

Impact of changes in Southern Ocean sea-ice on the carbon cycle

Primary supervisor:

Laurie Menviel, Climate Change Research Centre, UNSW

Project:

It is hypothesised that the Southern Ocean played a central role in past climate and carbon cycle changes. In addition, the Southern Ocean is one of today's largest oceanic sink of anthropogenic carbon. The PhD student will perform numerical experiments with Earth system models to better understand how Southern Ocean climate and carbon cycle respond to different forcings, and how this can feedback on other parts of the climate system. More specifically the student will study how changes in Southern Ocean sea-ice impact the marine carbon cycle.

Context:

This PhD project is affiliated with the ARC Australian Centre for Excellence in Antarctic Science (ACEAS), a national-scale, University-led, international centre focused on helping the world community prepare for climate risks emerging from East Antarctica and the Southern Ocean by integrating knowledge of the ocean, atmosphere, cryosphere and ecosystems, and their interplay. ACEAS will grow to support the activities of around 150 researchers, administrative staff, and students, with exciting opportunities to collaborate across disciplinary and institutional boundaries. Further information on ACEAS is available at: <https://antarctic.org.au>

Selection criteria:

- Honours / Master's degree or equivalent qualification in a relevant area (e.g., climate sciences, physical or biogeochemical oceanography, coupled physical-biogeochemical ocean modelling)
- Evidence of emerging independent research work, for example, a thesis with an associated peer-reviewed publication or draft manuscript.
- Demonstrated programming skills in a Unix/Linux environment (e.g., use of shell scripts, Fortran, Python, R or Matlab programming)
- Excellent oral and written communication skills
- Meet the UNSW English requirements

Funding:

Applicants will be considered for a Research Training Program (RTP) scholarship which, if successful, provides:

- a living allowance stipend of \$28,854 per annum (2022 rate, indexed annually) for 3.5 years
- a tuition fees offset covering the cost of tuition fees for up to 3.5 years
- A PhD scholarship-top-up of \$5,000 per annum for 3.5 years.

Application:

Send (i) a CV, (ii) a motivation letter describing your research interests and experience, (iii) contact details of two references, (iv) transcripts and diplomas of your bachelor and master degrees (if available) to Laurie Menviel: l.menviel@unsw.edu.au by July 18th 2022.