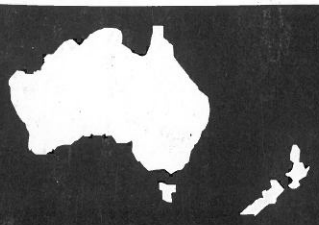

Quaternary Australasia

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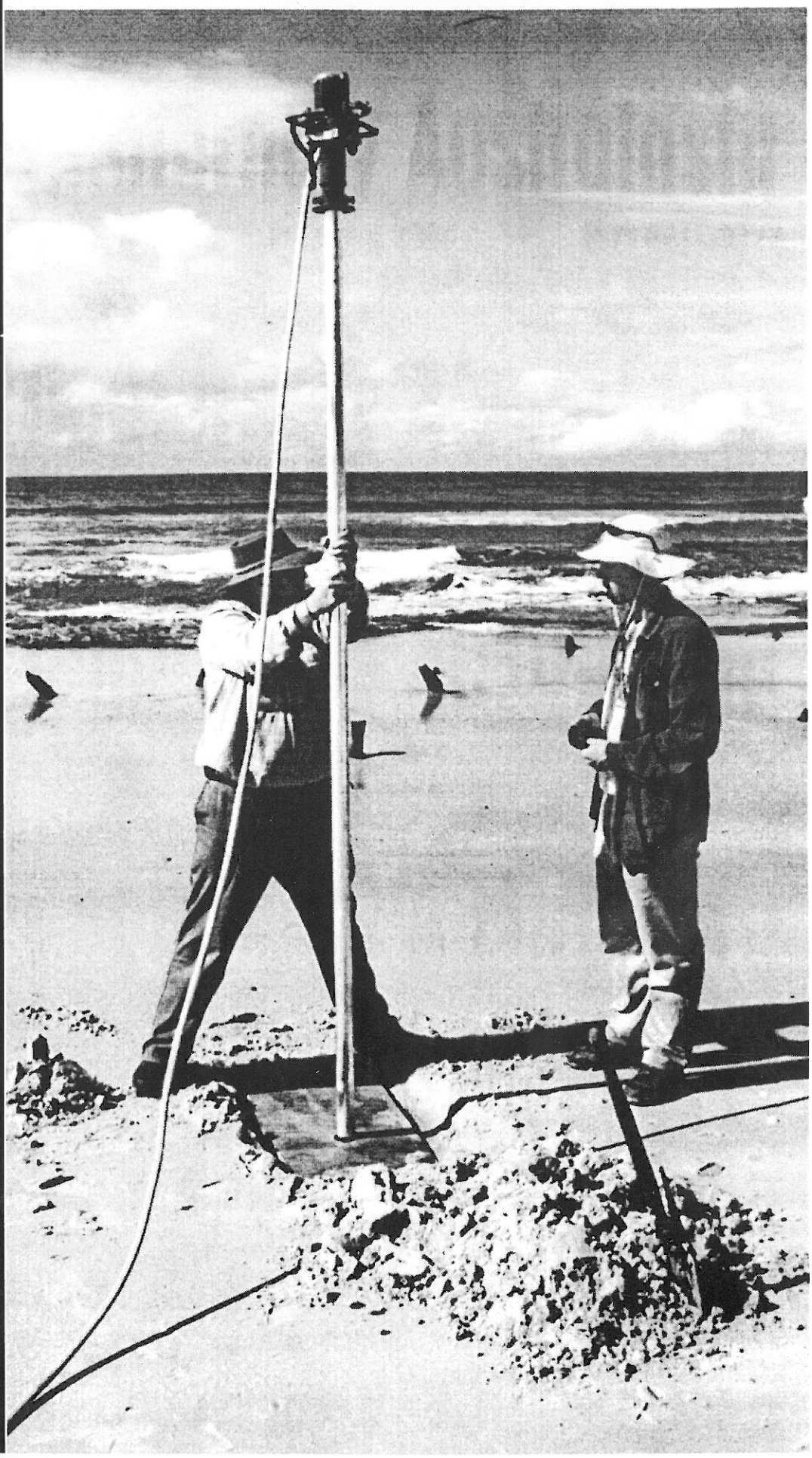

Some successful ARC grants

Multi-sensor core logger for Quaternary studies

Quaternary research in the Wild West

3rd Environmental Micropaleontology, Microbiology and Meiobenthology Congress

Book Review:
R.A. Bradstoc, JE Williams & MA Gill. Flammable Australia. The Fire REgimes and Biodiversity of a Continent

CD Review:
JM Bolwer Lake Mungo. Window to Australia's Past

...and much more.

Quaternary Australasia volume 20/2 December 2002

Editor
Kate Harle
Environmental Radiochemistry (Bld 34), ANSTO,
PMB 1, Menai, NSW 2234, Australia
ph: 61-2-9717-3880
fax: 61-2-9717-9270
e-mail: khz@ ansto.gov.au

Information Technology Editor
Tim Barrows
Research School of Earth Sciences
Australian National University
Canberra, ACT 0200
e-mail: Tim.Barrow@anu.edu.au

Material for the next issue should reach the editor by **31st March 2001 (papers)** and **31st May 2002 (other).**

The **Australasian Quaternary Association (AQUA)** is an informal grouping of people interested in the manifold phenomena of the Quaternary. It seeks to encourage research by younger workers in particular, to promote scientific communication between Australia and New Zealand, and to inform members of current research and publications. It holds biennial meetings and publishes the journal *Quaternary Australasia* twice a year. *Quaternary Australasia* is edited by Kate Harle. The annual subscription is $A25 or $15 for students, unemployed or retired persons. To apply for membership please contact Christine Kenyon (address below). Members joining after September gain membership for the following year. Existing members will be sent a reminder in December.

Research Papers in Quaternary Australasia have been peer reviewed. Research reports are not reviewed.

Committee Members

President
Dr Simon Haberle
Dept. Geography & Environmental Science
Monash University
Clayton, Victoria 3168
ph: (03) 9905
fax: (03) 9905 2948
e-mail:

Treasurer
Ms Christine Kenyon
Dept. Geography & Environmental Studies
The University of Melbourne
Parkville, VIC 3052
ph: (03) 9344 7815
fax: (03) 9344 4972
e-mail:
c.kenyon@pgrad.unimelb.edu.au

Secretary
Dr Henk Heijnis
Environment Division
ANSTO (Bld 34)
PMB 1, Menai, NSW 2234
ph: (02) 9717 3209
fax: (02) 9717 9270
e-mail: hhx@ansto.gov.au

Conference Secretary
Dr Jamie Shulmeister
Dept of Geological Sciences
University of Canterbury
Private Bag 4800
Christchurch
NEW ZEALAND
ph: +64 3 364 2762
fax: +64 3 364-2769
e-mail:
j.shulmeister@geol.canterbury.ac.nz

QA Editor
Dr Kate Harle

QA Info. Technology Editor
Dr Tim Barrows

New Zealand Representative
To be advised

Outgoing President
Dr Paul Hesse

Chair National Committee for Quaternary Research of the Australian Academy of Science - Prof. John Dodson

General committee members
Prof. Allan Chivas

University Representatives:

Adelaide - Sorell Bulpin
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La Trobe - to be advised
Macquarie - Tim Ralph
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Newcastle - Janece McDonald
New England - to be advised
New South Wales - Scott Mooney
Queensland - Brendan Brooke
Southern Cross - to be advised
South Pacific - to be advised
Sydney - to be advised
Tasmania - to be advised
Western Australia - Annabel Morris
Wollongong - Martine Couapel

The campus representatives were nominated principally to transfer information to and from local members. Institutions not represented can contact Simon Haberle to be included.

Cover Illustration – Dr Brendan Brooke (right) and a colleague from the Qld National Parks extracting sediment cores from the eastern beach of Bribie Island using a vibracorer.

Editorial

The Last Goodbye

"The time has come", the Walrus said, "to speak of many things..."

Yes folks, it is my last issue. After five years I have decided to pass the editing pen onto someone else. As yet no-one has stepped forward to claim it, but I am sure that there will be at least one willing soul at the forthcoming AQUA meeting. If you are interested please email either myself (khz@anst0.gov.au), Simon Haberle (Simon.Haberle@anu.edu.au) or Henk Heijnis (hhx@ansto.gov.au)so that we can nominate you at the meeting. Nominations will be open until just before the election.

It has been an interesting five years as editor. I have enjoyed shaping QA, although I haven't quite achieved everything I have set out to do and in recent times have been a little disappointed with the amount of w material sent in. However, the latter is at least partly due to my misplacing some material that people had sent to me for this current issue and also to my reduced energy levels in chasing up promises. If you sent me material and it is not in this issue (late papers excluded), then please accept my abject apologies and please send it to me again! I will pass it on to the new editor when she or he is elected.

This issue is the slimmest I have yet produced, but by no means the least interesting. To the contrary, there are some excellent research and publication reviews. Simon Haberle has provided a summary of some successful ARC Discovery and Linkage grants. Andrew Heap has provided a report on a multi-sensor core logger that is now available for use by Quaternary Scientists. Annabel Morris has given a report on the scientific activities of the Wild West. There is a book review of Flammable Australia (Bradstock *et al.*) by Lesley Head and a review of Jim Bowler's Lake Mungo CD by yours truly. I've also reported on the 3rd International Environmental Micropaleontology, Microbiology and Meiobenthology Congress I attended in Vienna. In addition, there are the usual pages of information and news.

To those of you who are interested (however vaguely) in taking over from me as QA editor I would like to offer this encouragement to come forward. It is an extremely worthwhile experience. I have met a whole range of new people and now have a much better understanding of the range and breadth of experience and talents in our Quaternary community. The actual task of putting QA issue together is a demanding one but it is also highly rewarding. The completion of each issue is definitely a buzz and many people have returned kind words of appreciation for my efforts (thankyou). There is a large amount of pleasure both intellectually and artistically to be gained from putting together a publication such as QA. It is also nice to have on your cv! So don't be shy, come forward and nominate yourself!

Finally, I would like to sign out with some words regarding Quaternary science in Australasia. Despite the attempts of the powers-that-be to channel all scientific endeavours into paths constrained by their economic rationalism, I believe that Quaternary science in this region has and will continue to have immense relevance! We live in a time of changing climate, particularly evident over the last year, and without an understanding of our past our future can never be anticipated. I believe that now, more than ever, is the time to drive home this message to our politicians. Many of you, I know, are already working hard to this end. To those who may have given up or be despondent in what appears to be the new "dark age" of science, read Simon's article and be encouraged. More importantly, write to your locally polly and urge them to support more funding for education and research in general!

Signing out
Kate Harle
Editor

ARC Survey 2003

This is the second year of compiling data on the success or otherwise of ARC grant proposals. The response was again very good and I would like to thank all of those who provided information. I guess there are still some unsuccessful proposals out there that aren't included in this survey, so the results presented below must be viewed in this light.

So how did the Quaternary fare in the 2003 ARC round? The overall results suggest that proposals associated with the Quaternary have again performed extremely well this year with a similar number of successful application as in 2002, but with fewer unsuccessful applications (Table 1). This is despite the initial pessimistic outlook with the announcement of the 4 priority research areas last year (Nano-Materials and Bio-Materials, Genome/Phenome Research, Complex/Intelligent Systems, Photon Science and Technology)...none of which readily accommodates the Quaternary sciences. The view held by some that the instigation of priority areas for research funding would have disadvantaged Quaternary-related proposals may explain why there were in total fewer numbers of applicants this year. It appears that the needs of these priority areas will be filled by the formation of new Centres of Excellence and that this has allowed other research areas to maintain a reasonable level of funding from the ARC.

I wasn't able to obtain information on discipline areas this year, but categories are given in the summary ("Some Successful ARC Discovery/Linkage Grants for 2003") of successful research grants (Quaternary News pg x). This year there appears to be a more even spread of success through a range of research areas (Table 1), with the Palaeoclimatology proposals faring the best with a 4 successful proposals, closely followed by and the palaeoecologists. Out of the 15 successful proposals there were 2 that supported a postdoc position (Congratulations to B. David and C. Pelejero!).

Table 1. Research areas (based on keywords provided)
Contributing Universities: Australian National University, Curtin University of Technology, Macquarie University, Southern Cross University, University of Adelaide, University of Melbourne, University of New England, University of Newcastle, University of Sydney, University of Tasmania, University of Wollongong.

Keywords	**Unsuccessful** number (%)	**Successful** number (%)
Geomorphology	0	2 (100%)
Geochemistry/Isotopes	0	2 (100%)
Palaeoclimatology	1 (20%)	4 (80%)
Palaeoecology (excl. Archaeology)	2 (33%)	4 (67%)
Glaciology	1 (50%)	1 (50%)
Palaeolimnology	1 (50%)	1 (50%)
Palaeoecology (with Archaeology)	2 (67%)	1 (33%)
TOTAL 2003	**7 (32%)**	**15 (68%)**
TOTAL 2002	23 (63%)	14 (37%)

Yours Quaternarily,

Simon
(President of AQUA)

Forthcoming conferences & meetings

Australasian Quaternary Association and New Zealand Friends of the Pleistocene Conference

4th-7th February 2003
Westport, New Zealand

As per usual this will be a pretty informal meeting with no concurrent sessions. We would like a focus on graduate student work and work in progress. There are proposed sessions on Antarctica, PEPII, and Phytolith Research. Other sessions will be created on demand.

Venue: University of Canterbury - Brian Mason/Max Gage Fieldstation, Westport, South Island, New Zealand

Accommodation: There is some accommodation on site: NZ$10 per person/night (4 beds per room) – preference will be given to graduate students. There is a camp ground within 100 metres of the venue and numerous motels, hotels (pub style), backpackers and B+Bs. Full listings are available at

http://www.geocities.com/westportnz/ and http://www.westport.org.nz/

Pre-conference field trip: Wellington to Conference via NW South Island (3-4 days)
Leader - David Kennedy

Post-conference field trip: Westport to Christchurch (8th-9th Feb)
Leaders - Jamie Shulmeister and Peter Almond

Intra-conference field trip: Pnakaiki Rocks, classical NZ main terrace and glacial sequences
Leader - Pat Suggate

Registration: Costs are estimated at $120/$50 members (Full/Student) and $150/$75 (non-members)

For further information (or suggestions) contact either:

Dr Jamie Shulmeister
Department of Geological Sciences
University of Canterbury
Private Bag 4800
Christchurch, NEW ZEALAND
Ph: 64+3+364 2762
Fax: 64+3+ 364 2769
Email:j.shulmeister@geol.canterbury.ac.nz

Dr David Kennedy
School of Earth Sciences
Victoria University of Wellington
PO Box 600
Wellington, NEW ZEALAND
Ph: 64+4+463 6159
Fax: 64+4+463 5186
Email: David.Kennedy@vuw.ac.nz

The XVI INQUA Congress

July 23 - 30, 2003
Reno Hilton Resort & Conference Center
Reno, Nevada USA

"Shaping the Earth: A Quaternary Perspective."

Important Deadlines

January 15, 2003

- Last day for Field Trip 410 (B-1 to Alaska) registration or cancellation. The Jan. 15 deadline applies to this trip only; all other trips - March 31, 2003.

January 20, 2003

- Financial assistance applications made to INQUA Executive Committee must be received by this date.

January 31, 2003

- Last day for Early Bird registration.
- Financial assistance applications made to INQUA Organising Committee must be received by this date.

March 31, 2003

- Last day for abstract submissions.
- Last day for Field Trips registration or cancellations, except Trip 410 (B-1 to Alaska, see above).

See website for details of symposia and poster sessions and abstract submission and registration information.

http://inqua2003.dri.edu/inqua_home.htm

Other general events

EGS-AGU-EUG Joint Assembly
Climate of the last millennium: reconstructions, analyses and explanation of regional and seasonal changes
(6-11 April, 2003)
Nice, France
Contact: Professor Michael E. Mann
Department of Environmental Sciences,
University of Virginia
Charlottesville, VA 22903
E-mail: mann@virginia.edu

Early-Middle Pleistocene transitions: the land-ocean evidence
(4 April, 2003)
University of Cambridge, UK
Contact: Martin J. Head
Godwin Institute for Quaternary Research
Department of Geography
University of Cambridge
Downing Place, Cambridge CB2 3EN
ENGLAND, U.K.
E-mail: mh300@cam.ac.uk

Ninth International Conference on River Research and Applications
"The Nature of Variability in River Environments"
(6-11 July, 2003)
Albury, New South Wales, Australia
Contact: A/Professor Martin Thoms
E-mail: thoms@scides.canberra.edu.au

Young Global Change Scientists' Conference
(November, 2003)
Trieste, Italy
Contact: Kristy Ross
E-mail: kristy@crg.bpb.wits.ac.za
Website:
http://www.ngdc.noaa.gov/paleo/ctl/youngscientists.pdf

Archaeology

The archaeology and environmental history of Southern Deserts
(15-18 January 2003)
National Museum, Canberra
Website: www.nma.gov.au under 'Exhibitions and Events'

Annual Symposium of the Association for Environmental Archaeology
Worlds apart? Human settlement and biota of islands
(24-25 April, 2003)
Queens University, Belfast
Contact: Dr Nicki J. Whitehouse
School of Archaeology and Palaeoecology
Queens University of Belfast
E-mail: N.Whitehouse@qub.ac.uk
Website: http://www.qub.ac.uk/arcpal/events/aea.htm

34th International Archaeometry Symposium
(4-8 May, 2003)
Heifei, China
Contact: Yaowu Hu
Department of Scientific History and Archaeometry,
University of Science and Technology of China, P.R.China
E-mail: ywhu@ustc.edu.cn

Second International Conference on Soils and Archaeology
(12-15 May , 2003)
Pisa, Italy
Contact: Giovanni Boschian
Dipartimento di Scienze Archeologiche
Universit E0 di Pisa
53, via Santa Maria
I-56126 Pisa - Italy
E-mail: soilarch@arch.unipi.it
Website: http://soilarch.humnet.unipi.it

5th World Archaeological Congress
(21-26 June, 2003)
Washington DC, USA.
E-mail: wac5@american.edu.au
Website:
http://wwwehlt.flinders.edu.au/wac5/indexhomepage.html

Geochemistry

Ancient Biomolecules: New Perspectives in Archaeology and Palaeobiology
at the 225th ACS National Meeting
(23-27 March, 2003)
New Orleans, USA
Contact: Professor Richard P. Evershed
School of Chemistry
University of Bristol
Bristol BS8 1TS UK
E-mail: r.p.evershed@bristol.ac.uk

The Fifth International Symposium on Applied Isotope Geochemistry (AIG-5)
(26-30 May, 2003)
Heron Island, Australia
Contact: Barry Batts
E-mail: bbatts@alchemist.chem.mq.edu.au
Website: http://www.chem.mq.edu.au/aig-5/

18th International Radiocarbon Conference
(1-5 September, 2003)
Wellington, New Zealand
Website: http://www.14Conference2003.co.nz

Geomorphology

3rd International Limnogeology Congress
(29 March - 2 April, 2003)
Tucson, Arizona
Contact: Prof. Suzanne A. G. Leroy,
Department of Geography and Earth Sciences, Brunel University, Uxbridge, Middlesex UB8 3PH, (West London), UK.
E-mail: suzanne.leroy@brunel.ac.uk
Website: http://w3.arizona.edu/~uaextend/ilic3/

Climate Change: the Karst Record
(11-14 May, 2003)
Montpellier, France
E-mail: karst3@lsce.saclay.cea.fr
Website:
http://www.ipsl.jussieu.fr/GLACIO/KARST/Main-KRIII.html

Geophysics

International Union of Geodesy and Geophysics (IUGG) 2003
Session: The Climate of the Holocene
(30 June - 11 July, 2003)
Sapporo, Japan
Contact: Michael Mann, Department of Environmental Sciences, University of Virginia, Charlottesville, VA 22903 USA
E-mail: mann@virginia.edu
Website: http://www.jamstec.go.jp/jamstec-e/iugg/

Micro and Macro Fossils

Inaugural Meeting of the International Biogeography Society
Special session on Palaeobiogeography
(4-8 January, 2003)
Mesquite, Nevada
Contact: Julio L. Betancourt
U.S. Geological Survey
Desert Laboratory
Tucson, AZ 85745 USA
E-mail: jlbetanc@usgs.gov
Website: http://www.fhsu.edu/biology/rchannell/IBS/

Paleolimnological Records of Regional Holocene Paleoclimate Change (3rd International Limnogeology Congress)
(29 March - 2 April, 2003)
Tucson, Arizona
Contact: Mizzi Filippi
CNR- Istituto di geologia Ambientale e Geoingegneria
c/o Dipartimento Scienze della Terra, Università la Sapienza
Ple Aldo Moro 5, 00185 Roma, Italy
E-mail: ml.filippi@cq.rm.cnr.it
Website: http://w3.arizona.edu/~uaextend/ilic3/

3rd International Mammoth Conference
(24-29 May, 2003)
Dawson City, Yukon Territory, Canada
Contact: John Storer
Yukon Palaeontologist
Heritage Branch
Yukon Department of Tourism
PO Box 2703
Whitehorse, YT Y1A 2C6
E-mail: John.Storer@gov.yk.ca
Website:
http://www.yukonmuseums.ca/mammoth/index.htm

9th Conference on Australasian Vertebrate Evolution, Palaeontology & Systematics - CAVEPS 2003
(7-11 July, 2003)
Queensland Museum, Brisbane, Australia
Contact: Scott Hocknull
CAVEPS 2003
Queensland Museum
PO Box 3300
South Brisbane 4101
E-mail: scotth@qm.qld.gov.au

Internantional Conference on Tropical Savannas and Seasonally Dry Forests
Session on Palaoecology and Environmental Change
(14th - 20th September, 2003)
Botanic Gardens, Edinburgh, UK
Website: http://www.geo.ed.ac.uk/bblza/sav2003/

Land-Sea Correlations in the Cenozoic Session of the Joint AASP/CAP/NAMS Meeting
(5-8 October, 2003)
Niagara, Canada,
Contact: Alwynne Beaudoin Provincial Museum of Alberta, Edmonton, Canada
E-mail: abeaudoi@gpu.srv.ualberta.ca
Website:
http://www.palynology.org/meet_AASP36.html

Third International Congress Environmental Micropaleontology, Microbiology and Meiobenthology

(Institute of Paleontology, Vienna, Austria 1-6 September 2002).

By Kate Harle

Environment (Bld 34)
Australian Nuclear Science and Technology Organisation
PMB 1 Menai
NSW 2234, Australia
e-mail: khz@ansto.gov.au

I attended this conference in the hope that I would broaden my knowledge of microfossils that could be used to reconstruct past climate change and human impacts on the landscape. I was particularly hoping that some of the participants would be into those weird micro-things we palynologists frequently ignore, but which are no doubt extremely valuable. The conference and indeed the organisation appears to have been the brainshild of Professor Valentina Yanko-Hombach from the Avalon Institute of Applied Science, Canada. In her opening address, Professor Yanko-Hombach explained how she developed the organisation in order to bring together international scientists working in the various microfossil fields. An excellent idea! Unfortunately, she has only met with limited success so far as this particular conference was dominated by those researching foraminfera. There was a smattering of other microfossil disciplines represented, most of which were also marine based. Needless to say, I was immensely disappointed by the meeting. This disappointment was exacerbated by the behaviour of a large contingent of participants who seemed to regard it more of a social get-together than of an exchange of ideas. I was stunned by their behaviour and lack of courtesy to their fellow speakers - invariably arriving very late to talks then proceeding to maintain very loud conversations throughout the majority of presentations. Unfortunately, the acoustics of the conference venue were appalling, with the result that the audience was frequently louder than the speaker. If nothing else, it was an interesting display of social behaviour, although one I would rather not have to experience again. There were a few interesting talks at least that I managed to hear. There may have been but they were inaudible! Unfortunately, although interesting, these talks were not particularly useful for terrestrial studies. There was also a rather long and protracted session on the debate over the Black Sea "Noah" flood hypothesis. Apparently a topic that many scientists from the region feel very strongly about and very resentful of outsiders coming in, performing one or two analyses, ignoring their science, and producing amazing and very publicised hypothesis. Certainly something that many can sympathise with. There didn't seem to be much debate, however, just a lot of exchange of commiserations and angst.

For me, the most positive aspect of the congress, was meeting Jacob Johns, a diatomist from W.A. He is the Australian representative of the EMMM organisation. We discussed the possibility of holding a sub-branch meeting in Australia.. Although the Vienna conference appears to have failed to achieve the broad interconnection of microfossil researchers, both Jacob and I believed that there was immense potential and value for this to be achieved in a smaller meeting of Australasian microfossil researchers. Hopefully, with more success! So if you are interested, please contact either me or Jacob Johns (School of Environmental Biology, Curtin University of Technology, GPO Box U1987, Perth WA 6845, Australia, email: RJACOBJO@cc.curtin.edu.au).

Some successful ARC Discovery/Linkage grants for 2003

compiled by Simon Haberle

Archaeology and Natural History
Research School of Pacific and Asian Studies
ANU, Canberra
Simon.Haberle@anu.edu.au

Discovery Grants

Astride the Wallace Line: 1.5 million years of human evolution, dispersal, culture and environmental change in Indonesia

Investigating scientists:
Prof. MJ Morwood (Uni. New England), Prof. RP Soejono, Dr F Aziz, Dr W Rink, Dr CS Turney, Dr PB O'Sullivan, Ms CJ Lentfer

Category: Archaeology & Prehistory

Summary:
This project will address major turning points in human evolution, dispersal, culture and palaeoenvironmental change in Southeast Asia. It will focus on two Indonesian islands (Flores and Java) that lie east and west of a major biogeographical boundary: the Wallace Line. Turning points in the last 1.5 million years include the initial arrival of hominids; the extinction of early hominids; the appearance of fully modern humans; the beginnings of plant cultivation and animal domestication; and major faunal changes over time. We will develop and apply new dating techniques to tackle some of the most fundamental questions in world archaeology.

Late Pleistocene faunal change and the formation of fossil deposits: a taphonomic approach

Investigating scientists:
Dr JC Dortch (Uni Sydney)

Category: Archaeology & Prehistory

Summary:
New insights into the relationships between environment, animal communities and humans are the key to understanding faunal extinctions from the prehistoric past to the modern day. Using taphonomic and environmental evidence, three prehistoric sites from across Australia will be examined to document faunal succession and the factors contributing to the formation of fossil deposits in each location. The outcomes include a clearer understanding of the dynamics of fauna, people and climate during a critical period in Australian prehistory as well as providing new evidence against which the current explanatory models of human impacts and climate change may be tested

Western Torres Strait cultural history project

Investigating scientists:
Dr IJ McNiven (Uni Melb), Dr B David (QEII Fellowship)

Category: Archaeology & Prehistory

Summary:
This Project provides the first archaeological study on long-term human presence in Torres Strait. Objectives are to research 1), the antiquity of earliest occupation, and 2), the subsequent emergence of ethnographically documented cultural practices through excavation of key village, rockshelter and ceremonial sites in Western Torres Strait. Current evidence suggests the complex maritime lifeways of Islanders developed <2600 years BP. We will excavate sites on remnant landforms along the ancient landbridge and colonisation pathway between mainland Australia and New Guinea. Results will provide internationally significant insights into Australia's place in an interconnected world during prehistory. International publications will be produced.

Development and application of the Uranium-series method for dating ancient rock engravings

Investigating scientists:
Dr AL Watchman (ANU)

Category: Archaeology & Prehistory

Summary:
Radiocarbon dating has been used to establish the age of relatively recent Australian rock art, but the ages of ancient engravings cannot be measured beyond the limit of this method. Comparative radiocarbon and uranium-series assays will be made on pairs of test samples collected from natural mineral deposits at engraving locations constrained by the ages of lakes, lava flows, sedimentary deposits or ice.

Using test samples with independent and radiocarbon age controls will give confidence in the uranium dating approach for reliably measuring the ages of similar coatings associated with ancient carvings and exposed rock surfaces throughout the world.

Uptake of atmospheric CO2 in the oceans and implications for global change: new proxy developments

Investigating scientists:
Dr C Pelejero (ANU, Postdoctoral Fellowship)

Category: Geochemistry

Summary:
This project aims to quantify the response of the oceans to increasing atmospheric CO_2 from anthropogenic production. This will be achieved by using newly developed palaeoceanographic indicators in deep sea sediments, corals and coralline sponges. These will be used to evaluate changes in seawater acidity and the response of the oceans to past variations in atmospheric CO_2. The capacity and role of the oceans to buffer the rise of atmospheric of CO_2 will be ascertained. This will provide constraints on the impact of increased seawater acidity on coral reefs such as the Great Barrier Reef.

The impact of changing climatic conditions inferred from the isotope abundances of trace metals in global ice sheets and glaciers

Investigating scientists:
Prof. KJ Rosman (Curtin Uni Tech), Mr V Morgan, Prof. C Boutron

Category: Geochemistry

Summary:
In this project Greenland and Antarctic ice-cores more than 3 km long will be used to investigate climatic variation extending back more that 4 complete glacial cycles. Some of these ice-cores include sections of refrozen water formed from sub-glacial Antarctic lake water. This project will use naturally occurring lead and strontium isotopic tracers to fingerprint impurities in the ice, because they have the potential to simultaneously signal the timing and location of past episodes of climate change. This will lead to an improvement in our understanding of the processes that cause these changes.

Millennial-scale instability of sea level and the climate system: new analysis of coral terraces in Papua New Guinea

Investigating scientists:
Prof. JM Chappell (ANU), Dr TM Esat

Category: Atmospheric Sciences

Summary:
Northern hemisphere climates switched repeatedly and abruptly between cold and warm states during the ice ages. This unexplained finding poses uncertainties about future climate. The exact chronology of past sea level and climatic changes is a key to the problem: this project aims to establish precise chronology through re-analysis of coral terraces at Huon Peninsula, PNG. New U-series dating methods will give an accurately-timed record of sea level changes, which will be tightly locked to marine-sediment records of climatic change, by using sharp changes in atmospheric radiocarbon as universal marker horizons.

Quantifying the El Niño-Indian Ocean Dipole system using high-resolution coral palaeoclimate archives

Investigating scientists:
Dr MK Gagan (ANU), Dr WS Hantoro, Dr JM Lough, Dr G Meyers, Dr GB Dunbar

Category: Atmospheric Sciences

Summary:
The ocean surrounding Indonesia is the warmest on Earth and a major source of energy for global atmospheric circulation. Understanding the role of the Warm Pool in future climate change is of key importance, but highly controversial because the potential extent of its variability is largely unknown. To address this issue, this project will provide the first major geochemical investigation of recently discovered ancient corals in Indonesia using state-of-the-art microanalytical techniques. Outcomes from these palaeoclimate records will advance our understanding of global climate change, rainfall variability related to the El Niño - Indian Ocean Dipole system, and Australian drought.

Looking back to see the future: change in the Lambert Glacier and the East Antarctic Ice Sheet

Investigating scientists:
Prof. K Lambeck (ANU), Dr D Fabel, Dr P Tregoning, Prof. R Coleman, Dr D Fink

Category: Geology

Summary:
To develop a comprehensive understanding of the Lambert Glacier of East Antarctica, from the time of the last maximum glaciation to the present, through an integrated and interdisciplinary study combining new field evidence - ice retreat history, geodetic measurements of crustal rebound, satellite measurements of present ice heights and changes therein with other geological and glaciological data and numerical geophysical modelling advances. The project contributes to the quantitative characterisation of the complex interactions between ice-sheets, oceans and solid earth within the climate system. Outcomes have implications for geophysics, glaciology, geomorphology, climate, and past and future sea-level change.

High-resolution records of climatic change in Australia, both on land and at sea covering the last 20,000 years

Investigating scientists: Dr P De Deckker (ANU), Prof. JR Dodson, Prof. Dr L Labeyrie, Prof. GH Miller

Category: Geology

Summary:
This project aims to determine climatic changes in the Australian region since the deglaciation commenced 20,000 years ago at a century scale or better. The information is to be obtained from high-quality records of carefully selected lakes and deep-sea cores in the Australian region. The project will rely on high-resolution chronological records of environmental changes. Several geochemical and micropalaeontological techniques will be used to determine conditions in the lakes and ocean, and links to atmospheric conditions will be determined. This information is of relevance to the international climate community which aims at modelling high-quality and high-resolution records of climate change.

Stable isotopes in marsupials: reconstruction of environmental change in Australia

Investigating scientists: Prof. Dr R Grün (ANU), Dr DM Bowman, Dr MK Gagan, Prof. RT Wells

Category: Ecology & Evolution

Summary:
This project will establish the application of stable isotope analysis of marsupial bones for the reconstruction of past environments, a key area to advance Australian prehistory. On a continental scale, it will establish the relationship between stable isotopes (C, O, N) in bones and environmental factors (e.g., plant distribution, humidity, temperature); on a local scale, the relationship between stable isotopes and aboriginal land management. The project will provide a late Quaternary environmental reconstruction along a transect from the coastal regions in South Australia into the Lake Eyre Basin and explore the methodological limitations at sites with long fossil records.

Antarctic freshwater lake fauna: palaeobiogeography, palaeoecology and applications to climate change studies

Investigating scientists: Dr JA Gibson (Uni Tas), Dr KM Swadling

Category: Ecology & Evolution

Summary:
The origins of the Antarctic freshwater fauna are poorly known: Are the species currently extant long-term endemics descended from species present before the formation of the Antarctic ice-cap, or are they recent invaders from more temperate zones? By studying the distribution of faunal remains in the sediments of freshwater lakes, a picture of the development of the fauna in space and time ('palaeobiogeography') will be formed that will allow the Antarctic fauna to be placed in a wider biogeographic context. Changes in the faunal distribution will also be interpreted in terms of lake palaeoecology and climate change.

Linkage Grants

Geo-hydrodynamic modelling and estuarine evolution

Investigating scientists: Prof. BG Jones (Uni Wollongong), Prof. JB Hinwood, Prof. CD Woodroffe, Mr E Mclean, Dr JF Meleo, Dr B Brooke, Dr B Chenhall

Industry Partner(s): Department of Land and Water Conservation, Shoalhaven City Council

Category: Environmental Engineering

Summary:
We have accumulated considerable knowledge of the geomorphology, sedimentology and hydrodynamics of estuarine systems in south-eastern Australia. This project represents the first rigorous attempt to combine these diverse factors to provide a process-based mathematical model of long- to medium-term sedimentation that can be used for environmental management. To be predictive the model has to use documented changes in the sedimentation histories of different estuary types over the past 8000 years in order to predict their evolution over the next 1000 years. The models that are developed can be applied to estuarine systems both nationally and internationally.

Tracing past and present pollution sources in the River Torrens, South Australia

Investigating scientists: Dr PA Gell (Uni Adelaide), Dr PJ Wallbrink

Industry Partner(s): Torrens Catchment Water Management Board

Category: Environmental Sciences

Summary:
The Torrens River is the principal water supply to 500,000 South Australians. Since early in European settlement it has suffered the impacts of eutrophication and high rates of sedimentation. The Catchment Management Board is seeking to prioritise rehabilitation resources to maximise water quality improvements. This will be informed by the revelation of the principal sources of sediment and nutrients over time.

Multi-sensor core logger available for Australian Quaternary studies

by Andrew Heap

Geoscience Australia & School of Geography and Environmental Studies
University of Tasmania,
GPO Box 252-78,
Hobart, TAS 7001
Andrew.Heap@utas.edu.au

Recently, Geoscience Australia and the Antarctic CRC acquired a GEOTEK multi-sensor core logger (Fig. 1), which is housed in the School of Geography and Environmental Studies at the University of Tasmania. The logger produces high-resolution (~0.5 cm) downcore records of magnetic susceptibility, p-wave velocity, and bulk density from whole and split sediment cores (Fig. 2). From these data, the processing software then calculates acoustic impedance and porosity. Notably, the bulk density data can be used in conjunction with high-resolution age data to derive very accurate mass accumulation rates for sedimentation studies, and the magnetic susceptibility information can be used as a good proxy for terrigenous sediment inputs in studies of marine sediments.

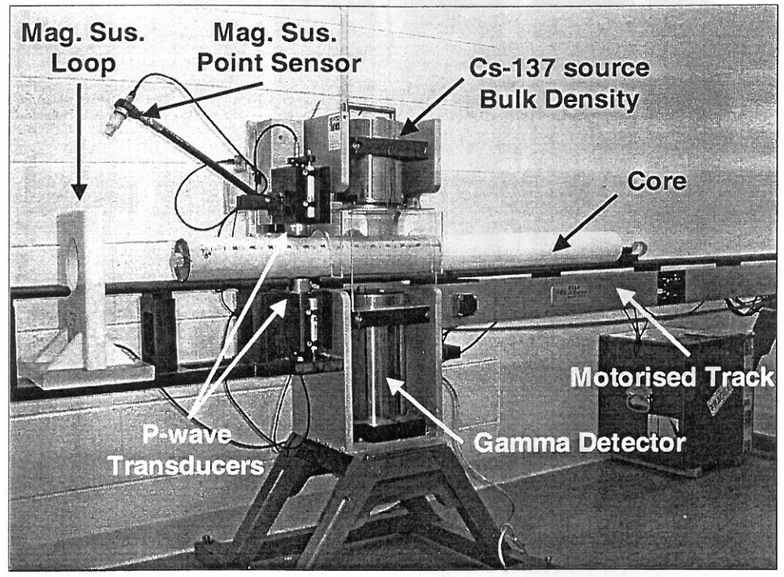

Figure 1. Main components of GEOTEK Multisensor core logger

Data generated by the logger have been applied to Quaternary sediments in Australia to address important management issues. Recent applications include: assessing the influence of terrigenous sediment on the development of fringing reefs in the Great Barrier Reef marine park over the last 10,000 years; assessing the influence of recent catchment clearance on the nutrient loadings to estuaries in SW Western Australia; development of a high-resolution chronology of global climate and sedimentary environments east of Tasmania for the last 300,000 years; and assessing the contribution of high-salinity shelf water from Antarctica to the global ocean circulation over the last 10,000 years. Although the applications described here target the marine environment, cores recovered from any sedimentary environment can be analysed, and the logger is particularly useful for researchers working in rivers and lake environments.

The GEOTEK multi-sensor core logger presents researchers with new opportunities to develop research projects based around high-resolution records of environmental proxies in Quaternary sediments. The logger is available for commercial and collaborative use. Those interested finding out more about the GEOTEK logger and its applications for Quaternary research studies should contact Dr Andrew Heap (Andrew.Heap@utas.edu.au; Ph +61 3 6226-7674) in the first instance.

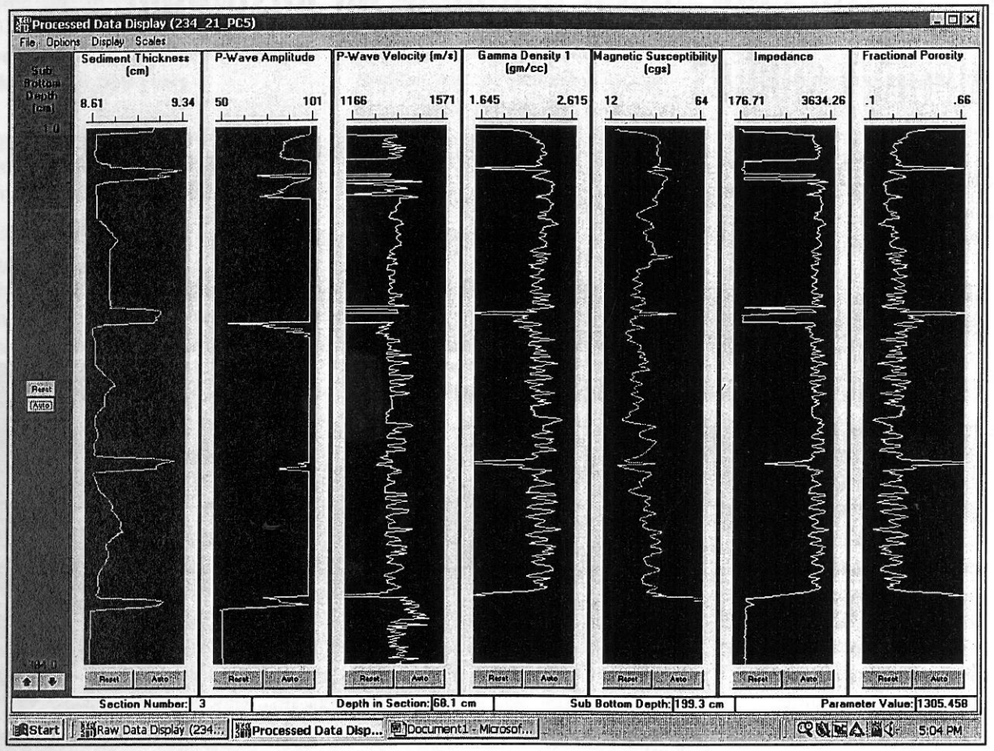

Fig. 2. Processed data output from GEOTEK Multisensor core logger.

Quaternary research in the Wild West

by Annabel Morris

School of Earth and Geographical Studies
University of Western Australia
amorris@geog.uwa.edu.au

Vegetation dynamics of the Proteaceae in south-western Australia.
Freea Itzstein-Davey
Supervisors: Prof. John Dodson, Dr. Ray Wills

Freea Itzstein-Davey is a PhD student investigating the development of the Proteaceae family in South-western Australia over the Cainozoic. Pollen from three sediment sequences of different ages (Eocene, Pliocene and Quaternary) and a modern pollen rain study from biodiverse communities are being studied. Findings from this research will aid understanding of Proteaceae biodiversity in south-western Australia and will enable present communities to be better understood and managed accordingly.

Salinity and Vegetation history in south-western Australia
Annabel Morris
Supervisors: Prof. John Dodson, Dr. Peter Gell

Annabel Morris is a PhD student investigating late Quaternary environmental and climatic conditions, for a Mediterranean type environment, in South-western Australia. Microfossil assemblages of pollen, diatoms and charcoal, obtained from lake sediments, are the main proxy indicators used to construct a record of past environmental and climatic conditions. Findings from this research will provide a better understanding of the region's past environmental and climatic conditions which land management and conservation agencies, as well as climate researchers can make constructive use of.

Palaeohydrology of lakes and wetlands on Swan Coastal Plain, Western Australia
Sandie McHugh
Supervisors: Prof. John Dodson, Dr. Steve Appleyard

Sandie McHugh is a PhD student investigating the Holocene palaeohydrology of lakes and wetlands on unconfined aquifers of the Swan coastal Plain. Analysis of the diatoms, stratigraphy, sedimentology, geochemistry and groundwater modelling will provide insight of palaeohydrological regimes. Findings of this research will provide information to help appropriately manage these sensitive lakes and wetlands and contribute to understanding the Holocene palaeoclimate of South-western Australia.

The history of environmental and human impact in the New Gerogia,Solomon Islands
Sarah Grimes
Supervisor: Prof. John Dodson

Sarah Grimes is Masters student investigating the history of environmental and human impact in the New Georgia group of Solomon Islands between 4000 years BP to the present. Palynology, geomorphology and radiocarbon dating are being used to assess flora and natural landscape change against the established archaeological record. Findings of the research will provide a baseline against which to measure non-anthropogenic impacts, and an analysis of how human impacts have contributed to changes over the last few millennia and into the present.

We would love to hear about your research and/or that being carried out by your department.
Please send in articles!
Deadlines are listed on the inside front cover.

Travel Bursaries 2002

There were two categories of travel bursaries awarded by AQUA this year: the normal travel bursary and the special bursaries for attendance at the 2003 AQUA meeting in New Zealand.

Mark Hemer (IASOS, UTAS) and Helen McGregor (RSES, ANU) won the general bursaries. The competition was very close as all applications were of a high standard. The decision was a particularly difficult one. Given that there are 2 winners, each will receive $750 towards the cost of travel. Congratulations Mark and Helen and we look forward to reading your reports on the meetings you attend in the next issue of Quaternary Australasia.

Ten travel bursaries were to be awarded to assist students to attend the 2003 Biennial AQUA meeting to be held in Westport, New Zealand. Five of these (AUD$500 each) were to be awarded to students from Australia, the University of PNG or the University of the South Pacific. All of the applicants were from Australia and the winners, chosen out of an excellent field, were (in no particular order): Craig Sloss (UOW), Kale Sniderman (Monash), Janece McDonald (Newcastle), Iona Flett (UTS), and Annabel Morris (UWA). Sadly, there were no applicants for the five bursaries (AUD$100) to be awarded to New Zealand students. Missed out guys!

World register of field centres

The Royal Geographic Society in conjunction IBG are calling for people interested in registering their field centres with an international field-centre database. RGS-IBG maintains a register of field research centres around the world, with the aim of encouraging wider international involvement in environmental field research and education.

Through the register, students, scientists, teachers and others are encouraged to make contact with field centres directly. The main users are those looking for a location and facilities to undertake field research; those looking for data or information on an area; individuals and institutes seeking partners and collaborators; and field centres that would like to be more widely known in the geographical and environmental communities. Only those centres that welcome international visitors are included in the register.

An on-line version of the register is publicly available on the RGS-IBG website on www.rgs.org/fieldcentres.

For more information contact:

Tania Plahay.
World Register of Field Centres
RGS-IBG, 1 Kensington Gore, London SW7 2AR, UK
tel. +44 (0) 207 591 3072, fax. +44 (0) 207 591 3071
e-mail. fieldcentres@rgs.org
http://www.rgs.org/fieldcentres

Australian Science: Investing in the Future

The Federation of Australian Scientific & Technological Societies (FASTS) has released the policy document "Australian Science: Investing in the Future". FASTS President, Professor Chris Fell, said in any international comparison Australia is "always running eleventh or fifteenth. Science and technology drive our economy and solve our environmental problems, and yet we accept our international status as one of the also-rans. We don't accept the mediocre in sport - why do we accept it in science, where it really counts?" The policy document puts forward a comprehensive set of policies aimed at driving Australia into the top third of OECD countries by 2012. There are actions for government, for business, for the education system, and for scientists. View the document online at: www.fasts.org

Independent Inquiry into Coastal Lakes - NSW

The Healthy Rivers Commission has released the Final Report of its inquiry, recommending that an environmental planning policy be developed to tackle the specific needs and pressures faced by coastal lakes ecosystems. The Marine and Coastal Community Network are recommending those interested in the future of coastal lakes under pressure assess the Report and provide written comments to Dr Andrew Refshauge, Minister for Planning, NSW Government. Visit www.hrc.nsw.gov.au to find this publication.

Virtual Ocean Floor

The National Oceans Office in collaboration with CSIRO Marine Research and Geoscience Australia has developed a virtual tour of Australia's south-east marine environment. It flies along the ocean floor from the subantarctic waters off Macquarie Island to the temperate zone off NSW. The computer simulated view reveals a number of extinct underwater volcanoes off the south-east coast of Tasmania, and hints at undiscovered species lurking in a series of canyons below the continental shelf. For more information about how to access this virtual world, contact the National Oceans Office: www.oceans.gov.au

Geochron Laboratory competition

Each year Geochron Laboratories in Cambridge, USA, awards research grants to graduate students enrolled in academic institutions around the world. The awards consist of analytical services performed free of charge for the winner of each category. The deadline for applications is May 1st. Early application is suggested to assist us with prompt evaluation and notification of winners. The four separate awards are offered by Geochron Labs in an effort to encourage the application of isotopic analysis techniques to solve original and significant problems. The awards consist specifically of the following services:

K-Ar age determinations: Up to five (5) age determinations using the K-Ar method.

14C age determinations: Up to eight (8) conventional 14C age determinations or three (3) AMS age determinations or some combination of the two.

Stable Isotope Ratio Analyses: Up to $1,500.00 in stable isotope analyses, of any variety or combination (except hydrogen and oxygen on silicates), based on our published prices.

Stable Pb or Sr isotopic analyses: Up to five (5) isotopic analyses of either stable Pb or Sr.

For further information contact
christian.wells@asu.edu or write to
Geochron Laboratories
711 Concord Avenue
Cambridge, MA 02138-1002 U.S.A.

HOLIVAR workshops

HOLIVAR (Holocene variability) is an ESF (European Science Foundation) funded programme mainly of workshops and training courses. It is also part of the PAGES/CLIVAR Intersection and part of PAGES PEPIII. Its aims are:

(i) to promote science that combines data from different instrumental, documentary and proxy records

(ii) to bring together the data community and the climate modelling community

(iii) to encourage more data-model comparisons, on time-scales of the last 1000 years and the last 10,000 years

(iv) to improve the predictability of climate models and the understanding of climate change at the regional scale and

(v) to examine the interaction between past climate change and human society.

So far we there have been workshops in Lammi on "combining proxies" and in Louvain-la-Neuve on "palaeoclimate modelling and data-model comparisons".

The highlights of these will be published as a forthcoming PAGES Newsletter, and summaries of the meetings can be found on the HOLIVAR website: www.esf.org/holivar

Forthcoming meetings will be on age modelling, climate forcing and climate-human society interaction. There will also be two training courses on climate reconstruction and age modelling (London) and on palaeoclimate modelling in 2003 and 2004 respectively. Please see the website for details. Places are limited. In addition, there is a plan to hold an Open Science Meeting at the end of the Programme in 2005, which will provide an opportunity to carry out a full state-of-the-art review of Holocene climate science.

For more information see the website or contact:

Professor R.W. Battarbee
Environmental Change Research Centre
University College London
26 Bedford Way, London WC1H OAP, UK.
Email: r.battarbee@geog.ucl.ac.uk

2nd International Swiss NCCR Climate Summer School

Climate Change: Impacts of Terrestrial Ecosystems
30 August - 6 September 2003
Grindelwald, Swiss Alps

The NCCR Climate invites young scientists to join leading climate researchers in a scenic Swiss Alpine setting for keynote lectures, workshops and poster sessions.

Topics covered will include
- Impacts on terrestrial ecosystems: overviews and scenarios
- Modelling impacts: ecosystem responses, local and regional impacts of
- climate change, Down-scaling, Up-scaling
- Observations: Past changes and recent trends
- Mitigation and adaptation: Land-use and food production

Registration is open now.
You find all relevant information and an application form online at:
http://www.nccrclimate.unibe.ch/events/SummerScool/03/information.html

South Asian PAGES workshop

A South Asian PAGES workshop come training is being organised at Pondicherry India in February 2003 (10th to 15th). The Workshop is titled: Late Quaternary Environment Change: Emerging Issues – **EILQUEC 2003** and the Training program is titled: Recent methodologies in Applied Palynology and Past Environmental Reconstruction – **POLTRAIN 2003.**

Focusing on data and model inter-comparison and multi-proxy approaches in the reconstruction of past environments since the last glacial epoch, this workshop also aims to attain a synergy between data producers and modellers. The organisers are hoping to bring together on a common platform global change scientists with diverse specialisations.
For more information see the website
http://www.ifpindia.org/Ecology/poltrain/home.html
or contact Dr Anupama Krishnamurthy
anupama.k@ifpindia.org

Updated Monash Centre for Palynology and Palaeoecology website

The website of the Centre for Palynology and Palaeoecology based at Monash has recently been updated. The site contains an abundance of information, including the Southeast Australian Recent Pollen Database.
http://www.arts.monash.edu.au/ges/research/Cpp/

New online LGM maps

A new online set of
Last Glacial Maximum maps has been published under Internet Archaeology courtesy of Nicolas Ray and Jonathan Adams. They can be download for use with GIS systems. The maps have been modified to include aspects of altitudinal zones, bathymetrically-based coastlines, etc.. The maps can be obtained at:
http://lgb.unige.ch/home/ray/lgmveg/index.html

CalPal updated

The CalPal program (Cologne Radiocarbon Calibration & Paleoclimate Research Package) has recently been updated. It can be downloaded as scientific freeware from http://www.calpal.de.

The upgrade includes a number of new radiocarbon analysis routines & dialogs, as well as some recently integrated climate proxies & archaeological 14C-databases:

Palaeoclimatology
- Total N=78 climate proxies.
  www.calpal.de/calpal/proxies.htm
- Most recent proxies are: dust and ^{18}O from Kilimanjaro and Huascaran Ice Cores.
  www.ngdc.noaa.gov.paleo/pubs/Thompson2002/Thompson.html.

Prehistoric archaeology
- Integration of Stage Three Project Palaeolithic 14C-Database.
  www.esc.cam.ac.uk/oistage3/Details/Homepage.html
- Integration of Radon European Neolithic & Bronze Age Database.
  www.jungsteinsite.de/radon/radon.html

General radiocarbon analysis
- Completion of Dialogs for RealTime 14C-Calibration.
- First Edition CalCurveComparer.
- Historical CalDataSets INTCAL93, INTCAL86, SUESS.
  www.calpal.de/calpal/composer.htm

Program management
- Correction of WindowRaise bugs (mainly WIN98).
- Inclusion of missing PlotConvertHelp file.

New websites for Center of Paleoclimatology

The World Data Center for Paleoclimatology has announced the creation of two new mirror sites in Asia. They can be accessed via:
Lanzhou: http://wdc.casnw.net/paleo/
Pune: http://wdc.tropmet.res.in/paleo/

Since the first WDC-Paleo mirror was established in 1996 at Médias-France in Toulouse, the WDC for Paleoclimatology with support from the World Data Centers Panel (a body within the International Council for Science - http://www.icsu.org/), has sought to foster links and promote the open exchange of data around the world.

Other WDC-Paleo mirror sites are located at:
- Toulouse, France (http://wdc.obs-mip.fr/paleo/)
- Nairobi, Kenya (http://wdc.uonbi.ac.ke/)
- Johannesburg, South Africa (http://sunsite.wits.ac.za/paleo/)
- Mendoza, Argentina (http://wdc.cricyt.edu.ar/)
- and their home site is in Boulder (http://www.ngdc.noaa.gov/paleo/)

The WDC-Paleo mirror sites contain complete sets of all static web pages and FTP files available from Boulder. This includes over 4000 web pages, 4000 images, 100 CGI programs, and 110,000 FTP files. New or modified pages or files are updated to the mirror sites daily. The only parts of the Boulder website that are not mirrored are those that involve commercially licensed software such as Oracle (database), IDL (graphics), and ArcIMS (GIS), although they are working to place even these services on at least some of the mirror sites in the future.

Journal/book news

New online journal

A new online journal, Palanth - International Journal of Palaeoanthropology has recently been launched. It is located at http://www.palanth.com/. Publication will be on a quarterly basis commencing in 2003. An Inaugural Issue will be freely accessible in December 2002 to all individuals interested in palaeoanthropological international discourse and ongoing developments.

Book offers

Soils of the Past
An Introduction to Paleopedology - 2nd Edition
by Greg J. Retallack
Blackwell Publishing
Cost $73.95 (US dollars?)

To order a copy of this book with a 20% discount go to
http://www.blackwellpublishing.com/book.asp?ref=0632053763
And enter the code EGE002 into the discount field. This discount expires on January 31, 2003.

Positions/grants available

Funds for graduate and undergraduate students
NOAA and the Oak Ridge Institute for Science and Education have an Educational Partnership Program with Minority Serving Institutions that provides funds for graduate and undergraduate students. Applications must be submitted by Monday, January 27, 2003. To see powerpoint fliers describing the opportunity, visit:

http://www.ngdc.noaa.gov/paleo/development/grad_sciences.ppt

http://www.ngdc.noaa.gov/paleo/development/undergrad_sciences.ppt

For additional background information:

Graduate:
http://www.orau.gov/orise/edu/NOAA/gi-gEPPMSI.htm

Undergraduate:
http://www.orau.gov/orise/edu/NOAA/gi-ugEPPMSI.htm

Contact Jennifer Garren if you have any questions (GarrenJ@orau.gov).

Graduate research opportunities in glacial geomorphology and past ice sheet dynamics
The Department of Geography at the Simon Fraser University in Canada is seeking graduate students for a range of potential projects, including:
1. The relative roles of meltwater and ice in glacial landscape evolution
2. Regional trends in Cordilleran Ice Sheet landsystems derived from digital imaging
3. Basal ice sheet thermal regime inferred from till properties
4. Applying electrical resistivity ground imaging techniques to glacial geomorphic problems.

Financial support is available from a combination of fellowships, scholarships, research assistantships, teaching assistantships and research semester bursaries. Research costs will be covered by secured funding to the program. [There is no indication if this is limited to citizens of Canada. It was posted on an international list, so I am assuming it is open. Editor]
Additional information on, and applications for, the Geography Graduate Program at SFU can be obtained at http://www.sfu.ca/geography/Programs/graduate.html or by contacting the Graduate Program Secretary, Marcia Crease (crease@sfu.ca)

Interested applicants should make initial enquiries to Tracy Brennand (tabrenna@sfu.ca Ph: 604 291 3617).

The deadline for applications from students wishing to enter the graduate program in September 2003 is February 1, 2003.

Palaeoecology Postdoc Position in Dublin
A postdoctoral research fellowship is available within the Palaeoecology Research Group in the Botany Department of Trinity College Dublin. This post is being funded within the ACCROTELM Project (Abrupt Climate Changes Recorded Over The European Land Mass: multi-proxy records of Late-Holocene climate variability in Europe). The Fellow will have a PhD in palaeoecology and experience in macrofossil analysis from peat deposits. The Fellow should also have experience of interpreting proxy climate signals from palaeoecological data. The fellowship will run for 24 months starting on 1st April 2003, or as soon as possible after that date. The salary will be Eu33,000 per annum.

Applications and informal enquiries should be sent to:
Dr Fraser Mitchell, Botany Department, Trinity College, Dublin 2, Ireland.
Tel: (+353 1) 6081811, Fax: (+353 1) 6081147, e-mail: fraser.mitchell@tcd.ie

Closing date 24th January 2003.

Comer Postdoctoral Fellowship in Paleoclimatology
Massachusetts Institute of Technology
Open Immediately: The paleoclimate group in the Department of Earth, Atmospheric and Planetary Sciences at MIT seeks a motivated postdoctoral fellow to study the record of abrupt climate change in Late Quaternary marine sediments from Southern Hemisphere middle latitudes. A strong background in organic geochemistry and/or paleoclimatology is essential. Experience with gas and/or liquid chromatography and organic mass spectrometry would be ideal. However, candidates with expertise in other geochemical techniques used to reconstruct Earth's climate history will be considered. The position is for one year and renewable for up to three years based upon performance. For further information contact Professor Julian Sachs (jsachs@mit.edu). Applications should be sent to: Comer Fellowships, c/o Prof. Julian Sachs, MIT Room E34-254, 77 Massachusetts Ave., Cambridge, MA, 02139.

Assistant Professorship, University of Pennsylvania
The Department of Earth and Environmental Science at the University of Pennsylvania invites applications for an assistant professorship in environmental geoscience. Further information about programs in the Department of Earth and Environmental Science at the University of Pennsylvania may be sought at www.sas.upenn.edu/earth/. Applications should be sent to: Robert Giegengack, Environmental Geoscience Search Committee, Department of Earth and Environmental Science, University of Pennsylvania, Philadelphia, PA 19104-6316 USA (earth@sas.upenn.edu).
The Search Committee will begin to evaluate applications in January 2003, however the search will remain open until the position is filled.

Reviews

Flammable Australia. The Fire Regimes and Biodiversity of a Continent

edited by Bradstock, R.A., Williams, J.E. and Gill, M.A.

Cambridge University Press, hardback, 462pp.
ISBN 0 521 80591 0
Cost $150

by Lesley Head
School of Geosciences
University of Wollongong

Call for book reviewers

If you are interested in reviewing books for Quaternary Australasia please contact Paul Hesse:
ph: (02) 9850 8384
e-mail: phesse@laurel.ocs.mq.edu.au

Those of us who still have the 1981 work *Fire and the Australian Biota* on student reading lists will welcome this new volume, which provides an overview of ecological and palaeoecological understandings of fire in Australia some two decades on. As the chapter bibliographies demonstrate, an enormous amount of research has been undertaken in the last twenty years, much of it utilising new remote sensing and GIS technologies.

The first two sections of the book deal with systemic issues such as temporal change, spatial variability, and life cycles of plants and animals. Then follows a series of chapters organised around specific ecosystems – grasslands, shrublands, woodlands and forests. Within each of the latter, temperate, tropical and arid variations are given due attention. A final group of chapters deal with management issues and applications.

For Quaternarists the most important paper is the first one. Kershaw, J. Clark, Gill and D'Costa provide an important update on the classic Singh, Kershaw and R. Clark chapter of the original volume. This chapter engages constructively with its predecessor, puts the ghost of Lake George to bed, and presents an overview of the state of current understanding at several different timescales. The key Quaternary information is summarised in the sixty-seven sites of Table 1.1, most of them analysed after 1981. The bibliography of this table provides an inadvertent tribute to the impressive supervisory record of Australia's palynological elders, notably Peter Kershaw and John Dodson. The carefully worded conclusion that

there is a notable increase in fire activity centered on 40ka before present (BP) which, in the absence of a major climate change around this time, is considered to most likely indicate early Aboriginal burning. (p. 3)

is likely to generate as much debate in the next two decades as Lake George, Lynchs Crater and Lashmars Lagoon generated in 1981. While we will no doubt find much to argue with in the details, there are several overview diagrams here that will be both helpful and provocative.

A number of characteristics make the volume a useful reference whose lifespan is likely to match its predecessor. Clear chapter structures, plentiful illustrations and detailed bibliographies indicate appropriately firm editorial hands. Having watched fires burn from my office window over the last few weeks, I would take issue with the way cultural processes are dealt with (or not) in a number of these discussions, but that is a feature of the disciplines generally rather than this book specifically.

Students (or others, for that matter) looking for simplistic explanations won't find them here. Nor, at $150, are they likely to buy the book, so make sure you order it for the library.

Lake Mungo

Window to Australia's Past

J.M.Bowler

A CD produced in conjunction with
the University of Melbourne,
the Murray-Darling Basin Commission,
Highbrow Interactive and Seagreen graphics
ISBN 0 7340 2663 3

by Kate Harle
ANSTO Environment
PMB 1 Menai, NSW 2234
khz@ansto.gov.au

This interactive CD is an absolute delight, both intellectually and visually. Made with Macromedia and QuickTime (a QuickTime 5.0.2 installer is included), the CD is a feast of information, enhanced and well supported by a wealth of excellent graphics, satellite images, aerial photography, photographs and audio-video. The CD is aimed at an audience ranging from the general public through to students and scientists. Not an easy audience range to cater for, given the varying levels of scientific knowledge and interests. However, Jim succeeds admirably , with information subtly set at a number of levels and all presented in an exciting and stimulating manner.

There are three modes in which the CD can be explored: Guided Tour, Exploration of Landscape and Exploration of Themes. The first, Guided Tour, is beautifully narrated by Jim, and provides an excellent overview of Lake Mungo, its surrounding environment and its history. It can be stopped and resumed at any point, allowing the tourist to explore areas of interest in greater detail via an interactive screen menu. This menu, which can be hidden or displayed at will, provides not only navigation options but also information in text and pictorial form. There are a range of options, including the ability to zoom into photos and maps, display a glossary, display stratigraphies and geology, display aerial photographs in either vertical or obliques view and access map information as well as on-screen help.

For those who wish to delve deeper into the treasure-trove of information that Jim has provided on this CD, the Exploration of Landscape and Themes options are of most use. Theme Exploration provides an option of eight themes: environmental processes, people and management, geology, archaeology, people/land synthesis, ice age, Murray Basin and the Western Plains. Each of these themes contains a wealth of information which is accessible by both the scientist and the interested novice. Using the on-screen navigator, it is possible at any stage to switch from one theme to another, making it an ideal tool for students wishing to explore related aspects of Lake Mungo.

The Landscape Exploration mode provides a means to quickly hone in on aspects of the Lake Mungo environment that are of interest. Maps and explanations are all provided. Further information explaining terms and concepts, such as the formation of lunettes and longitudinal dunes, are readily accessible via the on-screen menu if desired. Thus both the novice and expert are well catered for.

The information provided in this CD is abundant, well displayed and integrated, and, importantly, relevant and up to date (some of it not previously published). Not only are the scientific aspects of the site explored but also the sensitive nature of the relationship of the local Aboriginal communities to Lake Mungo. Indeed, Jim has approached this presentation of his life work with special regard to the concerns of the indigenous communities. He makes special note of their sensitivity to the burial information presented and requests that such information presented is viewed and accessed with dignity.

I am deeply impressed with both the huge amount of information that has been gathered on this CD as well as with the way it has been presented. Once again, Jim has proved himself a master story teller!

Thesis abstracts

A study of the relationships between climate, carbon dioxide and the vegetation over the Australian continent at the present and the Last Glacial Maximum

Sandra Berry (PhD)
Ecosystem Dynamics Group
Research School of Biological Sciences
The Australian National University, ACT
Sandy.Berry@greenhouse.crc.org.au

Attempts to develop a climatology for Australia during the Last Glacial Maximum (LGM, 15,000 to 25,000 yr BP) have been frustrated by apparently conflicting evidence of climate at this time. One possible cause of these conflicts is that proxy data have been misinterpreted. The terrestrial climate has been inferred from various kinds of evidence, but mostly from geomorphologic studies, and vegetation inferred from pollen studies. However, the direct effect of a change in the concentration of carbon dioxide in the atmosphere ($[CO_2]$) on photosynthesis has not been taken into account when climate has been inferred from vegetation. During the LGM, $[CO_2]$ was approximately half of the present (~360 µmol mol^{-1}) concentration (Barnola, 1987). Thus, inferences of climate during the LGM based on evidence from pollen studies need to be re-assessed.

In this thesis, I develop a framework to relate environmental conditions to the Australian vegetation. I subsequently use this framework to estimate changes in the vegetation structure that would result from a reduction in $[CO_2]$ to 200 µmol mol^{-1}, similar to that at the LGM. I conclude that the Australian vegetation at the LGM would have no modern analogues. I find that the reduction in $[CO_2]$ during the LGM would be sufficient to explain the vegetation inferred from pollen studies. There is no need to infer a change in climate. I then assess the impact of this vegetation change on the energy budget. I find that when $[CO_2]$ is reduced to 200 µmol mol^{-1} the albedo of the surface is increased, but the energy requirement of transpiration is decreased, so that there is little change in sensible heat at the surface. Consequently, over much of Australia, a reduction in vegetation cover resulting from a reduction in $[CO_2]$ would not substantially alter the availability of energy for transformation to sensible heat. However, a reduction in vegetation cover would exacerbate runoff and soil erosion. During the LGM the vegetation cover would have been less than the present even if there were more precipitation (up to twice the present rainfall). Thus, there is no need to infer increased aridity to explain the observed activation of dunefields during the LGM in southern Australia.

Having taken into account the direct effect of a reduction in $[CO_2]$ on the vegetation cover, and consequent changes in erosion and runoff, I reassess the evidence (from sources other than pollen) used to infer climate at the LGM. I also investigate the mechanisms that could have produced the inferred climate. There is evidence for increased aridity over northern Australia to the west of the mountain ranges on the eastern seaboard. I conclude that the increased aridity is probably mostly a consequence of the reduction in mean sea level during the LGM as proposed by Bowler *et al.* (1976) and Webster and Streten (1978). In southern and central Australia, annual precipitation was probably similar or greater than now. Increased precipitation is consistent with an equatorward displacement of the mid-latitude westerlies, arising from an increased thermal gradient between the equatorial and polar region.

Instructions to authors

This mostly applies to those submitting research papers. However, the formatting information will also be of use to those submitting research/conference reports and other material.

Preparation of the text

a) The manuscript should preferably be prepared using a word processor, with single spacing using either Abadi MT Condensed Light or Ariel font. The document should have at least a 2 cm page margin.
b) Please provide an abstract of no more than 200 words.
c) Please include on the title page the name(s) of the author(s), their affiliations, fax and email numbers. In the case of more than one author, please indicate to whom the correspondence should be addressed.

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a) References in the text should consist of the surname of the author(s) followed by a comma then the year of the publication in parentheses. eg. (Quaternarist, 2000) (Quaternarist and Palynology, 2000)
b) The reference list should contain all authors of a paper, the year of publication, the title of the article/chapter, the full name of the journal or book (if relevant) italicised, page numbers. See examples below.

Quaternarist, A.B., 2000. The top twenty field sites in Australia. *Journal of Field Studies*, 62 (2), 191-200.

Quaternarist, A.B. and Palynologist, C.D., 2000. The top twenty field sites in Australia. In A.N. Smith (editor). *A Guide to Happy Quaternary Studies.* Fun Book Company, Sydney. 109-146.

Quaternarist, A.B., Palynologist, C.D. and Geomorphologist, E.F., 2000. *A Guide to Happy Quaternary Studies.* Fun Book Company, Sydney. 300 pp.

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a) Tables and figures should be compiled on separate sheets and should be numbered according to their sequence in the text.
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Kate Harle
Environment Division (Bld 34)
ANSTO
PMB 1 Menai
NSW 2234

Email: khz@ansto.gov.au

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