



## Contents

1. 2k Phase 2 – white paper	2
2. Starting the data collection	3
3. 2k products	3
4. Upcoming 2k meetings	4
5. Meeting support	4

This circular is sent to all 2k mailing list subscribers listed in the “2kEmailAddress.xlsx” file on the “PAGES 2k” Dropbox folder. Feel free to forward it to interested colleagues. Also let Lucien know if you wish to be removed from the 2k mailing list or if somebody should be added to it.

As of January 2014, Heinz Wanner has rotated off the 2k-coordinators team. Heinz was the initiator of the 2k Network and was instrumental for the success of phase 1 of the project. We thank Heinz for all his enthusiasm and commitment to the 2k project and wish him all the best in his future endeavors!

### Best wishes from the 2k-coordinators

Mike Evans (mnevans@geol.umd.edu)  
Hugues Goosse (hugues.goosse@uclouvain.be)  
Darrell Kaufman (Darrell.Kaufman@nau.edu)  
Chris Turney (c.turney@unsw.edu.au)  
Lucien von Gunten (lucien.vongunten@pages.unibe.ch)  
Thorsten Kiefer (thorsten.kiefer@pages.unibe.ch)

## **1 - 2K PHASE 2 - WHITE PAPER**

Phase 2 of the 2k project is underway and several regional groups are now preparing for their workshops. As a result, it now seems like a good time to reaffirm the project goals and develop recommendations to achieve the project's primary near-term objectives. We have drafted a white paper that summarizes the status of the project and recommended a unified suite of products, reflecting the overarching goals of the 2k project (2000-year-long, multi-proxy, spatial T and P reconstructions; understanding the causes of the observed changes), but also encourage the regional groups to set realistic goals given the relatively short project timeline (next phase to be concluded in 2016). This paper was reviewed by the regional group leaders and others who had 2k working group meetings, and submitted to Eos as a "brief report". The targeted audience includes community-wide participants whom we rely on to contribute data for the syntheses, as well managers of funding programs who should know about this important project. The key recommendations for Phase 2 of the 2k project are outlined below.

### **PAGES 2k Network Recommendations**

#### ***Open Access Proxy Climate Database***

PAGES is committed to providing researchers opportunities to integrate their work into high-impact, multi-authored papers that address big-picture research questions. Data managers and group leaders for each region work with project participants to assure that datasets are published in ways that enable tracking and proper citation. Data-oriented publications and data repositories issue DOIs for datasets, which can be cited as part of future synthesis products.

The PAGES 2k database is envisioned as a flexible and comprehensive information library from which researchers can address a broad variety of scientific questions. An initial coarse screening strategy that is sufficiently inclusive to preclude selection bias has already been developed and PAGES 2k is working with NOAA-Paleoclimatology to standardize data formatting. We recommend the inclusion of all proxy records that meet these broad criteria, not only those that are used for a particular analysis or that meet more strict criteria. Complete geochronological data should be included for time-uncertain proxy records (e.g. sedimentary sequences), and uncertainty estimates are needed for layer-counted archives (e.g. corals and ice cores). See also section 2 of this circular.

#### ***Integration of Multi-resolution Proxy Records***

While fusing annual and lower-resolution time series remains an important goal, we recommend that PAGES 2k regional groups generate independent annually-resolved and lower-resolution reconstructions, because accurately calibrating lower-resolution and time uncertain proxy records to specific climate variables remains an unresolved challenge. Fully independent reconstructions at different resolutions are a compromise, but allow for mutual validation during their overlapping time intervals and spectral ranges, and serve as baseline estimates to test methods for fusing high- and low-resolution paleoclimate data.

#### ***Multivariate Climate Reconstructions***

The next generation of PAGES 2k climate reconstructions will target reconstructions of hydroclimate as well as temperature. In some cases, it may be possible to perform these reconstructions with independent sets of univariate paleo-indicators, thereby avoiding the problem of colinearity of temperature and hydroclimate. In many cases, however, it may be impossible to distinguish the combined temperature and precipitation influences in the proxy records. In these cases we recommend the reconstruction of targets that combine multiple climate influences.

#### ***Improved Spatial Resolution***

To facilitate a timely global synthesis of uniform reconstructions that includes areas where data coverage is relatively sparse, we recommend that the PAGES 2k regional groups focus on reconstruction of climate means over large-scale (sub-regional) areas, while parallel progress is made in developing the next generation of CFR methods. These sub-regional spatial units can be chosen to coincide not only with regions of high observational density, but also with spatial domains defined by coherent climate features. This approach will increase the spatial degrees of freedom relative to the Phase 1 synthesis paper and provide clear targets for observation-simulation comparisons while honoring limitations imposed by current data availability. Error analysis must take into account the analytical and inherent uncertainties of the input data, and propagate them through the entire inference and reconstruction process.

### ***Broader Participation***

The PAGES 2k Network encourages participation by all investigators interested in this community-wide project. PAGES 2k is committed to providing researchers opportunities to integrate their work into high-impact, multi-authored papers that address big-picture research questions. Data managers and group leaders for each region work with project participants to ensure that datasets are published in ways that enable provenance tracking and due citation. Data-oriented publications and international data repositories now issue DOIs for datasets that can be cited as part of future synthesis products.

## **2 – STARTING THE DATA COLLECTION**

The first step of the current Phase 2 of the PAGES 2k project is to complete the data compilations for each region. Both temperature and moisture records are now being collected.

To optimize the data collection effort, we suggest that all regional groups apply the following procedure. This procedure and related files will be kept up-to-date online here: [www.pages.unibe.ch/workinggroups/2k-network/data](http://www.pages.unibe.ch/workinggroups/2k-network/data)

### ***Data managers***

Regional data managers are ready to assist in the construction of the database and metadatabase. Nick McKay (Nicholas.McKay@nau.edu) will be responsible for coordination between groups and assisting with troubleshooting.

#### ***1) Selection criteria***

The 2k Network selection criteria for proxy records:

[www.pages-igbp.org/download/docs/working\\_groups/2k\\_network/pages2k-proxy-selection-criteria-Nov2013.pdf](http://www.pages-igbp.org/download/docs/working_groups/2k_network/pages2k-proxy-selection-criteria-Nov2013.pdf)

#### ***2) Submission***

The records should be submitted using the following Excel files and include as much metadata as possible (one file per record): [www.pages.unibe.ch/download/docs/working\\_groups/2k\\_network/2014-2kphase2-noaa-wdc-paleo-template.xlsx](http://www.pages.unibe.ch/download/docs/working_groups/2k_network/2014-2kphase2-noaa-wdc-paleo-template.xlsx)

Here is an example showing how the metadata should be filled: [www.pages.unibe.ch/download/docs/working\\_groups/2k\\_network/2014-2kphase2-clegg-2010-moose-lake.xlsx](http://www.pages.unibe.ch/download/docs/working_groups/2k_network/2014-2kphase2-clegg-2010-moose-lake.xlsx)

We use the NOAA submission template because it contains all the needed metadata entries, can easily be computer read, and is already in the right format for the eventual submission to the public NOAA data archive. But data can also be submitted in a different format if necessary by contacting a data manager.

All the submitted data will first be collected and used internally by the 2k Network, and publicly published only once a paper is submitted.

## **3 – 2K PRODUCTS**

Many regional and network products have emerged from the 2k project in Phase 1, including four journal special issues and the PAGES2K (2013) synthesis. To view these products and associated events, please visit the respective 2k group's websites via [www.pages.unibe.ch/workinggroups/2k-network](http://www.pages.unibe.ch/workinggroups/2k-network)

Please let us know if you see any gaps or errors, and send us any meeting documents e.g. presentations and posters, which we can post to create a complete online archive of an event or activity.

#### **4 – UPCOMING PAGES 2K MEETINGS**

##### **16-27 May 2014, Beijing, China**

3<sup>rd</sup> Asia2k Workshop

<http://www.pages.unibe.ch/calendar/127-pages/1195-3rd-asia2k-wshp>

##### **23-27 June 2014, Fort Collins, USA**

North America 2k - Phase 2 (Powell Center Working Group)

<http://www.pages.unibe.ch/calendar/127-pages/830-north-america-2k-phase-2>

##### **26-27 June 2014, Melbourne, USA**

ACCSP-Aus2k Working Group workshop

<http://www.pages.unibe.ch/calendar/127-pages/1198-accsp-aus2k-wshop>

##### **9-12 July 2014, Medellín, Colombia**

3<sup>rd</sup> LOTRED-SA symposium with 2-day pre-congress course for young scientist (7-8 July)

[www.eafit.edu.co/cec/congresos/Climatechange2014](http://www.eafit.edu.co/cec/congresos/Climatechange2014)

##### **14-17 September 2014, Soria, Spain**

EuroMed2k workshop - Compilation and evaluation of marine and terrestrial archives for Europe and the last 2k years.

##### **15-19 December 2014, San Francisco, USA**

AGU Fall Meeting Session “Climate of the Common Era”

<https://agu.confex.com/agu/fm14/webprogrampreliminary/Session2040.html>

More upcoming meetings here: <http://www.pages.unibe.ch/calendar>

#### **5 - MEETING SUPPORT**

Regional 2k groups seeking support for meetings can submit a proposal to PAGES (visit MyPAGES>Meeting Support). **The next deadline for proposal submission is 2 June 2014, the one after that will be presumably be in Jan/Feb 2015.**