Ice Flow History and Surficial Geochemistry, Huckleberry Mine Area
A Drift Exploration Case Study

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Model

IModel
- why Huckleberry Mine area?
- large number of overburden samples were collected by Huckleberry Mines Ltd., from surface to bedrock, using a Becker Hammer drill rig
- the type and distribution of mineralization in bedrock is well understood
- there is an extensive and thick mantle of Quaternary sediments and good access

Implications for Exploration
- results will provide guidance on interpreting till geochemical data, and aid in identifying the bedrock source of anomalous till samples, for companies working in west-central British Columbia
- results will suggest strategies on design and implementation of drill exploration programs in areas with similar physical and geological characteristics, and glacial histories

Objective
- develop a new ice-flow model for west-central British Columbia for the late Wisconsinan (last glaciation)
- model glacial dispersal of mineralization in till by investigating the three-dimensional geometry of dispersal plumes

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Summary of Ice Flow Study
- the region has a complex glacial history with two dominant ice flow directions (40°-01° and 236°-265°)
- evidence for both flow directions is commonly observed on opposite sides of single outcrops, especially in valley settings, and field data show different flow directions than airphoto landform interpretations
- high elevation sites (>1500 m) generally show only westerly flow
- west to southwest ice flow dominated during the Fraser Glaciation maximum, followed by a weaker, possibly shorter lived, east to northeast ice flow event (Ferbey and Levson, 2001a, 2001b)
- results agree with those discussed by Levson et. al. (1998, 1999), and Stumpf et al. (2000), suggesting the presence of an ice dome in central British Columbia during Fraser Glaciation maximum

Results to Date
- Accurate interpretations of ice flow history in west-central British Columbia, require field investigations as well as airphoto interpretation
- Westward ice flow dominated during the Fraser Glaciation maximum in the region. A later easterly flow occurred when the ice surface lowered to elevations below ~1500 m
- Surface till samples are highly anomalous in the vicinity of ore zones and elevated west of the mineralization suggesting mainly westward glacial dispersal
- Becker Hammer borehole samples show substantial vertical variability possibly due to shifts in ice flow direction
- 1351 ppm Cu 1.5 km west of Main Zone, may indicate buried mineralization there

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References