

discuss technical issues of cave monitoring in order to improve understanding of the local processes affecting speleothem growth and the ways that climate is recorded. The workshop was attended by 30 participants from Great Britain, Germany, Austria, Switzerland, Sweden, Spain, France, the Netherlands, Romania, and the United States, ranging from PhD students to university professors. The workshop, sponsored by the Gibraltar Ornithological and Natural History Society, also had local support from members of the Gibraltar Cave Science Unit (GCSU) who have been collaborating in a cave monitoring program with Royal Holloway (London) for the last five years. The workshop was held in the historic Garrison Library located at the foot of the world-famous rock, which also hosts a remarkable series of solution cave systems.

The workshop format was designed to be informal and encourage interactive



Figure 1: Workshop participants inside the rock of Gibraltar (St. Michael's Cave)

discussion. Participants contributed material for leaders to arrange into four themed sessions: Aquifer processes and climate-dripwater relations (led by Ian Fairchild and Dominique Genty); Karst CO₂ systems and ventilation controls (led by Christoph Spötl and James Baldini); Speleothem selection, growth kinetics and sampling strategies (led by Eric James), and Data logging, automation and telemetry (led by David Matthey and Marc Luetscher). Tim Atkinson presented a stimulating introduc-

tory historical perspective on cave monitoring, which was followed by discussion sessions interspersed with field visits to the cave monitoring laboratory in St. Michael's Cave (Fig. 1) and to Ragged Staff Cave, a unique site and the target of a new monitoring campaign by Royal Holloway and the GCSU beginning later this year.

Further information about the workshop and Gibraltar Cave Science can be found at www.gibcaving.net.



Integrated analysis of interglacial climate dynamics - INTERDYNAMIC Status Seminar

Bremen, Germany, 24-25 February 2009

MICHAEL SCHULZ AND ANDRÉ PAUL

MARUM – Center for Marine Environmental Sciences and Faculty of Geosciences, University of Bremen, Germany; mschulz@uni-bremen.de

The Priority Research Program "Integrated analysis of interglacial climate dynamics" (INTERDYNAMIC), funded by the German Research Foundation (DFG), aims at a better understanding of climate dynamics using quantitative paleoclimate analyses with a view to create more reliable scenarios for future climate change.

INTERDYNAMIC is based on an integrated approach in paleoclimate research in which all available paleoclimate archives (terrestrial and marine, as well as ice cores) are combined in order to yield a comprehensive and quantitative analysis of global environmental variations. Through close linkage between paleoclimate reconstructions and results from Earth System models, detailed insights into the dynamics of climate variations are gained.

The investigations in INTERDYNAMIC focus on the interglacials of the late Quaternary (including their onset and end) and address the following key questions:

- What are the amplitudes of natural climate variations on timescales of several years to millennia, and how do patterns of climate variability vary in time and space?
- Do abrupt changes in the large-scale circulation of the Atlantic Ocean occur in interglacials?

- Which biogeochemical feedback mechanisms control the natural limits of atmospheric concentrations of greenhouse gases and aerosols?
- What linkages exist between climate and pre-industrial cultures?

INTERDYNAMIC was established in 2007 and has an expected duration of 6 years. The program consists exclusively of collaborative projects, in which at least two of the research fields (e.g., ice cores, marine archives, terrestrial archives and Earth System modeling) are represented. Cur-

rently 13 projects are active, supporting 22 doctoral and 8 postdoctoral scientists. Information on the individual projects can be found at www.interdynamik.de

During the annual status seminar, initial results from each project were presented and discussed. Climate changes during the Holocene were addressed with respect to the hydrology of the Arctic Ocean, variation of precipitation, and flood dynamics in central Europe and central Asia. High-frequency intra-Holocene changes in the Caribbean and with respect to dust



Figure 1: Participants of the INTERDYNAMIC status seminar in Bremen.

deposition in Antarctica were also presented. Further, the role of solar forcing on climate was discussed, with emphasis on the southern westerlies. Human-climate interactions during the Holocene were discussed for Europe and central Asia, as were large-scale changes in circulation of the Atlantic Ocean for the Holocene and during Terminations I and II. Research into

biogeochemical feedbacks to understand the formation of sapropels in the Mediterranean during the Holocene, were also presented. Additionally, previous interglacials were highlighted with regard to carbon cycle dynamics and orbitally induced trends in sea-surface temperature.

The program was complemented with invited presentations by Julian Sachs

(on Holocene changes in the position of the Pacific rainbelt), Pinxian Wang (on the global monsoon system and its variability over a range of timescales) and Jürg Luterbacher (on perspectives of high-resolution climate reconstructions for the last millennium).

The next status seminar for the program will be held in spring 2010.

Compiling records of Holocene erosion and sediment transport

LUCIFS Workshop – Christchurch, New Zealand, 6-10 December 2008

NICK PRESTON

School of Geography, Environment and Earth Sciences, Victoria University of Wellington, New Zealand; Nick.Preston@vuw.ac.nz

A general meeting of the PAGES Focus 4 (PHAROS) Working Group "LUCIFS" took place in Christchurch, New Zealand, on the campus of Canterbury University. Richard Dikau (University of Bonn, Germany) as Chair, and the local organizer, Nick Preston (Victoria University of Wellington, New Zealand), were pleased to welcome 30 participants from 13 countries. The workshop provided an opportunity for presentation of recent research results and for discussion of a range of topical issues.

The workshop followed a joint meeting of the International Association of Hydrological Sciences and the International Commission on Continental Erosion, with many participants attending both meetings. A field trip led by Nick Preston and Nicola Litchfield (GNS Science, New Zealand) provided a break between the meetings. The field trip traveled to Mount Cook at the heart of New Zealand's Southern Alps and followed a source-to-sink route from the headwaters down through the catchment of the Waitaki River, focusing on the relative impacts on sediment flux of anthropogenic modifications and the glacial/post-glacial transition.

The schedule consisted of 18 oral presentations spread over two days. Many presentations highlighted the importance of human land use as the dominant control on erosion and sedimentation in diverse environments, ranging from central Europe to South America and New Zealand. It is therefore important to be able to reconstruct population densities through time, which the prehistoric archeologists from the University of Cologne have been able to do, suggesting that the pronounced human impacts result from lower population densities than have been conventionally estimated. Nevertheless, over longer temporal scales, human impacts must be considered to intensify natural trends, as

was shown for Middle East desertification. Similarly, research from the Rhine catchment shows that the behavior of the geomorphic system itself offers a further level of complexity. A number of keynote talks provided the basis for subsequent discussion group sessions. On the second and third days of the workshop, the meeting separated into small working groups to discuss the following issues:

- Defining a "LUCIFS method": Identification and elaboration of the systematic context in which LUCIFS researchers characterize fluvial systems (trajectories of change, spatial and temporal dis/connectivity, scale issues, etc.).
- Methodological considerations: Techniques for reconstruction of past landscape behavior using multiple and diverse environmental proxies.
- Development of a LUCIFS database: Structure, metadata, content.

These structured discussions helped to clarify key issues for further research, which were presented to the whole group of participants in a plenary session. White papers will be produced, summarizing the discussions and the issues that they raised, and will initially be published on the LUCIFS website.

A final discussion addressed future LUCIFS research strategies and the group's

role within the overarching PHAROS research focus. While LUCIFS research will continue with its emphasis on understanding the behavior of fluvial sediment redistribution systems, particularly as influenced by humans, members of the group will also contribute to the PHAROS "Soil and Sediment" and "Carbon" Themes (see www.pages-igbp.org/science/focus4.html for more information on these).

Richard Dikau expressed the wish to pass on the leadership of the group, and the gathered membership decided to make a number of changes to the organizational structure. Nick Preston was elected as Chair and Thomas Hoffmann to fill the dual role of Secretary and Co-Chair. They will be joined by a flexible Steering Committee, consisting of Andreas Lang, Gilles Erkens, Jochen Schmidt and Mike Page. Membership of the Committee will change to reflect the nature of the group's activities. In addition, those members who have previously served on the Committee will be invited to continue their input by serving on an Advisory Board.

People interested in LUCIFS activities are invited to visit the LUCIFS website (<http://gidimap.gub.uni-bonn.de:9080/lucifs/>) for further information.



Figure 1: Participants of the LUCIFS general meeting

