Ministry of Energy, Mines and Natural Gas
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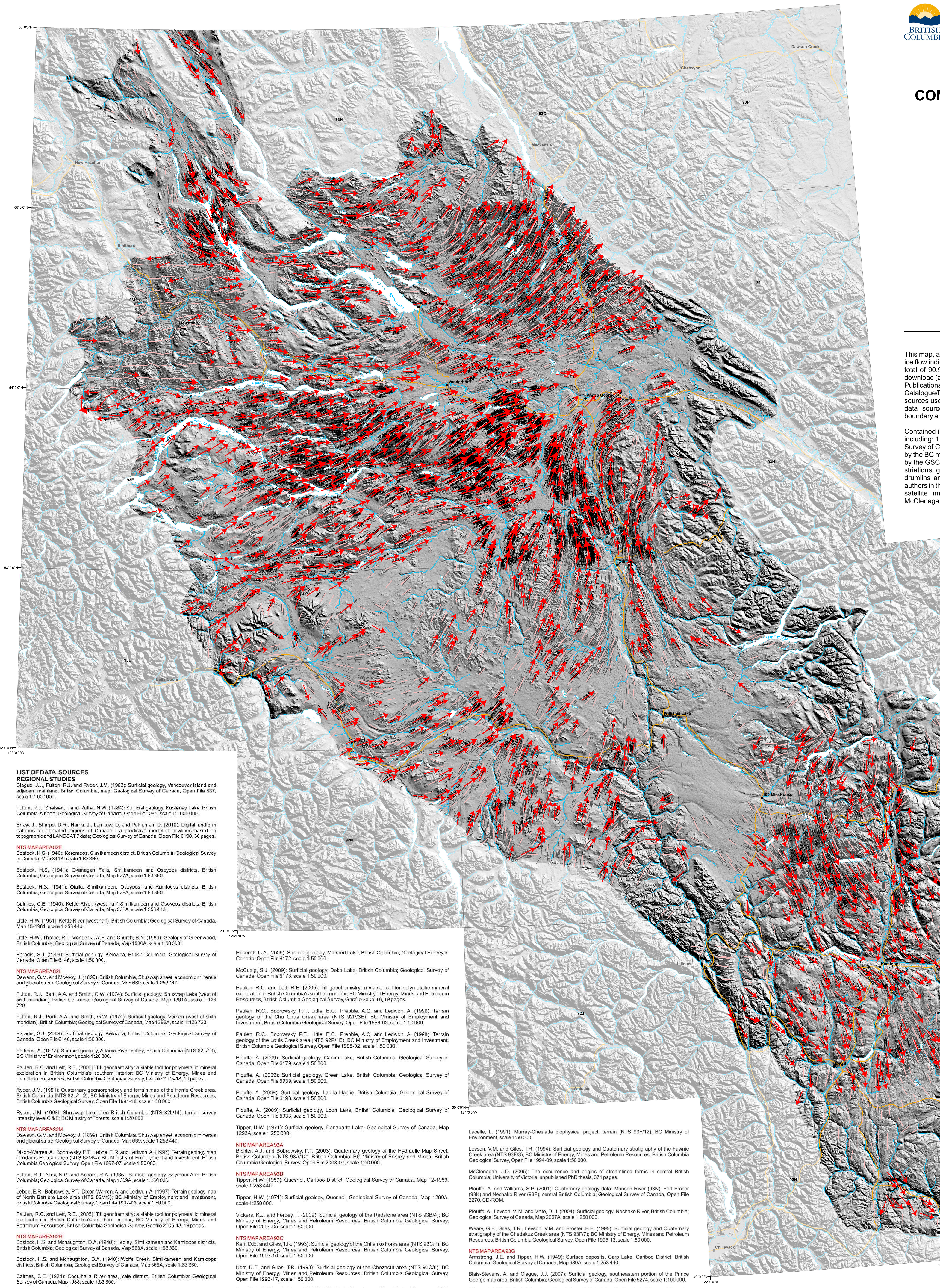
COMPILATION OF MICRO- TO MACRO-SCALE ICE-FLOW INDICATORS FOR THE INTERIOR PLATEAU, CENTRAL BRITISH COLUMBIA

T. Ferbey and H. Arnold



0 25 50 100 150 200 Kilometres

Scale 1:900,000

ICE-FLOW INDICATORS

Generalized regional ice-flow
- Ice flow direction derived from unidirectional indicators
- Ice flow direction derived from bidirectional indicators

Unidirectional indicators
- Crag-and-tail
- Drumlin
- Fluted bedrock
- Striation

Bidirectional indicators
- Drumlinoid or fluting
- Fluted bedrock
- Striation or groove

This map, and the accompanying database, is a compilation of micro- to macro-scale ice flow indicators for the Interior Plateau physiographic region of British Columbia. A total of 90,960 ice-flow features have been digitally captured and are available for download (as an ESRI shapefile) from the British Columbia Geological Survey (BCGS) Publications Catalogue (http://www.empr.gov.bc.ca/Mining/Geoscience/Publications Catalogue/Pages/ default.aspx). Included in the map is a referenced list of data sources used in this compilation (organized by geographic area). Points from these data sources that fall outside Holland's (1976) Interior Plateau physiographic boundary are not included.

Contained in the compilation are 41,515 features captured from a variety of sources including: 1) surficial geology and glacial features maps published by the Geological Survey of Canada (GSC) and BCGS; 2) surficial geology and terrain maps published by the BC ministries of Environment and Forests; 3) bedrock geology maps published by the GSC; and 4) unpublished sources. Features include erosional forms such as striations, grooves, crag and tails, fluted bedrock, and constructional forms such as drumlins and flutings. The features were observed and recorded by the source authors in the field, or in aerial photographs or digital elevation models; only rarely was satellite imagery used. An additional 48,127 features were captured from McClenagan's (2005) study of features in SPOT and Landsat data. These data are not shown in the map (due to a disproportional increase in data density for the area included in the study) but are included in the digital database.

Each data point in this map represents the location of a unidirectional or bidirectional ice-flow indicator. The orientation of the symbol is based on the azimuth orientation of the feature as mapped by the original author. All features are classified into a common legend using definitions and symbols outlined by Deblonde et al. (2012). Data density is largely a function of the original scale of mapping with larger-scale mapping being more likely to produce higher densities of features. For example, in a 1:50,000-scale map individual landforms may be identified in highly druminlized or fluted terrain. Similar terrain in 1:250,000-scale map may be generalized with a few map symbols. It should also be noted that there are regions in the Interior Plateau were mapping has not occurred, and consequently, no features are available for this compilation (e.g., eastern half of NTS 093A, southwest corner of NTS 093I).

These data have been summarized so that regional ice flow trends can be more clearly depicted. Summary vectors were generated using an 8 km grid (Figure 1). The mean azimuth of all unidirectional ice-flow indicators within each grid cell was calculated. If the azimuth range was >90°, a median value was calculated instead. A new data point was created in the grid cell at the data-cluster-centre and the calculated mean (or median) azimuth value for the grid cell was assigned to it. The size of the resultant vector (red arrow) is proportional to the number of unidirectional ice-flow indicators within the grid cell (see main map). A similar calculation was performed on bidirectional ice-flow indicators. The size of the resultant pink bar is proportional to the number of bidirectional ice-flow indicators within the grid cell (see main map).

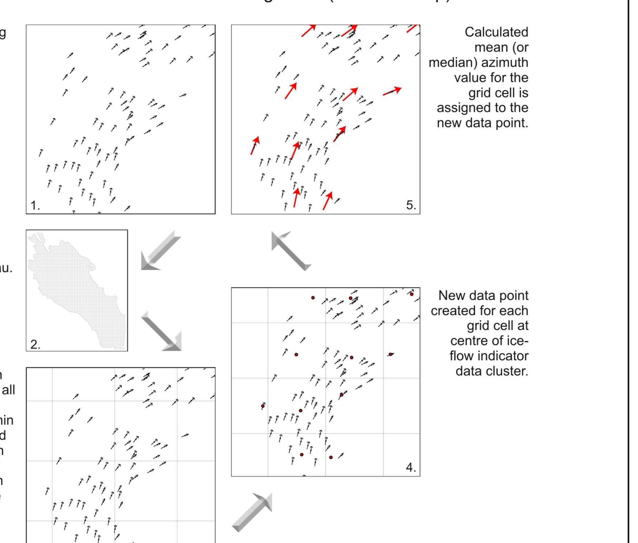


Figure 1. Creation of generalized ice flow directions.

This compilation will be of interest to those who are seeking to understand ice flow histories, a critical parameter for interpreting geochemical and mineralogical data from glacially transported sediments or designing and implementing a drift prospecting survey. These data will also benefit researchers who are more generally interested in landscape interactions of the Cordilleran ice sheet during the Late Pleistocene and the locations and evolution of ice divides.

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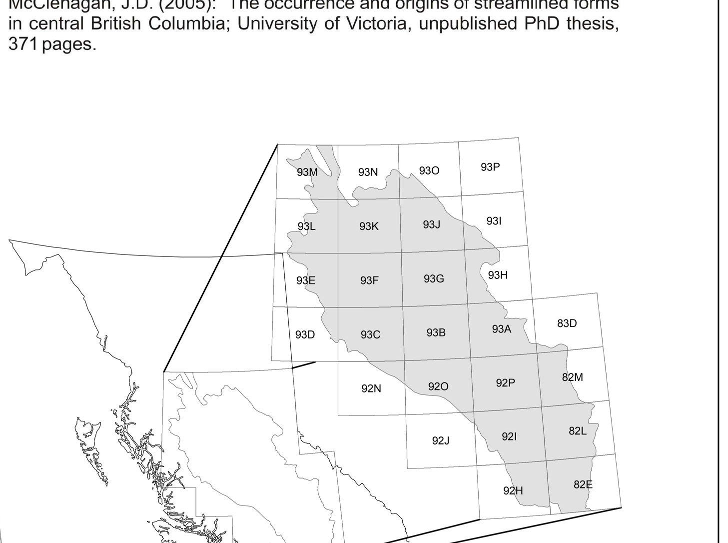

North American Datum 1983
Albers Equal Area Conic projection
Shuttle Radar Topography Mission (SRTM) DEM, 3 arcsecond (90 m) resolution

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