Voyage ss2009_v04

IMOS-Southern Ocean Time Series Facility

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Contribution to Australia's national benefit:

This project lies within the priority of An Environmentally Sustainable Australia: Responding to Climate Change and Variability. The Southern Ocean is important to global and regional climate and carbon cycling because of its highly energetic interactions with the atmosphere, its deep mixing, and its role in connecting all the basins in the global ocean. The overall scientific objective of this project is to obtain frequent measurements of surface and deep ocean properties that control the transfer of CO_2 from the atmosphere to the upper ocean, and then onwards to the ocean interior in the form of sinking particles. This "biological pump" drives carbon sequestration from the atmosphere and writes the sedimentary record. The controls on its intensity are complex and involve processes that vary on daily, weekly, seasonal and interannual timescales. Obtaining observations with the necessary frequency is not possible from ships. For this reason the NCRIS IMOS Southern Ocean Time Series Facility seeks to obtain this information using automated sensor measurements and sample collections.

This specific objectives of this voyage were to recover and redeploy a sediment trap mooring that collects sinking particles at approximately fortnightly intervals at three depths (near 1000m, 2000m and 3800m), and deploy a second mooring that will take measurements of temperature, salinity, mixed layer depth, photosynthetically available radiation, oxygen, total dissolved gases and phytoplankton fluorescence and backscatter. The second mooring will also collect 48 water samples for later measurement of dissolved nitrate, silicate, inorganic carbon and total alkalinity.

This voyage was largely successful in achieving its objectives, despite very difficult weather conditions. The moorings were successfully recovered and redeployed (albeit with some loss of equipment – 12 glass floats and a CART acoustic transponder). Data from these systems will be provided via the Integrated Marine Observing System to Australian and international researchers.

Itinerary

Departed Hobart 11:00,
Tuesday 22 September 2009

Arrived Hobart 17:00,
Wednesday 30 September 2009

> Voyage track ss2009_v04