



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](http://www.iodp.org.au)

Website: [drill.gns.cri.nz](http://drill.gns.cri.nz)

## News from the ANZIC Office

In 2016 we look forward to drilling in our region for several years, in exciting expeditions largely inspired by Australians and New Zealanders, and in which we will be well represented. An MOU has been agreed with New Zealand, and is in the process of being signed off, which has them joining ANZIC under the arrangements set out in the ARC/LIEF grant.

Don't forget that there will be an IODP Session and Booth at the Australian Earth Sciences Convention in Adelaide from 26 to 30 June next year, convened by Neville Exon and Richard Arculus. Abstract submissions close on February 15, so please get one in soon. Early bird registrations close on 15 April, after you will have heard about your abstract. This is our major chance to report to the geoscience community on the various IODP expeditions of the recent past and plans for the future. We already have excellent overseas speakers: Brad Clement talking about the *JOIDES Resolution* program; Jamie Austin (IODP Forum chair) talking about IODP's future plans; Gilbert Camoin (ECORD Director) talking about European IODP organisation; Nadine Hallmann (ECORD Assistant Director) talking about their alternative drilling platform activities, including the planned Antarctic Cenozoic Climate expedition on the margin south of Australia; and Shin'ichi Kuramoto (JAMSTEC) talking about *Chikyū* activities.

Shipboard scientists' opportunity: In the Bulletin of 21st October (check application arrangements there) we called for applications for *JOIDES Resolution* South China Sea 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 – one on each expedition. An email to our entire mailing list, sent on 2 February, called for late applications with a deadline of 22 February.

The *JOIDES Resolution* Southwest Indian Ridge Moho Expedition 360 arrived in Port Louis, Mauritius on 30 January. Mark Kendrick of ANU was aboard as an igneous petrologist. This is the first leg of the SloMo Project, which seeks to use a tectonic window into the lower crust to recover the full lower section of the ocean crust, core through the igneous crust–mantle transition, determine if Moho represents a serpentinization front and, ultimately, core through the Moho (~5.5 km at an ultraslow-spreading ocean ridge). SloMo Phase I (two *JOIDES Resolution* expeditions) intends to drill 3 km deep to reach the crust–mantle transition zone. Expedition 360 needed to properly establish the borehole for Leg 2 and thereafter drill as deep as possible. About 790 metres of diverse continuous core was recovered, with olivine gabbro predominant.

The *JOIDES Resolution* South African Climates Expedition 361 sailed from Mauritius early this month with John Rolison of the University of Otago aboard as an inorganic geochemist, and Luna Brentegani from QUT aboard as a nannofossil expert. It is designed to study the effects of the Agulhas Current on the southeast African margin in the last five million years. This is the strongest western boundary current in the Southern Hemisphere, transporting some 70 Sverdrups (70 million cubic metres per second!) of warm and saline surface waters from the tropical Indian Ocean along the East African margin to the tip of Africa. Exchanges of heat and moisture with the atmosphere influence southern African climates, including individual weather systems such as extratropical cyclone formation in the region and rainfall patterns. Recent ocean models and paleoceanographic data further point at a potential role of the Agulhas Current in controlling the strength and mode of the Atlantic Meridional Overturning Circulation (AMOC) during the Late Pleistocene. Spillage of saline Agulhas water into the South Atlantic stimulates buoyancy anomalies that act as a control mechanism on the basin-wide AMOC, with implications for convective activity in the North Atlantic and Northern Hemisphere climate.

The *JOIDES Resolution* Western Pacific Warm Pool Expedition 363 is now finalizing its shipboard scientific group for the period October-November 2016. Brad Opdyke of ANU will be sailing as a sedimentologist, and Jennifer Wurtzel of ANU will sail as a petrophysicist. The expedition aims to understand the interaction between climate and the warm pool from the middle Miocene to Holocene.

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 in late 2016. We congratulate CSIRO sedimentologist Emanuelle Frery on being selected for the expedition.

A book celebrating ANZIC's achievements in the first phase of IODP is well advanced. Its title is *Exploring the Earth under the Sea* with the subtitle *Australian and New Zealand achievements in the first phase of IODP Scientific Ocean Drilling, 2008-2013*. It will be a high-quality legacy document, perhaps 100 pages long, interesting reading for people with a scientific background, with some exciting science and personal anecdotes covered in special sections within it. Discussions are due with an ANU Press representative next week about the possibility of their publishing it. We intend to publish it in March, if at all possible.

The IODP Science Evaluation Panel met at Scripps Institution of Oceanography on 12-15 January, to consider the future of some existing and new scientific drilling proposals. A number of proposals for drilling in our region were considered and we await the release of their decisions. Rob McKay (Victoria University, Wellington) and Ben Clennell (CSIRO) were the ANZIC representatives on the panel.

We two members of the ANZIC Office are particularly busy on three matters at present (plus the legacy book mentioned above):

- Making arrangements for the IODP Masterclass to be held from 15 to 19 February in Perth
- Finalising the 2015 ANZIC Annual Report for publication in the next month or so
- Planning the Science Committee, Stakeholders and Governing Council meetings to be held in Canberra on 15 and 16 March.

There was very sad news this month, with the death of Bob Carter, who was an initial champion for, and very active member of the Australian and New Zealand ocean drilling community. A short appreciation of Bob is included later in the Bulletin.

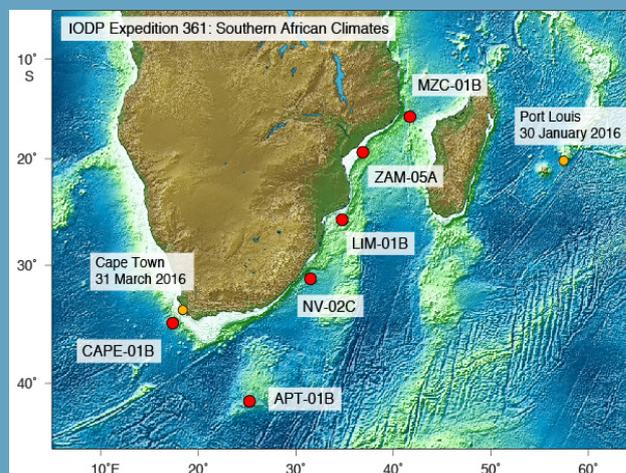
Neville Exon and Catherine Beasley

## AT SEA

Expedition 361 South African Climates launched on January 30th. We wish all the expeditioners well including our own John Rolison of Otago (inorganic geochemist) and Luna Brentegani of QUT (nanofossil paleontologist).

Follow the *JOIDES Resolution* on [Facebook](#) and read daily or weekly reports at:

<http://iodp.tamu.edu/scienceops/sitesumm.html>



## Farewell to Bob Carter

Many of you may not know that Professor Robert M. Carter, an influential geologist and marine geologist, died peacefully on 19 January in the presence of his family at the age of 74. Bob remained an important supporter of ocean drilling throughout his long and distinguished career.

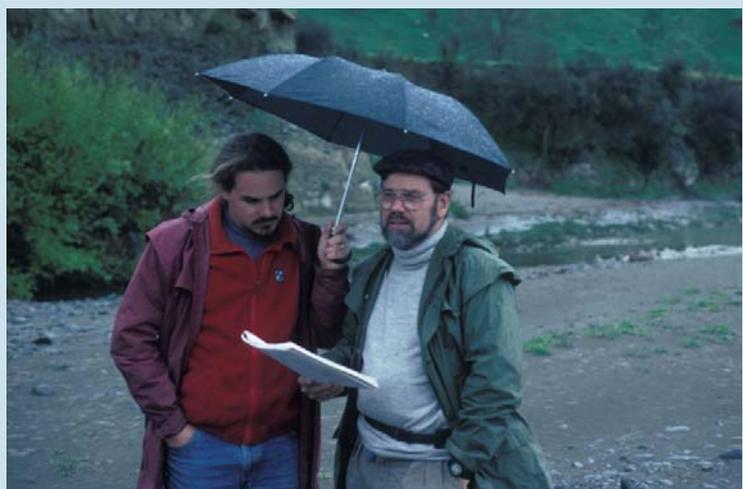
In fact, Bob Carter, then at James Cook University, was one of the leaders in getting Australia established as a member in the Ocean Drilling Program (ODP) in 1988. A number of us played a part in that wonderful step forward for Australian geoscience and marine geoscience, but Bob was a personable, enthusiastic, lucid and effective advocate. He hosted the ODP Secretariat for a time at JCU, and was lead proponent and then co-chief scientist of the highly successful Southwest Pacific Gateways ODP Leg 181 in 1998. That leg drilled seven sites in deep water east of New Zealand, investigating the effects of changing current patterns over time. It was especially notable for investigating the Eocene-Oligocene unconformity that represents the start of a fast, cold current around at least a part of Antarctica, and the production of increased volumes of cold bottom water.

In late 2009, Bob joined IODP Expedition 317 in the Canterbury Basin east of New Zealand, which was investigating sea level fluctuations as represented by prograding wedges of carbonate sediments laid down mostly in the last 20 million years. I remember a press conference about the expedition in Townsville before the expedition, when the press immediately asked him questions about his climate skepticism. He said simply that the past sea level fluctuations being investigated on this expedition were clearly driven by climate change, that his skepticism of modern global warming had nothing to do with the expedition, and referred the press to the expedition leaders for more information. Later he asked me with an amused smile "Did I handle that OK?"

Bob was a paleontologist, stratigrapher, marine geologist and environmental scientist, who started his geological career in New Zealand and earned degrees from the University of Otago (Dunedin) and the University of Cambridge. He was Professor and Head of School at James Cook University from 1981 to 1999, and there developed a strong marine geology group. During that time, he continued to carry out research in New Zealand, particularly in the Wanganui Basin, where he recognized the opportunity to test sequence-stratigraphic models in Plio-Pleistocene sediments that were deposited during a period of known glacial-interglacial sea-level changes (see photograph).

Talking to various geological friends of his, they all say that his skills as a sedimentologist, teacher and advocate of geology, plus his open and warm style, made him an outstanding colleague and human being. We will miss you Bob.

Neville Exon



Bob Carter, speaking as leader of a field trip to the Wanganui Basin in NZ, in about 1994. Steve Abbott, his then PhD student (now at Geoscience Australia) is holding the umbrella, as any good student would do for his esteemed supervisor. Photo courtesy of Brad Pillans

<b>ANZIC Calendar of Events January-August 2016</b>	
<b>January</b>	
12-14 January	Science Evaluation Panel ANZIC members, Rob McKay (VUW) & Ben Clennell (CSIRO)
29 January	EXP 361– South African Climates –John Rolison (NZ) Luna Brentegani (QUT)
<b>February</b>	
15-19 February,	ANZIC Marine Geoscience Masterclass, Perth
<b>March</b>	
1-2 March	Science Meets Parliament, STA Event, Canberra
15 March	ANZIC Science Committee meeting, ANU
15 March	ANZIC Stakeholders meeting, ANU
16 March	ANZIC Governing Council meeting, Geoscience Australia
23-24 March	Chikyu IODP Board, Kobe –Andrew Heap (Geoscience Australia)
<b>April</b>	
April 1	IODP Proposal submission deadline for consideration by Science Evaluation Panel in June
April	EXP 364– Chicxulub K-T Impact Crater, (offshore operation) Marco Coolen (Curtin)
<b>May</b>	
17-18 May	<i>JOIDES Resolution</i> Facilities Board, Washington Mike Coffin (UTas), Andrew Roberts (ANU)
<b>June</b>	
15-16 June	<i>ECORD</i> Facilities Board ANZIC member, Leanne Armand (Macquarie), Stephen Gallagher (Melbourne)
21-23 June	Science Evaluation Panel, Bremen- ANZIC members, Tim Naish (VUW) & TBA
26-30 June	Australian Earth Sciences Convention (AESC 2016) Adelaide
TBA	ANZIC Governing Council Teleconference
<b>July</b>	
11-13 July	Environmental Protection and Safety Panel (EPSP), College Station TX David Campin (UQ)
<b>August</b>	
6 August	Exp 362 Sumatran Seismogenesis Tobias Colson (UWA), Sarah Kachovich (UQ)