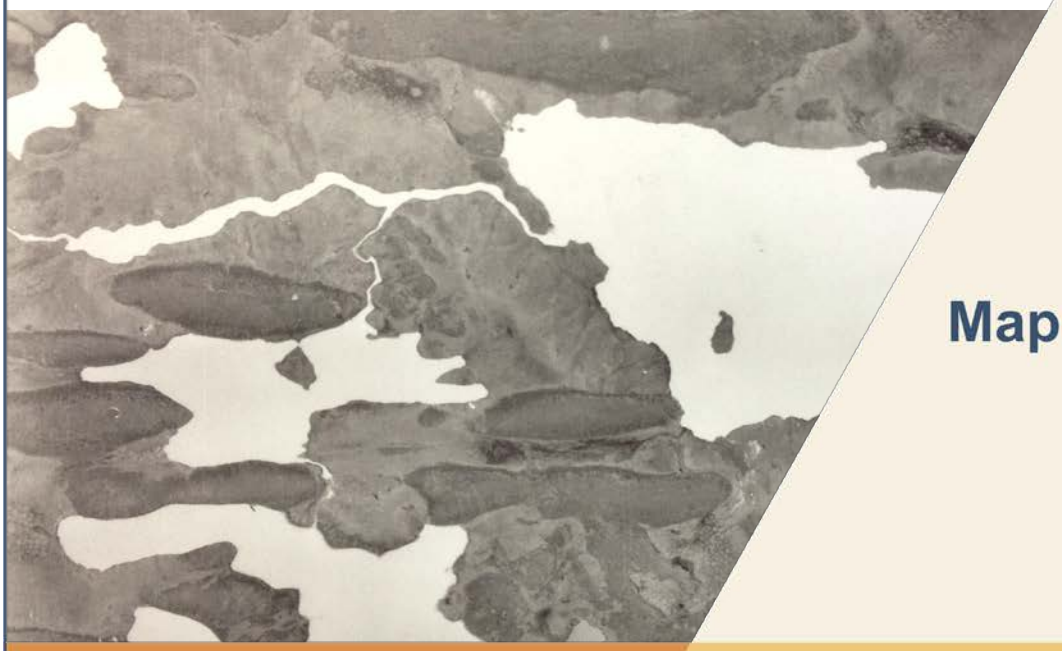
Natural Resources Canada | Ressources naturelles Canada

CANADIAN GEOSCIENCE MAP 194

RECONNAISSANCE SURFICIAL GEOLOGY

JOE LAKE

Nunavut, NTS 66-J south half



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Reconnaissance surficial geology, Joe Lake, Nunavut, NTS 66-J south half

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Cover Illustration

Elongated drumlinoid ridges surrounded by fine-grained glaciomarine sediments NAPL air photograph A14917-161.

ABSTRACT

Preliminary surficial geology studies, based on air photo interpretation and limited legacy and recent field data, were undertaken in the Joe Lake map area to provide an understanding of the distribution and nature of surficial materials, and regional glacial history. Much of the western area is characterized by streamlined till landforms indicating ice flow towards the north-northwest to north, but locally an older north-northeast flow is crosscut by the younger north-northwestward flow. Similar features occur in the eastern half but are more subdued. Small areas of hummocky till occur in the map area and are associated with longitudinal moraine ridges developed generally parallel to ice flow. Northward flowing subglacial meltwater corridors consisting of eskers, washed till, boulder lags and scoured bedrock, cross the entire area. Glaciomarine deltas, beaches and associated sediments extend up to 160–170 m a.s.l. in the western region, and are found more consistently near 160 m a.s.l. in the eastern half of the map area where these sediments overlie much of the till at lower elevations. The consistency of the elevation of the glaciomarine deltas implies a rapid ice retreat

relative to isostatic uplift. There is evidence of glaciolacustrine environments at 170–180 m elevation in the southwest but additional investigations are needed to determine their extent.

RÉSUME

Pour établir la distribution et la nature des sédiments de surface et l'histoire glaciaire du secteur du lac Joe, nous avons entrepris des études préliminaires de la géologie de surface en analysant des photos aériennes et un ensemble limité d'anciennes et de nouvelles données de terrain. La zone occidentale est en grande partie caractérisée par des formes de relief de till profilé qui indique que l'écoulement glaciaire s'est fait vers le nord-nord-ouest à nord. A certains endroits des drumlinoïdes plus anciens vers le nord-nord-est sont traversés par le dernier écoulement glaciaire vers le nord-nord-ouest. Des caractéristiques semblables se manifestent dans la moitié est, mais elles sont plus subtiles. Des zones de till bosselé sont présentes et associées à des crêtes morainiques longitudinales qui, pour la plupart, se sont formées le long de l'écoulement glaciaire. Des corridors d'eau de fonte sous-glaciaire s'écoulant vers le nord et formés d'eskers, de till lessivé, de résidus de blocs et de substratum rocheux décapé, traversent le secteur en entier. Des deltas glaciomarins, des plages et les sédiments qui y sont associés s'élèvent à jusqu'à 160–170 m au-dessus du niveau de la mer dans la région ouest. On les trouve de façon plus constante à 160 m au-dessus du niveau de la mer dans la moitié est, où ces sédiments recouvrent une grande partie du till à plus faible altitude. La constance d'altitude des deltas glaciomarins implique un retrait rapide du front glaciaire relatif au relèvement isostatique. Il y a des preuves de milieux glaciolacustres à des altitudes de 170 à 180 m dans le sud-ouest, mais il faudra étudier ce secteur davantage pour déterminer l'étendue de ces milieux.

ABOUT THE MAP

General Information

Authors: D.A. St-Onge and D.E. Kerr

Geology based on aerial photograph interpretation by D.A. St-Onge, 2013, with revisions and compilation by D.E. Kerr, 2014.

Geology conforms to Surficial Data Model v. 2.0

Data conversion by D.E. Kerr and S. Eagles, 2014

Geomatics and cartography by L. Landon-Roy

Initiative of the Geological Survey of Canada, as part of Natural Resources Canada's Geo-mapping for Energy and Minerals (GEM) program.

Map projection Universal Transverse Mercator, zone 14.
North American Datum 1983

Base map at the scale of 1:250 000 from Natural Resources Canada, with modifications.
Elevations in metres above mean sea level

Proximity to the North Magnetic Pole causes the magnetic compass to be erratic in this area. Mean magnetic declination 2014, 0°15'W, increasing 15' annually. Readings vary from 1°33'E in the SW corner to 2°07'E in the NE corner of the map.

The Geological Survey of Canada welcomes corrections or additional information from users.

Data may include additional observations not portrayed on this map. See documentation accompanying the data.

This publication is available for free download through GEOSCAN (http://geoscan.nrcan.gc.ca/).

This map is not to be used for navigational purposes.

Map Viewing Files

The published map is distributed as a Portable Document File (PDF), and may contain a subset of the overall geological data for legibility reasons at the publication scale.

About the Geology

References

NOTE: Additional field ice flow and station/sample data from:

Craig, B.C., 1961. Surficial geology, northern District of Keewatin; Geological Survey of Canada, Preliminary Map 7-1961. doi:10.4095/108770

McMartin, I., Berman, R.G., Normandeau, P.X., and Percival, J.A., 2013. Till composition of a transect across the Thelon tectonic zone, Queen Maud block, and adjacent Rae craton: results from the Geo-Mapping Frontiers' Chantrey project; Geological Survey of Canada, Open File 7418. doi:10.4095/292801

Author Contact

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Coordinate System

Projection: Universal Transverse Mercator
Units: metres
Zone: 14
Horizontal Datum: NAD83
Vertical Datum: mean sea level

Bounding Coordinates

Western longitude: 100°00’00” W
Eastern longitude: 98°00’00” W
Northern latitude: 66°30’00” N
Southern latitude: 66°00’00” N

Data Model Information

The Geological Survey of Canada (GSC) through the Geomapping for Energy and Minerals Program (GEM) has undertaken the Geological Map Flow to develop protocols for the collection, management (compilation, interpretation), and dissemination of surficial and bedrock geology data and map information. To this end, a data model has been created.

The Surficial Data Model (SDM) was designed using ESRI geodatabase architecture. The XML workspace document provided can be imported into a geodatabase, and the geodatabase will then be populated with the feature datasets, feature classes, tables, relationship classes, subtypes and domains.

Shapefile and table (.dbf) versions of the data are included within the data. Column names have been simplified and the text values have been maintained within the shapefile attributes. The direction columns are numerical, to display rotation for points, and the symbol fields will hold the correct values to be matched to the appropriate style file.

For a more in depth description of the data model please refer to the official publication:

Science language for an integrated Geological Survey of Canada data model for surficial geology maps, version 1.2; Deblonde, C., Plouffe, A., Eagles, S., Everett, D., Huntley, D.H., Inglis, E., Kerr, D.E., Moore, A., Parent, M., Robertson, L., Smith, I.R., St-Onge, D.A., and Weatherston, A., 2014. Science language for an integrated Geological Survey of Canada data model for surficial geology maps, version 2.0; Geological Survey of Canada, Open File 7631, 464 p. doi:10.4095/294225

LICENCE AGREEMENT

ACCORD DE LICENCE