
NEWS FROM THE UNIVERSITY OF TASMANIA, AUSTRALIA

Media Release

Chiefs of Staff, News Directors

Saturday 27 February 2016

Major IMAS *Investigator* voyage complete

A major IMAS voyage to the Southern Ocean ended in Hobart today with the arrival of the CSIRO's Marine National Facility research vessel *Investigator* after a 16 000 kilometre journey.

The voyage made news around the world when scientists on board *Investigator* caught a rare glimpse – and even rarer video footage – of an eruption of the Big Ben volcano on Heard Island.

But the voyage's Chief Scientist, IMAS Professor Mike Coffin, said the researchers' main goal was to study the link between underwater volcanoes and the mobilisation of iron which nourishes and supports marine life in the Southern Ocean.

"Over the last seven weeks we've seen that Heard and McDonald are active volcanoes, and we've mapped and dredged young volcanoes on the seafloor around the islands," Professor Coffin said.

"In the coming months we'll analyse the water samples, rock samples, and data we collected, and look for the 'smoking gun' which links those volcanoes to the iron-rich waters that support the growth of phytoplankton, the foundation of marine life and source of half of the oxygen in Earth's atmosphere."

Co-Chief Scientist, Associate Professor Andrew Bowie, said it would be a world-first if the voyage's results proved a link between solid Earth processes associated with hotspot volcanism and biological processes in the ocean.

"Iron is critical to life in Southern Ocean waters which, apart from isolated regions such as the Kerguelen Plateau around Heard and McDonald Islands, are essentially anaemic and do not support much life."

"During the voyage we found that near shore, the shallow waters around Heard and McDonald Islands contain elevated and non-limiting concentrations of dissolved iron, and our challenge now is to identify the source of that iron."

Professor Richard Arculus from the Australian National University, Co-Chief Scientist and a world-leading volcano expert, said the voyage provided a bonanza for volcanologists.

"We discovered and recovered rocks from three submarine volcanoes around the McDonald Islands, documented an active eruption taking place at the summit of Big Ben volcano on Heard Island, and

recovered rocks from a major debris avalanche on Heard Island which likely preserve a considerable portion of the volcano's eruptive history," Professor Arculus said.

Professor Coffin said the majority of their voyage's research had been completed despite *Investigator* returning a week early to allow the medical evacuation of one of the scientists.

The *Investigator* voyage left Fremantle on 8 January 2016 with 26 scientists and students on board from IMAS, the Antarctic Climate and Ecosystems CRC, the University of Tasmania, the Australian National University, CSIRO, the University of New South Wales, the Pierre and Marie Curie University/CNRS's (France) Microbial Oceanography Laboratory (LOMIC), the University of Western Brittany's (France) European Institute for Marine Studies (IUEM), and the Scripps Institution of Oceanography, University of California, San Diego, USA.

This project is supported by the CSIRO's Marine National Facility, Australian Research Council, and Australian Antarctic Science Program.

Also joining the voyage were two artists supported by the Australia Council for the Arts and a photographer/cinematographer

Rich media

Video and photos taken during the voyage are available via Dropbox:

<https://www.dropbox.com/sh/jywaoagc1pdz55y/AAA-f5AI2xmM85NewH5AsEbya?dl=0>

Background information and blogs about the IMAS *Investigator* voyage can be found at
<http://www.imas.utas.edu.au>

Marine National Facility

RV *Investigator* is a 94 metre purpose-built research vessel, capable of travelling 10,000 nm in a single voyage, accommodating up to 40 scientists and support staff, from the equator to the Antarctic ice-edge. The \$120 million ship was commissioned into operation in December 2014 to support atmospheric, oceanographic, biological and geoscience research.

The Marine National Facility is a blue-water research capability, funded by the Australian Government and managed by CSIRO on behalf of the nation. It is available to all Australian scientists and their international collaborators, with access granted on the basis of proposals that are internationally peer reviewed, and independently assessed for science quality and contribution to the national interest.

www.mnf.csiro.au

www.csirofrvblog.com

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