New chairperson for Australian IGCP committee

Cec Murray has retired as Chairperson of the Australian National Committee for the International Geological Program. The new Chairperson is Pat Rich, School of Geosciences, Monash University, Wellington Road, Clayton, VIC 3800, email: Pat.Rich@sci.monash.edu.au.

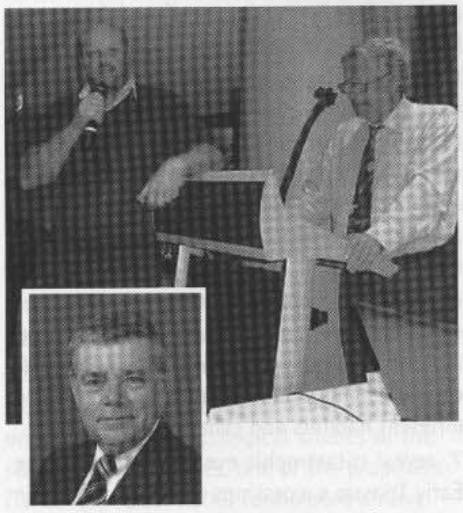
Community toasts Lindsay Gilligan

Farewell dinners were held in Maitland and Sydney for Lindsay Gilligan, Director of the Geological Survey of NSW.

The Sydney dinner was fittingly held at the Kirribilli Club – de facto home to the Sydney Mining and Exploration Discussion Group (SMEDG). Peter Lewis MC'd at the Kirribilli Club dinner and speakers included Brad Mullard, Executive Director, Mineral Resources, Industry and Investment NSW; James Johnson, Chief Onshore Energy and Minerals Division, Geoscience Australia and Russell Meares, Exploration Manager, Malachite Resources Limited.

As well as an impromptu 'toast from the workers', toasts were given by Graham Carr, Chief Scientist, CSIRO Exploration and Mining; Alan Coutts, Chief Executive Officer, NSW Food Authority and Ted Tyne, Director, Mineral Resources, PIRSA.

The evening was a clear display of the high regard Lindsay is held in the Minerals community, his leadership at the Survey will be sorely missed, but we look forward to his continued contribution and leadership in the geoscience community and wish him well for the future.



INSET: Lindsay Gilligan. Image courtesy of Geological Survey of NSW.

ABOVE: Peter Buckley (left with microphone) reminisces about the move to Maitland and Lindsay's leadership. Peter Lewis is the MC. Image courtesy Mal Bunny.

South-east Asian Gateway Evolution (SAGE) Conference Report

14–17 September 2009, Royal Holloway University of London

The South-east Asian Gateway Evolution (SAGE) conference focused on south-east Asia and in particular on the evolution of the site of the Indonesian throughflow between the Pacific and Indian oceans, the only low-latitude link between the world's oceans.

The Indonesian throughflow bestrides the collision zone between Australia and south-east Asia, which developed about 25 million years ago. The collision is the latest in a series of collisions and additions of continental fragments that were progressively rifted and dispersed from the Gondwana supercontinent, which migrated northwards and collided to form present-day east and south-east Asia during the last 400 million years. The complex geological development of the south-east Asian region has contributed to both ancient and modern biological complexities in the region and has had significant influence on both regional and global climate change.

This is the region in which Alfred Russel Wallace observed striking biogeographic distributions of organisms and where he delineated his famous Wallace's Line, a biogeographic boundary between Australian and Asian faunas and floras. The region is also a centre of maximum modern diversity of both marine and terrestrial biota and of an unusually high faunal and floral endemicity, as well as being where Wallace independently developed his theory of evolution. The multi-disciplinary conference brought together a wide range of Earth and life scientists to explore the nexus between geology and biology and to discuss the geological, biological and climatic evolution of the region.

The conference was attended by almost 200 participants from 20 countries. A total of 84 oral and 51 poster presentations were made over the three days. Australia was well represented (11 participants). Two of the three plenary keynote papers were by Australians and four of the total 10 keynote presentations were by Australian participants. Ian Metcalfe (University of New England, Armidale, NSW) presented the first plenary keynote paper in which he outlined the Palaeozoic–Mesozoic tectonic, biogeographic and palaeogeographic history of the region, including the complex Gondwana dispersion and Asian accretion of continental blocks and the opening and closure of three Tethyan ocean basins.

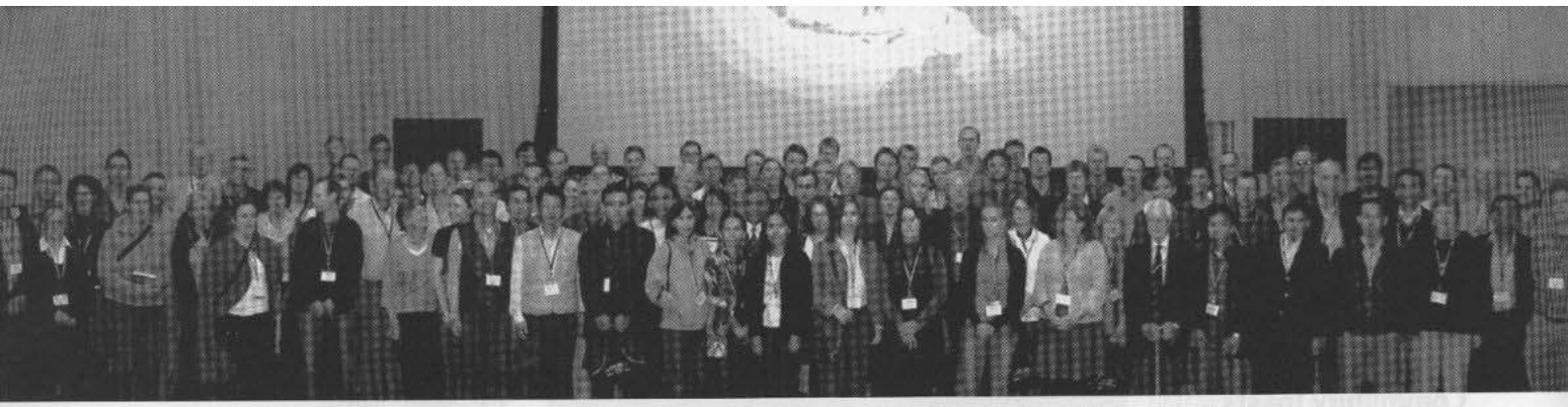
This was followed by Robert Hall (Royal Holloway, University of London, the principal conference organiser) who outlined the Late Mesozoic and Cenozoic plate tectonics, crustal flow and palaeogeography of the region and the Indonesian throughflow. Hall suggested that the complex nature and weak crustal structure of the region has made it difficult to interpret in terms of traditional plate tectonics and he invoked a new "jelly and biscuit" model.

The third plenary keynote paper was by David Bellwood (James Cook University, Townsville, Queensland) who discussed marine biodiversity in space and time. Bellwood discussed the Indo-Australian archipelago marine "bulls-eye" biodiversity hotspot and the hypotheses competing to explain it. He suggested that no single model is sufficient to explain the biodiversity hotspot, and that understanding it will require input from a wide range of disciplines including tectonics, palaeontology, evolution and ecology. He then posed the question "why are we interested in areas of high biodiversity and does biodiversity actually matter?". He suggested that continued health of the reefs in the region does not necessarily require high biodiversity, and that only a few key species are required to maintain reefs in a healthy condition.

The third Australian keynote paper was by Stephen Williams, also from James Cook University, titled 'An integrated framework for assessing the vulnerability of biodiversity to climate change: prioritising research and adaptation strategies'. Williams discussed frameworks to assess the vulnerability of species to global climate change and then used climate change modelling to predict the effect on species (using examples from rainforests of the north-east Australian wet tropics) which could then flow on to targeting management and conservation of specifically-identified geographic regions.

The fourth Australian keynote paper, by Moyra Wilson (Curtin University, Perth), discussed south-east Asian carbonates as tools for evaluating environmental and climatic change over the last 50 million years. Wilson outlined how changing geochemical signatures in marine skeletons and carbonates, and changing biotas and textures reveal environmental and climate changes on annual, decadal, 1000 and 10 000-year timescales.

Wim Spakman, who on day one had delivered a superb keynote on the mantle structure of south-east Asia inferred from seismic tomography, had his work cut out as session chair on day two. Two UWA papers by



Group photograph of participants at the South-east Asian Gateway Evolution Conference (SAGE), Royal Holloway, University of London. Image courtesy James Hammerstein (Earth Sciences Department, RHUL).

David Haig and Myra Keep on the Timor collision, which followed the paper by Mike Audley-Charles on the Volcanic Banda forearc-Australian continental margin collision in Timor, led to very lively discussion on the Timor collision (in particular regarding the timing of the collision) which spilled over and completely consumed the afternoon tea break!

In addition to the scientific papers and posters presented at the meeting, a special public guest lecture on "Darwin and Wallace: the true story" was delivered by John van Wyhe of Cambridge University. The talk outlined the lives of both Darwin and Wallace and dispelled some of the myths surrounding these two independent proponents of evolution by natural selection. The controversy surrounding publication of Darwin's and Wallace's work and speculations on "lost or delayed letters" and perceived lack of credit to Wallace for evolutionary theory were discussed. The conference dinner was held in the impressive Founders Building of Royal Holloway immediately following the public lecture.

Invited and selected papers from the meeting will be published by the Geological Society of London Special Publications with a provisional title "The south-east Asian gateway: history and tectonics of Australia–Asia collision", with editors Robert Hall, Michael Cottam and Moyra Wilson. A biological Special Publication will be a multi-authored volume edited by David Gower, Ken Johnson, James Richardson, Brian Rosen, Lukas Rüber, and Suzanne Williams.

For further details of the meeting please visit: **http://sage2009.rhul.ac.uk/index.html**

I would like to gratefully acknowledge support from the conference organisers to attend the SAGE meeting and also ongoing support from the University of New England and Macquarie University for ongoing research on south-east Asia.

IAN METCALFE
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IGCP 572 "Permian–Triassic Ecosystems" (2008–2012) and its activities in 2009–2010

Looking into the past, life on Earth has undergone at least five major mass extinctions in the past 550 million years. The sixth, and potentially the worst, is now said to be in progress. Despite widespread upheaval, marine ecosystems have recovered from every Phanerozoic catastrophe. These pre-historical biotic crises are natural global experiments that provide lessons for us in effective ecological management; not only in predicting the possible impact of defaunation events on the marine ecosystems, but also, perhaps, in revealing ways to help accelerate the post-event restoration of the devastated ecosystems.

In this regard, we, together with more than 130 researchers from 26 countries around the world, proposed the IGCP 572 to study a severe extinction event that occurred during the Permian–Triassic (P/Tr) global warming event (~252 million years ago). By analysing the post-extinction reconstruction of marine ecosystems in the Early Triassic we hope to determine how marine ecosystems recover after global-scale natural crises.

The P/Tr extinction resulted in dramatic elimination of >90% marine species and >70% of land life. The possible causes include: increased carbon dioxide concentrations and global marine anoxia, hypercapnia (CO_2 poisoning), a bolide impact, rapid global warming, and plume-induced volcanic eruption. Some of these triggers (eg global warming) are observed in the present. Thus, the proposed study has tremendous relevance to today's concerns regarding the extent to which human activity has influenced the loss of marine habitats and species.

Our objective in understanding the biotic response to the past crisis should be to develop a general understanding of the recovery mechanisms of marine ecosystems following the P/Tr crisis at a global scale from the low (eg south China) to high (eg Greenland, New Zealand) palaeolatitude regions. The ultimate aim of the IGCP 572 is to provide insights to help manage the current defaunation event and subsequent recovery of marine ecosystems. Specifically we aim to:

1. utilise stratigraphically-important fossil groups to establish robust biostratigraphic frameworks for the Early Triassic sequences worldwide, to enable accurate, high-resolution global correlation;
2. elucidate the recovery patterns of various fossil groups by conducting phylogenetic analyses to help minimise sampling biases, thus determining the true timing of recovery of various clades;
3. utilise palaeoecological, palaeontological (body and trace fossils), and sedimentological information to fully document marine communities throughout the recovery interval in a variety of environments from shallow to deep habitats and tropical to temperate climate zones, and construct a novel database of global P/Tr ecosystem types;
4. analyse community structures, and test and further refine a global palaeoecological recovery model that has been recently proposed (eg Twitchett, 2006) and forming the basis of part of this project;
5. assess the roles of the so-called disaster taxa, Lazarus taxa and refugia in the recovery communities, and determine the relationships between microbial structures and metazoa within a single community and between microbialite and metazoan communities;
6. utilise geochemical signatures (carbon, oxygen and sulphur isotopes, and biomarkers) as independent indicators of environmental and climate changes during the recovery stages in different habitats and climate zones;
7. reveal catastrophic events recorded in the Early Triassic successions and elucidate their relationships with those triggering the P/Tr mass extinction as well as effects on the Early Triassic ecosystems by integrating geochemical, palaeontological and sedimentological data;