

For the late Holocene, differentiating the human impact from low amplitude climatic changes has been difficult, mainly due to the lack of disturbance indicators. To overcome this problem in the Ethiopian Rift Valley, charcoal and grass epidermal fragments have been used to show the effect of domestic grazing after 2000 years BP (not shown).

The Last 60,000 years

Preliminary results of terrestrial records from Yunnan (southwestern China) and deep sea records from the Sulu Sea were presented. Both areas are influenced by monsoon systems, primarily the Indian and East Asian monsoons respectively. The Western Pacific Warm Pool influences the atmospheric and hydrological conditions in the Sulu Sea. In Yunnan, terrestrial indicators from lacustrine deposits, e.g. total organic carbon, pollen content, magnetic susceptibility, and percentage calcium carbonate, show several warm/wet and cool/dry episodes in the interval from 58 to 32 ky BP. These climatic changes are also observed in the record of lake level oscillations. The Sulu Sea high-resolution $\delta^{18}\text{O}$ and Mg/Ca records document apparently large, previously undetected millennial climate “events” during marine isotope stage (MIS) 3. Preliminary interpretation of $\delta^{18}\text{O}$ and Mg/Ca records suggests that these “events” are due in part to sea surface temperature and at least partly the result of changes in sea surface salinity in the Sulu Sea.

The observed terrestrial and marine climatic changes seem to be related in a simple manner with $\delta^{18}\text{O}$ depletion maxima and Mg/Ca maxima in marine records correlating with warm/wet episodes in the continental records. Correlation in this sense can be observed not only during the time of MIS 3, but also in the younger records (e.g., Last Glacial Maximum, Younger Dryas). Improvement of chronological control, especially beyond the range of radiocarbon dating is necessary. Further correlation of marine and terrestrial records could help shed light on the mystery of land-ocean linkages, in this case the link between the Indian and the East Asian monsoons and the Western Pacific Warm Pool.

Conclusions and Recommendations

A discussion session was held to provide recommendations for how PAGES

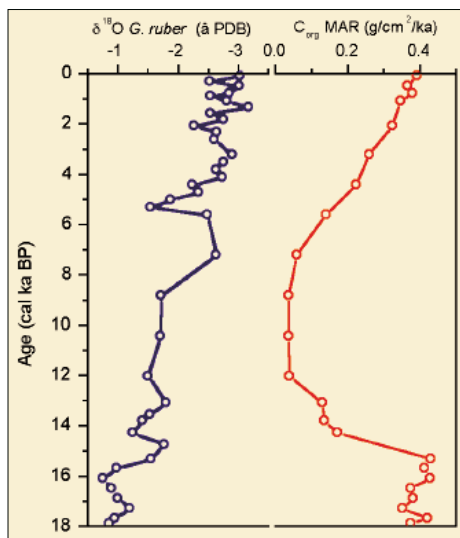


Figure d: Stable isotope record of planktonic foraminifera and mass accumulation rates (MAR) of organic carbon in a sediment core off SE Arabian Sea (M. Thamban et al., in press)

can best continue to support the work of young scientists from developing countries. The following recommendations were agreed upon:

- provide access to recent, updated data sets
- maintain a direct e-mail list
- facilitate access to modern equipment through opportunity announcements and by providing access to second hand equipment
- hold more workshops in developing countries
- facilitate submission of international proposals to national funding agencies
- lobby for increased funding of paleoscience, especially in developing countries

G. BERNAL, CICESE, Mexico; gbernal@cicese.mx

B. DAMNATI, Abdelmalek Essaadi University, Morocco; bdamnati@hotmail.com

S. DANNENMANN, New York State University, USA; steffi@atmos.albany.edu

M.U. MOHAMMED, Addis Ababa University, Ethiopia; mohammed_umer@hotmail.com

A. MULOCK-HOUWER, University of Cape Town, South Africa; houwer@egs.uct.ac.za

M. THAMBAN, National Institute of Oceanography, India; meloth@csnio.ren.nic.in

P.J. THOMAS, Andhra University, India; puthusery@hotmail.com

Y. YIN, University of Geosciences, China; yinyong@sky.cugb.edu.cn

For full references please consult www.pages.unibe.ch/publications/newsletters/ref993.html

PEP III at the XV INQUA Congress

DURBAN, SOUTH AFRICA, 3–11 AUGUST 1999

The PEP III Scientific Steering Group and Secretariat made use of the opportunity to publicize the PEP III programme at the INQUA XV



Congress by convening a thematic poster and a workshop session on past climate variability through Europe and Africa. The 90-minute poster session attracted a mix of scientists and PhD students from paleocommunities across the transect whose excellent presentations reflected the highest quality of research. The session highlighted a broad range of climate reconstructions for both timestreams using a variety of archives and proxies in both individual projects and larger collaborative programmes. Following an introductory delivery by Françoise Gasse, presentations of 6 generic posters outlined details of large multinational programmes from across the transect such as EDDI (European Diatom Database Initiative) and GASPAL (Groundwater as a continental indicator of past climatic conditions). The popularity of this session (28 posters were presented) forced us to divide the remaining hour into a series of parallel sessions according to climatic region. The posters received a lot of attention at the Congress, fulfilling our objective to publicize PEP III to a wider audience as well as to spread awareness of related projects amongst those already involved. It also highlighted existing gaps in paleoclimate studies with respect to both climatic region and to methodologies. In particular, paleoclimate science in Eastern Europe was poorly represented.

The workshop and business meetings focused on ways to alleviate problems encountered by African scientists within PEP III. PAGES funded three Africans to attend INQUA: Chiori O.C. Agwu (University of Nigeria), Cheikh Gaye (formerly of Cheikh Anta Diop University, Senegal, now IAEA, Vienna) and Daniel Olago (University of Nairobi, Kenya). PAGES also contributed

continued on page 18

PEP III at INQUA, continued from page 17

towards the costs of three others who were primarily funded by the African Pollen Database: Bisi Sowunmi (University of Ibadan, Nigeria), Immaculate Ssemmanda (Makerere University, Uganda) and M.U. Mohammed (Addis Ababa University, Ethiopia). Several important points of discussion were raised by this group and their national colleagues during these meetings. A lack of adequate national funds for both field and laboratory work, computing facilities, internet access and availability of key publications in libraries is placing African scientists at a serious disadvantage for full participation in paleoclimatic programmes.

There is a need to build on existing networks to further the integration of African and Euro-African communities. PAGES does not fund research, but we can help by funding Africans to attend workshops and summer schools and there are a number of opportunities for national meetings. Also, PEP III strongly encourages the use of its name and logo to support grant applications to African funding agencies, provided the proposal fits within the PEP III remit and we receive relevant feedback. For the future, PEP III is preparing to meet with African science leaders in Nigeria next year to further discuss these issues. In addition, the next IDEAL meeting sponsored by PAGES, START and IGU, will be held in Malawi, January 10-13, 2000. Several African scientists involved in large lake studies have been invited to attend. A plenary PEP III Conference will be held in Aix-en-Provence, France, 27-31 August, 2001. To register your interest please contact Catherine Stickley. Efforts are being made to find financial support for scientists from developing countries to participate.

FRANÇOISE GASSE

CEREGE, Aix-en-Provence, France
gasse@cerege.fr
www.cerege.fr

RICK BATTARBEE & CATHERINE STICKLEY

ECRC, University College
London, UK
r.battarbee@ucl.ac.uk
c.stickley@ucl.ac.uk
www.geog.ucl.ac.uk/ecrc/pep3/



Climate in Historical Times

The project "Natural climate variations from 10,000 years to the present day" (Klima in historischen Zeiten, KIHZ) is a joint effort to analyze the dynamics of natural climate variability. Geoscientists and climate modelers from five German institutions, all members of the Helmholtz Association of National Research Centers (HGF), intend to create a synergy between proxy data and numerical modeling of the ocean-atmosphere system. KIHZ, led by J.W.F. Negendank, H. von Storch and H. Miller, is funded from 1998-2001 through the Strategy Fund of the HGF.

Data from continental and marine climate archives such as ice cores, tree rings, lake and marine sediments from different locations across both hemispheres are systematically combined with dynamic climate modeling and data assimilation. The different archives, to be organized along a consistent synthetic time scale, will be integrated to form a multi-proxy-parameter network. The project thus comprises three main segments, (i) analysis of geological archives, (ii) evaluation of existing paleoclimate data and time series, and (iii) climate modeling. A comparison of "free" climate simulations with integrations driven by data-assimilation aims at time-spatial, continuous climatic reconstructions of the last 10,000 yrs with a temporal resolution of decades to centuries. Selected time windows and simplified models are chosen to simulate regional differences during historical highs and low temperatures.

Project progress is achieved through annual workshops where all project members present their work in progress, and frequent smaller ad-hoc meetings that focus on specific questions being raised by project participants. At the KIHZ'99 workshop, held from 6-9 September at Jülich, Germany, preliminary results were presented and accompanied by vigorous discussions. Many archives show larger amplitude signals than would be expected to result from reconstructed temperature changes alone. Thus, a major portion of climate variability during the Holocene must be attributed to changes in the hydrological cycle. Also all archive data show



a strong response to regional climate forcing and local effects. These results raise the following questions: What is the regional pattern of climate variations and anomalies? Which regions, variables and time scales can be realistically simulated by GCM's? Furthermore, climate models show that the internal atmospheric and ocean dynamics are able to produce a strong climate variability signal. Which signals can be attributed to external forcing and which ones to internal dynamics? In addition, increased focus is required on the main problems in data assimilation, with the ultimate question being: Can the trajectory of a climate simulation be driven by assimilation of proxy data? The next ad-hoc meetings will focus on, for example, the synthesis of a consistent time scale, upscaling, and climate variability during the past millennium. Data administration and exchange will be achieved through the information system PANGAEA (see PAGES News Vol 7, No. 1).

Currently, 9 groups from German universities, funded by the federal research and education ministry (BMBF), are preparing to join the project. KIHZ thus provides a platform for interdisciplinary and inter-institutional exchange within the national paleoclimate community and is looking forward to exchanging concepts, data and methods with the international paleoclimate community. For more information about the project, including the scientific background, structure and list of members please visit the KIHZ-homepage at www.gfz-potsdam.de/pb3/pb33/kihzhome/kihzh00/.

ANTJE SCHWALB

GeoForschungsZentrum Potsdam, Germany
schwalb@gfz-potsdam.de