



PAGES Cross-Cutting Themes

- Chronology
- Proxy development, Calibration and Validation
- Modeling
- Data Management

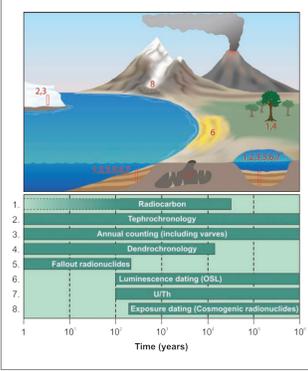


CCT1

CHRONOLOGY

Chronology is crucial to paleoresearch and often constrains the strength of conclusions from paleoenvironmental reconstructions. CCT 1 supports efforts to improve tools for absolute and relative dating, and to enhance the reliability of reference timescales.

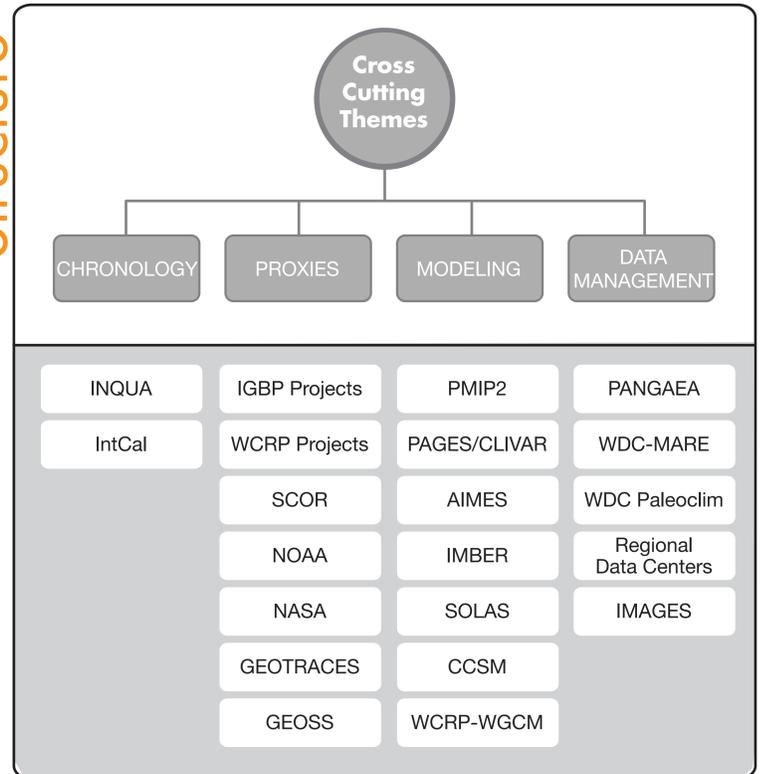
Late Quaternary depositional environments (ice caps, glacial moraine deposits, loess and sand dunes, trees, marine sediments, speleothems, lake sediments) and associated dating techniques. The lower part of the figure shows the effective dating ranges of the different techniques (Bertrand et al., 2008).



Goals:

- To improve absolute dating by
 - Reducing uncertainty of radiometric dating methods.
 - Improving calibration techniques.
 - Fostering development of new dating methods.
 - Promoting laboratory dating intercomparisons.
- To improve chronostratigraphic dating by
 - Synthesizing correlations of regionally occurring tephra on land/in the ocean with the ice core record.
 - Compiling paleomagnetic master curves all over the globe and on centennial/millennial scales.
- To improve event stratigraphy by
 - Establishing regional event stratigraphy master curves.
 - Developing a global network of high-resolution climate records from different regions and archives, with timescales consistent between records and relative to orbital solar insolation.
 - Establishing a high-resolution master curve of past global mean sea level change and spatial synopses of local changes.

Structure



Organization of PAGES four Cross-Cutting Themes (top; grey boxes) showing overlap with external programs (bottom; white boxes).

CCT2

PROXIES

The Proxy Development, Calibration and Validation Theme supports improvement of the precision and accuracy of paleoproxies as a basis for high-quality reconstructions of past global change to complement instrumental data. It includes efforts on proxy interpretation and development, analytical innovation, inter-laboratory comparisons, and calibration refinement, with the aim to reduce uncertainty in proxy-based reconstructions.

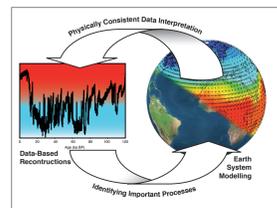
Goals:

- The overarching goal is to support advances in the precision and accuracy of paleo-proxies, specifically to:
 - Improve proxy interpretation and development
 - Refine analysis and calibration
 - Facilitate inter-laboratory comparisons
- To improve the quality of proxy records and resulting reconstructions in order to:
 - Discover new proxies
 - Optimize site selection
 - Improve sample analysis
 - Provide calibration datasets
 - Validate proxy interpretation
 - Quantify and express proxy-data uncertainties

CCT3

MODELING

Numerical models provide a comprehensive, quantitative and physically coherent framework for exploring couplings and feedbacks between the various components of the Earth System. The Modeling Theme supports efforts to improve model components specifically for paleoresearch.



Combined approach of paleo-reconstruction and Earth System modeling to decipher the dynamics of past environmental changes (data from NorthGRIP Project Members, 2004; figure from M. Schulz).

Goals:

- To foster the development of strategies for proxy modeling.
- To devise methods for the objective comparison of proxy data and modeling results such as paleodata assimilation, downscaling techniques, two-way nesting of coupled regional and global climate models.
- To promote the development of comprehensive ESM families.

CCT4

DATA MANAGEMENT

The Data Management Theme provides an umbrella for activities that support availability and access to paleoscience data, as well as creative ways for their scientifically fruitful utilization. It aims to mediate between the scientific community and international data centers, as well as the regional, national and thematic databases.

Goals:

- To support scientific data collection and synthesis activities.
- To ensure the availability of and access to (paleo)science data by:
 - 1) Providing a Paleodata Portal for coordinated data searches
 - 2) Optimizing the flow of data, information and technology between the mix of larger and smaller databases
 - 3) Supporting the archiving of and access to standard datasets (e.g., for modelers)
 - 4) Including model run outputs
 - 5) Serving the observing community (e.g., extending glacier observations back in time)
 - 6) Facilitating paleoscientists access to modern data
- To encourage data submission and expansion of the archive of internet-accessible paleodata by:
 - 1) Increasing the merit of data contribution and recognition of datasets as a form of official publication (e.g., assigning a Digital Object Identifier (DOI))
 - 2) Fostering data submission practices in coordination with funding organizations and publishers