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Proposal to climate center for provenance transect of Ungava tills

Introduction: Heinrich layers have been clearly demonstrated to come from the region around Hudson Strait (Hemming, review paper in review). However, Heinrich layer H3 (and H6, although that is not as well characterized) are different from the massive layers, H1, H2, H4 and H5. It has been proposed by Kirby and Andrews (1999) that ice flowed across Hudson Strait during the Younger Dryas and H3, and along the strait during H1, H2, H4 and H5. The basement geology of Ungava suggests there should be ways of testing these two scenarios with provenance studies. In particular sources from the Minto Block of the Superior Province and from the Labrador Trough would have been overridden if glacial flow was through Ungava Bay. Additionally, Greg Downing is finding that the IRD peaks in Stage 6 do not appear to have the same magnetic susceptibility (and thus presumably not the same provenance) as those of the last glacial Heinrich events (Downing et al., 2003). These observations raise some important questions: How many kinds of “Heinrich layers” are there? Do they all come from this region and the differences are based on local changes in the flow path? A survey of provenance components in the region that is clearly key in the last glacial cycle should help to answer some of these questions.