IMPERIAL

Grantham Institute – Climate Change and the Environment

Department of Physics

PhD Post in Geophysics (Imperial College, South Kensington campus)

Funding: Home fees only and stipend (3.3 years)

Project title: Melting Greenland's Ice Sheet from Above and Below: Earth's Mantle and Ocean as Heat Pumps

Supervisor: Dr Fiona Simpson

Co-Supervisors: Dr Arnaud Czaja

Description

Greenland's ice sheet is melting at an alarming rate. This has impacts on greenhouse gas emissions through the exposure of wetlands and sea level rise, both of which drive climate change feedback mechanisms. Atmospheric warming of the surface of the ice sheet due to climate change is the main factor. However, heating from Earth's mantle by a hypothesised mantle plume ascending from the core-mantle boundary adds to the regional heat budget to which the base of the ice sheet is also exposed and may also lead to melting at the base of the ice sheet, promoting slip. The saline oceanic waters surrounding Greenland are also known to be warming due to climate change and intrusion of seawater under Greenland's marine-terminating ice sheet may add a further advective heat source that promotes basal melting and slippage.

In this PhD, we will combine complementary ground-based geophysical, oceanographic and satellite-based earth observation datasets and use numerical modelling techniques to explore the different influences on Greenland's melting ice sheet. This could include: (i) investigating the sensitivity of the Greenland ice sheet to the mantle heat pump by constraining the thermal state of the mantle below Greenland, (ii) quantifying the possible effects of seawater infiltration below Greenland's marine-terminating ice sheet in the context of a warming ocean with changing circulation patterns and (iii) assessing the effect of basal sliding, subglacial streams and basal topography on the evolution of the Greenland ice sheet using ice flow models.

The student will receive training in geophysical, oceanographic and earth observation techniques including geophysical fieldwork, data management and science communication, areas within which the Natural Environmental Research Council (NERC) has identified skills gaps. They will be expected to present their research at national and/or international conferences. They will also engage in the associated PhD training and activities of the Grantham Institute for Climate Change and Environment and the Department of Physics.

Requirements:

- First-class or very strong 2:1 degree (or international equivalent) in geophysics, physics or applied mathematics.
- A strong grounding in numerical modelling.
- Good English writing and verbal communication skills.
- Experience with scientific programming and data analysis.
- Excellent organisational and time management skills.
- High degree of self-motivation and interest in geophysics, oceanography and glaciology.
- Curiosity driven with ability to think independently and critically.
- Willingness to contribute to geophysical fieldwork.

- Clean driving licence.

Funding: The studentship will provide funding for tuition fees at the level of Home (UK) students and a tax-free stipend at the standard UKRI London rate (£23,805 pa for 2026/2027). The funding can also be used to partially support an international student, combined with private resources or scholarships.

How to apply:
Enquiries and applications should be made to Dr Fiona Simpson at **f.simpson@imperial.ac.uk** with the following materials in a single PDF file (under 20 MB):

- Cover Letter explaining your motivation and suitability, including details of any prior research activities
- CV
- Undergraduate and master's grades and class rankings (if any)
- If relevant, English testing results, i.e. IELTS or TOFEL
- Details of two academic referees (including name, affiliation, and email address).

The closing date for applications is Friday 29th May 2026. Review of applications will begin immediately, so candidates are advised to apply as soon as possible.