ONE Planet
Doctoral Training Partnership

Natural Environment Research Council

Project title: The role of ocean-driven melting in future sea-level rise from the Antarctic Ice Sheet

Ref: OP2454

Keywords: Climate Change, Antarctica, ice sheet modelling

One Planet Research Theme:
Climate & Climate Change ☒ | Earth System Processes ☒ | Anthropocene ☐ | Environmental Informatics ☐

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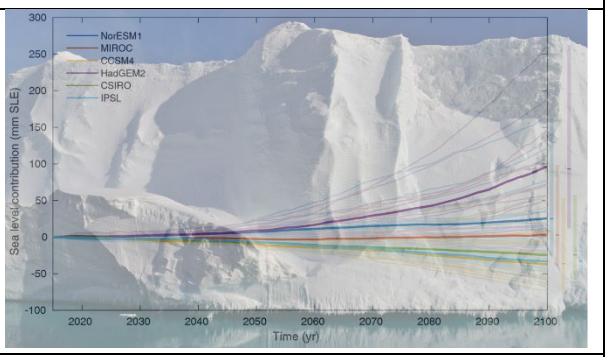
Key Research Gaps and Questions:

Antarctica's future evolution is currently the largest uncertainty in projections of sea level rise. And the ocean is the main driver of melting in Antartica. Can we hence narrow down uncertainty in sea level projections by gaining a better understanding of the ocean-driven melting and it's evolution under future warming?



Project Description:

The Antarctic Ice Sheet is by far the largest potential source for future sea-level rise. If it were to melt completely, global sea levels would rise by more than 50 meter. At the same time, the Antarctic contribution remains the largest uncertainty in projections of global sea-level rise, as found in the latest assessment report from the Intergovernmental Panel on Climate Change (IPCC AR6 WG1). Ocean-driven melting at the margins of the continent causes most mass loss at present. In this project, the influence of ocean-driven melting on future projections will be analysed using numerical models. The aim will be to better map out the uncertainty related to the ocean forcing and thereby improve the next generation of sea-level projections.

During the PhD, you will learn about climate change, and it's impact on the Antarctic Ice Sheet, ice dynamics, ice flow modeling and ice-ocean interactions in Antarctica. You will be supported and encouraged to develop own ideas and deepen the understanding of ice dynamics, and discuss your work at international conferences. You will be based in the Glaciology and Cold Environments groups at Northmbria University, collaborate with Newcastle University and your work will be closely linked to the NERC project Re-thinking Antarctic Sea-level Projections (RASP, 2024-2028).

We want to particularly encourage people from underrepresented groups to apply.

Prerequisites:

Helpful skills & knowledge (that can also be gained during the project): experience with ice flow or climate modelling, understanding of the climate system, programming experience (python, matlab, C++ or equivalent), collaborative working.

Essential skills & knowledge: Mathematical or physical understanding, e.g., a degree in maths, physics, statistics, or a related discipline.

For more information, please contact Ronja Reese (ronja.reese@northumbria.ac.uk).

Newcastle University

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