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CANADIAN GEOSCIENCE MAP 29

GEOLOGY

TECTONIC ASSEMBLAGE MAP OF MASSEY SOUND, AMUND RINGNES ISLAND AND SURROUNDING ISLANDS

Nunavut



**Map Information
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Preliminary

**Geological Survey of Canada
Canadian Geoscience Maps**

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ABSTRACT

This map and the related geodatabase illustrate the bedrock geology of southwestern Axel Heiberg Island, the greater part of Ellef Ringnes Island, all of King Christian, Amund Ringnes, Cornwall, and Griffith islands, in addition to various other small islands. Major features of the area include mostly Mesozoic strata of the Sverdrup basin penetrated by salt diapirs on Axel Heiberg Island and the Ringnes islands. Compressive deformation is pronounced on Axel Heiberg island; less so to the west. Cretaceous basalts and intrusive rocks (mostly gabbro) are associated with the High Arctic Large Igneous province.

RÉSUMÉ

Cette carte et la géodatabase qui s'y rapporte documentent la géologie du substratum rocheux dans le sud-ouest de l'île Axel Heiberg, la majeure partie de l'île Ellef Ringnes, et les îles King Christian, Amund Ringnes, Cornwall et Griffith en entier, de même que diverses autres petites îles. Les principales entités géologiques de la région sont des strates surtout mésozoïques du bassin de Sverdrup, qui sont percées de diapirs de sel sur l'île Axel Heiberg et les îles Ringnes. La déformation en compression est prononcée sur l'île Axel Heiberg, alors qu'elle l'est moins dans l'ouest. Le basalte et les roches intrusives (principalement du gabbro) crétacés sont associés à la grande province magmatique du Haut-Arctique.

ABOUT THE MAP

General Information

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Geology by H.R. Balkwill, R. Thorsteinsson, J.C. Harrison, and A.V. Okultich

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Cartography by A. Galloway

Critical review by L. Currie

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

Map projection Lambert Conformal Conic, standard parallels 77°30'N and 79°30'N.
North American Datum 1983

Base map at the scale of 1:250 000 from Natural Resources Canada, with modifications.

Proximity to the North Magnetic Pole causes the magnetic compass to be erratic in this area.

Mean magnetic declination 2015, 40°42'W decreasing 76.9'E annually. Readings vary from 12°42'W in the SW corner to 55°35'W in the NE corner of the map.

This map is not to be used for navigational purposes.

Title photograph: Agate North Diapir, western Axel Heiberg Island, Nunavut.
Photograph by J.C. Harrison. 2013-065

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/>).

Preliminary publications in this series have not been scientifically edited.

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.

Cartographic Representations Used on Map

This map utilizes ESRI Cartographic Representations in order to customize the display of standard GSC symbols for visual clarity on the PDF of the map only. The digital data still contains the original symbol from the standard GSC symbol set. The following legend features have Cartographic Representations applied:

Fault: approximate, showing downthrown side

Fault: assumed, showing downthrown side

Thrust fault: approximate, teeth indicate upthrust side

Thrust fault: assumed, teeth indicate upthrust side

Diabase dyke

Diabase dyke (solid circle indicates downthrown side of fault intruded by dyke)

ABOUT THE GEOLOGY

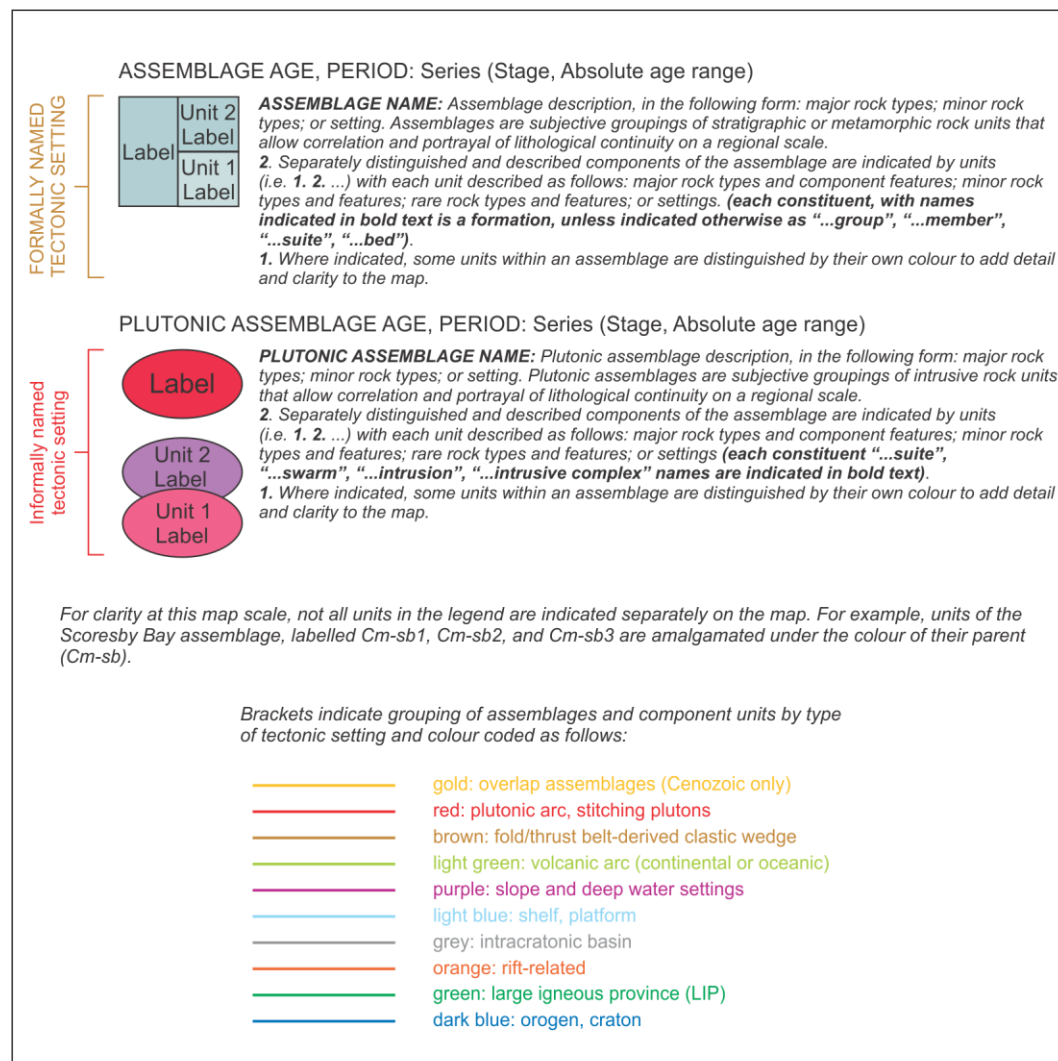


Figure 1. Explanation of map unit features.

References

- Balkwill, H.R., 1983a. Geology, Amund Ringnes, Cornwall, and Haig-Thomas Islands, District of Franklin; Geological Survey of Canada, Map 1471A, scale 1:250 000. doi:10.4095/119509
- Balkwill, H.R., 1983b. Geology of Amund Ringnes, Cornwall and Haig-Thomas Islands, District of Franklin; Geological Survey of Canada, Memoir 390, 76 p. doi:10.4095/119499
- Balkwill, H.R. and Roy, K.J., 1978. Geology, King Christian Island, District of Franklin; Geological Survey of Canada, Map 1445A, scale 1:250 000. doi:10.4095/109072
- Balkwill, H.R., Hopkins, W.S., Jr., and Wall, J.H., 1982. Geology, Lougheed Island and nearby smaller islands, District of Franklin; Geological Survey of Canada, Map 1490A, scale 1:250 000. doi:10.4095/109260

Beauchamp, B., Thériault, P., Henderson, C.M., Pinard, S., and Lin, R., 1998. Carboniferous to Triassic formations of the Sverdrup Basin; in *The geology of Devon Island north of 76°, Canadian Arctic Archipelago*; (ed.) Mayr, U., de Freitas, T.A., Beauchamp, B., Eisbacher, G., Geological Survey of Canada, Bulletin 526, p. 195–233. doi:10.4095/209773

de Freitas, T.A., Harrison, J.C., and Mayr, U., 1997. Sequence stratigraphic correlation chart of the lower Paleozoic Franklinian succession, Canadian Arctic Islands and parts of north Greenland; Geological Survey of Canada, Open File 3410. doi:10.4095/208912

Dewing, K. and Nowlan, G.S., 2004. Correlation chart of Cambrian and Ordovician stratigraphy, Arctic Islands, Nunavut, Canada; Geological Survey of Canada, Open File 1837, 1 sheet. doi:10.4095/214889

Embry, A.F., 1983. Stratigraphic subdivision of the Heiberg Formation, eastern and central Sverdrup Basin, Arctic Islands; in *Current Research, part B*; Geological Survey of Canada, Paper no. 83-1B; p. 205–213. doi:10.4095/109286

Embry, A.F., 1984a. The Wilkie Point group [Lower-Upper Jurassic], Sverdrup Basin, Arctic Islands; in *Current Research: part B*; Geological Survey of Canada, Paper no. 84-1B; p. 299–308. doi:10.4095/119557

Embry, A.F., 1984b. The Schei Point and Blaa Mountain groups [middle-upper Triassic], Sverdrup Basin, Canadian Arctic Archipelago; in *Current Research, part B*; Geological Survey of Canada, Paper no. 84-1B; p. 327–336. doi:10.4095/119557

Embry, A.F., 1985. Stratigraphic subdivision of the Isachsen and Christopher formations [Lower Cretaceous], Arctic Islands; in *Current Research, part B*, Geological Survey of Canada, Paper no. 85-1B; p. 239–246. doi:10.4095/120220

Embry, A.F., 1991a. Chapter 10: Middle-Upper Devonian Clastic Wedge of the Arctic Islands; in *Geology of the Innuitian Orogen and Arctic Platform of Canada and Greenland*; by Trettin, H.P. (ed.); Geological Survey of Canada, *Geology of Canada Series no. 3*; p. 263–279. doi:10.4095/133959

Embry, A.F., 1991b. Chapter 14: Mesozoic History of the Arctic Islands; in *Geology of the Innuitian Orogen and Arctic Platform of Canada and Greenland*; Trettin, H.P. (ed.); Geological Survey of Canada, *Geology of Canada Series no. 3*; p. 371–433. doi:10.4095/133959

Embry, A.F., 1993. Transgressive-regressive (T-R) sequence analysis of the Jurassic succession of the Sverdrup Basin, Canadian Arctic Archipelago; *Canadian Journal of Earth Sciences* vol. 30, no. 2; p. 301–320.

Embry, A.F. and Osadetz, K.G., 1988. Stratigraphy and Tectonic Significance of Cretaceous Volcanism in the Queen Elizabeth Islands, Canadian Arctic Archipelago; *Canadian Journal of Earth Sciences* vol. 25, no. 8; p. 1209–1219.

Harrison, J.C. and Jackson, M.P., 2008. Bedrock geology, Strand Fiord-Expedition Fiord area, western Axel Heiberg Island, northern Nunavut (parts of NTS 59E, F, G, and H); Geological Survey of Canada, Open File 5590, scale 1:125 000. doi:10.4095/225734

Harrison, J.C. and Jackson, M.P., 2010. Geology, Strand Fiord - Expedition Fiord area, western Axel Heiberg Island, Nunavut; Geological Survey of Canada, Map 2157A, scale 1:100 000. doi:10.4095/287168

Harrison, J.C., Mayr, U., McNeil, D.H., Sweet, A.R., McIntyre, D.J., Eberle, J.J., Harington, C.R., Chalmers, J.A., Dam, G., and Nøhr-Hansen, H., 1999. Correlation of Cenozoic sequences of the Canadian Arctic region and Greenland; implications for the tectonic history of northern North America; Bulletin of Canadian Petroleum Geology vol. 47, no. 3; p. 223–254.

Kerr, J.W. and Thorsteinsson, R., 1972. Geology, Baumann Fiord, District of Franklin; Geological Survey of Canada, Map 1312A, scale 1:250 000. doi:10.4095/109134

Mayr, U., 1992. Reconnaissance and Preliminary Interpretation of Upper Devonian To Permian Stratigraphy of northeastern Ellesmere Island, Canadian Arctic Archipelago; Geological Survey of Canada, Paper no. 91-8; 117 p. doi:10.4095/133669

Mayr, U. and Okulitch, A.V., 1994a. Geology, Baad Fiord-Cardigan Strait, District of Franklin, Northwest Territories; Geological Survey of Canada, Map 1840A, scale 1:250 000. doi:10.4095/194487

Mayr, U., de Freitas, T., Beauchamp, B., and Eisbacher, G. (ed.), 1998a. The geology of Devon Island north of 76°, Canadian Arctic Archipelago; Geological Survey of Canada, Bulletin 526; 500 p. (1 sheet). doi:10.4095/209767

Mayr, U., de Freitas, T., Eisbacher, G.H., and Kerr, J.W., 1998b. Geology, Prince Alfred Bay-Cardigan Strait, District of Franklin, Northwest Territories; Geological Survey of Canada, Map 1924A, scale 1:250 000. doi:10.4095/209702

Mayr, U., Packard, J.J., Goodbody, Q.H., Okulitch, A.V., Rice, R.J., Goodarzi, F., and Stewart, K.R., 1994. The Phanerozoic geology of southern Ellesmere and North Kent islands, Canadian Arctic Archipelago, (Craig Harbour, Baad Fiord, and eastern part of Cardigan Strait map areas, NTS 49A, 49B, and 59A); Geological Survey of Canada, Bulletin 470; 310 pages (10 sheets). doi:10.4095/195161

Miall, A.D., 1991. Chapter 15: Late Cretaceous and Tertiary Basin Development and Sedimentation, Arctic Islands, in; Geology of the Innuitian Orogen and Arctic Platform of Canada and Greenland; by Trettin, H.P. (ed.); Geological Survey of Canada, Geology of Canada Series no. 3, 1991; p. 437–458. doi:10.4095/133959

Okulitch, A.V., 1991. Geology of the Canadian Arctic Archipelago, Northwest Territories and North Greenland; Geological Survey of Canada, Map 1595A, scale 1:2 000 000. doi:10.4095/213121

Osadetz, K.G. and Moore, P.R., 1988. Basic Volcanics in the Hassel Formation [Mid - Cretaceous] and Associated Intrusives, Ellesmere Island, District of Franklin, Northwest Territories; Geological Survey of Canada, Paper 87-21; 19 p. doi:10.4095/126101

Ricketts, B.D., 1991. Delta evolution in the Eureka Sound group, western Axel Heiberg Island: the transition from wave-dominated to fluvial-dominated deltas; Geological Survey of Canada, Bulletin 402; 72 p. doi:10.4095/132169

Ricketts, B.D., 1994. Basin analysis, Eureka Sound Group, Axel Heiberg and Ellesmere islands, Canadian Arctic Archipelago; Geological Survey of Canada, Memoir 439, 1994; 126 p. (3 sheets). doi:10.4095/194814

Stott, D.F., 1969. Geology, Ellef Ringnes Island, District of Franklin; Geological Survey of Canada, Preliminary Map 4-1968, scale 1:253 440. doi:10.4095/108785

Thorsteinsson, R., 1971a. Geology, Eureka Sound North, District of Franklin; Geological Survey of Canada, Map 1302A, scale 1:250 000. doi:10.4095/109125

Thorsteinsson, R., 1971b. Geology, Greely Fiord West, District of Franklin; Geological Survey of Canada, Map 1311A, scale 1:250 000. doi:10.4095/109133

Thorsteinsson, R., 1971c. Geology, Haig-Thomas Island, District of Franklin; Geological Survey of Canada, Map 1303A, scale 1:250 000. doi:10.4095/109126

Thorsteinsson, R., 1971d. Geology, Middle Fiord, District of Franklin; Geological Survey of Canada, Map 1299A, scale 1:250 000. doi:10.4095/109124

Thorsteinsson, R., 1971e. Geology, Strand Fiord, District of Franklin; Geological Survey of Canada, Map 1301A, scale 1:250 000. doi:10.4095/123319

Thorsteinsson, R., 1972a. Geology, Glacier Fiord, District of Franklin; Geological Survey of Canada, Map 1304A, scale 1:250 000. doi:10.4095/109127

Thorsteinsson, R., 1972b. Geology, Canon Fiord, District of Franklin; Geological Survey of Canada, Map 1308A, scale 1:250 000. doi:10.4095/108009

Thorsteinsson, R., 1974. Carboniferous and Permian stratigraphy of Axel Heiberg Island and western Ellesmere Island, Canadian Arctic Archipelago; Geological Survey of Canada, Bulletin 224; 115 p. (22 sheets). doi:10.4095/103460

Thorsteinsson, R. and Trettin, H.P., 1972. Geology, Bukken Fiord, District of Franklin; Geological Survey of Canada, Map 1310A, scale 1:250 000. doi:10.4095/109132

Villeneuve, M. and Williamson, M-C., 2006. 40Ar/39Ar dating of mafic magmatism from Sverdrup Basin Magmatic Province; Proceedings of the Fourth International Conference on Arctic Margins.

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Coordinate System

Projection: Lambert Conformal Conic
False Easting: 0.0°
False Northing: 0.0°
Central Meridian: -96.0
Standard Parallel 1: 77.5
Standard Parallel 2: 79.5
Latitude of Origin: 40.0°
Units: metres
Horizontal Datum: NAD83
Vertical Datum: mean sea level

Bounding Coordinates

Western longitude: 104°00'00"W
Eastern longitude: 88°00'00"W
Northern latitude: 80°00'00"N
Southern latitude: 77°00'00"N

Data Model Information

This Canadian Geoscience Map does not conform to the Bedrock Mapping Geodatabase Data Model v.3.1. Therefore, some of the feature classes and feature attributes require explanation. Consult "Explanation_of_attributes.rtf" in Data folder for complete description of the feature classes and feature attributes.

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