



Australia and New Zealand form the Australia-New Zealand IODP Consortium (ANZIC), and the two countries have access to all IODP activities. This bulletin provides current news, job opportunities, scholarships and events relating to both national and international scientific communities.

For more information contact:
Website: www.iodp.org.au
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News from the ANZIC Office

It is two months, two very hectic months, since the last ANZIC Bulletin was sent out, and we apologise for this. In this time Neville Exon has been to Korea for an IODP Forum meeting, and to Perth and Adelaide for fruitful discussions about a potential proposal for IODP drilling of the Cretaceous black shales in the giant Great Australian Bight delta. We also had a major presence at the Australian Earth Sciences Convention (see report elsewhere in this bulletin).

One piece of excellent news is that now we have all the signatures on the Australian Multi Institutional Agreement, which was the last thing missing in formalising our financial arrangements for 2014. This means that we have access to the ARC funding for this year, so that we could pay and have paid our subscription of \$US1.5 million to the USA for *JOIDES Resolution* and European associate membership, and \$US300,000 to Japan for *Chikyu* associate membership. New Zealand has already been invoiced for their membership of ANZIC, and all our Australian partners will be invoiced soon. Although the exchange rate was much worse than we perforce put in our ARC application in April 2013, it was better than we had been budgeting for recently. At this stage we are in good financial shape for 2014 and 2015.

The *JOIDES Resolution* will be working in the western Pacific in early 2017, and there are a number of strong proposals in the Australian and New Zealand regions. The Chairman of the IODP Science Evaluation Panel, Dick Kroon, noted at AESC that now is the time to build new or improve existing proposals to keep the drill ship in our area a little longer in 2018. One new full proposal (760) is that to drill the Cretaceous sequences containing anoxic events on the Naturaliste Plateau and in the Mentelle Basin off Cape Leeuwin. The proposal was led by Richard Hobbs at the University of Durham, and Irina Borissova of Geoscience Australia is another lead proponent. This proposal was well received and will soon be out for external review. A potentially somewhat similar proposal to investigate the Cretaceous black shales in the Great Australian Bight has been discussed by interested researchers from the universities and government agencies, and scientists from the petroleum exploration companies that hold exploration leases in the area, at meetings in Perth and Adelaide. Peter McCabe of the Australian School of Petroleum at the University of Adelaide is taking the lead in this activity, which could well lead to a cooperatively funded Complementary Project Proposal being submitted for the next deadline of 1 October.

Neville Exon and Catherine Beasley

IODP FORUM

Neville Exon's visit to the IODP Forum Meeting in South Korea from 25 to 27 May was an interesting one. The Forum has a broad overview of scientific matters affecting all areas of IODP, and this was a somewhat exploratory first meeting where its future role was properly defined. Keir Becker of the University of Miami, who has vast IODP experience, chaired the meeting very well. All the key players in IODP were represented and the discussion, both during and outside the meeting, was very useful. The next Forum meeting is planned to be at ANU in July 2015 and we consider this an appropriate occasion to invite key research, departmental and ministerial people to a function so that they better understand the value of IODP to Australia.

ANZIC SCIENCE COMMITTEE

The new ANZIC Science Committee had a very useful meeting on 11 July in Newcastle immediately after AESC. Although most Science Committee work is done by email and telephone, an occasional face-to-face meeting lets members get to know each other and allows for free-flowing discussions. There was very strong emphasis on the need for outreach and excellent suggestions about touring scientists, and this will be passed on to the Governing Council for consideration. This was Stephen Gallagher's (University of Melbourne) last meeting as Chairman but he will stay on as a member for a time because his corporate knowledge is invaluable. All those involved with Stephen's Chairmanship will agree that he has done a wonderful job, putting much thought and effort into getting the most out of our IODP membership. It was agreed that, given the recent turnover on the Committee and the fact that our present funding runs out at the end of next year, there should be no more rotations until the next round of funding is assured.

ANZIC RESEARCH FUNDING

In the last month a number of research activities have received funding, including:

- Stephen Gallagher was granted post-cruise analytical funding for the Asian Monsoon Expedition 346 under the title "*Palaeoproductivity and Tsushima Current variability in the Japan/East Sea through the Middle Pleistocene Transition*".
- Chris Moy of the University of Otago was granted post cruise analytical funding for IODP Expedition 341 under the title "*Evaluating Plio-Pleistocene changes in algal productivity at IODP Site U1417 in the Fe-limited Gulf of Alaska*".
- Kelsie Dadd of Macquarie University has just been granted post-cruise analytical funding to cover her IODP Expedition 349 under the title "*Volcanic ash layers in South China Sea sediment: an investigation of the ash geochemistry, source and its tectonic significance*".

We have closed applications for funding for special post-cruise analytical studies on DSDP, ODP, or IODP material. We have a good level of interest and the ANZIC Science Committee will review the applications in the near future.

AT SEA

Richard Arculus (ANU, co-chief scientist), Sebastien Meffre (University of Tasmania, petrologist), and Alexandre Bandini (University of Western Australia, radiolarians) make up the official ANZIC contingent on the *JOIDES Resolution* Izu-Bonin- Mariana Arc Origins Expedition 351, which is almost complete. Philipp Brandl, an ECORD representative, has a Humboldt Foundation post-Doctoral scholarship at ANU, so could be regarded as an honorary Australian. The expedition has cored 1460 m of sediments and is now into the basement rocks, so has achieved all its aims despite a week 'waiting on weather' under threat from Super Typhoon Neoguri. The team will now drill until the bit gives up, probably at about 1600 m before returning to port.

Congratulations to the entire team on achieving the expedition aims despite significant challenges.



Sebastien Meffre of University of Tasmania, Sedimentologist



ANZIC Lead CI, Richard Arculus of ANU, as Co-Chief Scientist



Alexandre Bandini of University of Western Australia, Radiolarian Specialist

Science party aboard Expedition 351



Expedition 352: Izu Bonin Mariana, Forearc

Timothy Chapman (Sydney University petrologist) will join the Izu-Bonin- Mariana Forearc Expedition 352 embarking

Expeditions 355: Arabian Monsoon and 356: Indonesian throughflow

Applications for ANZIC participants for two more *JOIDES Resolution* Indian Ocean 2015 expeditions have just been considered by the Science Committee - Arabian Sea Monsoon Expedition 355, and Indonesian Throughflow Expedition 356 on the Northwest Shelf. Our rankings have been sent to USIO and we expect an appointment for Expedition 355 this month. The applications for Expedition 356 will be considered by the TAMU staff scientist and the two co-chief scientists (one being Stephen Gallagher) in the next month or two.

AUSTRALIAN EARTH
SCIENCES CONVENTION
IODP REPORT
July 2014
Neville Exon



Neville Exon and Catherine Beasley attended the Australian Earth Sciences Convention in Newcastle from Sunday 6 December until Friday 11 September. About 640 people attended the Convention, and IODP was featured in the IODP Symposium (Neville Exon's responsibility) and an ANZIC booth (Catherine Beasley's responsibility). Both were well attended, with 40-50 people at the three sessions of the Symposium, and a steady flow of interested visitors at the booth.

IODP Talks

Neville Exon (ANZIC Program Scientist): *Keynote Address - The Australian and New Zealand role in scientific drilling*

Dick Kroon (Chairman of IODP Science Evaluation Panel): *Keynote address - Highlights of IODP research and future outlook*

Stephen Gallagher (Co-chief Scientist of future IODP Expedition) – *A million year history of reefs, ocean and climate on the northwest shelf of Australia: IODP Expedition 356 (2015)*

Kelsie Dadd (Macquarie University) – *Geochemistry and source of ash layers in Bering Sea sediment at IODP Site 323-U1341*

Kyaw Moe (JAMSTEC IODP office) – *“Chikyu” riser drilling results and her future challenges*

Sophia Bratkenov (Macquarie University) – *Exploration of Miocene biomarkers in cored sedimentary rocks from IODP Expedition 317, Canterbury Basin, New Zealand*

Virginia Toy (University of Otago) – *IODP Expeditions 343 and 343T, the Japan Trench Rapid Drilling Project (J-FAST) yield new insights into the mechanics and structure of subduction thrust faults*

William Bonney (ANU) – *Insight into the Eocene: marine sedimentary sequences from IODP Expedition 342 [Newfoundland margin]*

Ingo Pecher (University of Auckland) – *Slow sliding of gas hydrate-bearing landslides on the Hikurangi Margin, New Zealand*

Amy Chen (Macquarie University) – *A comparative multiproxy approach to address paleo-redox change at the Paleocene-Eocene boundary, New Jersey continental margin*

IODP Posters

Rita Susilawati (University of Queensland) – *Methanogen propensity of selected low rank coal from Australia, Indonesia and Japan*

Marta Vega Faundez (Geological Survey of NSW) – *Rock magnetic signature of gas hydrate in deep marine sediments of the Peruvian margin*

Sean Johnson (University of Tasmania) – *IODP Expedition 343 (Baltic Sea): a high resolution test of the pyrite trace element seawater proxy*

The booth featured three striking pull-up posters prepared by Catherine Beasley, with two covering the drill ships *JOIDES Resolution* and *Chikyu* and the third providing a brief outline of IODP activities. But perhaps the main draw cards were the replicas of three famous ocean drilling cores.

The first replica, loaned from ECORD, was of the Paleocene-Eocene boundary taken on the Walvis Ridge off southwest Africa on ODP Expedition 208. It illustrates the effect of sudden global warming and ocean acidification on calcareous pelagic sediment much like that at the K/T boundary, with global extinctions also a consequence. In this case, there is a sharp boundary between the underlying calcareous sediment and overlying unfossiliferous brownish clays, which gradually give way to calcareous pelagic sediment as new calcareous microorganisms evolved to fill the empty niches. This extinction event is believed to have been caused by the sudden release of methane from gas hydrates from seabed sediments, after an initial warming made the gas hydrates unstable.

The second replica, loaned from USIO, was of the Cretaceous/Tertiary boundary taken on the Blake Nose off eastern Florida on ODP Expedition 171B. It beautifully illustrates the effects of the asteroid impact 2000 km to the west which caused the huge K/T extinction event and related tsunami. Slumped calcareous pelagic sediments below the event are truncated by a dark fining-upward horizon about 12 cm thick, representing the ejecta from the impact and topped by neodymium- rich clay. Above the ejecta material, brownish clay gradually gives way to calcareous pelagic sediment as calcareous microorganisms evolved to replace those exterminated by the impact.

The third replica, loaned from JAMSTEC, was of the rocks in the fault in the Japan Trench along which the overlying Japanese plate suddenly moved some 50 m to the east-southeast and 15 m vertically, generating the disastrous Tohoku Earthquake and tsunami – an unheard of displacement. This fault was drilled and instrumented by *Chikyu* on IODP Expeditions 343 and 343T in a technologically very difficult expedition involving a water depth of about 7000m, and drilling nearly 1000m below the seabed. The fault movement on slippery bentonitic clays allowed almost all the stress to be dissipated, and the highly sheared lenticular scaly clays shown in the replica are part of a mélangé also involving exotic blocks of lithified mudstone. The amazing amount of movement and the almost complete stress release suggest that other mega earthquakes are unlikely to be generated from the nearby fault zone for centuries to come.

The three cores were of great use in illustrating two of the talks. Dick Kroon was a co-chief scientist on both ODP Expeditions 171B and 208, and the K/T and P/E boundary replicas were passed around and generated great interest. Virginia Toy was aboard IODP Expedition 343 and the replica core was a wonderful example for her talk on the fault zone.



General Comments

The marked presence of ANZIC and IODP in both the booth and the symposium was a very effective advertisement of the value of this great international geoscience undertaking to the world, Australia, and New Zealand. Many scientists who had not previously been involved expressed interest either in applying to join future expeditions or in working on legacy material, being encouraged by the financial support for both styles of activity. Of particular note was the number of scientists and students from the University of New South Wales, which is not an ANZIC partner, who were interested. We should encourage UNSW to join the next round bid for Australian funding.

Given the amount of interest in the core replicas, Catherine Beasley in particular talked to university scientists about the value of the replicas to them in their teaching roles. There was considerable interest in borrowing replicas for teaching purposes, and the cores would also be of use at public lectures and future conferences where we have a booth. Accordingly, we will recommend to the ANZIC Governing Council that we should buy replicas of the K/T and P/E boundary cores for such use at an estimated cost of \$3000.

