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Science voyage from Perth could boost Australian continental shelf claims

An Institute for Marine and Antarctic Studies (IMAS)-led research team on the CSIRO research vessel *Investigator* will sail from Perth on Thursday for a two-month voyage that could lead to Australia's marine jurisdiction near Heard Island being extended by an area the size of Switzerland.

The main focus of the voyage is to study the ancient rifting, break-up and separation of tectonic plates that split a giant, once-contiguous oceanic plateau into two major Indian Ocean seafloor features, Broken Ridge and the Kerguelen Plateau, to the west and southwest of Perth.

The scientists will also acquire, analyse and interpret samples from William's Ridge, a seafloor feature that extends southeast from the Kerguelen Plateau, to establish whether the area qualifies under international law to be included in Australia's marine jurisdiction.

If judged eligible by the United Nations [Commission on the Limits of the Continental Shelf](#), it could add 40,000 square kilometres to the continental shelf recognised as part of Australia's jurisdiction.

The voyage's Chief Scientist, IMAS Professor Mike Coffin, said the seafloor of the Indian Ocean had undergone a complex evolution since it began forming more than 150 million years ago, and the geological events involved are an enigma.

"Like other oceans, the Indian Ocean has formed by seafloor spreading among tectonic plates," Professor Coffin said.

"However, to the west and southwest of Perth, this seafloor spreading interacted with hotspot volcanism, where magma rising from deep within the Earth has created oceanic crust much thicker than normal as the plates have broken up.

"During the voyage researchers from Australia, China, Denmark, Germany, Italy, Russia and USA will carry out a wide range of imaging and sampling techniques to acquire data and samples using the *Investigator's* cutting-edge technology.

"An exceptional multidisciplinary team of international scientists will subsequently analyse the data and samples to improve our understanding of parts of the seafloor that have never been studied in this level of detail."

Professor Coffin said consideration of the possible extension of Australia's marine jurisdiction around William's Ridge has been on hold due to a lack of sufficient data and samples from the continental shelf.

"The data and samples we collect will inform a possible future submission to the CLCS to extend Australia's marine jurisdiction to include the continental shelf on and around William's Ridge, an extension of the Central Kerguelen Plateau near Australia's Heard Island.

"The CLCS assessed Australia's continental shelf entitlements from 2004 to 2008, but in 2008 consideration of this area was postponed at Australia's request due to the shortage of relevant geological samples and geophysical data.

"Whether William's Ridge is eligible to be continental shelf is unknown, as are the geological processes that led to its development.

"Our voyage will for the first time carry out detailed investigations of the ridge, including multibeam bathymetry, seismic imaging, sub-bottom-profiling, dredging of rock samples, and deep towed-camera footage.

"This comprehensive and unique data and sampling will help the CLCS to decide whether Australia's marine jurisdiction should be extended by an area the size of Switzerland," Professor Coffin said.

The voyage will include scientists and students from [Geoscience Australia](#), [Macquarie University](#), [University of Queensland](#), [Australian National University](#), [GFZ German Research Centre for Geosciences](#), [James Cook University](#), [University of Western Australia](#), [College of the Atlantic](#), and [Institute of Oceanology, Chinese Academy of Sciences](#).

The project also involves shore-based researchers from the [Alfred Wegener Institute for Polar and Marine Research](#), [University of Cambridge](#), [Oregon State University](#), [Natural History Museum of Denmark](#), and [GEOMAR Helmholtz Centre for Ocean Research Kiel](#).

Investigator is Australia's only research vessel dedicated to blue-water research and is owned and operated by CSIRO – Australia's national science agency. The vessel conducts research year-round and is made available to Australian researchers and their international collaborators.

The voyage is scheduled to depart Henderson at 8 am on Thursday, 9 January, and return on Friday, 6 March.

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