Novitates* **209**, American Museum of Natural History, New York. http://digitallibrary.amnh.org/dspace/bitstream/handle/2246/4302/v2/dspace/ingest/pdfSource/nov/N0209.pdf?sequence=1

Reimer A, Landmann G, Kempe S (2009) Lake Van, Eastern Anatolia, hydrochemistry and history. *Aquatic Geochemistry* **15**, 195-222. http://dx.doi.org/10.1007/s10498-008-9049-9; Eastern Anatolia, Turkey, tephra, lake sediment, Lake Van, soda lake, opal, aragonite/calcite ratio, lake level change, alkaline, hydrogeochemistry, pore water.

Reimer PJ (2012) Refining the radiocarbon time scale. *Science* **338** (6105), 337-338. http://dx.doi.org/10.1126/science.1228653; Lake Suigetsu limnic sediment, Japan, ~50,000 year varve record, leaves and seeds provide detailed radiocarbon record for improving the radiocarbon dating accuracy, perspective on Ramsey et al. (2012).

Reimers CE, Lange CB, Tabak M, Bernhard JM (1990) Seasonal spillover and varve formation in the Santa Barbara Basin, California. *Limnology and Oceanography* **35** (7), 1577-1585. http://www.aslo.org/lo/toc/vol_35/issue_7/1577.pdf; siliceous phytoplankton, oxygenation, pore-water, role of benthos in formation of marine varves, Pacific.

Rein B, Jäger K, Kocot Y, Grimm K, Sirocko F (2007) 10. Holocene and Eemian varve types of Eifel maar lake sediments. In: (Sirocko F, Claussen M, Sánchez Goñi MF, Litt T, eds.) *Developments in Quaternary Sciences*, Elsevier, Volume 7, 141-156. http://dx.doi.org/10.1016/S1571-0866(07)80035-2; Holocene, last interglacial, varves in two sediment sequences from Schalkenmehrener Maar Lake and from dry maar paleolake West Hoher List, Germany, dry periods with aeolian dust deposition during the last interglacial, natural sedimentation processes versus human-controlled clastic input during the last 3000 years, Little Ice Age, Late Eemian Aridity Pulse.

Reinikainen P, Meriläinen JJ, Virtanen A, Veijola H, Äystö J (1997) Accuracy of ^{210}Pb dating in two annually laminated lake sediments with high Cs background. *Applied Radiation and Isotopes* **48** (7), 1009-1019. http://dx.doi.org/10.1016/S0969-8043(96)00337-5; ^{210}Pb, ^{226}Ra, ^{134}Cs, ^{137}Cs in varved Finnish sediment, human activity has greatly increased the variability of ^{210}Pb flux and reduced the reliability of ^{210}Pb dating.

Renberg I (1976) Annually laminated sediments in Lake Rudetjärn, Medelpad province, northern Sweden. *Geologiska Föreningens i Stockholm Förhandlingar* **98** (4), 355-360. http://dx.doi.org/10.1080/11035897609454396; Lake Rudetjärn, Sweden, oligotrophic lake.

Renberg I (1978) Palaeolimnology and varve counts of the annually laminated sediment of Lake Rudetjärn, northern Sweden. *Early Norrland* **11**, 63-91. Lake Rudetjärn, Sweden, later Flandrian development, diatoms, varve counts, radiocarbon. Additional information needed: Electronic link?

Renberg I (1979) Environmental monitoring by chemical, physical and biological analyses of annually laminated lake sediments - the possibilities of the method. In: *The use of Ecological Variables in the Environmental Monitoring*, *The National Swedish Environment Protection Board, Report* **1151**, 318-324 (in Swedish); http://www.worldcat.org/title/environmental-monitoring-by-chemical-physical-and-biological-analyses-of-annually-laminated-lake-sediments-the-possibilities-of-the-method/oclc/638342444; early paper on monitoring. Additional information needed: Electronic link? Keywords?

Renberg I (1981) Improved methods for sampling, photographing and varve-counting of varved lake sediments. *Boreas* **10** (3), 255-258. http://dx.doi.org/10.1111/j.1502-3885.1981.tb00486.x; Sweden, lake sediment, crust-freeze sampler, subsampling frozen sediment, varve-counting in frozen and in fresh cores, thin sections, light microscope.

Renberg I (1981) Formation, structure and visual appearance of iron-rich, varved lake sediments. *Verhandlungen der Internationalen Vereinigung für Limnologie* **21**, 94-101. http://www.worldcat.org/title/verhandlungen-der-internationalen-vereinigung-fur-theoretische-und-angewandte-limnologie/oclc/2962090; keywords: overview on history of varve research and underlying principles, deposition of iron-rich limnic varved sediments in Sweden.

Renberg I (1983) Varved lake sediments - geochronological records of the Holocene. *Geologiska Föreningens i Stockholm Förhandlingar* **104** (3), 275-279. http://dx.doi.org/10.1080/11035898309455277; overview on history of varve research and underlying principles.

Renberg I (1984) Freeze coring. In: (Norton SA, ed.) *Proceedings of a Workshop on Palaeolimnological Studies of the History and Effects of Acidic Precipitation*, May 23-25, 1984, Rockland, Maine, 8-14. Geological Science, University of Maine at Orono, Maine. http://www.worldcat.org/title/paleolimnological-studies-of-the-history-and-effects-of-acidic-precipitation-workshop-papers/oclc/78184507; additional information needed: Electronic link? Keywords?

Renberg I (1984) Varved sediments in chronology. In: (Norton SA, ed.) *Proceedings of a Workshop on Palaeolimnological Studies of the History and Effects of Acidic Precipitation*, May 23-25, 1984, Rockland, Maine, 78-85. Geological Science, University of Maine at Orono, Maine. Principles of formation, composition, appearance of vaved sediments, varve counting. Additional information needed: Electronic link?

Renberg I (1986) Varviga sjösediment i miljökontrollen. *Naturvårdsverket Rapport* **3083**, 43 pp. (in Swedish with English summary), The National Swedish Environment Protection Board, Solna. http://www.worldcat.org/title/varviga-sjosediment-i-miljokontrollen/oclc/186193781; Sweden, lake sediment, varve formation process, list of lakes with varved sediments in Sweden, freeze-core, environmental change, pollution.

Renberg I (1986) Photographic demonstration of the annual nature of a varve type common in N. Swedish lake sediments. *Hydrobiologia* **140** (1), 93-95. http://dx.doi.org/10.1007/BF00006731; Sweden, lake sediment, Lake Nylandssjön, no change in visual appearance of individual varves occurs after deposition of additional varves.

Renberg I (1986) Concentration and annual accumulation values of heavy metals in lake sediments: Their significance in studies of the history of heavy metal pollution. *Hydrobiologia* **143** (1), 379-385. http://dx.doi.org/10.1007/BF00026686; lead, cadmium, mercury, accumulation rate, Sweden, Lake Kassjön, Lake Koltjärn, Lake Grånästjärn, other Swedish lakes.

Renberg I (1990) A procedure for preparing large sets of diatom slides from sediment cores. *Journal of Paleolimnology* **4** (1), 87-90. http://dx.doi.org/10.1007/BF00208301; procedure for making diatom microscopy slides, small sediment samples, test tubes, hydrogen peroxide, no decantings, no centrifuging, no washing of glassware, economical, slide preparation, light microscopy.

Renberg I (1991) The HON-Kajak sediment corer. *Journal of Paleolimnology* **6** (2),167-170. http://dx.doi.org/10.1007/BF00153740; sediment corer, extruder device, surface sediments, lake sediments.

Renberg I (2000) Lake sediments as environmental archives. In: (Sandgren P, ed.) *Environmental Change in Fennoscandia during the Late Quaternary*. Lundqua Report, Lund University, 90-95. http://www.worldcat.org/title/environmental-changes-in-fennoscandia-during-the-late-quaternary/oclc/247980417; additional information needed: Electronic link? Keywords?

Renberg I, Bigler C, Boës X (2010) Review of recent studies and work in progress on varved lake sediments in northern Sweden. In: (Ojala AEK, Kosonen E, eds.) *First Workshop of the PAGES Varves Working Group (Palmse, Estonia, April 7-9, 2010), Programme and Abstracts*, Geological Survey of Finland, Espoo, Finland, 89-92. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2010-VWG-1st-wkshp.pdf; summary of work by Renberg group on Swedish varved lakes.

Renberg I, Bigler C, Gälman V, Kylander M, Maier D (2012) The Lake Nylandssjön project (N Sweden): Understanding relationships between environmental variables and properties of recent varves. In: (Zolitschka B, ed.) *3rd Workshop of the PAGES Varves Working Group, Manderscheid, Germany, March 20-25, 2012, Program and Abstracts. Terra Nostra, Schriften der GeoUnion Alfred-Wegener-Stiftung* **2012/1**, 65-67. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/VWG_AbstractVolume_Final_2012.pdf; extensive data base covering two decades of coring and monitoring, study of diagenetic processes since 1979, chemical composition, biological remains.

Renberg I, Brännvall ML, Bindler R, Emteryd O (2000) Atmospheric lead pollution history during four millennia (2000 BC to 2000 AD) in Sweden. *Ambio* **29** (3), 150-156. http://dx.doi.org/10.1579/0044-7447-29.3.150; heavy metals, atmospheric deposition, lead concentrations, stable lead isotope ratios ^{206}Pb/^{207}Pb, lake sediment, four varved lakes in northern Sweden, Lake Kassjön, Lake Norrtjärnsjön, Lake Koltjärn, Lake Grånästjärn, atmospheric lead pollution for the last 3000 years, airborne pollution from Greek and Roman cultures 2000 years ago, Medieval pollution.

Renberg I, Brännvall ML, Bindler R, Emteryd O (2002) Stable lead isotopes and lake sediments – a useful combination for the study of atmospheric lead pollution history. *The Science of the Total Environment* **292**, 45-54. http://dx.doi.org/10.1016/S0048-9697(02)00032-3; stable lead isotopes, lead concentrations, lake sediment, lead pollution history, 31 lakes in Sweden, atmospheric lead pollution, Roman lead peak ~0 AD, Medieval increase ~1000 AD.

Renberg I, Hansson H (1993) A pump freeze corer for recent sediments. *Limnology and Oceanography* **38** (6), 1317-1321. http://www.aslo.org/lo/toc/vol_38/issue_6/1317.pdf; pump unit, thin wedge-shaped freeze container, methanol or ethanol, dry ice in thermos, cold alcohol pumped down into freeze wedge, less disturbance of sediment stratigraphy and thicker crust of frozen sediment, cores up to 50 cm long, operates from ice-covered lakes but could be modified for coring from boat, pump concept could allow freeze coring in ~200 m deep lakes or on the continental shelf.

Renberg I, Hansson H (2008) The HTH sediment corer. *Journal of Paleolimnology* **40** (2), 655-659. http://dx.doi.org/10.1007/s10933-007-9188-9; development of the Kajak-corer concept, made of stainless steel and plastic, improved extruding device, one 360°-turn gives a 5-mm thick sediment increment, gravity corer.

Renberg I, Hansson H (2010) Freeze corer No. 3 for lake sediments. *Journal of Paleolimnology* **44** (2), 731-736. http://dx.doi.org/10.1007/s10933-009-9378-8; coring from lake ice, thermos connected to thin freeze wedge filled with 4 liter of ethanol, 6-8 kg dry ice kept in thermos by trapdoor that is opened by messenger after blade has entered sediment.

Renberg I, Hansson H (2011) A tripod piston corer for taking a meter-long sediment core with an undisturbed sediment–water interface. *Journal of Paleolimnology* **46** (2), 313-317. http://dx.doi.org/10.1007/s10933-011-9542-9; for retrieval of sediment cores up to 1 m long, with an undisturbed sediment–water interface, can be deployed from a raft or a boat.

Renberg I, Segerström U (1980) The initial points on a shoreline displacement curve for southern Västerbotten, dated by varve-counts of lake sediments. Uppsala, Societas Upsaliensis pro Geologia Quaternaria, *Striae* **14**, 174-176. http://www.worldcat.org/title/striae/oclc/4030990; four points in lakes, covering ca. 8900 years, on a shore line displacement curve for southern Västerbotten have been dated via varve-counting of lake sediment, uplift, Sweden.

Renberg I, Segerström U (1981) Applications of varved lake sediments in palaeoenvironmental studies. *Wahlenbergia* **7**, 125-133. ISBN 91-85410. Keywords: overview on varves lake sediment research, fundamental principles. Additional information needed: Electronic link?

Renberg I, Segerström U, Wallin JE (1984) Climatic reflection in varved lake sediments. In: (Mörner NA, Karlén W, eds.) *Climatic Changes on a Yearly to Millennial Basis*, D. Reidel Publishing Company, 249-256. Lake Judesjön, Sweden, varve thickness over 1300 years, cyclicity, primary production, insolation. Additional information needed: Electronic link?

Retelle MJ, Child JK (1996) Suspended sediment transport and deposition in a high arctic meromictic lake. *Journal of Paleolimnology* **16** (2), 151-167. http://dx.doi.org/10.1007/BF00176933; high arctic meromictic Lake C2, Taconite Inlet, Ellesemere Island, Canada, sediment trap, varve thickness, density-stratified lake, overflow, interflow.

Riboulleau A, Bout-Roumazeilles V, Tribovillard N (2014) Controls on detrital sedimentation in the Cariaco Basin during the last climatic cycle: insight from clay minerals. *Quaternary Science Reviews* **94**, 62-73. http://dx.doi.org/10.1016/j.quascirev.2014.04.023; marine varves, clay–mineral content spanning the last climatic cycle, changing intertropical convergence zone (ITCZ) influences fluctuations of the smectite and kaolinite contents.

Richards F (1975) The Cariaco Basin (Trench). *Oceanographic Marine Biology Annual Review* **13**, 11- 67. Physiography, oceanography, and sedimentology of Cariaco Basin, marine. Additional information needed: Electronic link?

Richter-Bernburg G (1964) Solar cycle and other climatic periods in varvitic evaporates. In: (Nairn AEM, Ed.) *Problems in Palaeoclimatology*, Proceedings of the NATO Palaeoclimates Conference, held at the University of Newcastle upon Tyne, January 7-12, 1963, Interscience Publishers, New York, 510-519. Postulated marine varves in Permian Zechstein Formation, Germany. Additional information needed: Electronic link?

Ridge JC (2011) *The North American Glacial Varve Project*. Available at: http://geology.tufts.edu/varves. The scope of the web site is glacial varve chronology in North America, primarily varve studies in New England. Includes educational material for outreach (maintained at Tufts University).

Ridge JC, Balco G, Bayless RL, Beck CC, Carter LB, Dean JL, Voytek EB, Wei JH (2012) The new North American Varve Chronology: A precise record of southeastern Laurentide Ice Sheet deglaciation and climate, 18.2-12.5 kyr BP, and correlations with Greenland ice core records. *American Journal of Science* 312, 685-722. http://dx.doi.org/10.2475/07.2012.01; correction, consolidation, expansion, and calibration of Ernst Antevs' original New England Varve Chronology (NEVC) in the Connecticut Valley of New England, USA, resulting in new North American Varve Chronology (NAVC), continuous 5659-yr glacial varve sequence that spans most of the last deglaciation (18,200-12,500 yr BP) in the northeastern United States, ice recession history coupled to varve thickness changes, comparison of varve thickness records to Greenland ice-core climate records, radiocarbon chronology, deglaciation, late Wisconsinan.

Ridge JC, Besonen MR, Brochu M, Brown SL, Callahan JW, Cook GJ, Nicholson RS, Toll NJ (1999) Varve, paleomagnetic, and ^{14}C chronologiesfor Late Pleistocene events in New Hampshire and Vermont (U.S.A.). *Géographie physique et Quaternaire* **53** (1), 79-106. http://depts.washington.edu/cosmolab/cronus/littleton/JCR_varves_Littleton.pdf; deglacial northern New England Varve Chronology, paleomagnetic records, radiocarbon, Connecticut Valley, Ernst Antevs, Canoe Brook, Vermont, Newbury.

Ridge JC, Larsen FD (1990) Re-evaluation of Antevs' New England varve chronology and new radiocarbon dates of sediments from glacial Lake Hitchcock. *Geological Society of America Bulletin* **102** (7), 889-899. http://dx.doi.org/10.1130/0016-7606(1990)102<0889:REOANE>2.3.CO;2, new varve record from sediments of glacial Lake Hitchcock in the Connecticut River Valley along Canoe Brook in Vermont matches and provides a test of Antevs' New England varve chronology for a span of more than 530 yr; radiocarbon dates calibrate New England varve chronology.

Ridge JC, Toll NJ (1999) Are late-glacial climate oscillations recorded in varves of the upper Connecticut Valley, northeastern United States? *GFF* **121** (3), 187-193. http://dx.doi.org/10.1080/11035899901213187; Antevs' (1922, 1928) original varve chronology for the upper Connecticut Valley was extended and a ^{14}C calibration established.

Ringberg B (1976) The genesis of the Bredåkra delta and its relation to the deglaciation of the Swedish west coast. *Geologiska Föreningen i Stockholm Förhandlingar* **98** (1), 82-84. http://dx.doi.org/10.1080/11035897609454344; critique of Mörner's (1975) study of the Fjärås line, prompting Mörner's (1976) rebuttal.

Ringberg B (1979) Varve chronology of the glacial sediments in Blekinge and northeastern Skåne, southeastern Sweden. *Boreas* **8** (2) 209-215. http://dx.doi.org/10.1111/j.1502-3885.1979.tb00802.x; Baltic Ice Lake, Blekinge, series of up to 355 varves fine-grained glacial sediments, four varve types, Karlshamn, varve chronology ranges from - 325 to + 315, or 640 years.

Ringberg B (1984) Cyclic lamination in proximal varves reflecting the length of summers during Late Weichsel in southernmost Sweden. In: (Mörner NA, Karlén W, eds.) *Climatic Changes on a Yearly to Millennial Basis*, 57-62. Springer. http://dx.doi.org/10.1007/978-94-015-7692-5_5; proximal varves in the bottomset

beds of glaciofluvial deltas in the provinces of Skåne and Blekinge, 43 and 56 'day varves' have been observed in the summer layers and the number of 'day varves' are supposed to represent the length of summers.

Ringberg B (1991). Late Weichselian clay varve chronology and glaciolacustrine environment during deglaciation in southeastern Sweden. Sveriges geologiska undersökning 79, Series Ca - Avhandlingar och uppsatser I A4, 1-42.

Ringberg B, Björck J, Hang T (2003) Correlation of stadial and interstadial events in the south Swedish glacial varves with the GRIP oxygen isotope record. *Boreas* **32** (2) 427-435. http://dx.doi.org/10.1111/j.1502-3885.2003.tb01095.x; glacial varve sequences, Sweden, 1040 varve years long mean varve thickness curve, pollen assemblage zones, Bölling, Older Dryas, Allerød, varying varve thickness.

Ringberg B, Erlström M (1999) Micromorphology and petrography of Late Weichselian glaciolacustrine varves in southeastern Sweden. *Catena* **35** (2-4), 147-177. http://dx.doi.org/10.1016/S0341-8162(98)00098-8; glaciolacustrine varve sedimentation in Baltic Ice Lake, varve chronology, provinces of Skåne and Blekinge, chemical analyses, XRD, microscopy (polarized), SEM-EDX, summer and winter layers of varves, microscopic evidence of four varve types differing in texture, paleoclimate during the deglaciation in Bölling and Older Dryas chronozones.

Ringberg B, Hang, T, Kristiansson J (2002) Local clay-varve chronology in the Karlskrona-Hultsfred region, southeast Sweden. *GFF* **124** (2), 79-86. http://www.tandfonline.com/doi/abs/10.1080/11035890201242079; provinces Blekinge, Hultsfred, Småland, ~800 glaciolacustrine varves, Baltic Ice Lake, Late Weichselian deglaciation, 60 connected and 56 unconnected varve series, ice recession rates, varve thickness, statistical analysis, Older Dryas, Alleröd.

Ringberg B, Rudmark L (1985) Varve chronology based upon glacial sediments in the area between Karlskrona and Kalmar, southeastern Sweden. *Boreas* **14** (2), 107-110. http://dx.doi.org/10.1111/j.1502-3885.1985.tb00898.x; glacial clay varve series, Baltic Ice Lake, Blekinge, Smalånd, connections with varve chronologies of Karlskrona (Ringberg 1971, 1979) and Kalmar (Rudmark 1975), uncertainty of ice recession chronology is at most 85 yr.

Ripepe M, Roberts LT, Fisher AG (1991) Enso and sunspot cycles in varved Eocene oil shales from image analysis. *Journal of Sedimentary Research* **61** (7), 1155-1163. http://dx.doi.org/10.1306/D4267857-2B26-11D7-8648000102C1865D; varve thickness in three core segments from distal lacustrine oil shales (Tipton and Laney members) of the Green River Formation, image analysis program, two strong bimodal periodicities, 4.8-5.6 years interpreted as an El Niño type (ENSO) phenomenon, 10.4-14.7 years interpreted as sunspot cycle, suggestion that some but not all of the oil shale of the Green River Formation is varved.

Rippey B, Anderson NJ, Renberg I, Korsman T (2008) The accuracy of methods used to estimate the whole-lake accumulation rate of organic carbon, major cations, phosphorus and heavy metals in sediment. *Journal of Paleolimnology* **39** (1), 83-99. http://dx.doi.org/10.1007/s10933-007-9098-x; AD 1902 to 1988 varved sediment in Lake Kassjön, Sweden, assessment of accuracy of 3 methods to estimate whole-lake accumulation rate of chemicals, simple mean accumulation rate, regression against water depth, mean accumulation rate in sedimentation zones, organic carbon, four major cations, phosphorus, four heavy metals, Monte Carlo simulation.

Rittenour TM (1999) Drainage History of Glacial Lake Hitchcock, Northeastern USA. M.Sc. thesis, University of Massachusetts, Amherst. Link needed.

Rittenour TM, Brigham-Grette J, Mann ME (2000) El Niño-like climate teleconnections in New England during the late Pleistocene. *Science* **288** (5468), 1039-1042. http://dx.doi.org/10.1126/science.288.5468.1039; New England glacial varve chronology, Glacial Lake Hitchcock in the Connecticut River Valley along Canoe Brook in Vermont, spanning 17,500 to 13,500 calendar yr BP, late Pleistocene.

Riveroll DD, Jones BC (1954) Varves and foraminifera of a portion of the upper Puente formation (Upper Miocene), Puente, California. *Journal of Paleontology* **28** (2), 121-131. http://www.jstor.org/stable/10.2307/1300246; marine varve record of 11.9 feet of thinly laminated Miocene shale in the Los Angeles Basin, varve thickness, periodicities, foraminifer assemblages, graded bedding in each couplet of laminae.

Roberts N, Allcock S, Woodbridge J, Jones M, Eastwood JDW, Leng M, Yiğitbaşıoğlu H, Arnaud F, Sabatier P (2012) "A tale of two crater lakes": comparing varved records for the last 15 ka BP from Cappadocia, Turkey. In: (Zolitschka B, ed.) *3rd Workshop of the PAGES Varves Working Group, Manderscheid, Germany, March 20-25, 2012, Program and Abstracts. Terra Nostra, Schriften der GeoUnion Alfred-Wegener-Stiftung* **2012/1**, 67-70. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/VWG_AbstractVolume_Final_2012.pdf; crater paleolake Eski Acıgöl, Nar Lake, review of studies.

Roberts N, Reed JM, Leng MJ, Kuzucuoğlu, Fontugne M, Bertaux J, Woldring H, Bottema S, Black S, Hunt E, Karabiyikoğlu M (2001) The tempo of Holocene climatic change in the eastern Mediterranean region: new high-resolution crater-lake sediment data from central Turkey. *The Holocene* **11** (6), 721-736. DOI: http://dx.doi.org/10.1191/09596830195744; crater lake Eski Acigöll, monsoon rainfall, solar forcing, oxygen stable isotopes, diatoms, pollen, mineralogy, hydrothermalism.

Romero-Viana L, Juliá R, Camacho A, Vicente E, Miracle MR (2008) Climate signal in varve thickness: Lake La Cruz (Spain), a case study. *Journal of Paleolimnology* **40** (2), 703-714. http://dx.doi.org/10.1007/

s10933-008-9194-6; meromictic, karstic lake, annually laminated sediment formed by summer pulses of calcite deposition, correlation between calcium carbonate lamina thickness and rainfall from December to March, North Atlantic Oscillation (NAO).

Romero-Viana L, Juliá R, Schimmel M, Camacho A, Vicente E, Miracle MR (2011) Reconstruction of annual winter rainfall since A.D.1579 in central-eastern Spain based on calcite laminated sediment from Lake La Cruz. *Climatic Change* **107** (3-4), 343-361. http://dx.doi.org/10.1007/s10584-010-9966-7; lake sediment, winter rainfall reconstruction, western Mediterranean area, North Atlantic Oscillation.

Romero-Viana L, Keely BJ, Camacho A, Vicente E, Miracle MR (2010) Primary production in Lake La Cruz (Spain) over the last four centuries: reconstruction based on sedimentary signal of photosynthetic pigments. *Journal of Paleolimnology* **43** (4), 771-786. http://dx.doi.org/10.1007/s10933-009-9367-y; photosynthetic pigments in varved sediment of meromictic lake, primary productivity over the last four centuries, chlorophyll a and b, algal carotenoids, zeaxanthin, lutein, alloxanthin, diadinoxanthin, diatoxanthin, biomarker, phototrophic sulfur bacteria, bacteriophaeophytins d, bacterial carotenoids,okenone, chlorobactene, diagenetic processes of pigment alteration, green sulfur bacteria, bacterioviridine, solar activity, picocyanobacteria, meromixis, solar forcing.

Romero-Viana L, Kienel U, Sachse D (2012) Lipid biomarker signatures in a hypersaline lake on Isabel Island (Eastern Pacific) as a proxy for past rainfall anomaly (1942–2006 AD). *Palaeogeography, Palaeoclimatology, Palaeoecology* **350-352**, 49–61. http://dx.doi.org/10.1016/j.palaeo.2012.06.011; hypersaline crater-lake Isabel Lake, Mexico, eastern tropical Pacific, comparison with regional instrumental data, varve chronology 1942–2006 AD, lipid biomarkers reflect rainfall, salinity fluctuations related to rainfall variability, tetrahymanol, El Niño.

Roop HA, Levy R, Dunbar GB, Vandergoes MJ, Howarth J, Fitzsimons S, Moon HS, Zammit C, Ditchburn R, Baisden T, Yoon HI (2016) A hydroclimate-proxy model based on sedimentary facies in an annually laminated sequence from Lake Ohau, South Island, New Zealand. *Journal of Paleolimnology* **55** (1), 1-16. http://dx.doi.org/10.1007/s10933-015-9853-3; lacustrine varves, varve counts, ^{137}Cs, ^{210}Pb.

Ross DA, Degens ET, MacIlvaine J (1970) Black Sea: Recent sedimentary history. *Science* **170** (3954), 163-165. http://dx.doi.org/10.1126/science.170.3954.163; three stratigraphic units correlated across the Black Sea, in part marine.

Ross J, Gilbert R (1999) Lacustrine sedimentation in a monsoon environment: the record from Phewa Tal, middle mountain region of Nepal. *Geomorphology* **27** (3-4), 307-323. http://dx.doi.org/10.1016/S0169-555X(98)00079-8; Phewa Tal drainage basin influences sedimentation in Phewa Tal reservoir, erosion and transportation, monsoon, varved sediment in delta-proximal region, human impact in drainage basin.

Rowell HC, Bopp RF, Peng F, Velinsky DJ, Bloomfield JA (2015) Annually laminated sediments from Onondaga Lake, New York (USA) provide a basis for high-resolution studies of lake degradation and recovery. *Journal of Paleolimnology* **53** (1), 107-121. http://dx.doi.org/10.1007/s10933-014-9811-5; lacustrine varves preserved due to high sedimentstion rate, ^{137}Cs, correlation with historical impacts, onset of laminations correlates to an 1822 change in lake level.

Rozanski K, Klisch MA, Wachniew P, Gorczyca Z, Goslar T, Edwards TWD, Shemesh A (2010) Oxygen-isotope geothermometers in lacustrine sediments: New insights through combined δ^{18}O analyses of aquatic cellulose, authigenic calcite and biogenic silica in Lake Gościąż, central Poland. *Geochimica et Cosmochimica Acta* **74**, 2957–2969. http://dx.doi.org/10.1016/j.gca.2010.02.026; water-based oxygen-isotope geothermometers (calcite–cellulose, silica–cellulose) across five intervals, ~decadal resolution, Younger Dryas, subsequent periods of relative stability during the early, middle and late Holocene, the calcite–cellulose geothermometer may be influenced by kinetic effects during rapid carbonate precipitation, which offsets temperature-dependent fractionation and thus leads to high temperature estimates, the silica–cellulose geothermometer may be affected by the production of diatom silica early in the spring, prior to seasonal warming and isotopic enrichment of the epilimnion, thus generating low temperature estimates.

Rôuk AM (1992) Laminated sediments in Estonian lakes – preliminary data. In: (Saarnisto M, Kahra A, eds.) *Proceedings of the Workshop at Lammi Biological Station 4-6 June, 1990. Geological Survey of Finland, Special Paper* **14**, 105-107. http://arkisto.gtk.fi/sp/sp14/sp_014.pdf; lake sediment, Quaternary, Rouge area, Lake Suurjärv, Lake Liinjärv, Lake Valgjärv, Lake Saadjärv.

Rowell HC, Bopp RF, Peng F, Velinsky DJ, Bloomfield JA (2015) Annually laminated sediments from Onondaga Lake, New York (USA) provide a basis for high-resolution studies of lake degradation and recovery. *Journal of Paleolimnology* **53** (1), 107-121. http://dx.doi.org/10.1007/s10933-014-9811-5; lacustrine varves preserved due to high sedimentation rate, ^{137}Cs, correlation with historical impacts, 200-year record began due to lake level change.

Rydberg J, Gälman V, Renberg I, Bindler R, Lambertsson L, Martínez-Cortizas A (2008) Assessing the stability of mercury and methylmercury in a varved lake sediment deposit. *Environmental Science & Technology* **42**, 4391-4396. http://dx.doi.org/10.1021/es7031955; lake sediment, Lake Nylandssjön, Sweden, diagenesis, freeze cores, 30–40% of methylmercury was lost over the first 5–8 years after sedimentation.

Rydberg J, Martinez-Cortizas A (2014) Geochemical assessment of an annually laminated lake sediment record from northern Sweden: a multi-core, multi-element approach. *Journal of Paleolimnology* **51** (4), 499-514. http://dx.doi.org/10.1007/s10933-014-9770-x; 7 varved lacustrine sediment cores from Nylandssjön, assessment of between-core variation and diagenesis, principal component analysis.

Saarinen T (1998) High-resolution palaeosecular variation in northern Europe during the last 3200 years. *Physics of the Earth and Planetary Interiors* **106** (3-4), 299-309. http://dx.doi.org/10.1016/S0031-9201(97)00113-1; declination, inclination, relative paleointensity of Earth's magnetic field during the last 3200 yr, sediments in Lake Pohjajärvi, Finland, uniform magnetic mineralogy, magnetite of pseudo-single-domain (PSD) grain size, relative paleointensity curve correlated accurately with archaeomagnetic data from Central Europe, paleosecular variation; paleomagnetism, Holocene, Northern Europe, lake sediment.

Saarinen T (1999) Palaeomagnetic dating of Late Holocene sediments in Fennoscandia. *Quaternary Science Reviews* **18** (7), 889-897. http://dx.doi.org/10.1016/S0277-3791(99)00003-7; paleomagnetic secular variation curves, varve counts, dating of four Holocene lacustrine sediment sequences from central Finland and northwest Russia, geomagnetic declination and inclination fluctuations, relative paleomagnetic dating, dating error during the last 3200 yr is estimated to be less than ± 50 yr.

Saarni S, Saarinen T, Dulski P (2016) Between the North Atlantic Oscillation and the Siberian High: A 4000-year snow accumulation history inferred from varved lake sediments in Finland. *The Holocene* **26** (3), 423-431. http://dx.doi.org/10.1177/0959683615609747; boreal Lake Kalliojärvi, Central Finland, digital image analysis of clastic-organic 4132 varves, paleomagnetic data, minerogenic sublamina from spring floods relates to snow.

Saarni S, Saarinen T, Lensu A (2015) Organic lacustrine sediment varves as indicators of past precipitation changes: a 3,000-year climate record from Central Finland. *Journal of Paleolimnology* **53** (4), 401-413. http://dx.doi.org/10.1007/s10933-015-9832-8; Lake Kallio-Kourujärvi, pairs of 2 biogenic sublaminae, no clastic lamina, positive correlation between organic varve thickness and precipitation, catchment erosion processes.

Saarnisto M (1979) Application of annually-laminated lake sediments: a review. In: (Vasari Y, Saarnisto M, Seppälä M, eds.) *Palaeohydrology of the Temperate Zone: Proceedings of Working Session of Commission on Holocene-INQUA*. *Acta Universitas Ouluensis* **82 (A)**, 97-108; lake sediment, varves, land use, accurate time scales, Quaternary, Holocene, Europe, Finland. Additional information needed: Electronic link?

Saarnisto M (1979) Studies of annually laminated lake sediments. In: (Berglund BE, ed.) *Project Guide, IGCP Project 158 B, Lake and Mire Environments 2*, 61-80, Lund, Sweden. Additional information needed: Electronic link?

Saarnisto M (1985) Long varve series in Finland. *Boreas* **14**, 133-137. http://dx.doi.org/10.1111/j.1502-3885.1985.tb00905.x; varved 'postglacial' organic sediments, lake sediment, connection of modern records with varved 'lateglacial' clays, Lake Valkiajärvi, Ruovesi, Lake Region, nearly 9,500 years varved record.

Saarnisto M (1986) Annually laminated lake sediments. In: (Berglund BE, ed.) *Handbook of Holocene Palaeoecology and Palaeohydrology*. John Wiley and Sons Ltd., Chichester, 343-370. Cenozoic, geochronology, Holocene, IGCP, lake sediments, laminations, planar bedding structures, Quaternary, freezing technique, varve documentation, varve counting. Additional information needed: Electronic link?

Saarnisto M, Huttunen P, Tolonen K (1977) Annual lamination of sediments in Lake Lovojärvi, southern Finland, during the past 600 years. *Annales Botanici Fennici* **14**, 35-45. http://www.worldcat.org/title/annales-botanici-fennici/oclc/1481230; mineralogy, microfossils and organic geochemistry of varves in meromictic lake, comparison with modern sediment, freeze core, 600 varves, five clay layers due to human activity, varve thickness correlated with crop failures, historical records, Lammi.

Saarnisto M, Kahra A (eds.) (1992) *Proceedings of the Workshop at Lammi Biological Station 4-6 June, 1990. Geological Survey of Finland, Special Paper* **14**, 113 pp. http://arkisto.gtk.fi/sp/sp14/sp_014.pdf; collection of short papers about varved sediments, INQUA Commission for the Study of the Holocene, final report of the Working Group on Laminated Sediments.

Saarnisto M, Ojala AEK (2009) Varved sediments. In: (Gornitz V, ed.) *Encyclopedia of Paleoclimatology and Ancient Environments*, Encyclopedia of Earth Sciences Series, Kluwer Academic Publisher, Part 21, 973-975. http://dx.doi.org/10.1007/978-1-4020-4411-3_226. http://www.springer.com/earth+sciences+and+geography/atmospheric+sciences/book/978-1-4020-4551-6; non-glacial varves, glacial varves, chronology, varve deposition.

Saarse L (1990) Textural and structural characteristics of the Estonian varved clays. In: (Saarnisto M, Kahra A, eds.) *Proceedings of the Workshop at Lammi Biological Station 4-6 June, 1990*. Geological Survey of Finland, *Special Paper* **14**, 55-63. http://arkisto.gtk.fi/sp/sp14/sp_014.pdf; Late Glacial, boreal lakes, Baltic Ice Lake, glaciolacustrine clays, Quaternary.

Saarse L (1992) Textural and structural characteristics of the Estonian varved clays. In: (Saarnisto M, Kahra A, eds.) *Proceedings of the Workshop at Lammi Biological Station 4-6 June, 1990. Geological*

Survey of Finland, Special Paper **14**, 55-63. http://arkisto.gtk.fi/sp/sp14/sp_014.pdf; Baltic Ice Lake, glaciolacustine varves, proglacial lakes, Quaternary.

Sachs JP, Repeta DJ (1999) Oligotrophy and nitrogen fixation during eastern Mediterranean sapropel events. *Science* **286** (5449), 2485-2488. http://dx.doi.org/10.1126/science.286.5449.2485; nitrogen stablre isotope ratios of fossil chlorophyll from late Pleistocene sapropels in the eastern Mediterranean Sea, marine laminated sediment (varved?), evidence for stratified surface water.

Salvatteci R, Field D, Sifeddine A, Ortlieb L, Ferreira V, Baumgartner T, Caquineau S, Velazco F, Reyss JL, Sanchez-Cabeza JA, Gutierrez D (2014) Cross-stratigraphies from a seismically active mud lens off Peru indicate horizontal extensions of laminae, missing sequences, and a need for multiple cores for high resolution records. *Marine Geology* **357**, 72-89. http://dx.doi.org/10.1016/j.margeo.2014.07.008; marine finely laminated sediment, Pacific, multiple stratigraphic discontinuities in sediment off Pisco (Peru) covering the last 600 years, ^{210}Pb, ^{241}Am, ^{14}C, some sedimentary sequences are continuous across scales of tens of kilometers, indicating that regional processes often determine laminae formation.

Salvatteci R, Gutiérrez D, Field D, Sifeddine A, Ortlieb L, Bouloubassi I, Boussafir M, Boucher H, Cetin F (2014) The response of the Peruvian Upwelling Ecosystem to centennial-scale global change during the last two millennia. *Climate of the Past* **10**, 715-731. http://dx.doi.org/10.5194/cp-10-715-2014; marine laminated (partially varved?) sediment, Pacific ocean, last 600 years, off Pisco, oxygen minimum zone intensity changes during the past 2000 yr.

Salonen VP, Räsänen M, Glückert G (1992) Disturbed sulphide laminations and the annual rate of sedimentation in two lakes in SW-Finland. In: (Saarnisto M, Kahra A, eds.) *Proceedings of the Workshop at Lammi Biological Station 4-6 June, 1990*. *Geological Survey of Finland, Special Paper* **14**, 109-111. http://arkisto.gtk.fi/sp/sp14/sp_014.pdf; Lake Kakskerranjärvi, Lake Pyhäjärvi, freeze-cores, blackish sulphide layers, partially disturbed sediment.

Sancetta C (1989) Processes controlling the accumulation of diatoms in sediments: A model derived from British Columbian fjords. *Paleoceanography* **4** (3), 235-251. http://dx.doi.org/10.1029/PA004i003p00235; sediment traps over 3-year period at 4 sites in fjords of British Columbia, rates of marine sediment accumulation, biological rates of production and flux, comparison with surface sediment from box cores, preservation of deep-sea assemblages depends on water depth, accumulation rate, degree of bioturbation, modification of assemblages can occur within the upper 500 m.

Sancetta C (1995) Diatoms in the Gulf of California: Seasonal flux patterns and the sediment record for the last 15,000 years. *Paleoceanography* **10** (1), 67-84. http://dx.doi.org/10.1029/94PA02796; sediment traps, central Gulf of California, piston core Atlantis II 125-8 56JPC from oxygen minimum zone in Guaymas Basin, correlation to nearby Deep Sea Drilling Project Hole 480, 15 ka record, laminated Holocene and late deglacial marine sediments.

Sancetta C (1996) Laminated diatomaceous sediments: controls on formation and strategies for analysis. In: (Kemp AES, ed.) *Palaeoclimatology and Palaeoceanography from Laminated Sediments*. *Geological Society Special Publication* **116**, London, 17-21. http://dx.doi.org/10.1144/GSL.SP.1996.116.01.03; principles of development of marine laminated and varved diatomaceous sediments, problem of identifying varve boundaries.

Sancetta C, Calvert SE (1988) The annual cycle of sedimentation in Saanich Inlet, British-Columbia - implications for the interpretation of diatom fossil assemblages. *Deep-Sea Research Part A. Oceanographic Research Papers* **35** (1), 71-90. http://dx.doi.org/10.1016/0198-0149(88)90058-1; monthly sediment traps at three depths near the head and mouth of Saanich Inlet, seasonal cycle of production and vertical flux to the sediments, carbon flux is a poor indicator or productivity, marine sediment.

Sander M, Bengtsson L, Holmquist B, Wohlfarth B, Cato I (2002) The relationship between annual varve thickness and maximum annual discharge (1909–1971). *Journal of Hydrology* **263** (1-4), 23-35. http://dx.doi.org/10.1016/S0022-1694(02)00030-6; varved sediment from River Ångermanälven, mid-central Sweden, 2000-year record of varve thickness with marine influence, maximum daily annual discharge, Gumbel frequency analysis, quantitative flood reconstruction.

Sandgren P, Björck S, Brunnberg L, Kristiansson J (1988) Palaeomagnetic records from two varved clay sequences in the Middle Swedish ice marginal zone. *Boreas* **17** (2) 215-227. http://dx.doi.org/10.1111/j.1502-3885.1988.tb00551.x; varved glacial clay sequences, Rystad, Tottnäs, Sweden, paleomagnetic analysis, floating varve chronology, link to Swedish time scale, sediment successions are partly synchronous, deglaciation at Tottnäs started ca. 130 years earlier than at Rystad.

Sandgren P, Hang T, Snowball I (1997) A Late Weichselian geomagnetic record from Lake Tamula, SE Estonia. *GFF* **119** (4), 279-284. http://www.tandfonline.com/doi/abs/10.1080/11035899709546488; paleomagnetic record compared to southern Sweden and Karelia in NW Russia, floating varve chronology in the varved clay unit, deglaciation.

Sandman O, Eskonen K, Liehu A (1991) The eutrophication history of Lake Särkinen, Finland and the effects of lake aeration. *Hydrobiologia* **214** (1), 191-199. http://dx.doi.org/10.1007/BF00050950; eutrophication since the 1960's, aeration started in 1980, diatom flora indicates rising eutrophy from the beginning of the 20th century and again in the 1950–60's period.

Sandman O, Lichu A, Simola H (1990) Drainage ditch erosion history as recorded in the varved sediment of a small lake in East Finland. *Journal of Paleolimnology* **3** (2), 161-169. http://dx.doi.org/10.1007/BF00414069; varved sediment of Lake Heinälampi, stratigraphy of total nitrogen, phosphorus, zinc,mercury, diatoms, recent change from organic mud to minerogenic silt, lead-210, cesium-137, historic change in land use, eutrophication, artificial drainage, ditch erosion.

Sauramo M (1923) Studies on Quaternary varve sediments in southern Finland. *Bulletin de la Commission Géologique de Finlande* **60**, 164 p. Keywords: Quaternary, varve sediments, clay varves, chronology, deglaciation.

Savrda CE, Bottjer DJ, Gorsline DS (1984) Development of a comprehensive oxygen deficient marine biofacies model: evidence from Santa Monica, San Pedro, and Santa Barbara basins, California Continental Borderland. *The American Association of Petroleum Geologists Bulletin* **68** (9), 1179-1192. http://aapgbull.geoscienceworld.org/content/68/9/1179.short; box core x-radiographs, relationships between dissolved oxygen content and (1) sediment fabric, (2) biogenic structure distribution and size trends, and (3) faunal composition and species richness in three "anoxic silled basins", preservation of laminations, bioturbation, marine sediment, Pacific Ocean.

Sayles RW (1919) Seasonal deposition in aqueoglacial sediments. *Memoirs of the Museum of Comparative Zoology* **47** (1), 1-67. Harvard College, Cambridge, Massachusetts. http://www.biodiversitylibrary.org/page/28862461#page/5/mode/1up; reviews the literature on varved glacial clays, banded clays in the Connecticut valley and in Rhode Island.

Schaffner LC, Jonsson P, Diaz RJ, Rosenberg R, Gapcynski P (1992) Benthic communities and bioturbation history of estuarine and coastal systems: effects of hypoxia and anoxia. *Marine Coastal Eutrophication*, 1001-1016. http://dx.doi.org/10.1016/B978-0-444-89990-3.50087-0; marine varves, coastal eutrophication, human impact.

Schaller T, Moor HC, Wehrli B (1997) Sedimentary profiles of Fe, Mn, V, Cr, As and Mo as indicators of benthic redox conditions in Baldeggersee. *Aquatic Sciences - Research Across Boundaries* **59** (4), 345-361. http://dx.doi.org/10.1007/BF02522363; concentration profiles of Mg, K, La, Fe, Mn, V, Cr, As, Mo in freeze core from varved Lake Baldeggersee, Switzerland, European Alps, redox indicators, trace metals.

Schaller T, Moor HC, Wehrli B (1997) Reconstructing the iron cycle from the horizontal distribution of metals in the sediment of Baldeggersee. *Aquatic Sciences - Research Across Boundaries* **59** (4), 326-344. http://dx.doi.org/10.1007/BF02522362; distributions of solid phase Fe, Mn, V, Cr, As, Mo in different sediment strata reflecting various deep-water oxygen conditions, Fe cycling is inhibited by oxygen penetration into the sediment, metal distribution, geochemical focusing.

Scharf BW (1998) Eutrophication history of Lake Arendsee (Germany). *Palaeogeography, Palaeoclimatology, Palaeoecology* **140** (1-4), 85-96. http://dx.doi.org/10.1016/S0031-0182(98)00033-9; thanatocenosis in freeze core, varve counting, fauna changed 1960 to 1972, sewage loading from town Arendsee and drainage of Lake Fauler See into Lake Arendsee, Lake Arendsee did not yet recover from the loading, eutrophication, ostracoda.

Scheidegger AE (1965) A theory of varve formation. *International Association of Scientific Hydrology. Bulletin* **10** (1), 68-73. http://dx.doi.org/10.1080/02626666509493374; varve thickness relates to the time of deposition after the retreat of the ice.

Schettler G, Liu Q, Mingram J, Negendank JFW (2006) Palaeovariations in the east-Asian monsoon regime geochemically recorded in varved sediments of Lake Sihailongwan (northeast China, Jilin province). Part 1: Hydrological conditions and dust flux. *Journal of Paleolimnology* **35** (2), 239-270. http://dx.doi.org/10.1007/s10933-005-0096-6; 220-year dust flux, geochemistry, hydrology, paleoclimate, lake sediment, dimictic Lake Sihailongwan, Long Gang mountain area, Jilin province, northeast China, silica geochemistry, diatom.

Schettler G, Liu Q, Mingram J, Stebich M, Dulski P (2006) East-Asian monsoon variability between 15 000 and 2000 cal. yr BP recorded in varved sediments of Lake Sihailongwan (northeastern China, Long Gang volcanic field). *The Holocene* **16** (8), 1043-1057. http://dx.doi.org/10.1177/0959683606069388; decadal-scale palaeohydrological reconstruction 15000-2000 cal. yr BP from varved sediments of Lake Sihailongwan (SHL), pollen, East Asian summer monsoon strength, Holocene, Late Glacial warm period, aeolian siliciclastic influx, sediment geochemistry.

Schettler G, Mingram J, Negendank JFW, Jiaqi L (2006) Palaeovariations in the east-Asian monsoon regime geochemically recorded in varved sediments of Lake Sihailongwan (northeast China, Jilin province). Part 2: a 200-year record of atmospheric lead-210 flux variations and its palaeoclimatic implications. *Journal of Paleolimnology* **35** (2), 271-288. http://dx.doi.org/10.1007/s10933-005-0102-z; dust flux, east-Asian monsoon, hydrology, lead-210, paleoclimate, lake sediment, Long Gang area, Jilin province.

Schettler G, Romer RL (1998) Anthropogenic influences on Pb/Al and lead isotope signature in annually layered Holocene Maar lake sediments. *Applied Geochemistry* **13** (6), 787-797. http://dx.doi.org/10.1016/S0883-2927(98)00010-9; Eifel volcanic field, Germany, Lake Meerfelder Maar, Lake Schalkenmehrener Maar, anomalously high lead with distinct isotope signature during first century AD, same isotopic composition as galena used for regional Roman lead refinement, airborne transport into Maar lakes, varve chronostratigraphy indicates 230 years of Roman lead input.

Schiefer E (2006) Depositional regimes and areal continuity of sedimentation in a montane lake basin, British Columbia, Canada. *Journal of Paleolimnology* **35** (3), 617-628. http://dx.doi.org/10.1007/s10933-005-5265-0; 20th century varve sequences from Green Lake system, rapid glacial recession, floods, unusual snowmelt conditions, sediment focusing, anthropogenic disturbances along lake shorelines.

Schiermeier Q (2012) Man of the desert — Stefan Kröpelin has carved out a career where few dare to tread — in the heart of the Sahara. *Nature* **488** (7411), 272-274. http://www.nature.com/news/science-in-the-sahara-man-of-the-desert-1.11162; http://www.nature.com/polopoly_fs/1.11162%21/menu/main/topColumns/topLeftColumn/pdf/488272a.pdf; overview on Kröpelin's desert research, including the discovery of varved sediments in the Sahara. See also:http://www.sfb806.uni-koeln.de/images/idoblog/upload/108/200706_Atlas_Ounianga_Kebir.pdf

Schillereff DN, Chiverrell RC, Macdonald N, Hooke JM (2014) Flood stratigraphies in lake sediments: A review. *Earth-Science Reviews* **135**, 17-37. http://dx.doi.org/10.1016/j.earscirev.2014.03.011; general overview on paleoflood reconstruction in lacustrine sediments with inclusion of varved sediments.

Schimmelmann A (2012) The 'coffin lid' effect: flood layers and turbidites in Santa Barbara Basin affect diagenesis of organic matter in underlying varved sediment. In: (Besonen MR, ed.) *Second Workshop of the PAGES Varves Working Group*, Program and Abstracts, 17-19 March 2011, Corpus Christi, Texas, USA, 83-86. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2011_VWG_2nd_wkshp.pdf; marine sediment, exclusion of oxygen from bottom water. *Note: the ages of particular layers described in this study were partially revised by Hendy et al.'s (2012) new chronology.*

Schimmelmann, A, Hendy IL, Dunn L, Pak DK, Lange CB (2013) Revised ~2,000-year chronostratigraphy of partially varved marine sediment in Santa Barbara Basin, California. *GFF, special issue "Varve Genesis, Chronology and Paleoclimate",* **135** (3-4), 258-264. http://dx.doi.org/10.1080/11035897.2013.773066; California Current, marine sediment prior to 18th century was not continuously varved, but instead was occasionally merely laminated, leading to incorrect varve count-ages, radiocarbon dating of terrestrial macrofossils, drought periods may have starved the basin of sediment and provided insufficient lithic material to deposit winter laminae, declining oxygenation of bottom waters in Santa Barbara Basin and Santa Monica Basin.

Schimmelmann A, Kastner M (1993) Evolutionary changes over the last 1000 years of reduced sulfur phases and organic carbon in varved sediments of the Santa Barbara Basin, California. *Geochimica et Cosmochimica Acta* **57** (1), 67-78. http://dx.doi.org/10.1016/0016-7037(93)90469-D; North America, marine sediment, Pacific Ocean, California Current, El Niño, *Beggiatoa* bacterial mat, sulfur, total organic carbon, total nitrogen, sulfur geochemistry, diagenesis. *Note: the findings of this study were partially revised by Hendy et al.'s (2012) new chronology.*

Schimmelmann A, Lange CB (1996) Tales of 1001 varves: a review of Santa Barbara Basin sediment studies. In: (Kemp AES, ed.), *Palaeoclimatology and Palaeoceanography from Laminated Sediments*. Geological Society (of London), Special Publication No. **116**, 121-141. http://dx.doi.org/10.1144/GSL.SP.1996.116.01.12; review article, California Borderland, Pacific Ocean, marine sediment, bacterial mat, *Beggiatoa*, lead-210, fish scales, upwelling, turbidite, flood layer, sill. *Note: the findings of this study were partially revised by Hendy et al.'s (2012) new chronology.*

Schimmelmann A, Lange CB, Berger WH (1990) Climatically controlled marker layers in Santa Barbara Basin sediments and fine-scale core-to-core correlation. *Limnology and Oceanography* **35** (1), 165-173. http://aslo.org/lo/toc/vol_35/issue_1/0165.pdf; abstract: http://www.jstor.org/pss/2837350; California Borderland, Pacific Ocean, marine sediment, X-radiography, microfossil stratigraphy, core-to-core correlation, porosity profile, bacterial mat.

Schimmelmann A, Lange CB, Berger WH, Simon A, Burke SK, Dunbar RB (1992) Extreme climatic conditions recorded in Santa Barbara Basin laminated sediments: the 1835-1840 *Macoma* Event. *Marine Geology* **106** (3-4), 279-299. http://dx.doi.org/10.1016/0025-3227(92)90134-4; California, Pacific Ocean, marine sediment, X-radiography, microfossil stratigraphy, core-to-core correlation, Soutar box corer, pelecypods, oxidation. *Note: as of 2012, it remains unclear whether the Macoma layer is a bioturbated interval or a turbidite.*

Schimmelmann A, Lange CB, Li HC (2002) Major flood events of the past 2,000 years recorded in Santa Barbara Basin. In: (West GJ, Buffaloe LD, Eds.) *Proceedings of the Eighteenth Annual Pacific Climate (PACLIM) Workshop*, *California Department of Water Resources, Technical Report* **68** of the Interagency Ecological Program for the San Francisco Estuary, 83-103. http://meteora.ucsd.edu/paclim/PACproc_2001.pdf; http://worldcat.org/oclc/49778045; California Borderland, Pacific Ocean, marine sediment, X-radiography, core-to-core correlation, Soutar box core, piston core, kasten core, flood layers, turbidites, flood frequency. *Note: the findings of this study were partially revised by Hendy et al.'s (2012) new chronology.*

Schimmelmann A, Lange CB, Meggers BL (2003) Palaeoclimatic and archaeological evidence for a ~200-yr recurrence of floods and droughts linking California, Mesoamerica and South America over the past 2000 years. *The Holocene* **13** (5), 763-778. http://dx.doi.org/10.1191/0959683603hl661rp; Santa Barbara Basin, California, Pacific Ocean, marine sediment, X-radiography, flood layers, turbidites, flood frequency, Mesoamerica, archaeological records. *Note: the findings of this study were partially revised by Hendy et al.'s (2012) new chronology.*

Schimmelmann A, Lange CB, Michaelsen J, Berger WH (1990) Climatic changes reflected in laminated Santa Barbara Basin sediments. In: (Betancourt JL, MacKay AM, eds.), *Proceedings of the Sixth Annual Pacific Climate (PACLIM) Workshop*, March 5-8, 1989: California Department of Water Resources, Interagency Ecological Studies Program, Technical Report **23**, 97-99. http://worldcat.org/oclc/22743042; http://www.worldcat.org/title/proceedings-of-the-sixth-annual-pacific-climate-paclim-workshop-asilomar-california-march-5-8-1989/oclc/22743042; California, Pacific Ocean, marine sediment, X-radiography, microfossil stratigraphy, core-to-core correlation, varve counting. *Note: the findings of this study were partially revised by Hendy et al.'s (2012) new chronology.*

Schimmelmann A, Lange CB, Roark EB, Ingram BL (2006) Resources for paleoceanographic and paleoclimatic analysis: A 6,700-year stratigraphy and regional reservoir-age (ΔR) record based on varve counting and ^{14}C-AMS dating for the Santa Barbara Basin, offshore California, USA. *Journal of Sedimentary Research* **76** (1), 74-80. http://dx.doi.org/10.2110/jsr.2006.04 Abstract: http://jsedres.geoscienceworld.org/cgi/content/abstract/76/1/74; additional correlation graphs are available at the JSR Data Archive at http://www.sepm.org/jsr/data_files/2006_data/2006_data.asp; Pacific Ocean, marine sediment, X-radiography, radiocarbon, AMS dating, core-to-core correlation, Soutar box corer, kasten corer, piston corer, varve counting. *Note: the findings of this study were partially revised by Hendy et al.'s (2012) new chronology.*

Schimmelmann A, Lange CB, Schieber J, Francus P, Ojala AEK, Zolitschka B (2016) Varves in marine sediments: A review. *Earth-Science Reviews* **159**, 215-246. http://dx.doi.org/10.1016/j.earscirev.2016.04.009; comprehensive review of marine varves.

Schimmelmann A, Lange CB, Zhao M, Harvey C (1997) Southern California's megaflood event of ca. 1605 AD linked to large-scale atmospheric forcing. In: (Isaacs CM, Tharp VL, eds.) *Proceedings of the Thirteenth Annual Pacific Climate (PACLIM) Workshop*, April 14-17, 1996, California Department of Water Resources, Interagency Ecological Program Technical Report **53**, 39-62. http://worldcat.org/oclc/36709616; Santa Barbara Basin, Pacific Ocean, marine sediment, X-radiography, varve counting, flood layer. *Note: the findings of this study were partially revised by Hendy et al.'s (2012) new chronology.*

Schimmelmann A, Schuffert J, Venkatesan MI, Leather J, Lange CB, Baturin GN, Simon A (1994) Biogeochemistry and origin of a phosphoritized coprolite from anoxic sediment of the Santa Barbara Basin. *Journal of Sedimentary Research* **A64**, 771-777. http://jsedres.sepmonline.org/cgi/content/abstract/64/4a/771; California Borderland, Pacific Ocean, coprolite, historic records, phosphate, diagenesis, marine sediment, X-radiography, radiocarbon, core-to-core correlation, varve counting.

Schimmelmann A, Tegner MJ (1991) Historical oceanographic events reflected in ^{13}C/^{12}C ratio of total organic carbon in laminated Santa Barbara Basin sediment. *Global Biogeochemical Cycles* **5**, 173-188. http://www.agu.org/pubs/crossref/1991/91GB00382.shtml; California Borderland, Pacific Ocean, kelp, historic records, carbon-13, El Niño, carbon stable isotopes, diagenesis, marine sediment, X-radiography, Soutar box corer, varve counting.

Schimmelmann A, Tegner MJ (1991) Coastal climate reflected in ^{13}C/^{12}C ratio of organic carbon in varved sediment from Santa Barbara Basin. In: (Betancourt JL, Tharp VL, eds.), *Proceedings of the Seventh Annual Pacific Climate (PACLIM) Workshop*, April 1990, California Department of Water Resources, Interagency Ecological Studies Program Technical Report **26**, 157-163. http://worldcat.org/oclc/26800294; California, Pacific Ocean, kelp, historic records, El Niño, carbon stable isotopes, diagenesis, marine sediment, X-radiography, varve counting.

Schimmelmann A, Tegner MJ (1992) Historical evidence of abrupt coastal climatic change in Southern California, 1790-1880. In: (Redmond KT, ed.), *Proceedings of the Eighth Annual Pacific Climate (PACLIM) Workshop*, March 10-13, 1991, California Department of Water Resources, Interagency Ecological Studies Program Technical Report **31**, 47-56. http://dx.doi.org/10.1029/91GB00382; http://worldcat.org/oclc/26800319; Santa Barbara Basin, California Borderland, Pacific Ocean, kelp, historic records, El Niño, marine sediment, storminess, shipwrecks, climatic change 1790-1880, *Macoma* layer.

Schimmelmann A, Zayin A (2010) Optical scanning of water-wet and epoxy-embedded sediment minislabs for structural documentation of laminated unconsolidated sediment: Energetic turbidites erode underlying varves in Santa Barbara Basin, California. In: (Ojala AEK, Kosonen E, eds.) *First Workshop of the PAGES Varves Working Group (Palmse, Estonia, April 7-9, 2010), Programme and Abstracts*, Geological Survey of Finland, Espoo, Finland, 93-95. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2010-VWG-1st-wkshp.pdf; optical scanning of wet and epoxy-embedded marine sediment slabs, erosion of varves by turbidites.

Schimmelmann A, Zhao M, Harvey CC, Lange CB (1998) A large California flood and correlative global climatic events 400 years ago. *Quaternary Research* **49** (1), 51-61. http://dx.doi.org/10.1006/qres.1997.1937; Santa Barbara Basin, California Borderland, Pacific Ocean, marine sediment, X-radiography, core-to-core correlation, Soutar box corer, kasten corer, varve counting, flood layer *Note: the findings of this study were partially revised by Hendy et al.'s (2012) new chronology; see also reply to comment (Schimmelmann et al., 1999).*

Schimmelmann A, Zhao M, Harvey CC, Lange CB (1999) Reply to Van Geel et al.'s Comment on "A large California flood and correlative global climatic events 400 years ago". *Quaternary Research* **51** (1), 111-112. http://dx.doi.org/10.1006/qres.1998.2012; http://dx.doi.org/10.1006/qres.1998.2013; Santa Barbara Basin, California Borderland, Pacific Ocean, marine sediment, X-radiography, core-to-core correlation, Soutar box corer, kasten corer, varve counting, flood layer.

Schimmelmann A, Zhao M, Kuhn GG, Tegner MJ (1995) Sea surface temperature and paleo-El Niño events in Santa Barbara Basin, AD 1841-1941. In: (Isaacs CM, Tharp VL, eds.) *Proceedings of the Eleventh Annual Pacific Climate (PACLIM) Workshop*, April 19-22, 1994, California Department of Water Resources, Interagency Ecological Program Technical Report **40**, pp. 93-105. http://worldcat.org/oclc/32635083; California, Pacific Ocean, marine sediment, X-radiography, varve counting, El Niño events 1841-1941, marine sediment, storminess, shipwrecks, climatic change 1790-1880, *Macoma* layer, historic records.

Schleser GH, Helle G, Lücke A, Vos H (1999) Isotope signals as climate proxies: the role of transfer functions in the study of terrestrial archives. *Quaternary Science Reviews* **18** (7), 927-943. http://dx.doi.org/10.1016/S0277-3791(99)00006-2; oxygen stable isotope ratios in diatoms, Lake Holzmaar, Germany, the diatom isotopic signal varies considerably and nonlinearly with temperature, comparison with carbon isotopes in tree rings.

Schlolaut G, Brauer A, Marshall MH, Nakagawa T, Staff RA, Ramsey CB, Lamb HF, Bryant CL, Naumann R, Dulski P, Brock F, Yokoyama Y, Tada R, Haraguchi T, Suigetsu 2006 project members (2014) Event layers in the Japanese Lake Suigetsu 'SG06' sediment core: description, interpretation and climatic implications. *Quaternary Science Reviews* **83** (1), 157-170. http://dx.doi.org/10.1016/j.quascirev.2013.10.026; Japan, lake sediment, flood, earthquake, landslide, 40 ka event layer chronology from Lake Suigetsu, μXRF, microfacies analysis, spectral analysis of flood chronology.

Schlolaut G, Marshall MH, Brauer A, Nakagawa T, Lamb HF, Staff RA, Bronk Ramsey C, Bryan CL, Brock F, Kossler A, Tarasov PE, Yokoyama Y, Tada R, Haraguchi T, Suigetsu 2006 Project Members (2012) An automated method for varve interpolation and its application to the Late Glacial chronology from Lake Suigetsu, Japan. *Quaternary Geochronology* **13**, 52-69. http://dx.doi.org/10.1016/j.quageo.2012.07.005; terrestrial (i.e. non-reservoir-corrected) ^{14}C calibration dataset, lake varve record is curtailed due to the incomplete formation or preservation of annual laminae, program for automated varve interpolation to complement the original varve count, comparison with ^{14}C chronology.

Schlüchter C (ed.) (1979) Moraines and Varves, Origin/Genesis/Classification. Balkema, Rotterdam, 441 pp. (review by McSaveney MJ: http://dx.doi.org/10.1016/0037-0738(82)90067-7). Additional information needed: Electronic link? Keywords?

Schlung SA, Ravelo AC, Aiello IW, Andreasen DH, Cook MS, Drake M, Dyez KA, Guilderson TP, LaRiviere JP, Stroynowski Z, Takahashi K (2013) Millennial-scale climate change and intermediate water circulation in the Bering Sea from 90 ka: A high-resolution record from IODP Site U1340. *Paleoceanography* **28** (1), 54-67. http://dx.doi.org/10.1029/2012PA002365; several marine laminated intervals, Bølling-Allerød characterized by high productivity and laminated sediments.

Schmidt R, Höllerer H, Wallner G (1995) A vacuum sampler for subsampling freeze-dried laminated sediments with the application toin situ frozen varves of Mondsee, Austria. *Journal of Paleolimnology* **14** (1), 93-96. http://dx.doi.org/10.1007/BF00682597; method for subsampling freeze-dried laminated sediments exposed at freeze-corer, small vacuum nozzle draws off sediment at high resolution, tested on an in situ frozen sediment core of Mondsee containing varves 2 to 7 mm thick.

Schmidt H, Reimers CE (1991) The Recent history of trace metal accumulation in the Santa Barbara Basin, southern California Borderland. *Estuarine, Coastal and Shelf Science* **33** (5), 485-500. http://dx.doi.org/10.1016/0272-7714(91)90086-Q; heavy metals, pollution, time series, AD 1931–1986 record in dated marine varved sediment, trace metal accumulation rates for Cd, Cu, Ni, Pb and Zn, removal of trace metals from seawater in this region is efficient near point sources, Pacific.

Schmidt R, van den Bogaard C, Merkt J, Müller J (2002) A new Lateglacial chronostratigraphic tephra marker for the south-eastern Alps: The Neapolitan Yellow Tuff (NYT) in Längsee (Austria) in the context of a regional biostratigraphy and palaeoclimate. *Quaternary International* **88** (1), 45-56. http://dx.doi.org/10.1016/S1040-6182(01)00072-6; meromictic Lake Längsee, Carinthia, European Alps, partially varved Lateglacial sediments, tephra correlates to the Neapolitan Yellow Tuff (NYT) from the Campanian Volcanic Province in Italy, varve counts, Younger Dryas.

Schmidt R, van den Bogaard C, Merkt J, Müller J, Indinger P, Kamenik C (2000) Synchronisation of Lateglacial climate events, recorded in a partially laminated core section of Längsee, South-Eastern Alps, by a new tephra marker and varves. In: *The Record of Human/Climate Interactions in Lake Sediments. 5th Workshop of the European Lake Drilling Programme ELDP*. October 7-12, 2000, Pallanza, Italy. *Terra Nostra* **2000/7**, 114-117. Additional information needed: Electronic link? Keywords?

Schönfeld J, Kuhnt W., Erdem Z, Flögel S, Glock N, Aquit M, Frank M, Holbourn A (2014) Systematics of past changes in ocean ventilation: a comparison of Cretaceous Ocean Anoxic Event 2 and Pleistocene to Holocene Oxygen Minimum Zones. *Biogeosciences Discussion* **11**, 13343-13387. http://dx.doi.org/10.5194/bgd-11-13343-2014; Cretaceous Ocean Anoxic Events (OAEs), laminated shales, comparison of: Peruvian upwelling, late Cenomanian OAE 2 from the Atlantic NW African shelf, California Borderland basins, Pakistan Margin, bioturbation.

Schoning K (2001) The brackish Baltic Sea Yoldia Stage – palaeoenvironmental implications from marine benthic fauna and stable oxygen isotopes. *Boreas* **30** (4), 290-298. http://dx.doi.org/10.1111/j.1502-3885.2001.tb01048.x; Sweden, timing of brackish phase of the Yoldia Sea, marine calcareous benthic fauna (i.e. foraminifera, ostracods and molluscs), stable oxygen isotopes, varved clay sequences, correlated to Swedish Time Scale, Early Preboreal.

Schostakowitsch WB (1936) Geschichtete Bodenablagerungen der Seen als Klima-Annalen. *Meteorologische Zeitschrift* **53**, 176-182. May become available on-line in the future: http://www.ingentaconnect.com/content/schweiz/mz

Schove DJ (1978) Tree-ring and varve scales combined, c. 13500 B.C. to A.D. 1977. *Palaeogeography, Palaeoclimatology, Palaeoecology* **25** (3), 209-233. http://dx.doi.org/10.1016/0031-0182(78)90037-8; comparison of glacial varve chronologies with tree-ring chronologies, examples of proxies for summer weather in the Late Glacial and in the past thousand years.

Schrader H, Baumgartner T (1983) Decadal variation of upwelling in the central Gulf of California. In: (Thiede J, Suess E, eds.) *Coastal Upwelling: Its Sediment Record*, Part B, New York, Plenum Press, 247-273. [ISBN-10: 0306413523]. Variability of upwelling over the last 500 years, marine sediment, Pacific, silicoflagellate population changes, tree-ring data. Additional information needed: Electronic link?

Schrader H, Kelts K, Curray J, Moore D, Aguayo E, Aubry MP, Einsele G, Fornari D, Gieskes J, Guerrero J, Kastner M, Lyle M, Matoba Y, Molina-Cruz A, Niemitz J, Rueda J, Saunders A, Simoneit B, Vaquier V (1980) Laminated diatomaceous sediments from the Guayamas Basin Slope (Central Gulf of California): 250,000-year climate record. *Science* **207** (4436), 1207-1209. http://dx.doi.org/*10.1126/science.207.4436.1207*; Deep Sea Drilling Project-International Program of Ocean Drilling leg 64, Guaymas slope in the central Gulf of California, marine varved sediment, variations in climate, productivity, Late Pleistocene to Holocene, diatom assemblages, reconstructions of paleoceanic conditions, Pacific.

Schrader H, Pisias N, Cheng G (1986) Seasonal variation of silicoflagellates in phytoplankton and varved sediments in the Gulf of California. *Marine Micropaleontology* **10** (1-3), 207-233. http://dx.doi.org/10.1016/0377-8398(86)90030-7; plankton in marine sediment surface, silicoflagellates accurately represent surface populations, Gulf of California, Pacific.

Schulz H, von Rad U (2014) Vertical and lateral flux on the continental slope off Pakistan: correlation of sediment core and trap results. *Biogeosciences* **11**, 3107-3120. http://dx.doi.org/10.5194/bg-11-3107-2014; marine varves, Holocene, late Pleistocene, hemipelagic muds, microscopic and SEM studies, lamination due to seasonal changes of surface productivity and lateral supply of fine-grained sediment, oxygen minimum zone (OMZ), Arabian Sea, west of Karachi (Hab area), sediment trap, accumulation rates, flux rates, laterally advected fine-grained material.

Schulz H, von Rad U, Erlenkeuser H (1998) Correlation between Arabian Sea and Greenland climate oscillations of the past 110,000 years. *Nature* **393**, 54-57. http://dx.doi.org/10.1038/31750; marine varves in surface sediments and possibly in Late Pleistocene sections.

Schulz H, von Rad U, von Stackelberg U (1996) Laminated sediments from the oxygen-minimum zone of the northeastern Arabian Sea. In: (Kemp AES, ed.) *Palaeoclimatology and Palaeoceanography from Laminated Sediments*. *Geological Society Special Publication* **116**, London, 185-208. http://dx.doi.org/10.1144/GSL.SP.1996.116.01.16; Holocene, late Pleistocene, hemipelagic muds, OMZ, microscopic and SEM studies, lamination due to seasonal changes of surface productivity and lateral supply of fine-grained sediment, marine varves.

Seeberg-Elverfeldt IA, Lange CB, Arz HW, Patzöld J, Pike J (2004) The significance of diatoms in the formation of laminated sediments in the Shaban Deep, Northern Red Sea. *Marine Geology* **209** (1-4), 279-301. http://dx.doi.org/10.1016/j.margeo.2004.05.019; Shaban Deep, brine-filled basin, backscatter electron imagery, Red Sea, marine sediment, diatoms.

Seeberg-Elverfeldt IA, Lange CB, Pätzold J, Kuhn G (2005) Laminae type and possible mechanisms for the formation of laminated sediments in the Shaban Deep, northern Red Sea. *Ocean Science* **1** (2), 113-126. http://dx.doi.org/10.5194/os-1-113-2005; www.ocean-science.net/os/1/113/; Shaban Deep, brine-filled basin, backscatter electron imagery, Red Sea, marine sediment, diatoms.

Segerström U, Renberg I (1986) Calculating net annual accumulation rates of sediment components exemplified by pollen. *Hydrobiologia* **143** (1), 45-47. http://dx.doi.org/10.1007/BF00026643; net annual accumulation rate, lake sediment, pollen, Scots Pine, Lake Kassjön, Sweden, pollen count.

Segerström U, Renberg I, Wallin JE (1984) Annual sediment accumulation and land use history; investigations of varved lake sediments. *Verhandlungen der Internationalen Vereinigung für Theoretische und Angewandte Limnologie* (*Proceedings of the International Association of Theoretical and Applied Limnology*) **22**, 1396-1403. Influence of land use of varve deposition in four lakes in Sweden, Lake Judesjön, Lake Koltjärn, Lake Kassjön, Lake Strömbackatjärn. Additional information needed: Electronic link?

Seibold E (1958) Jahreslagen in Sedimenten der mittleren Adria. *Geologische Rundschau* **47** (1), 100-117 (in German). http://dx.doi.org/10.1007/BF01802321; Bay of Mljet, former Yugoslavia, Mediterranean, Adriatic Sea, marine sediment, euxinc conditions, varves in deep center, historic events represented in sediment chronology, light summer lamina containing calcite, dark winter lamina contains organic matter, iron sulfide, quartz.

Seibold E, Berger WH (1996) The Sea Floor. An Introduction to Marine Geology. 3rd edition. Springer-Verlag, Berlin, Heidelberg, 358 p. Graph of varves in Dalmatian lagoons (Malo and Veliko Jezero, Isle of Mljet). See also Wunsam et al. (1999) http://dx.doi.org/10.1016/S0031-0182(98)00147-3.

Seibold E, Wiegert R (1960) Untersuchungen des zeitlichen Ablaufs der Sedimentation im Malo Jezero (Mljet, Adria) auf Periodizitäten. *Zeitschrift für Geophysik* **26**, 87-103. Additional information needed: Electronic link? Keywords?

Shackleton LY (1987) A comparative study of fossil fish scales from three upwelling regions. *South African Journal of Marine Science* **5** (1), 79-84. http://dx.doi.org/10.2989/025776187784522270; accumulation of fish scales in anoxic marine sediment off California, Peru, and Walvis Bay, Namibia.

Shanahan TM, Beck JW, Overpeck JT, McKay NP, Pigati JS, Peck JA, Scholz CA, Heil Jr. CW, King J (2012) Late Quaternary sedimentological and climate changes at Lake Bosumtwi Ghana: New constraints from laminae analysis and radiocarbon age modelling. *Palaeogeography, Palaeoclimatology, Palaeoecology* **361–362**, 49–60. http://dx.doi.org/10.1016/j.palaeo.2012.08.001; sub-Saharan Africa, sediment age model framework for the last ~45 cal kyr of sedimentation using a combination of high-resolution radiocarbon dating, Bayesian age-depth modeling and lamination counting.

Shanahan TM, Overpeck JT, Anchukaitis KJ, Beck JW, Cole JE, Dettman DL, Peck JA, Scholz CA, King JW (2009) Atlantic Forcing of Persistent Drought in West Africa. *Science* **324** (5925), 377–380. http://dx.doi.org/10.2307/20493739; high-resolution age model for the uppermost laminated unit (above unit S1), laminae counts, ^{210}Pb dating and identification of the ^{14}C "bomb-pulse", in agreement to within 1–3 yr over the last century, providing support for the annual nature of laminations, geomorphic, isotopic, and geochemical evidence to reconstruct natural variability in the African monsoon over the past three millennia, intervals of severe drought.

Shanahan TM, Overpeck JT, Beck JW, Wheeler CW, Peck JA, King JW, Scholz CA (2008) The formation of biogeochemical laminations in Lake Bosumtwi, Ghana, and their usefulness as indicators of past environmental changes. *Journal of Paleolimnology* **40** (1), 339-355. http://dx.doi.org/10.1007/s10933-007-9164-4; lake sediment, fine-scale (mm to sub-mm) varves covering much of the last 1 million years, West Africa, lead-210, radiocarbon dates on in-situ fish-bone collagen, dark-varve thickness correlates with local rainfall, carbonate-rich light laminae, crater lake, monsoon.

Shaw J, Archer J (1978) Winter turbidity current deposits in Late Pleistocene glaciolacustrine varves, Okanagan Valley, British Columbia, Canada. *Boreas* **7** (3), 123-130. http://dx.doi.org/10.1111/j.1502-3885.1978.tb00270.x; glaciolacustrine varves, Kickininee Park, British Columbia, Canada, North America, grain size, turbidite, varve thickness, appearance of coarse grained deposits within winter layers of varves may cause two years of deposition to be allocated to a single varve.

Shchukarev A, Gälman V, Rydberg J, Sjöberg S, Renberg I (2008) Speciation of iron and sulphur in seasonal layers of varved lake sediment: an XPS study. *Surface and Interface Analysis* **40**, 354-357. http://dx.doi.org/10.1002/sia.2704; Lake Nylandssjön, Sweden, lake sediment, iron speciation, sulfur speciation, analyses of seasonal layers of varves formed in 1968 and 2005 using X-ray photoelectron spectroscopy, organic (C, N, O, S) and inorganic (Al, Si, Ca, Fe, S) elemental compositions similar for all samples, chemical states of iron and sulfur differed depending on season, black color of the summer layer was caused by the precipitation of inorganic FeS, light layers conained only organic thiol (-SH) and sulfate together with Fe(III) hydroxides.

Shibahara A, Ohkushi K, Kennett JP, Ikehara K (2007) Late Quaternary changes in intermediate water oxygenation and oxygen minimum zone, northern Japan: A benthic foraminiferal perspective. *Paleoceanography* **22** (3), PA3213. http://dx.doi.org/10.1029/2005PA001234; Pacific, marine sediment cores from continental slope off Shimokita Peninsula and Tokachi, northern Japan, in part malinated or varved, today within OMZ.

Shipboard Scientific Party (1998) 2. Sites 1033 and 1034. In: (Bornhold BD, Firth JV, et al., eds.) *Proceedings of the Ocean Drilling Program, Initial Reports*, **169S**, 11-61. http://www-odp.tamu.edu/publications/169S_IR/CHAP_02.PDF; marine varves in Saanich Inlet, British Columbia, Canada, cored down to 89.5 m depth, uppermost 40 to 50 m laminated to varved, Pleistocene through Holocene.

Shore-based Scientific Party (1994) Site 893, Santa Barbara Basin. *Proceedings of the Ocean Drilling Program (ODP), Initial Reports*, **146** (Pt. 2), College Station, Texas, 81pp. http://worldcat.org/oclc/165138436;

Santa Barbara Basin, California Borderland, Pacific Ocean, marine sediment, X-radiography, core-to-core correlation, marine sediment, *Macoma* layer, Ocean Drilling program, sediment slabs, selected varved or laminated intervals. *Note: the findings of this study were partially revised by Hendy et al.'s (2012) new chronology.*

Shostakovich B (1931) Die Bedeutung der Untersuchung der Bodenablagerungen der Seen für einige Fragen der Geophysik. *Internationale Vereinigung für theoretische und angewandte Limnologie Verhandlungen*, Stuttgart. **5,** 307-317. Additional information needed: Electronic link? Keywords?

Shostakovich VB (1934) Lake silt bands and periodic oscillations in nature. *Zapiski Gosudarstvennogo Gydrogeologicheskogo Instituta* **13**, 95-140 (in Russian). (Шостакович ВБ (1934) Иловые отложения озер и периодические колебания в явлениях природы. *Записки Государственного гидрологического института* **13**, 95-140). Keywords: Holocene, Saki Lake, Crimea, Ukraine, varve counts, varve origin, dry and wet periods, climatic cyclicity.

Shostakovich B (1936) Geschichtete Bodenablagerungen der Seen als Klima-Ann. *Meteorologische Zeitschrift* **63**, 176-182. Additional information needed: Electronic link? Keywords?

Shostakovich VB (1941) Lake silt bands and geological problems. *Izvestia Geograficheskogo obshchestva* **73** (in Russian). (Шостакович ВБ (1934) Слоистые иловые отложения и некоторые вопросы геологии. *Известия Географического общества* **73**). Keywords: Holocene, Saki Lake, Crimea, Ukraine, varve counts, varve origin, dry and wet periods, climatic cyclicity.

Shostakovich B (1944) An experiment on geochronological analysis of mud deposits of Malinovoie Lake in connection with the uplift of the shore of the White Sea. Bulletin All-Union Geographical Society, U.S.S.R. (*Известия Географического общества СССР*) **76**, 203-206 (in Russian).

Shunk AJ, Driese SG, Dunbar JA (2009) Late Tertiary paleoclimatic interpretation from lacustrine rhythmites in the Gray Fossil Site, northeastern Tennessee, USA. *Journal of Paleolimnology* **42** (1), 11-24. http://dx.doi.org/10.1007/s10933-008-9244-0; paleosinkhole lake fill with well-preserved record of sedimentation and fossils from the latest Miocene to earliest Pliocene, uppermost lacustrine stratigraphy is varved, periodicities of 24 and 4.4 yr recorded within a continuous 96-varve sequence, monsoonal precipitation pattern, Hale solar cycle, ENSO frequency band.

Shvets GI (1974) *Holocene Variability of the Dnieper Runoff.* Leningrad, Gidrometeoizdat, 33 p. (in Russian). (Швец ГИ (1974) *Многовековая изменчивость стока Днепра*. Ленинград, Гидрометеоиздат, 33 с.); Dniepr River, hydrological observations on runoff, dry and wet seasons, correlation with Shostakovich's varve count in the Saki Lake deposits. Additional information needed: Electronic link?

Sifeddine A, Gutiérrez D, Ortlieb L, Boucher H, Velazco F, Field D, Vargas G, Boussafir M, Salvatteci R, Ferreira V, García M, Valdés J, Caquineau S, Mandeng Yogo M, Cetin F, Solis J, Soler P, Baumgartner T (2008) Laminated sediments from the central Peruvian continental slope: A 500 year record of upwelling system productivity, terrestrial runoff and redox conditions. *Progress in Oceanography* **79** (2-4), 190-197. http://dx.doi.org/10.1016/j.pocean.2008.10.024; 500 yr laminated record, partly marine varves, oxygen minimum zone, off Pisco and Callao, northern Humboldt current region, paleoproductivity.

Simola H (1977) Diatom succession in the formation of annually laminated sediment in Lovojärvi, a small eutrophicated lake. *Annales Botanici Fennici* **14** (3), 143-148. Additional information needed: Electronic link?

Simola H (1983) Limnological effects of peatland drainage and fertilization as reflected in the varved sediment of a deep lake. *Hydrobiologia* **106** (1), 43-57. http://dx.doi.org/10.1007/BF00016415; diatoms and chemistry in varved sediment in Lake Polvijärvi, Finland, sediment chemistry AD 1921–1980 (loss-on-ignition, C, N, Fe, Mn, Mg, P, chlorophyll and carotenoid pigments), eutrophication, land use change, slightly increased productivity of the lake AD 1690–1910 may coincide with slash-and-burn cultivation.

Simola H (1992) Structural elements in varved lake sediments. In: (Saarnisto M, Kahra A, eds.) *Proceedings of the Workshop at Lammi Biological Station 4-6 June, 1990. Geological Survey of Finland, Special Paper* **14**, 5-9. http://arkisto.gtk.fi/sp/sp14/sp_014.pdf; lake sedinment, gyttja, varve composition, Holocene, grain size, varve formation.

Simola H (2007) DIATOM RECORDS | Freshwater Laminated Sequences. In: (Elias SA, ed.) *Encyclopedia of Quaternary Science*, Elsevier, Oxford, 541-548. http://dx.doi.org/10.1016/B0-44-452747-8/00239-8; definition of varved freshwater sediments, importance of diatom remains, varve structure as a dating tool, methods for sampling and analysis of diatom-rich varved sediments, examples of high-resolution paleoecological studies.

Simola HLK, Coard MA, O'Sullivan PE (1981) Annual laminations in the sediments of Loe Pool, Cornwall. *Nature* **290**, 238-241. http://dx.doi.org/10.1038/290238a0; lake sediment, first reported instance of a long varve sequence from Great Britain, from a shallow, polymictic lake.

Simola H, Fält P, Hiltunen J, Parkkinen J (2010) Spectral imaging of sedimentary pigments in varved sediments – method and applications. In: (Ojala AEK, Kosonen E, eds.) *First Workshop of the PAGES*

Varves Working Group (Palmse, Estonia, April 7-9, 2010), Programme and Abstracts, Geological Survey of Finland, Espoo, Finland, 99-100. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2010-VWG-1st-wkshp.pdf; spectral reflectance analysis, chlorophyll, sedimentary photosynthetic pigments.

Simola H, Meriläinen JJ, Sandman O, Marttila V, Karjalainen H, Kukkonen M, Julkunen-Tiitto R, Hakulinen J (1996) Palaeolimnological analyses as information source for large lake biomonitoring. *Hydrobiologia* **322** (1-3), 283-292. http://dx.doi.org/10.1007/BF00031841; Lake Saimaa Biomonitoring Project (1990–1993), eastern Finland, nutrient-poor clearwater Lake Puruvesi, oligotrophic mesohumic Lake Paasivesi, eutrophied and polluted mesohumic Lake Haukivesi, unique developmental histories under human influence, lead-210, varve-counting, soot stratigraphy, element stratigraphies, biological remains (diatoms, cladocera, chironomids, sedimentary pigments).

Simola H, Tolonen K (1981) Diurnal laminations in the varved sediment of Lake Lovojärvi, south Finland. *Boreas* **10** (1), 19-26. http://dx.doi.org/10.1111/j.1502-3885.1981.tb00465.x; anthropogenic 1960 AD thick silty layer in the sediment of Lake Lovojärvi contained 18 laminations due to rhythmical variations in the size classes of the mineral particles, agreement between thicknesses of successive laminae and meteorological wind pulse data of the spring 1960, diatom analysis.

Simoneit BRT (1982) Preliminary organic geochemistry of laminated versus nonlaminated sediments from holes 479 and 480, Deep Sea Drilling Project Leg 64. In: (Blakeslee J, Platt LW, Stout LN, eds.) *Initial Reports of the Deep Sea Drilling Project* **64**, part 2, Washington, U.S. Government Printing Office, 921- 931. http://dx.doi.org/10.2973/dsdp.proc.64.137.1982; types of organic material in laminated versus nonlaminated marine sediments from DSDP holes 479 and 480, Guaymas Basin slope, Gulf of California, Pacific, similar lipid composition, some influx of allochthonous higher-plant detritus, nonlaminated sections contain more terrigenous plant waxes and perylene.

Simonneau A, Chapron E, Vanniere B, Wirth SB, Gilli A, Di Giovanni C, Anselmetti FS, Desmet M, Magny M (2013) Mass-movement and flood-induced deposits in Lake Ledro, southern Alps, Italy: implications for Holocene palaeohydrology and natural hazards. *Climate of the Past* **9** (2), 825-840. http://dx.doi.org/10.5194/cp-9-825-2013. Trento Province, Central European Alps, Italy, flood layers and turbidites in varved lake sediment, varves since 9000 cal. yr BP, subaquatic mass-movements triggered by historical and pre-historical regional earthquakes.

Sirocko F (2016) The ELSA - Stacks (Eifel-Laminated-Sediment-Archive): An introduction. *Global and Planetary Change* **142**, 96-99. http://dx.doi.org/10.1016/j.gloplacha.2016.03.011; introduction and literture list of ELSA stacks, lacustrine varves, Tertiary and Quaternary, from 7 extant and 61 dry maar lakes, Germany. Search this archive for key word ELSA for additional publications.

Sirocko F, Dietrich S, Veres D, Grootes PM, Schaber-Mohr K, Seelos K, Nadeau MJ, Kromer B, Rothacker L, Röhner M, Krbetschek M, Appleby P, Hambach U, Rolf C, Sudo M, Grim S (2013) Multi-proxy dating of Holocene maar lakes and Pleistocene dry maar sediments in the Eifel, Germany. *Quaternary Science Reviews* **62**, 56-76. http://dx.doi.org/10.1016/j.quascirev.2012.09.011; ELSA Project (Eifel Laminated Sediment Archive), ~52 cores from 27 maar lakes and filled-in maar basins, Eifel/Germany, radiometric dating, palynostratigraphy, event markers, varve counting, flood events at 1342 AD and ca 800 BC, eruptions at Ulmener Maar 11,000 varve years BP, Laacher See 12,900 varve years BP, Mosenberg volcanoes/Meerfelder Maar 41-45 cal ka BP, Dümpel Maar 116 ka BP, Glees Maar - 151 ka BP produced distinct ash-layers crucial for inter-core and inter-site correlations.

Sirocko F, Knapp H, Dreher F, Förster MW, Albert J, Brunck H, Veres D, Dietrich S, Zech M, Hambach U, Röhner M, Rudert S, Schwibus K, Adams C, Sigl P (2016) The ELSA-Vegetation-Stack: Reconstruction of Landscape Evolution Zones (LEZ) from laminated Eifel maar sediments of the last 60,000 years. *Global and Planetary Change* **142**, 108-135. http://dx.doi.org/10.1016/j.gloplacha.2016.03.005; Germany, Eifel dry maars and maar lakes, lacustrine varves, total carbon correlayes with Greenland ice record, pollen.

Slaymaker O, Souch C, Menounos B, Filippelli G (2003) Advances in Holocene mountain geomorphology inspired by sediment budget methodology. *Geomorphology* **55** (1-4), 305-316. http://dx.doi.org/10.1016/S0169-555X(03)00146-6; sediment budgets of alpine lakes in British Columbia, Canada, North America, hydroclimatic controls of lake sedimentation for the last 600 years (A.D. 1370–1998) preserved in varved sediments from two lake basins, contemporary monitoring, air photo analysis, detailed stratigraphy of sedimentation events within a single varve, phosphorus transfer from weathering minerals to occluded and organic fractions, low bioavailability of phosphorus.

Slomp CP (2013) Reconstructing the history of euxinia in a coastal sea. *Geology* **41** (4), 523-524. http://dx.doi.org/10.1130/focus0420131.1; overview on hypoxia and euxinia in marine basins.

Smirnov VN, Glushkova OYu (2013) Upper Pleistocene volcanic ash varve-like deposits in the Northern Okhotsk region. *Doklady Earth Sciences* **451** (1), 762–765. http://dx.doi.org/10.1134/S1028334X13070179; atmospherically deposited rhyolitic tephra from Kamchatka volcanos, apparently contributing to varved lacustrine Pleistocene to early Holocene lake sediment, sometimes disrupting the sedimentation pattern, ca. 200 to 220 annual 'varve-like beds'.

Smith A (1832) On the water courses, and the alluvial and rock formations of the Connecticut River valley. *American Journal of Science* **22**, 205-231. http://books.google.com/books?id=mSZGAAAAcAAJ&pg=PA205&lpg=PA205&dq=On+the+water+courses+and+the+alluvial+and+rock+formations+of+the+Connecticut+River+valley&source=bl&ots=wLLDtHh_qS&sig=2Bt9SwHqJ_BwWxTUTmfBHEM_a1E&hl=en&sa=X&ei=3vHMUbbENITvygHk2YAI&

ved=0CCwQ6AEwAA#v=onepage&q=On%20the%20water%20courses%20and%20the%20alluvial%20and%20rock%20formations%20of%20the%20Connecticut%20River%20valley&f=false

Smith SJ, Anderson RS (1995) A method for impregnating soft sediment cores for thin-section microscopy. *Journal of Sedimentary Research* **65** (3), 576-577. http://dx.doi.org/10.1306/D4268153-2B26-11D7-8648000102C1865D; Spurr epoxy impregnation of lacustriner sediment with intermittent acetobne replacement of water.

Smith SV, Bradley RS, Abbott MB (2004) A 300 year record of environmental change from Lake Tuborg, Ellesmere Island, Nunavut, Canada. *Journal of Paleolimnology* **32** (2), 137-148. http://dx.doi.org/10.1023/B:JOPL.0000029431.23883.1c; high-energy hydrologic discharge events from ~1865 to 1962, meltwater discharge from adjacent Agassiz Ice Cap, varve thickness record correlates with the amount of melting on the Agassiz Ice Cap and Eureka 900 mb air temperature records, Arctic, paleohydrology.

Smith VC, Mark DF, Staff RA, Blockley SPE, Ramsey CB, Bryant CL, Nakagawa T, Han KK, Weh A, Takemura K, Danhara T, Suigetsu 2006 Project Members (2011) Toward establishing precise $^{40}Ar/^{39}Ar$ chronologies for Late Pleistocene palaeoclimate archives: an example from the Lake Suigetsu (Japan) sedimentary record. *Quaternary Science Reviews* **30** (21-22), 2845-2850. http://dx.doi.org/10.1016/j.quascirev.2011.06.020; ~150 kyrs of varved lake sediment, volcanic ash layers, argon dating of Ulleungdo tephra, varve chronology, calibration of cosmogenic nuclide production, tephrochronology.

Smith VC, Staff RA, Blockley SPE, Bronk Ramsey C, Nakagawa T, Mark DF, Takemura K, Danhara T, Suigetsu 2006 Project Members (2013) Identification and correlation of visible tephras in the Lake Suigetsu SG06 sedimentary archive, Japan: chronostratigraphic markers for synchronising of east Asian/west Pacific palaeoclimatic records across the last 150 ka. *Quaternary Science Reviews* **67**, 121-137. http://dx.doi.org/10.1016/j.quascirev.2013.01.026; Honshu Island, central Japan, high-resolution palaeoenvironmental varved record, including 30 visible tephra layers spanning the last ~150 ka, major element glass composition, precise and accurate ages for the tephras from eruptions within the last 50 ka.

Smol JP (2008) *Pollution of Lakes and Rivers: A Paleoenvironmental Perspective*, 2nd edition, Wiley-Blackwell, 396 pp. http://www.wiley.com/WileyCDA/WileyTitle/productCd-1405159138.html; use of varved lake sediments to reconstruct pollution history, many references, chapter on recent climatic change and effects on water quality and quantity.

Sniderman JMK, Pillans B, O'Sullivan PB, Kershaw AP (2007) Climate and vegetation in southeastern Australia respond to Southern Hemisphere insolation forcing in the late Pliocene–early Pleistocene. *Geology* **35** (1), 41-44. http://dx.doi.org/10.1130/G23247A.1; paleolake Stony Creek Basin, probably maar, lacustrine varve chronology and pollen data available online at www.geosociety.org/pubs/ft2007.htm. ~40 m of black, organic-rich, partly microlaminated silty clays.

Snowball I, Muscheler R, Zillén L, Sandgren P, Stanton T, Ljung K (2010) Radiocarbon wiggle matching of Swedish lake varves reveals asynchronous climate changes around the 8.2 kyr cold event. *Boreas* **39** (4), 720-733. http://dx.doi.org/10.1111/j.1502-3885.2010.00167.x; radiocarbon wiggle matching, Sweden, lake sediment, asynchronous climate changes ~8.2 kyr cold event, varved sediments in Lake Kälksjön, Monte Carlo statistics, Bayesian age modelling, value of synchronized time scales in the reconstruction of abrupt climate changes based on proxy data.

Snowball I, Sandgren P (2002) Geomagnetic field variations in northern Sweden during the Holocene quantified from varved lake sediments and their implications for cosmogenic nuclide production rates. *The Holocene* **12** (5), 517-530. http://dx.doi.org/10.1191/0959683602hl562rp; paleomagnetic analysis, two varved lake-sediment sequences, magnetite, bacterial magnetosomes, magnetization, inclination and declination, regional paleomagnetic secular variation (PSV) curve, drifting of the geomagnetic field, cosmogenic nuclide production, paleointensity, dipole-moment.

Snowball I, Sandgren P, Petterson G (1999) The mineral magnetic properties of an annually laminated Holocene lake-sediment sequence in northern Sweden. *The Holocene* **9** (3), 353-362. http://dx.doi.org/10.1191/095968399670520633; mineral magnetic measurements, 9000-year Lake Sarsjön varve sequence in northern Sweden, paramagnetic susceptibility, ferrimagnetic magnetite correlated with the concentration of organic carbon, magnetotactic bacteria, erosion.

Snowball I, Stanton T, Zillén L, Muscheler R (2010) Refining a varve chronology using independent dating techniques: a Swedish case study. In: (Ojala AEK, Kosonen E, eds.) *First Workshop of the PAGES Varves Working Group (Palmse, Estonia, April 7-9, 2010), Programme and Abstracts*, Geological Survey of Finland, Espoo, Finland, 17-20. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2010-VWG-1st-wkshp.pdf; multiple dating techniques, Värmland, Sweden, Lake Kälksjön, Lake Mötterudstjärnet, Lake Furskogstjärnet, cesium-137, paleomagnetic secular variations, tephrochronology, atmospheric lead pollution isochrones, radiocarbon wiggle matching.

Snowball I, Zillén L, Gaillard MJ (2002) Rapid early-Holocene environmental changes in northern Sweden based on studies of two varved lake-sediment sequences. *The Holocene* **12** (1), 7-16. http://dx.doi.org/10.1191/0959683602hl515rp; mineral magnetism, organic carbon, pollen, varved Holocene lake-sediment sequences, boreal forest of northern Sweden, pollen.

Snowball I, Zillén L, Ojala A, Saarinen T, Sandgren P (2007) FENNOSTACK and FENNORPIS: Varve dated Holocene palaeomagnetic secular variation and relative palaeointensity stacks for Fennoscandia. *Earth and Planetary Science Letters* **255** (1-2), 106-116. http://www.sciencedirect.com/science/article/pii/S0012821X06008855; http://dx.doi.org/10.1016/j.epsl.2006.12.009; paleomagnetism, secular variation master curve, relative paleointensity, Sweden, Finland.

Snowball I, Zillén L, Sandgren P (2002) Bacterial magnetite in Swedish varved lake-sediments: a potential bio-marker of environmental change. *Quaternary International* **88** (1), 13-19. http://dx.doi.org/10.1016/S1040-6182(01)00069-6; mineral magnetic measurements, three varved lake-sediment sequences in Sweden, magnetic properties are dominated by relatively high concentrations of single-domain magnetite magnetosomes produced by magnetotactic bacteria, concentration of the magnetosomes correlates with total organic carbon content and suggests that magnetic remanence measurements reflect lake productivity, organic matter accumulation.

Sohlenius G, Lindeberg G, Björck J, Westman P, Risberg J (2003) The isolation age and history of Lake Sågsjön, Stockholm, based on different dating techniques. *GFF* **125** (2), 69-76. http://dx.doi.org/10.1080/11035890301252069; the last 1000 years or ^{14}C dated (AMS, terrestrial macrofossils) varve record, diatom stratigraphy to determine the age of the isolation from the Baltic Sea to AD 1500 to 1600.

Sohlenius G, Westman P (1998) Salinity and redox alternations in the northwestern Baltic proper during the late Holocene. *Boreas* **27** (2), 101-114. http://dx.doi.org/10.1111/j.1502-3885.1998.tb00871.x; geochemical parameters, siliceous microfossil assemblages, Baltic Sea, Ancylus Lake (9500-8000 14C BP), brackish Litorina Sea (8000-3000 BP), diatom record, high accumulation of organic carbon ca. 6500 and 4500 BP, anoxic or nearly anoxic bottom conditions, some laminae consist of alternating layers of organic and minerogenic material and are probably varves, laminated successions are distinguished by enrichments of vanadium, copper and molybdenum, in part marine.

Sonett CP, Williams GE (1985) Solar periodicities expressed in varves from glacial Skilak Lake, Southern Alaska. *Journal of Geophysical Research* **90** (A12), 12,019-12,026. http://dx.doi.org/10.1029/JA090iA12p12019; presumed sequence of 236 varve thickness measurements from proglacial lake statistically linked to sunspot index. *Note: Stihler et al. (1992) showed that the laminations in Skilak Lake are not varves:* http://dx.doi.org/10.1130/0091-7613(1992)020<1019:VCVTAC>2.3.CO;2.

Sonett CP, Williams GE (1987) Frequency modulation and stochastic variability of the elatina varve record: A proxy for solar cyclicity? *Solar Physics* **110** (2), 397-410. http://dx.doi.org/10.1007/BF00206434; periglacial varve sequence of 1337 laminae, varve thickness, late Precambrian Elatina Formation, possible record of ancient solar activity cycle.

Sonett CP, Williams CR, Mörner NA (1992) The Fourier spectrum of Swedish riverine varves: evidence of sub-arctic quasi-biennial (QBO) oscillations. *Global and Planetary Change* **6** (1), 57-65. http://dx.doi.org/10.1016/0921-8181(92)90022-3; sub-arctic Swedish Ångermanaälven river valley and estuary, periodicity, ~500-year varve record of seasonal riverine sedimentation, comparison with varves from Harding ice field and Skilak Lake, Alaska. *Note: Stihler et al. (1992) showed that the laminations in Skilak Lake are not varves:* http://dx.doi.org/10.1130/0091-7613(1992)020<1019:VCVTAC>2.3.CO;2.

Soreghan MJ, Francus P (2004) Processing backscattered electron digital images of thin sections. In: (Francus P, ed.) *Image Analysis, Sediments and Paleoenvironments. Developments in Paleoenvironmental Research*, vol. 7. Springer, Dordrecht, 203-225. http://dx.doi.org/10.1007/1-4020-2122-4; image acquisition, image processing, image measurement, case study of grain size analysis of upper Paleozoic loessites, recommendations for BSE image analysis, grain size, textural analysis.

Soulet G, Ménot G, Lericolais B, Bard E (2011) A revised calendar age for the last reconnection of the Black Sea to the global ocean. *Quaternary Science Reviews* **30** (9-10), 1019–1026. http://dx.doi.org/10.1016/j.quascirev.2011.03.001; radiocarbon reservoir ages for water column, reconnection 9000 cal a. BP, in part marine.

Soutar A (1967) The accumulation of fish debris in certain California coastal sediments. *California Cooperative Oceanic Fisheries Investigations (CalCOFI) Report* **11**, 136-139. http://www.calcofi.org/publications/calcofireports/v11/Vol_11_Soutar.pdf; Santa Barbara Basin, California, North America, marine sediment, Pacific Ocean, California Current, fish scales, sardine, anchovy, reconstruction of fish stocks. *Note: the varve chronology of the last 2,000 years was revised by Hendy et al. (2012) leading to potentially different interpretations.*

Soutar A (1975) Historical fluctuations of climate and bioclimatic factors as recorded in varved sediment deposits in a coastal sequence. *Proceedings of the WMO/IAMAP Symposium on Long-Term Climatic Fluctuations, Norwich, 18-23 August, 1975.* World Meteorological Organization, Publication No. 421, 147-158. http://www.worldcat.org/title/proceedings-of-the-wmoiamap-symposium-on-long-term-climatic-fluctuations-norwich-18-23-august-1975/oclc/1827479; comparison of Santa Barbara Basin marine varved sediment record of the past 150 years to historical climatic records, low rainfall years produce lower sediment accumulation rates, microfauna and microflora can be used to estimate sea surface temperatures, Pacific.

Soutar A, Crill PA (1977) Sedimentation and climatic patterns in the Santa Barbara Basin during the 19th and 20th centuries. *Geological Society of America Bulletin* **88**, 1161-1172. http://dx.doi.org/10.1130/0016-7606(1977)88<1161:SACPIT>2.0.CO;2; California, Pacific Ocean, marine sediment, varve thickness compared

to tree growth and regional indices of rainfall and temperature, varve thickness is independent of temperature but correlated to rainfall.

Soutar A, Isaacs JD (1969) History of fish populations inferred from fish scales in anaerobic sediments off California. *California Cooperative Oceanic Fisheries Investigations (CalCOFI) Report* **13**, 63-70. http://www.calcofi.org/publications/calcofireports/v13/Vol_13_Soutar___Isaacs.pdf; Santa Barbara Basin, North America, marine sediment, Pacific Ocean, California Current, fish scales, sardine, anchovy, reconstruction of fish stocks. *Note: the varve chronology of the last 2,000 years was revised by Hendy et al. (2012) leading to potentially different interpretations.*

Soutar A, Isaacs JD (1974) Abundance of pelagic fish during the 19th and 20th centuries as recorded in anaerobic sediment off the Californias. *Fishery Bulletin* **72** (2), 257-273. http://fishbull.noaa.gov/72-2/soutar.pdf; Santa Barbara Basin, Pacific, accumulation of pelagic fish debris, fish scales, Pacific sardine, northern anchovy, Pacific hake, Pacific saury, Pacific mackerel, marine varves, Pacific.

Soutar A, Johnson SR, Baumgartner TR (1981) In search of modern depositional analogs to the Monterey Formation. In: (Garrison RE, Douglas RG, eds.) *The Monterey Formation and Related Siliceous Rocks of California*. *Society of Economic Paleontologists and Mineralogists Special Publication, Pacific Section*, 123-147. http://www.worldcat.org/title/monterey-formation-and-related-siliceous-rocks-of-california-proceedings-of-an-sepm-research-symposium-dedicated-to-examine-the-paleontology-sedimentology-depositional-environments-and-diagenesis-of-the-monterey-formation/oclc/8729697; distribution of varve thickness in Santa Barbara Basin reflects the historical pattern of regional rainfall and seasonal upwelling, marine, Pacific.

Soutar A, Johnson SR, Taylor E, Baumgartner TR (1982) X-raydiography of hole 480: Procedures and results. In: (Curray JR, Moore DG, eds.) *Initial Results of the Deep Sea Drilling Project* **64**, part 2, Washington, U.S. Government Printing Office, 1183-1190. http://dx.doi.org/10.2973/dsdp.proc.64.158.1982; methods to prepare samples from piston cores in preparation for X-radiography, varve counting, Guaymas Basin slope, Gulf of California, Pacific, marine sediment.

Soutar A, Kling SA, Crill PA, Duffrin E, Bruland KW (1977) Monitoring the marine environment through sedimentation. *Nature* **266**, 136-139. http://dx.doi.org/10.1038/266136a0; Santa Barbara Basin, marine sediment, sediment traps, California, Pacific Ocean.

Spadini L, Sturm M, Wehrli B, Bott M (2003) Analysis and dating of Pb, Cd, Cu, Zn sediment profiles from the Vitznau basin of Lake Lucerne (Switzerland). *Revue de Géographie Alpine* **91** (1), 41-49. http://www.persee.fr/web/revues/home/prescript/article/rga_0035-1121_2003_num_91_1_2229; varved lacustrine record 1800 to 1970, anthropogenic development.

Spiker EC, Simoneit BRT (1981) Appendix III. Radiocarbon dating of sediments from the Cariaco Trench, Deep Sea Drilling Project Site 147. In: (Watkins J, Moore J, et al., eds.) *Inital Reports of the Deep Sea Drilling Project* **66**, Washington, U.S. Government Printing Office, 863-864. http://dx.doi.org/10.2973/dsdp.proc.66.app3.1982; radiocarbon dating, Cariaco Basin, marine sediment accumulation rate, ages up to 27,000 years at 20 m sub-bottom, Atlantic.

Sprenk D, Weber ME, Kuhn G, Wennrich V, Hartmann T, Seelos K (2014) Seasonal changes in glacial polynya activity inferred from Weddell Sea varves. *Climate of the Past* **10**, 1239-1251. http://dx.doi.org/10.5194/cp-10-1239-2014; core PS1795 consists primarily of fine-grained siliciclastic marine varves that were deposited on contourite ridges in the southeastern Weddell Sea during the Last Glacial Maximum (LGM), high-resolution XRF analysis and grain-size measurements on thin sections, two seasonal components of varves, bright relative coarser minerogenic laminae, dark laminae contain finer particles such as mica and clay, model of enhanced thermohaline convection in front of a grounded ice sheet, darker finer-grained layers were then deposited during less windier season, mainly during summer, when coastal polynya activity was likely reduced.

Sprowl DR (1993) On the precision of the Elk Lake varve chronology. In: (Bradbury JP, Dean WE, eds.) Elk Lake, Minnesota: evidence for rapid climate change in the north-central United States. *The Geological Society of America*, *Special Paper* **276**, 69-74. http://www.worldcat.org/title/elk-lake-minnesota-evidence-for-rapid-climate-change-in-the-north-central-united-states/oclc/27676675; http://specialpapers.gsapubs.org/content/by/year; multiple varve counts, independent varve counting, magnetic susceptibility for core-to-core correlation.

Sprowl DR, Banerjee SK (1989) The Holocene paleosecular variation record from Elk Lake, Minnesota. *Journal of Geophysical Research* **94** (B7), 9369-9388. http://dx.doi.org/10.1029/JB094iB07p09369; geomagnetic field record from four parallel cores of varved sediment, radiocarbon dates and varve chronology, magnetic susceptibility, North American paleosecular variation record 4000 years back, utility of Holocene sediment paleomagnetic records for cross-correlation and dating, comparison of North American and European paleomagnetic records, secular variation.

Sprowl DR, Banerjee SK (1993) Geologic implications of the Elk Lake paleomagnetic record. In: (Bradbury JP, Dean WE, eds.) Elk Lake, Minnesota: evidence for rapid climate change in the north-central United States. *The Geological Society of America*, *Special Paper* **276**159-162. http://www.worldcat.org/title/elk-lake-minnesota-evidence-for-rapid-climate-change-in-the-north-central-united-states/oclc/27676675; http://specialpapers.gsapubs.org/content/by/year; comparison of bulk magnetic properties with varve thickness and sediment density, correlation with Lake St. Croix and Kylen Lake demsonstrates accuracy of varve chronology.

Staff RA, Bronk Ramsey C, Bryant CL, Brock F, Payne RL, Schlolaut G, Marshall MH, Brauer A, Lamb HF, Tarasov P, Yokoyama Y, Haraguchi T, Gotanda K, Yonenobu H, Nakagawa T, Suigetsu 2006 Project Members (2011) New ^{14}C determinations from Lake Suigetsu, Japan: 12,000 to 0 cal BP. *Radiocarbon* **53** (3), 511-528. https://journals.uair.arizona.edu/index.php/radiocarbon/article/view/12340; radiocarbon calibration, AMS dating, lake sediment, Lake Suigetsu, central Japan, terrestrial macrofossils, varve count, agreement with IntCal09 calibration curve.

Stanton T (2011) High temporal resolution reconstructions of Holocene palaeomagnetic directions and intensity: an assessment of geochronology, feature reliability and environmental bias. LUNDQUA (PhD) Thesis 63. Lund University, Sweden. ISBN: 978-91-86746-67-4. Keywords: lake sediment, Holocene, varves, paleomagnetism, environmental bias, Iceland, Sweden, rock magnetism.

Stanton T, Nilsson A, Snowball I, Muscheler R (2011) Assessing the reliability of Holocene relative palaeointensity estimates: a case study from Swedish varved lake sediments. *Geophysical Journal International* **187** (3), 1195-1214. http://dx.doi.org/10.1111/j.1365-246X.2011.05049.x; environmental magnetism, paleointensity, paleomagnetic secular variation, Lake Kälksjön, remanence, Fennoscandian master curves FENNORPIS and FENNOSTACK, rock and mineral magnetism.

Stanton T, Snowball I, Zillén L, Wastegård S (2010) Validating a Swedish varve chronology using radiocarbon, palaeomagnetic secular variation, lead pollution history and statistical correlation. *Quaternary Geochronology* **5** (6), 611-624. http://dx.doi.org/10.1016/j.quageo.2010.03.004; statistical correlation as a technique for detecting errors between chronologies, paleomagnetic secular variation (PSV), varved Holocene lake sediment, Sweden, Lake Kälksjön, Fennoscandian paleomagnetic master stack (FENNOSTACK), likely errors in varve chronology, lead pollution-derived chronology for the last 2000 years, 270 years may be missing from younger part of varve chronology, possible overestimation by ca. 230 years in the number of varves counted in early Holocene, validation, lake sediment.

Stanton T, Snowball I, Zillén L, Wastegård S, Nilsson A, Muscheler R, Reid P (2012) Using corroborative proxies to validate varve chronologies. In: (Zolitschka B, ed.) *3rd Workshop of the PAGES Varves Working Group, Manderscheid, Germany, March 20-25, 2012, Program and Abstracts. Terra Nostra, Schriften der GeoUnion Alfred-Wegener-Stiftung* **2012/1**, 72-76. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/VWG_AbstractVolume_Final_2012.pdf; varved Holocene lake sediment, Sweden, Lake Kälksjön, likely errors in varve chronology, strategies to improve the chronology, historic lead pollution, validation.

Staubwasser M, Sirocko F (2001) On the formation of laminated sediments on the continental margin off Pakistan: the effects of sediment provenance and sediment redistribution. *Marine Geology* **172** (1-2), 43-56. http://dx.doi.org/10.1016/S0025-3227(00)00119-5; Arabian Sea, marine sediment, continental-margin sedimentation, organic carbon, trace metals, lead and neodymium isotopes, off Pakistan, turbidite.

Stebich M, Brüchmann C, Kulbe T, Negendank JFW (2005) Vegetation history, human impact and climate change during the last 700 years recorded in annually laminated sediments of Lac Pavin, France. *Review of Palaeobotany and Palynology* **133** (1-2), 115-133. http://dx.doi.org/10.1016/j.revpalbo.2004.09.004; 1.80-m-long varved lake sediment, vegetation history, pollen, diatom, Lake Pavin, volcanic crater lake, Auvergne, French Massif Central, France, human impact, varve chronology, the last 700 years, Little Ice Age.

Stebich M, Mingram J, Moschen R, Thiele A, Schröder C (2011) Comments on "Anti-phase oscillation of Asian monsoons during the Younger Dryas period: Evidence from peat cellulose δ^{13}C of Hani, Northeast China" by B. Hong, Y.T. Hong, Q.H. Lin, Yasuyuki Shibata, Masao Uchida, Y.X. Zhu, X.T. Leng, Y. Wang and C.C. Cai [Palaeogeography, Palaeoclimatology, Palaeoecology 297 (2010) 214–222]. *Palaeogeography, Palaeoclimatology, Palaeoecology* **310** (3-4), 464-470. http://dx.doi.org/10.1016/j.palaeo.2011.06.004; rejection of Hong et al.'s (2010) re-interpretation of Lake Sihailongwan varve-based data, no evidence for intensified East Asian summer monsoon in northeastern China during the Younger Dryas.

Stebich M, Rehfeld K, Schlütz F, Tarasov PE, Liu J, Mingram J (2015) Holocene vegetation and climate dynamics of NE China based on the pollen record from Sihailongwan Maar Lake. *Quaternary Science Reviews* **124**, 275-289. http://dx.doi.org/10.1016/j.quascirev.2015.07.021; palynology, lacustrine varves to 4000 cal. yr BP, varve counting, AMS radiocarbon dates from terrestrial plant macrofossils, biomization, power spectra.

Stevens LR (1997) Stable-isotopic composition of varved lake sediment: Implications for climatic change in Minnesota. Ph.D. dissertation, University of Minnesota-Minneapolis, 286 pp. Electronic link, key words?

Stevens R (1985) Glaciomarine varves in late-Pleistocene clays near Göteborg, southwestern Sweden. *Boreas* **14** (2), 127-132. http://dx.doi.org/10.1111/j.1502-3885.1985.tb00904.x; grain size, color, carbonate content, organic content, glaciomarine varves, meltwater overflow, salinity-induced coagulation, varves are not as well defined or as easily correlated as classical varves.

Stevens R (1986) Glaciomarine varves and the character of deglaciation, Säveån valley, southwestern Sweden. *Boreas* **15** (4), 289-299. http://dx.doi.org/10.1111/j.1502-3885.1986.tb00934.x; glaciomarine varves primarily dependent upon sedimentation from meltwater overflow, Sweden, varve-thickness variation, ice-marginal deposition,

glaciomarine varves provide a more continuous record of changes in the ice-front character than can be obtained from intermittent moraine positions.

Stevens LR, Dean WE (2008) Geochemical evidence for hydrologic variability over the last 2460 years from Crevice Lake in Yellowstone National Park, USA. *Quaternary International* **188**, 139-148. http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1328&context=usgsstaffpub; http://dx.doi.org/10.1016/j.quaint.2007.11.012; oxygen isotope ratios of endogenic carbonates, Palmer Hydrologic Drought Index (PHDI), Pacific Decadal Oscillation (PDO), laminations are assumed to be lacustrine varves, counted varve chronology.

Stevens L, Ito E, Olson D (2000) Relationship of Mn-carbonates in varved lake-sediments to catchment vegetation in Big Watab Lake, MN, USA. *Journal of Paleolimnology* **24** (2), 199-211. http://dx.doi.org/10.1023/A:1008169526577; authigenic manganese carbonate, oxygen and carbon stable isotope ratios, anoxia, diagenesis, pollen, late-glacial varved sediments, Minnesota, North America.

Stevens LR, Stone JR, Campbell J, Fritz SC (2006) A 2200-yr record of hydrologic variability from Foy Lake, Montana, USA, inferred from diatom and geochemical data. *Quaternary Research* **65** (2), 264-274. http://dx.doi.org/10.1016/j.yqres.2005.08.024; http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1030&context=geosciencefacpub; 2200-yr long record of drought variability inferred from diatoms and oxygen stable isotope ration of bio-induced carbonate in varved lacustrine sediment, oxygen-isotope values are sensitive to changes in regional moisture balance, spectral analysis, C/N ratio, Pacific Decadal Oscillation.

Stewart KA, Lamoureux SF, Finney BP (2008) Multiple ecological and hydrological changes recorded in varved sediments from Sanagak Lake, Nunavut, Canada. *Journal of Paleolimnology* **40** (1), 217-233. http://dx.doi.org/10.1007/s10933-007-9153-7; biotic, sedimentary and biogeochemical proxies, post-18th century changes in stratigraphic record of a deep lake on Boothia Peninsula, varve chronology verified by lead-210 and cesium-137, total organic carbon, C/N ratio, nitrogen stable isotope ratio, biogenic silica, changes in hydroclimatic conditions in the 20th century, Arctic.

Stewart MM, Grosjean M, Kuglitsch FG, Nussbaumer SU, von Gunten L (2011) Reconstructions of late Holocene paleofloods and glacier length changes in the Upper Engadine, Switzerland (ca. 1450 BC - AD 420). *Palaeogeography, Palaeoclimatology, Palaeoecology* **311** (3-4), 215-223. http://dx.doi.org/10.1016/j.palaeo.2011.08.022; Holocene, paleoflood, Lake Silvaplana, Engadine, European Alps, summer-autumn floods, climate warming, glacier length changes, mass accumulation rate, lake sediment, turbidite frequency.

Stewart MM, Larocque-Tobler I, Grosjean M (2011) Quantitative inter-annual and decadal June-July-August temperature variability ca. 570 BC to AD 120 (Iron Age - Roman Period) reconstructed from the varved sediments of Lake Silvaplana, Switzerland. *Journal of Quaternary Science* **26** (5), 491-501. http://dx.doi.org/10.1002/jqs.1480; Holocene, paleoflood, Engadine, European Alps, June-July-August temperature reconstruction, biogenic silica, chironomids, Roman Period, lake sediment, Iron Age.

Stewart MM, Grosjean M, Kuglitsch FG, Nussbaumer SU, von Gunten L (2011) Reconstructions of late Holocene paleofloods and glacier length changes in the Upper Engadine, Switzerland (ca. 1450 BC–AD 420). *Palaeogeography, Palaeoclimatology, Palaeoecology* **311** (3-4), 215-223. http://dx.doi.org/10.1016/j.palaeo.2011.08.022; regional glacier advances and retreats recorded in varved sediments of Lake Silvaplana, ca. 1450 BC–AD 420, 85 paleofloods, turbidites.

Stickley CE, Koç N, Pearce RB, Kemp AES, Jordan RW, Sangiorgi F, St. John K (2012) Variability in the length of the sea ice season in the Middle Eocene Arctic. *Geology* **40** (8), 727-730. http://dx.doi.org/10.1130/G32976.1; sea-ice diatoms *Synedropsis* spp., seasonal-scale flux events, backscattered electron imagery (BSEI), resin-embedded sediment, <30 µm resolution, discrete mono-specific laminae and micro-lenses.

Stickley CE, Pike J, Leventer A (2006) Productivity events of the marine diatom *Thalassiosira tumida* (Janisch) Hasle recorded in deglacial varves from the East Antarctic Margin. *Marine Micropaleontology* **59** (3-4), 184-196. http://dx.doi.org/10.1016/j.marmicro.2006.02.009; last deglaciation, marine varves, Antarctica, laminated diatom-rich marine sediments, subseasonal to seasonal resolution, sublaminae of single diatom species, sublaminae formed by a combination of episodic diatom blooms and rapid deposition, Iceberg Alley, Mac.Robertson Shelf, scanning electron microscope backscattered electron imagery, thin section, secondary electron imagery of sublamina fracture surfaces.

Stickley CE, Pike J, Leventer A, Dunbar R, Domack EW, Brachfeld S, Manley P, McClennen C (2005) Deglacial ocean and climate seasonality in laminated diatom sediments, Mac.Robertson Shelf, Antarctica. *Palaeogeography, Palaeoclimatology, Palaeoecology* **227** (4), 290-310. http://dx.doi.org/10.1016/j.palaeo.2005.05.021; last deglaciation, marine varves, Antarctica, East Antarctic Margin (EAM) laminated diatom-rich marine sediments, subseasonal to seasonal resolution, sublaminae of single diatom species, sublaminae formed by a combination of episodic diatom blooms and rapid deposition, Iceberg Alley, scanning electron microscope backscattered electron imagery, thin section, secondary electron imagery of sublamina fracture surfaces, 192 varves analyzed, retreat of the East Antarctic Ice Sheet, seasonal sea-ice changes along the EAM.

Stihler SD, Stone DB, Beget JE (1992) "Varve" counting vs. tephrochronology and ^{137}Cs and ^{210}Pb dating: A comparative test at Skilak Lake, Alaska. *Geology* **20** (11), 1019-1022. http://dx.doi.org/10.1130/0091-7613(1992)020<1019:VCVTAC>2.3.CO;2; sedimentation rate, cesium-137, lead-210, North America, lake sediment, tephra, X-radiography, magnetic susceptibility, intensity of magnetization, microprobe analyses of volcanic glass

shards, dating results indicates that rhythmite layers at Skilak Lake are not annual varves, earlier work on sunspot and climate changes thought to have been recorded in the 'varved' Skilak Lake needs to be reevaluated.

St. Jacques JM, Cumming BF, Sauchyn DJ, Smol JP (2015) The bias and signal attenuation present in conventional pollen-based climate reconstructions as assessed by early climate data from Minnesota, USA. *PLoS ONE* **10** (1), e0113806. http://dx.doi.org/10.1371/journal.pone.0113806; reconstructed record of past temperatures since AD 1116 from pollen counts from a lacustrine varve-dated record from Lake Mina, positive bias of 0.8-1.7°C based on non-native pollen.

St. Jacques JM, Cumming BF, Smol JP (2008) A 900-year pollen-inferred temperature and effective moisture record from varved Lake Mina, west-central Minnesota, USA. *Quaternary Science Reviews* **27** (7-8), 781-796. http://dx.doi.org/10.1016/j.quascirev.2008.01.005; North American Great Plains, pollen, Minnesota, Little Ice Age, Medieval Climate Anomaly, mega-drought.

St. Jacques JM, Cumming BF, Smol JP (2008) A statistical method for varve verification using seasonal pollen deposition. *Journal of Paleolimnology* **40** (2), 733-744. http://dx.doi.org/10.1007/s10933-008-9196-4; differences in pollen abundances in light/dark (i.e. summer/winter-spring) sediment layers, varve layer-splitting and seasonal pollen characterization as a method to verify varved deposition, $\chi 2$ test and non-parametric regression, plant bloom times from pollen traps, example of 900 visible laminations of Lake Mina, Minnesota, USA.

St. Jacques JM, Cumming BF, Smol JP (2009) A 900-yr diatom and chrysophyte record of spring mixing and summer stratification from varved Lake Mina, west-central Minnesota, USA. *The Holocene* **19** (4), 537-547. http://dx.doi.org/10.1177/0959683609104030; high-resolution, independent pollen-inferred paleoclimate record and direct algal seasonality data, diatom and chrysophyte record AD 1116–2002, splitting varves into constituent winter-spring and summer lamina, Medieval Climate Anomaly, Little Ice Age.

Stockhausen H (1998) Geomagnetic palaeosecular variation (0-13 000 yr BP) as recorded in sediments from three maar lakes from the West Eifel (Germany). *Geophysical Journal International* **135** (3), 898-910. http://dx.doi.org/10.1046/j.1365-246X.1998.00664.x; Geomagnetic palaeosecular variation (PSV) profiles from three maar lakes with varve chronologies.

Stockhausen H, Zolitschka B (1999) Environmental changes since 13,000 cal. BP reflected in magnetic and sedimentological properties of sediments from Lake Holzmaar (Germany). *Quaternary Science Reviews* **18** (7), 913–925. http://dx.doi.org/10.1016/S0277-3791(99)00005-0; lake sediment, Eifel, magnetic properties dominated by paramagnetic minerals, remanence carrying ferromagnetic minerals dominated by low coercivity fraction, titanomagnetite, hematite, postdepositional dissolution of titano-magnetite, authigenic growth of greigite, positive correlation between initial magnetic susceptibility (κ) and sediment accumulation rate and between κ and non-arboreal pollen percentage, κ and organic carbon content show negative correlation.

Stockhecke M, Anselmetti FS, Hammer P, Odermatt D, Sturm M (2010) Insights into the annual particle and sedimentation cycles of Lake Van (Turkey) by combining remote sensing data and sequential sediment trap analysis. In: (Ojala AEK, Kosonen E, eds.) *First Workshop of the PAGES Varves Working Group (Palmse, Estonia, April 7-9, 2010), Programme and Abstracts*, Geological Survey of Finland, Espoo, Finland, 101-105. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2010-VWG-1st-wkshp.pdf; lake sediment, modern varve formation, remotely-sensed total suspended-matter (TSMrs) concentrations, time-series of particle flux and water temperatures, for update see Stockhecke et al. (2012).

Stockhecke M, Anselmetti FS, Meydan AF, Odermatt D, Sturm M (2012) The annual particle cycle in Lake Van (Turkey). *Palaeogeography, Palaeoclimatology, Palaeoecology*, **333-334**, 148-159. http://dx.doi.org/10.1016/j.palaeo.2012.03.022; lake sediment, modern varve formation, remotely-sensed total suspended-matter (TSMrs) concentrations, time-series of particle flux and water temperatures, turbidity, temperature and oxygen profiles, sediment trap, high particle fluxes during spring and fall, medium fluxes during summer, almost zero flux during winter, calcium carbonate flux mainly controlled by runoff, light laminae are produced from spring to fall, and dark laminae in winter.

Stockhecke M, Anselmetti FS, Sturm M (2012) Sediments of Lake Van – a high-resolution archive of changing climate, volcanic events and seismic activity in Eastern Anatolia for the last 500,000 yrs. In: (Zolitschka B, ed.) *3rd Workshop of the PAGES Varves Working Group, Manderscheid, Germany, March 20-25, 2012, Program and Abstracts. Terra Nostra, Schriften der GeoUnion Alfred-Wegener-Stiftung* **2012/1**, 77-80. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/VWG_AbstractVolume_Final_2012.pdf; Turkey, soda lake stratigraphic framework of composite profile.

Stockhecke M, Kwiecien O, Vigliotti L, Anselmetti FS, Beer J, Çağatay MN, Channell JET, Kipfer R, Lachner J, Litt T, Pickarski N, Sturm M (2014) Chronostratigraphy of the 600,000 year old continental record of Lake Van (Turkey). *Quaternary Science Reviews* **104**, 8-17. http://dx.doi.org/10.1016/j.quascirev.2014.04.008; Ahlat Ridge and Northern Basin drill sites, ICDP project PALEOVAN, varve chronology, tephrostratigraphy, argon dating, ^{14}C dating, magnetostratigraphy, cosmogenic nuclides.

Stockhecke M, Sturm M, Brunner I, Schmincke HU, Sumita M, Kipfer R, Cukur D, Kwiecien O, Anselmetti FS (2014) Sedimentary evolution and environmental history of Lake Van (Turkey) over the past 600

000 years. *Sedimentology* **61** (6), 1830-1861. http://dx.doi.org/10.1111/sed.12118; six lacustrine lithotypes separated from fluvial and event deposits, varved clayey silts, intralake oxic–anoxic boundary, $CaCO_3$-rich banded sediments.

Stoll JMA, Poiger TF, Lotter AF., Sturm M, Giger W (1997) Fluorescent whitening agents as molecular markers for domestic wastewater in recent sediments of Greifensee, Switzerland. In: (Eganhouse RP, ed.) *Molecular Markers in Environmental Geochemistry*. *ACS Symposium Series* **671**, chapter 15, 231-241. http://dx.doi.org/10.1021/bk-1997-0671.ch015; http://pubs.acs.org/doi/abs/10.1021/bk-1997-0671.ch015; fluorescent whitening agents (FWAs) were examined in varved sediment freeze core, input history of FWAs since mid 1960s.

Støren E, Dahl SO (2012) Nonglacial varves recorded in a lake sediment sequence from Southern Norway. In: (Zolitschka B, ed.) *3rd Workshop of the PAGES Varves Working Group, Manderscheid, Germany, March 20-25, 2012, Program and Abstracts. Terra Nostra, Schriften der GeoUnion Alfred-Wegener-Stiftung* **2012/1**, 85-86. http://pastglobalchanges.org/products/1048-3rd-varves-working-group-workshop-abstract-volume; varved sediment core from lake Sagtjennet, southern Norway, non-glacial organic varves.

Striberger J, Björck S, Holmgren S, Hamerlík L (2012) The sediments of Lake Lögurinn – A unique proxy record of Holocene glacial meltwater variability in eastern Iceland. *Quaternary Science Reviews* **38**, 76-88. http://dx.doi.org/10.1016/j.quascirev.2012.02.001; sediment record from glacier-fed lake, meltwater variability of Eyjabakkajökull surge-type outlet glacier of the Vatnajökull ice cap, lake sediment, glaciolacustrine varves, diatoms, chironomids, glacial history in the North Atlantic region.

Striberger J, Björck S, Ingólfsson Ó, Kjær KH, Snowball I, Uvo CB (2011) Climate variability and glacial processes in eastern Iceland during the past 700 years based on varved lake sediments. *Boreas* **40** (1), 28-45. http://dx.doi.org/10.1111/j.1502-3885.2010.00153.x; varved lake sediments, Lake Lögurinn, glacial processes of outlet glacier Eyjabakkajökull on Vatnajökull icecap, 743-year varve chronology AD 1262–2005, high-resolution images, X-ray density, geochemical properties, X-ray fluorescence scanning, cesium-137, historical tephras, Little Ice Age, light-colored laminae are from the glacial river Jökulsáí Fljótsdal.

Striewski B, Mayr C, Flenley J, Naumann R, Turner G, Lücke A (2009) Multi-proxy evidence of late Holocene human-induced environmental changes at Lake Pupuke, Auckland (New Zealand). *Quaternary International* **202** (1-2), 69-93. http://dx.doi.org/10.1016/j.quaint.2009.01.013; Southern Hemisphere, maar lake, Auckland, lack of catchment disturbance from ca. 2000 BP until several decades before the eruption of the Rangitoto volcano, anthropogenic influence, tephrochronostratigraphy.

Strom K (1936) Land-locked waters. Hydrography and bottom deposits in badly ventilated Norwegian Fjords, with remarks upon sedimentation under anaerobic conditions. *Skrifter / Det Norske Videnskaps - Akademi i Oslo*, 1-85. http://www.worldcat.org/title/skrifter-det-norske-videnskaps-akademi-i-oslo-matematisk-naturvidenskapelig-klasse-1-matematisk-naturvidenskapelig-klasse/oclc/615039803; general conditions for the preservation of marine laminated sediments, Drammensfjord, Norway, North Sea, Atlantic.

Strömberg B (1985) Revision of the lateglacial Swedish varve chronology. *Boreas* **14** (2), 101-105. http://dx.doi.org/10.1111/j.1502-3885.1985.tb00896.x; Sweden, previous postglacial varve chronology extended by 365 years, so-called zero year is dated 7,288 BC, revised varve dating now gives older ages (calendar years) than ^{14}C-dating.

Strömberg B (1985) New varve measurements in Västergätland, Sweden. *Boreas* **14** (2), 111-115. http://dx.doi.org/10.1111/j.1502-3885.1985.tb00899.x; varve measurements at Skövde and Tibro in the middle Swedish end moraine belt, east of Mount Billingen, Västergötland, Sweden, 400–700 varves, correlations are difficult.

Strömberg B (1989) Late Weichselian deglaciation and clay varve chronology in east-central Sweden. *Sveriges geologiska undersökning*, Ca 73, 1-70. Electronic link and key words needed.

Strömberg B (1994) Younger Dryas deglaciation at Mt. Billingen, and clay varve dating of the Younger Dryas/Preboreal transition. *Boreas* **23** (2), 177–193. http://dx.doi.org/10.1111/j.1502-3885.1994.tb00598.x; Sweden, clay varve chronology, Late Weichselian, ice recession, east of Mt. Billingen, Västergötland, Middle-Swedish end moraine zone, Allerød/Younger Dryas transition, dynamics and geographic speed of deglaciation, discussion of timescale discrepancy between Swedish deglaciation and Greenland ice core data.

Stroup JS, Lowell TV, Breckenridge A (2013) A model for the demise of large, glacial Lake Ojibway, Ontario and Quebec. *Journal of Paleolimnology* **50** (1), 105-121. http://dx.doi.org/10.1007/s10933-013-9707-9; Canada, cores from 9 lakes along a 240-km transect from NW Quebec to NE Ontario, stratigraphy of the terminal phase of large glacial lake, magnetic susceptibility, density, grain size, X-ray fluorescence chemistry and X-ray diffraction, ice-proximal debris flows overlain by varves, varves thin up-section.

Struck U, Altenbach AV, Emeis KC, Alheit J, Eichner C, Schneider R (2002) Changes of the upwelling rates of nitrate preserved in the $\delta^{15}N$-signature of sediments and fish scales from the diatomaceous mud belt of Namibia. *Geobios* **35** (1), 3-11. http://dx.doi.org/10.1016/S0016-6995(02)00004-9; diatomaceous marine varved muds on the Namibian shelf, fish scales, oxygen minimum zone, Atlantic Ocean, the last 3200 years, nitrogen isotopes.

Sturm M (1979) Origin and composition of clastic varves. In: (Schlüchter C, ed.) *Moraines and Varves: Origin, Genesis, Classification*. A.A. Balkema, Rotterdam, 281-285. http://www.worldcat.org/title/moraines-and-varves-origin-genesis-classification/oclc/5542145; detailed theory and mechanisms of clastic varve deposition.

Sturm M, Lotter AF (1995) Seesedimente als Umweltarchive. Was ist natürlich, was vom Menschen verursacht? *EAWAG news* **38 D**, 6-9 (in German). *Note: copy and paste the following link directly into your browser. Clicking on the link may not work:* http://www.climategeology.ethz.ch/news/focusterra/EawagNews_1995.pdf; introducing the use of varves in paleoenvironmental research, for public outreach, example of Lake Soppensee, Switzerland.

Sturm M, Matter A (1972) The electro-osmotic guillotine, a new device for core cutting. *Journal of Sedimentary Research* **42** (4), 987-989. http://dx.doi.org/10.1306/74D726B7-2B21-11D7-8648000102C1865D; DC voltage produces cathodic elemental hydrogen to lubricate a metal cutting blade.

Sturm M, Matter A (1978) Turbidites and varves in Lake Brienz (Switzerland): deposition of clastic detritus by density currents. In: (Matter A, Tucker ME, eds.) *Modern and Ancient Lake Sediments*, Special Publication No. 2 of the International Association of Sedimentologists, Blackwell Scientific Publications, 147-168. http://dx.doi.org/10.1002/9781444303698.ch8; clastic varves, high-density turbidity currents depositing turbidites, low-density turbidity currents occur annually, seasonal thermal stratification.

Sturm M, Lotter AF (1995) Lake sediments as environmental archives. *EAWAG News* **38 E**, 6-9. Electronic link and key words needed.

Su Y, Chu G, Liu Q, Jiang Z, Gao X, Haberzettl T (2015) A 1400 year environmental magnetic record from varved sediments of Lake Xiaolongwan (Northeast China) reflecting natural and anthropogenic soil erosion. *Geochemistry, Geophysics, Geosystems* **16** (9), 3053-3060. http://dx.doi.org/10.1002/2015GC005880; lacustrine varves, magnetic and geochemical methods, magnetic susceptibility and frequency dependent magnetic susceptibility since AD 1500 due to increasing influx in pedogenic soil and human activity.

Subetto DA, Nesterov EM, Kul'kova MA, Gerasimenko NP, Sapelko TV, Kuznetsov DD, Ludikova AV, Neustrueva IYu, Bakhmutov VG, Stolba V (2009) Paleolimnological study of the West Crimean lakes in order to learn environmental and climatic changes during the Holocene. In: (Nesterov EM ed.) *Geologia, Geoekologia, Evolyutsionnaya Geografia*. Sankt-Peterburg, Gertsen State Pedagogical University of Russian Federation, 212-220 (in Russian). (Субетто ДА, Нестеров ЕМ, Кулькова МА, Герасименко НП, Сапелко ТВ, Кузнецов ДД, Лудикова АВ, Неуструева ИЮ, Бахмутов ВГ, Столба В (2010) Палеолимнологические исследования озер Западного Крыма в целях изучения изменений природы и климата в голоцене. In: Геология, геоэкология, эволюционная география, Издательство Российского государственного педагогического университета им. А.И. Герцена, Санкт-Петербург, 212-220.) Keywords: Lake Saki, Lake Dzharylgach, varves in Lake Saki, lithology, varve count, radiocarbon dating, pollen, transformation of sea gulfs into lakes.

Subetto DA, Sapelko TV, Kuznetsov DD, Ludikova AV, Gerasimenko N, Stolba V, Bakhmutov VG (2009) Black Sea level fluctuations during the Holocene recorded in salt lake sediments of Crimea. In: (Gilbert A, Yanko-Hombach V, eds.) *The 5th Plenary Meeting and Field Trip of IGCP-521 Project "Black Sea – Mediterranean Corridor During the Last 30 ky, Sea Level Change and Human Adaptations*, extended abstracts, Izmir, 169. Keywords: Lake Saki, Lake Dzharylgach, varves in Lake Saki, lithostratigraphy, varve count, radiocarbon dating, pollen, transformation of sea gulfs into lakes.

Subetto DA, Stolba V, Neustrueva IYu, Sapelko TV, Kuznetsov DD, Gerasimenko NP, Bakhmutov VG, Ludikova AV, Davydova NN (2007) Enviromental and Black Sea level changes in the Holocene as recorded in lakes Saki and Dzarylgach, Crimean Peninsula. In: (Gilbert A, Yanko-Hombach V, eds.), *The 3rd Plenary Meeting and Field Trip of IGCP-521 Project "Black Sea – Mediterranean Corridor During the Last 30 ky, Sea Level Change and Human Adaptations"*, extended abstracts, Gelendzik-Kerch, 157-159. Keywords: Holocene, the Saki and Dzharylgach lakes, varves in Lake Saki, lithology, varve count, radiocarbon dating, pollen, transformation of sea gulfs into lakes.

Suess E, Thiede J (eds.) (1983) *Coastal Upwelling, its Sediment Record. Part A: Responses of the Sedimentary Regime to Present Coastal Upwelling*. NATO Conference Series, Series IV: Marine Sciences 10a, Plenum Press, New York. http://www.worldcat.org/title/coastal-upwelling-its-sediment-record/oclc/9440953; additional information needed: Electronic link? Keywords?

Sugawara K (1934) Liesegang's stratification developed in the diatomaceous gyttja from Lake Haruna, and problems related to it. *Bulletin of Chemical Society of Japan* **9**, 402-409. Additional information needed: Electronic link? Keywords?

Sun Q, Chu G, Liu J, Gao D (2006) A 150-year record of heavy metals in the varved sediments of Lake Bolterskardet, Svalbard. *Arctic, Antarctic, and Alpine Research* **38** (3), 436-445. http://instaar.colorado.edu/

aaar/journal_issues/abstract.php?id=2417; lake sediment, heavy metal pollution, anthropogenic lead flux, cesium-137, lead-210.

Sun Q, Shan Y, Sein K, Su Y, Zhu Q, Wang L, Sun J, Gu Z, Chu G (2016) A 530 year long record of the Indian Summer Monsoon from carbonate varves in Maar Lake Twintaung, Myanmar. *Journal of Geophysical Research* **121** (10), 5620-5630. http://dx.doi.org/10.1002/2015JD024435; lacustrine tropical varves, light-colored carbonate and dark-colored biogenic-clastic laminae, synchrotron radiation X-ray fluorescence, spectral analysis of the Ca and Sr time series indicates El Niño–Southern Oscillation (ENSO)-like (Indian Ocean Dipole (IOD)-like) variability, solar activity, decreasing monsoon since AD 1840 coupled with tropical sea surface temperature variation.

Sun Q, Xie M, Lin Y, Shan Y, Zhu Q, Xu D, Su Y, Rioual P, Chu G (2016) An *n*-alkane and carbon isotope record during the last deglaciation from annually laminated sediment in Lake Xiaolongwan, northeastern China. *Journal of Paleolimnology* **56** (2), 189-203. http://dx.doi.org/10.1007/s10933-016-9904-4; lacustrine varves, compound-specific carbon isotope record of the last deglaciation.

Sun Q, Xie M, Shi L, Zhang Z, Lin Y, Shang W, Wang K, Li W, Liu J, Chu G (2013) Alkanes, compound-specific carbon isotope measures and climate variation during the last millennium from varved sediments of Lake Xiaolongwan, northeast China. *Journal of Paleolimnology* **50**, 331-344. http://dx.doi.org/10.1007/s10933-013-9728-4; *n*-alkanes (C_{17}–C_{33}) with strong odd over even carbon number, isotopic differences among algae, aquatic macrophytes and terrestrial plants, leaf wax, possible link to methane-derived ^{13}C-depleted pool and lake overturn, higher ^{13}C-abundance corresponds to warm phases of the Pacific Decadal Oscillation (PDO).

Swann GEA, Leng MJ, Juschus O, MellesM, Brigham-Grette J, Sloane HJ (2010) A combined oxygen and silicon diatom isotope record of Late Quaternary change in Lake El'gygytgyn, North East Siberia. *Quaternary Science Reviews* **29** (5-6), 774-786. http://dx.doi.org/10.1016/j.quascirev.2009.11.024; lacustrine varves, North East Russia, diatom $\delta^{18}O$ and $\delta^{30}Si$.

Swann GEA, Pike J, Snelling AM, Leng MJ, Williams MC (2013) Seasonally resolved diatom $\delta^{18}O$ records from the West Antarctic Peninsula over the last deglaciation. *Earth and Planetary Science Letters* **364**, 12-23. http://dx.doi.org/10.1016/j.epsl.2012.12.016; high-resolution deglacial seasonally laminated core section off the west Antarctic Peninsula (WAP), single species samples from individual laminae, season-specific isotope records, significant intra-annual seasonal variability during the deglaciation.

Swain AM (1973) A history of fire and vegetation in northeastern Minnesota as recorded in lake sediments. *Quaternary Research* **3** (3), 383-390, IN1-IN2, 391-396. http://dx.doi.org/10.1016/0033-5894(73)90004-5; charcoal in varved sediments of the past 1000 yr in Lake of the Clouds, frequency of fire, pollen analysis.

Swain AM (1978) Environmental changes during the past 2000 years in North-Central Wisconsin: analysis of pollen, charcoal, and seeds from varved lake sediments. *Quaternary Research* **10** (1), 55-68. http://dx.doi.org/10.1016/0033-5894(78)90013-3; 2000-year varved record, Hell's Kitchen Lake, USA, North America, fire record, varve chronology, long-wave pattern of the general circulation has been variable during the past 2000 years.

Swierczynski T (1912) A 7000 yr runoff chronology from varved sediments of Lake Mondsee (Upper Austria). PhD Dissertation, Universität Potsdam, Germany, 95 pp and 38 pp Appendix. http://opus.kobv.de/ubp/volltexte/2013/6670/pdf/swierczynski_diss.pdf; lake sediment; for details see individual publications of Swierczynski.

Swierczynski T, Brauer A, Lauterbach S, Martín-Puertas C, Dulski P, von Grafenstein U, Rohr C (2012) A 1600 yr seasonally resolved record of decadal-scale flood variability from the Austrian Pre-Alps. *Geology* **40** (11), 1047-1050. http://dx.doi.org/10.1130/G33493.1; Lake Mondsee, microfacies analyses, high-resolution micro-X-ray fluorescence element scanning, 157 detrital event layers deposited in spring–summer, Dark Ages Cold Period, Little Ice Age, Medieval Climate Anomaly.

Swierczynski T, Lauterbach S, Dulski P, Brauer A (2013). Late Neolithic Mondsee Culture in Austria: living on lakes and living with flood risk? *Climate of the Past* **9**, 1601-1612. http://dx.doi.org/10.5194/cp-9-1601-2013; Neolithic and Bronze Age lake dwellings, varved lake sediment with flood layers and debris flow events between 7000 and 4000 varve years BP, European Alps, flood frequency decreased since 4450 vyr BP without establishment of new lake dwellings

Swierczynski T, Lauterbach S, Dulski P, Brauer A (2009) Die Sedimentablagerungen des Mondsees (Oberösterreich) als ein Archiv extremer Abflussereignisse der letzten 100 Jahre. In: (Schmidt R, Matulla C, Psenner R, eds.) Klimawandel in Österreich: Die letzten 20.000 Jahre ... und ein Blick voraus, (*Alpine Space - Man & Environment* **6**), Innsbruck University Press, 115-126 (in German with English abstract). http://www.uibk.ac.at/alpinerraum/publications/vol6/swierczynski.pdf; Upper Austria, European Alps, Lake Mondsee, lake sediment, flood layers, debris flow, turbidite, extreme runoff events.

Swierczynski T, Lauterbach S, Dulski P, Brauer A, Merz B (2010) Extreme runoff events of the last 2000 years reconstructed from varved sediments of Lake Mondsee (Upper Austria). *Geophysical Research Abstracts*, *European Geosciences Union* **12**, 13209. *Note: cut-and-paste the URL directly into browser; clicking on*

link may not work! http://meetingorganizer.copernicus.org/EGU2010/EGU2010-13209.pdf; Upper Austria, European Alps, Lake Mondsee, lake sediment, flood layers, debris flow, turbidite, extreme runoff events.

Swierczynski T, Lauterbach S, Dulski P, Delgado J, Merz B, Brauer A (2014) Mid- to late Holocene flood frequency changes in the northeastern Alps as recorded in varved sediments of Lake Mondsee (Upper Austria). *Quaternary Science Reviews* **80**, 78–90. http://dx.doi.org/10.1016/j.quascirev.2013.08.018; varved sediments of Lake Mondsee provide a 7100 yr record of spring/summer floods, event layers are detected by combination of thin section and micro-element scanning, flood frequencies indicate a variability on millennial to decadal time scales, main shift towards more flood events occurred after 1500 varve years BP, more floods in the northern pre-Alps during periods of alpine glacier advances.

Sylwan CA (1990) Paleomagnetism of glacial varves from the last glaciation maximum in Patagonia at Lago Blanco. *Physics of the Earth and Planetary Interiors* **64** (2-4), 143-152. http://dx.doi.org/10.1016/0031-9201(90)90034-U; paleomagnetic measurements on178 glaciolacustrine varves, Argentina, last glaciation maximum, magnetic mineral composition determined by Simplex method, haematite (0.16%), magnetite (0.1%), magnetic susceptibility, declination shift, inclination shift, virtual geomagnetic pole (VGP) position.

Sylwan CA, Beraza LA (1990) Paleomagnetic record from glacial varves in Alto Río Mayo, Patagonia, Argentina. *Physics of the Earth and Planetary Interiors* **61** (3-4), 230-237. http://dx.doi.org/10.1016/0031-9201(90)90107-9; paleomagnetic measurements, 302 glaciolacustrine varves, declination, virtual geomagnetic pole position, last glacial maximum.

Talviste P, Hang T, Kohv M (2012) Glacial varves at the distal slope of Pandivere–Neva ice-recessional formations in western Estonia. *Bulletin of the Geological Society of Finland* 7–19. http://www.geologinenseura.fi/bulletin/index.html; varve thickness, Late Weichselian glaciolacustrine varved clay, Baltic Ice Lake, 294-year-long floating varve chronology, Yoldia Sea minimum level in the Pärnu area, deglaciation.

Taylor G, Walker PH (1986) Tertiary Lake Bunyan, Northern Monaro, NSW, part II: Facies analysis and palaeoenvironmental implications. *Australian Journal of Earth Sciences: An International Geoscience Journal of the Geological Society of Australia* **33** (2), 231-251. http://dx.doi.org/10.1080/08120098608729362; Bonnie Doon Member of the Miocene Lake Bunyan Formation contains cyclical deposits of diatomites formed in response to both annual and longer term cycles.

Teller JT, Yang Z, Boyd M, Buhay WM, McMillan K, Kling HJ, Telka AM (2008) Postglacial sedimentary record and history of West Hawk Lake crater, Manitoba. *Journal of Paleolimnology* **40** (8), 661-688. http://dx.doi.org/10.1007/s10933-008-9192-8; glacial Lake Agassiz basin, Canada, lake in meteorite impact crater, clay sediment, bulk and clay mineralogy, major and minor elements, total organic carbon, stable isotope ratios of C, N, and O, pollen, charcoal, diatoms, and floral and faunal macrofossils, radiocarbon AMS dates of plant macrofossils, dated marker events, 822 varves in the lower 8 m of a piston core were deposited before 10,000 cal years BP.

Tems CE, Berelson WM, Prokopenko M (2015). Particulate $\delta^{15}N$ in laminated marine sediments as a proxy for mixing between the California Undercurrent and the California Current: A proof of concept. *Geophysical Research Letters* **42** (2), 419-427. http://dx.doi.org/10.1002/2014GL061993; trends in $\delta^{15}N_{sed}$ from varved Pescadero Basin slope in Gulf of California relate to Pacific Decadal Oscillation (PDO) 1900-1990.

Teranes JL, McKenzie JA (2001) Lacustrine oxygen isotope record of 20th-century climate change in central Europe: evaluation of climatic controls on oxygen isotopes in precipitation. *Journal of Paleolimnology* **26** (2), 131-146. http://dx.doi.org/10.1023/A:1011175701502; 108-yr (AD 1885–1993) varve sequence, bio-induced authigenic calcite, freeze core from Lake Baldeggersee, Switzerland, European Alps, proxy data on the isotopic composition of past precipitation, comparison with instrumental climate data, record of past annual air temperature, North Atlantic Oscillation (NAO).

Teranes JL, McKenzie JA, Bernasconi SM, Lotter AF, Sturm M (1999) A study of oxygen isotopic fractionation during bio-induced calcite precipitation in eutrophic Baldeggersee, Switzerland. *Geochimica et Cosmochimica Acta* **63** (13/14), 1981-1989. http://dx.doi.org/10.1016/S0016-7037(99)00049-6; Lake Baldeggersee, European Alps, oxygen stable isotope ratio of autochthonous calcite is proxy for temperature and isotopic composition of lake water, lake sediment, sediment trap, phosphorus.

Teranes JL, McKenzie JA, Lotter AF, Sturm M (1999) Stable isotope response to lake eutrophication: Calibration of a high-resolution lacustrine sequence from Baldeggersee, Switzerland. *Limnology and Oceanography* **44** (2), 320-333. http://dx.doi.org/10.4319/lo.1999.44.2.0320; Lake Baldeggersee, European Alps, 108-year time-series, eutrophication, carbon stable isotope ratio of calcite, oxygen stable isotope ratio of autochthonous calcite in summer vs. winter, lake sediment, phosphorus, grain size of calcite.

Thamban M, Kawahata H, Purnachandra Rao V (2007) Indian summer monsoon variability during the Holocene as recorded in sediments of the Arabian Sea: Timing and implications. *Journal of Oceanography* **63** (6), 1009-1020. http://dx.doi.org/10.1007/s10872-007-0084-8; varved marine sediment from the Oxygen Minimum Zone of the eastern Arabian Sea margin, spectral analysis.

Théobald N (1951) Contribution à l'étude des schistes bitumineux du Premien de la Sarre. *Geologische Rundschau* **39** (1), 300-303 (in French). http://dx.doi.org/10.1007/BF01803333; bituminous (marine?) varved schist, fish fossils, Saar-Saale basin, Germany, St. Wendel.

Theuerkauf M, Dräger N, Kienel U, Kuparinen A, Brauer A (2015) Effects of changes in land management practices on pollen productivity of open vegetation during the last century derived from varved lake sediments. *The Holocene* **25** (5), 733-744. http://dx.doi.org/10.1177/0959683614567881; land management changes, varved lake sediment, Tiefer See, NE German lowlands, AD 1880-2010, 60% decline in pollen productivity of grasses.

Thiede J, Suess E (eds.) (1983) *Coastal Upwelling, its Sedimentary Record. Part B: Sedimentary Records of Ancient Coastal Upwelling*. NATO Conference Series, Series IV: Marine Sciences 10b, Plenum Press, New York. http://www.worldcat.org/title/coastal-upwelling-its-sediment-record/oclc/9440953; additional information needed: Electronic link? Keywords?

Thiel V, Jenisch A, Landmann G, Reimer A, Michaelis W (1997) Unusual distributions of long-chain alkenones and tetrahymanol from the highly alkaline Lake Van, Turkey. *Geochimica et Comochimica Acta* **61** (10), 2053-2064. http://dx.doi.org/10.1016/S0016-7037(97)00038-0; alkenones, sediment trap, Holocene, Late Pleistocene, soda lake sediment, paleotemperature reconstruction.

Thomas EK, Briner JP (2009) Climate of the past millennium inferred from varved proglacial lake sediments on northeast Baffin Island, Arctic Canada. *Journal of Paleolimnology* **41**, 209-224. http://dx.doi.org/10.1007/s10933-008-9258-7; North America, Holocene, lake sediment, air temperature reconstruction, Little Ice Age, plutonium-239, plutonium-240, Big Round Lake.

Thomas EK, Szymanski J, Briner JP (2010) Holocene alpine glaciation inferred from lacustrine sediments on northeastern Baffin Island, Arctic Canada. *Journal of Quaternary Science* **25** (2), 146-161. http://dx.doi.org/10.1002/jqs.1286; North America, Holocene, alpine glaciations, lake sediment, glacier fluctuations, minerogenic sedimentation, proglacial lake, magnetic susceptibility, Little Ice Age, Holocene Thermal Maximum.

Thomas EK, McGrane S, Briner JP, Huang Y (2012) Leaf wax δ^2H and varve-thickness climate proxies from proglacial lake sediments, Baffin Island, Arctic Canada. *Journal of Paleolimnology* **48** (1), 193-207. http://dx.doi.org/10.1007/s10933-012-9584-7; hydrogen isotope ratio, varve thickness, Arctic proglacial lake sediment, paleoclimate proxy, Little Ice Age, Baffin Island, biomarker, Holocene.

Thompson R (1976) The palaeomagnetism of varved clays from Blekinge, southern Sweden. A comment. *Geologiska Föreningen i Stockholm Förhandlingar* **98** (3), 283-284. http://dx.doi.org/10.1080/11035897609454384; criticizes Noël's (1975) palaeomagnetic interpretations of varved clays from Blekinge in terms of sedimentological and coring controls rather than geomagnetic field variations.

Thornton SE (1984) Basin model for hemipelagic sedimentation in a tectonically active continental margin: Santa Barbara Basin, California Continental Borderland. In: (Stow DAV, Piper DJW, eds.) *Fine Grained Sediments: Deep Water Processes and Facies*, 377-394, Blackwell Scientific Publications, Oxford. http://sp.lyellcollection.org/content/15/1/377.refs; http://dx.doi.org/10.1144/GSL.SP.1984.015.01.25; model for terrigenously-dominated hemipelagic basins devoid of submarine canyons, suspensate transport, turbidity current transport, preservation of annual varves plus turbidites and flood suspensate layers, marine sediment.

Thornton SE (1986) Origin of mass flow sedimentary structures in hemipelagic basin deposits: Santa Barbara Basin, California Borderland. *Geo-Marine Letters* **6** (1), 15-19. http://dx.doi.org/10.1007/BF02311691; Holocene, mud flow deposits, turbidite, varve counting of remaining 70% of sediment provides frequencies of turbidite and flood layer deposition, marine sediment, Pacific.

Thunnell RC (1998) Seasonal and annual variability in particle fluxes in the Gulf of California: a response to climate forcing. *Deep Sea Research Part I* **45** (12), 2059-2083. http://dx.doi.org/10.1016/S0967-0637(98)00053-3; 6-year time series of sediment trap samples, Guaymas Basin, Pacific, marine sediment, productivity is higher during non-ENSO years.

Thunell R, Pride C, Tappa E, Muller-Karger F (1993) Varve formation in the Gulf of California: Insights from time series sediment trap sampling and remote sensing. *Quaternary Science Reviews* **12** (6), 451-464. http://dx.doi.org/10.1016/S0277-3791(05)80009-5; examination of the mechanism of marine varve formation in Guaymas Basin, Carmen Basin, time-series from sediment traps, Baja California, Mexico, 1991/92 El Niño, dark laminae April – October, light laminae November - May, eolian deposition.

Thunell RC, Sigman DM, Muller-Karger F, Astor Y, Varela R (2004) Nitrogen isotope dynamics of the Cariaco Basin, Venezuela. *Global Biogeochemical Cycles* **18** (3), GB3001, http://dx.doi.org/10.1029/2003GB002185; nitrogen stable isotope ratios of water column, sediment traps, and varved marine sediment.

Thunell RC, Tappa E, Anderson DM (1995) Sediment fluxes and varve formation in Santa Barbara Basin, offshore California. *Geology* **23** (12), 1083-1086. http://dx.doi.org/10.1130/0091-7613(1995)023<1083:SFAVFI>2.3.CO;2; sediment trap, sediment flux, California, Pacific Ocean, marine varve formation, lithogenic material dominant over biogenic sediments, diatom, high lithogenic fluxes and low biogenic fluxes during

the fall-winter period produces dark laminae, spring upwelling and high surface productivity results in high biogenic silica fluxes in light laminae.

Thurow J, Peterson LC, Harms U, Hodell DA, Cheshire H, Brumsack HJ, Irino T, Schulz M, Masson-Delmotte V, Tada R (2009) Acquiring high to ultra-high resolution geological records of past climate change by scientific drilling. *Scientific Drilling* **8**, 46-56. http://dx.doi.org/10.2204/iodp.sd.8.08.2009; workshop report includes proposed drilling sites and outlook on the availability of promising high-resolution sedimentary archives.

Tian J, Brown TA, Hu FS (2005) Comparison of varve and ^{14}C chronologies from Steel Lake, Minnesota, USA. *The Holocene* **15** (4), 510-517. http://dx.doi.org/10.1191/0959683605hl828rp; 3000-year varve chronology, missing varves, Steel Lake, Minnesota, comparisons with nine AMS radiocarbon dates, terrestrial plant macrofossils, an overall 8.4% discrepancy of varve count, obscure laminations, independent radiogenic age-determination is usually necessary to verify varve chronologies, lake sediment, counting error, varve-count adjustment, paleoclimate, Holocene.

Tian J, Nelson DM, Hu FS (2011) How well do sediment indicators record past climate? An evaluation using annually laminated sediments. *Journal of Paleolimnology* **45** (1), 73-84. http://dx.doi.org/10.1007/s10933-010-9481-x; comparison of 100 lake sediment varves with instrumental weather data, Steel Lake, north-central Minnesota, midwestern United States, oxygen stable isotope ratio of calcite, effective moisture, Palmer Drought Severity Index PDSI, Pacific Decadal Oscillation PDO, lake-productivity, biogenic silica, C/N ratio, carbon stable isotope ratio, varve thickness, gray-scale intensity.

Tiljander M, Karhu JA, Kauppila T (2006) Holocene records of carbon and hydrogen isotope ratios of organic matter in annually laminated sediments of Lake Korttajärvi, central Finland. *Journal of Paleolimnology* **36** (3), 233-243. http://dx.doi.org/10.1007/s10933-006-9059-9; varved sediment from Lake Korttajärvi, central Finland, across 9590 years, two organic fractions, C/N ratios, carbon contents, diatom-inferred pH value, hydrogen stable isotope values shift to deuterium enrichment during the early Holocene, Holocene Climatic Optimum in 6000–2500 BC, Medieval Warm Period, maximum deuterium abundance.

Tiljander M, Ojala AEK, Saarinen T, Snowball I (2002) Documentation of the physical properties of annually laminated (varved) sediments at a sub-annual to decadal resolution for environmental interpretation. *Quaternary International* **88** (1), 5-12. http://www.sciencedirect.com/science/article/pii/S1040618201000684; http://dx.doi.org/10.1016/S1040-6182(01)00068-4; lake sediment, X-ray radiography, X-ray densitometry, digital image analysis, line-scan, environmental magnetism, Finland.

Tiljander M, Saarnisto M, Ojala AEK, Saarinen T (2003) A 3000-year palaeoenvironmental record from annually laminated sediment of Lake Korttajärvi, central Finland. *Boreas* **32** (4), 566-577. http://onlinelibrary.wiley.com/doi/10.1111/j.1502-3885.2003.tb01236.x/abstract; http://dx.doi.org/10.1111/j.1502-3885.2003.tb01236.x; deposition, varve components, climate change, Holocene, Finland, Lake Korttajärvi.

Tingley MP, Huybers P (2013) Recent temperature extremes at high northern latitudes unprecedented in the past 600 years. *Nature* **496**, 201-205. http://dx.doi.org/10.1038/nature11969; use of 11 log-transformed annual varve thickness series from lake sediment core and other annually resolved evidence, Bayesian analysis indicates severity of recent warm temperature extremes, varve thickness records publicly available from the NOAA Paleolimnology Data Archive (http://www.ncdc.noaa.gov/paleo/paleolim/paleolim_data.html).

Tjallingii R, Röhl U, Kölling M, Bickert T (2007) Influence of the water content on X-ray fluorescence core-scanning measurements in soft marine sediments. *Geochemistry Geophysics Geosystems* **8** (2), Q02004, 12 pp. http://dx.doi.org/10.1029/2006GC001393; RF core scanner, physical properties, sediment chemistry, interstitial water, seawater, effects of physical properties (density, water content) on XRF core scanner data, strongly reduced element intensities for the lighter elements Al and Si in wet sediment, elements K, Ca, Ti, and Fe remain relatively unaffected.

Tlan J, Brown TA, Hul FS (2005) Comparison of varve and ^{14}C chronologies from Steel Lake, Minnesota, USA. *The Holocene* **15** (4), 510-517. http://dx.doi.org/10.1191/0959683605hl828rp; assessment of the quality of a varve chronology for the last three millennia, 9 AMS radiocarbon dates on terrestrial plant macrofossils, missing varves, counting error, obscure laminations, need to independently verify varve chronologies, late Holocene.

Tolhurst TJ, Underwood AJ, Perkins RG, Chapman MG (2005) Content versus concentration: Effects of units on measuring the biogeochemical properties of soft sediments. *Estuarine, Coastal and Shelf Science* **63** (4), 665-673. http://dx.doi.org/10.1016/j.ecss.2005.01.010; use of different units of expression (i.e. content and concentration) can change patterns in the expression of unconsolidated sediments, presentation and interpretation of data expressed as concentration is preferable to content for biogeochemical measurements in sediments, because content data is confounded by various factors (including core density/mass), leading to mistaken inference.

Tolonen M (1978) Palaeoecology of annually laminated sediments in Lake Ahvenainen, S. Finland. II. Comparison of dating methods. *Annales Botanici Fennici* **15**, 209-222. http://www.worldcat.org/title/annales-botanici-fennici/oclc/1481230; microscopic examination identifies 6174 varves over 249 cm, pollen diagrams compared with radiocarbon dates and pollen chronology, varve counts, 240 to 600-yr disagreement beween varve chronology and radiocarbon dates due to erosion and deforestation in catchment area.

Tolonen K (1980) Comparison between radiocarbon and varve dating in Lake Lampellonjärvi, south Finland. *Boreas* **9**, 11-19. http://dx.doi.org/10.1111/j.1502-3885.1980.tb01020.x; adhesive tape preparations of frozen lake

sediment, varve counts AD 182 to AD 1513, some radiocarbon dates were older due to erosion of old organic terrestrial material via agriculture, varve chronology compared to tree rings, historical documents.

Tolonen M (1981) An absolute and relative pollen analytic study on prehistoric agriculture in South Finland. *Annales Botanici Fennici* **18** (3), 213-220. http://www.jstor.org/stable/23725235; 5500 varves in 160-cm-long section from a lake in Pälkäne, pollen counts, clearances and agricultural activities during the last 4000 yr.

Tolonen M (1992) Varve-dated palaeoecology of a small lake in the Lammi area, S. Finland – a review. In: (Saarnisto M, Kahra A, eds.) *Proceedings of the Workshop at Lammi Biological Station 4-6 June, 1990. Geological Survey of Finland, Special Paper* **14**, 11-16. http://arkisto.gtk.fi/sp/sp14/sp_014.pdf; summary of 3 papers by Tolonen, Lake Ahvenainen, 6200 varves, human activity, lake sediment, paleoecology, Holocene.

Tolonen M, Haapalahti R, Suksi J (1992) Comparison of varve dated soot ball chronology and lead-210 dating in Finland. In: (Saarnisto M, Kahra A, eds.) *Proceedings of the Workshop at Lammi Biological Station 4-6 June, 1990. Geological Survey of Finland, Special Paper* **14**, 65-75. http://arkisto.gtk.fi/sp/sp14/sp_014.pdf; preliminary chronology of soot balls, carbonaceous spherules, five localities in Finland, agreement with historically known total consumption of coal and oil, control for lead-210 dating, Bothnian Bay, Holocene.

Tomkins JD, Antoniades D, Lamoureux SF, Vincent WF (2008) A simple and effective method for preserving the sediment–water interface of sediment cores during transport. *Journal of Paleolimnology* **40** (1), 577-582. http://dx.doi.org/10.1007/s10933-007-9175-1; transport of unfrozen sediment cores, polymer gel (sodium polyacrylate) applied above the sediment surface as stabilizer while preserving surface undulations, gel may react with organic material (e.g. algal mats), no detectable effects on total organic carbon or total nitrogen.

Tomkins JD, Lamoureux SF (2005) Multiple hydroclimatic controls over recent sedimentation in proglacial Mirror Lake, southern Selwyn Mountains, Northwest Territories. *Canadian Journal of Earth Sciences* **42** (9), 1589-1599. http://dx.doi.org/10.1139/e05-049; changing climatic influences on discharge and sedimentation during the late 20th century, formation of varves, glacial discharge.

Tomkins JD, Lamoureux SF, Antoniades D, Vincent WF (2009) Sedimentary pellets as an ice-cover proxy in a High Arctic ice-covered lake. *Journal of Paleolimnology* **41** (1), 225-242. http://dx.doi.org/10.1007/s10933-008-9255-x; sediment aggregates ("sedimentary pellets") in sediment of meromictic Lake A, Ellesmere Island, Canada, 1000 yr proxy record of ice-cover , proxy ice-cover record corroborated by iron-rich laminae.

Tomkins JD, Lamoureux SF, Antoniades D, Vincent WF (2010) Autumn snowfall and hydroclimatic variability during the past millennium inferred from the varved sediments of meromictic Lake A, northern Ellesmere Island, Canada. *Quaternary Research* **74** (2), 188-198. http://dx.doi.org/10.1016/j.yqres.2010.06.005; varve thickness, High Arctic Lake A, Ellesmere Island, snow melt transports sediment, paleoclimate, snowfall.

Tomkins JD, Lamoureux SF, Sauchyn DJ (2008) Reconstruction of climate and glacial history based on a comparison of varve and tree-ring records from Mirror Lake, Northwest Territories, Canada. *Quaternary Science Reviews* **27** (13-14), 1426-1441. http://dx.doi.org/10.1016/j.quascirev.2008.04.012; comparison of hydroclimatic signals in varved sediments with tree rings, Selwyn Mountains, Yukon Territory border region, instrumental meteorological and hydrometric records from AD 1704 to 1996, Little Ice Age (LIA), varve thickness.

Toucanne S, Soulet G, Freslon N, Jacinto RS, Dennielou B, Zaragosi S, Eynaud F, Bourillet JF, Bayon G (2015) Millennial-scale fluctuations of the European Ice Sheet at the end of the last glacial, and their potential impact on global climate. *Quaternary Science Reviews* **123**, 113-133. http://dx.doi.org/10.1016/j.quascirev.2015.06.010; Bay of Biscay, northeast Atlantic, revised genetic interpretation of marine varves from the Celtic Margin, re-interpretation of material that originated from British Ice-sheet instead of Fennoscandian Ice-Sheet.

Toucanne S, Zaragosi S, Bourillet JF, Cremer M, Eynaud F, Van Vliet-Lanoë B, Penaud A, Fontanier C, Turon JL, Cortijo E, Gibbard PL (2009) Timing of massive 'Fleuve Manche' discharges over the last 350 kyr: insights into the European ice-sheet oscillations and the European drainage network from MIS 10 to 2. *Quaternary Science Reviews* **28** (13-14), 1238-1256. http://dx.doi.org/10.1016/j.quascirev.2009.01.006; Bay of Biscay, northeast Atlantic, revised genetic interpretation of marine varves from the Celtic Margin, ice-rafted debris (IRD) from anchor-ice processes in the Channel River; turbidite processes form silty laminae as overflow deposits; see also Toucanne et al. 2015; Zaragosi et al. 2006.

Tracey B, Lee N, Card V (1996) Sediment indicators of meromixis: comparison of laminations, diatoms, and sediment chemistry in Brownie Lake, Minneapolis, USA. *Journal of Paleolimnology* **15** (2), 129-132. http://dx.doi.org/10.1007/BF00196776; comparison of 3 sediment indicators of meromixis in a eutrophic lake that became meromictic around 1925, onset of laminations and changes in the iron to manganese ratio likely occurred before development of permanently anoxic bottom water, changes in diatom assemblage occurred later.

Trachsel M, Eggenberger U, Grosjean M, Blass A, Sturm M (2008) Mineralogy-based quantitative precipitation and temperature reconstructions from annually laminated lake sediments (Swiss Alps) since AD 1580. *Geophysical Research Letters* **35**, L13707. http://dx.doi.org/10.1029/2008GL034121; Lake

Silvaplana, Alps, Switzerland, Europe, X-ray diffraction, meteorological data, reconstruction of precipitation and summer temperature, Little Ice Age, wet periods, glacier advances.

Trachsel M, Grosjean M, Kamenik C, Larocque-Tobler I, Sturm M (2010) Assessing the potential of varved sediments of Lake Silvaplana (South-Eastern Switzerland) for high-resolution quantitative climate reconstruction. In: (Ojala AEK, Kosonen E, eds.) *First Workshop of the PAGES Varves Working Group (Palmse, Estonia, April 7-9, 2010), Programme and Abstracts*, Geological Survey of Finland, Espoo, Finland, 111-115. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2010-VWG-1st-wkshp.pdf; European Alps, 3,500-year varved lake sediment, biogenic silica and chironomid-based reconstruction of summer temperature, comparison with meteorological data, statistical evaluations.

Trachsel M, Grosjean M, Larocque-Tobler I, Schwikowski M, Blass A, Sturm M (2010) Quantitative summer temperature reconstruction derived from a combined biogenic Si and chironomid record from varved sediments of Lake Silvaplana (south-eastern Swiss Alps) back to AD 1177. *Quaternary Science Reviews* **29** (19-20), 2719-2730. http://dx.doi.org/10.1016/j.quascirev.2010.06.026; European Alps, Switzerland, reconstruction of summer temperature, biogenic silica flux, chironomids, six different regression methods, volcanic forcing, cold anomalies, solar activity, tree rings.

Trachsel M, Grosjean M, Schnyder D, Kamenik C, Rein B (2010) Scanning reflectance spectroscopy (380–730 nm): a novel method for quantitative high-resolution climate reconstructions from minerogenic lake sediments. *Journal of Paleolimnology* **44** (4), 979-994. http://dx.doi.org/10.1007/s10933-010-9468-7; scanning reflectance spectroscopy, lake sediment, summer temperature reconstruction, minerogenic sediment, Lake Silvaplana, European Alps, Switzerland, historic data, tree ring data.

Trachsel M, Kamenik C, Grosjean M, McCarroll D, Moberg A, Brázdil R, Büntgen U, Dobrovolný P, Esper J, Frank DC, Friedrich M, Glaser R, Larocque-Tobler I, Nicolussi K, Riemann D (2012) Multi-archive summer temperature reconstruction for the European Alps, AD 1053–1996. *Quaternary Science Reviews* **46**, 66-79. http://dx.doi.org/10.1016/j.quascirev.2012.04.021; multi-archive multi-proxy summer temperature reconstruction, European Alps, tree-ring and lake sediment data, nine different calibration approaches and errors, highest JJA temperatures 1000–2000 AD occurred at the end of the 20th century.

Traverse A (1974) Palynologic investigation of two Black Sea cores. In: (Degens E, Ross D, eds.) *The Black Sea - Geology, Chemistry, and Biology*. *American Association of Petroleum Geologists Memoir* **20**, 381-388. http://www.worldcat.org/title/black-sea-geology-chemistry-and-biology/oclc/969800; acritarchs, pollen, paleoecologic and paleoclimatic conditions, marine.

Trendall AF (1972) Revolution in earth history. *Journal of the Geological Society of Australia* **19** (3), 287-311. http://dx.doi.org/10.1080/00167617208728798; 900 m of banded iron formation in the 2,400-m thick Hamersley Group, 3 scales of stratification, termed macrobanding, mesobanding (the normal 'banding' of banded iron formation) and microbanding. Microbands are thin (0.2–2.0 mm) regular laminae, alternately rich and poor in iron, within chert mesobands. Microbands, mesobands and macrobands may all be correlated over the whole of the present outcrop. Microbands are believed to result from annual seasonal control of the primary precipitation in the basin, while alternations between microbanded chert mesobands and the adjacent non-microbanded chert-matrix are thought to reflect a 25-year environment cyclicity. There is also a higher-order cyclicity. The microbands are chemical evaporitic varves.

Tret'yakov GA, Kalugin IA, Dar'in AV, Rogozin DYu, Degermendzhi AG (2012) Physicochemical conditions of seasonal carbonate sedimentation in Shira lake (Khakasia). *Doklady Earth Sciences* **446** (1), 1099-1101. Originally published in Russian: Третьяков ГА, Калугин ИА, Дарьин АВ, Рогозин ДЮ, Дегерменджи АГ (2012) ФИЗИКО-ХИМИЧЕСКИЕ УСЛОВИЯ СЕЗОННОГО ОСАЖДЕНИЯ КАРБОНАТОВ В ОЗЕРЕ ШИРА (ХАКАСИЯ). *ДОКЛАДЫ АКАДЕМИИ НАУК* **446** (2), 1–3. http://dx.doi.org/10.1134/S1028334X12090152; varved record from the end of the 19th century to the 1940s.

Tribovillard NP, Gorin GE, Belin S, Hopfgartner G, Pichon R (1992) Organic-rich biolaminated facies from a Kimmeridgian lagoonal environment in the French Southern Jura mountains - A way of estimating accumulation rate variations. *Palaeogeography, Palaeoclimatology, Palaeoecology* **99** (1-2), 163-177. http://dx.doi.org/10.1016/0031-0182(92)90013-U; carbonate platform, marine sediment, paleolagoon, village Orbagnoux, calcareous laminites with up to 12% organic carbon, parallel laminae and undulating laminae, transmitted-light and scanning electron microscopy, Rock Eval pyrolysis, biomarkers, infrared study of kerogen, palynofacies observation, accumulation and preservation of organic matter from microbial mats.

Tröften PE, Mörner NA (1997) Varved clay chronology as a means of recording paleoseismic events in southern Sweden. *Journal of Geodynamics* **24** (1-4), 249-258. http://dx.doi.org/10.1016/S0264-3707(96)00031-2; varves in glacial clays document seismicity, earthquake, paleoseismic events, liquefaction, disturbance.

Troll K (1925) Methoden, Ergebnisse und Ausblicke der geochronologischen Eiszeitforschung. *Die Naturwissenschaften* **13** (45), 909-919. http://link.springer.com/article/10.1007%2FBF01558880#page-2; early review of varves, in German.

Tsyrulnikov A, Tuuling I, Kalm V, Hang T, Flodén T (2012) Late Weichselian and Holocene seismostratigraphy and depositional history of the Gulf of Riga, NE Baltic Sea. *Boreas* **41** (4), 637-689. http://dx.doi.org/10.1111/j.1502-3885.2012.00257.x; Lateglacial and postglacial sequence in northern Gulf of Riga, Baltic Sea, Late Weichselian, varved succession of Baltic Ice Lake, brackish-water/freshwater sandy/silty clay of Yoldia Sea, FeS-rich layer of Ancylus Lake, correlation/comparison with similar sequences across Baltic Sea and in other former glaciated basins, in part marine.

Tylmann W (2010) How to find varves? – Examples from Poland. In: (Ojala AEK, Kosonen E, eds.) *First Workshop of the PAGES Varves Working Group (Palmse, Estonia, April 7-9, 2010), Programme and Abstracts*, Geological Survey of Finland, Espoo, Finland, 21-23. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2010-VWG-1st-wkshp.pdf; conditions for deposition of varves in lake sediments, Lake Łazduny, Lake Żabińskie, lake size, shape, depth, hydrologic regime, morphometric features, report of systematic investigation in Poland, Kashubian Lake District, particle flux.

Tylmann W (2011) Jeziorne osady rocznie laminowane w północnej Polsce: aktualny stan rozpoznania, postępy metodyczne i perspektywy badawcze. *Studia Limnologica et Telmatologica* **5** (1), 23-41 (in Polish). http://www.paleolim.amu.edu.pl/SLETT/slett%2005%201/slett%2005_1_pp_23-41.pdf; annually laminated lake sediments, biogenic lamination, varve structure, northern Poland.

Tylmann W, Enters D, Kinder M, Moska P, Ohlendorf C, Poręba G, Zolitschka B (2013) Multiple dating of varved sediments from Lake Łazduny, northern Poland: Toward an improved chronology for the last 150 years. *Quaternary Geochronology* **15**, 98-107. http://dx.doi.org/10.1016/j.quageo.2012.10.001; integration and critical testing of dating methods, varve chronology, 210Pb, 137Cs, OSL dating, Masurian Lake District, systematic testing of different 210Pb dating models and routine validation required, OSL dating of quartz grains provided overestimated ages.

Tylmann W, Szpakowska K, Ohlendorf C, Woszczyk M, Zolitschka B (2012) Conditions for deposition of annually laminated sediments in small meromictic lakes: a case study of Lake Suminko (northern Poland). *Journal of Paleolimnology* **47** (1), 55-70. http://dx.doi.org/10.1007/s10933-011-9548-3; monimolimnion remains perennially anoxic, biochemical processes in the euphotic zone, high calcite deposition corresponded with algal blooms and oxygen concentration maxima, Kashubian Lake District.

Tylmann W, Woźniak PP, Czarnecka K, Jaźwiecka M (2006) New sites with laminated lake sediments in north-eastern Poland: preliminary results of field survey. *Limnological Review* **6**, 283-288. http://www.ptlim.pl/lr2006/pdf/tylmann.pdf; preconditions for varve formation, Masurian Lake, a survey covering north-eastern Poland identified 14 additional lake sites with laminated sediments or traces of lamination.

Tylmann W, Zolitschka B, Enters D, Ohlendorf C (2013) Laminated lake sediments in northeast Poland: distribution, preconditions for formation and potential for paleoenvironmental investigation. *Journal of Paleolimnology* **50** (4), 487-503. http://dx.doi.org/10.1007/s10933-013-9741-7; Masurian Lakes, Suwałki Lakelands, survey for formation and preservation of lacustrine non-glacial varves, laminated sediments in 24 lakes, relation between surface area and maximum water depth can be used to identify lakes with laminated sediments, biogenic (carbonaceous) type of lamination, spring-summer lamina that is rich in calcium carbonate and an autumn-winter lamina composed of organic and minerogenic detritus.

Uchman A, Kazakauskas V, Gaigalas A (2009) Trace fossils from Late Pleistocene varved lacustrine sediments in eastern Lithuania. *Palaeogeography, Palaeoclimatology, Palaeoecology* **272** (3-4), 199-211. http://dx.doi.org/10.1016/j.palaeo.2008.08.003; varved sediments in proglacial lake (17–16 kyr BP), East Lithuania, trace fish fossils occur mostly in the summer laminaa and transitional laminae along bunches of discrete microlaminae.

Uchman A, Kumpulainen RA (2011) Trace fossils in Quaternary glacial varved clays near Uppsala, Sweden. *GFF* **133** (3-4), 135-140. http://dx.doi.org/10.1080/11035897.2011.618274; arthropod and fish trace fossils in early Holocene glacial varved clays near Vittinge, west of Uppsala.

Udden JA (1924) Laminated anhydrite in Texas. *Bulletin of the Geological Society of America* **36**, 347-354. http://bulletin.geoscienceworld.org/content/35/2/347; additional information needed: Keywords?

Udden JA (1928) Study of the laminated structure of certain drill cores obtained from Permian rocks of Texas. *Carnegie Institution of Washington Year Book* **27**, 363 p. Additional information needed: Electronic link? Keywords?

Upham W (1884) The Minnesota valley in the Ice Age. *The American Journal of Science* **27** (158), 104-111. http://books.google.com/books?id=vmUWAAAAYAAJ&pg=PA104&lpg=PA104&dq=The+Minnesota+valley+in+the+Ice+Age&source=bl&ots=TSqmnhwRSO&sig=cwWpVyW3XHqwcF_uU2dHL5uusK8&hl=en&sa=X&ei=PfPMUYe5KeP9ygHlsoGYBQ&ved=0CF4Q6AEwCQ#v=onepage&q=The%20Minnesota%20valley%20in%20the%20Ice%20Age&f=false

Vail OE (1917) Lithologic evidence of climatic pulsations. *Science* **46**, 90-93. http://dx.doi.org/10.1126/science.46.1178.90; northern Colorado, USA, North America, laminated sandstone "Red Beds" of the Lyons and Lykins formations, alternate white (quartz) and brown sublamina, eolian origin, no fossils, suspected varves, periodicity of varve thickness.

Vallius H (2006) Permanent seafloor anoxia in coastal basins of the northwestern Gulf of Finland, Baltic Sea. *Ambio* **35** (3), 105-108. http://www.jstor.org/stable/4315699; eutrophication, marine varves, areas of sheltered western archipelago of Gulf of Finland deposit laminated sediment, also evidence for ancient anoxia in some areas.

Valpola SE, Ojala AEK (2006) Post-glacial sedimentation rate and patterns in six lakes of the Kokemäenjoki upper watercourse, Finland. *Boreal Environment Research* **11**, 195-211. http://www.borenv.net/BER/pdfs/ber11/ber11-195.pdf; Pääjärvi, southern Finland, lake sedinments of the last ca. 10 000 years, acoustic sounding profiles.

Van Andel TH (1964) Recent marine sediments of the Gulf of California. In: (Van Andel TH, Shor GG, eds.) *Marine Geology of the Gulf of California; A Symposium*. *American Association of Petroleum Geologists Memoir* **3**, 216-310. http://www.worldcat.org/title/marine-geology-of-the-gulf-of-california-a-symposium/oclc/270910; description of sediments from 250 cores from the Gulf of California.

Van Daele M, Moernaut J, Wolff C, Heirman K, Pino M, Brümmer R, Urrutia R, Roberts S, Kilian R, Brauer A, De Batist M (2010) Impact of landscape changes on the sedimentary record of lakes in South-Central Chile. In: (Ojala AEK, Kosonen E, eds.) *First Workshop of the PAGES Varves Working Group (Palmse, Estonia, April 7-9, 2010), Programme and Abstracts*, Geological Survey of Finland, Espoo, Finland, 117-118. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2010-VWG-1st-wkshp.pdf; South America, varved lake sediment, earthquake, seismic triggering of turbidites, landslides, mass wasting, Lago Villarrica, Lago Calafquén, Lago Pellaifa, Lago Panguipulli, Lago Neltume, Lago Riñihue, Lago Maihue, Lago Rupanco, varve counting.

Van Daele M, Moernaut J, Silversmit G, Schmidt S, Fontijn K, Heirman K, Vandoorne W, De Clercq M, Van Acker J, Wolff C, Pino M, Urrutia R, Roberts SJ, Vincze L, De Batist M (2014) The 600 yr eruptive history of Villarrica Volcano (Chile) revealed by annually laminated lake sediments. *GSA Bulletin* **126** (3-4), 481-498. http://dx.doi.org/10.1130/B30798.1; varved sediment from lakes Villarrica and Calafquén, Chilean Lake District, µXRF scanning, microfacies analysis, grain-size analysis, color analysis, magnetic-susceptibility measurements, lacustrine turbidites, tephra-fall layers, runoff cryptotephras, lahar deposits, Data Repository item 2014050: ftp://rock.geosociety.org/pub/reposit/2014/2014050.pdf

van der Post KD, Oldfield F, Haworth EY, Crooks PRJ, Appleby PG (1997) A record of accelerated erosion in the recent sediments of Blelham Tarn in the English Lake district. *Journal of Paleolimnology* **18** (2), 103-120. http://dx.doi.org/10.1023/A:1007922129794; freeze cores analyzed for mineralogy, magnetic properties, loss-on-ignition (LOI), radiometric ages, grain size, diatoms, varve counting, 40-yr record, lake productivity, erosion within catchment.

van Geel B, Engels S, Martin-Puertas C, Brauer A (2013) Ascospores of the parasitic fungus *Kretzschmaria deusta* as rainstorm indicators during a late Holocene beech-forest phase around lake Meerfelder Maar, Germany. *Journal of Paleolimnology* **50** (1), 33-40. http://dx.doi.org/10.1007/s10933-013-9701-2; discrete Holocene detrital layers in varved Lake Meerfelder Maar represent extreme runoff events, microfacies analyses, high-resolution palynology.

van Raden UJ (2012) High-resolution Swiss lake records of climate change. Doctoral dissertation, ETH Zürich, Switzerland, ETH No. 20596. http://e-collection.library.ethz.ch/eserv/eth:6967/eth-6967-02.pdf.pdf; lacustrine varves, sedimentology, geochemistry, oxygen stable isotopes, XRD, nanoSEM, EDX, Soppensee, Baldeggersee, Lake Zurich, Burgäschisee.

Vargas G, Pantoja S, Rutlant JA, Lange CB, Ortlieb L (2007) Enhancement of coastal upwelling and intedecadal ENSO-like variability in the Peru-Chile Current since late 19th century. *Geophysical Research Letters* **34**, L13607. http://dx.doi.org/10.1029/2006GL028812; Pacific Ocean, upwelling, El Niño, ENSO, Humboldt Current, Mejillones Bay, marine sediment, Pacific Decadal Oscillation PDO.

Verosub KL (1979) Paleomagnetism of varved sediments from western New England: Variability of the paleomagnetic recorder. *Geophysical Research Letters* **6** (4), 241-244. http://dx.doi.org/10.1029/GL006i004p00241; comparison of the paleomagnetic directions recorded by varved sediments, inherent variability of the paleomagnetic recorder of depositional detrital remanent magnetism. in certain circumstances correlation of sedimentary sequences on the basis of apparent secular variation will thus be impossible.

Verrecchia EP (2004) Multiresolution analysis of shell growth increments to detect variations in natural cycles. In: (Francus P, ed.) *Image Analysis, Sediments and Paleoenvironments. Developments in Paleoenvironmental Research*, vol. 7. Springer, Dordrecht, 273-294. http://dx.doi.org/10.1007/1-4020-2122-4; spectral analysis, wavelet transform, multiresolution analysis, application to growth increment detection, Fourier analysis, power spectrum, shell growth.

Verschuren D (1999) Sedimentation controls on the preservation and time resolution of climate-proxy records from shallow fluctuating lakes. *Quaternary Science Reviews* **18** (6), 821-837. http://dx.doi.org/10.1016/S0277-3791(98)00065-1; lake basins in Kenya, Africa, differences in basin morphometry and physical limnology influence preservation and time resolution of sedimentary climate-proxy records, potential to preserve varves, lake level, hiatuses.

Verschuren D (2000) Freeze coring soft sediments in tropical lakes. *Journal of Paleolimnology* **24** (3), 361-365. http://dx.doi.org/10.1023/A:1008191418497; wedge-shaped freeze-on container, 20-liter thermos with pellets of solid CO_2 descending into wedge, duration of effective freezing ~45 min, no electrical components, paleolimnological methods.

Veski S, Heinsalu A, Poska A, Seppä H (2010) Annually laminated lake sediment record from Rõuge Tõugjärv, southern Estonia - implications for paleoclimatic and palaeoenvironmental reconstructions. In: (Ojala AEK, Kosonen E, eds.) *First Workshop of the PAGES Varves Working Group (Palmse, Estonia, April 7-9, 2010), Programme and Abstracts*, Geological Survey of Finland, Espoo, Finland, 119-121. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2010-VWG-1st-wkshp.pdf; hard-water mesotrophic lake, Europe, base of calcareous-organic varves ca. 9100 BC, varve counting, radiocarbon dating of terrestrial macrofossils, lead-210, cesium-137, americium-241, carbonaceous fly-ash layers, Holocene, pollen-based reconstruction of land cover, diatom, Bronze Age, farming.

Veski S, Seppä H, Ojala AEK (2004) Cold event at 8200 yr B.P. recorded in annually laminated lake sediments in eastern Europe. *Geology* **32** (8), 681-684. http://dx.doi.org/10.1130/G20683.1; http://geology.gsapubs.org/content/32/8/681.full; varve chronology, pollen, oxygen isotopes, 8200 yr B.P. cold event, thermohaline circulation, Estonia, Baltic, Europe.

Virtasalo JJ, Kohonen T, Vuorinen I, Huttula T (2005) Sea bottom anoxia in the Archipelago Sea, northern Baltic Sea – Implications for phosphorus remineralization at the sediment surface. *Marine Geology* **224**, 103-122. http://dx.doi.org/10.1016/j.margeo.2005.07.010; bottom water oxygenation survey, marine varved sediments in basins and archipelago.

Virtasalo JJ, Leipe T, Moros M, Kotilainen AT (2011) Physicochemical and biological influences on sedimentary-fabric formation in a salinity and oxygen-restricted semi-enclosed sea: Gotland Deep, Baltic Sea. *Sedimentology* **58**, 352-375. http://dx.doi.org/10.1111/j.1365-3091.2010.01166.x; 8000 year sediment fabric study, includes marine varves among four lithofacies, alternating diatom-rich and lithic laminae with occasional Mn-carbonate laminae, evidence from sedimentation from bottom flow.

Vogel H, Rosén P, Wagner B, Melles M, Persson P (2008) Fourier transform infrared spectroscopy, a new cost-effective tool for quantitative analysis of biogeochemical properties in long sediment records. *Journal of Paleolimnology* **40** (2), 689-702. http://dx.doi.org/10.1007/s10933-008-9193-7; analytical method, biogeochemistry, biogenic silica, Lake El'gygytgyn in NE Siberia, Lake Ohrid, Albania, Macedonia, mid-infrared region, good statistical performance for quantitation of total organic carbon (TOC), total nitrogen, biogenic silica, opal, calibration models, small amount of sample material needed for high-resolution data, negligible sample pre-treatment, non-destructive, low cost.

Voigt R, Grüger E, Baier J, Meischner D (2008) Seasonal variability of Holocene climate: a palaeolimnological study on varved sediments in Lake Jues (Harz Mountains, Germany). *Journal of Paleolimnology* **40** (4), 1021-1052. http://dx.doi.org/10.1007/s10933-008-9213-7; seasonal algal diatom successions, pollen zonation, radiocarbon AMS dates from terrestrial plants, varved Holocene sediments in Lake Jues, Harz Mountains, central Germany, coccal green algae, karst.

von Grafenstein U, Erlenkeuser H, Brauer A, Jouzel J, Johnsen SJ (1999) A mid-European decadal isotope-climate record from 15,500 to 5000 years B.P. *Science* **284** (5420), 1654-1657. http://dx.doi.org/10.1126/science.284.5420.1654; Lake Ammersee, southern Germany, lake sediment, Bavaria, Europe, oxygen stable isotopes, ostracodes, deglaciation.

von Gunten L, Grosjean M, Kamenik C, Fujak M, Urrutia R (2012) Calibrating biogeochemical and physical climate proxies from non-varved lake sediments with meteorological data: methods and case studies. *Journal of Paleolimnology* **47** (4), 583-600. http://dx.doi.org/10.1007/s10933-012-9582-9; detailed methodology for multi-proxy climate reconstructions (applicable also for varved sediments), calibration and validation of biogeochemical proxies from lake sediments in comparison with meteorological data.

von Gunten HR, Sturm M, Erten HN, Rössler E, Wegmüller F (1987) Sedimentation rates in the central lake constance determined with ^{210}Pb and ^{137}Cs. *Swiss Journal of Hydrology* **49** (3), 275-283. http://link.springer.com/article/10.1007%2FBF02538288; central Lake Constance, sedimentation rates in sediment traps agree with the results of the radioisotope methods.

von Rad U, Merkt J, Rivas-Koslowski M, Schulz H (1995) Holocene "varves" in the upper slope sediments off Pakistan high-resolution chronometers for climatic research. In: *Alfred Wegener Conference "Climate Dynamics Recorded in Long Continental High Resolution Time Series since the Last Interglacial"*. Abstracts. GFZ Potsdam, September 28 - Oktober 2, 1994, Berlin. *Terra Nostra* **1/95**, 37-38. Additional information needed: Electronic link? Keywords? Marine varves.

von Rad U, Schaaf M, Michels KH, Schulz H, Berger WH, Sirocko F (1999) A 5000-yr record of climate change in varved sediments from the oxygen minimum zone off Pakistan, Northeastern Arabian Sea. *Quaternary Research* **51** (1), 39-53. http://dx.doi.org/10.1006/qres.1998.2016; Holocene, marine sediment, oxygen minimum zone, off Karachi, water depth 700 m, 5000-yr continuously laminated sediments with a sedimentation rate of 1.2 mm/yr, monsoonal climatic variability, varve counts, radiocarbon, light-colored terrigenous laminae during winter monsoon, dark-

colored laminae rich in marine organic matter deposited during high-productivity season of late summer monsoon (August–October), precipitation and river runoff appear to control varve thickness and turbidite frequency, spectral analysis.

von Rad U, Schulz H, Riech V, den Dulk M, Berner U, Sirocko F (1999) Multiple monsoon-controlled breakdown of oxygen-minimum conditions during the past 30,000 years documented in laminated sediments off Pakistan. *Palaeogeography, Palaeoclimatology, Palaeoecology* **152** (1-2), 129-161. http://dx.doi.org/10.1016/S0031-0182(99)00042-5; Late Holocene marine varves, core transect in oxygen minimum zone at the continental slope.

von Rad U, Schulz H, SONNE 90 Scientific Party (1995) Sampling the oxygen minimum zone off Pakistan: glacial-interglacial variations of anoxia and productivity (preliminary results, SONNE 90 cruise). *Marine Geology* **125** (1-2), 7-19. http://dx.doi.org/10.1016/0025-3227(95)00051-Y; oxygen minimum zone (OMZ), Arabian Sea, absence of bioturbation, high marine organic carbon accumulation and preservation of laminated sediments between about 300 and 1000 m water depth on steep continental slope.

Vonk JE, Dickens AF, Giosan L, Hussain ZA, Kim B, Zipper SC, Holmes RM, Montlucon DB, Galy V, Eglinton TI (2016) Arctic deltaic lake sediments as recorders of fluvial organic matter deposition. *Frontiers in Earth Science* **4**. http://dx.doi.org/10.3389/feart.2016.00077; Arctic Canada, partially varved lacustrine sediments across Mackenzie Delta record spring flood water levels, % organic carbon, % total nitrogen, $\delta^{13}C$, $\Delta^{14}C$, lignin, leaf waxes, ^{137}Cs, ^{210}Pb.

Vos H, Brüchmann C, Lücke A, Negendank JFW, Schleser HH, Zolitschka B (2004) Phase stability of the solar Schwabe cycle in Lake Holzmaar, Germany, and GISP2 (Greenland) between 9 ky and 10 ky BP. In: (Fischer H, Kumke T, Lohmann G, Flöser G, Miller H, von Storch H, Negendank JFW, eds.) *The Climate in Historical Times - Towards a Synthesis of Holocene Proxy Data and Climate Models.* Springer Verlag, Berlin, 293-318. http://www.worldcat.org/search?qt=worldcat_org_all&q=978-3-540-20601-9; solar variability, Schwabe cycle, lacustrine varves, Greenland ice core, phase analysis, varve thickness.

Vos H, Sanchez A, Zolitschka B, Brauer A, Negendank JFW (1997) Solar activity variations recorded in varved sediments from the crater lake of Holzmaar - a maar lake in the Westeifel Volcanic Field, Germany. *Surveys in Geophysics* **18**, 163-182. http://dx.doi.org/10.1023/A:1006531825130; Eifel, Germany, Holocene, lake sediment, solar forcing, Weichselian, Lake Holzmaar, Holocene, spectral analysis, periodicities.

Vuorinen J (1978) The influence of prior land use on the sediments of a small lake. *Polskie Archiwum Hydrobiologii (Polish Archive of Hydrobiology)* **25** (1/2), 453-451. Lake Hännisenlampi, Finland, kettle lake, abrupt change from brown to 1.2 m thick topmost black sediment was varve-counted to 1504 AD, also change in sedimentation rate due to onset of hemp processing, copper and zinc concentrations.

Walker D (2011) The frequency of lamination in the sediments of Lake Barrine, tropical north-east Australia, during the last five millennia. *Palaeogeography, Palaeoclimatology, Palaeoecology* **299** (1-2), 214-226. http://dx.doi.org/10.1016/j.palaeo.2010.11.003; tropics, Holocene, uppermost sediment is composed of alternating detritus-poor and detritus-rich laminae, 4.5 m long record contains about 3000 individual laminations, marker bands represent periods of unusual turbulence in the water body, radiocarbon dates from 5 ka cal BP to 1987 AD.

Walker D, Head MJ, Hancock GJ, Murray AS (2000) Establishing a chronology for the last 1000 years of laminated sediment accumulation at Lake Barrine, a tropical upland maar lake, northeastern Australia. *The Holocene* **10** (4), 415-427. http://dx.doi.org/10.1191/095968300671950228; radiocarbon, uppermost 115 cm of laminated mud, crater lake, charcoal, exotic *Solanum* pollen, meteorological correlation, accumulation rate to AD 1060.

Wall D, Dale B (1973) Paleosalinity relationships of dinoflagellates in the late quaternary of the black sea — a summary. *Geoscience and Man* **7** (1), 95-102. http://dx.doi.org/10.1080/00721395.1973.9989739; Dinoflagellates in Late Quaternary sediments from deepwater cores in the Black Sea fall into two ecological categories that are dependent upon paleosalinity, transiton at 7,000 years BP between euryhaline and freshwater species when saline water from the Mediterranean began to flow into the Black Sea.

Wall D, Dale B (1974) Dinoflagellates in Late Quaternary deep-water sediments of Black Sea. In: (Degens ET, Ross DA, eds.) *The Black Sea - Geology, Chemistry, and Biology*. *American Association of Petroleum Geologists Memoir* **20**, 364-380. http://www.worldcat.org/title/black-sea-geology-chemistry-and-biology/oclc/969800; dinoflagellates from each of the 3 stratigraphic units, paleoecologic conditions of the Black Sea, marine.

Wan GJ, Santschi PH, Sturm M, Farrenkothen K, Lueck A, Werth E, Schuler C (1987) Natural (^{210}Pb, ^{7}Be) and fallout (^{137}Cs, $^{239,240}Pu$, ^{90}Sr) radionuclides as geochemical tracers of sedimentation in Greifensee, Switzerland. *Chemical Geology* **63** (3-4), 181-196. http://dx.doi.org/10.1016/0009-2541(87)90162-8; average sedimentation rate of Greifensee by varve counting agrees with radionuclide dating.

Wang L, Mackay AW, Leng MJ, Rioual P, Panizzo VN, Lu H, Gu Z, Chu G, Han J, Kendrick CP (2013) Influence of the ratio of planktonic to benthic diatoms on lacustrine organic matter $\delta^{13}C$ from Erlongwan maar lake, northeast China. *Organic Geochemistry* **54**, 62–68. http://dx.doi.org/10.1016/j.orggeochem.2012.09.010; ratio between planktonic and benthic algae, benthic algae grow in relatively still water, pelagic algae

are exposed to greater water movement, carbon isotope ratios linked to dominance of planktonic diatoms low during the Medieval Warm Period, then gradually increased with the onset of the Little Ice Age.

Wang Y, Herzschuh U, Liu X, Korup O, Diekmann B (2014) A high-resolution sedimentary archive from landslide-dammed Lake Mengda, north-eastern Tibetan Plateau. *Journal of Paleolimnology* **51**, 303-312. http://dx.doi.org/10.1007/s10933-012-9666-6; lacustrine sediment with 64 modern varves in 20th century, 1927 Gulang earthquake.

Warren JK (1996) Evaporites, brines and base metals: What is an evaporite? Defining the rock matrix. *Australian Journal of Earth Sciences: An International Geoscience Journal of the Geological Society of Australia* **43** (2), 115-132. http://dx.doi.org/10.1080/08120099608728241; definition of evaporate, primary evaporates include evaporitic varves, secondary evaporates encompass the diagenetically altered evaporite salts, tertiary evaporites form in the subsurface from saturated brines, hydrothermal salts.

Wastegård S, Schoning K (1997) Calcareous fossils and radiocarbon dating of the saline phase of the Yoldia Sea stage. *GFF* **119** (3), 245-248. http://dx.doi.org/10.1080/11035899709546482; calcareous fossils in clay varves from eastern central Sweden and the northwestern Baltic Sea, deposited during the brackish phase of the Yoldia Sea stage.

Weber ME (2010) New tools for the varve community: laminae recognition (BMPix), fully automated counting (PEAK), and evolutionary spectral analysis (ESA-Lab). In: (Ojala AEK, Kosonen E, eds.) *First Workshop of the PAGES Varves Working Group (Palmse, Estonia, April 7-9, 2010), Programme and Abstracts*, Geological Survey of Finland, Espoo, Finland, 123-126. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2010-VWG-1st-wkshp.pdf; software package for laminae counting. See update in Weber et al. (2010). Version 2 can be downloaded from the Pangaea webserver at doi.pangaea.de/10.1594/PANGAEA.729700 (copy and paste this URL directly into your browser; clicking may not work).

Weber ME, Clark PU, Ricken W, Mitrovica JX, Hostetler SW, Kuhn G (2011) Interhemispheric ice-sheet synchronicity during the Last Glacial Maximum. *Science* **334** (6060), 1265-1269. http://dx.doi.org/10.1126/science.1209299; supply-info: www.sciencemag.org/cgi/content/full/334/6060/1265/DC1; chronology for the Weddell Sea sector of the East Antarctic Ice Sheet from a deep-sea contourite ridge on the SE Weddell Sea continental slope; radiography of fine-grained siliciclastic marine varves from the Last Glacial Maximum.

Weber ME, Holzapfel A, Molz M (2012) Fully-automated varve recognition and counting – an interactive software presentation. In: (Zolitschka B, ed.) *3rd Workshop of the PAGES Varves Working Group, Manderscheid, Germany, March 20-25, 2012, Program and Abstracts. Terra Nostra, Schriften der GeoUnion Alfred-Wegener-Stiftung* **2012/1**, 89-92. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/VWG_AbstractVolume_Final_2012.pdfsoftware package for laminae counting, version 2 can be downloaded from the Pangaea webserver at doi.pangaea.de/10.1594/PANGAEA.729700 (copy and paste this URL directly into your browser; clicking may not work).

Weber ME, Reichelt L, Kuhn G, Pfeiffer M, Korff B, Thurow J, Ricken W (2010) BMPix and PEAK tools: New methods for automated laminae recognition and counting – Application to glacial varves from Antarctic marine sediment. *Geochemistry Geophysics Geosystems* **11** (1), Q0AA05; 18 p. http://dx.doi.org/10.1029/2009GC002611; software package for laminae counting, Fourier Transformation. Note: the first (2010) version of the software is available at http://dx.doi.org/10.1594/PANGAEA.729700, whereas the updated version is available at http://dx.doi.org/10.1594/PANGAEA.775955.

Wehrli B, Lotter AF, Schaller T, Sturm M (1997) High-resolution varve studies in Baldeggersee (Switzerland): Project overview and limnological background data. *Aquatic Sciences* **59** (4), 285-294. http://dx.doi.org/10.1007/BF02522359; Lake Baldeggersee, Europe, freeze-core, 1885-1993 varve time-series, eutrophication, aeration of lake.

Weinheimer AL (1986) Radiolarian indicators of El Niño and anti-El Niño events in the recent sediment of the Santa Barbara basin. In: (Casey RE, Barron JA, eds.) *Siliceous Microfossil and Microplankton Studies of the Monterey Formation and Modern Analogs*. Pacific Section Society of Economic Paleontologists and Mineralogists, Los Angeles, 31-37. http://www.worldcat.org/title/siliceous-microfossil-and-microplankton-of-the-monterey-formation-and-modern-analogs/oclc/14101873; additional information needed: Electronic link? Keywords?

Weinheimer A, Biondi F (2003) Varves. In: (Holton JR, ed.) *Encyclopedia of Atmospheric Sciences*, Academic Press, Oxford 1680-1685. http://dx.doi.org/10.1016/B0-12-227090-8/00305-5; basics and definition of varve, example from Santa Barbara Basin.

Weinheimer A, Carson T, Wigley C, Casey R (1985) Radiolarian responses to Holocene and Neogene California El Niño and anti-El Niño events. *2nd Workshop on Climate Variability of the Eastern North Pacific and Western North America (PACLIM)*, May 19-23, 1985, Pacific Grove, California, p. 18 [abstract]. http://www.worldcat.org/title/2nd-workshop-on-climate-variability-of-the-eastern-north-pacific-and-western-north-america-19-to-23rd-may-1985-asilomar-conference-center-pacific-grove-california/oclc/693470546; http://www.worldcat.org/title/

2nd-workshop-on-climate-variability-of-the-eastern-north-pacific-and-western-north-america-19-to-23rd-may-1985-asilomar-conference-center-pacific-grove-california/oclc/15538258; radiolarian, Santa Barbara Basin, marine sediments 1957-58 and 1964 El Niño, plankton tow results of the 1983-84 El Niño.

Weinheimer AL, Carson TL, Wigley CR, Casey RE (1986) Radiolarian responses to recent and Neogene California El Niño and anti-El Niño events. *Palaeogeography, Palaeoclimatology, Palaeoecology* **53** (1), 3-25. http://dx.doi.org/10.1016/0031-0182(86)90036-2; Santa Barbara Basin, Pacific, comparison with Miocene Monterey Formation, radiolarian, California Counter Current, marine varves, Pacific.

Weinheimer AL, Cayan DR (1995) Radiolarian flux in the Santa Barbara Basin as an index of climate variability. In: (Isaacs CM, Tharp VL, eds.) *Proceedings of the Eleventh Annual Pacific Climate (PACLIM) Workshop*, April 19-22, 1994, California Department of Water Resources, Interagency Ecological Program Technical Report **40**, pp. 107-118. http://worldcat.org/oclc/32635083; California, Pacific, marine sediment, annual time series 1954-1986, polycystine radiolarians, annual radiolarian flux comoared to instrumental data, total flux correlated with regional California sea surface temperature and the composite of sea level pressure.

Weinheimer AL, Cayan DR (1997) Radiolarian assemblages from Santa Barbara Basin sediments: Recent interdecadal variability. *Paleoceanography* **12** (5), 658-670. http://dx.doi.org/10.1029/97PA00986; marine sediment, annual time series 1909–1991, polycystine radiolarian assemblages, flux of a few representative species can be extrapolated to estimate fluxes of environmentally sensitive groups, subtle decadal-scale changes in assemblages, diversity, increase in percent warm water fauna consistent with a spin-down of the California Current System.

Weinheimer AL, Kennett JP, Cayan DR (1999) Recent increase in surface-water stability during warming off California as recorded in marine sediments. *Geology* **27** (11), 1019-1022, http://dx.doi.org/10.1130/0091-7613(1999)027<1019:RIISWS>2.3.CO;2; marine sediment, radiolarian assemblages, warming of surface waters in the California Current since the 1950s, reduced upwelling of nutrient-rich waters, increased thermal stratification across the thermocline, oxygen stable isotopes of planktonic foraminifera, instrumental records.

Welten M (1944) Pollenanalytische, stratigraphische und geochronologische Untersuchungen aus dem Faulenseemoos bei Spiez. *Veröffentlichungen des Geobotanischen Instituts Rübel in Zürich* **21**, 201p., or: (1945) *New Phytologist* **44** (2), 241-244 (in German). http://www.jstor.org/stable/2428830?seq=2; review of Lake Faulensee Holocene varved record over 12 m core, Switzerland, pollen survey.

Whitehead NE, Ditchburn RG, McCabe WJ, Mason WJ, Irwin J, Pickrill RA, Fish GR (1998) Application of natural and artificial fallout radionuclides to determining sedimentation rates in New Zealand lakes. *New Zealand Journal of Marine and Freshwater Research* **32** (3), 489-503. Free pdf: http://dx.doi.org/10.1080/00288330.1998.9516838; Lakes Rotoiti, Taupo, Ngahewa, Tikitapu, Okareka, Pukaki, Rotorua, Waikaremoana, Wakatipu, Tekapo, Ohau, Falls Dam, Central Otago, Pauatahanui inlet (Wellington), Lake Vanda (Antarctica). ^{210}Pb and ^{210}Po, ^{137}Cs, ^{147}Pm, ^{144}Ce.

Whiticar MJ, Elvert ME (2001) Organic geochemistry of Saanich Inlet, BC, during the Holocene as revealed by Ocean Drilling Program Leg 169S. *Marine Geology* **174** (1-4), 249-271. http://dx.doi.org/10.1016/S0025-3227(00)00154-7; organic-rich marine laminated sediment, ODP Sites 1033 and 1034, sulfate reduction, microbial methanogenesis via carbonate reduction, carbon stable isotopes, Pacific.

Whitlock C, Dean WE, Fritz SC, Stevens LR, Stone JR, Power MJ, Rosenbaumb JR, Pierce KL, Bracht-Flyr BB (2012) Holocene seasonal variability inferred from multiple proxy records from Crevice Lake, Yellowstone National Park, USA. *Palaeogeography, Palaeoclimatology, Palaeoecology* **331-332**, 90-103. http://dx.doi.org/10.1016/j.palaeo.2012.03.001; alkaline lake, Yellowstone National Park, North America, pollen, charcoal, geochemistry, mineralogy, diatoms, oxygen stable isotopes, Holocene environmental history, northern Rocky Mountains, Holocene, Roman Warm Period, Medieval Climate Anomaly, Little Ice Age, episodes of extreme drought in the last 8 kyr.

Whitlock C, Dean W, Rosenbaum J, Stevens L, Fritz S, Bracht B, Power M (2008) A 2650-year-long record of environmental change from northern Yellowstone National Park based on a comparison of multiple proxy data. *Quaternary International* **188** (1), 126-138. http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1001&context=geosciencefacpub; http://dx.doi.org/10.1016/j.quaint.2007.06.005; geochemical, stable-isotope, pollen, charcoal, and diatom records, varved lacustrine sediment lake, USA, climate variations at the forest-steppe transition, Medieval Climate Anomaly, fire activity, metal pollution, regional mining operations.

Whittaker EJ (1922) Bottom deposits of McKay Lake, Ottawa. *Proceedings and Transactions of the Royal Society of Canada, 3rd Series* **16**, 141-156. Additional information needed: Electronic link? Keywords?

Whyte MA (1992) The use of "Photomount" adhesive as a medium for peels of unconsolidated sediments. *Journal of Sedimentary Research* **62** (4), 741-742. http://jsedres.geoscienceworld.org/content/62/4/741.full.pdf+html; method to make sediment peels, surface needs to be smooth, thren apply Scotch Photomount adhesive spray, dry for 20 min, slightly re-spray, wait a few minutes, apply strong paper, etc.

Widerlund A (1996) *Suspended Particulate Matter, Sedimentation and Early Diagenetic Processes in the Kalix River Estuary, Northern Sweden.* Doctoral Thesis, Luleå University of Technology, Luleå,

Sweden, 25 pp. http://www.baltic.vtt.fi/pdfs/dt200D.pdf; geochemistry of Fe and Mn oxides and organic matter in marine varved sediment in Baltic Sea.

Widerlund A, Roos P (1994) Varved sediments in the Kalix River estuary, northern Sweden. *Aqua Fennica* **24** (2), 163-169. http://pure.ltu.se/portal/en/publications/varved-sediments-in-the-kalix-river-estuary-northern-sweden%2831b04390-b601-11dc-b7e3-000ea68e967b%29.html; marine varves, Baltic Sea, ^{137}Cs, varve-counting.

Wilkes H, Ramrath A, Negendank JFW (1999) Organic geochemical evidence for environmental changes since 34,000 yrs BP from Lago di Mezzano, central Italy. *Journal of Paleolimnology* **22** (4), 349-365. http://dx.doi.org/10.1023/A:1008051821898; organic matter in 34,000 yr sediment profile, lipid distributions, biomarkers, fatty acids, *n*-alkanols, *n*-alkanes, cuticular waxes of terrestrial plants, Late Pleistocene, Holocene, algal and bacterial lipids, Hydrogen Index, Oxygen Index, Rock-Eval pyrolysis, total organic carbon TOC, preservation of organic matter.

Willems BA, Powell RD, Cowan EA, Jaeger JM (2011) Glacial outburst flood sediments within Disenchantment Bay, Alaska: Implications of recognizing marine jökulhlaup deposits in the stratigraphic record. *Marine Geology* **284** (1-4), 1-12. http://dx.doi.org/10.1016/j.margeo.2011.03.004; glacimarine varves formed by sediment gravity flows and hypopycnal plume sedimentation in response to seasonal melting.

Williams GE (1985) Solar affinity of sedimentary cycles in the Late Precambrian Elatina Formation. *Australian Journal of Physics* **38** (6), 1027-1044. http://dx.doi.org/10.1071/PH851027. pdf: http://www.publish.csiro.au/?act=view_file&file_id=PH851027.pdf. Climatic cyclicity recorded in varves within the Late Precambrian Elatina Formation (ca. 680 million years old), periglacial lake deposit in the Flinders Ranges, South Australia, solar variability suggested.

Williams JB, Schwab MJ, Brauer A (2012) An early first-century earthquake in the Dead Sea. *International Geology Review* **54** (10), 1219-1228. http://dx.doi.org/10.1080/00206814.2011.639996; western shore of Dead Sea at Ein Gedi, Israel, lake sediment, earthquake reported in New Testament on day of crucifixion, no evidence for strong earthquake at that time in dated varve record; see López-Merino et al. (2016) who advise caution about the presence of varves in the Dead Sea.

Wilson IT (1943) Varves in Sandusky Bay sediment. *The Ohio Journal of Science* (Ohio Academy of Science) **43** (5), 195-197. pdf available: http://kb.osu.edu/dspace/bitstream/handle/1811/3342/V43N05_195.pdf?sequence=1; Lake Erie, estimate of 12,223 varves.

Wilson MVH, Bogen A (1994) Tests of the annual hypothesis and temporal calibration of a 6375-varve fish-bearing interval, Eocene horsefly beds, British Columbia, Canada. *Historical Biology* **7** (4), 325-339. http://dx.doi.org/10.1080/10292389409380463; 6375-year sequence of lake varves, tests of the annual (varve) hypothesis, temporal calibration, spectral analysis of varve thicknesses, scanning electron microscopy and elemental analysis of dark and light laminae, and analysis of within-couplet distribution of seasonal fossils.

Wirth SB, Gilli A, Glur L, Anselmetti FS, Ariztegui D, Simonneau A, Chapron E, Vannière B, MagnyIn M (2012) Reconstructing the seasonality of late Holocene flood events using varved lake sediments of Lake Ledro (Southern Alps, Italy). In: (Zolitschka B, ed.) *3rd Workshop of the PAGES Varves Working Group, Manderscheid, Germany, March 20-25, 2012, Program and Abstracts. Terra Nostra, Schriften der GeoUnion Alfred-Wegener-Stiftung* **2012/1**, 93-95. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/VWG_AbstractVolume_Final_2012.pdf; Trento Province, Central European Alps, Italy, flood layers in varved sediment, turbidite.

Wirth SB, Gilli A, Simonneau A, Ariztegui D, Vannière B, Glur L, Chapron E, Magny M, Anselmetti FS (2013) A 2000 year long seasonal record of floods in the southern European Alps. *Geophysical Research Letters* **40** (15), 4025-4029. http://dx.doi.org/10.1002/grl.50741; lake sediments, seasonality, solar variability, flood frequency and intensity reconstruction from lake sediment, North Italy, flood frequency increased during solar minima, most extreme autumn floods occurred during a period of warm Mediterranean sea surface temperature, prediction of decreased summer floods, but increased autumn floods at the South-Alpine slope.

Wirth SB, Glur L, Gilli A, Anselmetti FS (2013) Holocene flood frequency across the Central Alps - solar forcing and evidence for variations in North Atlantic atmospheric circulation. *Quaternary Science Reviews* **80**, 112-128. http://dx.doi.org/10.1016/j.quascirev.2013.09.002; lake sediments are a valuable terrestrial archive of past flood events, high flood frequency in the Alps is driven by low solar activity, widening/shrinking of the Hadley cell brings dry/wet conditions to the Alps, south-alpine flood frequency indicates changes in a paleo-NAO pattern, frequent S-alpine floods suggest a southerly position of the N-Atlantic circulation.

Wittkop C, Teranes J, Lubenow B, Dean WE (2014) Carbon- and oxygen-stable isotopic signatures of methanogenesis, temperature, and water column stratification in Holocene siderite varves. *Chemical Geology* **389**, 153-166. http://dx.doi.org/10.1016/j.chemgeo.2014.09.016; freshwater Otter Lake, Michigan, USA, manganoan siderite ([Fe,Mn]CO_3) up to 19% dry weight as endogenic carbonate in summer layer of the varve couplet, water column alkalinity fluctuations driven by summer calcite dissolution.

Wohlfarth B, Bennike O, Brunnberg L, Demedov I, Possnert G, Vyahirev S (1999) AMS ^{14}C measurements and macrofossil analyses of a varved sequence near Pudozh, eastern Karelia, NW Russia. *Boreas* **28** (4), 575-586. http://dx.doi.org/10.1111/j.1502-3885.1999.tb00243.x; 1933-year varved glacial clay sequence, recession of active ice margin, radiocarbon dating of terrestrial plant macrofossils, Allerød, Weichselian, Holocene.

Wohlfarth B, Björck S, Cato I, Possnert G (1997) A new middle Holocene varve diagram from the river Ångermanalven, northern Sweden: indications for a possible error in the Holocene varve chronology. *Boreas* **26** (4), 347-353. http://dx.doi.org/10.1111/j.1502-3885.1997.tb00860.x; varve-thickness diagram, correlation of new varve sequence with postglacial varve chronology 4903 to 4415 varve years BP, radiocarbon dating of terrestrial macrofossils, discrepancy between varve and calender-year age indicates possible error in Swedish varve chronology.

Wohlfarth B, Björck S, Holmqvist B, Lemdahl G, Ising J (1994) Ice recession and depositional environment in the Blekinge archipelago of the Baltic Ice Lake. *GFF* **116** (1), 3-12. http://dx.doi.org/10.1080/11035899409546134; Swedish varved clays from the former Baltic Ice Lake during the deglaciation, new clay varve diagrams from Blekinge, southern Sweden, place deglaciation of sites situated in northern Blekinge to 12,971–12,855 v.y. BP, plant macrofossils.

Wohlfarth B, Björck S, Holmquist B, Possnert G, Björck J, Ising J, Olsson S (1996) The Late Weichselian varved clays in SE Sweden: Radiocarbon and varve chronology, pollen stratigraphy and geochemistry. *GFF* **118** (supplement 004), 72-73. http://dx.doi.org/10.1080/11035899609546365

Wohlfarth B, Björck S, Possnert G, Holmquist B (1998) An 800-year long, radiocarbon-dated varve chronology from south-eastern Sweden. *Boreas* **27** (4) 243-257. http://dx.doi.org/10.1111/j.1502-3885.1998.tb01419.x; glacial varved clays in south-eastern Sweden, correlation of 50 varve-thickness diagrams, 800-year floating varve chronology, radiocarbon dating of terrestrial macrofossils, synchronization with other high-resolution archives, chronology spans ~13150 to ~12350 calendar years BP, covers later part of Allerørd and early part of Younger Dryas.

Wohlfarth B, Björck S, Possnert G, Lemdahl G, Brunnberg L, Ising J, Olsson S, Svensson NO (1993) AMS dating Swedish varved clays of the last glacial/interglacial transition and the potential/difficulties of calibrating Late Weichselian 'absolute' chronologies. *Boreas* **22** (2), 113-128. http://dx.doi.org/10.1111/j.1502-3885.1993.tb00171.x; Late Weichselian, Gotiglacial varved clays of the Swedish Time Scale, possible use of Swedish varved clays for calibrating the ^{14}C chronology, radiocarbon dating of terrestrial macrofossils, Late Weichselian 'event stratigraphy'.

Wohlfarth B, Holmquist B, Cato I, Linderson H (1998) The climatic significance of clastic varves in the Ångermanälven Estuary, northern Sweden, AD 1860 to 1950. *The Holocene* **8** (5), 521-534. http://dx.doi.org/10.1191/095968398668399174; instrumental records, varves between 1860 and 1950, correlation between spring/summer precipitation and annual varve thickness, varve-thickness correlated against long instrumental series, marine influence.

Wohlfart B, Possnert G (2000) AMS radiocarbon measurements from the Swedish varved clays. *Radiocarbon* **42** (3), 323-333. https://journals.uair.arizona.edu/index.php/radiocarbon/article/viewFile/3825/3250; Swedish varve chronology, Swedish Time Scale, glaciolacustrine varves in the Baltic Sea during the recession of the Scandinavian ice sheet, continued deposition of varved clays throughout the Holocene still going on in the estuary of River Ångermanälven in northern Sweden; AMS radiocarbon measurements on terrestrial plant macrofossils show that several hundreds of varve years are missing in the varve chronology.

Wolfe B, Teller JT (1993) Sedimentological and stratigraphic investigations of a sequence of 106 varves from glacial Lake Assiniboine, Saskatchewan. *Journal of Paleolimnology* **9** (3), 257-273. http://dx.doi.org/10.1007/BF00677217; Canada, grain size, varve thickness, ice-dammed lake, 106 glacial varves.

Wolff C, Brauer A, Nomade J, Participants DecLakes (2006) Varve chronology of the last 3000 years of the sediment record from Lake Mondsee (Upper Austria). *Geophysical Research Abstracts, European Geosciences Union* **8**, 06750. http://meetings.copernicus.org/www.cosis.net/abstracts/EGU06/06750/EGU06-J-06750.pdf; multiple dating concept, varve chronology, radiocarbon dating, upper 6 m of Lake Mondsee sediment, Austria, European Alps, calcite varves, light layers endogenic calcite, darker autumn/winter sub-layers predominantly reflect detrital sediment fluxes of organic and minerogenic matter, diatoms, varve counting, thin section, petrographic microscope.

Wolff C, Haug GH, Timmermann A, Sinninghe Damsté JS, Brauer A, Sigman DM, Cane MA, Verschuren D (2011) Reduced interannual rainfall variability in East Africa during the Last Ice Age. *Science* **333** (6043), 743-747. http://dx.doi.org/10.1126/science.1203724; El Niño Southern Oscillation ENSO, equatorial East Africa, southeastern Kenya, rainfall variability, lake sediment.

Wolff C, Kristen I, Haug G, Verschuren D, CHALLACEA Participants (2010) East African monsoon and ENSO variability since the last glacial. In: (Ojala AEK, Kosonen E, eds.) *First Workshop of the PAGES Varves Working Group (Palmse, Estonia, April 7-9, 2010), Programme and Abstracts*, Geological Survey of Finland, Espoo, Finland, 127-128. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2010-VWG-1st-wkshp.pdf; Lake Challa (Kenya/Tanzania) sediments are varved for the last 25,000 years, eastern slope of Mt. Kilimanjaro, monsoon, El Niño Southern Oscillation ENSO, equatorial East Africa, southeastern Kenya, rainfall variability.

Wolff C, Kristen-Jenny I, Schettler G, Plessen B, Meyer H, Dulski P, Naumann R, Brauer A, Verschuren D, Haug GH (2014) Modern seasonality in Lake Challa (Kenya/Tanzania) and its sedimentary documentation in recent lake sediments. *Limnology and Oceanography* **59** (5), 1621-1636. http://dx.doi.org/10.4319/lo.2014.59.5.1621; sediment trap 2006-2010 in Lake Challa, a deep stratified freshwater lake on the eastern slope of Mt. Kilimanjaro in southern Kenya, sediment trap data support the hypothesis that the light–dark lamination couplets in Lake Challa cores reflect seasonal delivery to varved sediments of diatom-rich particulates during the windy months and diatom-poor material during the wet season.

Woodbridge J, Roberts N (2010) Linking neo- and palaeolimnology: a case study using crater lake diatoms from central Turkey. *Journal of Paleolimnology* **44** (3), 855-871. http://dx.doi.org/10.1007/s10933-010-9458-9; investigating the link between modern and paleo diatom assemblages in varved sediment from crater lake Nar Gölü, central Turkey. sediment traps, microscopic analysis of core thin sections.

Woodbridge J, Roberts N (2011) Late Holocene climate of the Eastern Mediterranean inferred from diatom analysis of annually-laminated lake sediments. *Quaternary Science Reviews* **30** (23–24), 3381-3392. http://dx.doi.org/10.1016/j.quascirev.2011.08.013; Nar crater lake, Turkey, diatom-conductivity transfer function, salinity, thin section, pollen, oxygen stable isotopes, drought, Medieval Climate Anomaly, Little Ice Age.

Wright CA, Dallimore A, Thomson RE, Patterson RT, Ware DM (2005) Late Holocene paleofish populations in Effingham Inlet, British Columbia, Canada. *Palaeogeography, Palaeoclimatology, Palaeoecology* **224** (4), 367-384. http://dx.doi.org/10.1016/j.palaeo.2005.03.041; marine varves, 500 y B.P. to 4000 y B.P., fish scales, Effingham Inlet, Vancouver Island, British Columbia; technical details of quantifying fish remains from varves, northern anchovy, Pacific herring..

Wulf S, Brauer A, Mingram J, Zolitschka B, Negendank JFW (2012) Varved maar and crater lake sediments: implications for a detailed Tephrostratigraphy. In: (Besonen MR, ed.) *Second Workshop of the PAGES Varves Working Group*, Program and Abstracts, 17-19 March 2011, Corpus Christi, Texas, USA, 89-90. http://pastglobalchanges.org/download/docs/working_groups/vwg/2011_2nd_VWG_workshop_programs_and_abstracts.pdf; Eifel volcsanic field, Meerfelder Maar, Holzmaar, Laacher See tephra, Lago Grande di Monticchio.

Wulf S, Dräger N, Ott F, Serb J, Appelt O, Guðmundsdóttir E, van den Bogaard C, Słowiński M, Błaszkiewicz M, Brauer A (2016) Holocene tephrostratigraphy of varved sediment records from Lakes Tiefer See (NE Germany) and Czechowskie (N Poland). *Quaternary Science Reviews* **132** (15), 1-14. http://dx.doi.org/10.1016/j.quascirev.2015.11.007; 13 tephras and cryptotephras of Icelandic provenance chemically fingerprinted, Saksunarvatn Ash, Lairg-B and Hekla-4 cryptotephras, Grimsvötn eruption, Glen Garry cryptotephra.

Wulf S, Keller J, Paterne M, Mingram J, Lauterbach S, Opitz S, Sottili G, Giaccio B, Albert PG, Satow C, Tomlinson EL, Viccaro M, Brauer A (2012) The 100-133 ka record of Italian explosive volcanism and revised tephrochronology of Lago Grande di Monticchio. *Quaternary Science Reviews* **58**, 104-123. http://dx.doi.org/10.1016/j.quascirev.2012.10.020; southern Italy, sequence of numerous primary tephra events, Late Quaternary eruptive history of Italian volcanoes, archive of essential marker horizons for dating and linking palaeoclimate records throughout the Central and Eastern Mediterranean, extension of tephra record back to end of the penultimate Glacial 133 ka BP, 52 single tephra layers forming 21 tephra clusters, robust revised tephrochronology of the entire Monticchio varved sediment sequence for the last 133 ka.

Wulf S, Kraml M, Brauer A, Keller J, Negendank JFW (2004) Tephrochronology of the 100 ka lacustrine sediment record of Lago Grande di Monticchio (southern Italy). *Quaternary International* **122** (1), 7-30. http://dx.doi.org/10.1016/j.quaint.2004.01.028; lake sediment, Europe, maar, correlation of tephra to central and south Italian volcanoes, historical documents, radiometric dating.

Wulf S, Kraml M, Keller J (2008) Towards a detailed distal tephrostratigraphy in the Central Mediterranean: The last 20,000 yrs record of Lago Grande di Monticchio. *Journal of Volcanology and Geothermal Research* **177** (1), 118-132. http://dx.doi.org/10.1016/j.jvolgeores.2007.10.009; 20,000 yrs compilation of distal tephrostratigraphy for the Central Mediterranean region, 47 distinct ash layers in maar lake sediments of Lago Grande di Monticchio (Basilicata, Southern Italy).

Wulf S, Ott F, Słowiński M, Noryśkiewicz AM, Dräger N, Martin-Puertas C, Czymzik M, Neugebauer I, Dulski P, Bourne AJ, Błaszkiewicz M, Brauer A (2013) Tracing the Laacher See Tephra in the varved sediment record of the Trzechowskie palaeolake in central Northern Poland. *Quaternary Science Reviews* **76**, 129-139. http://dx.doi.org/10.1016/j.quascirev.2013.07.010; tephrochronological studies of partly varved paleolake sediments, Late Allerød Laacher See Tephra (LST) from Eifel Volcanic Field, μ-XRF mapping of impregnated sediment slabs, direct synchronisation with Lake Meerfelder Maar and Rehwiese palaeolake.

Wunsam S, Schmidt R, Müller J (1999) Holocene lake development of two Dalmatian lagoons (Malo and Veliko Jezero, Isle of Mljet) in respect to changes in Adriatic sea level and climate. *Palaeogeography, Palaeoclimatology, Palaeoecology* **146** (1-4), 251-281. http://dx.doi.org/10.1016/S0031-0182(98)00147-3; karstic coastal 'seawater lakes', marine varves, eutrophication.

Wutke K, Wulf S, Tomlinson EL, Hardiman M, Dulski P, Luterbacher J, Brauer A (2015) Geochemical properties and environmental impacts of seven Campanian tephra layers deposited between 40 and 38 ka BP in the varved lake sediments of Lago Grande di Monticchio, southern Italy. *Quaternary Science Reviews* **118**, 67-83. http://dx.doi.org/10.1016/j.quascirev.2014.05.017; tephrostratigraphy, 40–38 ka varved lake sediment, Lago Grande di Monticchio (southern Italy), Heinrich H4-stadial, Campanian Ignimbrite (CI, 39.3 ka), Schiava tephra from Vesuvius, microfacies analyses, μ-XRF core scanning, diatom population growth directly after tephra deposition.

Xu B, Zheng H, Yao H, Li Y (2003) C-isotope composition and significance of the Sinian on the Tarim plate. *Chinese Science Bulletin* **48** (4), 385-389. http://dx.doi.org/10.1007/BF03183235; tillites from the Sinian in Kuluketage, carbon stable isotope ratios, glacial varves at the top of the Hankeerqiaoke Formation.

You H, Liu J, Liu Q, Chu G, Rioual P, Han J (2008) Study of the varve record from Erlongwan maar lake, NE China, over the last 13 ka BP. *Chinese Science Bulletin* **53** (2), 262-266. http://dx.doi.org/10.1007/s11434-007-0448-x; biogenic varve, clastic varve, dinocyst, Erlongwan maar lake, China, 13 ka varve chronology, two main varve types.

Young DR, Johnson JN, Soutar A, Isaacs JD (1973) Mercury concentrations in dated varved sediments collected off southern California. *Nature* **244**, 273-275. http://dx.doi.org/10.1038/244273a0; anthropogenic mercury pollution, Santa Barbara Basin, marine sediment, Pacific Ocean, the past 150 yr, two layers estimated age 1,500 yr BP before mining activity, Los Angeles, California Current.

Young R, Walanus A, Goslar T (2000) Auto-correlation analysis in search of short-term patterns in varve data from sediments of Lake Gościąż, Poland. *Boreas* **29** (3), 251-260. http://dx.doi.org/10.1111/j.1502-3885.2000.tb00982.x; the last c. 12900 years from Late Allerød to present, varve thickness time-series of 1912 varves, auto-correlation analysis, no indication of a relation between varve formation and the sun-spot cycle.

Young R, Walanus A, Goslar T, van Geel B, Ralska-Jasiewiczowa M, Wijmstra TA (1999) Test of an equal taxon–weight modification of Middeldorp's pollen density dating on data from varved sediments of Lake Gościąż, Poland. *Review of Palaeobotany and Palynology* **104** (3-4), 213-237. http://dx.doi.org/10.1016/S0034-6667(98)00060-8; use of seasonal pollen concentrations for reconstructing the chronology of a palynological data set, comparison with varve chronology, pollen density dating (PDD), spline interpolation instead of a polynomial regression of varve age on pollen variables, arboreal influx.

Yücel M, Moore WS, Butler IB, Boyce A, Luther III GW (2012) Recent sedimentation in the Black Sea: New insights from radionuclide distributions and sulfur isotopes. *Deep Sea Research Part I* **66**, 103-113. http://dx.doi.org/10.1016/j.dsr.2012.04.007; mass accumulation rate (MAR) in abyssal Black Sea increasing MARs for the past century, marine sediment, turbidites, cesium-137, pyrite sulfur isotopic ratios.

Zahnle KJ, Walker JCG (1987) Climatic oscillations during the Precambrian era. *Climatic Change* **10** (3), 269-284. http://dx.doi.org/10.1007/BF00143906; varve cyclicity with a period of ~11–12 cycles preserved in 680 million year old Elatina formation, South Australia, all but one of the many periods present can be interpreted as resulting from the sunspot cycle and the lunar nodal tide, critique of Williams and Sonett (1985).

Zahrer J, Dreibrodt S, Brauer A (2013) Evidence of the North Atlantic Oscillation in varve composition and diatom assemblages from recent, annually laminated sediments of Lake Belau, northern Germany. *Journal of Paleolimnology* **50** (2), 231-244. http://dx.doi.org/10.1007/s10933-013-9717-7; 1945-2002 varved lake sediment record, Schleswig–Holstein, compared with instrumental meteorological and limnological data, number of contiguous ice days and state of the winter North Atlantic Oscillation NAO are strong predictors for micro-facies development and diatom assemblage composition, solar and nutrient input influences visible in the diatom assemblage.

Zaragosi S, Bourillet JF, Eynaud F, Toucanne S, Denhard B, Van Toer A, Lanfumey V (2006) The impact of the last European deglaciation on the deep-sea turbidite systems of the Celtic-Armorican margin (Bay of Biscay). *Geo-Marine Letters* **26** (6), 317-329. http://dx.doi.org/10.1007/s00367-006-0048-9; glaciomarine clastic varves on Whittard, Shamrock and Guilcher turbidite levees, seasonal pulses of turbid water triggered by deglacial melting of the British-Irish Ice Sheet, Bay of Biscay off France, Atlantic. See Toucanne et al. (2009, 2015) for a re-interpretation of material that originated from British Ice-sheet instead of Fennoscandian Ice-Sheet.

Zhai Q, Guo Z, Li Y, Li R (2006) Annually laminated lake sediments and environmental changes in Bashang Plateau, North China. *Palaeogeography, Palaeoclimatology, Palaeoecology* **241** (1), 95-102. http://dx.doi.org/10.1016/j.palaeo.2006.06.011; Angulinuo Lake, scanning electronic microscopy (SEM), vaves with variable color and grain size, cyclic deposition of lacustrine clay and aeolian dust, chemical analysis of coarse grains by SEM-EDAX, grain size analysis of modern aeolian dust, aeolian origin for light coarse layers, image analysis, Holocene, winter monsoon.

Zhang K, Zhao Y, Yu Z, Zhou A (2010) A 2700-year high resolution pollen record of climate change from varved Sugan Lake in the Qaidam Basin, northeastern Tibetan Plateau. *Palaeogeography, Palaeoclimatology, Palaeoecology* **297** (2), 290-298. http://dx.doi.org/10.1016/j.palaeo.2010.08.008; 2700-year high resolution pollen record, varved lake sediment.

Zhang X, Sha J (2012) Sedimentary laminations in the lacustrine Jianshangou Bed of the Yixian Formation at Sihetun, western Liaoning, China. *Cretaceous Research* **36**, 96-105. http://dx.doi.org/

10.1016/j.cretres.2012.02.010; sedimentary laminations of the lacustrine Early Cretaceous Yixian Formation, Sihetun Fossil Museum section, western Liaoning, China, mudstones and shales are composed of siliciclastic and organic-rich laminae, most of the laminations are varves, varve thickness measurements.

Zhao M, Eglinton G, Read G, Schimmelmann A (2000) An alkenone ($U^{k'}_{37}$) quasi-annual sea surface temperature record (A.D. 1440 to 1940) using varved sediments from the Santa Barbara Basin. *Organic Geochemistry* **31**, 903-917. http://dx.doi.org/10.1016/S0146-6380(00)00034-6; California Borderland, Pacific Ocean, marine sediment, alkenones, total organic carbon, El Niño, paleo sea surface temperature, SST, Little Ice Age. *Note: the findings of this study were partially revised by Hendy et al.'s (2012) new chronology. Note that subsequent radiocarbon compound-specific studies proved that a significant fraction of biomarkers derives from older, re-suspended sediments. Mixing of old with new biomarkers influences the biochemical signal in accumulating varves (e.g., Mollenhauer and Eglinton, 2007).*

Zhao M, Schimmelmann A, Eglinton G (1995) Santa Barbara basin sea surface temperature and paleo-El Niño events: A 500-year record with about annual resolution. In: (Grimalt JO, Dorronsoro C, chief eds.), *Organic Geochemistry: Developments and Applications to Energy, Climate, Environment and Human History. Selected papers from the 17th International Meeting on Organic Geochemistry 4th-8th September 1995*, Donostia-San Sebastian, The Basque Country - Spain. A.I.G.O.A., Spain, 859-862. http://worldcat.org/oclc/37808914; California Borderland, Pacific Ocean, marine sediment, alkenones, total organic carbon, El Niño, paleo sea surface temperature, SST, Little Ice Age. *Note: the findings of this study were partially revised by Hendy et al.'s (2012) new chronology. Note that subsequent radiocarbon compound-specific studies proved that a significant fraction of biomarkers derives from older, re-suspended sediments. Mixing of old with new biomarkers influences the biochemical signal in accumulating varves (e.g., Mollenhauer and Eglinton, 2007).*

Zheng Y, van Geen A, Anderson RF, Gardner JV, Dean WE (2000) Intensification of the Northeast Pacific oxygen minimum zone during the Bölling-Alleröd Warm Period. *Paleoceanography* **15** (5), 528-536. http://dx.doi.org/10.1029/1999PA000473; marine laminations, possibly varves, with molybdenum enrichments in open margin sediments, decreased oxygen content of northeast Pacific at 800 m depth during Bölling-Alleröd warm period (15–13 kyr).

Zhou AF, Chen FH, Qiang MR, Yang ML, Zhang JW (2007) The discovery of annually laminated sediments (varves) from shallow Sugan Lake in inland arid China and their paleoclimatic significance. *Science in China Series D: Earth Sciences* **50** (8), 1218-1224. http://dx.doi.org/10.1007/s11430-007-0081-1; northern Qaidam Basin, Tibetan Plateau, varves suggested by modern seasonal surface sediments (summer and autumn light colored monohydrocalcites, winter dark organic lamina), varved lake sediments in upper 5.5 m of Core SG03I, lead-210, arid China, lead-210, pollen.

Ziegler M, Jilbert T, de Lange GJ, Lourens LJ, Reichart GJ (2008) Bromine counts from XRF scanning as an estimate of the marine organic carbon content of sediment cores. *Geochemistry Geophysics Geosystems* **9** (5), Q05009, 6 pp. http://dx.doi.org/10.1029/2007GC001932; X-ray fluorescence, XRF core scanner, sediment chemistry, marine sedimentary total organic carbon (TOC), correlation between biophilic halogen bromine and TOC, fast estimation of down core TOC profiles by XRF scanning of bromine as a proxy for TOC, data from the Arabian Sea and Urania Basin (Eastern Mediterranean brine basin), enhanced input of terrestrial organic matter interferes with measurement, solid phase Br is exclusively associated with marine organic matter.

Zillén L (2003) Setting the Holocene clock using varved lake sediments in Sweden. Lund University, LUNDQUA PhD thesis 50, 37p. http://www.geol.lu.se/personal/laz/Avhandling1.pdf; synthesis of published papers by Zillén.

Zillén L, Snowball I (2009) Complexity of the 8 ka climate event in Sweden recorded by varved lake sediments. *Boreas* **38** (3), 493-503. http://dx.doi.org/10.1111/j.1502-3885.2009.00086.x; mineral magnetic and carbon analyses, continuous varved lake sediment, Sweden, Lake Mötterudstjärnet, comparison with other regional lake records, varve chronology, tephrochronology, palaeomagnetic secular variations, radiocarbon AMS dating of terrestrial macrofossils.

Zillén L, Snowball I, Sandgren P, Stanton T (2003) Occurrence of varved lake sediment sequences in Värmland, west central Sweden: lake characteristics, varve chronology and AMS radiocarbon dating. *Boreas* **32** (4), 612-616. http://dx.doi.org/10.1111/j.1502-3885.2003.tb01239.x; lake sediment, Värmland, Sweden, Fennoscandia, new varved sites at Lake Furskogstjärnet, Lake Mötterudstjärnet, Lake Kälksjön, varve chronologies, radiocarbon dating, tephrochronology.

Zillén LM, Wastegård S, Snowball IF (2002) Calendar year ages of three mid-Holocene tephra layers identified in varved lake sediments in west central Sweden. *Quaternary Science Reviews* **21** (14-15), 1583-1591. http://dx.doi.org/10.1016/S0277-3791(02)00036-7; 3 Icelandic Holocene tephra horizons (Hekla-3, Kebister, Hekla-4) in varved lake sediments in Värmland, Sweden, varve counts, radiocarbon dating of terrestrial plant macrofossils, synchronization of multidisciplinary age scales.

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Zolitschka B (1991) Absolute dating of late-Quaternary lacustrine sediments by high resolution varve chronology. *Hydrobiologia* **214** (1), 59-61. http://dx.doi.org/10.1007/BF00050932; high-precision absolute timescale, Lake Holzmaar, Lake Meerfelder Maar, Eifel, Germany, palynology, paleomagnetism, varve thickness, varve composition, Late Quaternary.

Zolitschka B (1992) Climatic change evidence and lacustrine varves from maar lakes, Germany. *Climate Dynamics* **6** (3-4), 229-232. http://dx.doi.org/10.1007/BF00193535; Lake Holzmaar, Eifel, Germany, thin section, varve thickness, varve composition, climatic changes, glacier fluctuations in the Alps, spectral analysis of 512 varve-thickness measurements, 11-year sun-spot cycle.

Zolitschka B (1992) Human history recorded in the annually laminated sediments of Lake Holzmaar, Eifel Mountains, Germany. In: (Saarnisto M, Kahra A, eds.) *Proceedings of the Workshop at Lammi Biological Station 4-6 June, 1990*. *Geological Survey of Finland, Special Paper* **14**, 17-24. http://arkisto.gtk.fi/sp/sp14/sp_014.pdf; microstratigraphy, lake sediment, Lake Holzmaar, Eifel, Germany, human history back to 10800 BC, four Neolithic periods recognized (Bandkeramik, Rössen, Michelsberg, Schnurkeramik), Urnenfelderzeit, Latène, Roman Empire, Middle Ages, earlier charcoal occurrences may be associated with Mesolithic and Palaeolothic cultures, late Quaternary.

Zolitschka B (1996) High resolution lacustrine sediments and their potential for palaeoclimatic reconstruction. In: (Jones PD, Bradley RS, Jouzel J, eds.) *Climatic Variations and Forcing Mechanisms of the Last 2,000 Years*, NATO ASI Series I **41**, 453-478. http://www.worldcat.org/title/climatic-variations-and-forcing-mechanisms-of-the-last-2000-years/oclc/33971907; general introduction into varves and paleoenvironmental reconstruction, human influence, Lake Holzmaar, Eifel, Germany, varve thickness, solar influence.

Zolitschka B (1996) Image analysis and microscopic investigation of annually laminated lake sediments from Fayetteville Green Lake (NY, USA), Lake C2 (NWT, Canada) and Holzmaar (Germany): a comparison. In: (Kemp AES, ed.) *Palaeoclimatology and Palaeoceanography from Laminated Sediments*. *Geological Society Special Publication* **116**, London, 49-55. http://dx.doi.org/10.1144/GSL.SP.1996.116.01.06; digitization of thin sections, automated varve count, density variation, scanning, light transmission data alone do not allow the counting of varves, composite nature of laminations causes high-frequency noise which is hard to distinguish from thin varves without additional microscopic information, image analysis.

Zolitschka B (1996) Recent sedimentation in a high arctic lake, northern Ellesmere Island, Canada. *Journal of Paleolimnology* **16** (2), 169-186. http://dx.doi.org/10.1007/BF00176934; multiple-core-study on laminated minerogenic sediments from Lake C2, Northern Ellesmere Island, Canadian High Arctic, suggestion of clastic varves, sedimentation rate, lead-210, turbidities.

Zolitschka B (1998) A 14,000 year sediment yield record from western Germany based on annually laminated lake sediments. *Geomorphology* **22** (1), 1-17. http://dx.doi.org/10.1016/S0169-555X(97)00051-2; Lake Holzmaar, Eifel, flux rate of allochthonous minerogenic deposition for 13,840 years, Pleistocene/Holocene transition, human influence, soil erosion, catchment history.

Zolitschka B (1998) Paläoklimatische Bedeutung laminierter Sedimente – Holzmaar (Eifel, Deutschland), Lake C2 (Nordwest-Territorien, Kanada), Lago Grande di Monticchio (Basilikata, Italien). *Relief Boden Paläoklima* **13**, Gebrüder Bornträger, Stuttgart, 176 pp. (in German). http://www.schweizerbart.de/publications/detail/isbn/9783443090135/Paloklimatische_Bedeutung_laminierter_Sedimente; varved lake sediments from 3 regions, Lake C2 from the Canadian Arctic, Lake Holzmaar in Germany, Lago Grande di Monticchio in Italy, paleoclimate reconstructions of the last millennium or Pleistocene/Holocene transition, oxygen isotopes of Weichselian.

Zolitschka B (2002) Late Quaternary sediment yield variations - natural versus human forcing. In: (Baumhauer R, Schütt B, eds.) *Environmental Change and Geomorphology*. *Zeitschrift für Geomorphologie N.F.*, Supplement **128**, 1-15. http://www.schweizerbart.de/publications/detail/isbn/9783443211288/Zeitschr_f_Geomorphologie_Suppl_Bd_128_Environment; geochemical investigations, Lake Holzmaar, Eifel, Germany, 14000 yr-record, Germany, natural versus human forcing.

Zolitschka B (2003) Dating based on freshwater and marine laminated sediments. In: (Mackay A, Battarbee R, Birks J, Oldfield F, eds.) *Global Change in the Holocene*. Edward Arnold Publishers, London, 92-106. http://www.geopolar.uni-bremen.de/files/Zolitschka2003.pdf general definitions and methodologies surrounding varved sediments.

Zolitschka B (2007) Varved lake sediments. In: (Elias SA, ed.) *Encyclopedia of Quaternary Science*. Elsevier, Amsterdam, 3105-3114. http://dx.doi.org/10.1016/B0-44-452747-8/00065-X; definition of lacustrine varve, historic first definition of varves by De Geer (1912) was restricted to rhythmically deposited proglacial clays, a century later the meaning was extended to include all annually laminated sediments deposited on continents and in the ocean, modes of formation of varves, absolute dating, eutrophication.

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Zolitschka B, Blanke L, Kuhn G, Loewe T, Mayr C, Ohlendorf C, Tylmann W (2010) Climatic and human control on lacustrine depositional processes: Evidences based on varved sediments from Lake Łazduny, Masurian Lake District (north-eastern Poland). In: (Ojala AEK, Kosonen E, eds.) *First Workshop of the PAGES Varves Working Group (Palmse, Estonia, April 7-9, 2010), Programme and Abstracts*, Geological Survey of Finland, Espoo, Finland, 129-130. http://pastglobalchanges.org/download/docs/meeting-products/abstracts/2010-VWG-1st-wkshp.pdf; lead-210, radiocarbon, varve chronology since AD 550, sediment accumulation rate, carbon stable isotope ratios, human impact, productivity, Medieval Warm Period, Little Ice Age, eutrophication.

Zolitschka B, Brauer A, Negendank JFW, Stockhausen H, Lang A (2000) Annually dated late Weichselian continental paleoclimate record from the Eifel, Germany. *Geology* **28** (9), 783-786. http://dx.doi.org/10.1130/0091-7613(2000)28<783:ADLWCP>2.0.CO;2; 23 220 yr-long varved lake sediment record from Lake Holzmaar, Germany, Eifel, multiple dating methods, interlake comparison with Lake Meerfelder Maar, Weichselian, inorganic carbon content resulting from intensified eolian activities, agreement with proxy parameters of dust accumulation in Greenland, timing for end of last glacial maximum at Holzmaar agrees with Greenland Ice Sheet Project (GISP2) but suggests dating discrepancies with Greenland Ice Core Project (GRIP) data, dating three Weichselian terminal moraines.

Zolitschka B, Francus P, Ojala AEK, Schimmelmann A (2012) Deciphering climatic and environmental signals from varved sediments by applying process-related studies. *3rd Workshop of the PAGES Varves Working Group*, Manderscheid, Germany, March 20-25, 2012. *PAGES News* **20** (2), 95. http://pastglobalchanges.org/download/docs/newsletter/2012-2/PAGESnews_202-Low_res.pdf; http://pastglobalchanges.org/download/docs/newsletter/2012-2/PAGESnews_2012_295_VarvesWG.pdf; brief report from workshop.

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Zolitschka B, Negendank JFW (1998) A high resolution record of Holocene palaeoenvironmental changes from Lake Holzmaar, Germany. In: (Harrison SP, Frenzel B, Huckriede U, Weiß M, eds.) *Palaeohydrology as Reflected in Lake-Level Changes as Climatic Evidence for Holocene Times*. *Paläoklimaforschung* **25**, *ESF Special Issue* **17**, 37-52. http://www.worldcat.org/title/palaoklimaforschung/oclc/486823780; varve thickness, physical properties, varve-climate link, Younger Dryas, solar activity.

Zolitschka B, Negendank JFW (1999) High-resolution records from European Lakes. *Quaternary Science Reviews* **18** (7), 885-888. http://dx.doi.org/10.1016/S0277-3791(99)00002-5; editorial introduction to a series of seven papers jointly published in special issue of Quaternary Science Reviews on "High Resolution Records from European Lakes" reporting results related to the European Lake Drilling Programme (ELDP) – an ESF research programme to further the recovery and interpretation of lacustrine paleoclimatic and paleoenvironmental archives.

Zolitschka B, Negendank J W, Lottermoser BG (1995) Sedimentological proof and dating of the Early Holocene volcanic eruption of Ulmener Maar (Vulkaneifel, Germany). *Geologische Rundschau* **84** (1), 213-219. http://dx.doi.org/10.1007/BF00192252; tephra in early postglacial organic sediments from five maar lakes (West Eifel Volcanic Field, Germany) apparently derived from nearby volcano at Ulmener Maar, 9560 years BP radiocarbon date of wood associated with eruption, varve chronology provides an age of 10017 years VT (varve time in years before 1950) or 10 895 years corrected VT, high values of natural remnant magnetization intensity, increased values of total trace elements.

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Zolitschka B, Wulf S, Negendank JFW (2000) Circum-Mediterranean lake records as archives of climatic and human history. *Quaternary International* **73-74**, 1-5. http://dx.doi.org/10.1016/S1040-6182(00)00061-6; editorial introducing special issue of Quaternary International, dedicated to "Mediterranean Lacustrine Records" related to the European Lake Drilling Programme (ELDP) — an ESF research programme to further the interpretation of lacustrine palaeoclimatic and palaeoenvironmental archives.

Zykov VV, Rogozin DYu, Kalugin IA, Dar'in AV, Degermendzhi AG (2012) Carotenoids in bottom sediments of Lake Shira as a paleoindicator for reconstruction of lake states in Khakassiya, Russia. *Contemporary Problems of Ecology* **5** (4), 434–442. Originally published in Russian: *Sibirskii Ekologicheskii Zhurnal* 2012 (4), 585–595. http://dx.doi.org/10.1134/S199542551204018X; Siberia, 2300 years of carotenoid biomarker concentrations in varved lake sediment, late Holocene.