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## newsletter march/april 2013

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## Impressum

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## 1. "From the President" - A follow up from the INQUA Exec meeting

Dear PALCOMM Corresponding Members,

The INQUA Executive met for their annual meeting in Caracas at the beginning of March. The timing was not ideal, coinciding with the death of President Chavez and the subsequent period of national mourning, and very tight security associated with international travel into/out of the country. Nevertheless, we had a good meeting and our thanks go out to Frank Audemard, INQUA VP, for organizing the meeting under difficult circumstances. The Exec had a very full agenda – a digest of the minutes from the meeting will be available (soon) on the INQUA website. However, I thought it would be useful to give you a heads-up on some of the most important items that were discussed.

A major focus of this meeting was to consider reports from INQUA International Focus Groups (IFGs) and projects from the last inter-congress period, and then to consider requests for funding for new INQUA IFGs and projects. I would like to thank all of the leaders of PALCOMM-sponsored IFG and projects for providing interesting and detailed reports on their projects – these were well received by the Exec.

In addition, to confirming the ongoing activities of our three IFGs (ACER, CELL-50 and Palaeocarbon), the Exec approved three new projects this year:

1) SHAPE, a project under the CELL-50 IFG focusing on the southern

hemisphere, led by Andrew Lorrey (NZ) and Stephen Phipps (Australia)

2) Holocene Global Peatlands, a project under the PalaeoCarbon IFG, led by Zicheng Yu (USA), Dan Charman (UK) and Dave Beilman (USA).

3) TOME, funded under the skills enhancement category, to encourage the development of new approaches to evaluating palaeo-ocean models and the creation of a cadre of researchers focusing on data-model comparisons of palaeo-ocean simulations, led by Andreas Schmittner (USA).

A brief introduction to each of these new projects is given below. Details about the existing IFGs/projects, and the new projects, are available on the PALCOMM website -- I hope that the leaders of each of the IFGs, ongoing projects and new projects will provide a fuller description of their project and plans for the upcoming year in the next newsletter. INQUA projects are meant to be open for participation by all members of the community, so I would strongly encourage you to check out the PALCOMM website and to contact the leader of any project that you are interested in now!

For me, one of the most disappointing aspects of the proposals considered by the INQUA Exec this year was the overwhelming dominance of proposals from North America, Europe and Australia. PALCOMM has two ongoing projects with a focus on Quaternary science in other parts of the world – LaACER (Latin-American Abrupt Climate Changes and Environmental Responses) and the African Phytolith Working Group. These two groups are doing great work – but I am sure there are many other regional activities that we could be supporting and there are certainly scientists outside the USA/Europe/Australia axis who should be leading PALCOMM projects. Normally, projects should fit within the remit of our ongoing IFGs, but there are two categories of “projects” that do not need to be part of an IFG – pilot projects to develop a full proposal for

an IFG or an IFG-project, and on-off “skills enhancement” projects (like TOME). You can read about the different categories of INQUA funding on the INQUA webpage ([www.inqua.org/PALCOMM](http://www.inqua.org/PALCOMM)). If you have an idea about such a project, or a proposal for developing a new IFG, please contact me ([sandy.harrison@mq.edu.au](mailto:sandy.harrison@mq.edu.au)) as soon as possible – it takes time to develop a good proposal, and I would like to help and advise you in developing a viable one.

The “skills enhancement” funding scheme is just one way that INQUA is trying to improve the skill training, capacity-building and mentoring of younger scientists within the INQUA family. In December this year, there will be an INQUA ECR-Congress in Wollongong, Australia (organized by Craig Schloss and a support team at Wollongong itself). The focus on this mini-Congress is very much on networking, capacity-building and acquiring the skills necessary for survival in academia. More details about the ECR-Congress are given below. I hope that PALCOMM corresponding members will be well represented at this Congress, and that the success of the Congress will mean that this becomes a regular event in the INQUA calendar.

Of course, the other event in our calendar is the next Congress – to be held in 2015 in Nagoya. Koji Okumura (INQUA VP) provided the Exec with a summary of how the plans for the Congress are shaping up. I think it is going to be a very exciting meeting, and you should put this in you own calendar now (27 July-2 August 2015). There is a webpage (<http://inqua2015.jp/index.htm>) with information about the Congress, and this will be regularly updated. Traditionally, the Congress is the opportunity for the IFGs and projects sponsored by each commission to showcase what they have been doing. There will be a call for session proposals later this year – but

please don't wait until then to think about sessions. I hope that the PALCOMM IFGs and all of the associated projects (including short-lived projects that are now terminated) will have at least one session at the Congress. I also think it would be excellent if our "skills enhancement" projects took the opportunity to hold a session. The Congress will also be able to host other kinds of mini-meetings, for example project meetings or town-hall meetings – but rooms will only be available if we know about these in advance. So, if you want to make use of the opportunities offered by the Congress to hold such meetings, let me know soon.

PALCOMM is an extremely active Commission and looks well set to continue in this way, but there is very much more to do. WE NEED YOUR INPUT HERE. The Commission team members are very happy to hear from you if you have ideas for activities you want to promote, if you want to advertise ongoing activities through the newsletter, or if you want to be more actively involved in INQUA initiatives, and especially mentoring and skills-building activities. Please get in contact!

Sandy

## 1.1. Newly approved PALCOMM IFG's/projects

### **SHAPE: Southern Hemisphere Assessment of PalaeoEnvironments**

The land-sparse Southern Hemisphere (SH) contains crucial components of the Earth's climate system. The marine hemisphere is the counterpart to the land-dominated Northern Hemisphere (NH). Despite the limited area of terrestrial environments in the SH, good proxy data documenting past changes can be found in Antarctica, Australia, South America, southern Africa, New Zealand and small islands that are scattered across the vast SH oceans. Some terrestrial archives have the potential to yield long, high-resolution information about past climate. Moreover, the extensive oceanic expanse and long-resident Antarctic ice sheets present opportunities to gather long, continuous records of change for both the ocean and the atmosphere/cryosphere.

The role of the SH in determining how Earth's climate responds to, or initiates, global changes, and the fate of the SH in light of current climate changes, are open-ended questions. Examination of climate oscillations over glacial-interglacial periods has coarsely outlined changes related to insolation forcing, with much of the detail about ocean-atmosphere-cryosphere linkages and feedbacks provided by NH studies. However, a detailed perspective from the SH is needed to make comparisons with lessons learnt by the NH. What we do know is that there are distinct spatial heterogeneities within the SH, difficulties with making direct comparisons to climate models, and generally different characteristics to the NH in terms of timing and magnitude of past environmental and climate changes. The question remains: How are the climates of the two hemispheres linked at different spatio-temporal scales through glacial-interglacial cycles?

Addressing this question will require the integration of different regions of the SH into a unified view of past change, as well as the integration of proxy data with climate modelling. This perspective can provide a useful contribution to integrations being undertaken by the INQUA CELL-50K (Calibrating Environmental Leads and Lags over the last 50ka) and ACER (Abrupt Climate Changes and Environmental Responses) International Focus Groups (IFGs). The Southern Hemisphere Assessment of PalaeoEnvironments (SHAPE) will investigate past environmental characteristics, variability and change for the SH through the development and integration of proxy archives and model simulations for the Late Quaternary. SHAPE will utilize environmental proxy signatures to extract information about past climate, and extend and refine our understanding of the Earth's climate system from the present back to 60ka.

The approach SHAPE will adopt will be to reconstruct atmospheric and oceanic circulation patterns for key time slices using proxies and to integrate this information with climate model simulations. Spatially-distributed suites of quantitative terrestrial climate reconstructions (including temperature and precipitation) will help to reveal characteristics of the global circulation that are difficult to resolve at the individual site level alone. Multiple transects from the tropics to the mid and high latitudes, paired with detailed reconstructions of currents, fronts, gyres and oceanic cross sections, will contribute to outlining the structure of past SH circulation. We will connect reconstructed atmospheric and oceanic patterns, establish the timing of changes, and highlight synchronous vs. asynchronous changes to implicate distinct circulation and climate modes of the past. Integration with climate model simulations will help us to formulate new hypotheses about triggers of climate change, climate dynamics, and mechanisms of inter-hemispheric climate teleconnections.

## **Holocene Global Peatland Carbon Dynamics: Community-Wide Data Synthesis and Modeling Initiatives**

Peatlands store a large belowground carbon pool of ~500 Pg C that has accumulated since the Last Glacial Maximum. 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 CO<sub>2</sub> and CH<sub>4</sub> concentrations, is critical to understanding global carbon dynamics in the past and future.

The Holocene Peatlands project is an international initiative under the Palaeocarbon IFG to build on the success of last inter-congress Project 0804 (Ombrotrophic peatlands as Holocene paleoenvironmental archives), which successfully focused on data coordination and analysis of northern peatland carbon accumulation over the last millennium (Charman et al. 2012). The Holocene Peatlands project will also benefit from ongoing coordinated peatland carbon projects funded by the US NSF (Yu, Beilman, Camill, Loisel) and UK NERC (Charman, Gallego-Sala). 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 modeling over the last millennium. The INQUA funding will facilitate closer collaboration with 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. In particular, we see the extension of data collection and coordination to

less developed countries, the tropics and the southern hemisphere as critically important in addressing questions relating to the role of peatlands in the global carbon cycle and peatland climate sensitivity.

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, organizing workshops, and facilitating joint publications within 3 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 organize 2 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.

### **TOME: Techniques for ocean model evaluation**

Changes in ocean circulation play an important role in determining regional climate changes on glacial-interglacial timescales. In the PMIP2 coupled ocean-atmosphere climate-model simulations, there were considerable differences in the responses of the thermohaline circulation to glacial forcing. Comparisons of the simulated changes in sea-surface temperatures suggest that these models overestimate tropical cooling and underestimate mid-latitude changes. A new generation of coupled model LGM simulations has been run for CMIP5, and the challenge now is to determine whether these models produce more realistic results. This requires the development of a more sophisticated approach to model

evaluation of oceanic changes than has been carried out before, making use of the widest range of observations possible and including the use of offline diagnostic approaches for key tracers. Evaluation of ocean simulations will be the theme of

PAGES sponsored workshop to be held in Corvallis in December 2012. The purpose of the current proposal is to help fund the inclusion of a capacity-building and skills enhancement element into this workshop.

## 2. INQUA Early Career Researcher (ECR) Conference Announcement



Photo Ines Hessler: South of Wollongong

- WHAT:** INQUA 2013 Early Career Researcher Inter-Congress meeting
- WHEN:** December 2nd - 6th 2013
- WHO:** MSci, PhD Candidates, Post-Doctoral Researchers and research-active academics in the early stage of their career (within 5 years of obtaining their PhD)
- WHERE:** Wollongong, New South Wales, Australia.
- OBJECTIVES:** One of the primary objectives is to offer workshops in a variety of research-related issues presented by experienced researchers. Potential workshops would include:
- Giving oral and poster presentations.
  - How to write for publications.
  - Various techniques used in Quaternary Research (e.g. field methods, geochronology, geochemistry, proxy analysis...).
  - Grant writing.
- OUTCOMES:**
- To develop presentation skills and use this meeting for preparation for the 2015 INQUA congress 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* and be involved in the editorial process.
- To be exposed to a variety of methods and techniques used in Quaternary research.
- To increase activity involvement in INQUA and its various commissions.
- To develop new research collaborations and networks.

### **3. Upcoming PALCOMM related workshops and conferences**

Palaeoclimate sessions at the 10th Asia Oceania Geosciences Society Congress, Brisbane, Australia, 24th-28th June 2013

#### **Late Quaternary evolution of the tropical monsoon systems in Asia and Australasia and linkages to high latitude climate change**

Session organisers: James Shulmeister, Rathnasiri Premathilake, Patrick Moss

The tropical monsoon systems of South Asia, East Asia and Indonesia-Indo China-Australia are critical components of the global circulation system but the long term history and drivers of many of these systems are poorly understood. The teleconnections to and from the monsoons and the lags and leads associated with these connections are also debated. A particular gap in understanding are the roles of decadal, centennial and longer scale

oscillatory systems in modulating the monsoons.

This session will focus on the position of the ITCZ and the variability and extent of influence of the three major monsoon systems of our region: the Indian, East Asian and Australian-Indonesian-Indo China, over the past 50 ky.

We invite papers on palaeoclimatological reconstructions of changes in monsoon systems from high resolution records such as corals and speleothems and lower resolution proxies, modelling of monsoon long-term behaviour and papers that seek to develop an understanding of climate links between the high latitudes and the monsoons, including investigations of lags and leads in teleconnections.

This session will be a contribution to the OZ-INTIMATE working group, which looks to integrate ice core, marine and terrestrial palaeoclimate records from the Australian region and CELL-50k, an International Focus Group of the INQUA Paleoclimate Commission, focusing on calibrating environmental leads and lags across the globe. We hope this session will stimulate research of the important role of the tropics in global circulation and better understanding the relationship between the three monsoons in our region.

### **Late Quaternary environments of temperate Australasia and relationships with the tropical Indo-Pacific region**

Session organisers: Patrick Moss, Lynda Petherick and Craig Sloss

Temperate Australasia (incorporating southern Australia and New Zealand) lies between the Indo-Pacific tropical heat engine and the cold waters of the Southern Ocean. With contemporary environmental changes within the region there are clear links to the tropical Indo-Pacific region through atmospheric teleconnections, particularly the El Niño Southern Oscillation (ENSO) phenomenon and the Indian Ocean Dipole (IOD).

This session will focus on environmental change within the temperate region of Australasia over the past 50,000 years and how the tropical heat engine of the Indo-Pacific region may have influenced these alterations.

We invite papers that provide late Quaternary multi-proxy datasets from the temperate regions of Australasia, quantitative estimates of late Quaternary environmental variables from the temperate region and papers that are providing an understanding of climatic

relationships between the temperate areas of Australasia and the tropical Indo-Pacific region, including the ENSO and the IOD phenomena.

This session will be a contribution to the OZ-INTIMATE and NZ-INTIMATE working groups, which looks to integrate ice core, marine and terrestrial palaeoclimate records from the Australasian region and CELL-50k, an International Focus Group of the INQUA Paleoclimate Commission, focusing on calibrating environmental leads and lags across the globe. We hope this session will stimulate research of the important links between late Quaternary environmental change in temperate Australia with the Indo-Pacific tropical heat engine to improve understanding of past palaeoclimatological change across the globe. We invite all PALCOMM scientists with interests in these fields to submit talks or posters. These are sessions IG17 and BGo7 respectively. Please go to <http://www.asiaoceania.org/aogs2013/public.asp?page=home.htm> for more information about the Congress.

Palaeoclimate sessions at the 10th Asia Oceania Geosciences Society Congress, Brisbane, Australia, 24th-28th June 2013

### **Perspectives in Paleoceanography and Paleoclimatology I & II**

Conveners: Dunia H. Urrego, Bruno Turcq, Francisco Sanchez-Beristain, Cristiano Mazur Chiessi, Jhan Carlo Espinoza

Research in paleoceanography and paleoclimatology has greatly expanded in recent years, characterized by inter- and multi-disciplinary approaches, high-resolution multi-proxy records, modeling studies and development of new methods. This session aims to provide a forum for presentations on the state, recent developments and perspectives in paleoceanography and paleoclimatology. In addition to contributions to the session, we plan to have invited presentations by Fellows and past Emiliani Lecturers.

First workshop of The African Phytolith Working Group  
(INQUA Project 1213) in Witwatersrand, South Africa,  
25th-26th of March 2013

Workshop organiser: Marion Bamford

The first workshop will be held at the University of the Witwatersrand in the Bernard Price Institute for Palaeontological Research from 25 to 26 March 2013. Participants will discuss nomenclature - specifically for African floras, extraction techniques, storage of samples and slides, modern reference collections and current projects. They will also discuss future collaborations beyond regional projects and specifically towards "new" approaches such as looking at fire history and human impact. Participants that have already responded that they will attend are Irene Esteban Alama (doctoral student, University of Barcelona), Tanya Hattingh (Masters student, Wits University), Rahab Kinyanjui (Kenya, doctoral student at Wits University), Prof Julius Lejju (Mbabara University, Uganda), May Murungi (Uganda, doctoral student at Wits (University), Edward Odes (Masters student, Wits University), Dr Caroline Phillips (post doctoral fellow at Wits University), Dr Lloyd Rossouw (National Museum in Bloemfontein) and the organizer Prof Marion Bamford.

Contact Marion Bamford ([Marion.Bamford@wits.ac.za](mailto:Marion.Bamford@wits.ac.za)) for further details.

North American deglacial margin chronology revision  
project workshop at the CANQUA biannual meeting,  
Edmonton, Alberta, 18th-22nd of August 2013

Workshop organisers: Lev Tarasov and Chris Stokes

More information: <http://www.eas.ualberta.ca/canqua/?page=MOCA>

A key need for improving the reconstructions of North Americandeglaciation is an up to date deglacial margin chronology with well thought-out max and min bounds for each isochrone. Under

the coordination of the INQUA sponsored MOCA (Meltwater routing and Ocean-Cryosphere-Atmosphere response) network, a team of over 40 regional experts have come together to revise the Dyke (2004) deglacial margin chronology and determine bounding isochrones. The draft results will be presented in this open workshop. All are welcome to participate in the review of the results, gap filling, further revision, and consideration of outstanding issues/inconsistencies.

Contact Lev Tarasov (lev@mun.ca) or Chris Stokes (c.r.stokes@durham.ac.uk) for more details.

Further info on MOCA is available at: <http://www.physics.mun.ca/~lev/MOCA.html>.

## 4. Upcoming conferences

Month	Date	Conference	Location
April	04.-05.	Holocene Climate Change <a href="http://www.geolsoc.org.uk/holocene13">http://www.geolsoc.org.uk/holocene13</a>	London, UK
	07.-12.	European Geosciences Union (EGU) General Assembly 2013 <a href="http://www.egu2013.eu/home.html">http://www.egu2013.eu/home.html</a>	Vienna, Austria
	28.-30.	COST-INTIMATE Annual spring workshop <a href="http://cost-es0907.geoenvi.org/activities/intimate-events/910-upcomming/96-intimate-2013-spring-meeting">http://cost-es0907.geoenvi.org/activities/intimate-events/910-upcomming/96-intimate-2013-spring-meeting</a>	Blair Atholl, Scotland
May	05.-07.	Ocean Gateways Past and Present: Significance for Ocean Circulation and Climate <a href="http://gatewaypresentpast.net/">http://gatewaypresentpast.net/</a>	Jerusalem, Israel
	14.-17.	Meeting of the Americas 2013 <a href="http://moa.agu.org/2013/">http://moa.agu.org/2013/</a>	Cancun, Mexico
June	23.-26.	High-Resolution Proxies of Paleoclimate <a href="http://www.geology.wisc.edu/~wiscsims">http://www.geology.wisc.edu/~wiscsims</a>	Wisconsin, USA
July/August	28.07.-02.08.	Speleothem Summer School <a href="http://www.speleothem2013.uni-hd.de/">http://www.speleothem2013.uni-hd.de/</a>	Heidelberg, Germany

Outlook			
November		Annual Conference of the Geoscience Society of Newzealand (GSNZ) <a href="http://www.gsnz.org.nz/information/conference-i-6.html">http://www.gsnz.org.nz/information/conference-i-6.html</a>	Canterbury, NZ
December	04.-06.	PMIP Ocean Workshop 2013 - Understanding Changes Since the Last Glacial Maximum <a href="http://people.oregonstate.edu/~schmita2/Projects/PMIP_LGM_C13/PMIP_ocean_WS.html">http://people.oregonstate.edu/~schmita2/Projects/PMIP_LGM_C13/PMIP_ocean_WS.html</a>	Corvallis, USA

more workshop and conference annoucements can be found on <http://www.pages-igbp.org/calendar>

We want to emphasize again that we would like to make the PALCOMM Newsletter useful and exciting for our community-and we need your input for this!

Please feel free to use the newsletter to raise the community's attention to your article, fact sheet, conference, workshop etc!

To do so, simply send a summary, paragraph or flyer to

**[ines.hessler@mq.edu.au](mailto:ines.hessler@mq.edu.au)**