



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

Australasian IODP Regional Planning Workshop 13-16 JUNE 2017 at the University of Sydney. Draft agenda now available at iodp.org.au

*Expedition 381: Corinth Active Rift Development Alternative Platform Expedition scheduled for late 2017. **Now open for applications** Details on page 6*

News from the ANZIC Office

Much has happened since the last bulletin of late last year. Firstly, plans for the Australasian IODP Planning Workshop to be held at Sydney University from June 13 to June 16, 2017 are almost final (see the ANZIC web site). This will be a major regional workshop (SW Pacific, Southern and eastern Indian Oceans) like the earlier, highly successful, Indian Ocean and Southwest Pacific Ocean workshops. The workshop will cover all platform possibilities, but our main aim will be to start the process of writing good proposals to attract *JOIDES Resolution* back into our region around 2022. All funding from the major potential sources is secured with the exception of the USA, the funding agency of which will get a revised version this week; a final decision from them is expected this month. We intend to go ahead with the workshop in any case.

Early next month we expect to contact key potential ANZIC participants about their interest, with information about ANZIC funding. Clearly, Sydneysiders will not require funding and we will invite a number of people from there.

There have been numerous new ANZIC appointments to expeditions since the last bulletin and congratulations to them all (the full lists, including the co-chief scientists, are given below):

- Expedition 369 (Australia Cretaceous Climate and Tectonics, Naturaliste Plateau). Lloyd White (Wollongong) was appointed as a sedimentologist, and Irina Borissova (Geoscience Australia) and Carmine Wainman (Adelaide) as petrophysicists.
- Expedition 372 (Creeping Gas Hydrate Slides & Hikurangi margin LWD). Ben Clennell (CSIRO) was appointed as a petrophysicist and Joshu Mountjoy (NIWA) as a sedimentologist.
- Expedition 374 (West Antarctic Ice Sheet Climate, Ross Sea). Giuseppe Cortese (GNS) has been appointed as a radiolarian specialist.
- Expedition 375 (Hikurangi subduction margin). Martin Crundwell (GNS) has been appointed a foram specialist.

We will be putting an Education Officer, probably a teacher, on either Expedition 371 (Tasman Frontier Subduction, Lord Howe Rise) from July 27 to September 26, or Expedition 369 (Australia Cretaceous Climate and Tectonics, Naturaliste Plateau) from September 26 to November 26. Calls for Expressions of Interest will be going out soon.

The *JOIDES Resolution* South China Sea Expeditions 367 and 368 will address the mechanisms of lithosphere extension during continental breakup. Isabel Sauermilch is aboard Expedition 367 (February 7 to April 9) as a physical properties specialist.

Deep reflection seismic data show that the northern South China Sea (SCS) margin offers excellent drilling opportunities that can address the process of plate rupture at a magma-poor rifted margin. The SCS margin shows similarities to the hyperextended Iberia-Newfoundland margins, possibly including exhumed and serpentinitized mantle within the continent-ocean transition (COT). However, recent modeling studies suggest that mechanisms of plate weakening other than serpentinitization of the subcontinental lithospheric mantle exist. Two competing models for plate rupture (in the absence of excessively hot asthenospheric mantle) have widely different predictions for (1) the crustal structure across the COT, (2) the time lag between breakup and formation of igneous ocean crust, (3) the rates of extension, and (4) the subsidence and thermal history. Proposed drilling will core through thick sedimentary sections and into the underlying basement to firmly discriminate between these models.

The *JOIDES Resolution* Mariana Convergent Margin Expedition 366 (December 8 to February 7) investigated the geochemistry, tectonics and biology in an active subduction zone by coring the summits and flanks of serpentinite mud volcanoes on the forearc of the Mariana system, a non-accretionary convergent plate margin. Emanuelle Frery (CSIRO sedimentologist) was aboard and has returned; a report by her will be in the next bulletin.

Rob McKay (Wellington) and Chris Elders (Curtin) attended the Science Evaluation Panel meeting at Scripps Institute of Oceanography in La Jolla in January. Minutes are at <http://www.iodp.org/science-evaluation-panel-minutes/353-sep-2017-january-minutes/file>). Rob reported that there were no contentious decisions from our point of view, so these minutes are pretty self-explanatory. The Lord Howe Rise *Chikyu* Proposal 871 presentation was very detailed, and the proponents were recognised as being very professional and exceptionally responsive. It was approved pretty more-or-less instantly. Interesting is that the JOIDES Resolution Facility Board noted they would like one more circumnavigation prior to the program's end which bodes well for us.

Neville Exon and Catherine Beasley

Forthcoming IODP expeditions in our region from mid-2017

- *Expedition 371 Tasman Frontier Subduction, Lord Howe Rise:* July 27 to September 26, 2017. Co-chief Rupert Sutherland, (VUW), Wanda Stratford (GNS) was appointed as a physical property specialist; Kristina Pascher (GNS) and Gayane Asatryan (Queensland) as radiolarian specialists; and Hugh Morgans (GNS) as a foram specialist.
- *Expedition 369 Australia Cretaceous Climate and Tectonics, Naturaliste Plateau:* September 26 to November 26, 2017. Lloyd White (Wollongong) was appointed as a sedimentologist, and Irina Borissova (Geoscience Australia) and Carmine Wainman (Adelaide) as petrophysicists.
- *Expedition 372 Creeping Gas Hydrate Slides & Hikurangi margin LWD:* November 26, 2017 to January 4, 2018. Co-chiefs Ingo Pecher (Auckland) and Phil Barnes, (NIWA) Ben Clennell (CSIRO) was appointed as a petrophysicist and Joshu Mountjoy (NIWA) as a sedimentologist.
- *Expedition 373 Alternative platform Antarctic Cenozoic Paleoclimate, George V Land and Adélie Land shelf sediments* has been deferred until 2019-20.
- *Expedition 381: Corinth Active Rift Development -Alternative Platform* Offshore expedition late 2017 followed by onshore sampling party in Bremen, early in 2018. **Open for applications** –Information for applicants on Page 6-7 or email from the office of 25 January 2017
- *Expedition 374 West Antarctic Ice Sheet Climate, Ross Sea:* January 4 to March 8, 2018. Co-chief Rob McKay (VUW), Giuseppe Cortese (GNS) has been appointed as a radiolarian specialist.
- *Expedition 375 Hikurangi subduction margin:* March 8 to May 5, 2018. Martin Crundwell (GNS) has been appointed a foram specialist.
- *Expedition 376 Brothers Arc Flux, north of New Zealand:* May 5 to July 5, 2018. Cornel de Ronde (GNS) has just been appointed co-chief scientist. **Applications should be called for soon.**
- Expedition 378 (South Pacific Paleogene): October 14 to December 14, 2018
Expedition 379 (Amundsen Sea Ice Sheet History) January 18 to March 20, 2019

AT SEA

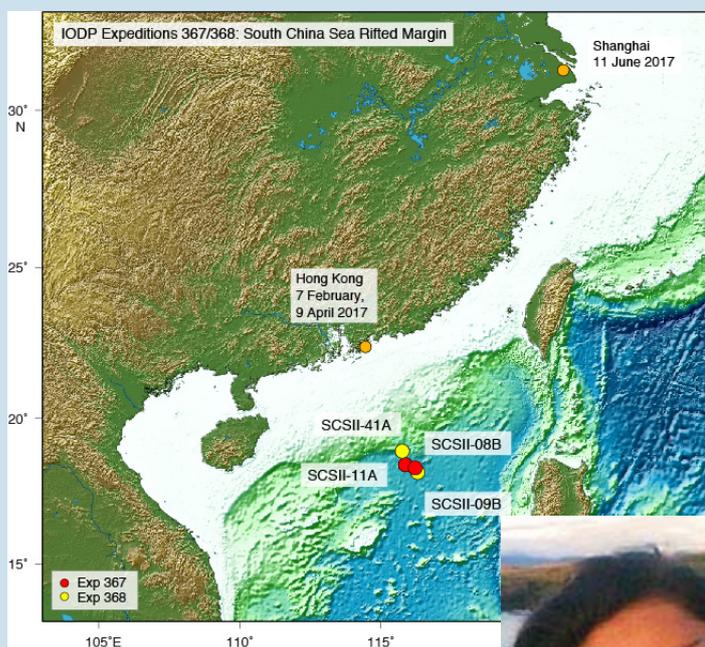
Expedition 367 –South China Sea Rifted Margin (A)

The two South China Sea (SCS) Rifted Margin Expeditions (based on IODP Proposals 878-CPP and 878-Add) aim to understand the mechanisms of lithosphere extension during continental breakup at a non-volcanic rifted margin.

The SCS margin shows similarities to the hyper-extended Iberia-Newfoundland margins, possibly including exhumed and serpentinized mantle within the Continent-Ocean-Transition (COT). However, modeling studies suggest that there can be mechanisms of plate weakening other than serpentinization of sub-continental lithospheric mantle. Two competing models for plate rupture (in the absence of excessively hot asthenospheric mantle) have widely different predictions for development of the SCS margin.

To discriminate between these models, a series of deep-penetration sites will be drilled across a 150–200 km wide zone of highly extended seaward-thinning crust with a well-imaged COT zone. Coring and logging deep/basal sediments and the underlying basement is the primary objective.

The proposed drill sites determine the nature of crust within the COT and constrain (a) post-breakup crustal subsidence, (b) how soon after breakup igneous crust started to form, (c) timing of rifting, and (d) rate of extension. The science objectives can be effectively addressed at these drill sites because of the existing constraints on SCS formation and stratigraphy that include industry drilling, ODP Leg 184 and IODP Expedition 349 drilling, as well as due to the young (Paleogene) rifting of the margin and absence of excessively thick post-rift sediments.



ANZIC is represented on 367 by Isabel Sauermilch, a PhD candidate at IMAS, University of Tasmania. Isabel is sailing as a petrophysics specialist.

Follow the *JOIDES Resolution* on [Facebook](#) or <https://www.youtube.com/user/theJOIDESResolution> and read daily or weekly reports at: <http://iodp.tamu.edu/scienceops/sitesumm.html>

Expedition 363: Western Pacific Warm Pool

Katie Halder – education officer

After flying to Singapore I stayed overnight ready to join the research expedition 363 on the *JOIDES Resolution*. I could hear the buzz of excited conversation as I descended to the hotel lobby to meet the scientists with whom I would be spending the next two months at sea. It was immediately clear from the greetings being exchanged and smiling faces that many of those gathered were old friends catching up, whilst others like me knew nobody. Those sailing on our expedition had been asked to meet in the lobby prior to being taken to the research vessel *JOIDES Resolution*. After a brief bus journey we rounded the corner to the dock. Necks craned to catch a first glimpse of our new home; it was easy to spot with its distinctive 66 m derrick, so I knew it instantly.



The *JOIDES Resolution* at a mighty 150 m long is one of the most capable drilling ships in the world, able to drill in both deep ocean water and to great depths below the ocean floor. It has been solely used for scientific research since its conversion from an oil exploration vessel in 1984. It can drill down through rocks and sediment on the ocean floor to remove long cores which are studied by scientists both during and after the voyage. Initial measurements and analysis of the cores is performed on board using the ship's laboratory equipment. The scientists work around the clock to maximise the equipment and time on the ship.

For our expedition we took sea floor cores around the Western Pacific Warm Pool. This area of water is the largest patch of warm sea water in the world and due to the high heat capacity of water it contains a great deal of stored energy. This influences important climate systems. These include the Asian monsoons, the Australian Monsoon and the El Nino cycle. The interaction between this large body of water and these weather systems is not well understood. Understanding how the interplay between the extent of the Western Pacific Warm Pool and the climate in the past will help us to better predict future climate changes as the planet becomes warmer. Scientists are keen to understand the last 10 million years of climate history as during this time the Earth land masses were similarly placed to where they are today so currents and climate systems are thought to be similar.

For the three days before leaving port the ship was a hive of activity. Goods were continually craned on and off the ship in preparation for the voyage. With a total of 124 people on board the preparations for the galley alone was staggering. The food included 10800 eggs, an astonishing 7000 kg of vegetables and 4000 kg of meat. The shelves and the corridors in the huge walk in fridges were

In readiness for the expedition the laboratories had to be restocked and prepared. The previous expedition's core samples needed to be removed from the ship's hold. Computer equipment was set up and made ready for the new personnel and the ship was refuelled which was a 24 hour procedure in itself. The teams of personnel making up the 124 are made up of engineers, the drill floor crew, the captain and his mates, the cooks and stewards working in the 'hotel stack', the laboratory technicians, the marine computer specialists and of course the scientists. All were briefed in preparation for the expedition.

My position on board was the 'education officer'. Like all on board I worked 12 hour shifts 7 days a week. My role was to engage the public with the research on board so that they gain a better understanding of the science undertaken for the expedition and learn how scientific research is conducted more generally. This was done through the use of social media (by writing blogs and posting on facebook and twitter), and by engaging directly with schools, universities and other institutions through webinars and making resources for teachers. The webinars were tailored to the needs and interests of the institution. With primary schools this mainly focused on what life was like on board with students' interest focussing on our work routines and sleeping arrangements. For the secondary schools webinars included more information about the scientific process and the concepts underpinning the work on board. Earth science is having an increasingly large place in the science curriculum in Australian schools and it is a great opportunity for students to see the scientists researching this area in action. All the webinars included a short tour of the ship and a chance to engage with the scientists on board.

Life on board soon settled down into a routine. My midday to midnight shift allowed me to enjoy many sunset meals. We were lucky enough to glimpse the occasional pod of dolphins and had visits from different sea birds. After the end of the shift we would sometimes watch the stars when in transit between sites. In the nights on drill sites the deck is brightly light by the derrick's lights and stars looked somewhat dimmer under the electric glare. Tim Proctor the camp boss helped keep moral up by providing delicious birthday cakes to celebrate birthdays. He and his team also provided special meals to celebrate events. We had a sushi night where staff decorated the canteen and provided a feast of fishy treats.



As the voyage reached its conclusion with the hold filled with almost 7000 m of core excitement rose with the prospect of seeing land once more. I was up at 5.00 am to see Guam appear in the early morning light. First a pilot came on board then tug boats moved us into place at the dock. Customs officers and passport control came to process our arrival in the United States. Finally we were cleared to leave the boat and to wait for the arrival of our bus to take us to our hotel. Although my time as the education officer has finished there is always an education officer on the JOIDES Resolution. Schools can book free webinars with the *JOIDES Resolution* from the joidesresolution.org website. The education officer on board will try to meet the time requested by the school. I would certainly recommend that schools take advantage of this opportunity. It is an interesting and unusual experience for students to get a glimpse into research, work as a scientist and life on board a boat. Each expedition has different objectives so there are differences in the material presented but the overall opportunity to see science research in action remains common.

IODP Expedition 381: Corinth Active Rift Development

We are now accepting ANZIC applications from scientists in our member institutions for scientific participation in an *ECORD* expedition in the Rift of Corinth in October-November 2017. We are guaranteed one scientific place. The links in the attachment provide more scientific background. Opportunities exist for researchers (including graduate students) in specialties in the following fields: paleontology, sedimentology, organic geochemistry, inorganic geochemistry, structural geology, paleomagnetism, physical properties, geophysics and petrophysics/downhole logging.

The applicants will either be part of 1) the limited offshore party (late 2017) and the onshore sampling party in Bremen in February 2018 or 2) the larger onshore sampling party. If you apply, please specify which option you would prefer. For the offshore phase of the expedition, they are particularly looking for the following fields: paleontology, sedimentology, organic geochemistry, inorganic geochemistry, physical properties, and petrophysics/downhole logging.

Could senior scientists please ensure that this offer is widely circulated to relevant groups in their institutions.

Background and objectives

This European-funded alternative platform expedition will drill three sites within the active Corinth Rift, Greece, where deformation rates are high, the syn-rift succession is preserved and accessible, and a dense, seismic database provides a high resolution fault network and seismic stratigraphy for the recent rift history but with limited chronology. In the Gulf of Corinth, the expedition can achieve an unprecedented precision of timing and spatial complexity of rift-fault system development and rift-controlled drainage system evolution in the first 1-2 Myr of rift history.

The expedition aims to resolve at a high temporal and spatial resolution how faults evolve, how strain is (re-)distributed, and how the landscape responds within the first few Myrs in a non-volcanic continental rift, as modulated by Quaternary changes in sea level and climate. High horizontal spatial resolution (~1-3 km) is provided by a dense grid of seismic profiles offshore that have been recently fully integrated, complemented by extensive outcrops and fault analysis onshore. High temporal resolution (~20-50ka) will be provided by seismic stratigraphy tied to core and log data from three carefully located boreholes to sample the recent syn-rift sequence.

Two primary themes will be addressed by the drilling integrated with the seismic database and onshore data. First, fault and rift evolutionary history (including fault growth, strain localization and rift propagation) and deformation rates: the spatial scales and relative timing can already be determined within the seismic data offshore. Dating of drill core will provide the absolute timing offshore, the temporal correlation to the onshore and the ability to quantify strain rates from individual faults to the whole rift scale. Second, the response of drainage evolution and sediment supply to rift and fault evolution: core data will define lithologies, depositional systems and paleoenvironment, including catchment paleo-climate, basin paleobathymetry, and relative sea level. Integrated with seismic data, onshore stratigraphy and catchment data, we will investigate the relative roles and feedbacks between tectonics, climate and eustasy in sediment flux and basin evolution. A multidisciplinary approach to core sampling integrated with log and seismic data will generate a Quaternary chronology for the syn-rift stratigraphy down to orbital timescale resolutions and resolve the paleoenvironmental history of the basin in order to address the objectives.

The expedition aims to drill, core, and log up to 750m-deep boreholes at three sites in the central and eastern Gulf of Corinth. The procurement process to contract platform and drilling services is currently being undertaken by ESO, and it is envisaged that the setup will involve a geotechnical vessel equipped with a coring rig, and outfitted with ESO's laboratory containers.

Information webinar

To learn more about the scientific objectives of this expedition, life at sea, and how to apply to sail, please join us for a web-based seminar on Tuesday 14th February 2015 at 1pm GMT. To participate in the webinar, you will need access to the internet with a computer equipped with a speaker and microphone (optional). To register, please visit:

<https://www.surveymonkey.co.uk/r/IODP381>

ANZIC applications

Australians should visit www.iodp.org.au for a link to the *application form*, a completed version of which should be sent to Neville Exon (Neville.Exon@anu.edu.au) and Rob McKay (robert.mckay@vuw.ac.nz), with all parts in one document. New Zealanders should contact Chris Hollis (NZODP@gns.cri.nz).

Applicants should bear in mind that their applications will be firstly reviewed and ranked by the ANZIC Science Committee and, if they pass that hurdle, by the expedition co-chief scientists. Clearly, they need to convince both groups that they would be excellent in the role.

The ANZIC Science Committee makes allowance for the relative opportunities of the applicants, so that early career researchers, including graduate students, have a good chance of selection. Note that non-tenured applicants must have a position at an Australian or New Zealand member institution for at least one year post-expedition and ideally more to enable them to carry out the necessary post cruise research.

As well as the form, applicants should provide:

1. *Participation Plan and Budget* (maximum of four pages): This should set out why they are interested in the expedition, how their skills suit the position applied for, what they would bring to the expedition, and the nature of their initial post-cruise research plans (including publication plans), and a brief outline of what budget they might need beyond that covered by their institution.

To maximise the return to ANZIC from the involvement of our scientists on expeditions, we ask that applicants endeavour to assemble a team, including ANZIC scientists, of potential land-based science party members in various fields, set out who has agreed to join that team if you are successful, and what they would aim to do post-cruise. The potential existence of such a team, which would provide additional analytical and scientific skills, would strengthen the applications. If all went to plan, the team members could become part of the land-based science party, and thus get early access to material from the vessel. Of course, final research plans will depend on the material actually recovered by the vessel, and negotiations in Bremen as to who does what.

2. *Curriculum Vitae* including selected publications (maximum of two pages)

3. *Letter of support for non-tenured applicants* by their supervisor: This should cover general support from the institution for the application, include an outline of the proffered post-cruise support, and indicate when the present position, or a new position, will end (at least one year post-cruise is required).

4. *Financial support*: For ANZIC scientists all travel costs, including those to some post-cruise meetings, would be covered by ANZIC. In addition the ANZIC IODP Office may provide up to \$A40,000 for post-cruise activities (mainly analytical costs) for Australian and New Zealand university and research institution scientists and post-graduate students, if funding cannot be obtained in any other way. Applications for such funding can only be made after expeditions are completed and samples are in hand.

5. *Application deadline*: The deadline for scientists to submit applications to ANZIC is Wednesday, 24 February 2017.

This is an excellent opportunity for scientists, doctoral students or post docs to collaborate with an international team of scientists. Neville Exon and Rob McKay will be happy to provide advice for the applications, and help where possible with timing problems for non-tenured scientists or post-graduate students.