



Project acronym: GLACTIC

Project title: Glacier-climate fingerprints of cooling events in the subarctic Atlantic

Project leader: Willem van der Bilt, University of Bergen, Norway

Discipline: Earth Sciences & Environment: Global change & Climate observation

Station(s): Rif Field Station (Iceland)

The Little Ice Age (LIA) is the most recent and severe of a series of high-amplitude climate oscillations that shaped the post-glacial North Atlantic climate. Marked by widespread glacier advances and frequent crop failures, this event affected both human society and natural ecosystems between ± 1200 and 1850 AD. While a string of studies has invoked numerous forcing mechanisms, the causes of the LIA and similar Arctic-Atlantic cooling events, remain unresolved. A paucity of empirical information restricts our ability to answer this question: written sources are fragmentary while paleoclimate data are sparse, scarce and often poorly dated. As similar natural climate variations may modulate future warming, this knowledge gap challenges the robustness of the projections that underpin climate policies. GLACTIC will address this pressing issue by utilizing the sensitivity of small alpine glaciers to climate change and the potential of down-stream lakes to capture this signal on human-relevant timescales. We apply to extract a glacier-fed lake sediment sequence from Skeiðsvatn in northern Iceland. Situated at the interface of key components of the Arctic-Atlantic climate system like the polar front and the meeting of Atlantic and Arctic waters, this area is highly sensitive to regional change. This project takes advantage of I) a cross-disciplinary team with existing expertise in all facets of the proposed work, II) state-of-the-art laboratory infrastructure at group leader's institute and III) comparison with existing Interact TA-funded work carried out by consortium members.