



Voyage SS01-2008

Reconstruction of paleo-oceanography and climate in south-east Australia and the Southern Ocean from analysis of deep-sea corals

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Contribution to Australia's national benefit:

The Southern Ocean has been specifically identified by climate scientists as a key element in the global carbon cycle. It is likely to moderate and be strongly affected by rising world temperatures through effects on the production of the ocean's deep cold waters. As detailed measurements of the Southern Ocean span only the last 10-20 years interpreting recent observations is difficult.

This voyage was a critical part of a joint Australia-USA project to determine long-term changes in the oceanography of the Southern Ocean and temperate Australian waters from analysis of the composition of deep-water corals.

The corals sought on this voyage reside in deep ocean water masses. Changes in their composition (which is affected by the surrounding environment) can indicate how much the Southern Ocean circulation has varied in the past.

While a selection of coral samples was obtained during the voyage, most effort was devoted to deploying a free-swimming unmanned submarine, the Woods Hole Autonomous Benthic Explorer (ABE). The ABE was used to survey potential sampling sites in detail for subsequent sampling. The samples collected are likely to range in age from recent (alive when collected) to several hundred thousand years.

Additional sampling will be done later in 2008 using another deep-diving vehicle, the 'Jason'. The combination of sampling strategies will allow samples to be collected from precisely known depths and locations, this will be critical for climate reconstruction.

The ABE also obtained photographic images to more than twice the depth (nearly 3 km) previously examined in the newly declared Southeast Commonwealth Marine Reserve Network, identifying new and previously unknown marine communities and providing crucial information to reserve managers about biodiversity.

Addressing National Research Priorities:

An Environmentally Sustainable Australia

- Goal 7: Responding to climate change and variability
- Goal 5: Sustainable use of Australia's biodiversity

Itinerary

Departed Hobart 1000 hrs
Friday 11 January 2008

Arrived Hobart 0800 hrs
Friday 1 February 2008

> Voyage track SS01-2008

