



Graduate Student Opportunities at Dalhousie University, Department of Oceanography, Nova Scotia, Canada

Positions for MSc/PhD students

Starting Date: January or May 2017

Qualifications: Bachelor of Science (B.Sc.) or equivalent in Earth Sciences, Ocean Sciences, Chemistry, Physics, or related field

1) Tracing Dust Input to the Global Ocean using Thorium Isotopes in Marine Sediments

Continental dust input into the ocean-atmosphere system has significant ramifications for biogeochemical cycles and global climate, yet direct observations of dust deposition in the open ocean remain scarce. The long-lived isotope thorium-232 is greatly enriched in upper continental crust compared to oceanic crust and mid-ocean ridge basalts. In conjunction with thorium-230, a constant flux tracer, thorium-232 measurements in marine sediments and sea-water are a promising new proxy to quantify dust and iron input in the modern and past ocean.

We are seeking graduate students interested in geochemistry and paleoclimate to participate in "THOROMAP", an international effort to build a new database of dust deposition in the global ocean. The successful applicants will carry out measurements of thorium isotopes in laboratories at Dalhousie University and partner institutions, using acid digestion, isotope dilution, and inductively coupled mass spectrometry (ICP-MS). Results will be directly compared to output from coupled climate models, such as CCSM4. Additional Qualification: geochemical laboratory experience (or willingness to obtain it).

2) Reconstructing Storminess and Sea Surface Temperatures in the northwest Atlantic over the last 2000 years

Storms are predicted to have an increasing impact on people, infrastructure, and eco-systems on the eastern coast of Canada and elsewhere. However, climate projections are inherently uncertain, in part due to the short extend of the instrumental record available to validate hind-casts. In the northwest Atlantic region, information on winds has only been systematically collected since 1955. However, marine sediments accumulating in selected locations on the Eastern Canadian shelf appear to hold valuable paleo climate information with respect to bottom water movement.

We are seeking graduate students interested in sediments and paleoclimate to participate in a project to extend the instrumental record of extreme storm events into the recent past. The successful applicants will work at Dalhousie University and partner institutions to investigate existing and new marine sediment cores for their suitability as paleo-storm archives, and to reconstruct sea surface temperature using alkenone biomarkers. This work will be combined with modern observations of storm-induced turbidity on the Scotian Shelf and an investigation of historical archives in Atlantic Canada.

General information on the graduate program in oceanography at Dalhousie can be found at

<https://www.dal.ca/faculty/science/oceanography/programs/graduate-studies.html>

Send direct inquires about these opportunities, along with a transcript and research statement (1 page max) to Stephanie Kienast at stephanie.kienast@dal.ca