



Project acronym: GrAINFlux

Project title: Greenland Atmospheric Isotopic and Nutrient Fluxes

Project leader: Jonathan Martin, University of Florida, USA

Discipline: Earth Sciences & Environment: Water sciences/Hydrology

Station(s): Greenland Institute of Natural Resources (GINR) (Greenland)

The Greenlandic Ice Sheet (GrIS) currently covers approximately 75% of the land surface of Greenland and has been retreating across that surface since ~ 10.1-11.4 ka. This retreat created a glacial foreland with distinct environments and a gradation in exposure ages that can be evaluated to determine controls on the composition of terrestrial solute fluxes. The vast majority of research on solute fluxes from Greenland has focused on large proglacial rivers draining the melting ice sheet, but streams draining previously glaciated regions (herein referred to as non-glacial streams) are poorly characterized. Our research project thus aimed to evaluate terrestrial solute fluxes from non-glaciated portions of Greenland to better understand how these fluxes change over glacial-interglacial timescales as the proportion of proglacial and non-glacial streams varies. Constraining solute fluxes from non-glacial streams will improve predictive capability of impacts of climate change on Greenlandic and other high latitude ecosystems, with implications for carbon sequestration and delivery of nutrients to coastal waters. This work will contribute to depictions of terrestrial solute fluxes from previously glaciated landscapes as a function of underlying lithology, exposure age, and annual water balance. The results of this project will improve understanding of past terrestrial solute fluxes during glacial-interglacial cycles, as well as for future solute fluxes as the GrIS retreats.