MR03-K04 Leg2 Cruise Summary

Objectives

a. To detect and quantify temporal changes in the Antarctic Overturn System corresponding to the global ocean and the Southern Ocean warming during this century through high quality and spatially dense observation along old WHP (World Ocean Circulation Experiment Hydrographic Program: 1991– 2002) lines.

b. To estimate the amount of anthropogenic carbon uptaken by the Antarctic Ocean.

   Selected scientific priorities which lead to above interest are:
   # Changes in inventories of heat and freshwater
   # Carbon and nutrients transport
   # Data base for model validation
   # ARGO censor calibration and its deployment in the Western South Pacific and the Indian Ocean

Number of Stations

A total of 116 stations were occupied along WHP P6 line using a Sea Bird Electronics 36 bottle carousel equipped with 36 12 liter Niskin X water sample bottles, a SBE911plus equipped with SBE35 deep ocean standards thermometer, SBE43 oxygen sensor, Seapoint sensors Inc. Chlorophyll Fluorometer and Benthos Inc. Altimeter and RDI Monitor ADCP.

Sampling and measurements

1. Measurements of temperature, salinity, oxygen ,current profile, fluorescence and using CTD/O_2 with LADCP, fluorescence meter.
2. RMS water sampling and analysis of salinity, oxygen, nutrients, CFC11,12, 113, total alkalinity, DIC TOC and pH. The sampling depth in db were 10, 50, 100, 150, 200, 250, 300, 400, 500, 600, 700, 800, 900, 1000, 1200, 1400, 1600, 1800, 2000, 2200, 2400, 2600, 2800, 3000, 3250, 3500, 3750, 4000, 4250, 4500, 4750, 5000, 5250, 5500, 5750 and bottom (minus 10db).
3. Sample water collection for POC, Ar, ^{14}C, ^{13}C, $^{3}He/^{4}He$, ^{137}Cs, Plutonium and ^{3}H
4. Measurements of autotropic biomass (epifluorescence and chlorophyll a) by surface LV
5. Bio-Optical measurement (scatter and transfer)
6. Underway measurements of pCO_2, temperature, salinity, surface current, bathymetry and meteorological parameters

Floats, Drifters, Drifter

18 ARGO floats (9 SOLO floats and 9 APEX floats) were launched.