



Project acronym: ACT-RG

Project title: An active rock glacier in West Greenland – Deciphering its structure and landform evolution

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

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

Rock glaciers are prominent landforms in mountain regions. A first near-global rock glacier database lists c.73,000 rock glaciers. The formation period of such landforms lasts centuries to millennia whereas climate variability in such time scales is commonly high. Comprehensive understanding regarding incipient rock glacier formation and evolution, variations in nourishment rate and the ratio changes between ice and rock input over long-time spans are moderate. In Greenland, rock glaciers are studied since the 1980s focusing almost exclusively on Disko Island, central-west Greenland, and Zackenberg, north-east Greenland. Only very recently, the existence of an active rock glacier at the island of Bjørneø near Nuuk, south-west Greenland, was hypothesized. In ACT-RG we originally intended – and succeeded in 2021 – to substantially expand research activities at this rock glacier. The objectives of the present study at a local scale are to assess surface and subsurface structure, thickness, permafrost distribution, ice content, present horizontal and lateral displacement rates, and potential age and evolution of this rock glacier. On a regional spatial scale, we aim at contributing with our study to the permafrost knowledge and the knowledge regarding periglacial landscape evolution in south-west Greenland. To accomplish the objectives, we applied a series of field-based methods during a research stay in July 2021. These methods included various geophysical techniques (electrical resistivity tomography, ground penetrating radar), differential GPS, a relative surface dating approach (Schmidt-hammer), geomorphic mapping, clast form analysis, and finally manual and automatic monitoring of ground, air, and water temperatures. The comprehensive fieldwork at Bjørneø was carried out with the Interact station Greenland Institute of Natural Resources (GINR) as our base and their full support. Asiaq Greenland Survey logistically supported our research activities.