Issue 9, 5 November, 2015

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
Website: drill.gns.cri.nz

News from the ANZIC Office

Many of you have already heard the excellent news that we have been very well funded by ARC/LIEF for the next five years. This means that we can now look forward to many exciting IODP expeditions and opportunities, in our region and elsewhere, in the coming years. Of course, it is essential that we make the best possible use of this opportunity, and the ANZIC Governing Council will meet at Macquarie University on 24 November to consider the framework from which we will get optimal scientific achievements.

More detail on where we stand and what the future holds for Australia and New Zealand in ANZIC is outlined below under the title "Scientific Ocean Drilling now in Australasia". We will continue to have the right to send our scientists to sea on all expeditions. We will also continue to offer funding support, using our partner funds, to science party members for necessary analytical post-cruise work to ensure full benefit from their participation. We expect to support future rounds of analytical funding that make use of legacy ocean drilling material, and to continue our very successful annual Marine Geoscience Masterclasses for university students.

The success of the ARC/LIEF bid is a great credit to all those directly involved in the bid and all those who have been involved in IODP activities: those who wrote and are writing scientific proposals, those on expeditions, the Governing Council and the Science Committee, those involved in IODP international panels or working on legacy material, the good public relations work of Grahame Cook and this office, and all those who speak well of IODP around the traps. Special mention must be made of Geoff Garrett (Council Chairman and key supporter), Richard Arculus (Lead CI, co-chief scientist on IBM Expedition 351 and eloquent spokesman), Stephen Gallagher (former Science Committee Chairman and co-chief scientist on the just-concluded northwest Australia Expedition 356) and Rob McKay (present Science Committee Chairman) for their involvement in some key areas.

We are very grateful to the ARC/LIEF system for continuing to support the exciting IODP project, and to our 17 Australian partners and 4 New Zealand partners for their wholehearted support. This is the world's largest and longest lived international geoscience research program, with 26 countries involved and a total operational budget of about $US180 million, and Australia and New Zealand are very significant scientific partners in it, as nicely illustrated by the number of ANZIC-led expeditions planned for our region in the next few years. The US, Europe and Japan are the providers of all the logistics and our gratitude to them is enormous.

Australian Government
Australian Research Council

Minister Birmingham's media release can be read at http://www.arc.gov.au/news-media/media-releases/379-million-new-research-infrastructure-equipment-facilities

We are able to continue business as usual with $A2,875,000 p.a. from Australian sources (ARC $2 million and partners $875,000). New Zealand intends to put in an additional $US300,000 p.a.. We have signed MOUs covering our access to drilling platforms to the extent of $US1.8 million, but are in a very strong general financial position if the exchange rate does not fall much further. New Zealand provides great additional value to ANZIC and we hope the Australia-New Zealand partnership blossoms even more.

Craig Sloss (QUT) is aboard the *JOIDES Resolution* as a sedimentologist, and they are now halfway through the Maldives Monsoon Expedition 359. For anyone wanting to follow happenings on the ship, the blog is at http://joidesresolution.org/blog, the twitter is twitter.com/TheJR, the instagram is instagram.com/joides_resolution/. Anyone wanting to schedule a videoconference for any classroom or group can do so at http://joidesresolution.org/node/1746 (or the link directly to the form is bit.do/JRexp356).

ECORD IODP Expedition 357, "Atlantis Massif Serpentinization and Life", is just beginning on the mid-Atlantic ridge using two seabed drills from RMS *James Cook*. The full proposal, and up-to-date expedition information, can be found on http://www.eso.ecord.org/expeditions/357/357.php. Most of the science party is not aboard, but will meet at the Bremen core repository when the cores are returned there. Organic chemist Morgan Williams, a PhD student at ANU, is the ANZIC science party member.

The expedition is addressing two exciting discoveries in mid-ocean ridge research: off-axis, serpentinite-hosted hydrothermal activity, exemplified by the Lost City Hydrothermal Field on the Atlantis Massif oceanic core complex (30°N); and the significance of tectono-magmatic processes in forming and exposing heterogeneous mafic and variably serpentinized ultramafic lithosphere that are key components of slow and ultraslow spreading ridges. The expedition will also build constraints on the nature and distribution of microbial communities in ultramafic subsurface environments.

The *JOIDES Resolution Mariana Convergent Margin Expedition 366* will investigate geochemical, tectonic, and biological processes at intermediate depths in an active subduction zone. This expedition will core the summits and flanks of serpentinite mud volcanoes on the forearc of the Mariana system, a non-accretionary convergent plate margin in the western Pacific. The expedition is planned to start at the end of November 2016. At present the ANZIC Science Committee is evaluating a number of good applications for a shipboard position.

In the last bulletin (check application arrangements there) we called for applications for *JOIDES Resolution South China Sea (SCS) Rifted Margin Expeditions 367 & 368,* which aim to understand the mechanisms of lithosphere extension during continental breakup at a non-volcanic rifted margin. The two-month expeditions will be in the periods 7 February - 9 April 2017 and 9 April - 9 June 2017. Opportunities exist for researchers (including graduate students) in many specialities.

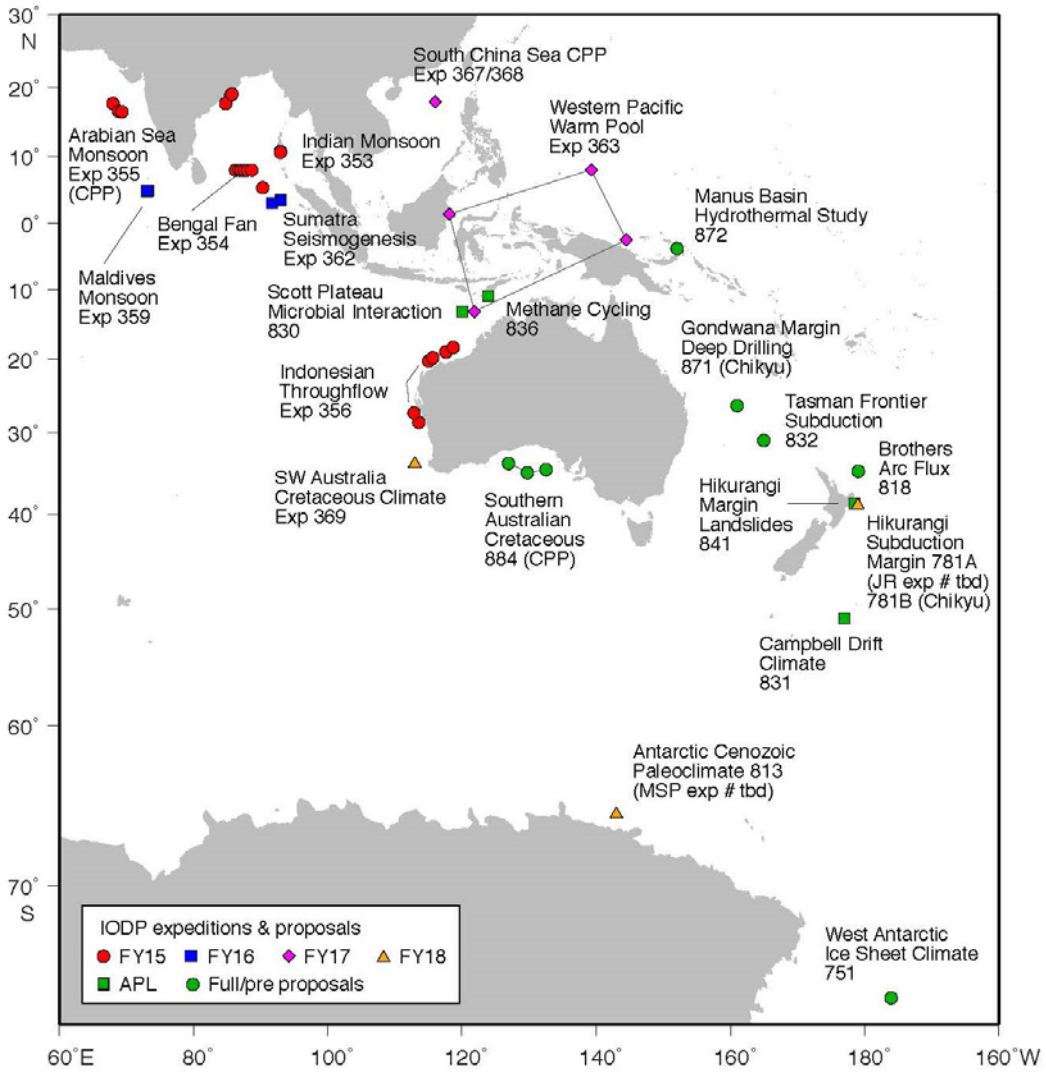
Neville Exon and Catherine Beasley

November 2015

Scientific Ocean Drilling now in Australasia

Scientific ocean drilling through the International Ocean Discovery Program (IODP) is a continuation of the world's longest running and most successful international research collaboration. IODP can provide continuous cores of sediment and rocks in water as deep as 7000m, and up to five kilometres below the sea bed. Its expeditions tackle 'big science' questions such as climate change, plate tectonics and geological hazards. Over the next three years Australia's offshore jurisdiction and neighbouring regions will be a major focus of this scientific activity (see map), and we are now adequately funded until 2020.

Planned and Approved IODP Expeditions in the Australasian region: 2015-2018



Note that all the expeditions shown will be carried out by the drillship *JOIDES Resolution* unless otherwise shown (MSP = European; or *Chikyu*). The US fiscal years begin in October, e.g. FY15 begins in Octo-

The Australian and New Zealand IODP Consortium (ANZIC), consisting of seventeen universities and four science agencies, is a small but scientifically important part of the program. ANZIC scientists are lead proponents or co-proponents of a number of IODP proposals.

Five IODP expeditions are scheduled for our region in the period 2015 to 2018 (see map) and four more may be scheduled before 2020. The drillship *JOIDES Resolution* is IODP's primary research vessel, and four of its scheduled expeditions will be in our general region. This ship will arrive in Fremantle in July 2015 before drilling on the North-west Shelf of Australia (Expedition 356). The port call will be an opportunity to share cutting edge science with local schools and universities through touring the ship and quizzing the scientists. It will also inject around $2 million into the local economy. Further port calls are expected in the coming years.

Five Australians, including the co-chief scientist, Professor Stephen Gallagher (University of Melbourne) recently took part in Expedition 356. This *Indonesian Throughflow* expedition drilled six holes, from south (near Geraldton) to north (near Port Hedland). It was designed to investigate the last 5 million years of Earth history, including changes in the flow of the huge ocean currents south and west from the Indonesian straits, as sea levels rose and fell by about 100 m; associated changes in Australia's climate; and unusual tectonic events. The data recovered will lead to better models of the hydrocarbon reservoirs deep beneath the surface rocks, which are naturally important to industry. About 5000 m of sediments and sedimentary rocks were recovered and described, and will be subject to extensive further scientific examination. The main results will be published in leading science journals.

Improved understanding of climate change is a key IODP outcome. The oceans are critical components in global climate change on timescales of centuries to millions of years, and knowledge of this change depends entirely on ocean coring. These cores provide vital information regarding past and present mechanisms of climate forcing, about feedbacks in the climate system, and about the processes and timescales of natural climate change.

Although IODP is a scientific research program, it also informs petroleum exploration. IODP Proposal 884, to drill Cretaceous sediments in the Great Australian Bight for scientific purposes, is of interest to industry as the black shales contained are probable petroleum source rocks. Indeed, industry intends to co-fund this drilling.

IODP Proposal 871 is designed to drill the Cretaceous strata on the Lord Howe Rise for scientific and resource purposes, using the Japanese vessel *Chikyu* under a joint agreement between Geoscience Australia and Japan. The main aim of the expedition would be to better understand the geological history of this part of the former Australian margin, but the cores will be critical to understanding the petroleum potential of the region.

Key facts

- Twenty-six OECD countries form IODP.
- Ocean drilling platforms are provided by the United States, Japan and Europe.
- While there has been much scientific ocean drilling in our region vast areas remain unexplored.
- An average two-month ocean drilling expedition costs around $US 8 million.
- An average port visit generates about $2 million in expenditure for fuel and supplies.
- IODP's annual operational budget is ~$US 180 million. Australia contributes USD$1.8 million and obtains a disproportionate share of the action for this sum.
- IODP brings our geoscientists and microbiologists in contact with research teams from around the world, broadening their skill sets and networks.
- The Australia and New Zealand ANZIC consortium (http://iodp.org.au) comprises fifteen universities and two government scientific agencies from Australia and two universities and two government research institutes from New Zealand.
- ANZIC's annual budget is $3 million, with more than half of the funding coming from the Australian Research Council's ARC/ LIEF program.
- The Australian National University hosts the ANZIC office.

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IODP
INTEGRATED OCEAN DRILLING PROGRAM