The Atlantic Meridional Transect (AMT) 2018-2023

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CLASS-AMT has supported seagoing activities of PML, NOC, BODC and SAMS and Universities of: Exeter, Heriot Watt, Imperial College, Liverpool, Oxford, East Anglia, Southampton during:

3 research cruises which involved 55 Scientists from 23 institutions in 16 countries including 3 POGO fellowships for developing nations (India, Venezuela, Mexico).

CLASS-AMT cruises have serviced the NOC – SOG mooring (since 2008) and deployed 41 ARGO floats to the remote ocean. Collaboration has been key to the origin and continuation of AMT, recent highlights include ESA (www.amt4oceansatflux.org) & NASA supported projects.


Including:

Primary Production, an Index of Climate Change in the Ocean: Satellite-Based Estimates over Two Decades

Ocean Colour Chlorophyll a algorithms for Sentinel-3, MODIS-Aqua and Suomi-VIIRS

Nitrification in South Atlantic Gyre
North Atlantic Gyre

AMT has undertaken sustained measurements of oceanographic and atmospheric variables during 30 research cruises on a passage between the UK and destinations in the South Atlantic since 1995. This program spans more than 100° of latitude, samples to depths of up to 1000m and crosses a range of ecosystems from sub-polar to tropical, from eutrophic shelf seas and upwelling systems, to oligotrophic mid-ocean gyres.

AMT is unique in acquiring repeat data of core parameters on long transects through the Atlantic Ocean. CTD profiles are made at a resolution of ~100 miles (over ~8500 miles) and, of the core measurements that have been identified as Global Ocean Observing System (GOOS) Essential Ocean Variables seven of the nine are measured routinely during AMT cruises, namely: oxygen, macronutrients, carbonate system, suspended particulate matter, nitrous oxide, and dissolved organic matter. Additionally, measurements are made of eDNA, microbial abundance and diversity (bacteria and phytoplankton), zooplankton biomass and diversity, primary production, phytoplankton pigments including chlorophyll-a and optical characteristics.

AMT contributing to international science during covid pandemic. >180,000 downloads in 5 years by 28 countries

H2020 funding to support analysis of legacy samples:
Genomic and transcriptomic analysis of microbial DNA/RNA

Taxonomic analysis of zooplankton collected since 1995.

Novel approaches:
• In situ direct eddy covariance air-sea CO2 fluxes
• Satellite-based indirect bulk air-sea CO2 fluxes
• Satellite-based ocean acidification parameters
• Phytoplankton carbon:chlorophyll at basin scale using flow cytometry, AI & ML