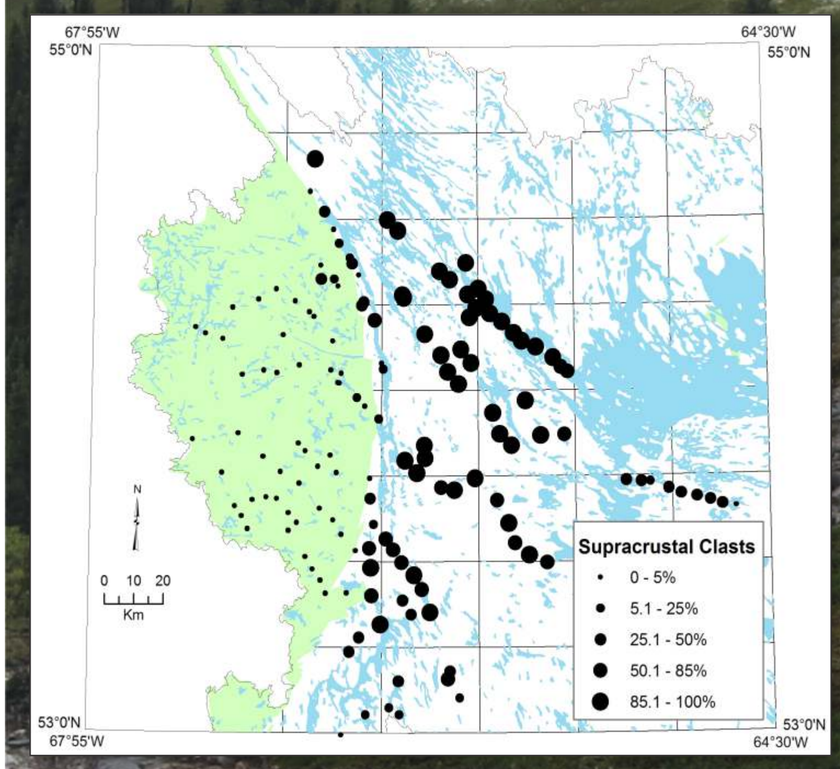
Esker sampling, western Labrador

Newfoundland Labrador
Natural Resources

In 2012, the Geological Survey conducted a reconnaissance esker-sampling program in western Labrador. The program was prompted by the perceived potential for kimberlites in the Archean Ashuanipi Complex. However, eskers offer an effective method of regional prospecting for a variety of base- and precious-metal mineralization, as well as diamonds.

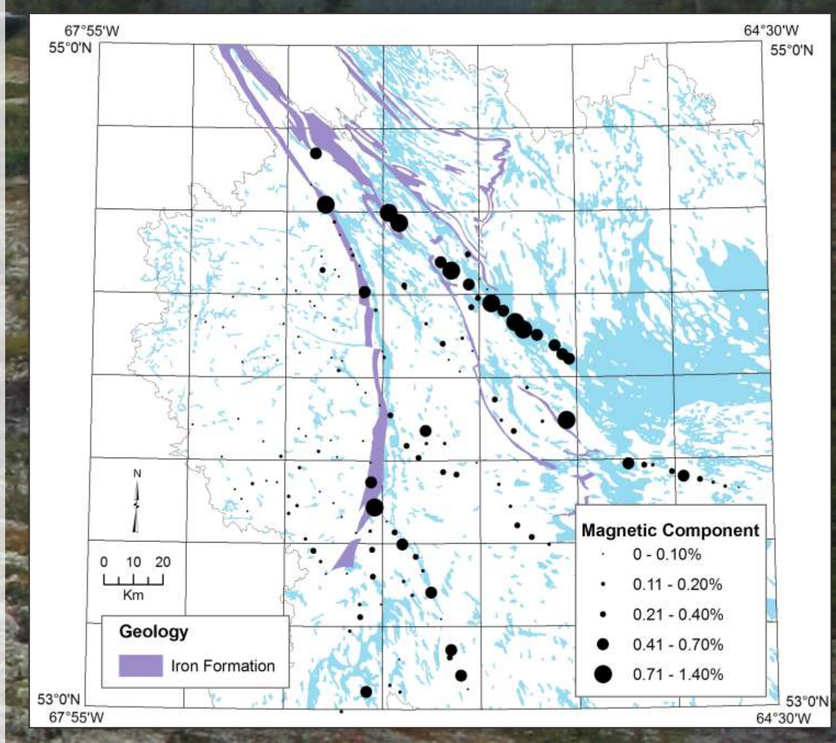
The eskers' gravelly ridges were sampled because heavy minerals tend to concentrate in the gravelly facies, which also records a more proximal provenance signal.

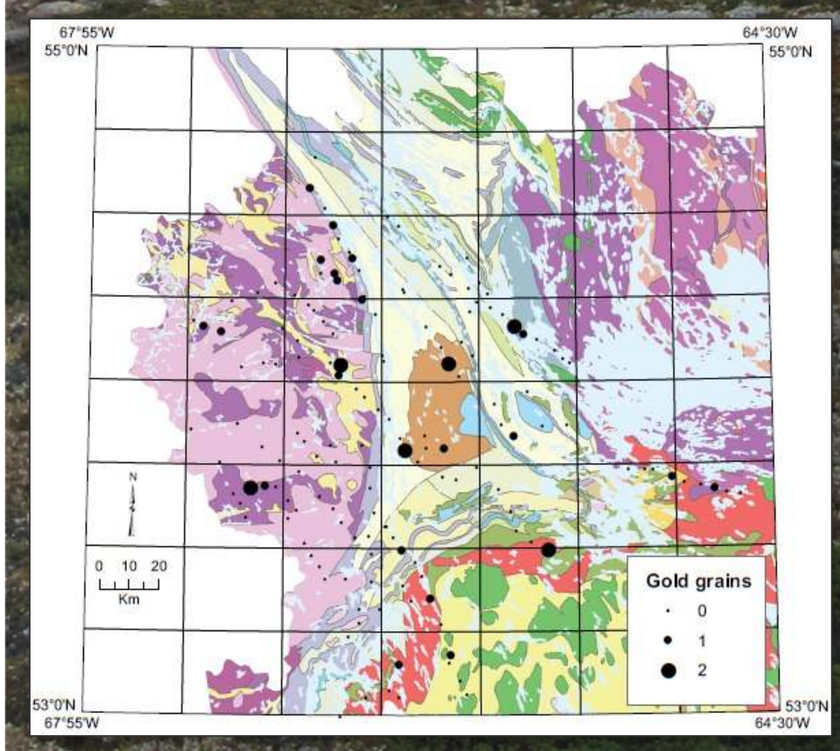
The primary control on the length of an esker's dispersal train is the length of the underlying till dispersal train that the esker crosses.



The Superior Province, in the west, comprises plutonic rocks of the Ashuanipi Complex. The Churchill Province is represented by the Labrador Trough, a sequence of Proterozoic supracrustal rocks overlying the Ashuanipi Complex unconformably, and by mostly Archean granites and gneisses to the east. Diverse metamorphic rocks of the Grenville Province crop out to the south.

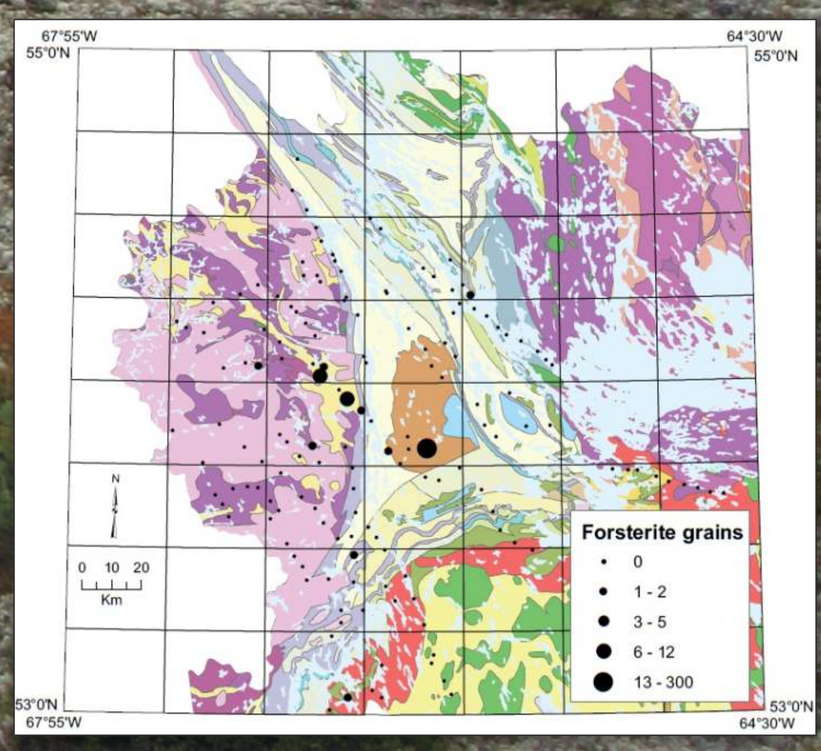
The relative content of supracrustal clasts in the esker gravels increases sharply east of the contact between the Ashuanipi Complex and the younger rocks of the Labrador Trough.

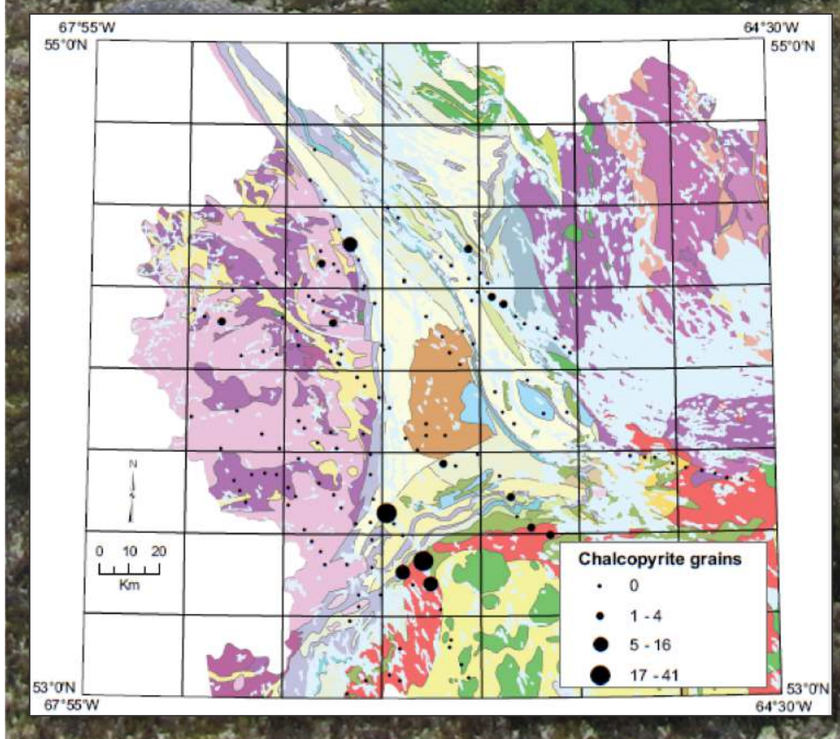




Heavy minerals identified in the processed 2012 esker samples include native copper, gold, pyrite, chalcopyrite and barite.

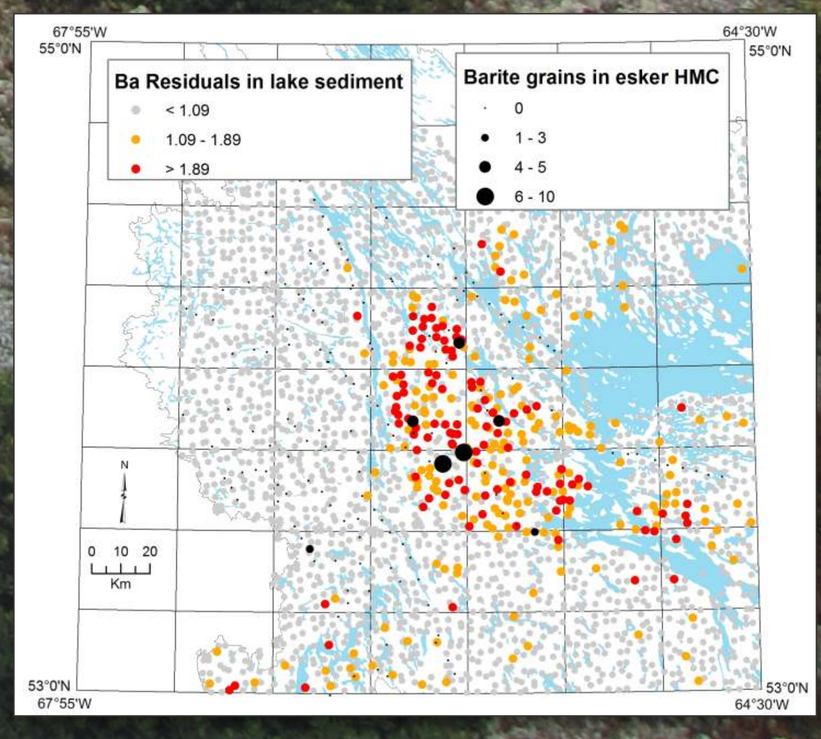
Kimberlite-indicator minerals (KIMs) are scarce; forsterite was detected in one esker system whose source appears to be in the Ashuanipi Complex, but it is unaccompanied by other KIMs and is not believed to be kimberlite-derived, although its precise bedrock source remains unknown.





The presence of barite in esker heavy-mineral concentrates shows a close spatial association with high regression-residual Ba content in lake sediments. Their source probably lies in sedimentary rocks of the arenaceous Tamerack River Formation (Simms Group) or argillaceous Menihek Formation (Upper Knob Lake Group) of the Labrador Trough.

The presence of gahnite (Zn-spinel) in another nearby esker sample suggests a co-association in Sedex-type mineralization.



Reference: Brushett, D. and Amor, S., 2013: Kimberlite-indicator mineral analysis of esker samples, western Labrador. Government of Newfoundland and Labrador, Department of Natural Resources, Geological Survey, Open File LAB/1620, 58 pages.