



MEDIA RELEASE

NEWS FROM THE UNIVERSITY OF TASMANIA

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ATTENTION: Chiefs of Staff, News Directors



Reading the rough surface of the Southern Ocean

Marine scientists will attempt to capture data from the rough Southern Ocean using ground-breaking monitoring equipment to be deployed at sea later this week.

The Southern Ocean's notoriously turbulent water has previously made it almost impossible for researchers to take important surface ocean readings.

One of the greatest challenges is engineering a float to prevent the instruments from being torn from their mooring in the inhospitable Southern Ocean, where swells reach up to 20 metres.

But scientists at the Integrated Marine Observing System (IMOS), based at the University of Tasmania, are developing specially-engineered ocean measuring moorings that will be used to measure currents and other physical oceanographic properties, as well as to collect marine biological data.

The PULSE mooring technology has been developed over several years in a joint project by CSIRO and the Antarctic Climate & Ecosystems Cooperative Research Centre (ACE CRC). IMOS this year integrated the mooring technology into its Southern Ocean Time Series project (SOTS).

The hope is this latest generation of moorings will provide accurate readings in the world's toughest conditions.

CSIRO-UTAS scientist and ACE CRC program leader Dr Tom Trull says that if this latest design is successful, scientific instruments to measure ocean conditions will be added in future years. The goal this year is to test two different engineering designs, using instruments to send measurements of mooring stresses from waves and currents back to the laboratory via satellite.

“When the moorings are fully operational, these instruments will be used to determine how ocean conditions affect phytoplankton growth and associated carbon uptake into marine ecosystems,” Dr Trull said.

They will provide information on how carbon is moved from the atmosphere to the deep ocean through a natural ‘biological pump’ system that moves about 10 gigatonnes of carbon per year from the surface to the deep sea.

Dr Trull said the new equipment will help determine if this process will speed up or slow down due to climate change.

“The deep sediment trap mooring will measure the amount of material sinking to the deep sea south of Tasmania, as well as the rate at which it sinks. This sinking of organic matters sequesters carbon dioxide away from the atmosphere,” he said.

Dr Tom Trull will this Friday lead a group to Antarctica on the icebreaker *Aurora Australis* to deploy the moorings. The equipment will be recovered in April 2009.

The SOTS facility, with a budget of almost \$6million, is coordinated and managed by staff at UTAS, CSIRO Marine and Atmospheric Research, ACE CRC and the Bureau of Meteorology.

IMOS is a distributed set of equipment and data-information services that together creates a national observing system for marine climate research in Australia. It is an initiative of the Australian Government, being conducted as part of the National Collaborative Research Infrastructure Strategy.

- **Fact file on PULSE below.**

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PULSE MOORINGS FACT FILE

- PULSE technology has been a major program of work by CSIRO and ACE CRC for the past eight years. It is now coordinated by IMOS, but CSIRO and ACE CRC continue to supply substantial in-kind support.
- It is now being used as part of the wider Southern Ocean Time Series (SOTS) program, one of the key IMOS platforms.
- PULSE surface moorings are instruments which are deployed for time-series observations of physical, biological and chemical properties in the Sub-Antarctic Zone, southwest of Tasmania.
- These observations are crucial to resolving ecosystem processes that affect carbon cycling, ocean productivity and marine responses to climate variability and change, ocean acidification and other stresses.
- IMOS recovered a PULSE mooring in April this year, unfortunately the surface float flooded and some of the plastic subsurface floats imploded.
- These new moorings are adaptations of previous floats.

Background:

- Information on IMOS: www.imos.org.au
- Information on PULSE equipment:
<http://www.cmar.csiro.au/research/co2/pulsevoyage.html>
- Comprehensive project description, footage and interviews with scientists:
<http://www.cmar.csiro.au/research/co2/co2.html>