

Quaternary Perspectives



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INQUA 2013 Early Career Researcher inter- congress meeting

The International Union for Quaternary Research (INQUA) is committed to developing the next generation of Quaternary Scientists. The INQUA Executive Committee has approved the inaugural INQUA Early Career Researcher (ECR) inter-congress meeting to provide an avenue for MSc/PhD candidates, post-doctoral researchers and research-active academics in the early stage of their careers (within 5 years of obtaining their PhD) to attend valuable workshops designed to assist ECRs with career development, to present their research and gain invaluable mentoring from more senior researchers.

Objectives

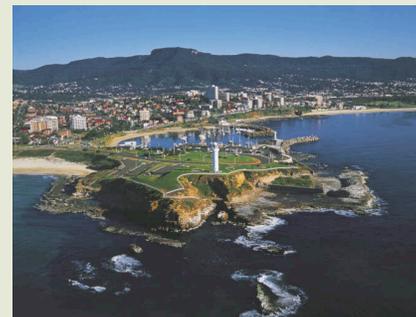
One of the primary objectives is to offer workshops in a variety of research-related issues presented by experienced researchers. Potential workshops include:

- Giving oral and poster presentations.
- How to write for publication.
- Techniques used in Quaternary research (e.g. field methods, geochronology, geochemistry, proxy analyses e.g. macrofossils, forams, diatoms, ostracods, charophytes, etc.).
- Grant writing.

The ECR inter-congress meeting will also provide an excellent opportunity for ECRs to a) give oral and poster presentations in preparation for the 2015 INQUA Congress in Nagoya, Japan, and b) publish work (and be involved in the editorial process) in a special issue of Quaternary International. In addition, senior scientists will be available at the meeting for mentoring and to provide guidance on all aspects of academia, science and career development. Finally, social activities and fieldtrips will be held to encourage networking and foster potential collaboration among ECRs.

Outcomes for ECR delegates:

- To provide experience in organising and running a conference e.g. convening sessions, reviewing abstracts, organising meetings and administration tasks associated with running a conference.
- To develop presentation skills and to prepare for the 2015 INQUA Congress (27 July – 2nd August, 2015) and other international meetings.
- To develop writing and publishing skills.
- To develop grant-writing skills.
- To provide an opportunity to publish in a special issue of Quaternary International (QI) and be involved in the editorial process.
- To be exposed to a variety of methods and techniques used in Quaternary research.
- To increase active involvement in INQUA and its various commissions.
- To develop new research collaborations and networks.



The Australasian Quaternary Association (AQUA) in collaboration with the School of Earth and Environmental Sciences, University of Wollongong, the Australian Nuclear Science and Technology Organisation (ANSTO) and the Australian Academy of Science: National Committee for Quaternary Research, will host the INQUA inaugural Early Career Researcher inter-congress (INQUA ECR inter-congress) meeting in 2013.

WOLLOGONG, AUSTRALIA 2nd– 6th December, 2013

INFO AND REGISTRATION:

<http://www.inqua.org/ecrMeetings.html>

Follow ECR on [twitter](#) and [facebook](#)



INQUA 2013 Early Career Researcher inter-congress meeting for MSc, PhDs and ECRs: 2nd-6th December, 2013, Wollongong, New South Wales, Australia. Details attached.

To register [CLICK HERE](#)

We have established the "INQUA Early Career Researcher page" on [Facebook](#) which will also be posting updates for the meeting.



As part of the INQUA 2013 ECR inter-congress meeting, **Quaternary International (QI) has kindly agreed to run a Special Issue for ECRs.**

Submissions associated with the commission themes and associated INQUA projects are welcome (<http://www.inqua.org/commissions.html>).

If you have any questions or would like to discuss a submission please contact the Guest Editors of this Special Issue

Dr. Craig R. Sloss (c.sloss@qut.edu.au)

Dr. Lynda Petherick (lynda.petherick@qut.edu.au)

The INQUA ECR meeting has a **limited number of travel awards** available for those giving an oral presentation and intending to publish in the QI Special Issue. For international attendees this amounts to (AU \$1000) and for Australasian attendees this amounts to AU \$500). Unfortunately INQUA will not be able to fund all applicants. Please use the application form attached and return to c.sloss@qut.edu.au.

Closing date for applications: September 11, 2013. Recipients will be informed of the outcome by the end of September 2013.

For questions relating to the meeting contact the organisation committee representative Sam Marx (smarx@uow.edu.au)



INQUA 2015 Congress Nagoya-Japan

It is time to plan your sessions for the XIX INQUA Congress in Nagoya, Japan in 2015! The call for session proposals will appear on the INQUA Congress website (<http://inqua2015.jp>) in November 2013. The deadline for submission of session proposals will be called in January 2014. Since the number of sessions at the INQUA Congress will be limited due to time and space constraints, we encourage delegates to consider collaborative session proposals within the wider research community. Please note that all session proposals are to be submitted to one of the five INQUA commissions. The scientific program committee will then determine which sessions will be held. It is possible that some special session proposals, that do not fit any of the commissions, may be accepted at the discretion of the Japanese local organisers. Preliminary dates to help plan your attendance at the INQUA Congress 2015 are outlined below.

We look forward to seeing you there!

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Important dates (PRELIMINARY)

November 2013 to January 15, 2014:

Session proposal

July 2014 to December 20, 2014:

Abstract submission for ORAL presentations

July 2014 to February 28, 2015

Abstract submission for POSTER presentations

July 2014 to December 10, 2014

Application for INQUA and LOC support for participation

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Up-to-date information is available at:

<http://inqua2015.jp>

Now please mark your calendars for

27 July -- 2 August, 2015

Yoshiki Saito, President,

Organising Committee of the XIX INQUA Congress.



Coastal and Marine Processes



PALSEA2 - 1301F

Project Leaders: Anders Carlson (University of Wisconsin-Madison, USA), Andrea Dutton (University of Florida, USA), Antony Long (Durham University, UK), Glenn Milne (University of Ottawa, CAN)

[Website](#)

The greatest uncertainty in projecting future sea level rise lies in the responses of the Earth's remaining ice sheets. The observational period of sea level and ice sheet mass balance spans at best the last century, exacerbating present uncertainty in future sea level rise. In contrast, the geologic record provides valuable archives of how ice sheets and sea level have responded to past climate variability, particularly during periods of climate warming. The information contained in the geological record can therefore help assess the relationship between ice sheets, sea level and climate change, and provides a firm basis for predicting the future. This working group continues to bring together observational scientists and ice sheet, climate and sea level modellers in order to better define observational constraints on past sea level rise and improve our understanding of ice sheet responses to rapid climate change.

The overarching goal of PALSEA2 is to better understand ice sheet and sea level processes that led to sea level change during past periods when ice volume was similar to that at present, and hence societally relevant, by addressing the following objectives:

- 1) Document and synthesise data on rates, patterns, and budgets of sea level variability during Quaternary/Pliocene warm periods and assess the ability of numerical and semi-empirical models to simulate these observations.
- 2) Estimate the sea level/ice sheet response time (and governing processes) to past "warm" climates and use this data-driven information to

improve future sea level rise projections; thus bridging the gap between paleo and historical observations and future predictions.

PALSEA2 2013 Meeting: "Estimating rates and sources of sea level change during past warm periods"

21-24 October 2013

Fieldtrip 25 October

INGV Rome Italy

[INFO AND REGISTRATION](#)

MEDFLOOD - 1203P

Project Leaders: A. Rovere (LDEO, Columbia University, USA), S. Furlani (University of Trieste, IT), A. Fontana (University of Padova, IT), J. Benjamin (Wessex Archaeology, UK)

[Website](#)

The Mediterranean sea, with its small tidal ranges and relatively low-energy storms (which favour the preservation of sea level markers along coastlines) has been the theatre of several studies related to fieldmeasures of past sea levels using RSL markers for over four decades. In the Mediterranean, different types of source data have been used to reconstruct RSLs including biological markers, sedimentological, geomorphological and archaeological.

Much greater amounts of published data exists and such literature, still rapidly growing, has led to the obvious consequence of fragmented information. As such, data are only occasionally reviewed with reference to specific location, but not as a whole, since there has never been a concerted effort to compile this into an organic, yet central database which could then be analysed on a truly 'Mediterranean scale'.

The main aim of the MEDFLOOD project, sponsored by INQUA for 2012 and of anticipated duration of four years (2012-2015), is to create a comprehensive, coherent, spatially explicit and updatable database containing Holocene and MIS 5.5 RSL data available in literature for the Mediterranean basin. The database, coupled with considerations on vertical land movements due to tectonics, volcanic and isostatic effects, will create an enhanced platform for evidence-supported projections of future sea level which can in turn be used to supplement coastal-flooding models and maps. The database will be freely accessible and downloadable.

During the first year of project, a kick off meeting was held in Rome, and reunited experts in different regions of the Mediterranean, or in different fields of study concerned with RSL, including GIA modelling, archaeology, geology or geomorphology, sedimentology and GIS mapping.

The result of this project was a first database, built on published data, that is available [here](#)

If you wish to contribute new data or subscribe to the mailing list, please email medflood@gmail.com



A snapshot of the MEDFLOOD database of past sea levels.

MEDFLOOD 2013 Meeting

14-18 October 2013

Athens, with field trips to Aegina and Epidaurus

[INFO AND REGISTRATION](#)

Coastal and Marine Processes

Highlighted publications

- Carlson, A.E., Clark, P.U., 2012, Ice Sheet sources of sea level rise and freshwater discharge during the last deglaciation: *Reviews of Geophysics* 50, doi: 10.1029/2011RG000371.
- Carlson, A.E., Winsor, K., 2012. Northern Hemisphere ice sheet responses to past climate warming. *Nature Geoscience* 5, 607-613.
- Dutton, A., Lambeck, K., 2012. Ice volume and sea level during the Last Interglacial. *Science* 337, 216-219.
- Goto, K., Chagué-Goff, C., Fujino, S., Goff, J., Jaffe, B., Nishimura, Y., Richmond, B., Sugawara, D., Szczuciński, W., Tappin, D.R., Witter, R., Yulianto, E., 2011. New insights into tsunami risk from the 2011 Tohoku-oki event. *Marine Geology* 290, 46-50.
- Falcini, F., Khan, N.S., Macelloni, L., Horton, B.P., Lutken, C.B., McKee, L., Santoleri, R., Colella, S., Li, C., Volpe, G., D'Emidio, M., Salusti, A., Jerolmack, D.J., 2012. Linking the historic 2011 Mississippi River flood to coastal wetland sedimentation. *Nature Geoscience* 5, 803-807.
- Gasson, E., Siddall, M., Lunt, D.J., Rackham, O.J.L., Lear, C.H., Pollard, D., 2012, Exploring uncertainties in the relationship between temperature, ice volume, and sea level over the past 50 million years. *Reviews of Geophysics* 50, doi 10.1029/2011RG000358.
- Gehrels, W.R., Woodworth, P.L., 2013. When did modern rates of sea level rise start? *Global and Planetary Change* 100, 263-277.
- Gregoire, L.J., Payne, A.J., Valdes, P.J., 2012. Deglacial rapid sea level rises caused by ice sheet saddle collapses. *Nature* 487, 219-222.
- Hanebuth, T.J.J., Voris, H.K., Yokoyama, Y., Saito, Y., Okuno, J.I., 2011. Formation and fate of sedimentary depocentres on Southeast Asia's Sunda Shelf over the past sea level cycle and biogeographic implications. *Earth-Science Reviews* 104, 92-110.
- Rovere, A., Raymo, M.E., O'Leary, M.J., Hearty, P.J., 2012. Crowdsourcing in the Quaternary sea level community: insights from the Pliocene. *Quaternary Science Reviews* 56, 164-166.
- Siddall, M., Milne, G.A., 2012, Understanding sea level change is impossible without both insights from paleo studies and working across disciplines. *Earth and Planetary Science Letters* 315-316, 2-3.
- Törnqvist, T.E., Hijma, M.P., 2012. Links between early Holocene ice sheet decay, sea level rise and abrupt climate change. *Nature Geoscience* 5, 601-606.
- Woodroffe, C.D., Murray-Wallace, C.M., 2012. Sea Level rise and coastal change: the past as a guide to the future. *Quaternary Science Reviews* 54, 4-11.

OTHER NEWS

During 2013 Two Project 1202-related publications will be released:

- Special Issue of Continental Shelf Research entitled "Geoscience and Habitat Mapping for Marine Renewable Energy". J. V. Barrie (Project 1202 co-leader).
- Special Issue of Geomorphology entitled "Continental Shelf Drowned Landscapes". K. M. Cohen and F. J. Lobo (Project 1202 co-leader).

OTHER CONFERENCES

[ABEQUA 2013](#) Natal, Brazil, August 4-8, 2013.

As part of the ABEQUA 2013 conference in Natal, a Project 1202 (Working group Continental Shelves) session + annual meeting will be organised.

[IAS](#), Manchester, United Kingdom, Sept. 2-5, 2013.

Thematic project meeting, 1202 - Working group Continental shelves

PALSEA meeting Scotland, Sept. 16-23 2014

Methodologies for paleo-sea level and ice sheet extent. Details to be disclosed.

Arctic Science Conference, Scott Polar Research Institute 17-20 Sep 2013

Paleoclimate



LaACER: Latin-American Abrupt Climate Changes and Environmental Responses - 1209P

Project Leader: D.H. Urrego (Université de Bordeaux 1, FR)

The LaACER initiative is part of the INQUA International Focus Group ACER (Abrupt Climate Changes and Environmental Responses), a project of the Paleoclimate Commission (PALCOMM). ACER aims to understand the timing, frequency and amplitude of abrupt climate variability during the last glacial period, abrupt CO₂ and CH₄ changes recorded in ice cores, and feedback mechanisms involved both at global and regional scales. LaACER focuses on understanding abrupt climate events and their environmental signature in the American tropics and subtropics. Specifically, LaACER and ACER concentrate in the environmental signature of Dansgaard-Oeschger cycles (DO), Heinrich Stadials (HS), the Younger Dryas (YD) and the 8.2k event. A non-scientific objective of LaACER is to foster capacity building among Latin-American scientists.

The first LaACER workshop was hosted by the Universidad de los Andes in Bogotá, Colombia between the 28th of November and 2nd of December 2012. Funding support was provided by PAGES and INQUA, and logistic support by the Universidad de los Andes. The principal aim of this workshop was to bring together researchers from different sub-disciplines to discuss: i) whether there is a signature of DO, HS, YD, and the 8.2k event in vegetation, ocean and precipitation records from the American tropics and subtropics, ii) the environmental responses to this climate variability, and iii) to identify open questions regarding abrupt climate change in the region.

The workshop attracted 22 paleoclimatologists from 9 different nationalities, with 75% of scholars being from Latin-American countries and 50% being early-career scientists. Their expertise covered at least 5 sub-disciplines and a wide range of markers. Twenty-two talks

were delivered and organised in four sessions: modelling, paleoceanography and geochemistry, paleoprecipitation (speleothems and paleolimnology) and paleovegetation (pollen and charcoal). A final program, abstracts and list of participants can be accessed from: <http://www.ephe-paleoclimat.com/acer/LaACER.htm>s

The first LaACER workshop produced three main outcomes. Firstly, the group elected a steering committee for LaACER activities, consisting of Dunia H. Urrego (ECR1), Francisco Cruz (DCR), Cristiano Chiessi (ECR, DCR), Jaime Escobar (ECR, DCR), Henry Hooghiemstra (SS), Mitch Power (ECR), Juliana Marson (PhD, DCR), and Alexander Correa-Metrio (ECR, DCR). This committee is meant to coordinate future LaACER activities. Secondly, the group planned and outlined the publication of a special issue for 2014 on Abrupt Climate Changes in the American tropics and subtropics. Four guest editors agreed to contact journals, find a suitable ground for the special issue, and guide its preparation during 2013 and publication in 2014. A list of 17 potential contributions was prepared and was sub-divided into four sessions: vegetation, atmosphere, ocean and models. Thirdly, four contributions for the PAGES Newsletter were outlined to reach a broader audience, and included (1) The LaACER initiative, an overview of the expression of abrupt climate changes and research strategies; (2) Chronology of North-Atlantic abrupt events in the tropics; (3) Moisture sources in tropical and subtropical America and understanding the InterTropical Convergence Zone; and (4) Internal structure of abrupt climate events in the American tropics and subtropics.

The first LaACER workshop ended with a field excursion to Lake Fuquene, an iconic site for millennial-scale climate variability in tropical America. Henry Hooghiemstra (University van Amsterdam) and Gustavo Sarmiento (Universidad Nacional de Colombia, Sede Bogotá) led the field trip. They explained the geology of the region, the most recent work on Lake Fuquene record, and

some anecdotic memories of large-lake drilling in the tropics.

During 2012, LaACER engaged in other activities that were related to the organisation of the first workshop and the creation of the LaACER community. A website was built for the project (<http://www.ephe-paleoclimat.com/acer/LaACER.htm>) and served to communicate news to LaACER scholars and to the scientific community in general.



Participants of the first LaACER workshop during field excursion to Lake Fuquene (background), near Bogotá, Colombia. Fento (DCR).

Workshop LaACER II
Millennial-scale climate variability over the last glacial period in tropical and subtropical America
International Symposium on Paleoclimatology and Paleoceanography - ABEQUA
Natal, Brazil
4th to 8th August 2013
[INFO AND REGISTRATION](#)

Holocene Global Peatland Carbon Dynamics: Community-Wide Data Synthesis and Modelling Initiatives - 1303

Project Leader: Zicheng Yu (Lehigh University, USA), Dan Charman (University of Exeter, UK), David Beilman (University of Hawaii, USA)

Peatlands store a large belowground carbon pool of ~500 Pg C that has accumulated since the Last Glacial Maximum (LGM). We know that this largest biosphere carbon pool has played a major role in the global carbon cycle dynamics during the last deglaciation and the Holocene. However, we do not know how these carbon-rich ecosystems have responded to past climate change, especially at regional scales. Empirical data and evidence will be essential to document and understand regional carbon sequestration histories and their climate sensitivity, and as a result provide critical information for evaluating and validating global climate-carbon cycle models. The contribution of peatlands to the global carbon cycle, particularly their impact on atmospheric CO₂ and CH₄ concentrations, is critical to understanding global carbon dynamics in the past and future.

This INQUA project builds on the success of the last inter-congress project that focused on data coordination and analysis of northern peatland carbon accumulation over the last millennium. This project will benefit from ongoing coordinated peatland carbon projects funded by the US NSF (lead PI: Yu) and UK NERC (lead PI: Charman). The NSF project is focused on Holocene circum-Arctic peatland data synthesis and peatland sensitivity to past warm climates, while the emphasis of the NERC project is on global peatland carbon and modelling over the last millennium. This project will not only facilitate closer collaboration between US and UK groups but also extend to peatland researchers in other countries and lead to new proposals for funding from various national agencies. The funding support from INQUA will expand the activities and participation of planned workshops and other activities in the next 3 years.

The long-term goals are to build a global network of peatland carbon accumulation records to improve documentation and understanding of peatland carbon dynamics over the Holocene, to build a stronger international network of peatland carbon researchers, and to develop a community-wide accessible database. We will achieve these goals through designing websites, organising workshops, and facilitating joint publications within three coordinated Working Groups focusing on (1) Holocene circum-Arctic peatlands, (2) data-model inter-comparisons, and (3) tropical and southern peatlands. The specific activities and goals for 2013 are to organise two workshops on Holocene peatland carbon data analysis and synthesis, and to prepare one or more papers with the participation of the international peatland carbon research community. We plan to follow this with further

workshops in 2014 and 2015 with foci on data-model comparison and development of tropical and southern peatland carbon databases, respectively.



A Sphagnum magellanicum (Magellan's sphagnum)-dominated peatland in Tierra del Fuego, Patagonia, southern South America (near Ushuaia, Argentina). Photo taken by Zicheng Yu in January 2010.

Holocene circum-Arctic peatland carbon data analysis and synthesis workshop

Location: Lehigh University, Bethlehem, Pennsylvania, USA

Date: 12-16 October 2013

Goal: Holocene circum-Arctic peatland carbon data synthesis design and analysis

Participants and Funding: available from NSF, INQUA and PAGES to support 20 participants by invitation only

Contact: Professor Zicheng Yu (Email: ziy2@lehigh.edu)

Breakout workshop during AGU Fall Meeting 2013 week

Location: San Francisco, California, USA

Date: Sunday, 8 December 2013 (to be confirmed)

Goal: discuss the state of research on circum-Arctic peatland carbon dynamics and plan as a community for future activities

Participants: open to all researchers

Funding: INQUA and NSF funding available for one night accommodation for selected early career researchers, and scientists from less developed countries.

Contact: Professor Zicheng Yu (Email: ziy2@lehigh.edu)

PMIP Ocean Workshop 2013 - Understanding Changes since the Last Glacial Maximum

Project Leader: Andreas Schmittner (Oregon State University, USA)

The Paleoclimate Model Intercomparison Project in its third phase (PMIP3) includes simulations with comprehensive climate models of the Last Glacial Maximum (LGM), the Mid-Holocene, and the last Millennium. PMIP3 results, some of which are part of the Coupled Model Intercomparison Project 5 (CMIP5), are becoming available for analysis now. An important task will be to evaluate the ocean simulations including circulation patterns and strengths. Here we want to facilitate this evaluation by updating existing datasets of surface and deep temperatures, carbon isotopes and other relevant proxies (e.g. Pa/Th, Nd) including revisions of chronology and proxy uncertainties. Another goal of the workshop will be to bring together sea-going paleoceanographers, modellers, and statisticians in an effort to collaboratively improve our understanding of ocean changes since the LGM.

Scientific questions addressed will include

- What were the temperatures, salinities, and ice cover of the ocean since the LGM
- What was the global deep ocean circulation and carbon cycle during the LGM and its variability during the Late Holocene (LH)?

Methodological issues

- What are issues in interpreting proxies (e.g. SST forams vs Mg/Ca, chronologies)
- How can we use models and data together to address the scientific questions posed above?

**PMIP Ocean Workshop 2013
Dec 4-6, 2013 Corvallis, Oregon**

Deadline for registration: Aug 31st, 2013

This workshop is funded by the Marine Geology and Geophysics Program of the National Science Foundation (NSF), the Past Global Changes (PAGES) project of the International Geosphere-Biosphere Program (IGBP), and by the International Union for Quaternary Research (INQUA). Limited funding for travel expenses is available. Particularly early career researchers and scientists from developing countries are encouraged to apply.

To register send abstract via email to [Andreas Schmittner](mailto:Andreas.Schmittner):

Notification of accepted abstracts and travel support applications will be sent by Sept. 8, 2013.

SHAPE: Southern Hemisphere Assessment of PalaeoEnvironments

Project Leaders: Andrew Lorrey (NIWA, NZ)
Steven Phipps (University of New South Wales, AU)

SHAPE is a new INQUA inter-congress project (PALCOMM 1302) focused on reconstruction of Southern Hemisphere (SH) atmospheric and oceanic circulation patterns during the Late Quaternary. It sits under the INQUA International Focus Group CELL-50K (Calibrating Environmental Leads and Lags over the last 50 Ka).

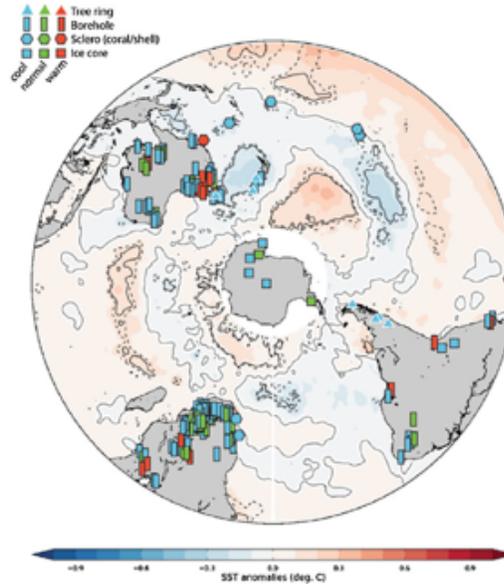
The main objectives of the project are to:

- develop defensible chronologies for SH proxy records
- refine and extend regional climate event stratigraphies
- provide robust interpretations of proxies (qualitative and quantitative)
- generate regional reconstructions of past environmental and climatic change (temporal-geographic syntheses)
- integrate the results into a hemispheric-wide story for key time slices, highlighting the changes and testing hypotheses for their causes
- integrate proxy records with climate model simulations

Both quantitative and qualitative marine and terrestrial climate reconstructions will be compiled to provide transects from the tropics to the mid and high-latitudes. These will allow detailed regional reconstructions of currents, fronts and temperature gradients to highlight the timing of critical changes, and identify synchronous versus asynchronous climate shifts.

Use of the PMIP3 (Palaeoclimate Modelling Intercomparison Project Phase 3) multi-model ensemble will be a focus of SHAPE. Transient simulations for the last 8 ka are also expected to shed light on Holocene climate change and to better understand circulation and climate modes of the past.

New tools designed for palaeoclimate research are also being developed through the project. The Past Interpretation of Climate Tool (PICT), currently under development at the National Institute of Water and Atmospheric Research (NIWA) in New Zealand, will be used to generate reconstructions. Targets for SH circulation patterns produced by PICT, based on regional syntheses, can assist in interpreting hydroclimatic and circulation conditions that are linked to a wide array of climate drivers.

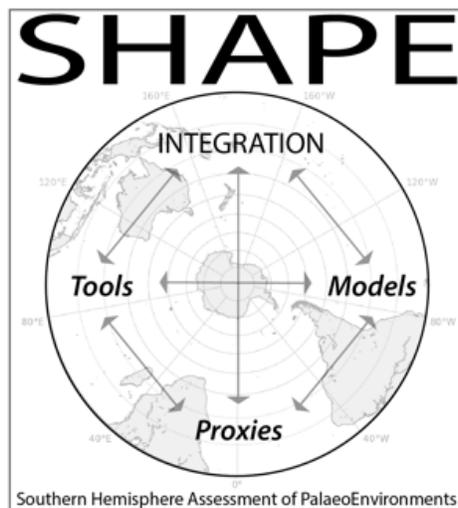


Example of a palaeoclimate reconstruction produced using PICT for summer during the Little Ice Age (1450-1850 CE; From Lorrey et al. 2013. *Climate Dynamics* doi:10.1007/s00382-013-1876-8)

The proxy reconstructions and understanding of local responses to circulation changes over glacial-interglacial timescales generated by SHAPE are expected to improve the understanding of Southern Hemisphere climate change. More details can be found at http://aqua.org.au/?page_id=56.

Workshop:
SHAPE 2013, 16 September 2013, GNS Science, Lower Hutt, New Zealand

Training related to SHAPE:
INQUA Early Career Researcher inter-congress meeting 2-6 December, University of Wollongong, Australia



Stratigraphy and Chronology



INTREPID Tephra – II: - 1307F

Project Leader: D. Lowe (Univ. of Waikato, NZ)

Project description

The INTREPID Tephra project, “Enhancing tephrochronology as a global research tool through improved fingerprinting and correlation techniques and uncertainty modelling”, was an overarching project of the international community of tephrochronologists of the International Focus Group on Tephrochronology and Volcanism (INTAV), which in turn lies under the auspices of INQUA’s Stratigraphy and Chronology Commission (SACCOM). INTREPID’s main aim has been to advance our understanding and efficacy in fingerprinting, correlating, and dating techniques, and to evaluate and quantify uncertainty in tephrochronology, and thus enhance our ability to provide the best possible linking, dating and synchronising tool for a wide range of Quaternary research projects around the world. A second aim has been to re-build the global capability of tephrochronology for future research endeavours through mentoring and encouragement of emerging researchers in the discipline. These aims have been tackled through five linked objectives (noted further below), targeted largely through activities at four international conferences as follows:

1) “Active Tephra 2010”: INTAV-led international field conference held in Kirishima, Japan, in May 2010 (76 participants including 25 students, 12 of whom were supported in part by INTREPID funds) (Figs. 1 & 2) (see Lowe and Holt, 2010; Moriwaki and Lowe, 2010; Nagaoka et al., 2010; Moriwaki et al., 2011; Suzuki et al., 2011).



Fig. 1. Part view of the Tenjindan archaeological site on Kyushu, Japan, visited during the “Active Tephra” conference in Japan, May, 2010. Prominent yellow tephra bed at around waist height is K-Ah tephra (c. 7.3 cal ka). Photo: David Lowe.

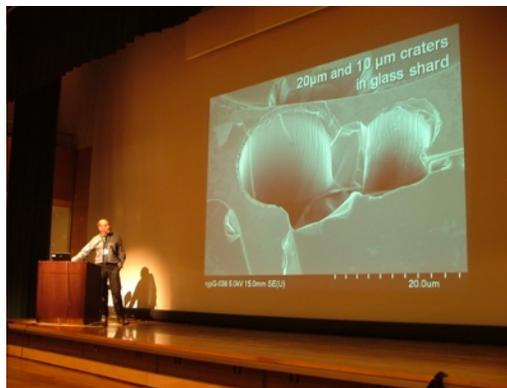


Fig. 2. Nick Pearce (UK) showing a photo of two laser-generated craters in a glass shard analysed for trace elements using LA-ICP-MS. Presented at “Active Tephra” conference in Japan, May, 2010. Photo: David Lowe.

2) “Paleochronology building workshop”: international workshop held in San Miguel de Allende, Mexico, in August 2010 (27 participants including 10 from low-income countries or early career researchers supported in part by INTREPID funds) (for lectures and labs, see <http://chrono.qub.ac.uk/blaauw/Workshop/>) (Fig. 3).



Fig. 3. Participants of the “Paleochronology Building Workshop” held in Mexico in August, 2010. Photo: Amy Myrbo.

3) “Workshop on the Eyjafjallajökull eruptions of 2010 and implications for tephrochronology, volcanology, and Quaternary studies”, a meeting of TIQS: Tephra in Quaternary Science, held in Edinburgh, UK, in May 2011 (36 participants including 11 early career researchers and 8 postgraduates who were supported in part by INTREPID funds) (see Dugmore et al., 2011).

4) A tephra session, “Enhancing tephrochronology and its application in archaeology and palaeoenvironmental-change studies”, was held during the INQUA Congress in Bern in July, 2011 (Figs. 4 & 5).



Fig. 4. Tephra specialists at the symposium on tephrochronology at the INQUA Congress in Bern in July, 2011. From left, Felix Riede (based in Denmark), Siwan Davies (UK), Nick Pearce (UK), David Lowe (New Zealand), Christel van den Bogaard (Germany), and Duane Froese (Canada). Photo: David Lowe.



Fig. 5, John Lowe (UK) presenting results from the RESET project at the symposium on tephrochronology at the INQUA Congress in Bern in July, 2011. Photo: David Lowe.

As well as abstracts, workshop notes, reports, and field guides, a special “INTREPID Tephra” volume of Quaternary International comprising 31 papers was published in December 2011 (Lowe et al., 2011a). At least 30 papers or articles have acknowledged the INTREPID Tephra Project (INQUA-0907) (listed with References). In addition, members of INTAV initiated, developed, and ran an interlaboratory comparison exercise (involving 27 electron microprobes in 24 labs) as part of objective number 2 of INTREPID (see below). The results and recommendations were published in Kuehn et al. (2011). This work helps provide tephrochronologists with an improved, optimised tool for stratigraphic and chronological research.

Objectives of INTREPID Tephra

(1) To evaluate and apply new and emerging technologies to enhance our ability to characterise or ‘fingerprint’ tephras and cryptotephras, especially where major element analyses via electron microprobe (EMP) have been unable to distinguish multiple tephras, or where tephras are compositionally heterogeneous. New techniques that provide trace and rare-earth element data on single glass shards include laser ablation inductively-coupled plasma mass spectrometry (LA-ICPMS), and the ion microprobe (e.g. Pearce et al., 2011; Smith et al., 2011; Westgate et al., 2011).

(2) To develop and document improved guidelines and protocols for enhancing appropriate geochemical data acquisition and data quality in characterising tephras and cryptotephras using both traditional methods such as the electron microprobe and emerging methods including LA-ICPMS, ion microprobe, and other techniques (e.g. Kuehn et al., 2011; Pearce et al., 2011; Hayward, 2012).

(3) To develop suitable regional databases of high-quality tephra geochemical data. Several major research projects (e.g. TEPHRABase, SMART, LaPaDiS projects in Europe) (e.g. Riede and Thastrup, 2013) are currently building large geochemical datasets based on detailed work on

proximal deposits as well as on more distal records such as those of the Greenland ice cores (Riede et al., 2011; Abbott and Davies, 2012). Comprehensive and high-quality geochemical datasets, and other information, are essential for numerical correlation techniques to be effective (objective 4).

(4) To evaluate and develop more objective ways of correlating tephras and cryptotephras from different places using appropriate statistical techniques, and to develop numerical measures of (un)certainly. The recognition and quantification of uncertainty can be used in subsequent age probability modelling and stratigraphic applications (e.g. Lowe, 2011; Lowe et al., in prep).

(5) To develop improved age models for key marker tephras (or cryptotephras) by applying statistical methods such as wiggle matching and Bayesian probability analysis to dated sequences (e.g. Blockley et al., 2012; Hogg et al., 2012; Lowe et al., 2013). Bayesian modelling allows prior information such as stratigraphic position to be included, outliers are able to be formally identified, and all results are expressed as probabilities. In addition, emerging radiometric methods such as U-Th/He need evaluating alongside other radiometric and also incremental dating methods (e.g. Danišik et al., 2012).

INTAV is led currently (2011-2015) by president Prof David Lowe (New Zealand), vice president Prof Takehiko Suzuki (Japan), and secretary Dr Vicki Smith (UK). Previously, from 2007-2011, the INTAV president was Prof Siwan Davies (UK), Assoc Prof Phil Shane (New Zealand) was vice president, and Prof David Lowe was secretary. INTAV uses JSCMail to communicate with members as well as running a website hosted at the University of Oxford (<http://www.arch.ox.ac.uk/intav/INQUA-INTAV.html>).

INTREPID Tephra-II: Enhancing tephrochronology as a global research tool, phase II (INQUA project 1307s)

The INQUA executive, supported by SACCOM, has recently agreed (April 2013) to support a second phase of INTREPID, namely INTREPID Tephra-II. The central goals are effectively the same as those of INTREPID Tephra-I, documented above, and the project is thus set to continue as a collective effort by the global tephra community, allied to other disciplines as needed (e.g. geochemistry, Bayesian and multivariate statistics in age modelling and correlation). That is, we plan to advance tephrochronology as a discipline on a range of fronts simultaneously to help provide improved stratigraphic and chronological tools for applied Quaternary research programmes. It is appreciated that these objectives are wide ranging but the key point is that all objectives contribute to improving the methodologies of tephrochronology and thus, through chronostratigraphy, support and underpin many key multidisciplinary Quaternary projects

such as RESET, INTIMATE, CELL50k, TRACE, LaPaDiS, and SHAPE. We argue that the role of tephras and cryptotephras in such projects is now critically important in correlating and dating sequences in palaeoenvironmental reconstructions, archaeology, volcanology, and other disciplines (e.g. Lowe, 2011; Blockley et al., 2012; Lowe et al., 2012; Riede and Thastrup, 2013). Therefore it is entirely appropriate for our INTAV community to be part of a global research project relating to tephra studies (in the same way that the radiocarbon community continues to develop and enhance the radiocarbon methodology and concomitantly provide a dating tool for numerous Quaternary projects).

South America: connecting with tephras (2014/15)

We plan to hold an international field conference in Bariloche, Argentina, in December 2014 or January 2015. This will be the first tephra-based conference held in South America involving INTAV. The conference has three main aims: (1) to continue new, tephra-focussed research as part of the INTREPID Tephra-II Project (INQUA-1307s); (2) to enhance participation in global tephrochronological research by scientists and students in emerging nations (especially Argentina, Chile), and to encourage and mentor young tephrochronologists; and (3) to apply tephrochronology as a unique stratigraphic linking, synchronising, and dating tool in reconstructing past environments and in archaeological research. The volcanic record will also be examined through tephrostratigraphy. Field trips to local palaeoenvironmental, archaeological, and tephrostratigraphic sites will form an integral part of the meeting (up to 8 days: 3 days intra-conference, 5 days post-conference), and workshops on a range of topical issues associated with tephrochronology and its application in many disciplines will be included.

There has been considerable growth of palaeoenvironmental research in South America in recent years (e.g. Strelin et al., 2011; Moreno et al., 2012) and new work has begun on tephrostratigraphy in Chile and Argentina to help provide a chronostratigraphic framework for emerging palaeoenvironmental research (e.g. Watt et al., 2011; Wastegård et al., 2013).

The conference is being facilitated by Assoc Prof Brent Alloway (Victoria University of Wellington, New Zealand) and Prof Nick Pearce (Aberystwyth University, UK), who are undertaking a research programme in the region, with the local organising committee headed by Dr Gustavo Villarosa (Consejo Nacional de Ciencia y Técnica, Argentina) and colleagues from Chile and Argentina. More details are to be announced soon. A volume of leading papers arising from what promises to be an interesting and enjoyable meeting is to be published in a thematic issue of Quaternary International.

Some financial support for students, early career researchers, and colleagues from low-income countries is likely, and further support is being sought.

Nagoya 2015

A tephra symposium at the full INQUA meeting in Nagoya, Japan, in 2015 will be organised.

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TRANSBAIKAL: Quaternary stratigraphy of the Transbaikalian region as a key point for interregional correlation of terrestrial Northern Eurasia - 1308S

Project Leader:M. Erbajeva (Geological Institute Siberian Branch, RUS)

The international conference entitled “Advances in the Quaternary of Interior Asia”, will be held from 9 to 15 September 2013 (<http://asqua2013.borea.ru>). The main goals of this meeting are to discuss the geology and faunal successions of the critical Transbaikalian sections and correlations. The main topics to be discussed at the symposium include:

1. Stratigraphy and correlations of global abiotic and biotic events and signals with emphasis on mid-Eurasian geological record;
2. Pleistocene and Pliocene chronostratigraphy, interregional correlation;
3. Palaeontology and biochronology of fossil mammals and plants;
4. Pleistocene Environmental Dynamics of Eurasia in context of the global change.

The conference will take place at the city Ulan-Ude and the village in 'Enkhaluk' (tourist inn) on the Baikal Lake shore.

The scientific sessions will be followed by field excursions on the studied key sections displaying the main genetic types of Quaternary continental deposits of the region with abundant mammalian fossils calibrated with palaeomagnetic information.

Title and date

"Advances in the Quaternary of Interior Asia", will be held from 9 to 15 September 2013

The field work mostly on the Transbaikalian key sites Tologoi and Zasukhino are planned to start from June 3, 2013 to prepare them to demonstrate during the excursion of the conference (13.09-14.09.2013).

Co-sponsor of the project is Siberian Branch, Russian Academy of Sciences

Advances in the Quaternary of Interior Asia
INFO AND REGISTRATION
Ulan-Ude, the Baikal region, Russia
9 - 15 September 2013

Terrestrial Processes, Deposits and History



Circumalpine events and correlations in the Late Pleistocene (CECLAP) jointly with INTIMATE (COST Action ES0907) - 1218P

Project Leaders: Giovanni Monegato (National Research Council, IT), Christoph Spötl (Innsbruck University, FIN), Karin Koinig (Innsbruck University, FIN) and Oliver Heiri (University of Bern, GER) (INTIMATE)

Project 1218, sponsored by the INQUA-TERPRO Commission, has been funded for the second year. The 2012 CECLAP workshop focused on the Last Glacial Maximum (LGM) in the Alps and took place in Udine (NE Italy); 30 participants from 6 countries of the Alpine region attended the meeting.

The topic of this first field-based workshop was the correlation of key events in the Late Pleistocene inside and around the Alps, with a focus on the LGM in the Southern Alps. Questions related to the precise timing and structure of the alpine LGM were at the centre of discussions during the meeting. While there is mounting evidence from various regions of the Alps for the onset of the final withdrawal (collapse) of foreland glaciers ca. 21 ka BP, the start of the ice advance at the MIS 3/2 boundary at ca. 30 ka BP is still poorly documented, especially in the Southern Alps. Here, a suitable key site comparable to Baumkirchen in the Inn Valley is yet to be found. The workshop participants agreed to foster international collaborations across the entire Alps, and to explore the possibility of updating existing maps of the LGM ice extent. For this reason a joint workshop was planned for 2013.

This 2013 CECLAP workshop will take place in Obergurgl (Austria) jointly with the second INTIMATE workshop. INTIMATE is a COST Action ES0907 aimed at developing common protocols and methods to reconstruct abrupt and extreme climate change across the full range of European environments (ice, marine and terrestrial) over the period 60 to 8 ka.

The aim of this 2013 workshop is to discuss and compile climate proxy records from the greater

Alpine region for the above mentioned time window and to make them eventually available to the palaeoclimate and modelling community in an easy-to-access database. Records from all archives and from all parts of the Alps and their foreland will be considered. Emphasis will be on well-dated records providing quantifiable proxy information of past climate, ice, hydrology or vegetation dynamics. The ultimate goal is to advance the understanding of the timing and rate of climate change in the Alps between 60 ka and the early Holocene and to catalyse future international collaboration. Funds from INQUA and INTIMATE will be largely used towards travel support for PhD students and early career scientists.

SAM-GeoQuat- South America during the last interglacial-glacial cycle: evidence from integrated geological analyses - 1310F

SAQint3- Interactions between climatic forcing, tectonics and volcanism during the Late Quaternary: a multidisciplinary approach applied on key regions of South America - 1311

International Focus Group (IFG) and Project leader: Daniela Kröhlhing (Universidad Nacional del Litoral, ARG)

[Website](#)

IFG description:

The Group is mainly composed of researchers in Quaternary Geology from low-GDP countries based in South America (SA) that initially participated in the SAM-GeoQuat Skill Enhancement Initiative in the year 2012 (INQUA 1225S). With an open list of active participants, the main activity for the period 2013-2015 focuses on the hosting of workshops of the group at national and international congresses and the organisation of field courses and field meetings in order to reinforce the integration and the planned scientific work in multiple areas of the continent. The research is centered on the interactions and feedback between tectonics, climate and surface processes that actively influenced the

landscape. It is addressed mainly by field discussions along representative transects comprising some of the main morphostructural domains in SA (the Andes and the extra-Andean regions) and the close interaction during international workshops.

Aware of the potential of SA to disentangle the role of multiple factors ruling Quaternary dynamics, this IFG aims to bring together scientists working on research areas that address the Quaternary Geology of large SA environments with the objective of distinguishing features caused by major climatic changes from those created independently of exogenetic processes. Nowadays, the progress in drawing a broad view of the Quaternary Geology often suffers from the lack of coordination and interaction between the groups working on endogenetic processes and those studying surficial processes. Also, the integrated information has a rather "patchy" distribution on the continent. Hence, a main goal is to increase the existing communication between geoscientists and to develop new contacts among local researchers in order to stimulate multidisciplinary research mainly based on field discussions covering both climatic and tectonic-volcanic influences on the analyses of terrestrial processes and their deposits in representative environments of SA and particularly spanning the entire last interglacial-glacial cycle.

Some of the specific objectives of the IFG are:

- (i) To link the scientific geologic communities from SA and dedicated to the research of the Quaternary that do not usually work together.
- (ii) To bring together field activist specialists interested in Quaternary science, with study areas in the continent and to allow researchers with different backgrounds to meet (especially in the field), to interact and exchange data and interpretations and also discuss common approaches for studying geological processes along a variety of tectonic settings, with the aim of achieving integrated results.

(iii) To obtain cross-disciplinary and cross-regional correlation of geological records in different settings of SA with the aim of seeking international forums to discuss results and to review the advances on the studies that link research on Quaternary continental environments and tectonics. The results will contribute information useful to programs of mitigation of societal impacts from natural hazards in SA.

(iv) To organise workshops and field meetings to discuss innovative approaches aiming to enhance our understanding of the interplay between tectonic and climatically controlled processes that have created landforms and sedimentary sequences of representative regions of SA spanning the last interglacial-glacial cycle.

(v) To compile and interlink fluvial, glacial, lacustrine, colluvial and coastal records, because of their widespread distribution on the continent, and their value in registering comparatively rapid response to tectonic and climate influences.

(vi) To advance the palaeoenvironmental assessment of aeolian-palaeosol sequences and pyroclastic/volcaniclastic sequences of key selected regions of SA.

(vii) To produce, as a collective of authors, a series of research results and papers that exceeds the capacity of individuals.

Project description:

During the Quaternary, a series of landforms and sedimentary deposits evolved in South America (SA) in response to major tectonic and surficial processes. In the Andean region, tectonic and volcanic processes generated significant changes in the landscape, in interaction with glacial, physical weathering, fluvial and mass transports processes. For intraplate extra-Andean SA, surface deformation occurred also at unexpected locations, but with relative slow displacement rates. On a regional or sub-continental scale, the state of knowledge on the interactions between climatic forcing, tectonics and volcanism during the Quaternary in SA is segmented because of the scarce integration between geoscientists working in the different sub-disciplines. This can lead to biased palaeoenvironmental reconstructions. Also, regional temporal analyses rely on the recognition of morphostratigraphic units, in some cases without an absolute chronological control.

Field meetings and workshops allow many researchers with different geological backgrounds to meet and discuss common approaches for studying the interactions between Quaternary climatic forcing, tectonics and volcanism along a variety of tectonic settings of the continent. The main objective of the project in 2013 is to enhance integrated

analyses in three main target regions of the continent: the Southern Altiplano-Puna Plateau (Central Andes), the Pampean Ranges and North Pampa Plain, and the Passive Margin of the continental intraplate part (extra-Andean SA) mainly through field discussions and integrated studies. From cross-disciplinary and cross-regional correlations, advances related to those interactions during the Late Quaternary will be produced.

The Central Andes (4°-46°30'S) show a wide variety of Quaternary tectonic styles and settings, mainly controlled by subduction processes through the collision of the Nazca and SA plates. Into the normal subduction segment (14°-27°S) and between their main morphostructural units, the Southern Altiplano-Puna Plateau is important to enhance integrated analyses of the tectonic-volcanic vs. climatic interplay on the Quaternary landscape evolution. The Pampean flat-slab segment (27°-33°S) (the active Andean front and the Pampean Ranges, a broken foreland adjacent to the Andean orogen) concentrates more than 90% of the Quaternary deformation documented in Argentina (Costa et al., 2000; 2006). This latitudinal section is a key area for integrated tectonic and climatic processes studies. Research on Quaternary deformation along the intraplate domain of SA is incomplete and not well documented in some areas. Field discussions along a transect from the Pampean Ranges to the Paraná river valley, crossing the North Pampa, can enhance integrated interpretations on the Late Quaternary processes. In the Brazilian platform, several examples of Quaternary tectonics have been reported. Seismically they have very long recurrence intervals, although recent studies have highlighted their capability of producing surface ruptures as well as liquefaction (Bezerra et al., 1998, Riccomini and Assumpção, 1999, Bezerra and Vita Finzi, 2000). Geological proxies pave the way for subsequent palaeoseismological studies in order to obtain more accurate measurements of slip rates and recurrence periods of co-seismic displacements. Evidence of Quaternary deformation exists in craton-related basins (Amazonas, Pantanal and Paraná basins), which have been areas for the analyses of tectonics and fluvial processes interaction.

This is a collaborative project of mutual interest; with most of the participants being developing-country researchers from SA institutions that have limited resources to keep their involvement in international scientific activities. The planned workshops in Brazil and both field training course/meetings to be organised in Northwestern and Central Argentina and corresponding to the target areas of the project (2013) will provide excellent opportunities to present results to a range of appropriate scientists, and to discuss problems, interpretation and correlation between regions. The possibility to offer grants from this INQUA project to young researchers is highly valuable on this continent, where relatively few offers for these kinds of initiatives usually exist.

Target zones will be extended in other regions of SA in 2014 and 2015 as the activities progress and other participants of the project are willing to get more involved. One of the main confirmed activities for 2014 is the organisation of the International Fieldtrip Meeting in Venezuela (from Venezuelan Andes to the Llanos) –Dr. M. Bezada, main coordinator-. The analysis of the role of the neotectonics and the climatic changes on key representative sections of SA will be discussed to produce, as a collective of authors, a series of research results and papers that exceeds the individual geological disciplines (2014/2015).

4th Workshop of the SAM-GeoQuat Group, XIV Congresso da Associação Brasileira de Estudos do Quaternário (ABEQUA), Natal (NE Brazil), 4-8 August, 2013.

Coordinators: D. Kröhlhling and J. Stevaux

The workshop will be arranged according to the running tasks of the SAM-GeoQuat Group and specific debates will be organised in order to identify future directions of the Group. It will consist of: (i) an introduction to the INQUA project 1311, (ii) a series of presentations by invited lectures from Colombia, Argentina, Uruguay and Brazil, corresponding to some of the formal participants of the project and relating to the state-of-the-art research on terrestrial processes during the Late Quaternary, including the analysis of surficial processes and their records on fluvial-lacustrine systems of South America, with interpretations in terms of tectonic and climatic forcing, (iii) a round-table discussion led by formal participants of the project and participants to the ABEQUA congress, and (iv) a related post-congress field trip (1 day) coordinated by Dr. F.H. Bezerra, an active participant of the Group. The fieldtrip (“O Quaternário da Bacia Potiguar - Tectônica e Variação do Nível do Mar”) will focus on Quaternary tectonic differential coastal uplift, subsidence and seismicity in the most seismically active area of the passive continental margin of Brazil, according to both historical and instrumental seismological data.

Contact: D. Kröhlhling. E-mail: dkrohli@gmail.com, dkrohling@santafeconicet.gov.ar .



Field Training Course and Workshop of the SAM-GeoQuat FG "From the Pampean Ranges to the North Pampa: tectonic and climatic forcing on the Late Quaternary Landscape Evolution". Central Argentina, 14-18 October 2013

Coordinators: D. Kröhling, C. Costa, C. Carignano, E. Piovano, E. Brunetto and F. Córdoba (members of the SAM-GeoQuat Group, Argentina).

The field course is open to young researchers from South American countries (PhD students & Post-Docs). Fieldwork activities will include a 5 day intensive trip along four Argentine provinces (San Luis, Córdoba, Santa Fe and Entre Ríos), from the Eastern Pampean Ranges through the North Pampa Plain to the Paraná Fluvial Belt. The trip will follow a 1,100 km geological transect along a key region of the extra-Andean South America allowing discussion on outcropping sequences and landforms. This field course provides training in field observation from different geological sub-disciplines. The main task of the course will be to stimulate multidisciplinary field discussions between the sub-groups of neotectonics and those sub-groups dedicated to the research of climatically driven processes of the Quaternary, the adaptation of common criteria for the use of all the information on the analyses of the landscape evolution and the application of new laboratory techniques. As the group is travelling, a series of evening talks will take place.

The workshop of the Sam-GeoQuat Group will be held in Miramar city (Córdoba province), on the afternoon of 16 October, 2013. The indoor program will consist of invited plenary lectures (members of the Group), talks by participants (including young researchers) and roundtable discussions.

The field course is competitive and will be limited to a max. of 20 participants. It will only be approved after personal participation in all field activities and all exercises and approval of a final test on the topics discussed in the course. Certificate of attendance for all participants and assessment qualifies for credits towards PhD.

Grants for PhD students and early career scientists from South American countries are available. Grant applicants are requested to submit the application form for the course. Deadline for grant applications: 30 July, 2013. Deadline for registration: 30 August, 2013.

Contact: D. Kröhling.

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International Field Course on Southern Central Andes Volcanism (Southern Puna Plateau, Argentina). Instituto GEONORTE, Universidad Nacional de Salta and Latino American Assoc. of Volcanology (ALVO). November, 2013 (1-2 days workshop and seminar, 8 days field excursion, pending dates).

Coordinators: J. Viramonte and M. Arnosio (members of the SAM-GeoQuat Group, Argentina).

The most important tectonic-related process of landscape development in large parts of the Andes is Quaternary volcanism. This target area belongs to the Central Volcanic Zone of SA. Quaternary-recent volcanoes (in a number that exceeds 600) make a continuous arc through W Bolivia and into E Chile-W Argentina and is represented by a remarkable variety of volcanic features ranging from monogenetic tephra cones of basaltic andesite to wide-spread sheets of rhyolitic ignimbrite. Majestic stratovolcanoes predominate (differentiated into Pleistocene - with evidence of glaciation- and Holocene ones - unmodified volcanic features-), while between them is the highest active volcano in the world (Nevado Ojos del Salado, 6,893 m, Arg.-Chile border). Extensive caldera systems hundreds of square km in extent are present.

This international course is mainly dedicated to PhD students and early career scientists of SA and will be an excellent opportunity to discuss the interaction of processes in this target area of SA. The trip will cover the application of different research techniques in the identification of volcanic structures and associated pyroclastic rocks.

The SAM-GeoQuat Group supports active participation in this course through a partial travel grant stipendium for some young researchers from SA.

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Groundwater and Global Palaeoclimate Signals - 1309F

Project Leaders: Dioni I. Cendón (ANSTO, AU), Jianyao Chen (CSIRO, CHI), Najiba Chkir Ben Jemâa (University of Sfax, TUN), Jason J. Gurdak (San Francisco State University, USA), Sylvi Haldorsen (Norwegian University of Life Sciences, NOR), Roland Purtschert (University of Bern, CH), Ofelia Tujchneider (Universidad Nacional del Litoral, ARG), Rein Vaikmäe (Tallinn University of Technology, Estonia), Martine J van der Ploeg (The Netherlands)

Around 80 scientists from all continents are registered as G@GPS members.

Website

Groundwater is a significant part of the global hydrologic cycle and supplies fresh drinking water to almost half of the world's population supporting streams, lakes, wetlands, ecology, aquatic communities, economic development and growth, agriculture, and other industry worldwide. Understanding the groundwater recharge history of aquifers under past climatic conditions is of crucial importance for the utilisation of large non- or low-recharge aquifers. Aquifers may archive environmental information acquired before the water was recharged into the aquifer. The recharge processes incorporate different signals (recharge temperatures, rainfall sources, dissolved components, etc.). Analysis of stable and radioactive isotopes is commonly used to estimate palaeorecharge temperatures and residence time of groundwater. Other geochemical parameters are used to identify groundwater transport pathways. Groundwater in large aquifers may consist of water recharged over long time intervals and during different climate conditions. This is particularly the case for low-recharge aquifers, where groundwater has long transit times. However, dispersion processes and/or water-rock interaction affect the groundwater during its transport and make it difficult to interpret the palaeoclimate signals. The impact of such processes, which occur along the whole groundwater pathway from its recharge area to its discharge area, is difficult to estimate.

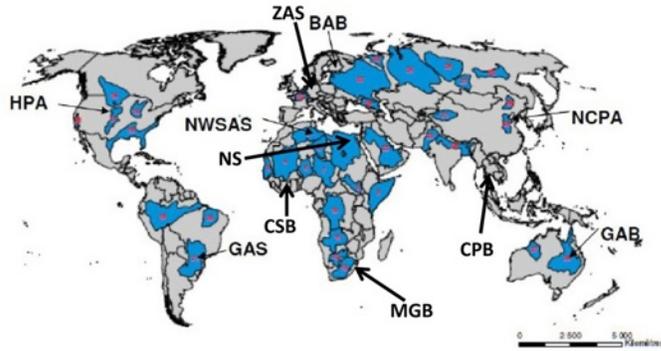
Therefore, palaeoclimate information deduced from groundwater is inherently a low resolution record. Despite this, groundwater may have the potential to provide a regionally integrated proxy of climatic variations at the times of recharge.

The main targets of G@GPS IFP is to:

- a. correlate groundwater palaeoclimate signals on a global and continental scale (Fig. 1)
- b. develop tools for the modelling of palaeoclimate aquifer history
- c. develop methods for the study of groundwater balance of large groundwater basins

The first G@GPS conference takes place in Mozambique October 14-19, 2013. The meeting has a special focus on Africa and includes a workshop and training course. Financial support is provided by INQUA, IGCP, ICSU and UNESCO-IHP. A number of young scientists and senior scientists from low economy countries will be given priority for funding to attend the meeting.

A number of papers by G@GPS Members are published each year (see the G@GPS website).



G@GPS Basins

- | | |
|-------------------------------------|---|
| Baltic Artesian Basin (BAB) | North China Plains Aquifer (NCPA) |
| Chao Phraya Basin (CPB) | Northwest Sahara Aquifer System (NWSAS) |
| Coastal Sandstone Basin Benin (CSB) | Nubian Sandstone (NS) |
| Guarani Aquifer System (GAS) | Sydney basin aquifers (SBAs) |
| High Plains Aquifer (HPA) | Zealand Aquifer System (ZAS) |
| Maputo Groundwater Basin (MGB) | |

Fig. 1. The present G@GPS Basins. New basins can be registered by scientists working with long-term groundwater balance.



Fig. 2. The Maputo Groundwater Basin in Mozambique will be studied during the G@GPS conference in October. The basin consists of an upper phreatic and a lower confined/semi-confined aquifer. Groundwater from the confined/semi-confined aquifer plays an important role for the rural population around the capital Maputo.

Paleosol and soil analysis for assessing climate, time and duration of land surface stability of Quaternary terrestrial systems - 1215F

Project Leaders: Daniela Sauer (Hohenheim University, GER), Rivka Amit (Geological Survey of Israel), Sergey Sedov (UNAM University City, MX)

[Website](#)

The main overall objective of the PASTSOILS Focus Group is to establish a solid base for interpreting paleosols in terms of duration of soil development indicating tectonically and geomorphologically stable periods. Moreover, the importance and spatial pattern of dust production, deposition and incorporation into soils in the Mediterranean region will be evaluated. State-of-the-art methods for dating pedogenic features and new molecular and isotopic methods for palaeo-environmental reconstruction based on paleosols will be reviewed and evaluated. Combining knowledge about duration of pedogenesis derived from soil properties with absolute ages from dating pedogenic features will significantly increase the potential contribution of paleosol studies for developing chronologies of Quaternary continental sedimentary records.

The focus group will provide information to the international scientific community about:

- rates of soil forming processes in different climates
- field and laboratory methods that are useful for assessing the stage of soil development
- methods of dating various pedogenic objects
- soil stratigraphy and interpretation of soil dating
- biological proxies (micro fossils, molecular and isotopic methods for palaeo-environmental reconstruction)
- spatial pattern of dust deposition and incorporation into soils in the Mediterranean region

G@GPS Workshop and Training course, Bobole Mozambique

October 14-19, 2013.

Travel support deadline: July 31, 2013

Registration deadline for all participants: August 31, 2013.

For details, view the Workshop and Training Course Announcement.

For additional information, email sylvi.haldorsen@umb.no.

RAISIN: Rates of soil forming processes obtained from soils and paleosols in well-defined settings - 1216P

Project Leader: Daniela Sauer (Hohenheim University, GER)

[Website](#)

The project RAISIN has four major objectives:

1. Reviewing and compiling existing studies. The first objective is to provide thoroughly reviewed and checked knowledge on directions and rates of soil forming processes in different climates. This knowledge can be used in future paleo-environmental reconstructions in order to obtain the best possible information from paleopedological records in Quaternary sediment-soil successions. This first objective will be achieved through reviewing, discussing and combining the numerous existing data on soil development with time by a group of experts in this field collaborating in RAISIN. In the past decades significant progress has been achieved in evaluating the rates by which soil forming processes proceed, using mostly surface and buried soil chronosequences. These available datasets form the base to utilise paleosols as chronometers for the duration of periods of land surface stability.

2. Defining soil properties indicative of progressive soil development and standardised methods. The second objective is to define soil properties that are most closely linked to soil age and are recommended to be used for estimating time-spans of soil development. Standardised field and laboratory methods that are useful for assessing the stage of soil development will be recommended as well. A standard and minimum set of field and laboratory analyses to be performed on soil chronosequences and paleosols will be defined in order to ensure that new studies will be carried out in a way that permits comparison of the newly produced data with existing data to achieve the best possible overall scientific progress.

3. Identifying knowledge gaps. The third objective is to identify gaps in our present knowledge. Based on the identified gaps, recommendations will be given in terms of special foci (by topic and region) suggested for future research, in order to close these gaps step by step.

4. Establishing a network and stimulating new research.

The fourth objective is to bring experts together with various backgrounds and experience in studying soil development with time in different regions of the world and to stimulate the development of future projects through other international or national funding sources. Up to now, studies on soil formation rates and well-analysed sediment-paleosol sequences in tropical climates (tropical rain forest, savanna and desert

regions) are rare, particularly in developing countries. Involving colleagues from these countries will help to identify existing knowledge gaps and suitable objects for future research and will stimulate the development of future collaborative projects that could significantly improve the world-wide coverage of paleopedological knowledge.

Workshop "Rates of Soil Forming Processes in Mediterranean Climate"
Calabria and Basilicata, Italy
September 24-28, 2013.
[INFO AND REGISTRATION](#)

AEOMED: Loess occurrences and dust additions to current surface soils and paleosols in Mediterranean climate - 1217P

Project Leader: Rivka Amit (Geological Survey of Israel)

Long term objectives

- (i) to assess the spatial pattern of primary and secondary loess deposits across the Mediterranean;
- (ii) to analyze primary loess successions in similar geomorphic units of various Mediterranean environments, in order to evaluate the contribution of proximal and distal dust sources to the formation of Mediterranean soils;
- (iii) to estimate the potential of dust emission and deposition in the various Mediterranean regions, based on the understanding of the mechanisms of dust generation, transport and deposition;
- (iv) to evaluate the rates of loess/dust deposition in the context of palaeo-climate reconstructions;
- (v) to detect sources of recent and palaeo-dust/loess around the Mediterranean.

Workshop "Soils and Dust in the Mediterranean"
Ulm University, Germany
4-5 October 2013
[INFO AND REGISTRATION](#)

PALACTEM: Paleoseismology and active tectonics - 1228F

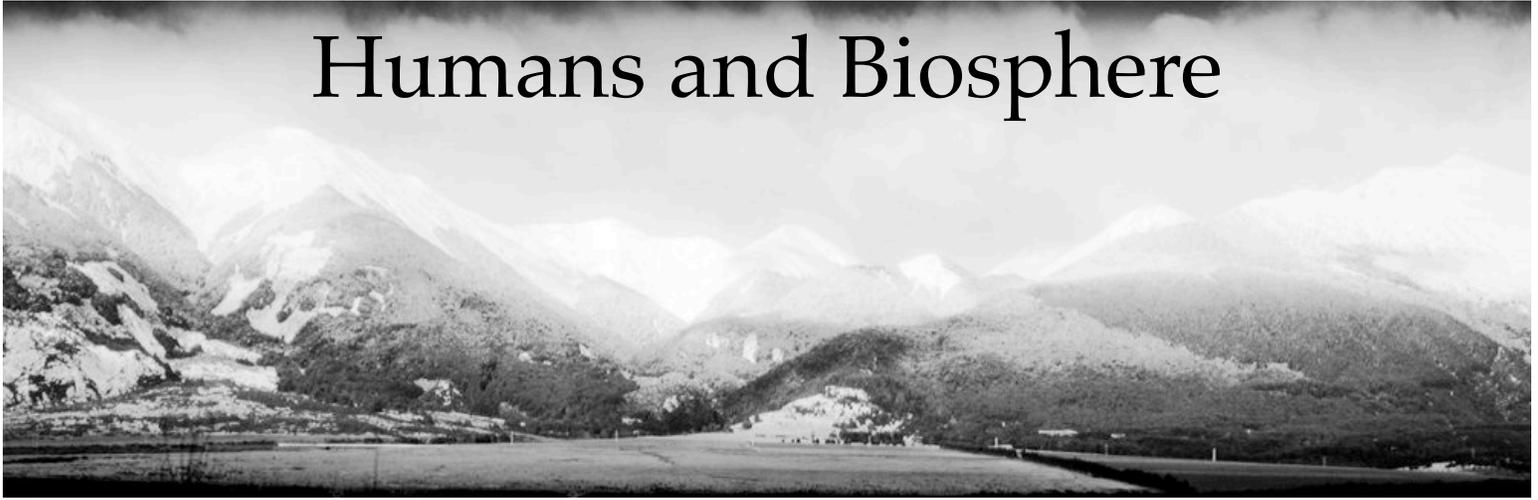
Project Leader: Pablo G. Silva (Salamanca University, ES)

[Website](#)

The main scope of International Focus Group on Paleoseismology and Active Tectonics is the understanding of past earthquakes and future seismic risks using Quaternary geology. The activity of the FA is focused on the study of coseismic environmental effects and their integral expression in the Quaternary record. Recent progresses in the field of paleoseismology have clearly shown that earthquake effects on natural environment are more strictly related to the earthquake magnitude (e.g. Wells & Coppersmith, 1994) than effects on humans and manmade structures. During the last intercongress period (2007-2011) the focus area also incorporated an archaeoseismic view to the study of historic and ancient earthquakes by means the joint-initiative with the IGCP-567 Project on Earthquake Archaeology. At the moment three INQUA-IGCP International workshops have been celebrated in the ancient roman city of Baelo Claudia (2009, Spain), the Corinth Gulf (2011, Greece) and Morelia (2012, Mexico). A fourth International workshop will be held in October 201e in the city of Aachen (Germany) under the direction of Klaus Reicherter and Christoph Grützner (RWTH).

Aachen 2013 – 4th International INQUA Meeting on Paleoseismology, Active Tectonics and Archeoseismology
Aachen, Germany
9-14 October
[INFO AND REGISTRATION](#)

Humans and Biosphere



Context and controls on modern human behaviour in southern Africa: human-environment interactions in the late Pleistocene - 1205

Project Leaders: B.M. Chase (CNRS, Institut des Sciences de l'Evolution de Montpellier, Département Paléoenvironnements et Paléoclimat, FR), A. Mackay (Australian National University, AU)

[Website](#)

Primary aim of project: To bring together young researchers expert in southern African archaeology and palaeoenvironments to synthesise existing data in order to explore questions concerning the controls on behavioural modernity.

Distinctive forms of complex behaviour arose among modern humans (*Homo sapiens*) in Africa in the late Pleistocene. However, the appearance of these behaviours in the archaeological record is sporadic before 30,000 years ago, with periods of greater complexity interspersed among extended periods of apparently greater simplicity. While it seems likely that the capacity to behave in complex ways was established more than 100,000 years ago, we presently do not understand the conditions that caused it to appear (and disappear) when it did. Researchers in the region recognise that one of the missing keys to answering these questions is the region's diffuse and depauperate palaeoenvironmental data set. This hampers not only the reconstruction of the Pleistocene environments, including subsistence potential, but also the identification of possible environmental drivers for behavioural change. It is important to recognise, however, that a wide range of pertinent data have been published since the major last synthesis work that combined archaeological and palaeoenvironmental experience (Deacon and Lancaster, 1988); but that much of the information is only imperfectly integrated into models designed to interpret the latest archaeological finds being made in southern Africa (Marean, 2010).

This project brings together young researchers working on diverse aspects of the archaeology and environment of the late Pleistocene of southern Africa. Using data from archaeological sites and other proxy archives, the project will:

- 1) build a detailed picture of environmental change in southern Africa through the late Pleistocene based on the most recent evidence available,
- 2) map the various forms of archaeological data (e.g. faunal, technological and symbolic streams) onto this environmental baseline, and,
- 3) explore the relationships between various data sets and environmental contexts in order to understand causation and correlation in the appearance of behavioural complexity.

The objective of the group is to create a multi-stranded, sensitive and robust explanation for the contexts and controls on the appearance of modern human behaviour in southern Africa.

Activities:

In order to address these deficiencies in our understanding of the late Pleistocene human history of southern Africa, we are bringing early career researchers working in the palaeoenvironmental and archaeological sciences in southern Africa together to bring a fresh perspective to the region's many long-standing questions. The participants all have a well-developed understanding of the relevant bodies of environmental or archaeological data and/or a strong background in relevant theoretical fields.

The principle platform for the project is a series of annual meetings culminating in a dedicated session at INQUA at Nagoya in 2015. In 2012, two smaller meetings were held: 1) in Cape Town in May 2012 between Project Leaders to establish database contents and access restrictions; and 2) at Gobabeb, Namibia in September 2012, coinciding with the

SASQUA 2012 Conference, where several team members were present and we were able to establish an outline for data integration. In 2013, a full project meeting was held in Cape Town, South Africa (May 2013), outlining current research in specialist archaeological or palaeoenvironmental streams. Subsequent to presentations, the group will meet and collate presented datasets into a meta-database. Using this meta-data, the participants will work to identify key periods both of notable change and stability in the archaeological and palaeoenvironmental records. These key points will serve as a research focus for further data collection, and for interrogating the strength and nature of correlation between different data types.

Researchers who are interested in this project should make contact with the project leaders.



Brian Chase collecting rock hyrax middens adjacent to a Late to Middle Stone Age site along South Africa's Doring River. The middens span the last 55,000 years, and are helping the HAB COMM project "Context and controls on modern human behaviour in southern Africa: human-environment interactions in the late Pleistocene (no. 1205)" to achieve its goal of understanding the role of environmental change in shaping human behaviour in the region.

Equatorial Eastern Africa Quaternary, Climate Change And Variability - 1224S

Project leaders: C. A. Ogola. (Archaeology Section, National Museums of Kenya , Nairobi), R. Kinyanjui (National Museums of Kenya, Nairobi)

This project was funded under the skills enhancement scheme providing support for the 4th Biennial conference of the Eastern African Quaternary Research Association (EAQUA). The association's conference brings together Quaternary scholars from eastern Africa with other international counterparts working in the region to deliberate on themes related to various aspects of Quaternary research in the region. The earlier three conferences established that there were local and regional variations in climate over the last 2000 years and suggested multidisciplinary approaches for better understanding these, in addition to assessing the impacts of global and climate change, vulnerability and adaptations. Concluded and ongoing research conducted in earlier periods of the Quaternary before 100,000 years ago in tropical eastern Africa remain inexhaustively explored, collated and shared. This conference was designed to provide a forum for exchange of research results and ideas among eastern African Quaternary community and to build networks for collaborative research among Quaternary researchers working in the eastern African region, and especially among eastern Africans.

Outcomes:

The 4th EAQUA conference themed Eastern African Quaternary Climate change and variability was hosted by the National Museums of Kenya in Nanyuki Kenya on 23rd to 27th July 2013 and was attended by 55 delegates from 14 countries. The conference was co-sponsored by National Museums of Kenya (NMK), International Union for Quaternary Research (INQUA – HABCOMM Project 1224S), Past Global Changes (PAGES), Embassy of France (Nairobi) and the French Institute for Research and Development (IRD).

The Director General NMK, Dr Idle Omar Farah and the INQUA President Dr Margaret Avery graced the Opening ceremony. Dr Farah stressed the commitment of NMK to capacity building for scientists and communities from areas with science research resource (proxies), and hence was delighted to host the EAQUA conference. He also noted that EAQUA members' research dealt with relevant current global issues such as climate change and adaptive mechanisms and encouraged the participants to make use of the immense palaeo ecological, geological and cultural records in the custody of the NMK for research in palaeoenvironments, palaeoclimates and early human origins and stated that NMK was working at streamlining processes for Quaternary science and research in Kenya. Dr Avery encouraged members

to publish their research and papers presented at the conference to make EAQUA more visible.

The papers presented in sessions 1 and 2 of the conference themed habitat and palaeoenvironmental reconstruction of prehistoric sites (palaeobotany, isotopes, fauna and sedimentology) with highland biodiversity and ecosystems, exploring the proxies for palaeoclimate and palaeoenvironmental reconstructions for prehistoric sites and different depositional environments to understand the environmental contexts of evolution and adaptation and dispersal of humans. Sessions 3 and 4 focused on Late Pleistocene-Holocene climate and rainfall variability, human-environment interactions and global change impacts, adaptations and vulnerability assessments to look at patterns and evidence for global change and its effects of ecosystems, human populations and adaptations. Session 5 on the Quaternary fossil and archaeological record explored various fossil and archaeological assemblages from the early Pleistocene and Holocene contexts to the more historic archaeological assemblages. Session 6 on heritage resource governance and sustainable development showcased selected heritage resources, their vulnerabilities and enhanced management and conservation statuses and use as instruments for improving local community livelihoods and sustainable development.

Time was allocated for general discussions during which plans for two possible collaborative research areas in carnivore ecology (see separate item) and heritage resource development were shared and discussed and interested researchers invited to take part.

An association business meeting was held at the end of the conference where matters affecting the association were discussed and the election of the association's new executive members was conducted. The following are the resolutions made:

The EAQUA secretariat to work on various publicity and outreach programmes to increase membership base including affiliation with similar research associations, reach out to other eastern African countries not yet participating in EAQUA activities (South Sudan, Rwanda, Burundi, Eritrea, Djibouti and Somalia) and mobilization of more researchers and student working in eastern Africa to join the association.

Start a mentoring and capacity building programme designed as a pre-conference activity involving training on research technical and logistical planning, grant applications as well as preparation of conference presentations and publications for future EAQUA Conferences.

Funds will be sourced for an EAQUA research program to include field training of students and young researchers.

The local organizing committee and EAQUA secretariat to coordinate publication of the current conference proceedings in Quaternary International. The process for revised abstracts and manuscript acceptance has started.

Members were urged to participate in the upcoming INQUA early career researchers and Pan African Quaternary research association workshops.

Human technological and behavioral adaptation to the Last Glacial Maximum in Northeast Asia - 1206

Project Leader: M. Izuho (Tokyo Metropolitan University, Japan).

This project focuses on the Human technological and behavioral adaptation to the Last Glacial Maximum in Northeast Asia.

The Last Glacial Maximum (LGM) roughly 20,000-17,000 14C BP was a crucial time in NE Asian Prehistory as foragers were forced to reorganize themselves to cope with extreme ecological deterioration. It is becoming clear that in Siberia foragers adopted microblade technology as insets for organic tools to allow them the flexibility of pursuing solitary game from short-term campsites during and immediately after the LGM. Some researchers assert that these new developments are the result of human population expansion from either Mongolia or Hokkaido into subarctic and arctic regions of Siberia, while other scholars maintain that microblade technology was present in Siberia prior to the LGM. Presently, we have little knowledge about how LGM archaeological sites in Hokkaido relate to these patterns found in other parts of NE Asia.

The purpose of the research is to understand the relationship between environmental changes and human technological organization around the LGM based on Archaeology (geoarchaeological and stone tool data from Paleolithic sites in Hokkaido), and Paleocology. The central question for us to investigate is: How did human technology respond to LGM environmental conditions in Northeast Asia? Field and laboratory work will be aimed at collecting environmental data at archaeological sites and assessing changes in lithic technological organization.

The group held an International Workshop entitled “Geochronology of Upper Paleolithic sites before/ during/ after the LGM in Northeast Asia”, organized by Masami Izuho (Tokyo Metropolitan University, Japan), Yuichi Nakazawa (Hokkaido University), Ian Buvit (Central Washington University, USA) and Karisa Terry (Central Washington University, USA) in 30 November 2012, at Tokyo Metropolitan University, Tokyo. Around 30 researchers from Russia, United States, Belgium, Mongolia and Japan participated in this workshop.

The following papers were presented in 3 Sessions, to review geochronological evidence and human behavioral strategies in Upper Paleolithic sites before/ during/ after the LGM across Northeast Asia:

-Masami Izuho (TMU), Ian Buvit (Central Washington University), and Karisa Terry (CWU): Introduction: Current Research on the LGM Prehistory in Northeast Asia

Session 1: Southwestern Transbaikal (Chair: Yuichi Nakazawa)

-Mikhail V. Konstantinov (Transbaikal State University of Humanity and Pedagogy): Geochronology and Distribution of Paleolithic Sites in the Transbaikal around the LGM

-Ian Buvit (CWU): Upper Paleolithic Landscape Geoarchaeology of the Transbaikal Before, During, and After the LGM

-Karisa Terry (CWU): Technological Innovation during the LGM in the Transbaikal, Russia

-Nicolas Zwyns (University of California, Davis): Laminar Technology and the Beginning of Upper Paleolithic in the Zabaikal Region: the Example of Varvarina Gora

Session 2: Mongolia (Chair: Karisa Terry)

-Tsogtbaatar Batmunkh (Institute of Archaeology, Mongolian Academy of Sciences): Research History of Stone Age in Mongolia

-Gunchinsuren Byanbaa (Institute of Archaeology, MAS): Current Evidence of Upper Paleolithic Sites in Mongolia

-Nicolas Zwyns (University of California, Davis): The Upper Paleolithic of the Ikh Tulberin Gol (Northern Mongolia): New Excavation at the Tolbor 16 Site

Session 3: Hokkaido (Chair: Nicolas Zwyns)

-Masami Izuho (TMU): Geochronology of Upper Paleolithic Sites on Hokkaido

-Satoru Yamada (Kitami City Board of Education): Behavioral Changes in Microblade Assemblages on Hokkaido

-Yuichi Nakazawa (Hokkaido University): Toward a Reexamination of the Last Glacial Maximum Occupation of Kashiwadai 1

-Akira Iwase (Meiji University): Use-wear Analysis of the LGM Portable Blade Tools from Kawanishi C, Hokkaido, Northern Japan

It was agreed through the presentations and discussions at the end of the workshop, that it was important that there should be sharing of recent progress in archaeology and differences in the geological and geomorphological context of sites in each region.

Interested colleagues should make contact with the project leader.

Palaeoenvironment and lithic raw material exploitation in North and East Asia during MIS3 and MIS2 - 1207

Project Leader: A. Ono (Meiji University, Japan)

[Website](#)

This project focuses on the interaction between the natural environment and Palaeolithic human activity with particular reference to lithic raw material exploitation during MIS3 and MIS2 in the North and East Asia.

Causal relationships between the natural environment and humans are easy to speculate about but often difficult to elucidate. There are three different research levels. The first is a macro environment level that is totally independent of human activity or accessibility. The second is a so-called “effective environment” level. The third level is a pure archaeological level that is exclusively led by human-made artifact phenomena. The “effective environment” level should be the central target for an explicit discussion of humans-environmental interactions.

Lithic raw material exploitation studies in the Palaeolithic have a long tradition both in Europe and Northeast Asia. Archaeological interpretations of lithic raw material procurement systems and distribution patterns or transportation systems have also developed in various areas, with many case studies focusing on different lithic raw materials. Obsidian provenance studies, however, have attained a new horizon in these areas, i.e., Russian Far East, Korean Peninsula, and Japanese Islands, in the recent two decades. The project aims to set out a testable referential model for the interaction between the natural environment and humans through various lithic raw material exploitations in the palaeoenvironmental contexts.

Outcomes

A workshop entitled “Lithic raw material exploitation and circulation in prehistory: a comparative perspective in diverse palaeoenvironments” was held in September 28, 2012 at Meiji University, Tokyo. The symposium discussed recent research within a comparative perspective between Europe and East Asia and in the context of diverse palaeoenvironments. The following speakers presented their research:

Akira Ono (Meiji University, Project Leader): Opening address.

Mi-Young Hong (Hanyang University): Obsidian appeared Paleolithic industries in Korean Peninsula.

Vadim Stepanchuk (Institute of Archaeology of National Ukrainian Academy of Science): Small opportunities and big needs: Mira EUP case of raw materials exploitation (Dnepr basin, Ukraine).

Sergey Ryzhov (Taras Shevchenko National University of Kyiv) Obsidian outcrops in Transcarpathia and their use during the Paleolithic time.

Katalin T. Biro (Hungarian National Museum): Petroarchaeological research in the Carpathian basin: methods, results, challenges.

Harald Floss (University of Tübingen): Rivers as orientation axes for migrations, raw material transport and exchange in the Upper Palaeolithic of Central Europe.

Stefano Bertola (University of Innsbruck): The raw material variability in the Mesolithic site of Ullafelsen (Sellrain, Tyrol, Austria).

Yuichiro Kudo (National Museum of Japanese History): Temporal correlation between archaeological and environmental records from late MIS3 to early MIS1 in Japan.

Hiroyuki Sato & Miyuki Yakushige (The University of Tokyo): Obsidian exploitation and circulation in Late Pleistocene Hokkaido and adjacent areas.

Kazutaka Shimada (Meiji University Museum): Upper Palaeolithic obsidian use in central Japan.

Koujiro Shiba (Nara National Research Institute of Cultural Properties): Acquisition and consumption of obsidian in the Upper Paleolithic of Kyushu.

Tristan Carter (McMaster University): The Contribution of Obsidian Characterization Studies to Early Prehistoric Archaeology.

Through the workshop, various geo-chemical analyses and archaeological studies on lithic raw materials were shared. The workshop clarified the differences in palaeoenvironmental research backgrounds. Future areas for collaboration in lithic raw material research were identified. About sixty people participated in this workshop from both archeology and various Quaternary disciplines, including young researchers and students.

List of publications during reporting year

Ono, Akira (in press) Modern hominids in the Japanese Islands and the early use of obsidian: the case of Onbase Islet. World Heritage Papers, Human Evolution: Adaptations, Dispersals and Social Developments (HEADS) 3, UNESCO

Iwase, A., Hashizume, J., Izuho, M., Takahashi, T. and Sato, H. 2012. The Timing of Megafaunal Extinction in the late Late Pleistocene on the Japanese Archipelago. *Quaternary International*. 255, pp.114-124

Izuho, M., Akai, F., Nakazawa, Y. and Iwase, A. 2012. The Upper Palaeolithic of Hokkaido: current evidence and its geochronological framework. In: Ono, A. and M. Izuho (eds.), Environmental changes and human occupation in East Asia during OIS3 and OIS2: pp.109-128, *BAR International Series* 2352.

Iwase, A. 2012 Diversity of technological adaptation of Late Upper Paleolithic hunter-gatherers in the Japanese Archipelago: inferred from lithic usewear analysis. In: Marreiros, J., Ferreira Bicho, N. and Gibaja Bao, J. (eds.), International Conference on Use-Wear Analysis Faro/ Portugal: Use-Wear 2012. Program and Abstract book, p.27.

Iwase, A. 2012 Consideration of Burin-blow function: usewear analysis on Kamiyama-type burin of Sugikubo blade industry in central Japan. In: Marreiros, J., Ferreira Bicho, N. and Gibaja Bao, J. (eds.), International Conference on Use-Wear Analysis Faro/ Portugal: Use-Wear 2012. Program and Abstract book, pp.27-28.

Shimada, K. 2012 Pioner phase of obsidian use in the Upper Palaeolithic and the emergence of modern human behavior in the Japanese Islands. In: Ono, A., and Izuho, M. (eds.), Environmental Changes and Human Occupation in East Asia during OIS 3 and OIS2, *BAR International Series* 2352, pp.129-146, Archaeopress.

Colleagues who like to know more about the project should make contact with the project leader, Prof Ono.



Shimaki excavation (Photo: M. Izuho).

Quaternary environments and homind evolution in India (Siwalik palaeoanthropology project, 2010-2012) - 0703

Project Leader: : P. R. Chauhan (Indiana University, US)

Four meetings were associated with this project, two of which were field meetings and two that primarily included presentations and discussions around the project. These four events took place between 2010 and 2012 in (i) Chandigarh, (ii) the surrounding Siwalik Hills study area, (iii) Bangalore city and most recently, the (iv) Mudumalai Tiger Reserve in Tamil Nadu, which planned related taphonomic research. The main objective of all of these meetings was to implement a long-term project to understand Plio-Pleistocene palaeoenvironments, vertebrate paleontology and modern bone preservation patterns in India by focusing on the well-known Siwalik Hills as the primary study area. Our temporal target is the Early Pleistocene and the earliest hominin dispersal or Out of Africa 1. In conjunction to planning the paleoanthropological fieldwork in the Siwaliks Hills, we also aim to supplement the vertebrate paleontology portion with actualistic studies such as taphonomic observations and studies on the modern Indian landscape. Such modern data, supplemented with GIS and remote sensing, will enable us to successfully predict the paleoanthropological occurrences. Below, all four project meetings in the past two years are described in further detail.

EVENT 1. Siwalik workshop & field visit around Chandigarh

The first part of the workshop was held in Chandigarh and the surrounding Siwalik region from March 5th to March 8th, 2010. The first day involved formal presentations and related discussions from seven people on Siwalik prehistory, paleontology, geology and palaeoenvironments. Key research issues that were

established as priority included fresh evaluations of known sites (e.g. Uttarbaini, Nadah) and their dating and contexts (e.g. Plio-Pleistocene tephra-lithic associations), initiating new paleoanthropological surveys in the Pinjore Formation of the Upper Siwalik Subgroup, and formulating specific methodological strategies. Novel methodological suggestions were offered by several participants (e.g. Vimal Singh, Rajeev Patnaik) including the use of neo- and paleo-tectonic and erosional activity in order to understand and predict the exposure of paleoanthropological sites. To predict the locations of sites on the Siwalik paleo-landscape, the need for an accurate reconstruction of the paleobiogeography of the region was also stressed. Finally, an edited volume on Siwalik paleoanthropology (past and present research and detailed review papers) was outlined and proposed. The next three days consisted of field visits to areas of project interest. Overall, this first project meeting was highly productive and encouraging.

Participants: G.S. Gill (Chairperson, Dept. of Geology, Panjab University), A.C. Nanda (Wadia Institute of Himalayan Geology), P.R. Chauhan (Stone Age Institute), R. Patnaik (Dept. of Geology, Panjab University), V. Soni (Patiala), A. Soni (Patiala), S.N. Rajaguru (Dept. of Archaeology, Deccan College and Postgraduate Research Institute), V. Singh (Dept. of Geology, Delhi University), R.R. Singh (Dept. of Geology, Panjab University).

EVENT 2. Siwalik field visit with R.W. Dennell around Chandigarh and Jammu.

This event was focused upon consulting with Prof. Robin W. Dennell in the field to understand how to implement a paleoanthropology in the Indian Siwaliks, due to his lengthy experience in the Pakistan Siwaliks. Key type localities around Chandigarh were visited in the field as well as important Plio-Pleistocene sections in relation to ash deposits at Nadah (Haryana) and Uttarbaini near Jammu. These localities were visited to understand the stratigraphic and spatial relationship between the ash, nearby fossil occurrences and potential raw material sources available to hominins for stone tool production during the Plio-Pleistocene. All such ash or tephra localities will need to be mapped along with the archaeological and paleontological data from this sector of the Siwalik Hills. Because the nature of the Siwalik exposures here in India are different from those in Pakistan, the need for GIS and remote sensing applications for predictive modeling was also discussed. Five people participated in the field visit: R.W. Dennell, P.R. Chauhan, R. Patnaik and 2 graduate students who will also be involved in this project at a later stage.

EVENT 3. Project Meeting with Prof. Sukumar at the Indian Institute of Science in Bangalore.

This meeting discussed the taphonomy project in relation to the Siwalik Paleoanthropology Project. Suitable study areas (i.e. suitable national wildlife parks), were discussed in which to carry out research on taphonomy and early hominin scavenging opportunities by predator kills in an Indian ecological context that contrast sharply with those from Africa. The Mudumalia Wildlife Sanctuary in southern Karnataka was decided as the most suitable for this project due to its size, diverse ecological zones and abundant wildlife (i.e. predator and prey diversities).

EVENT 4. Project meeting in Mudumalai Tiger Reserve

The final project meeting was held at the Mudumalai Tiger Reserve and Wildlife Sanctuary in the state of Tamil Nadu. The participants in this meeting included P.R. Chauhan, R. Sukumar, R. Patnaik and P. Chakrabarty. Prof. S.N. Rajaguru, Prof. A.C. Nanda. This final field meeting was to complement and supplement the research objectives of the Siwalik Paleoanthropology Project. We discussed and planned the methodological integration of the vertebrate paleontological evidence in the Siwalik Hills study area with modern-day taphonomic processes to be studied at Mudumalai in the future. Two future field seasons were discussed. With the assistance of the Mudumalai Forest Department, we were able to visit a week-old tiger kill of a gaur or Indian bison, which enabled a preliminary understanding of how to structure our future field documentation for laboratory parameters and related quantification purposes.

FUTURE OBJECTIVES

Based on presentations, discussions and field observations at all of the four meetings, our next objective is to implement Phase 2 of this project (Quaternary Environments and Hominid Evolution in India) which involves one more year of related project meetings and an interactive workshop/seminar exclusively for young scientists and to apply for the required research funding to initiate the fieldwork and subsequent laboratory work. The workshop/seminar planned in 2013 involves young scientists of various Quaternary disciplines to compile, integrate and understand pan-Indian Quaternary environments and climate in the last two million years, for which we will re-apply to INQUA. Finally, we also aim to publish an edited reference volume on the multidisciplinary aspects of the Siwaliks Hills (Plio-Pleistocene geology, stratigraphy, vertebrate paleontology and Paleolithic archaeology) anticipated to be published in Quaternary International as our previous two volumes on Indian paleoanthropology and prehistory, respectively.

African Large Carnivores Conservation: Formation of a Researchers' Network

HAB COMM is pleased to support this new initiative and encourages all interested researchers to make contact with the organisers at the bottom of this announcement.

Large carnivores are major components of the ecosystems that regulate herbivore populations to ensure ecological balance. In Africa, the large carnivores of the three families: Felidae (lion, leopard, and cheetah), Hyenidae (spotted, striped and brown hyenas) and Canidae (wild dogs) are facing great conservation challenges resulting from negative impacts of their interactions with people. These predators are both revered and detested by people and are often seen as dangerous competitors. Consequently, they have been eliminated from most of their natural ranges and are mostly endangered in areas they are currently distributed. Despite the human-carnivore conflicts, carnivores are highly regarded locally and internationally as symbols of power in some local cultures where people use their body parts like the skins during rites of passage ceremonies and as tourists' attractions. Thus conservation of large carnivores does not only serve an ecological purpose but also has a cultural and economic value that requires a multidisciplinary approach to its implementation.

To understand large carnivores' evolutionary and social behaviour and their ultimate conservation, a combination of study approaches is required. For example carnivore eco-ethological studies can inform evolutionary studies that may put observed carnivore traits into perspective. Similarly, understanding taphonomic processes are important in the interpretation of paleontological remains and bone assemblages and hence provide greater understanding of paleoecology and faunal dynamics during the Quaternary period. We therefore, propose to initiate a carnivores' researchers' network from various fields of specialisation aimed at creating a forum for exchange of ideas necessary for sustainable large carnivores' conservation and understanding human-carnivore interactions in Africa and beyond.

To achieve this will need multidisciplinary approaches: i) socioeconomic approach to understand and resolve human-carnivore conflict, ii) museological studies in order be able to use museum specimens to build a database of the species' biometry, anatomy, isotope analysis, genetics, and other necessary information required to understanding species evolution and biogeographical variability; iii) dietary analysis of remains at modern dens or lairs some of which spanning several years preserve species around the site in recent past, that can aid in understanding recent ungulates dynamics, land use patterns and habitat changes and iv) archaeological and taphonomical studies will aid in interpretation of bone assemblages from dens to give an insight into

bones associated with human artefacts in prehistoric Plio-Pleistocene sites. Our goal is to bring together researchers, students and other stakeholders from diverse fields of specialization to address conservation and biology of large carnivores. This in turn will aid in the preservation of pastoralism, an agricultural heritage that appears to be compatible with wildlife conservation but is facing challenges that may lead to its disintegration due to changing socio-economic conditions and climatic changes.

Initially we will like to invite carnivore researchers working or who have worked in Africa to join this forum. It seems essential to use Modern and Past information for carnivore conservation and people involved in the fields of eco-ethology, conservation, socio-ecology, zooarcheology, taphonomy, paleontology and paleoecology are eligible to join the network. In order to build a directory, please fill the information below:

- Name, surname.....
- Institution affiliation (address and Email)
- Specializations.....
- Research topics.....
- Study areas/ Country of operation.....
- Current projects and collaboration.....
- Main publications.....

Contacts and information to be sent to both:

Ogeto MWEBI – National Museum of Kenya – ogeto_mwebi@yahoo.com or omwebi@museums.or.ke

Jean-Philip BRUGAL – CNRS France – brugal@msh.univ-aix.fr

IN MEMORIAM - DR. SASKIA 'KIEK' JELGERSMA



Saskia Jelgersma, one of the pioneers in modern sea level research and an honorary life fellow of INQUA, died on May 7th 2012, just two days before her 83rd birthday. After graduating from Leiden University in 1954, obtaining a degree in geology, she was instantly employed by the Geological Survey of the Netherlands. Here, she would build an impressive career marked by a broad range of expertise and an impressive scientific output. During her early career, Saskia became the Survey's main consultant for geohydrological issues and was strongly involved in mapping Quaternary and Tertiary aquifers with freshwater reserves. Being trained in palynology, she also developed a close cooperation with palynologists Waldo Zagwijn and Chris Doppert, both graduates from Leiden University and already active in the laboratories of the Geological Survey.

Saskia Jelgersma became internationally renowned by her much-cited 1961 doctoral thesis: Holocene sea level changes in the Netherlands. Through this work she introduced a solid methodology and interdisciplinary approach for reconstructing past sea level changes. The curve that she reconstructed showed a smooth, steadily rising sea level during the past 8000 years. It contrasted significantly with the wiggly sea level curve published by Rhodes Fairbridge around the same time, which was characterised by several oscillations over roughly the same time span. This difference formed the start of a lengthy and lively debate. Many of us will remember both her stubbornness and the consistency of arguments brought forward by her sonorous voice during discussions in the field and in the conference room. Nevertheless, or perhaps because of this difference in scientific opinion, Saskia and Rhodes became close and lifelong friends.

Saskia's sea level investigations started in the mid-1950s, many years before she wrote her thesis. Initially it was not meant to be a PhD study. The government agency for public works and water management in the Netherlands (Rijkswaterstaat) contracted the Geological Survey to reconstruct the patterns of past sea level change in order to make reliable estimates for expected future sea level rise. Accurate figures were necessary to determine the desired minimum height of all dikes along the Dutch coast as part of a major reinforcement endeavour following the catastrophic 1953 storm surge. After finishing an initial report Saskia left the Netherlands in 1959-1960 for a research fellowship at the University of Minnesota's pollen laboratory. She helped Professor Herbert Wright in further developing this laboratory while also conducting several studies on the record of past vegetation in lake basins. Thus, she helped pave the way for the incorporation of the pollen laboratory in the newly established Limnological Research Center a few years later. After returning to the Netherlands, some colleagues, but particularly her father, stimulated Saskia to compile the results of her sea level investigations into a doctoral thesis. It took her less than one year to complete this compilation and the associated synthesis. Exactly 50 years after the defence of her thesis, in December 2011, Leiden University honoured Saskia through a nicely designed commemorative certificate.

Following the publication of her thesis Saskia was promoted to senior geologist at the Geological Survey of the Netherlands, a position she held until her retirement in 1990. She continued to study the geohydrological systems of the Netherlands subsurface and for many years served as the Survey's main advisor to the National Institute of Drinking Water Supply. Through this part of her work she became fully aware of the vulnerability of groundwater reserves in coastal lowlands around the world, quite some time before environmental issues were raised as a serious societal problem.

As a logical follow-up to her sea level studies, Saskia increased her efforts to reconstruct and understand the development of the Dutch coastal region. She collaborated with many researchers during several multidisciplinary field studies in the coastal plain of the Netherlands. In 1963 she co-published a series of maps showing the palaeogeographical development of the Netherlands during the Holocene. These maps provided a visual framework for subsequent coastal studies for decades to come. In cooperation with Waldo Zagwijn and Jan de Jong (Geological Survey) and Jean-Francois van Regteren Altena (Archaeological Survey) Saskia also undertook a major study on the geology, vegetation history and archaeology of the coastal dune along the coast of Holland in the western Netherlands. Their conclusion, published in 1970, that dune formation and erosion were related to changes of climate, stimulated similar research throughout Europe.

Through her ground-breaking work on coastal development and on sea level change Saskia Jelgersma was able to establish an impressive network with coastal researchers from across the globe. She attended dozens of meetings of the former INQUA Commission on Sea Level Changes and Coastal Evolution, serving several years as its President, and was also an active participant in the Subcommittee on Shorelines of NW Europe. She was a highly esteemed person in the INQUA community and was elected honorary life fellow of INQUA.

To share her expertise, Saskia was frequently invited to institutes abroad, lecturing at the Earth Technology Institute of the Vrije Universiteit Brussel (Belgium), the Departments of Geology at universities in Qingdao and Nanjing (China), the Asian Institute of Technology in Bangkok (Thailand), and the Department of Geography and the Environmental Research Centre of Durham University (UK). In 1987, she organised a session on the impacts of future rise in sea level on European lowlands at the European Workshop on Interrelated Bioclimatic and Land Use Changes in Noordwijkerhout (the Netherlands). In 1989 she was a member of the organising committee for a NATO Advanced Workshop on the Geohydrological Management of Sea Level and Mitigation of Drought in Fuerteventura, Canary Islands (Spain). With Professors Rhodes Fairbridge and Roland Paepe, Saskia edited the resulting proceedings in a book on Greenhouse Effect, Sea Level, and Drought. She was also a co-editor of many other conference proceedings. Her vast scientific output includes a great number of influential scientific articles and chapters in several books on sea level and coastal research, greenhouse effects and the impact of climate change on coastal societies. In recognition of her contribution to earth science, Saskia Jelgersma received the Van Waterschoot van der Gracht Medal, the highest award given by the Royal Netherlands Geological and Mining Society (KNGMG), in 1997.

Since the early 1980s Saskia lived in the small village of Bergen aan Zee, in a house just a few hundred meters from the shoreline she loved so much and studied so thoroughly. Already during her childhood Saskia and her family went on holiday to this village and probably this had kindled her interest in the local geology, archaeology and history. For eight years she served as councillor of the village. She was also chair and treasurer of several local foundations and charities, for which she was given a royal decoration in 2011.

On May 11th, 2012 in a solemn ceremony several former colleagues, friends and relatives accompanied Saskia under a bright sunny sky to her final resting place, a peaceful site at the landward rim of the coastal dunes near Bergen. Sprinkling Holocene dune sand over her coffin, we all realised that we were saying goodbye to an exceptional human being and felt privileged to have known her.

Wim Westerhoff & Sytze van Heteren

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IN MEMORIAM - DR. SIGFÚS JOHANN JOHNSEN

Sigfús Jóhann Johnsen passed away on June 5th 2013. His departure marks an end of a remarkable scientific career devoted to some of the coldest regions of our planet and to an increasingly hot topic, the climate of the Earth. Sigfús was born in Iceland and retained strong ties with his roots there, although he spent a considerable part of his professional life in Copenhagen, Denmark, where he received his education in the field of physics. His profound grasp of physics coupled with an exceptional ability to translate his knowledge into technological solutions made Sigfús a central figure in the ice drilling community for decades.

Exploration of the Earth's major ice caps for the past 50 years constitutes an innovative effort in the acquisition of physical data on past atmospheric circulation. This effort ranks among other major breakthroughs in physical earth sciences such as the late 20th century development of the plate tectonic theory and ocean drilling projects. Indeed, the availability of ice-core data archives has opened up new venues of comparing high resolution records from the oceanic and terrestrial realms.

Professor Willi Dansgaard was a pioneer of stable isotope geochemistry of ice accumulation at the University of Copenhagen, Denmark, and one of his first papers in this field dealt with the fractionation of oxygen isotopes in precipitation deposited along transects from coastal to summit regions of the Greenland ice cap. A group of researchers was soon assembled around him, focusing on Greenland ice-core research, with Sigfús playing an important and central role. Sigfús was one of Willi Dansgaard's physics students, and he became involved with the Greenland ice-core studies at an early stage. One of his early achievements was the design and implementation of a large capacity equilibration

system for water oxygen isotope analyses at the University of Copenhagen. The Copenhagen laboratory has since then coped with an enormous amount of oxygen isotope analyses of ice core samples.

Another early development by Sigfús, together with Willi Dansgaard, was an ice flow model for the Camp Century ice core near Thule, Greenland, enabling the construction of an age model for that core. The ability to date time-series records was a major step forward in ice-core studies.

Sigfús was a key designer of the ice drilling equipment employed at the milestone coring sites such as Dye-3, Renland, GRIP, NorthGRIP, and NEEM. The success of these coring operations, and the wealth of data that was obtained, attracted scientists from many parts of the world. The coring technology was later to be used in many major coring operations, e.g. in Antarctica. Sigfús was always available to advise and help solve technical coring problems as they arose, day or night.

Long records of quantifiable physical proxies with annual resolution were virtually unknown when the Greenland ice-core records began to appear. The detail and quality of these data, which turned out to be reproducible in near-duplicate ice-cores such as the GISP2 Greenland core, soon had a profound impact on the knowledge and understanding of the Earth's climate system. The ice-core records showed how rapidly climate events can occur, exemplified by the Younger Dryas cold event at the end of the last glaciation. Amazingly detailed records of climate fluctuation throughout the last glacial suddenly became available for comparing various proxies from the North-Atlantic realm.

One of the achievements of Sigfús was the quick realisation of these findings for the Quaternary geological community. This was probably promoted by the long tradition of close cooperation between geophysicists and geologists in Iceland, and Sigfús remained affiliated with the Science Institute, University of Iceland as long as he lived. Already in the nineteen-eighties, he began cooperation with geologists and linked geological data from the Lateglacial with the new ice-core records. At the same time, he was the primus motor in organising symposia and summer schools in the Nordic countries, aimed at interdisciplinary climate studies, attracting renowned scientists from many countries as well as graduate students.

The contribution of Sigfús J. Johnsen to science has been widely recognised. He was the recipient of the International Glaciological Society's Seligman Crystal (1997), the Hans Oeschger medal of the European Geophysical Society (2003) and was made Knight of the Order of Dannebrog by Queen Margrethe II of Denmark in the year 2000. In 2010, Sigfús was awarded an honorary doctorate by the Department of Earth Sciences, University of Iceland, and became an honorary fellow of the Glaciological Society of Iceland.

The extremely detailed records of climate events and highly sophisticated age-models of the Greenland ice cores have had a strong impact on the international Quaternary community, and increasingly, the Greenland ice-core stratigraphy is used as a standard reference for events during the last glacial and the subsequent period of deglaciation. Sigfús took an active part in this development by participating in numerous meetings and workshops organised by INQUA working groups such as INTIMATE and LIGA.

Sigfús was gifted with resilience, ingenuity, and a positive, helpful attitude towards fellow scientists and students. These qualities enabled him as a part of the ice-core group at the Niels Bohr Institute of the University of Copenhagen, to contribute significantly to the present-day knowledge of past climates. Sigfús is remembered fondly by the community of ice-core researchers and physical earth scientists for his outstanding contributions, kindness and positive interest in promoting knowledge and understanding. His personal life and professional work were closely integrated, and his wife, Pálína, took part in ice-core operations in Greenland. Both his family and his colleagues have lost a loving friend. The community of Quaternary researchers has benefitted greatly by Sigfús Jóhann Johnsen's amazing quest.

Jón Eiríksson,

Institute of Earth Sciences, University of Iceland.



IN MEMORIAM - PROF. BERNIE SMITH (1951-2012)

It is with great sadness that we have to announce the death of Prof Bernie Smith (Professor Emeritus, Queen's University Belfast) on 31st October 2012 at the age of 61 years. Bernie died peacefully at home after a long and debilitating illness and will be greatly missed by his family, friends and colleagues. Bernie described himself first and foremost as a Geographer who practised Geomorphology in its broadest sense. He was proud to be a Geographer and in my many conversations with him over the years he was at pains to emphasise the unique nature of a discipline, which focuses on providing explanations of how the human and physical environments operate and the complexity of their interactions. He always felt privileged to be able to earn a living from his 'hobby', a 'hobby' which required him to travel the world and experience first-hand many of the planet's most impressive landscapes and the people that inhabited them.

Bernie graduated with his PhD from the University of Reading in 1975 and relocated to Nigeria with Dorothy his wife, where he taught in Ahmadu Bello University, Zaria. On his return to the UK Bernie took up a lecturing position at Queen's University Belfast in 1979 and held the Chair in Tropical Geomorphology from 1998. Bernie continued in post up until illness necessitated his early retirement in 2011. Bernie supervised the launch of many geomorphological careers (my own included) with his thoughtful and generous PhD supervision, and influenced the career decisions of many of the undergraduate students who came into contact with him. Bernie was an inspiring teacher who believed that it was essential for the future of geomorphology that all students and practitioners should have a thorough understanding of the history and development of the subject.

His research interests were wide and varied but were rooted in his love of hot deserts and tropical landscapes and his desire to better understand the processes that shape them. Whilst the interpretation and exploration of landscapes formed the central core of Bernie's career, his fascination with process studies and weathering processes in particular led him onto some of his most significant geomorphological work and to the establishment of the Weathering Research Group in the early 1990s in the School of Geography, Archaeology and Palaeoecology at Queen's.

The focus of this group was on improving our understanding of stone weathering in both natural and built environments and resulted in Bernie's involvement with local conservation architects and the wider building conservation community in the UK, Europe and further afield. He really enjoyed this work because of the many wonderful historic and archaeological structures that it gave him access to. In the last decade or so, Bernie's core interest in landscape interpretation came back to the fore as he became increasingly involved with UNESCO initially through his advisory role for Northern Ireland's own World Heritage Site at the Giant's Causeway and then on a broader global stage as a world heritage evaluator.

Throughout his career Bernie's quiet advice has influenced so very many people in many different disciplines and he leaves a significant legacy of research and publications that will undoubtedly continue to influence the direction of future Geographical and Geomorphological research. He will be sorely missed.

P.A. Warke



IN MEMORIAM - PROF. MOHAMMED UMER MOHAMMED (1959-2011)

Mohammed Umer Mohammed (1959-2011) was an Associate Professor at the Department of Earth Sciences, Addis Ababa University, for 19 years. He was also the founder in 2009, and leader of the "Paleo-environment and Paleoanthropology Program Unit" at Addis Ababa University until his untimely death, during fieldwork in the Afar on 27 November 2011. Mohammed served as a member of the PAGES Scientific Steering Committee, as leader of the PAGES Africa 2k Working Group, and of PAGES Science Focus 4 (Past Human-Climate-Ecosystem Interactions). The untimely death of Dr Mohammed Umer Mohammed is a grievous loss to his numerous colleagues and friends in the international community of paleoenvironmental research. He was a dedicated and internationally recognised researcher and an ambassador for African science and for PAGES, and a much-valued friend to his many students and colleagues.

Mohammed was born on 22 June 1959 in Arsi Robe, a small town on the southeastern Ethiopian Highlands. He graduated from Addis Ababa University with a BSc degree in Geology in 1981, and taught at Asmara University, Eritrea, for five years, before beginning research at the University of Aix-Marseille III. His PhD, on the vegetation history of the eastern Ethiopian highlands, was completed in 1992. His subsequent research which focused largely on the environmental history of Ethiopia made significant contributions to the understanding of the environmental history of the country. In addition to his teaching and research duties at Addis Ababa University, Mohammed also served in various academic administration positions including as Associate Dean of the Faculty of Science during 2005-2007 and he was recently elected as a member of the University Council.

Mohammed was a founding member of the East African Quaternary Research Association, and was elected its President in February 2011. He was a member of the executive committee of the International Association of Geomorphologists, and of the steering committee of the Hominid Sites and Paleolakes Drilling Project, supported by the International Continental Scientific Drilling Program. He was a key partner in the current Ethiopian Lakes Palaeoenvironmental Reconstruction Project, led from Cologne University. Mohammed, as a member of the Organising Committee and co-host of the 2011 Regional Conference of the International Association of Geomorphologists held in Addis Ababa on February 18-22 2011, played a key role for the successful completion of the Conference.

LIU TUNGSHENG AND HUANG TU MAGNETISM

At the XVIII Congress of the International Union for Quaternary Research (INQUA) held in Bern 21-27 July, a special session was held to recognise the seminal contributions of Professor T.S. Liu to our understanding of past global change and to explore the continuing impact of these contributions. In a long and fruitful career, Liu Tungsheng demonstrated—among many other things—that the Chinese Loess Plateau (CLP) is the foremost terrestrial archive of millions of years of paleoclimatic and paleoenvironmental variability. Born in 1917, Liu lived through the many turbulent events that rocked China throughout the 20th Century (the Japanese invasion, the Long March, the Cultural Revolution). His formal education was also affected by World War II. Nevertheless he graduated in 1942, and in 1946 commenced what was to become an outstanding career as a geologist. His early work involved fossil fish, but he was soon drawn into loess research, partly as a result of the great excitement surrounding the discovery of Peking Man. In the early 1920s the Austrian paleontologist Otto Zdansky (1894-1988), began excavations at the now-celebrated site of Zhoukoudian. The Canadian anatomist Davidson Black (1884-1934), who was teaching at the Peking Union Medical College, argued that the fossils coming to light represented a new hominid genus for which he suggested the name *Sinanthropus* (see "Further Hominid Remains of Lower Quaternary Age from the Chou Kou Tien Deposit", *Nature* 120, p.733, 1927). On the basis of this—and further spectacular finds—Black received a grant from the Rockefeller Foundation which he used to establish the Cenozoic Research Laboratory in 1928, the same year that INQUA itself was founded. Naturally, Liu Tungsheng eventually became familiar with all these developments and the scientists behind them, but he seems to have been most influenced by the paleontological work and philosophical writings of the French polymath Pierre Teilhard de Chardin SJ (1881-1955), who acted as a consultant to the Cenozoic Research Laboratory from its inception.

For Quaternary science in general—and for Session 59 at the Bern Congress in particular—the legacy of Zhoukoudian cannot be over-stated. Its impact on the career of Liu Tungsheng was critical, for it was Liu who went on to establish the "ground rules" that underpin paleoclimatic interpretations of the CLP record: (1) loess (huang tu [yellow earth] in Chinese) is an aeolian deposit, (2) it accumulates during glacial periods when the north-east winter monsoon dominates, (3) soils (now buried and therefore paleosols) form during interglacials when precipitation increases due to enhanced south-west summer monsoons, (4) magnetic remanence locked in the sediments of the CLP captures polarity reversals of the geomagnetic field and thus furnishes a reliable chronology, and (5) magnetic susceptibility

profiles of the loess/paleosol sequences provide a robust proxy record of paleoclimatic variability that can be matched to the oceanic oxygen isotope record.

The contributions to Session 59 (www.inqua2011.ch) reflected these various aspects of loess magnetoclimatology. Four invited talks from world leaders paid tribute to the life and work of Professor Liu and demonstrated that the topic is now a mature field of scientific research. But much remains to be done. For example, can the elusive goal of world-wide quantitative paleoclimatology be achieved? This will require advances in site-specific analysis to unravel the spatial variability in source materials (i.e. not all loesses are alike), and in local environmental conditions (i.e. not all pedogenetic pathways are alike). Our understanding of how iron cycling in soils takes place under widely differing conditions will need to be greatly improved. But the task is an important one. It offers the opportunity to map past global change, and thereby to check the results of numerical general circulation models (GCMs), which, in turn, offer one of the best means of predicting the climatic Armageddon that awaits us. The oral presentations—to a standing-room-only audience—were accompanied by a lively poster session covering several related topics. Not surprisingly, the CLP was strongly represented, but results from Korea, Serbia, Bulgaria, and Alaska were also reported, along with contemporaneous data from marine sediments in the Pacific Ocean. Temporally, investigations were pushed back to 22 Ma—well outside traditional INQUA enquiries, but highly relevant to figuring out how the CLP evolved.



INQUA Congress Bern, 21st July 2011. Friedrich Heller kicks off Session 59: The magnetostratigraphic and environmental magnetic work of T.S. Liu and its continuing consequences. The screen behind Friedrich shows Liu Tungsheng in his late eighties animatedly addressing a 2006 meeting in Beijing. When last seen, the irksome obstruction in the foreground was attached to Ted Evans. (Photo courtesy of Ramon Egli).

Tungsheng, who was a past president of INQUA, at the first congress to be held after his death in 2008, and on the occasion of the inaugural presentation of the Union's Liu Tungsheng medal.

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