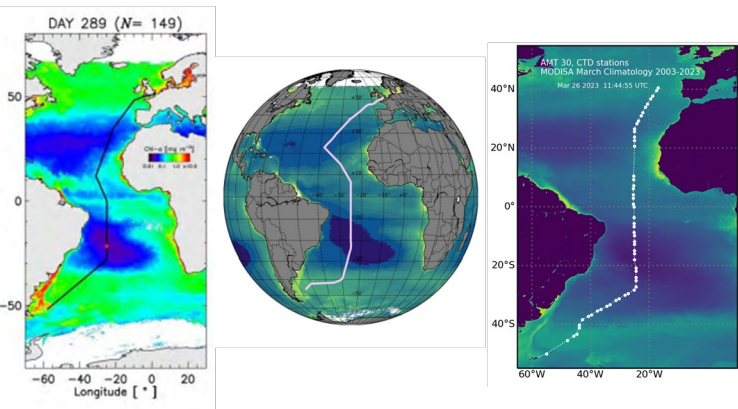


## The Atlantic Meridional Transect (AMT) 2018-2023

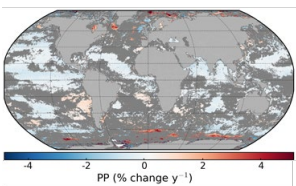
Andy Rees ([apre@pml.ac.uk](mailto:apre@pml.ac.uk)), Tim Smyth, Glen Tarran, Ian Brown, Sarah Breimann, Steve Groom, Tom Jordan, Vas Kitidis, Gavin Tilstone, Malcolm Woodward.

**2018-19** JR18-001/AMT28  
**2019-20** DY110/AMT29  
**2022-23** DY157/AMT30

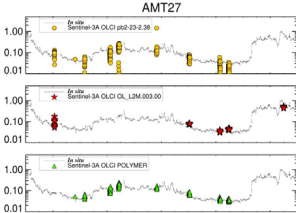


CLASS-AMT has supported seagoing activities of PML, NOC, BODC and SAMS and Universities of: Exeter, Heriot Watt, Imperial College, Liverpool, Oxford, East Anglia, Southampton during: **3 research cruises** which involved **55 Scientists** from **23 institutions** in **16 countries** including **3 POGO 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](http://www.amt4oceansatflux.org)) & NASA supported projects.

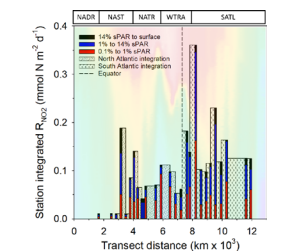
**60+ peer reviewed publications** plus Research Topic in Frontiers in Marine Science (<https://www.frontiersin.org/research-topics/24988/the-atlantic-meridional-transect-programme-1995-2022>) Including:



Primary Production, an Index of Climate Change in the Ocean: Satellite-Based Estimates over Two Decades  
 Kulk et al 2020. Remote Sensing 12(5), art: 826. [doi:10.3390/rs12050826](https://doi.org/10.3390/rs12050826)



Ocean Colour Chlorophyll a algorithms for Sentinel-3, MODIS-Aqua and Suomi-VIIRS  
 Tilstone et al. 2021. Remote Sens. Env., 260, 112444. <https://doi.org/10.1016/j.rse.2021.112444>



Nitrification in South Atlantic Gyre North Atlantic Gyre  
 Clark et al. 2022. Biogeosciences, 19, 1355–1376, <https://doi.org/10.5194/bg-19-1355-2022>, 2022

**H2020 funding to support analysis of legacy samples:**



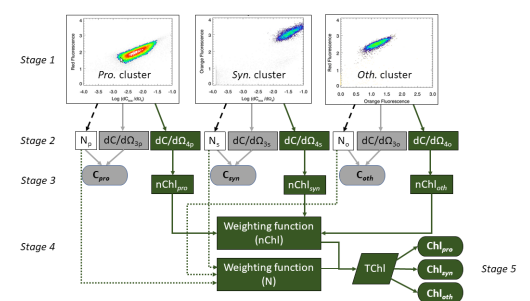
Genomic and transcriptomic analysis of microbial DNA/RNA



Taxonomic analysis of zooplankton collected since 1995.

**Novel approaches:**

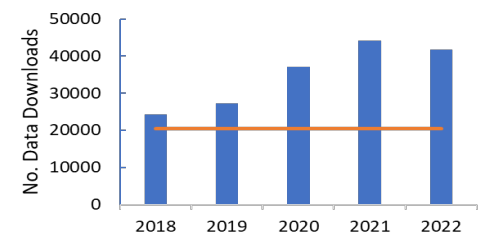
- In situ direct eddy covariance air-sea CO<sub>2</sub> fluxes
- Satellite-based indirect bulk air-sea CO<sub>2</sub> fluxes
- Satellite-based ocean acidification parameters
- Phytoplankton carbon:chlorophyll at basin scale using flow cytometry, AI & ML



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



AMT data downloads 2018 – 2022 relative to 2013 – 2018 mean

