



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

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Leanne Armand from Macquarie University took up the Program Scientist's position in September, with several weeks' overlap with Neville Exon before he steps back to an honorary position at ANU. She almost immediately headed off to the IODP Forum meeting in Shanghai, where the main topic is generally how IODP science is progressing overall, and how to best to support and publicise it.

ANU Press has provided Neville with the proofs of the ANZIC IODP book, *Exploring the Earth under the Sea: Australian and New Zealand achievements in the first phase of IODP Scientific Ocean Drilling, 2008-2013*. It looks really good. Each individually written section starts on a new page, giving due acknowledgement to the many section authors.

The book, consisting of about 220 pages of text and pictures, will be out well before the end of the year and a proper function for the press release is being planned. ANU Press covers all the design and publication costs, and will own the digital rights to the book. We intend to buy 150 paperback copies, so that we have enough for key people inside and outside ANZIC. The basic reference at this stage is "Neville Exon (Editor): *Exploring the Earth under the Sea: Australian and New Zealand achievements in the first phase of IODP scientific ocean drilling, 2008-2013. Australian National University Press.*"

Expedition 371 (Tasman Frontier Subduction Initiation and Paleogene Climate) sailed from Townsville on 30th July, with five ANZIC scientists aboard and will berth in Hobart in late September. As usual there have been exciting discoveries and some surprises. The co-chief scientists are Rupert Sutherland from Victoria University, Wellington, and Jerry Dickens from Rice University in Texas. Debra Beamish, from Corinda State High School in Brisbane, is sailing in an education and outreach role involving video sessions from the ship, and *The Conversation* ran an excellent story on it, including a video presentation that was obviously prepared with the expert help of the shipboard videographer (<http://theconversation.com/explorers-probe-hidden-continent-of-zealandia-83406>).

A VIP and media tour of the ship, plus several scientific tours, will be hosted in Hobart on 27 September, and Neville and Catherine are very busy with that. CSIRO (Sandra Macmillan), IMAS (Jenna Patterson) and University of Tasmania in general (Martin Jutzeler), are organizing tours. If you are not on their lists and would like to come please contact Catherine Beasley (iodp.administrator@anu.edu.au) and we'll see if we can fit you in.

Another piece of excellent IODP-related scientific outreach was included in a one-hour ABC *Catalyst* program on 5th September, entitled “The Day the Dinosaurs Died”. Professor Sean Gulick and Professor Joanna Morgan, the co-chiefs of IODP Expedition 364, which drilled the peak ring of the Chicxulub asteroid impact crater off Mexico, illuminated both the shipboard and post-cruise activities. The program was a very good review, based on a BBC program but going beyond that, of all the extinction events triggered by the impact of the giant asteroid at the Cretaceous-Tertiary boundary. Marco Coolen of Curtin University was the Australian scientist aboard.

Expedition 369 (Australian Cretaceous Climate and Tectonics), to the Naturaliste Plateau and Great Australian Bight, sails from Hobart at the very end of September, and is due in Fremantle at the end of November. The co-chief scientists are Richard Hobbs of Durham University and Brian Huber of the Smithsonian Institution. The three Australians aboard will be Lloyd White of the University of Wollongong, Carmine Wainman of the University of Adelaide, and Alessandro Maritati of the University of Tasmania.

An ANZIC call for applications for Expedition 378 (South Pacific Paleogene: October 14 to December 14, 2018) was sent out on 18 July. Applications have closed and will be considered by the ANZIC Science Committee.

An ANZIC call for Expedition 379 (Amundsen Sea Ice Sheet History: January 18 to March 20, 2019) and for Expedition 382 (Iceberg Alley Paleoceanography and South Falkland Slope Drift Expedition (382) 20 March – May 2019) went out on 25 June. The deadline is 16 October.

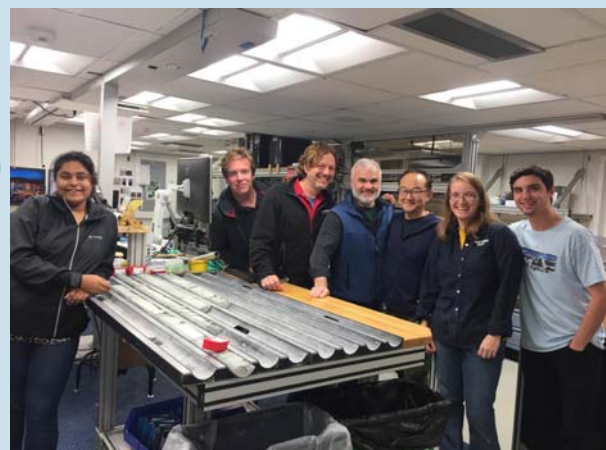
ANZIC applications for shipboard positions on Expedition 376 (Brothers Arc Flux, north of New Zealand) were ranked by the Science Committee. Our rankings were forwarded to the expedition leadership on June 1, were made. Cornel de Ronde from GNS is a co-chief scientist and two other New Zealanders (Agnes Reyes and Fabio Caratori both of GNS) and two Australians (Olivier Alard and Dominique Tanner both of Macquarie University), have been accepted to sail.

More recently, a special call went out for a scientist with experience in downhole logging with a preference for a scientist with experience in geothermal borehole logging. Applications have come in and are now closed.

Catherine and Neville went to Geoscience Australia on Sunday 20 July for their open day (at the end of Science Week), which included an ANZIC/IODP exhibition. A video session with the ship attracted a large crowd

A full list of expeditions to mid-2020 is available on <https://www.iodp.org/expeditions/expeditions-schedule>.

Neville Exon and Catherine Beasley

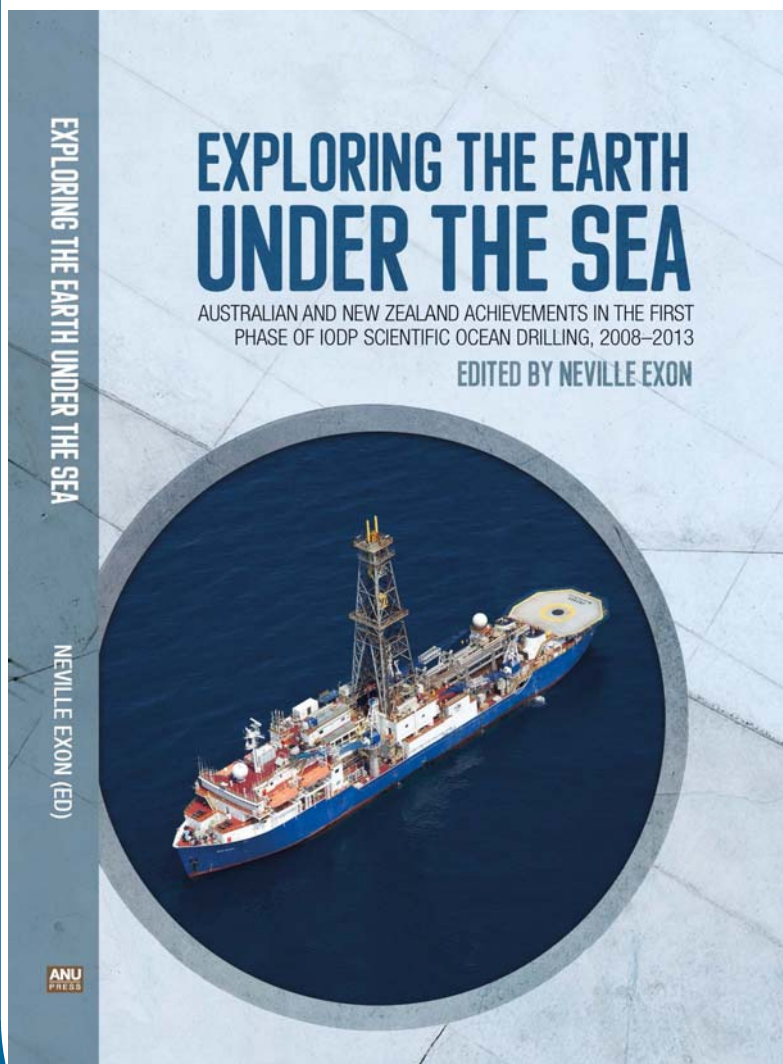


Members of Expedition371 - Tasman Frontier Subduction

Exploring the Earth, Under the Sea

Just in time for all your Christmas shopping needs! Neville Exon has been working hard to finalise ANZIC's legacy book, celebrating all the achievements of Australian and New Zealand participants in the Integrated Ocean Drilling Program (2008-2013). The book will be published by ANU Press and made available online at no cost, however, paperback copies will be provided to authors and stakeholders or will be available for purchase through the ANZIC Office.

A launch event in early December is currently being planned, and you're all invited! We will provide details once they are confirmed. We hope many participants, friends and supporters will join us to recognise the effort that has gone into building the Australian and New Zealand IODP Consortium and the successes that have created an increasingly strong and vigorous research community in the region.



Exploring the Earth under the Sea brings to life the world's largest and longest-lived geological research program, which has been drilling over many decades at many locations deep below the ocean floor to recover continuous cores of sediment and rock. Study of these materials has helped us understand how the Earth works now, how it has worked in the past and how it may work in the future. The cores are a wonderful source of information on the dynamic processes that form and reform the Earth, both beneath the ocean and on land. The results have revealed climate and oceanographic change on different time frames, the history of life in the sea and on land including global mass extinctions, the extraordinary story of the great masses of 'extremophile' microbes that live beneath the sea bed, the nature of the giant earthquakes and tsunamis generated at the trenches where tectonic plates collide, and the nature of submarine volcanoes and metalliferous deposits.

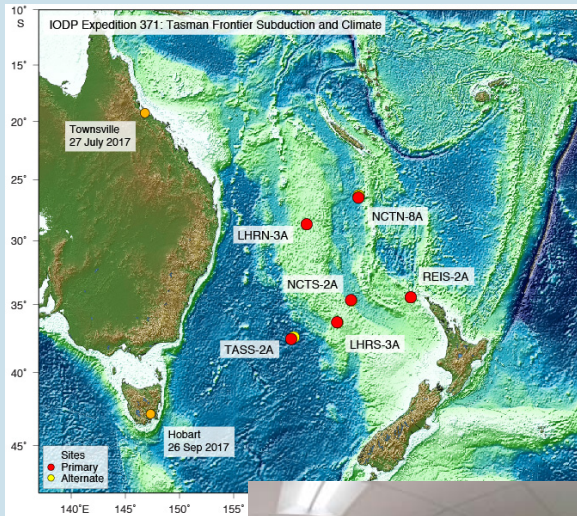
This book outlines the technology and enduring international partnerships that underlie the scientific ocean drilling accomplished by the first phase of IODP, currently involving 23 countries. It highlights the important role of Australian and New Zealand scientists in the program, and the great scientific benefits we have derived from our partnership since joining IODP in 2008. As well as the scientific summaries, there are also personal accounts by shipboard scientists of how they found life at sea on two-month expeditions, working 12-hour shifts on a noisy drill ship.

AT SEA

Expedition 371: Tasman Frontier Subduction

With just one week of their expedition left, our team aboard Expedition 371 are working hard, right down to the wire, still drilling their final sites.

The JOIDES Resolution will be arriving in Hobart on October 26th, 2017. If you are in the area and interested to hear about the expedition, we will be hosting a public lecture at CSIRO on the evening of Wednesday, September 27th, followed by drinks and a chance to quiz our expedition leaders. Details are on the next page.



<https://www.youtube.com/watch?v=Q8-EOaOYIq>
http://iodp.tamu.edu/scienceops/gallery/exp371/week6/images/exp371_135.jpg
http://iodp.tamu.edu/scienceops/gallery/exp371/week6/images/exp371_135.jpg



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>

Exploration of the lost continent of Zealandia by scientific ocean drilling

Where: *CSIRO Auditorium, 2 Castray Esplanade, Salamanca*

When: *5 pm – 6.30 pm, Wednesday, 27 September, 2017*

More information: *Sandra Macmillan 03 6232 5108*

Format: 40 minutes of illustrated talks by co-chief scientists Rupert Sutherland and Jerry Dickens just off two-month scientific drilling expedition of drill ship *JOIDES Resolution*; 20 minutes formal discussion; 30 minutes informal discussion over drinks and nibbles. There is no need to book.

A team of 32 scientists from 12 countries arrive in Hobart on 26 September after a nine week voyage to investigate a lost and now submerged land in the South Pacific, and this seminar will discuss the expedition and its results.

Zealandia was confirmed as Earth's seventh continent earlier this year, but little is known about it, because most is hidden more than a kilometre deep beneath the ocean. The recent expedition of the International Ocean Discovery Program (IODP) drilled deep into the seabed at six sites with water depths of 1250 m to 4850 m. About 2500 m of sediment cores were collected from layers that record how the geography, volcanism, and climate of Zealandia changed during the last 70 million years.

Significant new fossil discoveries were made that prove Zealandia was not always as deep beneath the waves as it is now. More than 8000 specimens from several hundred different fossil species were identified on-board. The discovery of microscopic shells of organisms that lived in warm shallow seas, and spores and pollen from land plants, reveal that the geography and climate of Zealandia was dramatically different in the past.

The new discoveries reveal that formation of the 'Pacific Ring of Fire' about 40 to 50 million years ago caused dramatic changes in ocean depth, volcanic activity, and buckled up the seabed of Zealandia. Zealandia sank deep beneath the ocean during the age of dinosaurs, when it became isolated from Australia and Antarctica about 80 million years ago. It is now clear that dramatic later events further shaped the continent we explore today.

The discovery of big geographic changes across northern Zealandia, which is about the same size as India, has big implications for understanding big scientific questions. For example, how did plants and animals disperse and evolve in the South Pacific? The discovery of past land and shallow seas provides an explanation: there were pathways for animals and plants to move along.

Onshore study of the sediment cores will focus on understanding how Earth's tectonic plates move, and how the climate system works. What are the deep geological processes that drive movements at Earth's surface that create mountains or ocean basins? How and why was the South Pacific climate so warm in the past, despite Zealandia being close to the South Pole?

Why should we care? Formation of the Pacific Ring of Fire created deposits of nickel, gold, copper, and petroleum, and similar processes created natural resources elsewhere at other times. The South Pacific, including Zealandia, Australia, and Antarctica, is a key region within the global climate system: records of Zealandia climate history are a sensitive test for computer models that are also used to predict future climate change.