Paired and multi cosmogenic-nuclide data from two extreme locations with respect to the Last Glacial Maximum extent of the Scandinavian Ice Sheet

HENRIETTE LINGE[1]*, DAVID LUNDBEK EGHOLM[2], MADS FAURSCHOU KNUDSEN[2], JESPER OLSEN[3], LEWIS OWEN[4], MARC CAFFEE[5]

[1] Dept. of Earth Science, Univ. of Bergen, and Bjerknes Centre for Climate Research, Norway, (*correspondence: henriette.linge@uib.no)
[2] Dept. of Geoscience, Aarhus Univ., Denmark (david@geo.au.dk; mfk@geo.au.dk)
[3] Aarhus AMS Centre/Dept. of Physics and Astronomy, Aarhus Univ., Denmark (jesper.olsen@phys.au.dk)
[4] Dept. of Geology, Univ. of Cincinnati, USA (lewis.owen@uc.edu)
[5] Dept. of Physics and Astronomy/PRIME Laboratory, Purdue Univ., USA (mcaffee@purdue.edu)

Andøya (69°N, 16°E, 0-705 m a.s.l.) and Rendalssølen (61°N, 11°E, 900-1755 m a.s.l.) in Norway are two areas situated at extreme locations with respect to the Last Glacial Maximum extent of the Scandinavian Ice Sheet (SIS). The island Andøya was at the NW SIS margin, whereas the inland mountain massif Rendalssølen was beneath the SIS ice divide. Bedrock surfaces at both sites give apparent ^{10}Be and ^{26}Al surface exposure ages older than the timing of the last deglaciation. Erosion rates based on Markov Chain Monte Carlo modelling of ^{26}Al and ^{10}Be will be presented.

The island Andøya is located between the 500-m-deep Andfjorden and the shelf. The short (8-15 km) distance to the shelf-break has implications with regard to ice-sheet boundary conditions. The sampled bedrock surfaces at Andøya mainly give ^{10}Be ages of 35-50 ka, and ^{10}Be and ^{26}Al ages overlap. A handful of ^{36}Cl analyses from some of these surfaces provides corroborating information. Analysis of in situ ^{14}C is expected to shed light on erosion and exposure histories at this coastal location.

Rendalssølen is an isolated mountain massif protruding the Femunden mountain plateau (600-1000 m a.s.l.). The region has experienced limited glacial erosion, as indicated by few deep glacial valleys and widespread regolith cover; this is usually explained as a result of cold-based glaciers and proximity to the ice divide. At Rendalssølen, the ^{10}Be age range for glacial erratics is 10-16 ka and 10-130 ka for bedrock surfaces, where ^{10}Be ages typically are 5-20 % older than ^{26}Al ages. Analysis of in situ ^{14}C has the potential to determine time and rate of ice-sheet surface lowering in this region.