



The PAGES 2k Network: Understanding the climate of the Common Era (past 2000 years)

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The past 2000 years (2k) provide critical context for the recent anthropogenic forcing of the Earth's climate. The PAGES 2k Network was created with the aim of using data from natural archives to reconstruct and understand changes in regional and global surface climate over this period. During Phases 1 (2008-2013) and 2 (2014-2016), regional and trans-regional groupings focused on building reconstructions for terrestrial regions and the oceans. The conclusion of Phase 2 coincided with the release of an open and transparent global database of temperature-sensitive proxies spanning the Common Era (PAGES 2k Consortium, 2017). This database is primarily encoded using the Linked Paleo Data format, which ensures that the data is both structured and machine-readable (McKay et al., 2016). Phase 3 aims to use open data to address questions articulated around the themes "Climate Variability, Modes and Mechanisms", "Methods and Uncertainties" and "Proxy and Model Understanding". Research is organised as a network of projects, identified and led by 2k community members. We present the ten current projects that have been established by the PAGES 2k Network community, and summarise their key outputs to date:

ARAMATE investigates the mechanisms of ecosystem variability in the North Atlantic region using annually resolved marine and terrestrial climate archives.

CLIM-ARCH-DATE combines 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.

MULTICHRON investigates multidecadal climatic signals in North Atlantic sclerochronological records.

CLIVASH2k studies large scale modes of climate variability and the mechanisms and drivers of climate change in Antarctica, the sub-Antarctic and the wider Southern Hemisphere.

CORALHYDRO₂k investigates tropical ocean hydroclimate and temperature from coral archives.

ISO₂k is building a water isotope database to study hydroclimate at decadal to centennial-scales, as well as possible secular trends.

PALEOLINK is developing new downscaling strategies that allow the linking of coarse Earth System Model simulations with local climate reconstructions (Ludwig et al., 2018).

PSR2k studies ocean modes by combining marine proxy records and the output from isotope-enabled and traditional GCM simulations.

GMST (Global Mean Surface Temperature Reconstructions) and Global Temperature Climate Field Reconstruction are estimating global temperatures by using the PAGES 2k database and an ensemble of different reconstruction techniques.

References

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