

Putting PAGES together

For the first time since the establishment of its program of Foci and Activities, PAGES has held a meeting of virtually all the scientists responsible for coordinating PAGES research throughout the world. This **Leaders Meeting** took place in Hilterfingen, Switzerland on the north shore of Lake Thun, November 8 and 9, 1997. The main goals of the meeting were to summarize progress in each area of activity, to review the PAGES project as a whole, to promote synergism between the various research teams and to put PAGES on course for making the best possible impact at the Open Science Meeting.

PAGES derives its distinctive identity from prioritizing the study of those aspects of past global change that contribute crucially to our understanding of Earth system function on human timescales and to our capacity to improve the quality of any assessment of future climate changes and their impacts. Even with this strongly focused research agenda, the range of tasks to which PAGES is committed is broad and diverse. The challenge of synthesizing the results is a daunting one. Full documentation of all the PAGES activities will soon be available through publication of the 'PAGES Status Report and Implementation Plan', now complete and due for publication early in 1998.

To some degree, the structure of PAGES includes built-in patterns of coordination. Some of these, like **PEP I**, are already at the stage where preliminary syntheses can be attempted (see Calendar entry on the **Merida Meeting**). Beyond these, the **PAGES Open Science Meeting** to be held in London April 20 - 23, 1998, will provide an over-arching compilation of PAGES science and of its significance for the future (see this page).

In parallel with presentational syntheses at meetings and in the publications that grow out of them, PAGES shares an additional key responsibility: the WDC-A Paleoclimate Data Base which can be accessed via either NGDC in Boulder Colorado (<http://www.ngdc.noaa.gov/paleo/igbp-dis/index.html>) or Météo-France in Toulouse, France (<http://www.cnrn.meteo.fr:8000/igbp>) constitutes a major global resource and a long term PAGES legacy of growing value. Efforts are underway to ensure that the facility meets the data needs of all PAGES research. The **Data Workshop** in Boulder, (February 9 - 12, 1998) is an important stepping stone in this direction.

PAGES OPEN SCIENCE MEETING
Senate House, University of London, April 20 - 23, 1998

DRAFT PROGRAM

MONDAY APRIL 20

8.45 - 9.25 Ray Bradley
9.25 - 10.05 Keith Briffa

Introductory overview
Annual climate variability in the Holocene; interpreting the message of ancient trees.
Corals: grand archives of tropical paleoclimate

10.15 - 10.45 Mike Gagan
Coffee break

11.15 - 11.55 Lonnie Thompson
11.55 - 12.35 Vera Markgraf

Ice core evidence for climate change in the Tropics: Implications for our future
Interhemispheric paleoclimate linkages and forcing in the Americas from decadal to millennial scales

Lunch

14.00 - 14.40 Zhisheng An
14.40 - 15.20 Françoise Gasse
15.20 - 16.00 Jim Knox

The history and variability of East Asian monsoon climate
The temporal evolution of African climates based on lake system records
Magnitudes and spatial patterns of Holocene hydrologic sensitivities to global climate changes

16.00 - 18.00 **Poster session 1**

TUESDAY APRIL 21

8.45 - 9.25 Richard Alley

Abrupt climate changes of the past — and the future? — lessons from the Greenland ice cores.

9.25 - 10.05 Elsa Cortijo

Rapid climatic variability of the Atlantic Ocean and global climate: a focus on the IMAGES program.

10.05 - 10.45 Dominique Raynaud

The past record of greenhouse gases: a view in the context of future changes

Coffee break

11.15 - 11.55 Juerg Beer
11.55 - 12.35 Greg Zielinski

The role of the sun in climate forcing
Determining the range of variability in the volcanism-climate system through multi-disciplinary evaluations of explosive eruptions over the last 100,000 years

Lunch

14.00 - 14.40 Thomas Stocker
14.40 - 15.20 Suki Manabe
15.20 - 16.00 Edouard Bard

Past and future reorganizations in the climate system.
The study of abrupt climate change by a coupled ocean atmosphere model
Comparing temperatures of the glacial ocean quantified with the alkenone method and simulated by numerical models

16.00 - 18.00 **Poster session 2**

BANQUET

WEDNESDAY APRIL 22

8.45 - 9.25 Anne De Vernal

Sea-ice, sea-surface salinity and the halo/thermocline structure in the northern North Atlantic: modern vs. last glacial maximum

9.24 - 10.05 Sylvie Joussaume

The Paleoclimate Modeling Intercomparison Project: what can we learn when using several different climate models run under past climates?

10.05 - 10.45 Sandy Harrison

How well can we simulate past climates? Evaluating the models using global paleoenvironmental data sets

Coffee break

11.15 - 11.55 Jean Jouzel

Water isotopes in precipitation: Data/model comparison for present-day and past climates
TBA

11.55 - 12.35 David Rind

Lunch

14.00 - 14.40 Colin Prentice
14.40 - 15.20 Ed Boyle

Role of the terrestrial biosphere in Earth system dynamics.
Abrupt climate change and the ocean thermohaline circulation: the search for causes and effects
Influences of oceanic rheostats and amplifiers on atmospheric pCO₂ during the late quaternary

15.20 - 16.00 Tom Pedersen

16.00 - 18.00 **Poster session 3**

THURSDAY APRIL 23

8.45 - 9.25 Paul Colinvaux

Response of Amazonian and other tropical plant communities to climatic changes of glacial cycles.

9.25 - 10.05 Rick Battarbee

Lakes, climate change and the role of paleolimnology: past changes, future threats

10.05 - 10.45 Peter DeMenocal

Holocene variations in subtropical Atlantic Climate and SSTs: a perspective on past social implications of abrupt change

Coffee break

11.15 - 11.55 Jonathan Overpeck

Assessing future climate change and its impacts: the role of PAGES data

11.55 - 12.35 Bruno Messerli

TBA

Lunch

14.00 - 16.00 Panel Discussion chaired by Chris Rapley

The Poster presentations will be broken into three one day sessions and arranged thematically. The deadline for poster abstract submission is now past. Late poster abstracts are welcomed until March 15th although inclusion in the published abstracts volume cannot be guaranteed.

Registration:

The deadline for registration is March 15th, with late registrations possible up to the time of the meeting itself with additional fees imposed. Pre-registration forms, housing registration forms, and the latest information on the meeting are available by e-mail from the PAGES office (pages@pages.unibe.ch) or from the PAGES website (<http://www.pages.unibe.ch/>).

UPCOMING WORKSHOPS

Chapman Conference on Mechanisms of Millennial-Scale Global Climate Change

SNOWBIRD, UTAH, USA, JUNE 14-18, 1998
Cliff Lodge Snowbird Conference Center

CONVENERS:

Peter U. Clark, Department of Geosciences, Oregon State University, Corvallis, OR, USA
Robert S. Webb, NOAA-NGDC Paleoclimatology Program, Boulder, CO, USA

PROGRAM COMMITTEE:

Richard B. Alley, Antony J. Broccoli, Wallace S. Broecker, William Curry, Laurent Labeyrie and Alan Mix

Conference Scope:

This conference will provide an international forum for discussion of possible mechanisms that may account for millennial-scale climate change. Unlike orbital-scale climate change, which has a well-defined forcing mechanism in changes in solar insolation, the cause(s) of millennial-scale climate variation remain(s) unknown. The growing global paleoclimate database relevant to this issue is now of significant breadth to provide the critical information required to address these issues. The central themes of this conference will address two key questions that arise from evidence of millennial-scale climate change:

- (1) What is the sensitivity of various components of the Earth's climate system to millennial-scale climate change?
- (2) What are the mechanisms, linkages, and feedbacks which produce millennial-scale climate change?

A subset of these general themes includes:

- Is millennial-scale climate change a characteristic only of ice-age boundary conditions, or do those conditions simply amplify an ongoing process?
- Is millennial-scale climate change globally synchronous?
- If so, is the change symmetrical (of equal sign) across both polar hemispheres?
- Are the linkages made through the

atmosphere, the deep and surface ocean, or both?

- If globally synchronous, does millennial-scale climate change represent an internal climate oscillator originating in the North Atlantic region and transmitted globally through the atmosphere and oceans?
- Does millennial-scale climate change represent a common global forcing mechanism transmitted from the tropics?
- Do changes in the southern hemisphere drive climate change elsewhere?
- What are the feedbacks between various components of the Earth's climate system at these timescales?
- Does all millennial-scale climate change share a common forcing (internal or external), or do several possible forcing mechanisms exist which independently produce millennial-scale climate change?

For further information please contact:

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EUROPEAN ACTIVITIES

NETHERLANDS FOUNDATION FOR SCIENTIFIC RESEARCH (NWO) FUNDS IMPLEMENTATION OF PAGES RESEARCH

Climatic change at low elevation: expedition to the savannas and rain forest of Colombia

Paleoecological and paleoclimatological knowledge of northern South America is mainly based on Andean studies. Current key questions concern especially the lowlands. It is still not clear how much tropical lowlands cooled during the last glacial maximum (LGM) and to what degree changes in precipitation were relevant. The changes were possibly more than first CLIMAP estimates of $<2^{\circ}\text{C}$, perhaps less than 8°C often claimed in palynological studies from the Colombian Andes. Recently, a cooling of Amazonian lowlands by 4°C for the LGM is claimed by both "schools" debating the Amazonian refuge theory. Also for paleodata-model comparisons reliable paleo-vegetation maps are missing.

The Netherlands Foundation for Scientific Research (NWO), Geological, Oceanographic and Atmospheric Research branch (GOA), funded the post-doc project «Paleo-ecology of 0-20 kyr tropical America based on new pollen records and integration of existing palynological data» for 3 years. A field expedition to the savannas of the Llanos Orientales, and the rain forest of Choco was part of the project. We aimed to core the maximum number of lakes

and swamps in order to give expensive expeditions the maximum scientific effect.

During January-February 1996 we visited with two 4-wheel-drive cars and our new Livingstone Corer (modified by Paul Colinvaux) the savannas of NE Colombia, mainly at 150-200 m altitude. Over a transect of 600 km we cored 12 lakes. Core length varied from 10 m close to the Eastern Cordillera to 1 m in the centre of the Llanos. First radiocarbon dates show most cores represent the last 8,000 to 12,000 years, one core reaches 18,000 years showing the savanna in the LGM.

In August 1996 we visited the inter-Andean valleys of the Rio Cauca and Rio Patia in southern Colombia. We cored 4 peat bogs at 1020 m altitude in the humid Cauca Valley. Cores were 2 to 7 m long and first radiocarbon dates show these records reach 8,000 to 13,000 years back in time. In the dry Patia Valley we cored 4 lakes at 760 m altitude. Cores were 3 to 5 m long and first radiocarbon dates show these records reach 6000 to 11,000 years back in time. During January-February 1997 we had our most difficult expedition to the Pacific

rain forest of Choco. Travel, organisation and physical conditions were challenging. We cored a lake in each of the 3 provinces that constitute the "Choco biogeographic area". The 3 cores are 5 to 6 m in length. One core was raised with the Livingstone Corer from 23.5 m water depth. Perhaps these cores will help us to discover why the Choco rain forests have the largest biodiversity in the world.

Expertise at the Hugo de Vries-Laboratory concerns pollen analysis and time control. But we would be delighted if other colleagues are interested to make use of our core material to study additional proxies, such as diatoms, phytoliths, geochemistry, etc. Especially colleagues in the PEP-1 community are invited to contact us to discuss proposals for joint studies.

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