



Voyage SS04-2007

Pelagic ecosystem productivity and dynamics off the west coast of Western Australia

Dr. Peter Thompson, CSIRO (Chief Scientist)

This voyage brought together scientists from a range of leading institutions including CSIRO, GA, UWA, Murdoch University and the West Australian Museum to investigate one of the largest biological phenomena observed in Australia. Analysis of ocean colour data collected by satellite has shown the continental shelf of Western Australia develops a mesoscale phytoplankton bloom in late autumn. The fundamental goal of this voyage was to understand the processes that contribute to this massive increase in primary production that occurs along the ~700 km of Australia's western continental shelf and coastal zone.

A range of processes that are hypothesised to contribute to the phytoplankton bloom were examined and, where possible, tested during the voyage. For example, detailed investigations of phytoplankton population dynamics including growth, nutrient uptake and photosynthesis were made.

Using the data collected during the voyage particular emphasis is placed upon modelling the physical dynamics of the Leeuwin Current so that we can understand its role in the development of this bloom. Nutrients to fuel the phytoplankton bloom and their sources, either benthic, along shore or from offshore were investigated. Intensive

sampling using a deep water video system, high resolution acoustics and conventional grab samples revealed deep populations of various animals and plants. Their density and diversity have already forced us to reconsider our preconceptions of the ecology of this shelf habitat.

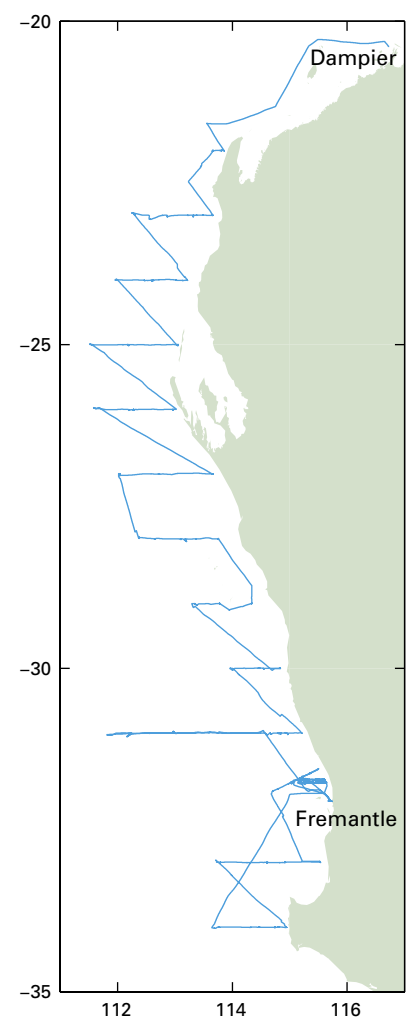
As a result of this voyage:

1. We have quantified the benthic habitats of the WA continental shelf, dramatically improving knowledge of the ecology that sustains the rich harvest of rock lobster;
2. We have collected the data to allow a vastly improved understanding of the mechanisms responsible for the massive phytoplankton bloom off WA;
3. We have mapped the Leeuwin Current in greater detail than any previous study and during its peak flow.

These achievements all contribute to our capacity to manage our biodiversity in a sustainable manner.

Itinerary

Departed Fremantle 16:00 hrs
Thursday 10 May 2007
Arrived Darwin 08:00 hrs
Monday 9 July 2007



> SS04-2007 voyage track