

EGU21-691

<https://doi.org/10.5194/egusphere-egu21-691>

EGU General Assembly 2021

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



## Deglaciation of the central sector of the Cordilleran Ice Sheet in northern British Columbia

**Helen Dulfer** and Martin Margold

Department of Physical Geography and Geoecology, Faculty of Science, Charles University in Prague, Czech Republic

The Cordilleran Ice Sheet (CIS) repeatedly covered western Canada during the Pleistocene and attained a volume and area similar to that of the present-day Greenland Ice Sheet at the Last Glacial Maximum. Numerical modelling studies of the CIS during the last glacial-interglacial cycle indicate the central sector of this ice sheet, located in mountainous northern British Columbia, played an important role during both the advance and retreat phases. Additionally, the models indicate that the rapid climate oscillations at the end of the Pleistocene had a dramatic effect on the CIS. The abrupt warming at the onset of the Bølling-Allerød caused significant thinning of the ice sheet, resulting in a fifty percent reduction in mass, while the subsequent cooling caused the expansion of alpine glaciers across the former central sector of the CIS. However, the mountainous terrain and remote location have thus far impeded our understanding of this important region of the CIS, and the ice sheet configuration during the Late Glacial remains poorly constrained.

Here we use the glacial landform record to reconstruct the deglaciation dynamics of the central sector of the CIS during the Late Pleistocene climate reversals. Numerous high elevation meltwater channels suggests the early emergence of mountain peaks above the ice sheet and the configuration of ice marginal landforms, particularly lateral meltwater channels, eskers, kame terraces and ice-contact deltas, allows the westward retreat of the ice margin to be traced towards ice dispersal centres in the Skeena and Coast mountains. Hundreds of arcuate, sharp-crested terminal moraines delineate the extent of alpine glaciers, ice caps and ice fields that regrew on mountain peaks above the CIS and numerical dating indicates that this readvance occurred during the Late Glacial period. Additionally, at some locations, cross-cutting relationships preserve the interaction of the local readvance glaciers with the trunk glaciers of the CIS, allowing the extent of the central sector of the CIS during the Late Glacial period to be reconstructed for the first time.