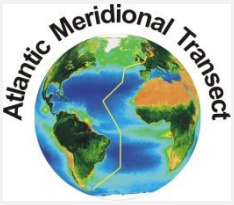
AMT Annual Report 2021

The Atlantic Meridional Transect (AMT)



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Selected highlights

1. Selected scientific highlights since last report

Last report was submitted to Brest SSC meeting, June 2019. Each highlight needs to be VERY short, bullet points, with a link to publication if applicable.

AMT is now in its 26th year of research activities in the Atlantic Ocean. 2020-21 saw the publication of 17 papers, total list of >350 can be found at https://www.amt-uk.org/Publications . AMT provides exceptional opportunities to UK and international partners to access the remote regions of the Atlantic Ocean including the rarely visited South Atlantic Gyre. To date 289 individuals from 77 institutes in 29 countries have taken part in AMT cruises, datasets are made publicly available through the British Oceanographic Data Centre (https://www.bodc.ac.uk/projects/data_management/uk/amt/) and to-date in excess of 124000 downloads of AMT data have been made since 2011 by the international community. AMT also contributes to capacity building in the developing nations through support from POGO (Partnership for Observation of the Global Ocean) and to date has supported training to 12 individuals.

The COVID pandemic coupled with reduced UK ship availability has meant that there was no cruise during the last 12 months, the first break in the regular series since 2008. The fallout from this situation means that the next cruise will not occur until 2022 at the earliest.

Through PI involvement the AMT project continues extensive collaboration which most recently has involved additional funding and significant alignment with projects funded by European Space Agency (https://amt4oceansatflux.org/Home) and the European Union (https://ciencias.ulisboa.pt/pt/noticia/26-11-2019/atlantic-meriodional-transect and https://www.atlanteco.eu/the-project)

2. Publications since last report

Please add all publications since last report to the table below (see notes for details on "Class" and "Activity" fields).

***Publication** with DOI*	***Class 1, 2, 3***	***Activity****
Brewin, R. J. W., Wimmer, W., Bresnahan, P., Cyronak, T., Andersson, A. J., & Dall'Olmo, G. (2021). Comparison of a Smartfin with an infrared sea surface temperature radiometer in the Atlantic Ocean. Remote Sensing, 13(5), 841. doi:10.3390/rs13050841	2	AMT – endorsed project
Larkin, A. A., Garcia, C. A., Brock, M. L., Lee, J. A., Garcia, N., Ustick, L. J., . . . Martiny, A. C. (2021). High spatial resolution global ocean metagenomes from Bio-GO-SHIP repeat hydrography transects. Scientific Data. doi:10.1101/2020.09.06.285056	2	AMT – endorsed project
Smyth, T. J., Tarran, G. A., & Sathyendranath, S. (2021). Sub-micron picoplankton shape, orientation and internal structure combine to preferentially amplify the forward scatter. Optics Express, 29(2), 2014-2024. doi:10.1364/OE.413576	2	AMT – endorsed project
Alikas, K., Vabson, V., Ansko, I., Tilstone, G. H., Dall'Olmo, G., Nencioli, F., . . . Casal, T. (2020). Comparison of above-water Seabird and TriOS radiometers along an Atlantic Meridional Transect. Remote Sensing, 12(10), 1669. doi:10.3390/rs12101669	2	AMT – endorsed project
Baker, A. R., Li, M., & Chance, R. (2020). Trace metal fractional solubility in size-segregated aerosols from the tropical eastern Atlantic Ocean. Global Biogeochemical Cycles, 34(6), e2019GB006510. doi:10.1029/2019GB006510	2	AMT – endorsed project
Banks, A. C., Vendt, R., Alikas, K., Bialek, A., Kuusk, J., Lerebourg, C., . . . Casal, T. (2020). Fiducial Reference Measurements for Satellite Ocean Colour (FRM4SOC). Remote Sensing, 12, 1322. doi:10.3390/rs12081322	2	AMT – endorsed project
Choo, L.-Q., Bal, T. M. P., Goetze, E., & Peijnenburg, K. T. C. A. (2020). Oceanic dispersal barriers in a holoplanktonic gastropod. Journal of Evolutionary Biology, 34(1), 224-240. doi:10.1111/jeb.13735	2	AMT – endorsed project
Dutkiewicz, S., Cermeno, P., Jahn, O., Follows, M. J., Hickman, A. E., Taniguchi, D. A. A., & Ward, B. A. (2020). Dimensions of marine phytoplankton diversity. Biogeosciences, 17, 609-634. doi:10.5194/bg-17-609-2020	2	AMT – endorsed project
Graban, S., Goult, S., Dall'Olmo, G., & Sauzède, R. (2020). Accurate deep-learning estimation of chlorophyll-a	2	AMT – endorsed project

concentration from the spectral particulate beam-attenuation coefficient. Optics Express, 28(16), art: 24214.		
Humpreys, M. P., Artioli, Y., Bakker, D. C. E., Hartmann, S. E., León, P., Wakelin, S., . . . Williamson, P. (2020). Air-sea CO2 exchange and ocean acidifcation in UK seas and adjacent waters. MCCIP Science Review, 2020, 54-75. doi:10.14465/2020.arc03.oac	2	AMT – endorsed project
Kulk, G., Platt, T., Dingle, J., Jackson, T., Jönsson, B. F., Bouman, H. A., . . . Sathyendranath, S. (2020). Primary production, an index of climate change in the ocean: satellite-based estimates over two decades. Remote Sensing, 12(5), art: 826. doi:10.3390/rs12050826	2	AMT – endorsed project
Lange, P. K., Werdell, J. P., Erickson, Z. K., Dall'Olmo, G., Brewin, R. J. W., Zubkov, M. V., . . . Cetinić, I. (2020). Radiometric approach for the detection of picophytoplankton assemblages across oceanic fronts. Optics Express, 28(18), 25682-25705. doi:10.1364/OE.398127	2	AMT – endorsed project
Moore, T. S., & Brown, C. W. (2020). Incorporating environmental data in abundance-based algorithms for deriving phytoplankton size classes in the Atlantic Ocean. Remote Sensing of Environment, 240, 111689. doi:10.1016/j.rse.2020.111689	2	AMT – endorsed project
Organelli, E., Dall'Olmo, G., Brewin, R. J. W., Nencioli, F., & Tarran, G. (2020). Drivers of spectral optical scattering by particles in the upper 500 m of the Atlantic Ocean. Optics Express, 28(3), 34147-34166. doi:10.1364/OE.408439	2	AMT – endorsed project
Pabortsava, K., & Lampitt, R. S. (2020). High concentrations of plastic hidden beneath the surface of the Atlantic Ocean. Nature Communications, 11, 4073. doi:10.1038/s41467-020-17932-9	2	AMT – endorsed project
Peijnenburg, K. T. C. A., Janssen, A., Wall-Palmer, D., Goetze, E., Maas, A. E., Todd, J. A., & Marlétaz, F. (2020). The origin and diversification of pteropods precede past perturbations in the Earth's carbon cycle. Proceedings of the National Academy of Sciences, art:201920918. doi:10.1073/pnas.1920918117	2	AMT – endorsed project
Wall-Palmer, D., Janssen, A. W., Goetze, E., Choo, L.-Q., Mekkes, L., & Peijnenburg, K. T. C. A. (2020). Fossil-calibrated molecular phylogeny of atlantid heteropods (Gastropoda, Pterotracheoidea). BMC Ecology and Evolution, 20, 124. doi:10.1186/s12862-020-01682-9	2	AMT – endorsed project

**If appropriate, please list the IMBeR activity through / by / from / during which the publication arose*

*******Notes on publications*******

Publications are logged in the IMBeR Zotero library which is publicly accessible online - https://www.zotero.org/groups/2448334/imber_library_2/library

[Due to space limitations, publications from 1999-2017 are in a separate Zotero library - https://www.zotero.org/groups/38770/imber_library_1/library]

Publications are categorised by "Class" and linked to "Activities":

Class 1 publications are specifically generated through/by/from/during ***IMBeR activities*** - for example, arising from IMBIZOs and IMBeR conferences such as the IMBeR open science meeting and the IMBeR CJK symposia and from the activities of the working groups, regional programmes and the SPIS scoping teams.

Class 2 publications are on topics relevant to the IMBeR Science Plan that benefitted from some interaction with IMBeR or ***IMBeR activities***, for example by IMBeR symposium attendees, past and present SSC members, working group, regional programme and endorsed project members, or national contacts.

Class 3 publications are on topics relevant to the IMBeR Science Plan but for which there is no direct link to or benefit from an IMBeR activity. These might include publications by SSC members, working group, regional programme or endorsed project members or members of the IMBeR international community that were written as part of the normal scientific activity of the authors and would have occurred irrespective of IMBeR's existence. You can report Class 3 publications, but they will no longer be logged in the IMBeR database.

[See https://drive.google.com/open?id=1OQWn41KJvQ-LyWJlkiYnc5qZ2IuNQOrg or https://pan.ecnu.edu.cn/p/DTrpUb4QiFAYoQ4 for further information on "What is an IMBeR publication?".]

Why list 'Class' and 'Activity'? This helps us to declare authentically which publications IMBeR has helped to generate, and it makes it easier for us to demonstrate the value of the Regional Programmes, the Working Groups, the Endorsed Projects, and IMBeR in general, and it helps us to justify support for IMBeR activities when we can list tangible outputs.