

Is the ocean short of breath due to global warming?

PML supervisors: Dr Giorgio Dall'Olmo (gdal@pml.ac.uk), Dr Luca Polimene
UEA supervisors: Prof. Carol Robinson, Dr Bastian Queste

Scientific Background

The ocean is running out of oxygen. This de-oxygenation is reducing the habitats available for fish and other marine organisms and can alter global biogeochemical cycles. Yet, our understanding of why oceanic oxygen is diminishing is severely limited: state-of-the-art Earth System Models can only account for about half of the observed oxygen decline, likely because we have a poor understanding of the processes responsible for ocean de-oxygenation (Oschlies et al., 2018).

Project aims

To quantify how oxygen consumption by marine organisms changes as a function of temperature.

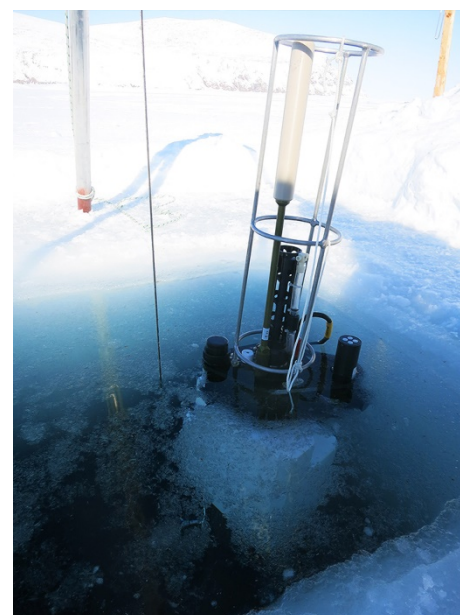
To quantify how this temperature-dependence varies with geographic region and season.

To develop new model parameterisations of the process.

Research methodology and Training

You will be based at the Plymouth Marine Laboratory where you will determine oxygen consumption rates from [Biogeochemical-Argo floats](#) deployed in the global ocean (Hennon et al., 2016) and analyse their variability with temperature, depth, season and geographic location (Brewer and Pelzer, 2017). Using the new knowledge gained from these data, you will also improve existing biogeochemical models of oxygen consumption in the ocean.

You will receive training in ocean biogeochemistry, data analysis and visualisation, scientific programming, laboratory determination of oxygen concentrations, ocean biogeochemical models, and oral and written presentation skills. You will contribute to the [PICCOLO project](#) and take part in an oceanographic expedition in Antarctica (Weddell Sea) on the newest NERC polar research vessel, the [RSS Sir David Attenborough](#), during which you will determine ocean oxygen concentrations. You will collaborate with dynamic research teams at the Plymouth Marine Laboratory and the University of East Anglia. You will present your findings at international scientific conferences, in peer-reviewed scientific publications and in a PhD thesis.



Person specification

We seek an enthusiastic, proactive team player with strong scientific interests and self-motivation. You will have at least a 2.1 honours degree in physics, chemistry, mathematics, computing, or a branch of environmental science.

