# Atlantic Meridional Transect

The AMT programme has run since 1995, conducting multidisciplinary research during the annual return passage of the Royal Research Ships (RRS) James Clark Ross or Discovery between the UK and the Falkland Islands or Cape Town every May and September of each year. This has provided a unique set of repeated measurements along a series of Atlantic meridional transect covering a distance of almost 13,500km and a wide range of ecosystems.



RRS James Clark Ross
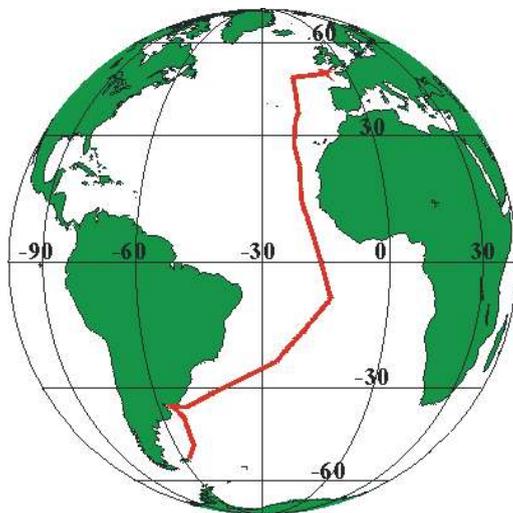


AMT8 cruise track

The first phase of the AMT programme took place between 1995 and 2000 and consisted of 12 cruises. BODC has been integrating data from the physical, chemical and biological measurements made on these earlier cruises.  Data sets include:

- Vertical CTD profiles
- Optics casts
- Continuous underway data
- Biogeochemical measurements on water samples including nutrients, pigments, phytoplankton abundance and taxonomy, primary production, dissolved gases
- Zooplankton abundance and taxonomy from net hauls

The second phase of the programme (2002-2006) involves 45 investigators, researchers and students from 6 partner UK institutions (Universities of Newcastle, Plymouth, Liverpool, Southampton and East Anglia, together with the National Oceanography Centre, Southampton and the Plymouth Marine Laboratory) as well as other national and international collaborations.

Objectives:

1. How does the structure, function and the flow of food within planktonic ecosystems vary in space and time?

2. How do physical processes affect the supply of nutrients, including dissolved organic matter, to the planktonic ecosystem?

3. How do ocean-atmosphere exchanges and sunlight affect the formation and breakdown of organic matter?
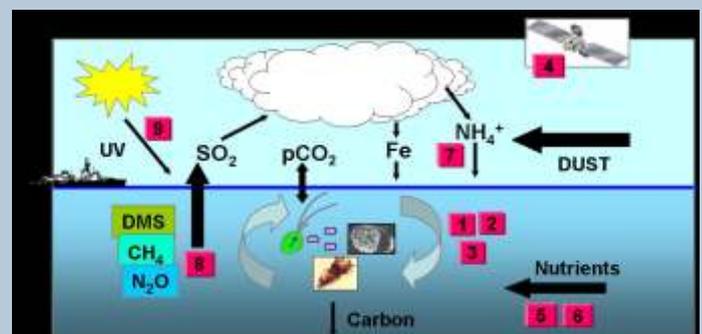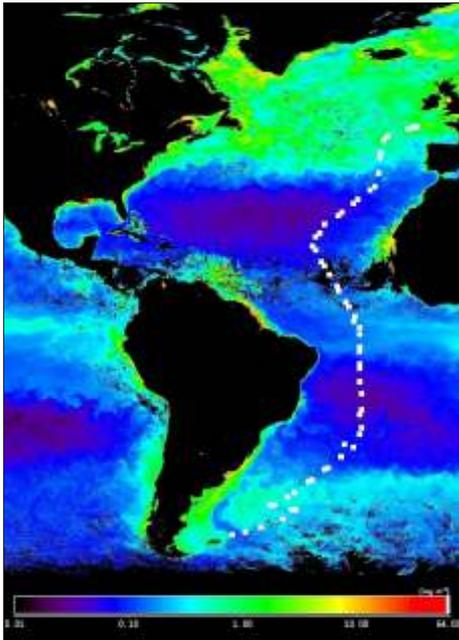


Diagram representing the focii of AMT research

These questions are being researched through the testing of nine hypotheses.  More detail on these may be found on the official AMT website, http://www.pml.ac.uk/amt/index.htm

AMT12 monthly composite SeaWiFS image with cruise track

In the new phase of AMT, work focuses on cross-disciplinary studies of ocean plankton ecology and biogeochemistry, and links to atmospheric processes.

When added to the observations from the 1995-2000 phase of the AMT programme, the work provides a unique ten-year time-series of data, allowing some of the first detailed comparisons to be made of how ecosystems function in the North and the South Atlantic gyres (circular current systems in the ocean).

The data sets being collected during the AMT cruises between 2003 and 2006 include:

- Aerosol and rainwater composition
- Surface water time series and profiles of biological, chemical and physical parameters
- Primary, new production and respiration measurements
- Optical characteristics of the water column
- Satellite imagery
- Plankton community structure

BODC's work involves collating all of the AMT data sets from both phases into a quality-controlled integrated database.
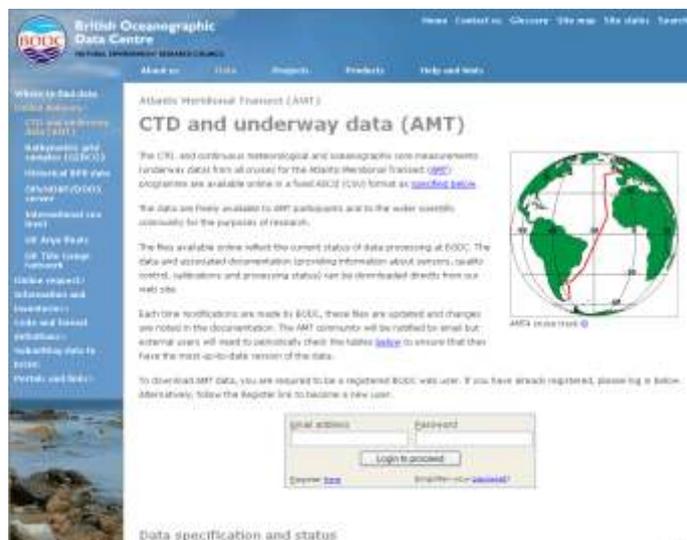
The data are assembled in a relational database which links all samples through their time and position. This ensures that data are readily available for temporal and spatial studies.



CTD deployment



Zooplankton nets



AMT data management is tailored to meet the needs of AMT scientists where possible. Core oceanographic data sets, including profiles and time series, are processed and quality-controlled as soon as possible after a cruise, and made available to AMT participants and the wider scientific community via the BODC web pages (http://www.bodc.ac.uk/projects/uk/amt/).

The AMT data policy has been designed to make the data available to the wider scientific community as quickly as possible, so that the maximum use may be made of this valuable data resource.