EGU2020-334
https://doi.org/10.5194/egusphere-egu2020-334
EGU General Assembly 2020
© Author(s) 2021. This work is distributed under
the Creative Commons Attribution 4.0 License.

Deglaciation of the Kola Peninsula, Arctic Russia, during the Last Glacial-Interglacial Transition

Benjamin Boyes[1], Lorna Linch[1], and Danni Pearce[2]
[1]University of Brighton, School of Environment and Technology, United Kingdom of Great Britain and Northern Ireland
[2]University of Hertfordshire, Department of Biological and Environmental Sciences, United Kingdom of Great Britain and Northern Ireland

The glacial history of the Kola Peninsula, northwest Arctic Russia, during the Last Glacial-Interglacial Transition (LGIT; c. 18-10 ka) is poorly understood, with some researchers suggesting that the region was glaciated by the Fennoscandian Ice Sheet (FIS; e.g. Hughes et al., 2016), and others suggesting that it was glaciated by an independent Ponoy Ice Cap (e.g. Astakhov et al., 2016). Furthermore, it is unclear if and where there was a periodic ice standstill during the Younger Dryas (c. 12.9-11.7 ka) cold stadial. This is the largest sector of Fennoscandia where glaciation is poorly constrained, which stems from low resolution geomorphological mapping, a lack of sedimentary analyses, and limited dating of glacial landforms and deposits on the Kola Peninsula.

Initial interpretations of geomorphological mapping and sedimentological analyses are presented. High resolution geomorphological mapping has, so far, demonstrated that the Kola Peninsula was glaciated by the FIS, which flowed from the Scandinavian mountains in the west and across the shield terrain of the Kola Peninsula, and not an independent Ponoy Ice Cap, as indicated by the west-east orientation of glacial lineations (e.g. drumlins, crag and tails, mega-scale glacial lineations), moraines, and meltwater channels. Up to four ice streams located in the western Kola Peninsula and the White Sea demonstrated in the glacial lineation record have also been identified. Furthermore, the Younger Dryas margin is proposed to be aligned north-south across the Kola Peninsula, flowing around the Khibiny Mountains, and forming an ice lobe in the White Sea, which is demonstrated by the moraine and meltwater landform assemblage. Moraines and lateral meltwater channels also suggest the Monche-tundra Mountains were exposed as nunataks, and that there were independent cirque and valley glaciers in the Lovozero and Khibiny Mountains at the periphery of the FIS during the Younger Dryas. In addition, glaciotectonised sediments identified in sedimentary analyses indicates the FIS underwent sustained readvances during retreat. This research will provide crucial empirical data for validating numerical model simulations of the FIS, which in turn will further our understanding of (de)glacial dynamics in other Arctic, Antarctic, and Alpine regions.

Astakhov, V., Shkatova, V., Zastrozhnov, A. and Chuyko, M. (2016). Glaciomorphological map of the

Russian Federation. *Quaternary International, 420*, pp.4-14.

Hughes, A.L., Gyllencreutz, R., Lohne, Ø.S., Mangerud, J. and Svendsen, J.I. (2016). The last Eurasian ice sheets - a chronological database and time-slice reconstruction, DATED-1. *Boreas, 45*(1), pp.1-45.