

Assessing the response of the AMOC during times of abrupt climate change

Project Description

Our limited understanding of how the climate system will respond to future climate change is linked to the difficulty in constraining the response of the Atlantic Meridional Overturning Circulation (AMOC) during abrupt climate events. This project will investigate the response of the AMOC to a selection of abrupt transitions in climate that occurred during the last 500 kilo annum. This will allow us to identify triggers and thresholds that cause an abrupt change in the AMOC for different climate boundary conditions.

To achieve these goals, the successful candidate will perform sedimentological (sortable silt) analysis on marine sediments and geochemical ($\delta^{18}\text{O}$, Mg/Ca – palaeothermometry) measurements on foraminifera preserved in an exceptionally high resolution marine sediment core. A key methodological strategy of the project is to assess the climate response of the surface and deep branch of the AMOC within the same sediment samples to determine the structure, timing, and response of the AMOC during intervals of abrupt climate change.

Person Specification

Essential

- Undergraduate and/or postgraduate thesis in Palaeoceanography, Paleoclimatology, or related fields.
- Academic Excellence
- Good communication and writing skills
- Must be highly motivated
- The ability to work independently as well as in interdisciplinary research groups.

Desirable

- Previous laboratory experience using a dissecting microscope
- Comfortable using command driven software programmes (R, Matlab, etc.)
- Should have a suitable background in paleoclimatology or palaeoceanography, preferably based on sediment records.

NUI, Galway

Environmental Change Research Cluster / School of Geography & Archaeology

The Environmental Change Research Cluster brings together researchers who strive to improve our understanding of environmental systems with a focus on Marine & Coastal Sciences. The consistent theme that integrates the research is the challenge of mapping spatial and temporal variability of natural systems and measuring the impact of climate



change and human activities on their health and resilience at various scales. A driving motivation of our research cluster is the conviction that informed decision making must be based upon scientific data as we try to predict how these natural systems will respond to short- and long-term forcing.

A range of geographical perspectives and expertise are employed by our research cluster that can be grouped into three main categories (i) Climate Change (palaeoceanography, palaeoclimatology, palaeolimnology, historical climatology) (ii) Marine Litter & Environmental Pollution (microplastics in coastal, marine and benthic environments, environmental geochemistry, geographical information science (GIS)), and (iii) Coastal Geomorphology (process geomorphology, coastal dynamics, coastal and marine spatial planning, sediment transport, risk management, natural and environmental hazards). We are proud of our multi- and interdisciplinary approach, its international outlook, and its extensive network of collaborations with private and government organizations, linked to a strong research tradition. The research cluster's work is funded by national and international bodies, with graduate research and training as a core element.

Contact Information

Informal queries are welcome.

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