

Pre-LGM sea levels in northern Svalbard

Helena Alexanderson^a, Astrid Lyså^b, Mark F. A. Furze^c and Anders Schomacker^d

^aDepartment of Geology, Lund University, Lund, Sweden, helena.alexanderson@geol.lu.se; ^bGeological Survey of Norway, Trondheim, Norway, astrid.lysa@ngu.no; ^cArctic Geology, University Centre in Svalbard, Longyearbyen, Svalbard, markf@unis.no; ^dDepartment of Geosciences, UiT the Arctic University of Tromsø, Tromsø, Norway, anders.schomacker@uit.no

Past sea level changes reflect changes in climate, ice sheet volume and crustal movements and by reconstructing past sea level variations, inferences about all these factors can be made. The post-glacial sea level history is well known on Svalbard but relative sea levels prior to the Last Glacial Maximum (LGM) are less constrained, both in time and elevation.

Raised littoral and marine deposits older than the Last Glacial Maximum have been documented in many places on Svalbard and reliably dated at some sites. Six or seven high relative sea-level events during the last 200 000 years have thereby been identified, but some of them are not well constrained in time. Of particular interest are deposits from Marine Isotope Stage 3 (ca 57-29 ka), an interstadial with small ice sheets and relatively high sea level. Deposits from this time are being studied both on land and in the sea to investigate how climate and sea-level change affected both terrestrial and marine environments, including glaciation, methane release and submarine slumping.

Here we present luminescence and radiocarbon ages and descriptions of mainly raised littoral deposits from several sites on NW and NE Spitsbergen as well as on Sjuøyane. The samples were taken from coastal cliffs, river sections, ridges, deltas and terraces and the results add to the existing chronology of high relative sea-level events in northern Svalbard.