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# **Glacial dispersal trains in Arctic Canada**

**D.I. Cummings<sup>1,2,3</sup>, A.L. Bergen<sup>1</sup>, M.D. Pyne<sup>1</sup> and H.A.J. Russell<sup>1</sup>**

<sup>1</sup>Geological Survey of Canada, 601 Booth Street, Ottawa, Ontario K1A 0E8

<sup>2</sup>DCCGeosciences 31 Chemin Rivermead, Gatineau, Quebec J9J 1H3

<sup>3</sup>Department of Earth Sciences, Carleton University, 1125 Colonel By Drive, Ottawa, Ontario K1S 5B6

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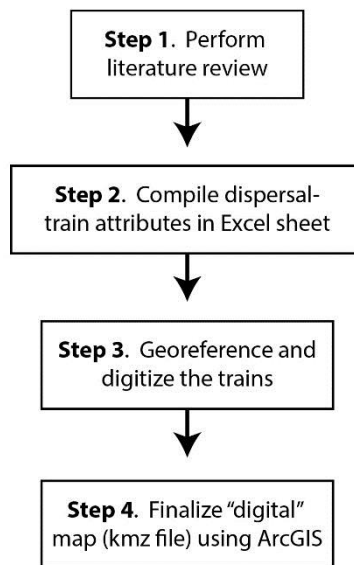
## INTRODUCTION

A map depicting 52 till dispersal-trains from across Arctic Canada has been synthesized from published literature (see Appendix 1: Source References). It expands on previous maps (Cummings, inpress; Cummings and Russell, 2018) in that it depicts heterogeneity within trains (e.g., concentration contours), shows the limits of sampling for each train, and includes additional information on the trains. More complete information on the process employed is available in Cummings and Russell (2018). The map is published as a digital file (kmz file) designed to be opened in GoogleEarth, a free, readily available software program. It can also be opened using specialized software (e.g., ArcGIS).

## METHOD

The map was constructed in several steps (Figure 1).

- (1) The literature was searched, portions of the grey literature notwithstanding (e.g., mineral assessment reports). Trains with mapped bedrock sources were identified and scanned, and saved as jpg files.
- (2) The attributes of the dispersal trains were compiled in an Excel sheet.
- (3) The scanned images (jpg files) were georeferenced in ArcGIS. The outlines of dispersal trains and their bedrock sources were traced in ArcGIS, generating polygons. Information from the dispersal-train Excel sheet was loaded into ArcGIS.
- (4) The final “digital” map (kmz file), which depicts bedrock source and dispersal train polygons, was generated using ArcGIS.



*Figure 1. Protocol followed to generate the map.*

## HOW TO USE THE MAP

- Opening the map. To open the map, click on the kmz file (Appendix 1). (GoogleEarth must be loaded on your computer.)

- Perusing the trains. To peruse trains, click the names of the trains in the “Places” column. (This is the best way to peruse the small trains.) Alternatively, simply pan around and zoom in and out. The name of the train can be searched for. Trains are named based on geographic names used in the primary publication.
- What is the meaning of this polygon? To understand the meaning of a polygon, click on the polygon, and information will pop up (Figure 2).
- Additional details. To learn additional details about a train, click on its bedrock source (bedrock sources are the black polygons). An expanded information table will pop up. For carbonate trains, the bedrock sources are not delineated because they are too large. This expanded information table pops up if any part of the train is clicked. Attribute information in the table include: Train type as mapped, Train defined by, Significance of contoured edge, Maximum concentration in train, Background concentration, Bedrock source, Location of bedrock source, References (Figure 3).
- Sampling limits. To see the data control for each train, click “Sampling limits” in the “Places” column.

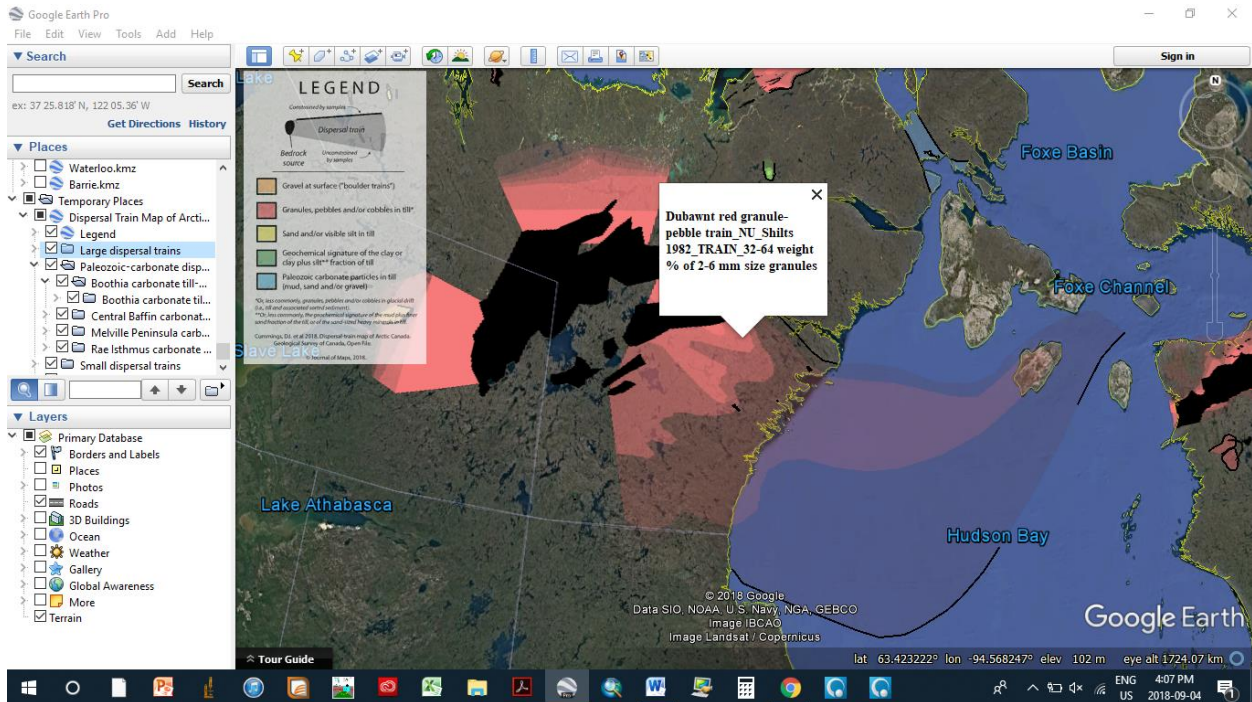


Figure 2. Click on an individual dispersal-train polygon, and additional details will pop up that describe the significance of the polygon and the source of the information.

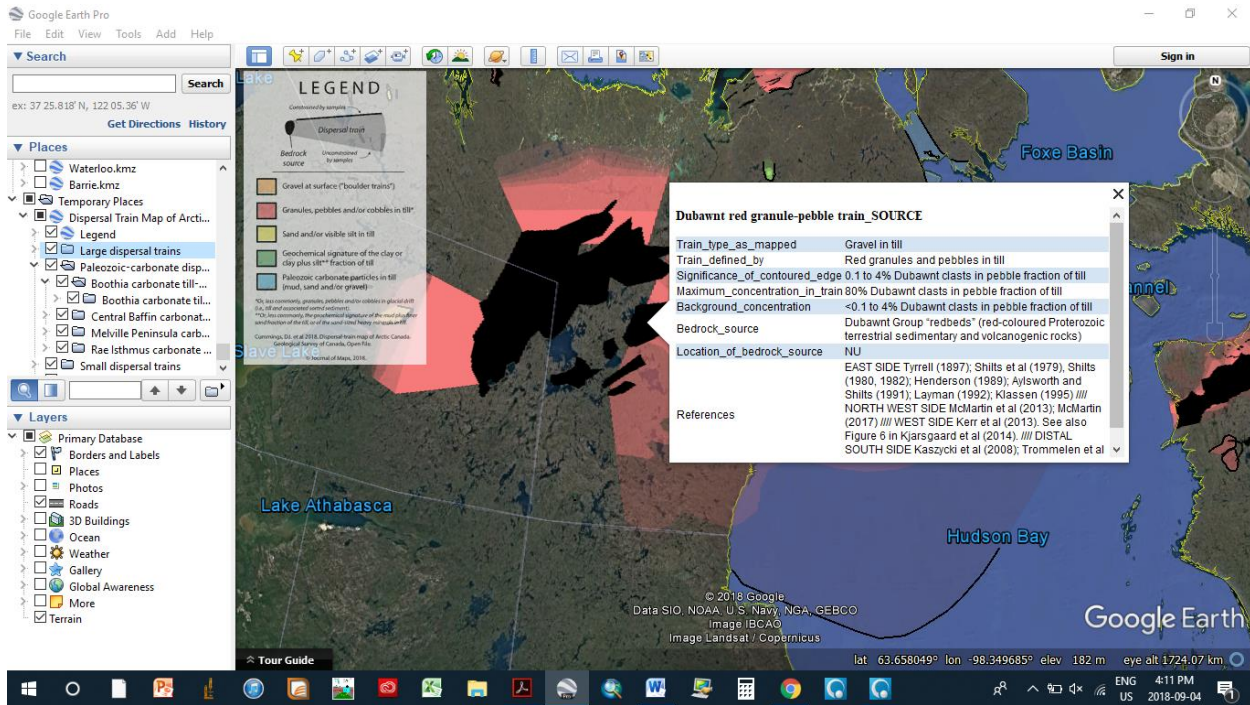


Figure 3. Click on a bedrock source area (black polygons), and a data table with further information on the train will pop up. For carbonate trains with bedrock sources too large to depict on the map, a data table will pop up when any part of the train is selected.

## CONTRIBUTIONS

Don Cummings and Hazen Russell conceived the map. Don guided its generation. He reviewed the literature (Step 1), synthesized the data (Step 2), georeferenced the train images (part of Step 3), digitized the train and bedrock outlines (part of Step 3), and oversaw the remainder of the work (Step 4 and the remainder of Step 3). Anika Bergen digitized additional concentration contours within dispersal trains (part of Step 3). Matt Pyne integrated the Excel table data into the map (part of Step 3). Anika and Matt generated the kmz file (Step 4). Hazen managed the project and provided critical feedback throughout.

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