



## **Laurentide Ice Sheet basal temperatures at the Last Glacial Cycle as inferred from borehole data**

Jean-Claude Mareschal (1), Carolyne Pickler (2), and Hugo Beltrami (3)

(1) GEOTOP, UQAM, Montreal, Canada (mareschal.jean-claude@uqam.ca), (2) GEOTOP, UQAM, Montreal, Canada (pickler.carolyne@courrier.uqam.ca), (3) St Francis Xavier University, Antigonish, NS, Canada (diablo.stfx@gmail.com)

We measured and inverted thirteen temperature-depth profiles ( $\geq 1500$  m) in boreholes in eastern and central Canada to determine the ground surface temperature histories during and after the last glacial cycle. The sites are located in the southern part of the region covered by the Laurentide Ice Sheet. The inversions yield ground surface temperatures ranging from  $-1.4$  to  $3.0^{\circ}\text{C}$  throughout the last glacial cycle. These temperatures, near the pressure melting point of ice, demonstrate that the southern portion of the Laurentide Ice Sheet was not frozen to the bed, allowing for basal flow and fast flowing ice streams at the base. Despite such conditions, which have been inferred from geomorphological data and models, the ice sheet persisted throughout the last glacial cycle. Our results suggest some regional trends in basal temperatures with possible control by internal heat flow.