

INQUA

QUATERNARY PERSPECTIVES

Newsletter of the International Union for Quaternary Research
(INQUA)

<http://www.inqua.tcd.ie>



1928

Volume 17 (1), July 2009

Editorial

Welcome back to QP!

Quaternary Perspectives has not appeared since the last International Congress in Cairn two years ago. This is because we have not been able to find a replacement for our most efficient Editor, Frank Preusser, who was unable to continue. While we continue our hunt, I am standing in until the next Congress in 2011 to see that *QP* does not die. Please do bear in mind our on-going search for a longer-term Editor and let us know if you or someone you know would be interested in taking on this very worthwhile challenge.

Whilst we are about it, we have also revamped the look of your newsletter. We have done our best and hope you like the new version (praise would be very welcome!) but we know our limitations. So, let us know if there is anything you do not like or if you have suggestions for further improvements, especially if you have lay-out talents.

Finally, from now on *Quaternary Perspectives* will be purely electronic. It will be posted on our website <http://www.inqua.tcd.ie> and emailed, as a pdf, to those of you on our mailing lists as National Representatives, Honorary Members, INQUA project leaders and contributors to *QP*. We then request that all of you, especially National Representatives, forward the pdf to all your Quaternary colleagues.

Margaret Avery, INQUA Vice President and Interim Editor
mavery@iziko.org.za



Quaternary in Geologic Time Scale

In May 2009, the International Commission on Stratigraphy voted 89% in favour of redefining the base of the Pleistocene Series/Epoch and Quaternary System/Period as the base of the Gelasian Stage. The proposal, which was forwarded to the Executive Committee of the International Union of Geological Sciences (IUGS) in late May, is as follows:

- § the Pleistocene is a Series/Epoch with its base coinciding with the base of the Gelasian Stage/Age as defined by a GSSP at Monte San Nicola, Italy.
- § the Quaternary is a System/Period that follows the Neogene, as ratified by the IUGS Executive Commit-

tee in 2007, and with its base coinciding with the base of the Pleistocene Series/Epoch.

The significant change from the previous definition of the Pleistocene and Quaternary, which was established by the IUGS Executive Committee in 1985, is that their base would be moved from 1.8 Ma to 2.588 Ma. This change had been sought by INQUA for more than a decade after Quaternary scientists recognized the fundamental changes that occurred in Earth's climate and environments coincident with the growth of the first ice sheets in the Northern Hemisphere at about 2.6 Ma.

ICS's proposal must be ratified by the Executive Committee of IUGS before the change becomes official. A decision is imminent.

Stop Press: We have just been informed by the IUGS President Alberto Riccardi that the IUGS Executive Committee has ratified the ICS recommendation on the Quaternary and Pleistocene.

John Clague, INQUA Past President

XVIII International Congress

Bern Switzerland 20-27 July 2011

We look forward to giving you a cordial welcome to Bern for the next International Congress. To help you start planning your visit, here is some preliminary information about deadlines.

- § **August 2009:** Homepage online and official invitations sent to the National Committees
- § **December 2009:** Official Excursion Programme (including cost estimates and maximum participation) online
- § **30 June 2010:** Submission of proposals for sessions and symposia, as well as supplementary self-organised pre- and post-congress excursions
- § **31 December 2010:** Early Bird Registration (CHF 750), registration for oral presentations, and pre- and post-congress excursions
- § **31 March 2011:** Normal registration (CHF 1000), registration for poster presentations and for all excursions (including mid-congress excursions), receipt of Abstracts
- § **After 31 March 2011:** Late Registration (CHF 1250).

For now, please keep an eye on the INQUA website <http://www.inqua.tcd.ie> to find out when we are online and then bookmark our website when it comes online.

Contact us at schluechter@geo.unibe.ch or preusser@eo.unibe.ch any time.

Christian Schlüchter and Frank Preusser

Shackleton Medal

Please be reminded that the call for nomination of candidates for the Shackleton Medal for outstanding young Quaternary scientists was issued some time ago. The procedure is simple. All that is required is the following:

- § Letters of support from two nominators
- § *Curriculum vitae* of the nominee, including a list of the nominee's publications
- § Short statement of major contributions to Quaternary research of the nominee.

Closing date for receipt of nominations is 31st July 2009 so, if you wish to nominate someone, please go to the INQUA website <http://www.inqua.tcd.ie> for further details and nomination form.

Completed documentation should be sent to the Secretary-General of INQUA pcoxon@tcd.ie and the Chairperson of the Award Committee mavery@iziko.org.za

In Memoriam

Orson van de Plassche



On Monday May 4 Orson van de Plassche passed away after a long struggle with cancer. He was a great and unique sea-level scientist – incredibly meticulous, highly original, persistent, positively stubborn, and always moving boundaries. Orson was one of the revolutionaries who brought sea-level research to the front. Orson was a member of the (formerly) INQUA Subcommittee on Shorelines and Sea level since the early 70's. He had been involved mainly with sea-level related IGCP's since its very beginnings and he was the leader of Project 274 (Quaternary Coastal Evolution. Models, Processes and Local to Global Factors, 1988-1993). To his many students he was a tremendous source of inspiration and a shining example of mentorship. Colleagues will also remember him as a wonderful man and a great friend, who was exceptionally engaging and brightened up any meeting that he attended. We all learned from him and we will all miss him.

Cecile Baeteman for



Commissions

HABCOM: Humans and the Biosphere

The PAHE Commission (Palaeoecology and Human Evolution) was reconstituted at the INQUA Congress in 2003. The Commission's focus areas were to be:

- § Terrestrial vertebrates (past and present)
- § Terrestrial invertebrates (past and present)
- § Botany/Paleobotany
- § Human Biology/Palaeoanthropology
- § Cultural processes (prehistoric and historic)
- § Modern proxies and databases
- § Ecosystem dynamics
- § Geoarchaeology
- § Marine palaeoecology

At the 2009 INQUA Executive Committee meeting in Arizona, USA, a name-change for the Commission was deemed necessary. The unique identity of the Commission needed to be clearly indicated and distinguished from the other Commissions, whose concerns are palaeoclimates, stratigraphy, terrestrial processes, and coastal and marine processes. The name PAHE was perhaps vague and seemed to indicate a split in its purpose, leading some colleagues to bypass it as a forum meant to integrate closely related research activities.

The Commission's old name also did not clearly convey the breadth of themes of potential interest, such as, for example, the methods of palaeobotany which can also be applied to predict future effects of global climate change, or humanity's cultural/technological responses to palaeoenvironmental shifts in the past and present. A new branding has therefore been applied to the Commission – it is now INQUA's Humans and Biosphere Commission (HABCOM).

Commission Remit: The Commission's central goal is to promote and facilitate communication and interchange among specialists in palaeontology, palaeobotany,

palaeoecology, archaeology, palaeoanthropology, and geology and the earth sciences, in order to understand human responses to global and regional changes of the past. An ancillary goal is to provide a unifying framework for the exchange of information between palaeoecologists and neo-ecologists working on issues of global change.

Gary Haynes, Commission President

PALCOMM

The next PALCOMM newsletter will be delayed a few weeks and the PALCOMM web page will also change home site over the next couple of weeks. This is due to my change of work. From 1st July my new address is:

Professor and Head of School, School of Geography, Planning and Environmental Management, University of Queensland, St Lucia, QLD, Australia. Email: james.shulmeister@uq.edu.au

Jamie Shulmeister, Commission Secretary

IYPE Africa

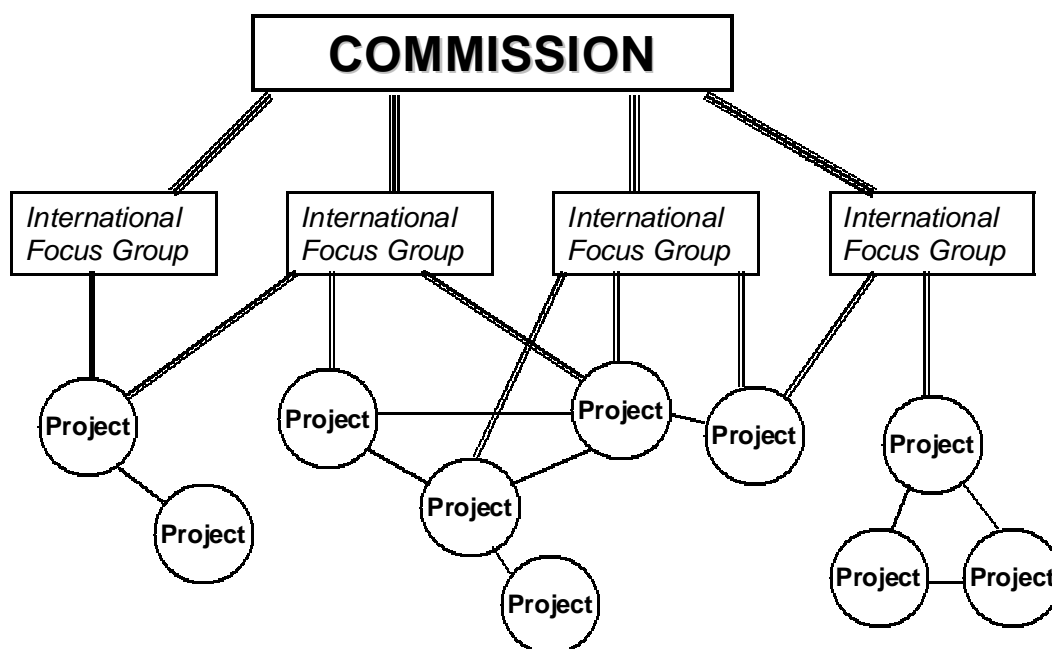
IYPE after 2009, decisions & suggestions

The following is extracted from the *Proceedings International Year of Planet Earth Meeting of Science Implementation Team Leaders and National Committee Chairs (Africa): Progress Report and the Future* (18 – 19 May 2009, Pretoria, South Africa). More information and the full report is available from Prof. Sospeter Muhongo, Director of the ICSU Regional Office for Africa s.muhongo@icsu-africa.org

The need to continue the IYPE initiative beyond 2009 was agreed upon with a consensus to establish national and regional nodal points to facilitate interaction between members. The decisions taken at this meeting are summarised as follows:

- § Decision: Africa will continue with the activities of the Year (i.e., the 10 broad themes – Science, Outreach & Fundraising). This is partly because many of the African NCs have just begun to be active and hence they will find themselves having unfinished tasks at the end of the Year. They propose to continue beyond 2009, more specifically, 2009 - 2012.
- § Decision: Africa will embark on the mega project initiated by Prof Maarten de Wit and Dr John Anderson (South Africa), on "Africa Alive Corridors."
- § Decision: Africa's IYPE NCs should operate under the tutelage of Africa's Ministries responsible for Science and Technology and/or any other national umbrella that is found to be suitable to the country in question.
- § Decision: A Regional (Africa) coordinating body/committee should be in place and that this body will be composed of representatives from the five sub-regions of Africa (preferably, of NC Chairs) and a representative from the Geological Society of Africa. They will select their own Chair
- § Suggestion: IYPE NCs should be named as National Committees of Planet Earth.
- § Suggestion: A request has to be sent to Germany requesting to use the IYPE logo beyond 2009.
- § Suggestion: A global coordinating body/committee should be in place, composed of representatives from all the continents active in post IYPE activities. Each continent will have two representatives on this committee.

INQUA Structure



New structure of INQUA's core activities, endorsed by the International Council and General Assembly of INQUA at the XVIIth Congress, Cairns, Australia, 2007, based on a figure created by Gary Haynes, President of HABCOM.

INQUA sponsors a programme of international collaborative research projects in Quaternary science. These are promoted and managed by INQUA Commissions. Commissions initiate, promote and manage INQUA's international collaborative scientific activities. Prior to 2007, some Commissions recognised *Sub-commissions*, which provided a focus on very specific themes within INQUA's sphere of interest. All commissions also supported projects, which to some extent fulfilled a function similar to Sub-commissions. Partly because of a blurring of the distinction between sub-commissions and projects, and also because of lack of clarity as to whether sub-commissions could be regarded as permanent entities or not, the structure of INQUA's core activities has been revised, and is summarised in the figure above.

The International Council at the 2007 Cairns congress resolved the following:

§ that the use of the term '*sub-commission*' be discontinued within INQUA's structure and formal reports

§ that Commissions will initiate and nurture *International Focus Groups*, which are non-permanent collaborative actions designed to address scientific themes and issues of wide international significance; the duration of IFGs will depend upon their track records and how well they continue to meet key scientific needs

§ *Projects* are smaller-scale activities that are focused on very specific aims and objectives and which contribute in strategic ways to the wider aims of one or more IFGs.

This makes for a clearer and more strategic hierarchical structure and terminology for the orchestration and description of INQUA's core activities. Inter-Commission collaboration in IFGs and projects is encouraged by the INQUA executive, as is co-operative arrangements with other international scientific bodies such as IGCP, PAGES and IGBP. For further explanation of this structure and feedback on potential IFG or project proposals, initial contact should be made with the relevant Commission President or other commission 'officers'.

Projects

INQUA Projects supported or endorsed for 2009

N.B. We are concerned that several grant holders did not claim their grants by the cut-off point of 31 May 2009. It would be most helpful if those involved were to contact the Treasurer, Marie-France Loutre marie-france.loutre@uclouvain.be either to decline their grant or to discuss late payment. Thank you.

INQUA Project	Commission (2 nd Commission)	Project Title	Leader
0501	CMP	Black Sea-Mediterranean Corridor during last 30 ky: Sea level change and human adaptation strategies	Valentina Yanko-Hombach
0704	TERPRO	Sand seas and dune fields of the world: a digital Quaternary atlas	Nick Lancaster
0801	PALCOMM	Evaluation of PMIP Palaeoclimate Model Simulations	Sandy Harrison
0802	PALCOMM	DIRTMAP2 Working Group	Barbara Maher
0803	PALCOMM (TERPRO)	Meltwater routing and Ocean-Cryosphere-Atmosphere Response (MOCA)	Lev Tarasov
0804	PALCOMM (TERPRO)	Ombrotrophic peatlands as Holocene palaeoenvironmental archives: towards a global network	Steve Jackson
0805*	PALCOMM	Land-ocean correlation of long Quaternary records from the Southern Hemisphere (PASH2)	Jan-Berend Stuut
0811	TERPRO	A global catalogue and mapping of earthquake environmental effects	Alessandro Michetti
0812	TERPRO	Developing international research collaboration and capacity in investigations of subglacial processes and environments	Jasper Knight
0901	HABCOM	Quaternary environments and Hominid evolution in India	Parth Chauhan
0902	HABCOM (SACCOM)	Chronology and environment of the earliest occupation of northern Europe	Katharine MacDonald
0903	HABCOM	Network for establishing a multi-proxy palaeo-botanical expertise in East Africa	Mohammed Umer
0904	HABCOM	Palaeo-climatic/sea level changes and anthropogenic responses and adaptations during the Quaternary in the West African subregion: evidences from marine and terrestrial sources	Mike Akaegbobi

0905*	PALCOMM	PCMIP (Palaeo carbon modelling intercomparison project)	Ayako Abe-Ouchi
0906	SACCOM	The Quaternary of southern Spain: a bridge between Africa and the Alpine domain	Mario Coltorti
0907	SACCOM	INTREPID - Enhancing tephrochronology as a global research tool through improved finger printing and correlation techniques and uncertainty modelling	David Lowe
0908	TERPRO	Palaeogroundwater: Long-term groundwater dynamic and its relation to terrestrial palaeoenvironments	Sylvi Haldorsen
0909	PALCOMM (SACCOM)	The North Atlantic INTIMATE Project: INTegrating Ice core, MARine and TERrestrial records (60,000 to 8000 years ago)	Chris Turney
0910	CMP	Coastal and marine diatoms of the Southern Hemisphere: taxonomy and environmental applications.	Kathryn Taffs
0911	CMP	Decoding the Last Interglacial in Western Mediterranean	Teresa Bardaji
	activity	Young Earth Scientists Network	Joanne Venus

*endorsed without funding

INQUA Project 0704: Sand seas and dune fields of the world: a digital Quaternary atlas.

Leader: Nicholas Lancaster, Desert Research Institute, USA. nick@dri.edu

Sand seas and dune fields contain the majority of aeolian sand in arid and semi-arid areas in low and mid latitudes. In addition, there are significant areas of dunes that have accumulated in past and present periglacial environments. Their construction has been determined by climatic, tectonic, and sea level changes that have affected sand supply, availability, and mobility, as well as the preservation of deposits and landforms from prior episodes of aeolian construction (Kocurek and Lancaster, 1999). As significant sedimentary deposits and landforms, sand seas and dune fields also provide an archive of the effects of climate change including unique data on past wind directions.

The primary objective of this project is the production of a global database of geographically-located chronologic information on periods of aeolian sand deposition for desert and other inland dunefields and sand seas. Coastal dune areas may be included at a later date. The data are to be accessed, analyzed, and visualized using a geographic information systems (GIS) approach and be available via the web to all Quaternary scientists. An archival version of the database will be deposited with the Paleoclimatology section of the NOAA National Climatic Data Center.

Workshops to develop the database and establish standards for inclusion of datasets were held in Cairns, Australia (August 2007) and Oxford, England (January 2009). The database is being compiled with data from published sources by regional correspondents, each of which has expert knowledge of a desert region. A review of the compiled data will take place at the next project workshop to be held in the United Arab Emirates (January 2010). The group plans to hold a symposium on the dunes atlas and its implementation at the next INQUA Congress (Berne, Switzerland, 2011). This symposium will include

reports on regional aeolian history as well as initial interpretations and correlations.

Reference

Kocurek, G. & Lancaster N. 1999. Aeolian sediment states: theory and Mojave Desert Kelso Dunefield example. *Sedimentology* 46: 505-516.

INQUA Project 0803: Melt water routing and Ocean-Cryosphere-Atmosphere response (MOCA)

Leader: Lev Tarasov, Memorial University of Newfoundland, Canada. lev@mun.ca. <http://www.physics.mun.ca/~lev/>.

See International Focus Group news below for further details.

INQUA Project 0804: Ombrotrophic peatlands as Holocene paleoenvironmental archives: Towards a global network

Leader: Stephen T. Jackson, University of Wyoming, USA. jackson@uwyo.edu

Sediments of Sphagnum-dominated peat lands constitute a valuable archive of Holocene climate change and variability. These peat lands are broadly distributed at mid to high latitudes in both the Northern and Southern Hemispheres, and at high elevations at lower latitudes, including tropical mountains. Their sediments contain a variety of microfossil, macrofossil, geochemical, and stable-isotope proxies of temperature and hydrology, and records are demonstrably sensitive to subcentennial to subdecadal climate variation. In the first stage of the project, we are convening an international workshop in May 2009, assembling 36 leading researchers from 15 countries to identify critical research needs and priorities, develop a comprehensive science agenda to advance peatland paleoclimatology, and initiate planning for a global network of Holocene peatland records. Participants will include scientists with expertise in peatland paleoclimatology, hydrology, and biogeochemistry, as well as

paleoclimatologists with expertise in modeling, and statistical analysis, and other late Holocene archives (e.g., tree rings, speleothems, lake sediments)



At the workshop on “Peatland Archives of Holocene Climate Variability and Carbon Dynamics” held at Vihula estate in rural Estonia 17-20 May 2009



Edgar Karofeld (center) discussing pool formation and its role in methane flux with Mariusz Lamentowicz, Atte Korhala, Dmitri Mauquoy, François de Vleeschouwer, and Minna Valiranta during the field trip. Photo credit: Bas van Geel.

Project update: A workshop on "Peatland Archives of Holocene Climate Variability and Carbon Dynamics" was held at Vihula estate in rural Estonia 17-20 May 2009. The workshop, co-sponsored by INQUA, PAGES, the U.S. National Science Foundation, the Quaternary Research Association, and the University of Tartu, was organized by Stephen T. Jackson (University of Wyoming), Edgar Karofeld (University of Tartu), Robert K. Booth (Lehigh University), Dan Charman (University of Plymouth), and Bas van Geel (University of Amsterdam). The workshop, attended by 34 scientists from 15 countries in Europe, North and Central America, and Asia, included 2½ days of discussions and a ½-day field trip to a local peatland.

Plenary presentations and breakout discussions centered on development and refinement of paleoclimate proxies, developing forward models of peatland response to climate change, refinement of chronological and statistical models, carbon dynamics, development of data networks for peatland archives, and integrating peatland archives with earth-system models and other Holocene archives. Ongoing follow-up activities include development of cooperative databases for peatland paleoclimate and carbon data, launching of an integrated effort to compile and analyze peatland records of late Holocene carbon storage, preparation of review and synthesis papers. Additional workshops and working groups are planned for the coming year.

For more information contact jackson@uwyo.edu and see <http://www.lehigh.edu/~rkb205/peatworkshop/>

INQUA Project 0805: Land-Ocean correlation of long Quaternary records from the southern hemisphere on orbital and sub-orbital timescales (PASH2).

Leader: Jan-Berend Stuut, University of Bremen, Germany. jbstuut@marum.de www.marum.de/jbstuut.html

For the moment we have planned two major activities:

- § a session during EGU 2009 in Vienna, Austria. PASH2-INTIMATE session at EGU09 <http://meetingorganizer.copernicus.org/EGU2009/session/223>
- § a (proposed) session during Southern Connections 2010 in Bariloche, Argentina.

The session in Vienna is a merger with the Intimate Session, and is now labelled: "Integration of marine, terrestrial, and ice-core records". It will take place on Monday 20 April, starting 15.30 in room 28. We have compiled a program of 6 speakers talking about a wide variety of proxy records from onland- marine- and ice-core studies. There will be an accompanying poster session on the same day.

The second activity is a session that we proposed for the Southern Connections meeting, to be held in 2010. We have also already established contacts with the editor-in-chief of Quaternary International, proposing a special volume as a result of this session. The idea is that we invite a number of speakers to contribute to this special, and offer the "other" participants to also publish their work in a peer-reviewed journal. This way we can ensure that a substantial number of papers will appear. IF our session takes place (we are still awaiting the final "go" from the program committee) we will spread the word through as many as possible available channel and hope that we can come

back to you to also make announcements in the INQUA channels.

INQUA Project 0811: A Global Catalogue of Earthquake Environmental Effects: a tool for improved seismic hazard assessment

Leaders: Guerrieri L. (1) & Michetti A.M. (2) (1) Geological Survey of Italy, Roma. alessandro.michetti@uninsubria.it (2) University of Insubria, Italy.

The traditional approach for seismic hazard assessment based mostly on the effects on humans and manmade structures may result often poorly constrained, especially in the epicentral area of strong to large seismic events (intensity degree > IX) when the intensity scales are afflicted by saturation, and in sparsely populated areas where effects on buildings are not recorded. On the other hand, recent progresses in the field of paleoseismology have clearly shown that the impact on natural environment (in terms of, for instance, length of surface faulting, amount of surface fault displacement, volume and number of landslides, dimension of sand volcanoes in alluvial terrains) is a function of the earthquake size (e.g. Wells & Coppersmith, 1994). Therefore, classical macroseismic data have to be integrated with detailed characterizations of coseismic effects produced on natural environment by "innovative" techniques, like paleoseismic investigations. The application of the recently developed ESI intensity scale (Michetti et al., 2007), which uses the characteristics, size and distribution of environmental effects for the evaluation of seismic intensity, has confirmed that this approach provides a more reliable image of the earthquake, being the effects produced on natural environment more strictly related to the earthquake size.

The importance of the coseismic environmental effects in seismic hazard assessment was clearly shown by the recent Chuetsu-Oki earthquake on 16th July 2007 (Mw = 6.6) that damaged the Kashiwazaki – Kariwa Nuclear Power Plant (KK NPP) in Central Japan, the largest civilian nuclear facility in the world. This event was generated by a reportedly "blind" active structure located very close to the NPP site. Damage to the NPP site was essentially due to ground failure and liquefaction. Moreover, this event produced a large number of environmental effects (sand blows, landslides, ground cracks, coseismic uplift) in the surroundings of the KK NPP. Siting investigations performed in the 1980's on the basis of Quaternary geology, historical and instrumental seismicity, geophysical prospecting, etc., had likewise excluded the presence of active faults in the proximity of the site (< 30 km), and judged the folds under the plant not active in the past 50,000 years. However, the occurrence of environmental effects was not considered in the earthquake scenarios resulting from NPP siting investigations.

A recent project supported by INQUA (International Union for Quaternary Research) in the frame of the Commission on Terrestrial Processes, Deposits, and History, aims at revising, mapping and cataloguing at global scale the effects produced on natural environment by contemporary, historical and paleo seismic events, with special focus on the most diagnostic features for intensity assessment.

The infrastructure of this new global catalogue will follow the typical standard formats of seismic catalogues, where one earthquake is described by one string of a table char-

acterized by typical fields like “Date of occurrence” (Year, Month, Day, Hour, Min, Sec), “Epicentral Area”, “Epicentre Coordinates”, “Epicentral intensity” (I0) and “Magnitude” (instrumental or estimated on the basis of macroseismic observations). The last part of the string should be more specifically focused on the characteristics and distribution of environmental effects diagnostic for the ESI epicentral intensity assessment, i.e. surface faulting parameters (surface rupture length, maximum displacement, prevalent slip type) and the total area of secondary effects.

A spatial interface of the catalogue will be designed in order to map the distribution of ESI local intensities (similarly to traditional macroseismic intensity fields) and to archive at higher resolution the location of sites where environmental effects occurred.

This effort will allow to improve the quality of seismic hazard assessment in numerous areas and also to develop standardized methodologies for mapping environmental effects during emergency phases after future earth quakes. In this perspective, remote sensing techniques (optical, radar and multi-spectral images focused on pre- and post-event scenarios) integrated with in situ surveys will play a crucial role in mapping a wide number of morphogenetic effects associated to an earth quake.

References

- Michetti A.M., Esposito E., Guerrieri L., Porfido S., Serva L., Tatevossian R., Vittori E., Audemard F., Azuma T., Clague J., Comerci V., Gurpinar A., McCalpin J., Mohammadioun B., Morner N.A., Ota Y. & Roghazin E. (2007) – Intensity Scale ESI 2007. In: Guerrieri L. & Vittori E. (Eds.): Memorie Descrittive Carta Geologica d’Italia., vol. 74, Servizio Geologico d’Italia – Dipartimento Difesa del Suolo, APAT, Roma, 53 pp.
- Wells, D.L., Coppersmith, K.J., 1994. New empirical relationships among magnitude, rupture length, rupture width, rupture area and surface displacement. Bull. Seismol. Soc. Am. 84, 974–1002.

INQUA Project 0812: Developing international research collaboration and capacity in investigations of subglacial processes and environments.

Leader: Jasper Knight, University of Exeter, UK.
j.knight@exeter.ac.uk

This project (2007-11) has three main objectives: (1) to develop an international research network of workers on subglacial processes and environments; (2) to host an international meeting on subglacial processes and environments, that helps catalyse this network; and (3) to support in their work less experienced researchers and those from developing countries.



Participants at the drumlin symposium

As part of this project two sessions on sub glacial processes and environments were convened at AGU Fall Meeting (December 2008). 34 presentations were made in these sessions. The VII International Drumlin Symposium (23-26 March 2009) took place in Westport, western Ireland, the first drumlin symposium to run since 2001. Over 30 attendees from 10 different countries were at the meeting. INQUA financially supported attendance by five less experienced researchers. The meeting comprised 1½ days of papers and 2½ days of field excursions that visited the ice-shaped landscapes of part of western Ireland. Drumlin sections were examined in Clew Bay and Galway Bay. The karstic landscape of the Burren was also visited. Papers presented at this meeting will be published in a special issue of Sedimentary Geology.

Over the next months a collaborative international research network will be set up, based on discussions undertaken at the symposium, and involving partners from

4-6 different countries. This network will be focused on a specific collaborative research project on sub glacial dynamics that will involve all these partners.

The overall project builds international research capacity and collaboration into sub glacial environments and processes to the next INQUA Congress and beyond, and supporting research by less experienced scientists and those from developing countries.

INQUA Project 0901: The Siwalik Paleanthropology Project

Leader: Parth R. Chauhan; Indiana University, USA.
pchauhan@indiana.edu

The Siwalik Paleanthropology Project (INQUA funded Project No. 0901) is part of a broader project entitled Quaternary environments and hominid evolution in India, which involves multidisciplinary investigations in various

parts of India to understand how early hominins and their later descendants evolved and adapted to diverse environments during the Plio-Pleistocene. The primary goal of the Siwalik project is to identify and clarify the evidence for the earliest hominin dispersal and adaptations in the subcontinent. The Siwalik Hills region and the adjacent Karewa deposits in Kashmir preserve a lengthy fluvio-lacustrine record of paleoanthropological and related data spanning the Miocene, Pliocene and Pleistocene. These two zones may have played a major geographic role in facilitating an ecological corridor between the earliest West Asian evidence (i.e. Dmanisi) and the Southeast Asian sites (i.e. Sangiran, Mojokerto). Our interdisciplinary work will involve systematic surveys, GIS mapping, Paleolithic archaeology, biostratigraphy and vertebrate taphonomy, paleoenvironmental reconstructions (through various sources), absolute and relative geo chronology and actualistic studies in Indian national parks.

INQUA Project 0902: Chronology and environment of the earliest occupation of northern Europe.

Leader: Katharine MacDonald, University of Leiden, Netherlands. k.macdonald@arch.leidenuniv.nl

Conference "Chronology and environment of the earliest occupation of northern Europe", 22nd-23rd May 2009, Leiden, The Netherlands

Expansion of human ancestors across Eurasia is a key event in human evolution, yet the timing and nature of colonization of northern Europe remains the subject of much debate. Fossil and archaeological sites document hominin presence at low latitudes across Eurasia by 1.8 mya, and in southern Europe by 1 mya. Until recently, it seemed that occupation of higher latitudes in Europe was considerably delayed. However recent discoveries from the Cromer Forest-bed Formation, East Anglia, UK, have demonstrated surprisingly early hominin occupation of northern Europe. A robust chronology for these sites, and correlation with other areas, particularly the Mediterranean, as well as reconstruction of hominin environments, will provide further insight into the process of colonization, and feed into the wider debate on hominin expansion in Eurasia. With this in view, a two-day conference in Leiden was organised focusing on the prospects and problems for chronology and environmental reconstruction in the late Early and early Middle Pleistocene. The conference was attended by scientists from the UK, Netherlands, Germany, Poland and Russia.

In a keynote lecture, Richard Preece highlighted a number of events making it possible to break down this period in north-west Europe, including examples of faunal turnover and the paleomagnetic record. The nature and timing of glaciation provided a focus for discussion: constraints on the age of glacial succession in East Anglia to the Anglian (MIS 12), with implications for dating archaeological sites, were discussed in the keynote lecture. In addition, recently published data on the timing and amplitude of fluvial discharges from the former Channel river, presented by Phil Gibbard, supports the view of an earlier (MIS 12) date for the Elsterian glaciation. Meijer (2009) reviewed the Cromerian Complex of the Netherlands, and drew attention to limitations in the definition of the Noordbergum interglacial, including traditional AAR dating which points to attribution to MIS 11. In this first session potential

solutions and remaining problems for the chronology of this period in north-west Europe were explored.

Kim Cohen introduced the subject of Cromerian environments with an illustrated presentation of his view of the palaeo-landscape of the southern North Sea basin, based on GIS storage and analysis of data from terraced river valleys and heterogeneous deposits from the North Sea basin. The nature of the 'mid-Pleistocene revolution' provided a focus for discussion, including the impact of increases in the amplitude and duration of cold stages on terrestrial vegetation, and the timing of the arrival of steppe faunas in Europe. These changes, in particular the emergence of the herbivore-rich 'mammoth-steppe', had important implications for colonizing hominins.

A third session focused on the rich record and long sequences from eastern continental Europe and southern Russia, introduced in a wide-ranging survey by Charles Turner. Anastasia Markova and Alexander Agadzhanjan presented evidence from the rich small mammal fauna from well-dated stratigraphic sequences from eastern Europe, while Leszek Marks focused on the geological record from Poland. While the numerous distinctive faunal assemblages apparent from this region present a contrast with the isolated points available from north-western and central Europe, similarities in the record for these regions provide a valuable opportunity for dating and correlation.

In the concluding keynote lecture, Nick Ashton drew on the rich early Middle Pleistocene record from the UK, focusing on sites investigated or revisited as part of the Ancient Human Occupation of Britain project, to review the environmental context of hominid occupation, varying from relatively cool conditions, with coniferous forest dominating regional vegetation, to Mediterranean-like conditions. With the help of Simon Parfitt, he presented new archaeological, chronological and environmental data from early sites from the Cromer Forest-bed Formation. A key question concerns whether the earliest occupants colonized some of the relatively challenging environments of northern Europe, and discussion focused on the challenges of environmental reconstruction, including identifying differences relevant to hominins. Given that archaeology was only recently discovered in the Cromer Forest bed Formation despite 150 years of investigation, the role of research history, and potential for locating similarly early sites elsewhere, was also considered.

The meeting provided a timely opportunity to assess the implications of the new discoveries for the nature and timing of colonization in northern Europe. The conference was supported by funding from INQUA, AHOB II, and the Spinoza Prize of the Netherlands Organization for Scientific Research (N.W.O.). The proceedings of the conference will be published in a special issue of Quaternary International.

Reference

Meijer, T., Cleveringa, P. 2009. The Cromerian Complex in the Netherlands. WMC Kwartair Consultants, PalaeoMal Report M31, pp 1-10.

INQUA Project 0903: Network for establishing a multi-proxy palaeo-botanical expertise in East Africa

Leader: Mohammed Umer, University of Addis Ababa, Ethiopia. moha_umer@yahoo.com

The first meeting of this group will take place in conjunction with the Second Biennial Meeting of the Eastern African Quaternary Association in May 2009. Specific objectives of the group are:

- § Inventory of existing available expertise in the area of paleobotanical research in the region
- § Inventory of paleo-botanical comparative material so far collected and existing in the region or elsewhere
- § Establishing a network of the various researchers working in the region
- § Identifying gaps and proposing way-forward for the filling the gaps
- § Preparing protocol for availing the material for interested researchers

INQUA Project 0904: Paleo-climatic/sea level changes and anthropogenic responses and adaptations during the Quaternary in the West African sub region: evidences from marine and terrestrial sources.

Leader: Izuchukwu Mike Akaegbobi. University of Ibadan, Nigeria. izumike20022002@yahoo.com

First International Workshop of West African Quaternary Research Scientists 2009, City of Ibadan, Nigeria, October 26–30, 2009

Arising from the ICSU 29th General Assembly in Maputo, Mozambique in October 2008, is the need for Quaternary research scientists from across the West African sub region to come together as an association with the possibility of setting up a branch of INQUA in the sub region. An application for fund support was submitted through the President of INQUA's Commission on Palaeoecology and Human Evolution (PAHE). At its meeting in Sedona, AZ., USA the INQUA Executive Committee awarded a seed grant to help facilitate a workshop/summit of Quaternary research scientists from West African sub region to be convened at the last quarter of 2009 in the University town of Ibadan, Nigeria.

The theme for this maiden workshop will focus on "Palaeoclimatic/sea level changes during the quaternary in West Africa with evidences from both marine and terrestrial sources. In addition to this central theme, other subtopics on palaeobotanical studies in the Late Holocene of West Africa as well as Pleistocene faunal and floral distributions with respect to climatic conditions in the past 2 Million years ago will be addressed. This first International workshop of Quaternary scientists in West Africa seeks among other things:

- § Intensify interactions between West African Quaternary scientists and their counterparts elsewhere in the world.
- § Promote research and networking of scientific data notably by bringing together specialists working in all the sub fields of palaeoecology of Quaternary in West Africa.
- § Promote exchange of ideas with specialists working in research laboratories based in developed countries.
- § Mentor, involve and motivate younger scientists,

- § Explore the possibility of the emergence of the West African Quaternary Research Association (WAQUA).
- § Set priorities and tasks while forming working groups and identify scientific problems to be addressed.

The first circular is available. All Quaternary research scientists working in West Africa with focus on climatic and sea level changes during Pleistocene and Holocene periods as well as faunal and floral distribution and human adaptations and responses are encouraged to contact the project leader.

INQUA Project 0907: Enhancing tephrochronology as a research tool through the INTREPID project

Leader: David J. Lowe, University of Waikato, New Zealand. d.lowe@waikato.ac.nz

INTREPID* is a new project led by the International Focus Group on Tephrochronology and Volcanism (INTAV) that operates primarily through the Stratigraphy and Chronology Commission. INTREPID's central goals are to advance understanding and efficacy in fingerprinting, correlating, and dating techniques, and to evaluate and quantify uncertainty in tephrochronology, and thus enhance the ability of tephrochronologists to provide an optimum linking, dating and synchronizing tool for a wide range of Quaternary research projects around the world. At the same time INTAV aims to help re-build the global capability of tephrochronology for future research endeavours.

Although considerable new and exciting research projects in tephrochronology are underway in many countries and on various topics (e.g. SMART - Synchronising marine and ice-core records using tephrochronology), the INTAV executive (Siwan Davies, Phil Shane, and David Lowe) felt a need to integrate many of these projects more coherently through an INTAV initiative. INTREPID is both a response to achieve such integration and an opportunity to develop further the discipline to a higher level of efficacy, and to help train and mentor the next generation of tephrochronologists, via five major objectives (listed below). INTREPID is considered as a long-term project (it is envisaged to run for about eight years or effectively two INQUA cycles) and that its ultimate success requires a collective, tephra-community-based approach integrated with expertise from a range of allied disciplines (e.g. geochemistry, Bayesian statistics, and modelling). INTREPID has five inter linked objectives (in short):

- § New characterization techniques
- § Improved guidelines and protocols for geochemical data acquisition and quality
- § Developing regional databases
- § Objective correlation and quantification of uncertainty
- § Improving age models for key marker tephtras.

Further details on the objectives and the project rationale in general are available on the INTAV website at

http://www.sges.auckland.ac.nz/the_school/affiliations/intrepid_project_intav_inqua0907.pdf

A range of other projects involving tephrochronology, such as the VAST Arctic tephra project, INTIMATE, SMART, and RHOXTOR are affiliated in part with the INTREPID project.



Holocene tephra layers and buried soil horizons near Rotorua, North Island, New Zealand (photo: D.J. Lowe)

The INTAV executive envisage that invited specialist colleagues will (volunteer to) take leadership roles for each project but emphasizes that any members with interests in specific projects are welcome to contact the project leaders or INTAV executive members about their possible contribution to an objective or the project in general. The project is collaborative and international in scope. A key aspect is to involve and mentor new or young, emerging tephrochronologists or volcanologists who have begun work in the discipline in the past few years (especially those working on distal cryptotephra and ice cores). There is likely to be a serious loss of expertise and experience in tephrochronology over the next decade as academics and others retire.

The initial meeting for INTREPID, 'Active Tephra in Kyushu', being held 10-17 May 2010 in Kirishima, Kyushu Island, southern Japan, provides a critical opportunity for emerging tephrochronologists to present their research and to meet experienced tephrochronologists and to actively encourage better mentoring. The meeting organisers plan to involve and support as many graduate students as possible to encourage them to go further in the discipline, to meet senior scientists in a supportive environment, and to provide up-to-the-minute feedback to their studies. An INQUA grant in support of INTREPID will be allocated largely for travel assistance to a number of young scientists, and ideally to a scientist from a developing country, to attend the Kirishima conference in 2010.

The first circular is available at: [http://www.ris.ac.jp/intav-
jp/](http://www.ris.ac.jp/intav-jp/). An INTREPID workshop or symposium is planned for the conference and the organizers encourage your attendance and welcome your contributions. More information about possible travel grants will be available in the second circular due in August 2009 (or from INTAV secretary David Lowe).

*INTREPID loosely stands for 'EnhancINg TephRochronology as a global research tool through improved fingErPrinting and correlation techniques and uncertainty moDelling'. The 'ID' at the end of INTREPID is intended to evoke tephra fingerprinting or identification as a core function.

INQUA Project 0908: Palaeogroundwater: Long-term groundwater dynamic and its relation to terrestrial palaeoenvironments

Leader: Sylvi Haldorsen, Norwegian University of Life Sciences, Norway. sylvi.haldorsen@umb.no

See following International Focus Group news for further information.



International Focus Groups

TERPRO: Glaciation and its Control on Hydrology

Leaders: Jasper Knight, University of Exeter, UK, j.knight@exeter.ac.uk & Neil Glasser, Aberystwyth University, UK, nfg@aber.ac.uk

Scope: As one of the six new Focus Groups within TERPRO, the Glaciation and its Control on Hydrology Focus Group exists to stimulate and promote research on topics related to glacial processes, deposits, and history, especially in areas that investigate new frontiers in Quaternary science and incorporate multiple and cross-disciplinary research efforts, multi-national research, and involve developing countries.

Objectives: The Glaciation and its Control on Hydrology Focus Group has two main specific objectives:

To understand better the controls on present glacier dynamics. The objective is to improve our understanding of the climatic and internal glaciological controls on, and sensitivity of, present day glaciers and ice sheets, in order to evaluate better their responsiveness and vulnerability to present and future climate change and other forcings. It is also important to understand the implications of glacier hydrology and mass balance for water provision in water-scarce areas, and for hazard evaluation.

To understand better the dynamics of past glaciers. The objective is to improve our understanding of the sensitivity of, and controls on, past glacier dynamics over long and short time scales within the context of rapidly changing deglacial climates of the last glacial-interglacial transition, and during fluctuating climates of the Holocene (including the Medieval Warm Period-Little Ice Age). It is also important to consider the role of ice-bed processes in controlling glacier dynamics, and to evaluate these processes using geological (geophysical, geomorphological and sedimentological) evidence, and reconstruct past basal thermal and hydrological characteristics.

Accomplishments since INQUA 2007

This Focus Group has convened and run sessions at the 33rd IGC Congress in Oslo, 6-14 August 2008 (<http://www.33igc.org/coco/>)

Subglacial environments: Processes, sediments, landforms, modelling and Experiments. Organisers: Jan A. Piotrowski, Chris D. Clark, David J.A. Evans

Debris transport and deposition by glaciers. Organisers: Mike Hambrey, Neil Glasser, David Graham.

This Focus Group has convened and run the VII International Drumlin Symposium, Westport, Ireland, 23-26 March 2009, organised by Jasper Knight (<http://tre-research.ex.ac.uk/Drumlin2009/>)

Report from Earth Science Ireland (in press): Drumlins on the Atlantic fringe: A report from the VII International Drumlin Symposium, 23-26 March 2009, Westport

Across Ireland, landforms that were shaped by the action of ice during the last Quaternary glaciation, culminating in the period 25,000-13,000 years ago, are dominant features of today's landscape and have largely controlled

patterns of soils, ecology, river resources, and human settlement. Historically, drumlins (subglacially-streamlined hills) have been a specific focus of Quaternary research in Ireland, for a number of reasons. Linguistically, the Irish word droimnín (meaning, broadly, a hill) was adopted by the Rev Maxwell H. Close in his key paper of 1867 to refer to an upstanding glacial hill or ridge comprised of boulder-clay (glacial till). Drumlin distributions in Ireland were extensively described by key workers including J.K. Charlesworth and W.B. Wright. The drowned drumlins of Strangford Lough frequently appear as the iconic 'basket of eggs' topography in textbooks. Much of the data on drumlin sediments have also come from studies undertaken in Ireland.

From initial mapping studies by Close and others, our understanding of drumlins is now based on a range of data types including numerical analysis and modelling; detailed sediment descriptors and analytical methods; high-resolution satellite imagery, GPS, LiDAR and sub-surface geophysical methods; and radiometric dating. Using these techniques, drumlin studies are placed in a wider context and as part of a continuum of subglacial bedforms indicative of changes in basal thermal and hydrological regimes. Ironically, this more sophisticated view of drumlins takes place at a time when it is now apparent that Irish drumlins are, for the most part, modified and remoulded Rogen (ribbed) moraines.

Drumlins and other subglacial bedforms are now back in vogue, and lie at the heart of a new research project funded by the International Union for Quaternary Research (<http://www.inqua.tcd.ie>) and run by Jasper Knight (http://www.exeter.ac.uk/cornwall/academic_departments/geography/research/staff-and-research-profiles/jasper_knight.shtml).

As part of this project, the seventh in a series of international drumlin symposia was held on drumlin landforms and sediments and based in Westport, County Mayo. The aim of this meeting was to revive the 'brand' of drumlin symposia (which started in 1984) and inspire a new generation of scientists by visiting what might be considered (one of) the homes of glacial geology. This meeting had a strong field focus and comprised 1½ days of papers and 2½ days of field excursions. Academic presentations were made by new and 'old-hand' researchers from 10 different countries on all aspects of subglacial processes, products, dynamics and controls and from field sites including Antarctica, USA, the Alps and Ireland. Participants also visited field sites on the south side of Clew Bay, Connemara, Galway Bay and the Burren. Some of these sites were also visited during the IV drumlin symposium in 1992. The 2009 meeting revisited these sites in the light of new models for ice sheet development and extent in Ireland, based on new bedform mapping and cosmogenic dating evidence. This has helped reshape debates on the formation and controls on drumlin formation. Proceedings from the meeting will be published as a Special Issue of *Sedimentary Geology*.



TERPRO: Palaeogroundwater

Leader: Sylvi Haldorsen, Norwegian University of Life Sciences, Norway. sylvi.haldorsen@umb.no

Groundwater dynamic and climate history are closely linked. Longer and shorter climate cycles during the Quaternary have resulted in major changes of the recharge and discharge of groundwater flow systems. Groundwater has during the recent years become an increasingly important factor also in the reconstruction of palaeoclimate, and vice versa, climate history has become an important tool to understand long-term groundwater dynamic.

Groundwater systems often reflect the local climate conditions better than do rivers and river-fed lakes. That makes them important for e.g. speleothem studies and studies of fully groundwater-fed aquatic systems. And many large groundwater systems have a very complex history, with remote recharge and multiple periods with recharge interrupted by no-recharge conditions.

This is the background for the establishment of the INQUA International Focus Group on Palaeogroundwater, which is an activity under the Commission on Terrestrial Processes. The main focus of the group is Long-term groundwater dynamic and its relation to the following terrestrial palaeoenvironments:

A. Glacier-related groundwater systems: Englacial and subglacial groundwater systems are of importance for the behaviour of the glaciers. Groundwater may also play an important role in the formation of glacial Quaternary sediment assemblages. This is shown by studies of groundwater flow in connection with ice sheets, where the presence of groundwater is critical for sedimentary and glaciotectonic processes. In polar areas the fluctuation of sea level and the extension of glaciers during glacial – interglacial cycles control the distribution of permafrost and thereby conditions of groundwater recharge and discharge.

B. Lakes and wetlands: Groundwater is often a key factor in palaeolacustrine studies. High lake levels and large wetland distribution are associated with high rainfall, while low lake levels, often with increasing salinity, and shrinking wetlands are associated with droughts. Many lakes are fed entirely by groundwater, and the lake levels fluctuate in phase with the phreatic water levels in the surrounding aquifers. Thereby palaeo-rainfall can be more safely modelled than for lakes connected to river systems. In several cases hydrological models have been used to simulate palaeo-rainfall. Also the isotopic, geochemical and biological variations in sediment records of such lakes are used to reveal periods of wet and dry climate during the Quaternary, especially in areas not directly influenced by the large Quaternary ice sheets. This applies in particular to diatom studies.

C. Karst and speleothems: Speleothems often form the basis for high-resolution climate curves. They can give important information about palaeotemperatures and palaeorainfall. As the water flowing into caves is mainly local precipitation, they give very site-specific information. However, it is a growing concern that the isotopic signals from speleothems cannot always be directly converted to temperature or rainfall. This is for instance a problem in the transition zone from a temperate to a subtropical climate.

D. Fossil groundwater and palaeoaquifer studies:

Large groundwater aquifers may have a complex long-term recharge history, with long periods without any recharge in between wetter periods with a favourable recharge situation. Groundwater in previously recharging aquifers may become totally fossil during dry-climate events. The palaeoclimate history, in combination with isotopes and other geochemical parameters can be useful to reconstruct the history of such aquifers.

Dating of groundwater and the studies of stable isotopes in groundwater may give direct information about palaeoclimate (many examples from north Africa and the Middle East)

E. Groundwater and sea-level fluctuations: Fluctuations in sea level may influence the condition of many groundwater aquifers. A rise in sea level may cause problems in areas where the groundwater level is near present sea level, causing e.g. saltwater intrusion. Results of studies of the past have shown that climate changes may lead to dramatic effects on groundwater systems. This will become even more critical during a future global climate change accompanied with a rise in sea level, when the demand for drinking water will be much larger than ever before, leading to an increased exploitation of groundwater aquifers.

The following **main project** will run during the period 2009-2011: *Methods in palaeogroundwater studies*. We will in particular focus on methods used in studies of modern groundwater aquifers, and to see how these can be applied also in palaeogroundwater studies and in studies of deposits related to groundwater-fed systems. These include:

- A. Geochemical parameters: - Stable isotopes, - Radioisotopes, - Other geochemical parameters
- B. Biological parameters used on groundwater-fed systems: - Diatoms, - Other organisms, which are diagnostic for groundwater-fed systems
- C. Hydrogeological modelling (conceptual, analytical and numerical) used on palaeogroundwater systems

Workshop in 2010: Methods for the study of long-term groundwater dynamics

- § Presentation of papers related to methods and modelling
- § Publication of volume of GSL or QI related to the presentations during this workshop
- § Training course: *The importance of palaeoclimate for the present groundwater resources – case studies, methods and modelling*. This will in particular be related to large aquifers in developing countries. The workshop will be arranged in collaboration with UNESCO IHP –Graphic and IAH Commission on Groundwater and Global Change

Session during the INQUA Congress in Bern in 2011. With approval of its rank in the INQUA hierarchy and election of new officers the TERRPRO International Focus Group on Palaeogroundwater has a full and corresponding membership. Those who are interested to attend, please look at the website <http://www.inqua.umb.no>



TERPRO: Rapid Changes during the Last Glacial-Interglacial Transition

Leader: Lev Tarasov, Memorial University of Newfoundland, Canada. lev@mun.ca
<http://www.physics.mun.ca/~lev/>

As one of the six new International Focus Groups within TERPRO, the Rapid changes during the last glacial-interglacial transition exists to stimulate and promote research on topics related to inter actions between ice and climate, with a focus on rapid changes. A key emphasis is to bring together both modellers and field specialists in all relevant areas (including paleoclimatology, paleo-oceanography, glaciology and glacial geology/geomorphology/ sedimentology).

The work of this International Focus Group is largely through the joint TERPRO-PALCOMM Melt water routing and Ocean-Cryosphere-Atmosphere response (MOCA) project, INQUA Project 0803 (see <http://www.physics.mun.ca/~lev/MOCA.html>).

This project has two main objectives:

- § The principal objective is to establish a constrained regional meltwater and ice berg discharge chronology for the northern hemisphere.
- § The consequent objective is to establish a good conceptual understanding of the interactions between

the cryosphere, ocean, and atmosphere associated with this chronology.

To meet these objectives, MOCA entails the review/compilation of relevant existing and new paleo records, expert assessment/analysis of the results of data-calibrated glacial systems modelling, and incorporation of new observational constraints to refine the modelling (with subsequent iterations thereof). As well, a close collaboration with the Paleo Model Intercomparison Project (PMIP 3, <http://pmip2.lsce.ipsl.fr>) offers a detailed examination of the climatic consequences of the evolving ice and meltwater chronology, critical for meeting the consequent objective of MOCA.

The main temporal focus of MOCA is the last deglaciation. However, a collaboration with the INQUA INTIMATE project will extend this further into the past. For general queries or to join MOCA, contact the project Leader (Lev Tarasov) or one of the co-leaders below.

Co-leaders for MOCA are: Trond Dokken and Richard Gyllencreutz Bjerknes Centre for Climate Research, Bergen, Norway, Timothy G. Fisher University of Toledo, Toledo, Ohio, USA, Hans Renssen Vrije Universiteit Amsterdam, Netherlands, Chris R. Stokes Durham University, Durham, UK.



National Members



Belgium

The BELQUA National Committee is the Belgian representative of INQUA, the International Union for Quaternary Research. It was created in 2006 as one of the Belgian National Scientific Committees of the Royal Academies for Science and the Arts of Belgium.

The purpose of BELQUA is to encourage the Belgian research on various aspects of the Quaternary period, either research conducted in Belgium or by Belgian researchers. It aims to encourage young researchers and to promote scientific communication. All fields related to Quaternary research are welcome, e.g. geology, climate, archaeology.

BELQUA organises an annual workshop. The Belgian Quaternarists as well as foreign Quaternarists working in Belgium or on Belgian site are invited to present their recent research. This workshop is mostly intended to provide first contacts between junior and senior scientists and to provide junior scientists a first opportunity to discuss their work. BELQUA is also planning an annual fieldtrip, which gather the community around a Belgian site of special interest for the Quaternary. The forthcoming fieldtrip will take place in September. It will be about recent tectonics in Belgium.

In addition to these activities, BELQUA maintains a mailing list, through which information about forthcoming meeting is distributed. This information is also posted on the BELQUA website (<http://www.belqua.be>).

Marie-France Loutre

China

The Executive Committee of the Chinese Association for Quaternary Research (2008–2011) is as follows:

President: DING Zhongli, zding@mail.iggcas.ac.cn
 Secretary-General: Xiao Jule, jlxiao@mail.iggcas.ac.cn
 Treasurer: XIE Cuihua, dsjx@mail.iggcas.ac.cn
 Vice Presidents: CHEN Jun, chenjun@nju.edu.cn
 FU Bojie, bjfu@cashq.ac.cn
 QIN Dahe, gdh@cma.gov.cn
 ZHANG Peizhen, peizhen@ies.ac.cn
 ZHENG Hongbo, zhenghb@nju.edu.cn
 ZHOU Weijian, weijian@loess.llqg.ac.cn

Xiao Jule

Croatia

The Committee has not been very active during the past several years, since there are very few scientists and researchers dealing with Quaternary, and those are very much occupied with their project engagements, thus we all lack time for regular meetings. Academician Ivan Gušić is our new president since February 2008. The Croatian National Committee decided to celebrate its 10th anniversary in 2009 by organizing a meeting and a field trip. The aim of the meeting was to gather scientists and their collaborators who work in any aspect of Quaternary geology throughout Croatia, in order to exchange information and knowledge, and open new possibilities of cooperation. One of the goals was also to attract senior students to focus their research interest in Quaternary geology, and to discuss implementation of new study courses. The response of both scientists and students was very good for the first such meeting.

The national INQUA meeting 'Quaternary geology in Croatia – the state of art and perspectives' was held in the Croatian Academy of Sciences and Arts on March 26th and the field trip to loess deposits of Eastern Croatia on March 27th. There were 15 presentations of different projects, presented by scientists from various institutions (listed below). There were around 80 attendees of the meeting and 40 joined the field trip. This meeting was found very successful and everyone agreed to hold it as an annual INQUA national meeting.

Regarding some other activities, an international workshop on Dinaric glaciations is in preparation for 2010. It will be the field workshop in Starigrad-Paklenica (Northern Dalmatia). The tentative programme includes lectures, posters and field discussions in the area of the National park Paklenica and Novigrad sea realm.

List of presentations from the 1st National INQUA Meeting in Croatia:

- Nada Horvatincic. Exploration of Dinaric Karst by Isotope Methods,
- Georg Koch and Slobodan Miko. Holocene sediments as a document of environmental changes in the Adriatic watersheds.
- Sanja Faivre and Nenad Buzjak. Geomorphologic and geocologic investigations of karst in Croatia.
- Marcel Buric. Archeometric research on lithic material of early Neolithic communities by utilizing PGA analyses with special respect to radiolarites and obsidian (Hungarian-Croatian bilateral project).
- Dejana Brajkovic. Correlation of Palaeolithic, Mesolithic and Neolithic in continental and maritime Croatia.
- Jadranka Barešić. Geochemical and Isotope Analyses of Sediments from Plitvice Lakes.
- Koraljka Bakrac, Quaternary Palynology in Croatia – state of art and perspectives.
- Andrija Bognar. Geomorphologic mapping of Croatia.
- Ivor Karavanic. Recent investigations of Palaeolithic in Dalmatia and Lika (Project: Lithic materials, technology and its adaptation during Stone Age in Croatia).
- Lidija Galovic. Loess of Eastern Croatia (from doctoral thesis).
- Marta Mileusnic. Groundwater and dependent Ecosystems: New Scientific basis on climate change and land-use impacts for the update of the EU Groundwater Directive (Project GENESIS funded through FP7-ENV-2008-1).
- Danijela Bogner. Modern sediments in Adriatic» (Project: The Role of Planktonic Assemblages in energy conductivity and matter circulation in Adriatic Sea).
- Maša Suric. Investigation of flowstone (stalagmites and stalagmites) (Project: Modern sediments and fossil environments of Adriatic littoral).
- Cedomir Benac. Evidence of sea level oscillations in Kvarner area during Late Pleistocene and Holocene (Project: Modern sediments and fossil environments of Adriatic littoral).
- Ljerka Marjanac. Impacts and associated geological events in development of Dinarides.

Ljerka Marjanac

Estonia

ESTQUA (Estonian National Committee of INQUA) was established in 1991 and includes ca 70 active professionals and postgraduate students in the fields of Quaternary geology, palaeoecology, geomorphology, archaeology,

limnology and palaeoclimatology. At present there are 5 research groups in the fields of Quaternary science that are financed by Estonian Research Council. In addition Estonian Science Foundation has funded number of minor research projects in the field. Information on projects, research teams and their publications is available and downloadable from Estonian Research Information System at <https://www.etis.ee/index.aspx?lang=en>

Since the beginning ESTQUA members have been active participants in INQUA Peribaltic Working Group's annual conferences and field excursions (<http://www.ut.ee/INQUAPeriBaltic>). ESTQUA has hosted INQUA Peribaltic symposiums in 1993, 1999 and 2003. INQUA Peribaltic WG is an informal regional group of researchers active in different fields of Quaternary science. The WG activities are subordinated to the INQUA Commission on Terrestrial Processes, Deposits and History (TERPRO). INQUA Peribaltic WG started in early 1990-s and its annual conferences and field trips usually bring together 40 to 60 participants from five to nine countries around the Baltic Sea (Finland, Russia, Estonia, Latvia, Lithuania, Belarus, Poland, Denmark, Germany, Sweden), occasionally also from USA, Ukraine, Canada, Norway, Switzerland, The Netherlands, UK. Some of the earlier Peribaltic WG symposium materials are downloadable at the WG's website (<http://www.ut.ee/INQUAPeriBaltic>).

ESTQUA with the help of Latvian colleagues will host again next INQUA Peribaltic WG symposium "Extent and timing of the Weichselian glaciation southeast of the Baltic Sea" in September 13-18, 2009. Field excursion of the symposium will take participants to southern Estonia and northeastern Latvia. Selected papers will be published in Special Issue of Estonian Journal of Earth Sciences (<http://www.kirj.ee/earthsciences>), which provides full and free access to articles. INQUA Peribaltic WG has been invited to join (have a joint meeting) the biannual conference of the German Quaternary Union (DEUQUA, <http://www.deuqua.de>) and the subsequent excursions in September 2010, hosted by the University of Greifswald.

Volli Kalm

Poland

Some of the INQUA Polish National Committee initiatives

The INQUA National Committee in Poland is founded on the National Quaternary Commission, therefore their activities are combined strictly with each other. Members of the National Quaternary Commission are elected every four year among the members of the Quaternary community in the country. Therefore even in spite of a very limited financial founding, the Committee plays a significant and stimulating role for discussion of new scientific ideas and for the interdisciplinary cooperation all over the country and abroad. Many complex investigations are initiated, then carried through by the organized *ad hoc* international teams, speed-up by bilateral or mutual cooperation of research institutions.

Most stratigraphic enigmas of the Quaternary in Europe cannot be solved if achievements in the eastern part of the continent are neglected. Among the others, there are more numerous glacial series in this region than in the west, immense loess-palaeosol complexes and traces of marine transgressions of the Black Sea. For these reasons, mutual cooperation of Polish, Belarusian and Ukrainian

researchers have already a long tradition and have been the most intensive during the last decades.

A key item in the Quaternary research in central and eastern Europe is a cross-border correlation of glaciation limits. Varied methodological approaches and research traditions, accompanied by a limited availability of the full list of references in the other country, generally favour local stratigraphic subdivisions that neglect scientific experience in the neighbouring countries. The Polish-Belarusian cross-border region has not been an exception. The National Committee's initiative was to carry through a correlation of the principal stratigraphic units in both areas, especially the ones that have not been definitely determined yet in one of the countries. Such situation is somewhat depressing because it makes reliable correlation with other regions of Europe and with the stratotype sites almost impossible. To overcome this, is the absolute priority in Quaternary research as it comprises definition of principal stratotype sections and sites (GSSP). They are badly needed for a revised, reasonable stratigraphic chart of the Quaternary.

The Polish-Belarusian intentions on common geological fieldworks in the trans-border area have been supported recently by including this task in the intergovernmental agreement on scientific cooperation. The project starts with geological mapping in scale 1:200 000 (Fig. 1), supplied with complex lithological, palaeoecological and chronostratigraphical analyses as well as presentation of 3D geological model for the whole region. From a geological point of view the northern part of the Polish-Belarusian cross-border area and particularly, a vicinity of the Neman River gorge at Grodno are extremely geologically attractive, especially for numerous interglacial sections. This region can play in future a leading role and is very prospective for establishment of new stratotype sites.

On the other hand, a validity of recent natural changes can establish influence of various biotic and abiotic factors. Human impact on the environment can be deduced not only from its present state but also from the changes in the past. Such record is to be received from a complex palaeolimnological research, including sedimentological, geochemical and palaeobiological analyses. They were carried through during bilateral cooperation between Polish Academy of Sciences and the University of Helsinki, within the frames of the Finnish project *Lapland Atmosphere-Biosphere, Facility Improving the Human Research Potential and the Socio-Economic Knowledge Base (LAPBIAT and LAPBIAT 2)*.

Since 2002 a north-south transect has been constructed: samples from lake sediments in Finland (lakes from the Kilpisjarvi, Oulanka and Kevo regions), located on both sides of the Arctic Circle have been collected and examined. Complex analysis comprised the Holocene (especially the last 1000 years) and, as indicated by subfossil *Cladocera* and *Pediastrum* (Figs 2, 3), proved alternating warmer (presence of *Pleuroxus* and *Bosmina coregoni*) and cooler episodes (dominant *Eurycercus glacialis*). The species composition of phyto- as well as of zooplankton was rich enough to prove suitable edaphic and temperature conditions in this region. Results of investigation considerably supplement the European data on climate change during the Holocene and are crucial for a climatic prognosis.

These two examples of new international projects stimulated by the INQUA Polish National Committee will certainly start new openings for bilateral research. The latter will undoubtedly take advantage of the previous achievements and will help to overcome barriers in scientific understanding.

Leszek Marks and Krystyna Szeroczyńska

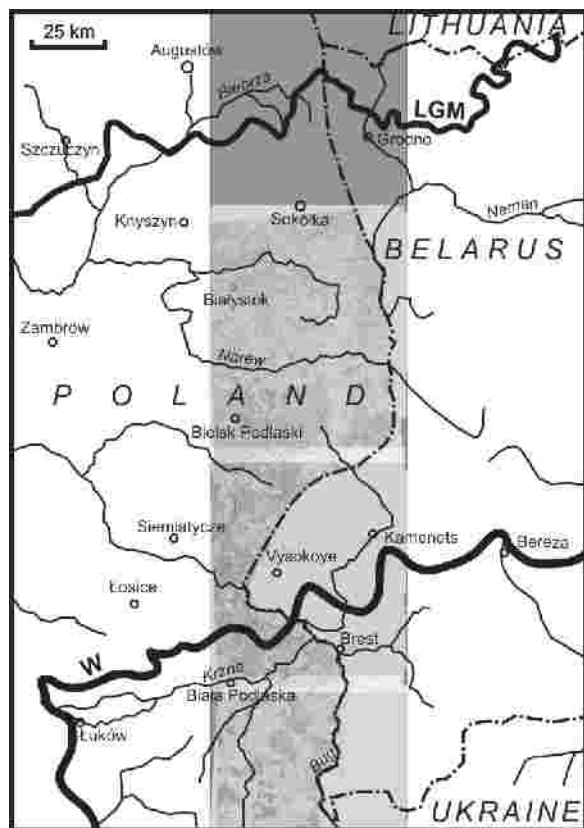


Fig. 1. Polish-Belarusian cross-border region; indicated is the area for geological mapping and glacial limits (LGM –Last Glacial Maximum, W – Warta Glaciation).

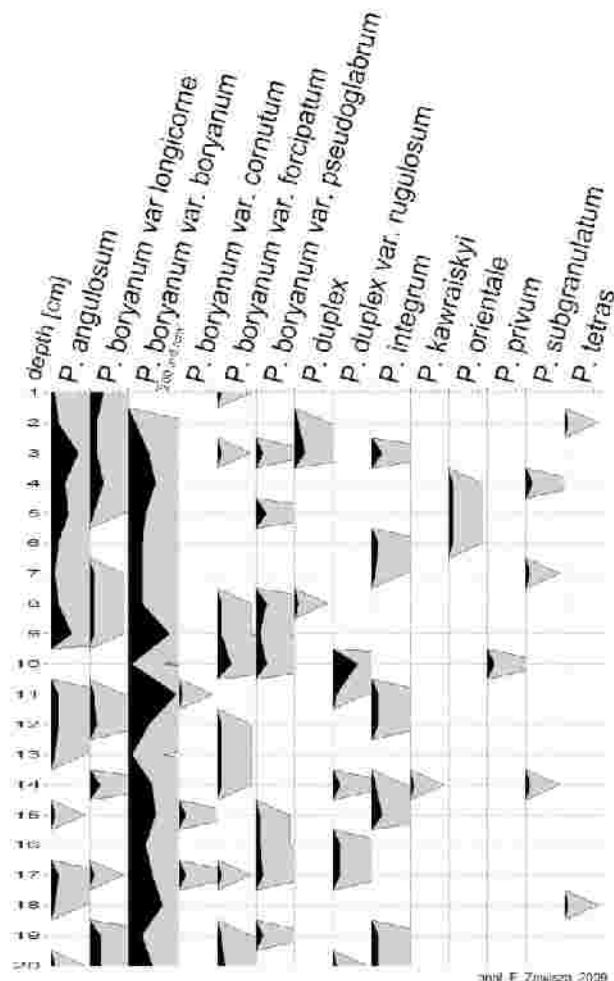


Fig. 2. Diagram of the absolute number of *Pediastrum* in 1 cm³ of the sediments from the Lake Kevo, Finnish Lapland.

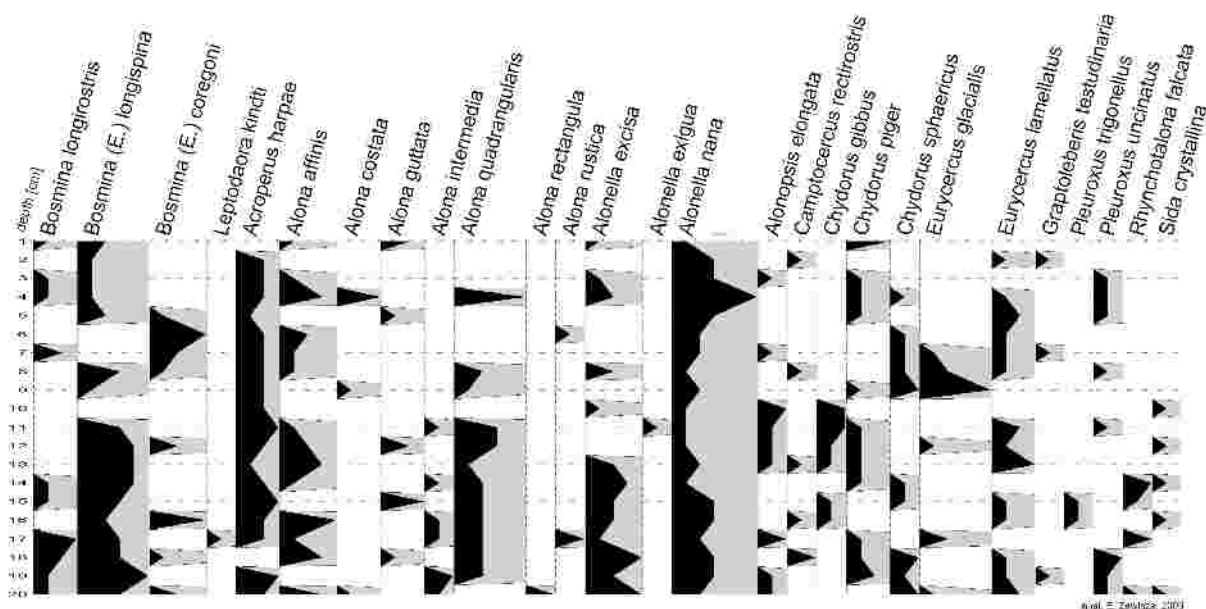


Fig. 3. Diagram of the absolute number of *Cladocera* indiv./cm³ of the sediments from the Lake Kevo, Finnish Lapland.

Spain

The Spanish Association for Quaternary Research (AEQUA): As far as 1972 the Spanish Working Group on Quaternary (GTEQ) was funded by some researchers who were deeply interested in Quaternary. By those years, for many geologists Quaternary in Spain was just that thin little soft layer that covered the “real Geology”, in fact in most of the Geological Maps the Quaternary was represented by an amoeboid grey shape that in many cases was used to hind a geological problem or disagreement. This initial Working Group was then aimed to show how was the real importance of Quaternary in understanding the present world, and meanwhile the quaternary started to have its own legend in the geological maps.

This working group gathered together researchers from many different disciplines: geologists, archaeologists, palaeontologists, geomorphologists, etc. There was the very first moment where science and letter researchers started to realize that they need each other for the development of their respective investigations. In fact the main aim of the Working Group was “to study the evolution of the Earth in the last 2 million years”, having into account both geological and biological systems including the study of humans and their cultural evolution”.

In 1985, the Working Group was restructured and passed to constitute the Spanish Quaternary Association (AEQUA) who assumed entirely the objectives of the Working Group.

AEQUA is now a solid association that is going to have its 25th birthday next year. Although not very crowdie (we are roughly 300 members) we manage to go on with our activities and with the involvement of young researchers.

Organization. AEQUA has an Executive Committee formed by 13 members. Besides the President, Vice President, Secretary and Treasurer, there are five elected members and four representative members. These last are: the Editor in chief of our journal (Quaternary & Geomorphology); the president of the Spanish National Committee of INQUA; the president of the most numerous working Group within AEQUA and the Organizer of the forthcoming national Congress.

The other members of the Executive Committee are elected by the General Assembly, who is the highest authority of the Association. Everything concerning the activities of the association, such as the host city of congresses, statutes and by-laws, or the economic budget, is discussed and approved by the General Assembly, after proposal of the Executive Board. The General Assembly meets once a year, coinciding or not with the biannual national or Iberian meetings.

Statutes of AEQUA contemplates the possibility of organize working groups within the national association. In this way, there are several regional working groups that have their own organization and activities, always within the AEQUA framework. At present, active groups are the Quaternary Group of Andalusia (GAC), the Quaternary Group of Valencia (GVC) and the Madrid Quaternary Group (GMC). They organize local field trips and meetings every year that are open to the members of AEQUA that has shown their wish to belong to each Group.

The Statutes also contemplates the possibility of nominate Honorary Members to those Quaternarists that have

shown a long lasting interest in Quaternary and have contribute to its study and development. In fact, one of our most outstanding and loved honorary member is Emiliano Aguirre, who have been an indispensable person for the development of the study of Quaternary in Spain. But not only we in Spain but everyone is indebted to him and Passini for the first definition for the base of the Pleistocene at Vrica.

Congresses: The National Congresses take place every four years, and the Iberian Reunions of Quaternary, jointly with the Portuguese Working Group on Quaternary, also every four years, in such a way that there are one scientific meeting every two years. Next meetings will be the VII Reunion of Iberian Quaternary, which will take place next October in Faro (Portugal), and the XIII National Reunion of Quaternary (Andorra, 2011).

Relation with other Associations: Since 1989, year in which the Spanish Society of Geomorphology was created, AEQUA keeps a very close relationship with this Society. The relationship between both organizations has made possible some activities and initiatives such as a reduced fee for common members; joint edition of the journal Quaternary and Geomorphology, with two editors-in-chief, one from each society; the Maria Jesús Ibáñez Prize, given by both societies every three years to the best Doctoral Thesis dealing with Quaternary and Geomorphology.

Also from the beginning of the existence of AEQUA we have had a very close relationship with Portuguese Quaternarists. Since 1985, and every four years AEQUA and the GTPEQ (Portuguese Working Group on Quaternary) celebrates the Iberian Reunion on Quaternary, alternating the host country between Spain and Portugal. However, given the fact that quaternary researchers from Gibraltar and Andorra usually belongs to the Spanish Association, we have also contemplated the possibility of celebrating these Iberian Meetings in Gibraltar (2005) and Andorra (2011).

The relationship with the GTPEQ goes back to 1977 after a meeting among representatives from Iberian and south American countries that took place during the X Congress of INQUA in Birmingham (1977). That was the first stone of the cooperation between Spanish and Portuguese Quaternarists, that was materialized later, in 1985, by the celebration of the 1st Reunion of Iberian Quaternary held in Lisbon (Portugal) by the initiative of the then President of the GTPEQ, Dr. Miguel Ramos.

Relation with INQUA: The Spanish National Committee works within the INQUA frameworks since 1957, when the International Congress was held in Madrid. Since 1996, Spain is Member of INQUA with Category II. However, the National Committee is definitively and officially created by the Spanish Ministry of Science and Education in February 2005, whit the main objective of impulse the participation of Spanish Quaternarists in INQUA. The By-Laws of the Committee regulate the relations between AEQUA and the National Committee of INQUA in such a way that the President of the National Committee is always representative member in the Executive Board of AEQUA, and it will be encouraged that the President of AEQUA take part of the National Committee. In fact, at present the President of AEQUA is the Secretary of the National Committee of INQUA.

Relation with ICSU: The Spanish National Committee of INQUA, composed by 10 selected members of AEQUA, is also represented in the National ICSU Commission, composed by representatives from all the National Committees of scientific Unions. This commission celebrates a meeting every year.

Teresa Bardají (President, AEQUA) & Cari Zazo (President, INQUA Spanish National Committee)

Where are they now?

We are most concerned to have lost contact, in some cases for an extended period, with the following National Members:

- § Belarus
- § Brazil
- § Colombia
- § Greece
- § Ukraine

There may be others whose email addresses are no longer current but from whom messages have not been returned. If anyone can help us with email contact within these countries or knows of updates for other countries, Peter Coxon, INQUA Secretary-General pcoxon@tcd.ie will be very grateful to receive this information. If in doubt, please check our website for the known list at http://www.inqua.tcd.ie/about_members_nrm.html



Forthcoming Conferences

August 2009

- § Fifth INQUA Project 0501-ICP 521 Conference and Field trip, Turkey on 22-31 August 2009
- § Details are available at <http://www.avalon-institute.org/IGCP/>
- § The World of Mammoths: Vth International Conference on Mammoths and their Relatives, From the Pliocene to Present-Day: Biotopes, Evolution and Human Impact. Le Puy-En-Velay, France, 30th August to 4th September 2010. Contact worldofmammoths@gmail.com for further details.
- § Loessfest meeting of the Loess Focus Group, end of August 2009 in Novi Sad, Yugoslavia. Contact Slobodan Marcovic zbir@im.ns.ac.yu for more details.

September 2009

- § XVII Biennial Conference of the Southern African Society for Quaternary Research (SASQUA), Knysna, South Africa, 6-10 September 2009. For further details contact Marion Bamford marion.bamford@wits.ac.za.
- § 1st International Workshop on Earthquake Archaeology and Paleoseismology, 7th -13th September, 2009; Baelo Claudia Roman ruins, Southern Spain. The INQUA Focus Group on Paleoseismology and Active Tectonics is sponsoring the 1st International Workshop on Earthquake Archaeology and Paleoseismology www.baelo2009.org.
- § 18th International Sedimentological Congress, 26th September to 1st October 2010 in Mendoza, Argentina. There will be two relevant sessions on glacial sediments and the Quaternary. For further information see: <http://www.isc2010.com.ar>

October 2009

- § 1st AsQUA (First Asian Conference on Quaternary Research), Beijing, 19-23 October, 2009. In commemoration of the 80th anniversary of the discovery of the first skull of Peking Man, the International Symposium on Paleoanthropology and the First Conference on Quaternary Research of Asia will be jointly

- held. For further information see http://www.ivpp.ac.cn/en/peking_conference/peking_conference.html or contact Chiqua@mail.igccas.ac.cn
- § Russian Quaternary Conference, October 19-23 2009 at Novosibirsk. Contact Andrei Velichko paleo_igras@mail.ru for further details.
- § INQUA Commission on Coastal and Marine Processes, 25th–31st October 2009, Myrtle Beach, South Carolina USA. For details see the IGCP Project 495 website <http://www.geography.dur.ac.uk/projects/igcp495/Home/tabid/333/Default.asp> and the Burroughs and Chapin Center for Marine and Wetland Studies website www.coastal.edu/cmws/igcp495
- § First International Workshop of West African Quaternary Research Scientists, City of Ibadan, Nigeria, October 26–30, 2009. For further details see INQUA Project 0904 above and contact Mike Akaegbobi izumike20022002@yahoo.com

December 2009

- § Geological Society Conference: "Glaciogenic Reservoirs and Hydrocarbon Systems", 1-2 December 2009. <http://www.geolsoc.org.uk/gsl/groups/specialist/petroleum/page5160.html>
- § American Geophysical Union, Fall Meeting, 14-18 December 2009 Climatic vs Internal Dynamical Forcing of Glacial Systems in the Past, Present and Future. Session organisers: Jasper Knight and Neil Glasser. For further details see <http://www.agu.org/meetings/fm09/index.php>.

February 2010

- § International Glaciological Conference: "Ice and Climate Change: A View from the South" (VICC 2010), Valdivia, Chile, 1-3 February 2010. <http://www.cecs.cl/VICC2010/>



Do not forget to SEND YOUR NEWS AT ANY TIME to Margaret Avery mavery@iziko.org.za for inclusion in the next edition, which will be published at the end of the year