



Climate Change in the Arctic – Fully funded MS opportunities

With support from the US National Science Foundation, we are recruiting two students for newly funded research projects in the Arctic – one in Greenland and the other in northeastern Canada. We are looking for people who are interested in how Earth has responded over time to a changing climate. Students will be part of a [vibrant and diverse graduate program](#) in the Rubenstein School of the Environment and Natural Resources at the University of Vermont and co-advised by Drs. [Paul Bierman](#) (UVM), [Jeremy Shakun](#) (Boston College), [Andrew Christ](#) (UVM), and [Nico Perdrial](#) (UVM). We strongly encourage people underrepresented in the Earth Sciences to join us including Black, Indigenous, and People of Color, women, LGBTQ+ folks, veterans, people with disabilities, and first generation college students. We strive for an equitable, safe, and positive research and learning community.

Students who work with us will have two full years of salary and tuition support including summers. They will have funds to attend professional meetings and publish their findings in peer-reviewed journals. Both students will be part of a team studying how climate changes affect our planet and be part of a school dedicated to studying Earth's environment over time. We plan for both students to join us as members of UVM's [Gund Institute for Environment](#). Both students will spend time in the [NSF/UVM Community Cosmogenic Facility](#).

Our hope is to recruit people to start their degrees in spring semester 2022 but will consider applicants for a June 2022 start. To reduce applicant costs and time investment, we'll be doing an initial screening of interested people and will then ask a short list of candidates to make a formal application to the [University of Vermont](#) and have a video chat interview. If you are interested in these opportunities, please fill out this preapplication [google form](#). Please reach out to us if you have questions about how to apply or need help with the application. We will start evaluating these pre-applications on October 15, 2021.

<https://forms.gle/Rt5sn1NijsvrXswPA>

Climate stories buried under Greenland's Ice Cap

Buried beneath a mile of ice in northwest Greenland are layers of ancient soil, kept in the deep freeze for millions of years. The last time this soil saw daylight was 400,000 years ago during a long period of warmth between glaciations. Plants from that time are preserved nearly perfectly and provide a glimpse into this ancient ecosystem. We seek a student whose research will focus on the chemistry of 23 samples of ancient soil collected in 1966 in the first deep ice core to reach the bottom of the Greenland Ice sheet. Together we will use a variety of chemical, physical, and isotopic techniques to characterize these buried soils including cosmogenic ^{10}Be analysis, scanning electron microscopy, mineral grain analyses, soil development, X-ray diffraction, soil water chemistry, as well as carbon and nitrogen concentrations and stable isotopes.



We are seeking a person who is comfortable in the laboratory and has had courses in chemistry as well as some undergraduate research experience. Suitable backgrounds could include degrees in chemistry, soil science, engineering, agriculture, earth science, natural resources, ecology, and mineralogy. There is no fieldwork involved although we hope (COVID willing) there will be international travel.

When the ice left Canada

For the last 3 million years, large ice sheets have repeatedly grown in northern Canada and spread southward over much of North America. They've left their mark on the landscape with smoothed bedrock and piles of sand and gravel we today mine to build roads. The same ice sheets, and the icebergs they generate, have carried countless tons of sediment out to deep ocean and dumped it there. This project aims to understand the multi-million year history of the ice that comes and goes across North America. We'll do that by sampling marine sediment cores and by understanding the eastern Canadian landscape that was repeatedly covered by ice. We seek a student to work with us in eastern Canada, collecting samples of river sand and bedrock over a several week field season. Once back at UVM, they will characterize these samples and prepare them for cosmogenic nuclide and chemical analysis.



We are seeking a person who is comfortable in both the laboratory and the field although we are ready to train the right person in both skill sets. Suitable backgrounds could include degrees in earth science, natural resources, engineering, environmental science, and geography. Interest in glaciers and landscape change over time would be helpful and some chemistry experience is needed. Undergraduate research experience is a plus. Fieldwork will involve some hiking but no extended backcountry stays (there are likely to be beds for most nights).