



LUND UNIVERSITY

Deglaciation history and subsequent lake dynamics in the Siljan region, south-central Sweden - LiDAR evidence and sediment records

Möller, Per; Björck, Svante; Dowling, T.P.F.; Hammarlund, Dan; Jakobsson, Martin; Ljung, Karl; Lund, Martin; Paradeisis-Stathis, Savvas

2024

Document Version:

Publisher's PDF, also known as Version of record

[Link to publication](#)

Citation for published version (APA):

Möller, P., Björck, S., Dowling, T. P. F., Hammarlund, D., Jakobsson, M., Ljung, K., Lund, M., & Paradeisis-Stathis, S. (2024). *Deglaciation history and subsequent lake dynamics in the Siljan region, south-central Sweden - LiDAR evidence and sediment records*. Abstract from Nordic Geological Winter Meeting, Göteborg, Sweden.

Total number of authors:

8

General rights

Unless other specific re-use rights are stated the following general rights apply:

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

Read more about Creative commons licenses: <https://creativecommons.org/licenses/>

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

LUND UNIVERSITY

PO Box 117
221 00 Lund
+46 46-222 00 00

Deglaciation history and subsequent lake dynamics in the Siljan region, south-central Sweden - LiDAR evidence and sediment records

Per Möller^a, Svante Björck^{a†}, Thomas P.F. Dowling^b, Dan Hammarlund^a, Martin Jakobsson^c, Karl Ljung^a, Martin Lund^d, Savvas Paradeisis-Stathis^e

^aDepartment of Geology/ Quaternary Sciences, Lund University, Sweden (per.moller@geol.lu.se); ^bSchool of Environment, University of Auckland, New Zealand; ^cDepartment of Geological Sciences, Stockholm University, Sweden; ^dDepartment of Geosciences, University of Oslo, Norway, ^eDepartment of Crop, Soil, and Environmental Sciences, Auburn University, USA

The Siljan region hosts Europe's largest impact structure. The high-relief landscape, with a central granite dome bordered by lake basins, contains an array of glacial and shore-level landforms. We investigated its deglaciation history by mapping and analysing landforms on high resolution LiDAR-based Digital Surface Models coupled with well-dated sediment successions from peat and lake sediment cores. The granite dome and bordering areas are characterized by streamlined terrain and ribbed moraine with a streamlined overprint. These suggest an ice-flow direction from NNW with wet-based thermal conditions prior to deglaciation. During its retreat, the ice sheet was split into thinner plateau ice and thicker basin ice. Sets of low-gradient glaciofluvial erosion channels suggest intense ice-lateral meltwater drainage across gradually ice-freed slopes, while 'down-the-slope' erosion channels and eskers show meltwater drainage from stagnated plateau ice. Thick basin ice receded with a subaqueous margin across the deep Siljan–Orsasjön Basin c. 10,700–10,500 cal. BP. During ice recession the ingression of the Baltic Ancylus Lake led to diachronous formation of highest shoreline marks, from ~207 m in the south to ~220 m a.s.l. in the north. Differential uplift resulted in shallowing of the water body, which led to the isolation of the Siljan–Orsasjön Basin from the Baltic Basin at c. 9800 cal. BP. The post-isolation water body – the 'Ancient Lake Siljan' – was drained through the ancient Åkerö Channel with a water level at 168–169 m a.s.l. during c. 1000 years. A later rerouting of the outlet to the present course was initiated at c. 8800 cal. BP, which led to a lake-level lowering of 6–7 m to today's level of Lake Siljan (~162 m a.s.l.). This study shows the strength of an integrated methodological approach for deciphering the evolution of a complex landscape, combining highly resolved geomorphological analysis with well-dated sediment successions.