

EGU2020-17484

<https://doi.org/10.5194/egusphere-egu2020-17484>

EGU General Assembly 2020

© Author(s) 2020. This work is distributed under the Creative Commons Attribution 4.0 License.



Subglacial Drainage Routes of the Last Scandinavian Ice Sheet

Nico Dewald¹, Chris D. Clark¹, Stephen J. Livingstone¹, Jeremy C. Ely¹, and Anna L.C. Hughes^{2,3}

¹Department of Geography, University of Sheffield, Sheffield, United Kingdom (ndewald1@sheffield.ac.uk)

²Department of Geography, University of Manchester, Manchester, United Kingdom

³Department of Earth Science, University of Bergen and Bjerknes Centre for Climate Research, Bergen, Norway

The configuration of subglacial drainage systems has a major impact on the dynamics of ice sheets. However, the logistical challenges of measuring subglacial processes beneath contemporary ice sheets hinder our understanding about the spatio-temporal evolution of subglacial drainage systems. Furthermore, today's observations on contemporary ice sheets are inherently limited to a short period within the process of deglaciation. Landforms generated by the flow of meltwater at the ice-bed interface offer the potential to study both large-scale (10^3 - 10^6 km²) and long-term (10^3 - 10^5 a) developments of subglacial drainage networks beneath past ice sheets. Despite collectively recording subglacial drainage, individual meltwater landform types such as eskers, meltwater channels and tunnel valleys, and hummock corridors have mostly been considered as separate entities. Using high-resolution (1-2 m) DEMs, we summarise the suite of interconnected subglacial meltwater landforms into a common drainage signature herein called a subglacial drainage route. Our integrated map of subglacial meltwater landforms presents the large-scale distribution of major subglacial drainage routes across Scandinavia and provides a basis for future research about the long-term evolution of subglacial drainage networks and its effect on ice dynamics of the Scandinavian Ice Sheet.

How to cite: Dewald, N., Clark, C. D., Livingstone, S. J., Ely, J. C., and Hughes, A. L. C.: Subglacial Drainage Routes of the Last Scandinavian Ice Sheet, EGU General Assembly 2020, Online, 4–8 May 2020, EGU2020-17484, <https://doi.org/10.5194/egusphere-egu2020-17484>, 2020