

Provenance of glacial sediments by detrital geochronology from Kapp Ekholm, Svalbard

F. JOHANSSON*¹, T. ZACK¹, Ó. INGÓLFSSON^{2,3} & A. HORMES¹

¹*Department of Earth Sciences, University of Gothenburg, Box 460, 40530, Guldhedsgatan 5A, SWEDEN (*correspondence: filip.johansson@student.gu.se)*

²*University Centre in Svalbard, Longyearbyen, NORWAY*

³*University of Iceland, Reykjavik, ICELAND*

This study aims to present inter-comparative provenance data from the Saalian to Late Weichselian till units preserved in the Kapp Ekholm stratigraphy, located in inner Isfjorden on the west coast of Svalbard.

Here we attempt to distinguish sediment sources by coupling individual detrital grains to geochronological data. In recent years the paradigm of ice sheet behavior has shifted towards the concept of highly dynamic fast flowing ice-streams with inactive inter-ice-stream areas. Northern hemishperic ice sheet configurations are known to have differed considerably throughout the late Quaternary (Svendsen et al. 2004), and probably shifted to more channeled erosive regimes constrained to fjord settings in the mid-Pleistocene (Gjermundsen et al. 2015). Lack of preserved landforms leaves reconstructions of older glacial cycles contingent on data from preserved glacial sediments. Provenance data from this study might yield information reflecting distinct ice flow patterns, while providing a testing ground for geochronological provenance studies.

Recent advancements in LA-ICP-MS enables ⁸⁷Rb/⁸⁷Sr geochronology without prior isotopic separation and sample dissolution (Zack et al. this conference). In-situ ⁸⁷Rb/⁸⁷Sr geochronology may provide a key provenance tool for reconstructing ice flow dynamics throughout the Pleistocene, and should also be applicable within similar sedimentological contexts.

References:

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