Natural Resources Canada
Ressources naturelle Canada

National Geochemical Reconnaissance

Multi-Element Lake Sediment Data Plot - Central Baffin Island Project

Silver, Copper, Lead, Antimony and Zinc in Lake Sediment

INTRODUCTION

Large areas of Canada have been covered by stream and lake surveys carried out under the National Geochemical Reconnaissance (NGR) program. The goal of this program is to establish and maintain a national, consistent database of field and analytical data derived from drainage sediment and water samples. Toward this end, systematic surveys have been conducted since 1973. To date (1999), more than 200 surveys have been completed to NGR standards, representing over 190 000 sites covering 2.3 million km ^{2} throughout Canada (see Figure below). These were carried out mainly by the Geological Survey of Canada, either independently or in cooperation with provinces and territories, under various funding arrangements.

Consistent methods of sample collection, sample preparation and chemical analysis developed and employed at the GSC are the hallmark of NGR surveys (Friske and Hornbrook, 1991). Presently, data for each NGR survey are available in hard copy and digital form. However, to simplify access to such a substantial collection of diverse information, a digital database has been created using Microsoft® ACCESS® software. As entry of large contiguous blocks of data (e.g. all Labrador or Ontario lake sediment and water data) is completed, geochemical maps and reports are being produced that display and summarize the data (e.g. Friske et al. 1997a, 1997b, 1997c). The aim of this second generation of publications is to increase awareness of NGR data and enhance applications not only to mineral exploration but in other areas as well, such as public health and environmental studies.

SELECTED REFERENCES

Friske, P.W.B. and Hornbrook, E.H.W.
1991: Canada's National Geochemical Reconnaissance programme; Transactions of the Institution of Mining and Metallurgy, Section B, Volume 100, p.47-56

Friske, P.W.B., McCurdy, M.W. and Day, S.J.A.
1997a: National Geochemical Reconnaissance - Ontario compilation; distribution of nickel in 17 935 lake sediment samples. Geological Survey of Canada Open File 3379a. Scale 1:1 500 000.

Friske, P.W.B., McCurdy, M.W. and Day, S.J.A.
1997b: National Geochemical Reconnaissance - Labrador compilation: distribution of chromium in 18793 lake sediment samples and 1131 stream sediment samples, Newfoundland (Labrador). Geological Survey of Canada, Open File 3260. Scale 1:1 000 000

Friske, P.W.B., McCurdy, M.W. and Day, S.J.A.
1997c: National Geochemical Reconnaissance - Ontario compilation, distribution of mercury in lake sediment. Geological Survey of Canada, Open File 3379c. Scale 1:1 500 000.

de Kemp, E.A. and Scott, D.J.
1998: Geoscience compilation of north Baffin Island and northern Melville Peninsula, Northwest Territories; Geological Survey of Canada Open File D3638, 2 CD-ROM, mapscale 1:500 000.

Morgan, W.C.
1983: Geology, Lake Gillian, District of Franklin (NTS 37O); Geological Survey of Canada Open File 1605A, Scale 1:250 000.

Tippett, C.R.
1984: Geology of a transect through the southern margin of the Foxe fold belt (mainly NTS 27B), central Baffin Island, District of Franklin; Geological Survey of Canada Open File 1110, 73 p.

DATA PRESENTATION - CENTRAL BAFFIN ISLAND PROJECT

For this report, relative concentrations of selected elements in sediments at sample sites are illustrated with two types of images: shaded contour plots and multi-element proportional spot plots ("beachball" plots).

Contour plots depict broad regional trends. From the irregular grid of sample sites, a regular grid is generated using the following parameters:

Inverse Distance Weighting (IDW) function
Exponent = 1.0
Cell size = 1000 metres
Search radius = 15000 metres
Display Radius = 7500 metres

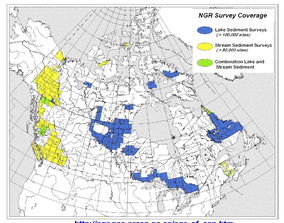
The resulting grid is then coloured based on percentiles. A hill-shading effect is also added to enhance the surface of the regular grid. Maps are generated using the Vertical Mapper® module in Mapinfo™.

'Beachball' plots, a variation of proportional spot plots, represent multi-element anomalies at specific sites. Individual analytical values of selected elements are reassigned with integer 'scores' of between 0 and 4, depending on the value of each analytical result relative to the median value for each element. Specific scores assigned to element ranges for this map are shown in the table directly below.

The total score is used to establish the size of the individual spot, with the size of the spot proportional to the sum of the score, the value of which is shown at each site with a value + 1.0. The proportion of the total value represented by one element (elements are assigned different colours) is indicated by the size of the wedge within the spot.

ELEMENTAL RANGES

Element		*Silver*	*Copper*		*Antimony*	*Zinc*
units		ppm	ppm		ppm	ppm
median		<0.2	74		<0.	32
Score	0	<0.3	<222	<42	<0.5	<396
	1	0.3	222 - 303	42 - 57	0.5	396 - 541
	2	0.4 - 0.5	304 - 451	58 - 85	0.6 - 0.9	542 - 805
	3	0.6 - 0.7	452 - 673	86 - 127	1.0 - 1.4	806 - 1201
	4	>0.7	>673	>127	>1.4	>1201



http://ngr.gsc.nrcan.gc.ca/ngr_of_can.htm

Contribution to the Central Baffin Partnership Program, a cost shared initiative between the Qikiqtaaluk Corporation, the Government of the Northwest Territories Department of Resources, Wildlife and Economic Development, and the Geological Survey of Canada.

Contribution au Programme de partenariat de l'île de Baffin centrale, une entente conjointe à laquelle participent financièrement la corporation Qikiqtaaluk, le ministère des Ressources, de la Faune et du Développement économique (gouvernement des Territoires du Nord-Ouest) et la Commission géologique du Canada.

INDEX MAP

Scale 1 300 000

0 10 20

Kilometres

Lambert Conformal Conic Projection
Standard Parallels 68°N and 70°N
Central Meridian 72°W
NAD83

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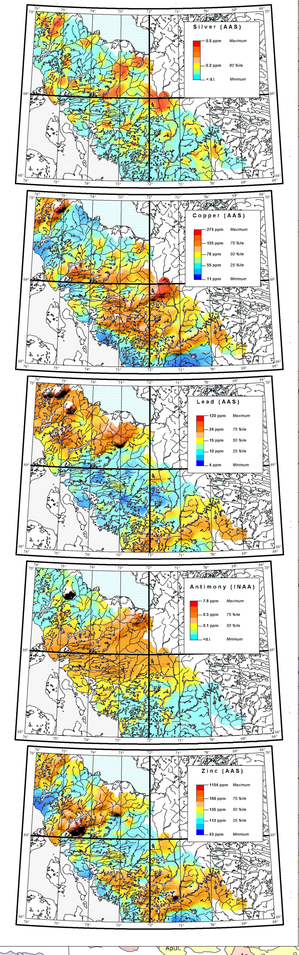

LEGEND

PALEOZOIC

Undivided Paleozoic limestone and dolomite

ORDOVICIAN

UPPER MIDDLE AND UPPER ORDOVICIAN

Dolomitic limestone; minor calcareous dolostone

UPPER, LOWER AND LOWER MIDDLE ORDOVICIAN

SHIP POINT FORMATION: dolostone, sandy in part, silty, argillaceous; dolomitic flat-pebble conglomerate; minor dolomitic sandstone, siltstone, breccia quartz-cemented sandstone

PROTERROZOIC

APHEBIAN

Massive, fine- to coarse-grained, pink granite-granodiorite; chiefly quartz monzonite; abundant crosscutting veins and sheets of aplite and pegmatite; local weak foliation

Massive, white muscovite-biotite granite-quartz monzonite

Pegmatite; white to light grey; massive; includes some aplite and granite; may contain muscovite, biotite, garnet, tourmaline and beryl; chiefly sills and dykes but also crosscutting veins and sheets; local deformation and foliation; mapped and schematic bodies

PLING SROUP (ApOL-Appu)

Undivided Pling Group

Metamorphosed iron formation; chiefly oxide facies with silicate facies; metallic grey; fine- to coarse-grained; laminated to bedded; includes quartzite, paragneiss, amphibolite and basic metavolcanic horizons

LONGSTAFF BLUFF FORMATION: greywacke, psammite, slate and metamorphic equivalents (schist, paragneiss, migmatitic paragneiss); interbedded; thin to thick bedded, light to dark grey; graded beds and typical turbidite structures; some rusty schists; minor calcsilicate rocks

ASTARTE RIVER FORMATION: sulphide schist; rusty weathering; graphitic, pyrrhotite-pyrite schist and slate; sulphide facies iron formation

FLINT LAKE FORMATION: dolomite, marble and calcsilicate gneiss; chiefly white to grey or buff weathering; minor paragneiss, quartzite, and rusty schist

BRAVO LAKE FORMATION: mafic volcanics; amphibolites; hornblendites; tremolite-actinolite-rich schists; some ultramafics containing abundant olivine and clinopyroxenite

DEMARI LAKES FORMATION: quartzite and feldspathic quartzite; grey, white and black; laminated, bedded and massive; includes muscovite schist, commonly with sillimanite, and paragneiss, some rusty horizons

ARCHEAN

MARY RIVER GROUP (AMqr-AMmv)

Meta-anorthosite-metagabbro; white to grey; banded to massive; foliated; fine- to coarse-grained; mesocumulic with local fooliball anorthosite; cumulate textures; layers of amphibolite and hornblendite; foliated amphibolite dykes

Slate, greywacke and metamorphic equivalents (schist, paragneiss, migmatic paragneiss); laminated to thick bedded, light to dark grey; rusty; minor impure quartzite, conglomerate, amphibolite and volcaniclastic rocks

Mafic metavolcanics; chiefly migmatized amphibolite; dark grey, brown, green, black; fine- to medium grained; foliated, banded or massive

Quartzite; white to pale grey; thin bedded to massive; fine grained to very fine grained; sheared; chierty; minor schist and paragneiss horizons; amphibolite sills; includes coarse cobble conglomerate with acid metavolcanic clasts and some quartzite with green mica (fuchite)

Amphibolite and hornblende gneiss dykes; medium- to coarse-grained; dark grey green to black; commonly foliated and banded

Ultramafic rocks; serpentinized peridotite and hornblendite; foliated to schistose; dark green or brown weathering

Weakly mineral foliated quartz-monzonite-granodiorite; minor granite; pale pink to grey; medium- to coarse-grained

Potash feldspar augen gneiss; quartz monzonite-granodiorite; grey to pink; streaky appearance; medium- to coarse-grained, pervasive mineral lineation

Quartz monzonite-granodiorite gneiss; banded and foliated; medium- to coarse-grained; light grey to pink granitic bands alternate with darker more mafic bands

Migmatite and nebulitic migmatite; chiefly massive; foliated thin banded; fluidal or streaky granitic to granodioritic gneiss; grey to pink; fine- to medium-grained; amphibolite and metasedimentary schlieren and nebulae common; local well banded gneisses; mixed rocks and agmatite; may contain some Aphebian rocks

GSC Open File 3716, Sheet 2 of 5
National Geochemical Reconnaissance
Silver, Copper, Lead, Antimony and Zinc in Lake Sediment, Central Baffin Island, NTS 27B, 27C, 37A and 37D

Published 1999

Recommended citation:
Friske, P.W.B., Day, S.J.A., McCurdy, M.W., Durham,C.C.
1998. Reanalysis of 1775 lake sediments from surveys on central Baffin Island, Nunavut (Northwest Territories), parts of NTS 27B, 27C, 37A and 37D. Geological Survey of Canada, Open File 3716, scale 1:300 000.