



www.pastglobalchanges.org/ini/wg/2k-network

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This circular is sent to all 2k mailing lists subscribers. Feel free to forward it to interested colleagues with a link to the [PAGES 2k list](#) where they can sign up to receive future circulars. You can unsubscribe at any time [here](#) or contact Lucien. All previous circulars are available online on the [PAGES 2k Network](#) website.

Best wishes from the 2k coordinators,

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1 – Announcement: Review paper on 2k science

As a key Phase 3 synthesis product for the 2k Network, we are planning a review paper on climatic variations for the last 2000 years. The aim is to provide a valuable resource for the community and, potentially, for the IPCC AR6 report authors.

We are currently developing the scope, outline, and process for this review paper, and soon we will seek participation from the wider 2k community in writing the manuscript. This will be an excellent opportunity to draw together the massive 2k scientific development of recent years.

2 – Status report from the 2k projects

ARAMATE

ARAMATE investigates the mechanisms of ecosystem variability in the North Atlantic region over the past two thousand years. We will link North Atlantic climate proxies – in particular annually resolved proxies (including tree rings and growth increments from marine molluscs) – with historical records of ecosystem change. The idea is that the long (multicentennial or longer) proxy records can be used to reconstruct climatic modes that are thought to influence ecosystem change. This will give insight into baseline rates and magnitudes of ecosystem change in the preindustrial period, and help us to assess the sustainability of ecosystems in the present day.

Because we have a common region of interest, we are likely to carry out much of our work jointly with the PAGES working groups MULTICHRON and AMOC2k, and kicked things off with a joint splinter group meeting at EGU 2018 at which we discussed future plans. The meeting included discussion of data production, possible funding applications to H2020 in 2019, and a joint workshop at the Palaeoceanography meeting, ICP13 in September 2019.

ARAMATE has a core team of 12 members, and is led by Paul Butler of the University of Exeter and Ulf Büntgen of University of Cambridge. A further 11 people have subscribed to this list.

Website: <http://pastglobalchanges.org/ini/wg/2k-network/projects/aramate/intro>

Contact: Paul Butler, p.butler@exeter.ac.uk

Subscribe to mailing list: <https://listserv.unibe.ch/mailman/listinfo/aramate.pages>

CLIM-ARCH-DATE

CLIM-ARCH-DATE uses new absolutely-dated marine proxy archives, with other dating techniques, to determine the relative and absolute timing of cultural and environmental events in the past. We hope this can help to clarify the relative roles of cultural and environmental factors in initiating and prolonging periods of cultural change.

CLIM-ARCH-DATE has attracted great interest, including requests for joint activities with NABO (North Atlantic Biocultural Organisation), and proposals for collaboration with other groups including IHOPE (Integrated History and Future of People on Earth) which is part of the Future Earth network, and PESAS (Paleo-Ecology of Subarctic and Arctic Seas).

One of our organisers (Meghan Burchell, of Memorial University), is applying to the Canadian SSHRC Connection grant programme to get funding for a meeting that would specifically involve CLIM-ARCH-DATE.

CLIM-ARCH-DATE has a team of 15 members (which will include a core group of four or five members). It is led by Paul Butler of the University of Exeter. A further 45 people have subscribed to this list.

Website: <http://www.pastglobalchanges.org/ini/wg/2k-network/projects/clim-arch-date/intro>

Contact: Paul Butler, p.butler@exeter.ac.uk

Subscribe to mailing list: <https://listserv.unibe.ch/mailman/listinfo/clim-arch-date.pages>

CLIVASH2k

The first CLIVASH2k meeting was on Monday 18th June, prior to the POLAR2018 conference. The aim of this meeting was to engage members of the paleoclimate community interested in climate variability in Antarctica and the southern hemisphere over the past 2000 years. We have received funding from PAGES and SCAR to host a 2-day workshop at the British Antarctic Survey, [Cambridge on the 4-5 September 2018](#). The aim of this workshop is to bring together researchers working on a range of paleo archives (ice core, marine records, terrestrial records...) with the climate modeling communities to focus on drivers of climate variability over the past 2000 years. Key areas to address include: (1) identifying dominant modes of variability captured in the paleo-archives, (2) combining high-and low-resolution archives for paleo-reconstructions, (3) increasing the usability of paleoclimate data in climate models.

Website: <http://www.pastglobalchanges.org/ini/wg/2k-network/projects/clivash/intro>

Contact: Liz Thomas, lith@bas.ac.uk

Subscribe to mailing list: <https://listserv.unibe.ch/mailman/listinfo/clivash2k.pages>

CoralHydro2k

New analyses by team members potentially provide 8 seawater ^{18}O reconstructions for Indo-Pacific sites based on paired coral Sr/Ca and ^{18}O . The new reconstructions will extend the sparse network for studying spatiotemporal seawater ^{18}O changes of the tropical ocean back into the Little Ice Age, and for identifying the dynamical drivers on seasonal, interannual, and decadal to multidecadal timescales. The team intends to (1) take available reconstructions compiled by the Hydro2k Consortium (Clim. Past, 2017, <https://www.clim-past.net/13/1851/2017/cp-13-1851-2017>) as starting point for investigations of hydroclimate and temperature (trends, variability, spatial pattern) during the last centuries, (2) add new reconstructions to this dataset, and (3) work closely with the coral group of Iso2k. CoralHydro2k was presented at the Tropical Coral Archives Workshop (Bremen) and the Last Millennium Reanalysis Meeting (Boulder, CO) in 2017. CoralHydro2k held a session at EGU 2018 (Vienna), was promoted in a meeting report (Eos, 2018, <https://doi.org/10.1029/2018EO096071>), and is involved in a "Paleo ENSO Workshop" (financial support by PAGES) to be held in Indonesia (Belitung Island) in August 2019. CoralHydro2k will hold a side meeting on 1 September 2019 in conjunction with the 13th International Conference

on Paleoceanography in Sydney (ICP13). Hali Kilbourne (UMCES) was nominated as data liaison officer.

Website: <http://www.pastglobalchanges.org/ini/wg/2k-network/projects/coral-hydro/intro>

Contact: Thomas Felis, tfelis@marum.de

Subscribe to mailing list: <https://listserv.unibe.ch/mailman/listinfo/coralhydro2k.pages>

Global Mean Surface Temperature Reconstructions

This collaborative group effort uses the new PAGES 2k temperature database to produce reconstructions of global mean surface temperature (GMST) over the past 2000 years. The initiative started in 2016 as a Phase 2 trans-regional project and is in its synthesis. The group has applied a range of state-of-the-art reconstruction techniques to the temperature database to (1) study the effect of the method choice on the results, and (2) identify and quantify features of global mean temperature change that stand up to a wide range of reconstruction choices and approaches. The data analyses are now over and a paper draft is in an advanced state - submission is envisaged in a couple of weeks.

Website: <http://www.pastglobalchanges.org/ini/wg/2k-network/projects/gmst-recon-2k/intro>

Contact: Raphael Neukom, neukom@giub.unibe.ch

Global Temperature Climate Field Reconstruction

Similarly to the GMST project, this group started as Phase 2 trans-regional project and is in its synthesis. The focus is on spatially explicit quantification of global temperature based on the PAGES2k temperature proxy database. Six different climate field reconstruction (CFR) techniques have been applied to allow testing the influence of methods on the reconstruction outcome and quantify key features of spatial temperature patterns over the Common Era. Data analysis is finished and an advanced paper draft is currently being revised by the group. Submission is envisaged this summer.

Website: <http://www.pastglobalchanges.org/ini/wg/2k-network/projects/gtcf-2k/intro>

Contact: Raphael Neukom, neukom@giub.unibe.ch

Iso2k

Iso2k is a community-based effort investigating decadal to centennial-scale variability in hydroclimate over the past 2,000 years. The project was formed in 2015 as a PAGES 2k Phase 2 trans-regional project. The first goal of the project - the creation of a global database of paleo- $\delta^{18}\text{O}$ and δD records based on marine and terrestrial archives - is near completion and manuscripts are being drafted to be submitted later in 2018. Initial results were presented during a talk and a poster at the AGU Fall Meeting in 2017.

Website: <http://www.pastglobalchanges.org/ini/wg/2k-network/projects/iso2k/intro>

Contact: Bronwen Konecky, bkonecky@wustl.edu

Subscribe to mailing list: <http://listserv.unibe.ch/mailman/listinfo/iso2k.pages>

MULTICHRON

The aim of MULTICHRON is to develop the use of bivalve and coralline algae based proxy records as a tool for analysing the amplitude and structure of decadal and multidecadal climate variability in the North Atlantic region. We will identify and investigate key mechanisms of multidecadal variability in the marine climate system of the NE Atlantic Ocean by integrating results from state-of-the-art climate model simulations with high-resolution (annual and better), paleoclimate reconstructions for the last few centuries derived from precisely-dated sclerochronological archives. This initiative builds on a number of ongoing and recently ended sclerochronological projects. PAGES working groups MULTICHRON, ARAMATE and AMOC2k had a joint splinter meeting at the EGU General Assembly 2018, where future plans and joint collaboration were discussed. More recently, leaders of MULTICHRON and ARAMATE discussed the sharing of data within LinkedEarth and Linked Paleo Data (LIPD) framework. We have started a discussion amongst, primarily bivalve sclerochronologist, of the components of a data standard for this field. This work will continue within the MARPA working group. Currently, MULTICHRON has a core team of 15 members, and is led by Carin Andersson Dahl, and Odd Helge Otterå at Uni Research, Bergen. A further 18 people have subscribed to the MULTICHRON mailing list.

Website: <http://www.pastglobalchanges.org/ini/wg/2k-network/projects/multichron/intro>

Contact: Carin Andersson Dahl, carin.andersson@uni.no

Subscribe to mailing list: <https://listserv.unibe.ch/mailman/listinfo/multichron.pages>

PALEOLINK

The group held its first meeting at EGU in April 2018. A first paper produced in the framework of the PALEOLINK project was published in June: "Perspectives of regional paleoclimate modeling", <https://doi.org/10.1111/nyas.13865>.

The project leaders have submitted local and international funding applications for a workshop to be held in February 2019 in Murcia, Spain. A project proposal was also submitted to help co-fund and expand the activities of PALEOLINK.

The University of Murcia and the Institute of Environmental Assessment and Water Research are starting a collaboration through a one-month research exchange stay. This has been organised through PALEOLINK, and illustrates the type of collaborations between model and reconstruction communities we aim at promoting.

We will organise a survey to start building a database with existing Regional Climate Model simulations within the next weeks.

Website: <http://www.pastglobalchanges.org/ini/wg/2k-network/projects/paleolink/intro>

Contact: Juan Jose Gómez-Navarro, jjgomeznava@um.es

Subscribe to mailing list: <https://listserv.unibe.ch/mailman/listinfo/paleolink.pages>

PSR2k

The PSR2K project presented preliminary results at Ocean Science (February) and EGU (April) that suggest small AMOC variations during the Common Era. Discrepancies between the variance of paleoclimate data and that estimated from simulations continues to be a challenge, and has motivated a new look at foraminifera Mg/Ca forward models. A compilation of global core-top data has been compiled and is being used to calibrate, and validate, multivariate relationships. Results from this work are unlikely to resolve discrepant variance concerns, but should yield more realistic representations of the environmental controls on Mg/Ca that will be incorporated into the next PSR iteration.

Website: <http://www.pastglobalchanges.org/ini/wg/2k-network/projects/psr2k/intro>

Contact: Casey Saenger, csaenger@uw.edu

3 – Sign up to the PAGES database!

Are you interested in paleosciences beyond the scope of PAGES2k? Sign up to join PAGES' People Database. That way you can keep up to date with international paleo news and events via our short monthly e-news, receive electronic or hard copies of Past Global Changes Magazine, search for 5,000+ paleoscientists by name, country, institute, program, or scientific expertise, and also explore ways to work with other members of the PAGES community. You can provide as much or as little information as you would like, by filling in the orange tabs near the top of the form. <http://pastglobalchanges.org/people/people-database/join-pages>

4 – Funding for 2k workshops

While the majority of interactions among and between the Phase 3 projects happens online and alongside larger conferences, limited funding is available from PAGES for face-to-face meetings.

Only official 2k projects can apply for funding, which they can do by submitting a proposal following the guidelines: www.pastglobalchanges.org/ini/wg/2k-network/projects/guidelines

The next deadline for PAGES 2k workshop proposals is **24 September 2018**.

5 – New 2k Products

The **Phase 2 synthesis special issue** in *Climate of the past* is now completed. Read the 16 accepted contributions here: https://www.clim-past.net/special_issue841.html

Konecky B, Comas-Bru L, Dassié E, DeLong K & Partin JW (2018) Piecing Together the Big Picture on Water and Climate, *Eos* 99, <https://doi.org/10.1029/2018EO095283>

Ludwig P, Gómez-Navarro JJ, Pinto JG, Raible CC, Wagner S & Zorita E (2018) Perspectives of regional paleoclimate modeling, *Annals of the New York Academy of Sciences* : 1-16, <https://doi.org/10.1111/nyas.13865>

McGregor H (2018) Regional climate goes global, *Nature Geoscience* 11: 18-19, <https://doi.org/10.1038/s41561-017-0046-8>

Neukom R, Schurer AP, Steiger NJ & Hegerl GC (2018) Possible causes of data model discrepancy in the temperature history of the last Millennium, *Scientific Reports* 8: 7572, <https://doi.org/10.1038/s41598-018-25862-2>

Zinke J, Pfeiffer M & Felis T (2018) Reconstructing climate and environment from coral archives, *Eos* 99, <https://doi.org/10.1029/2018EO096071>

To view all 2k products, visit the 2k website: <http://pastglobalchanges.org/ini/wg/2k-network/intro>

Please let us know if you see any gaps or errors, and send us any meeting documents (e.g. presentations and posters) to post on the PAGES 2k webpage to create a complete archive of an event or activity. See an example [here](#).

Don't forget to acknowledge PAGES or the 2k Network (e.g. "the ideas/data in this paper were assembled/developed/discussed by the <name> PAGES 2k working group" or "This is a contribution to the <name> PAGES 2k working group) in publications that draw ideas arising from PAGES-funded meetings. Only articles with an acknowledgement can be considered PAGES products.

6 – Upcoming PAGES 2k events

4-9 September 2018, Cambridge, UK

CLIVASH2k workshop: Climate variability in Antarctica and the Southern Hemisphere over the past 2000 years

www.pastglobalchanges.org/ini/wg/2k-network/meetings/127-pages/1814

Registration deadline: 17 August 2018

10-14 December 2018, Washington DC, USA

AGU Fall Meeting

2k session: PP010: Climate of the Common Era (Session: [49467](#))

2k session: PP026: New perspectives on past climates: progress in proxy system modeling, reconstruction algorithms and uncertainty quantification (Session: [52723](#))

www.pastglobalchanges.org/ini/wg/2k-network/meetings/127-pages/1789

Abstract deadline: 1 August 2018

February 2019, Murcia, Spain

PALEOLINK workshop

More information to come soon.

7-12 April 2019, Vienna, Austria

EGU General Assembly

2k session: Studying the climate of the last two millennia

<https://www.egu2019.eu>

Abstract deadline: 10 January 2019

25-31 July 2019, Dublin, Ireland

20th INQUA Congress

Several 2k sessions proposed.

www.pastglobalchanges.org/ini/wg/2k-network/meetings/127-pages/1778

Abstract deadline: 9 January 2019

25-30 August 2019, Belitung Island, Indonesia

Paleo ENSO workshop

CoralHydro2k involvement.

<http://pastglobalchanges.org/calendar/upcoming/127-pages/1805>

1-9 September 2019, Sydney, Australia

13th International Conference on Paleooceanography

CoralHydro2k side meeting on 1 September

Iso2k side meeting, date TBD

www.pastglobalchanges.org/ini/wg/2k-network/meetings/127-pages/1722

Abstract Deadline: 20 April 2019

More upcoming meetings can be found at: www.pastglobalchanges.org/calendar