

Proposal for Bio-optical Measurements on the JAMSTEC Southern Hemisphere Cruise 2003 - 2004

One bio-optical specialist, plus at least one trainee, will on board the *RV Mirai* for the first five legs of the cruise.

The minimum Programme would include the following bio-optical measurements:

- Light Measurements:
 - Continuous Recording of Incoming Photosynthetically Active Radiation on deck
 - On-deck measurement of spectral reflectance at all day-time stations
- Chlorophyll-a (Turner Fluorometer): As frequently as possible, from surface and depth
- Pigments (HPLC): Two samples from surface and deep chlorophyll maximum (DCM)
- Phytoplankton Absorption Spectra: Two samples from surface and DCM
- Absorption by coloured dissolved organic material (CDOM)
- Flow Cytometry: Two samples from surface and DCM

We will also be measuring the parameters of the photosynthesis-irradiance curve during this cruise, using Carbon 13. These measurements would enhance the value of the other measurements proposed. There is a great paucity of this type of data from the Southern Hemisphere and the data would be invaluable for improving large-scale estimates of primary production from the regions using satellite data on ocean-colour.