ASSEMBLAGE AGE, PERIOD: Series (Stage, Absolute age range)

FORMALLY NAMED TECTONIC SETTING

Label | Unit 2 Label | Unit 1 Label

ASSEMBLAGE NAME: *Assemblage description, in the following form: major rock types; minor rock types; or setting. Assemblages are subjective groupings of stratigraphic or metamorphic rock units that allow correlation and portrayal of lithological continuity on a regional scale.*
2. Separately distinguished and described components of the assemblage are indicated by units (i.e. 1. 2. ...) with each unit described as follows: major rock types and component features; minor rock types and features; rare rock types and features; or settings. ***(each constituent, with names indicated in bold text is a formation, unless indicated otherwise as "...group", "...member", "...suite", "...bed").***
1. Where indicated, some units within an assemblage are distinguished by their own colour to add detail and clarity to the map.

PLUTONIC ASSEMBLAGE AGE, PERIOD: Series (Stage, Absolute age range)

Informally named tectonic setting

Label | Unit 2 Label | Unit 1 Label

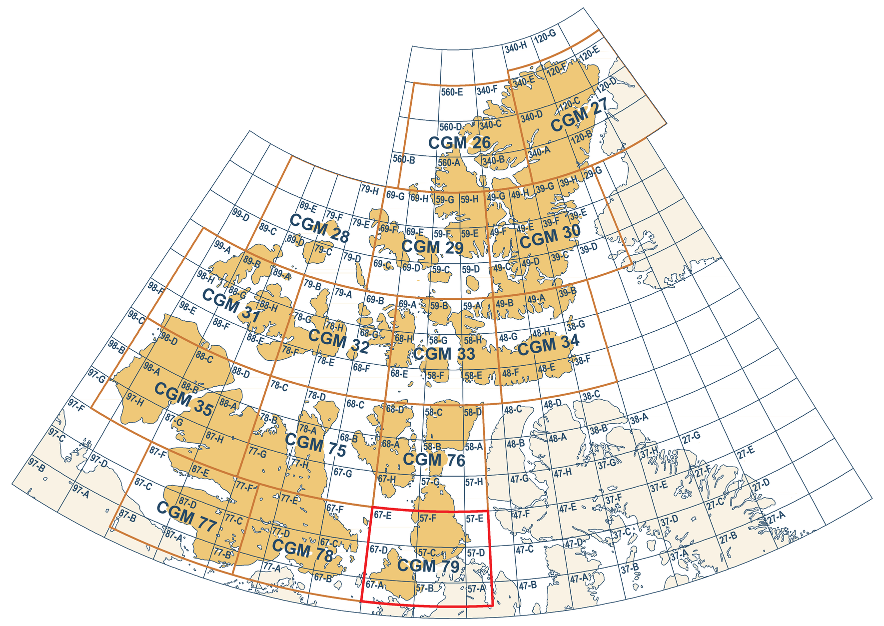
PLUTONIC ASSEMBLAGE NAME: *Plutonic assemblage description, in the following form: major rock types; minor rock types; or setting. Plutonic assemblages are subjective groupings of intrusive rock units that allow correlation and portrayal of lithological continuity on a regional scale.*
2. Separately distinguished and described components of the assemblage are indicated by units (i.e. 1. 2. ...) with each unit described as follows: major rock types and component features; minor rock types and features; rare rock types and features; or settings ***(each constituent "...suite", "...swarm", "...intrusion", "...intrusive complex" names are indicated in bold text).***
1. Where indicated, some units within an assemblage are distinguished by their own colour to add detail and clarity to the map.

For clarity at this map scale, not all units in the legend are indicated separately on the map. For example, units of the Scoresby Bay assemblage, labelled Cm-sb1, Cm-sb2, and Cm-sb3 are amalgamated under the colour of their parent (Cm-sb).

Brackets indicate grouping of assemblages and component units by type of tectonic setting and colour coded as follows:

- gold: overlap assemblages (Cenozoic only)
- red: plutonic arc, stitching plutons
- brown: fold/thrust belt-derived clastic wedge
- light green: volcanic arc (continental or oceanic)
- purple: slope and deep water settings
- light blue: shelf, platform
- grey: intracratonic basin
- orange: rift-related
- green: large igneous province (LIP)
- dark blue: orogen, craton

Figure 1. Explanation of map unit features.



National Topographic System reference and index to adjoining published Geological Survey of Canada maps

Abstract

This map and the related geodatabase illustrate the bedrock geology of King William Island and southern Boothia Peninsula. Major features of the area include Archean and Paleoproterozoic granitoid and metasedimentary rocks of Boothia Uplift, unconformably overlain by generally flat-lying Cambrian to Silurian strata of the Arctic Platform.

Résumé

Cette carte et la géodatabase qui s'y rapporte documentent la géologie du substratum rocheux dans l'île King William et le sud de la presqu'île de Boothia. Les principales entités géologiques de la région comprennent des roches granitoïdes et métasédimentaires de l'Archéen et du Paléoprotérozoïque du soulèvement de Boothia, surmontées en discordance par des strates généralement horizontales d'âge cambrien à silurien de la Plate-forme de l'Arctique.

Catalogue No. M183-1/79-2015E-PDF
ISBN 978-1-100-25549-1
doi:10.4095/295863

© Her Majesty the Queen in Right of Canada, as represented by the Minister of Natural Resources Canada, 2015

Natural Resources Canada | Ressources naturelles du Canada

2nd EDITION

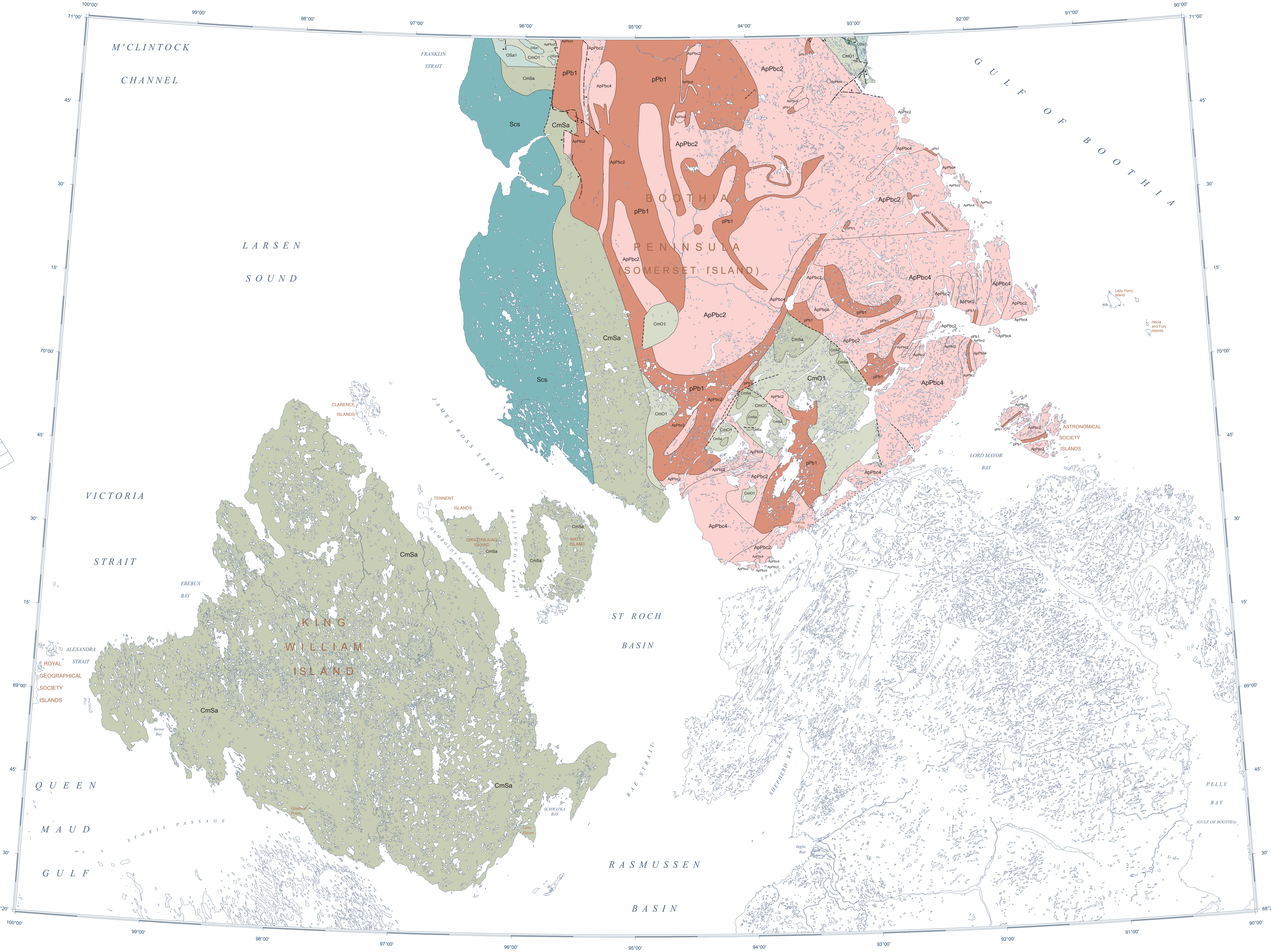
CANADIAN GEOSCIENCE MAP 79

GEOLOGY

TECTONIC ASSEMBLAGE MAP OF THE GJOA HAVEN AREA

King William Island and southern Boothia Peninsula, Nunavut

1:500 000



SILURIAN

LUDLOW

Franklinian shelf, ARCTIC PLATFORM

Scs — **CAPE STORM:** Dolostone; grey, buff and brown weathering, very fine- to fine-grained, thin- to thick-bedded, laminated, mud-cracked, molar-tooth structures, stromatolitic, microbial; lesser dolomitic limestone, oolitic and peloidal; minor silty dolostone, siltstone, shale; mostly restricted intertidal and supratidal **(Cape Storm)**.

ORDOVICIAN AND SILURIAN

RICHMONDIAN TO LUDLOW

OSa1 — **ALLEN BAY:** Dolostone, limestone; local bioherms, anhydrite; arid subtidal to supratidal settings.
1. Dolostone, medium- to thick-bedded, light grey to yellowish brown, medium-grained, in part fossiliferous; bitumen stained; lesser dolomitic limestone, burrow mottled; minor flat pebble conglomerate; local stromatoporoid bioherms; local gypsum and anhydrite (Somerset Island); common shallowing upward cycles; semi-arid to arid subtidal to supratidal settings **(Allen Bay)**.

ORDOVICIAN

MIDDLE AND LATE ORDOVICIAN (Blackriveran to Richmondian)

Oct5 — **THUMB MOUNTAIN:** Limestone, mudstone, grainstone, wackestone, dolostone; subtidal and intertidal, restricted and unrestricted.
5. (Thumb Mountain, Irene Bay, undivided).

CAMBRIAN TO SILURIAN

LATE CAMBRIAN TO LUDLOW

CmSa — **ARCTIC PLATFORM:** Dolostone, dolomitic limestone, limestone; minor sandstone, shale, intraclast conglomerate, breccia; nearshore and intertidal to supratidal; mostly restricted **(Turner Cliffs, Ship Point, Irene Bay Thumb Mountain, Allen Bay, Cape Storm)**.

CAMBRIAN AND ORDOVICIAN

LATE CAMBRIAN TO WHITEROCKIAN

CmO1 — **TURNER CLIFFS:** Dolostone, limestone, intraclast conglomerate; minor shale, sandstone, gypsum; local bioherms; peritidal grading to subtidal shelf.
1. Dolostone, grey to buff, laminated and thin-bedded grading to massive; minor sandstone; grey, locally red brown; intraclast breccia and conglomerate; local stromatolitic units; nearshore to shallow marine **(Turner Cliffs)**; dolostone, very fine- to medium-grained, grey to greenish grey, bioturbated, arenaceous, oolitic, domal stromatolitic; gastropods, brachiopods; minor dolomitic sandstone and siltstone, intraclast conglomerate, breccia; local subsurface anhydrite; shallow subtidal to intertidal, mostly restricted **(Ship Point)**.

PALEOPROTEROZOIC

SIDERIAN TO OROSIRIAN (2480 to 1920 Ma)

THELON OROGEN, Rae craton cover

pPb1 — **BOOTHIA:** Paragneiss, metapelite; lesser marble, calcsilicate, granitoid gneiss; local ultramafic rocks, quartzite, meta-iron formation; mostly metamorphosed supracrustal rocks.
1. Pelitic gneiss with garnet, biotite, sillimanite, cordierite, graphite; lesser marble, calcsilicate, quartzite, orthopyroxene granitoid gneiss; metamorphosed supracrustal rocks.

ARCHEAN AND PALEOPROTEROZOIC (3000 to 1920 Ma)

THELON OROGEN, RAE CRATON

ApPbc — **BOOTHIA COMPLEX:** Granite, granitoid gneiss; lesser paragneiss, metapelite, local marble, calcsilicate, pyribolite; syn-orogenic plutonic complex interlayered with supracrustal rocks.
4. Granite; red coloured, massive textured.
2. Orthopyroxene granitoid gneiss, paragneiss.

Contacts
- Geological boundary: defined or approximate
- Limit of mapping

Faults
- Fault: approximate
- Fault: assumed
- Fault: approximate, showing downthrown side

Thrust faults
- Thrust fault: approximate, teeth indicate upthrust side

REFERENCES

Blackadar, R.G., Christie, R.L., and Taylor, F.C., 1967. Geology, Boothia Peninsula and King William Island, District of Franklin; Geological Survey of Canada, Preliminary Map 2-1967, scale 1:506 880. doi:10.4095/108493

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

Frisch, T., 2011. Geology, Precambrian geology of northern Boothia Peninsula and Somerset Island, Nunavut; Geological Survey of Canada, Open File 6051, scale 1:250 000. doi:10.4095/287896

Stewart, W.D., 1987. Late Proterozoic To Early Tertiary Stratigraphy of Somerset Island and northern Boothia Peninsula, District of Franklin, Northwest Territories; Geological Survey of Canada, Paper 83-26, 1987; 78 pages.

Stewart, W.D., and Kerr, J.W., 1984. Geology, Central Boothia Peninsula, District of Franklin; Geological Survey of Canada, Map 1598A, scale 1:250 000. doi:10.4095/120340

Recommended citation
Harrison, J.C., Blackadar, R.G., Stewart, W.D., Frisch, T., Hillary, E.M., and Ford, A., 2015. Geology, Tectonic assemblage map of the Gjoa Haven area, King William Island and southern Boothia Peninsula, Nunavut; Geological Survey of Canada, Canadian Geoscience Map 79 (2nd edition, preliminary), scale 1:500 000. doi:10.4095/295863

ess.nrcan.gc.ca

Canadian Geoscience Maps

Canada

Authors: J.C. Harrison, R.G. Blackadar, W.D. Stewart, T. Frisch, E.M. Hillary, and A. Ford

Geological compilation by J.C. Harrison

Source map geology (senior authors) by T. Frisch, R.G. Blackadar, and W.D. Stewart

GIS development by T. Lynds

Spatial data capture by Gismo Solutions Ltd. (Edmonton), E.M. Hillary, and A. Ford

Cartography by M.J. Baldock

Critical review by K. Dewing

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.

GEOLOGY

TECTONIC ASSEMBLAGE MAP OF THE GJOA HAVEN AREA

King William Island and southern Boothia Peninsula, Nunavut

1:500 000

10 0 10 20 30 40 km

Map projection Lambert Conformal Conic, standard parallels 68°54′N and 70°34′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, 11°05′W, decreasing 9.8′ annually. Readings vary from 17°12′W in the SE corner to 3°52′W in the NW corner of the map.

This map is not to be used for navigational purposes.

Title Photograph: Paleoproterozoic basement including metasediments and marble, Bellot Strait and southern Somerset Island, Nunavut. Photograph by T. Frisch. 2013-073

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.

CANADIAN GEOSCIENCE MAP 79
GEOLOGY
TECTONIC ASSEMBLAGE MAP OF THE GJOA HAVEN AREA
King William Island and southern Boothia Peninsula, Nunavut