



Transit Voyage SS03-2008

“Next Wave” Early Career Training Program - evaluation of changes in phytoplankton and larval communities when crossing the East Australian Current in temperate coastal waters of New South Wales

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Contribution to Australia’s national benefit:

This transit voyage of the *Southern Surveyor* was part of the “Next Wave” initiative which involved the participation of seven students from the University of Technology, Sydney, the University of New South Wales and The University of Sydney. This project contributed to our understanding of the complex marine ecosystem associated with the East Australian Current and through sampling of phytoplankton and larvae in the surface and deeper waters of coastal NSW, we have been able to gain detailed insights into this system. This research was integrated into field-based learning for undergraduate students who were able to experience first-hand the methodologies behind oceanographic science in an educational environment. We ran experiments in which phytoplankton communities were separated into size classes to evaluate responses to nutrient conditions and collected larval samples in surface and 40 m deep net trawls. Preserved samples were collected for post-voyage laboratory analysis for identification of organisms at each sampling site. Students were also involved in daily observations of birds and marine mammals and monitoring the swath mapping of the sea floor.

As a result of this voyage:

1. We have a better understanding of changes in phytoplankton and larval communities across the East Australian Current in temperate coastal waters of New South Wales. Experimental apparatus were also successfully trialled for operation on future voyages.
2. We have found that phytoplankton communities respond to changes in oceanographic nutrient status in a size-dependent manner, with smaller algae relying on high nutrient levels for more efficient photosynthesis. The biodiversity and abundance of marine larvae found at each station will be determined in the laboratory.
3. We have mapped in detail a significant area of the sea floor around the 400 m isobath from Gladstone to Sydney using the EM300 swath mapper.

Addressing National Research Priorities

An Environmentally Sustainable Australia

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

Itinerary

Departed Gladstone 12 August 2008
Arrived Sydney 16 August 2008

> Transit voyage track SS03-2008

