

NERC-funded Research Experience Placement (REPs) Summer 2025

Project title

Examining the impact of the world's largest icebergs on Southern Ocean phytoplankton communities

Lead supervisor

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Project description

The passage of giant icebergs through the Southern Ocean can stimulate the growth of 'iceberg-associated' phytoplankton species, altering phytoplankton community composition (Tarling et al., 2024). However, these effects vary between icebergs, across different regions, and across seasons. This research experience placement (REP) will investigate the impact of two of the world's largest icebergs on Southern Ocean phytoplankton communities, identifying similarities and differences between them, and comparing these findings to an oceanographic transect without iceberg influence.

Iceberg A23a calved from the Filchner ice shelf in 1986 and quickly became grounded in the Weddell Sea for over 30 years, before breaking free and heading northwards in 2021, when it started to attract significant media attention for being the world's largest and oldest iceberg. The iceberg grounded on the continental shelf of South Georgia at the beginning of March 2025. British Antarctic Survey (BAS) researchers visited the iceberg in December 2023 and collected water samples around the iceberg.

The shorter-lived iceberg A76a calved from the Ronne ice shelf in 2021 before heading northwards, disintegrating into smaller fragments in the Scotia Sea in summer 2023. BAS researchers also visited and collected water samples around this iceberg in January 2023.

The student will conduct laboratory analyses at BAS, beginning with training in phytoplankton identification and enumeration using the Utermöhl method and inverted light microscopy to classify cells to species or genus level. This training will be supervised by an experienced phytoplankton ecologist, enabling the student to progress to independently analysing samples.

Following laboratory analysis, the student will learn quantitative methods for phytoplankton analysis, including biovolume calculations, community structure analysis with multivariate statistics in Primer-E, and data visualisation in R. With supervisor guidance, the student will develop specific research questions and determine the most suitable statistical approaches for their analysis.

The placement will follow a structured timeline:

Weeks 1-2: lab-based training in phytoplankton identification and microscopy.

Weeks 3-6/8: independent lab analysis with supervisor support.

Weeks 6/9-10: quantitative analysis, statistical interpretation, and preparation and presentation of results.

Throughout the placement, the student will be integrated into the BAS ecosystems team, attending in-person or online team meetings, as well as participating in the BAS student seminar series. At the end of the placement, they will have the opportunity to present their findings to an audience of BAS researchers, gaining valuable experience in science communication.

While some experience in phytoplankton taxonomy or microscopy would be advantageous, there are no pre-requisite skills for this project and full training will be provided. The student should be undertaking undergraduate studies in areas including biological sciences, oceanography, environmental sciences, ecology, or biochemistry.

Project restrictions

To complete the laboratory component of this REP, the student must work in person at BAS Cambridge for at least six weeks of the ten-week placement (or equivalent on a part-time schedule). The remaining four weeks can be conducted remotely or in person, depending on the student's preference.

In cases where unforeseen circumstances prevent in-person work, alternative datasets will be available to allow a project to be completed remotely, however, the scope may be altered due to the absence of lab-based analysis. Supervisors will be able to provide online training if required. There are no pre-requisite skills for this project, the student will be provided with full training.

Working arrangements

This project is designed for a flexible combination of in-person and remote work. The student will be required to work in person at BAS Cambridge for approximately six weeks, with the option to complete the remaining four weeks remotely if preferred. If a fully remote placement becomes necessary, alternative datasets can be provided.

The student will be fully integrated into the BAS Ecosystems team, attending monthly team meetings and seminars in person or online. They will also join the BAS student community, gaining access to networking events and interdisciplinary seminars. The placement will culminate in a student-led presentation to BAS researchers (in person or online), offering an invaluable opportunity for scientific feedback and career development.