

An Overview of Activities of the Canada - Nunavut Geoscience Office



*DT James
April 13, 2010*



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**Geological Survey of Canada
(Natural Resources Canada)**

**Indian and Northern
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**Canada - Nunavut
Geoscience Office**



**Nunavut Tunngavik
Incorporated**



University Partners

**Department of Economic Development
and Transportation
(Government of Nunavut)**



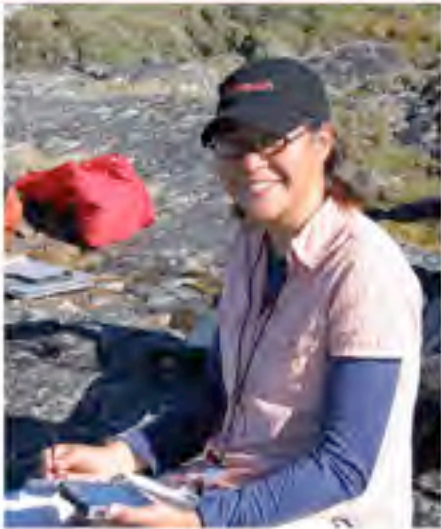
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Public Geoscience in Nunavut: The challenge



Applying geoscience for the benefit of people and communities in the North.

Geoscience for the public good. New data and ideas intended to generate opportunities for responsible resource development and protection of the public.

Opportunities for education and employment for young people, opportunities for development of sustainable skills.



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Bedrock Mapping: Integrated Geoscience



*Layered ultramafic rocks,
Melville Peninsula (2009)*



- Data and new ideas intended to give our clients the tools for making better decisions
- What are the 'big' questions that have to be addressed?
- Bedrock mapping in regions having inadequate coverage
- Bedrock mapping integrated with airborne geophysical surveys, surficial mapping, focussed geophysical surveys, geochemistry, geochronology
- Focus on providing local training and development opportunities



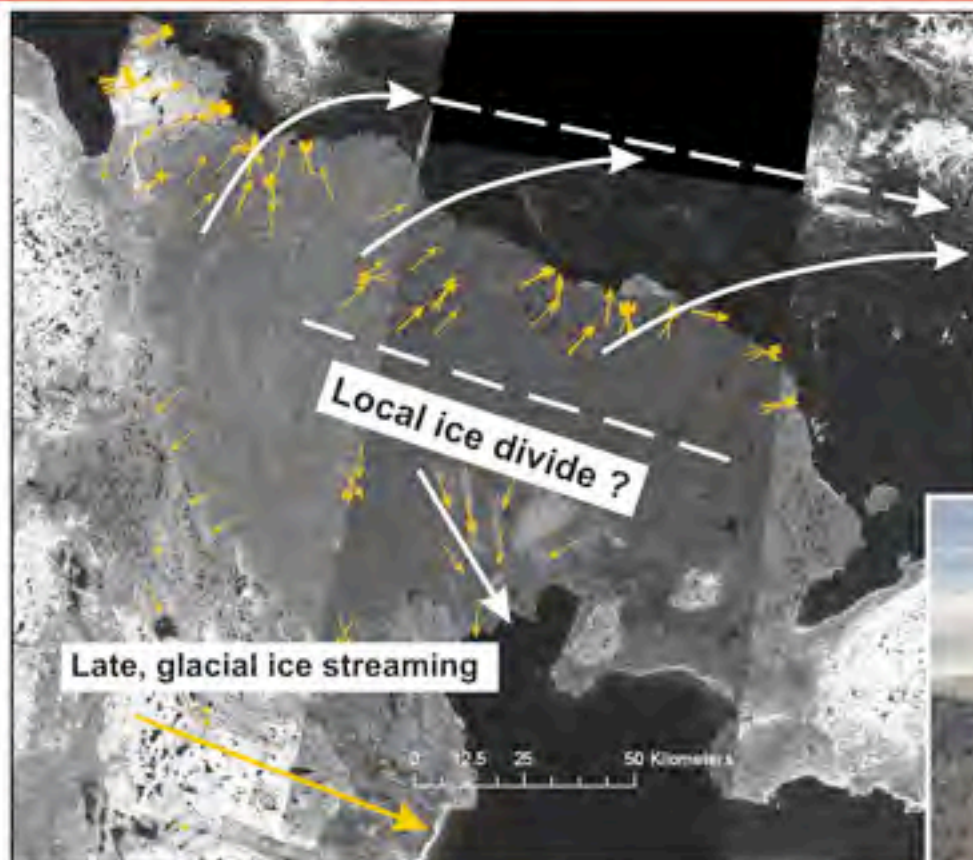
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CNGO - GSC (GEM) Surficial geology studies



- Mapping ice-flow indicators, glacial features, dispersion
- Regional till sampling programs, dating of glacial deposits
- KIM and till geochemical studies



Satellite image of Southampton Island, Nunavut, showing ice-flow directions. Martin Ross University of Waterloo.



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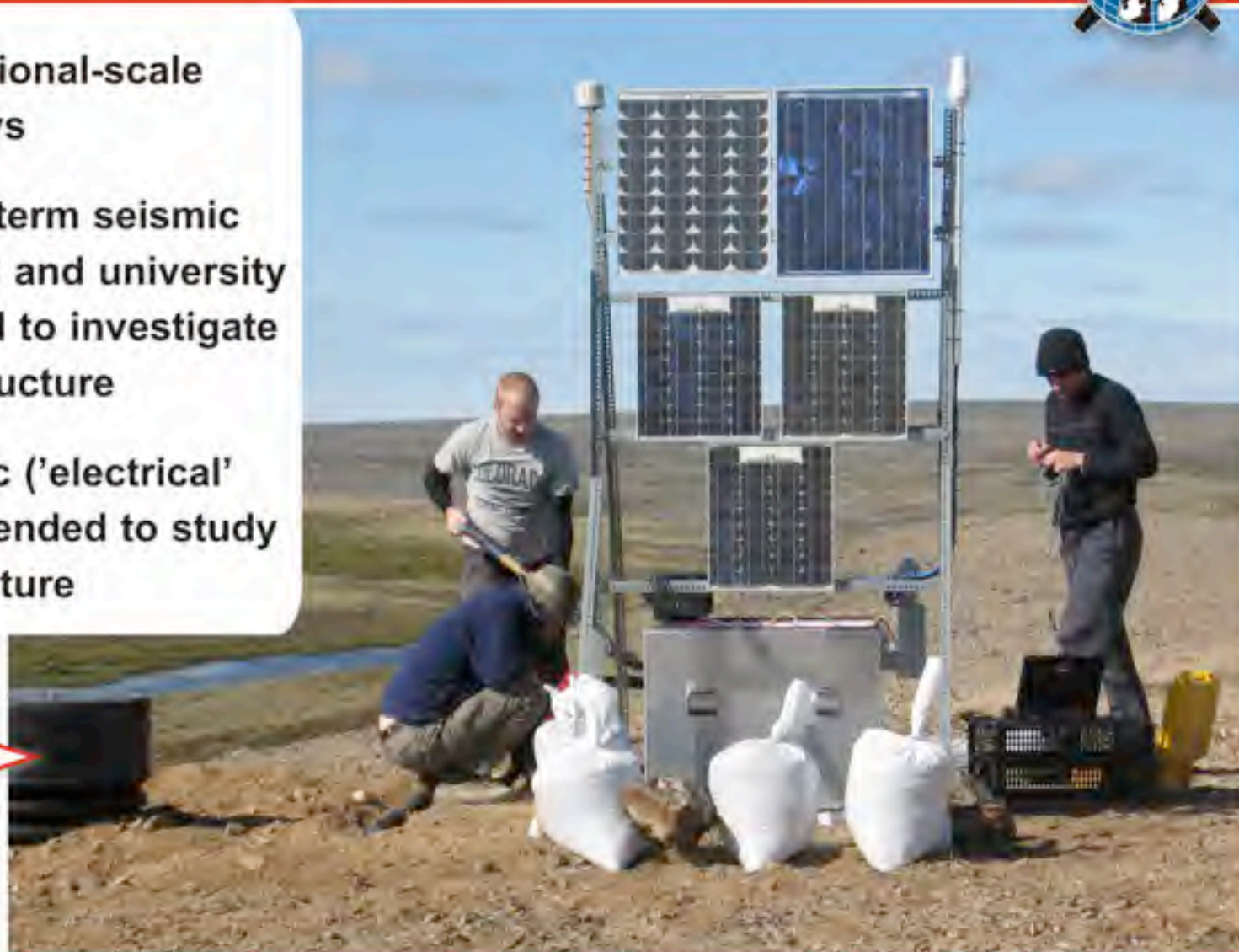
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GSC - CNGO - University Geophysical Studies



- Support for regional-scale airborne surveys
- 'Passive', long-term seismic studies by GSC and university teams designed to investigate lithospheric structure
- Magneto-telluric ('electrical' studies) are intended to study crustal architecture



seismometer



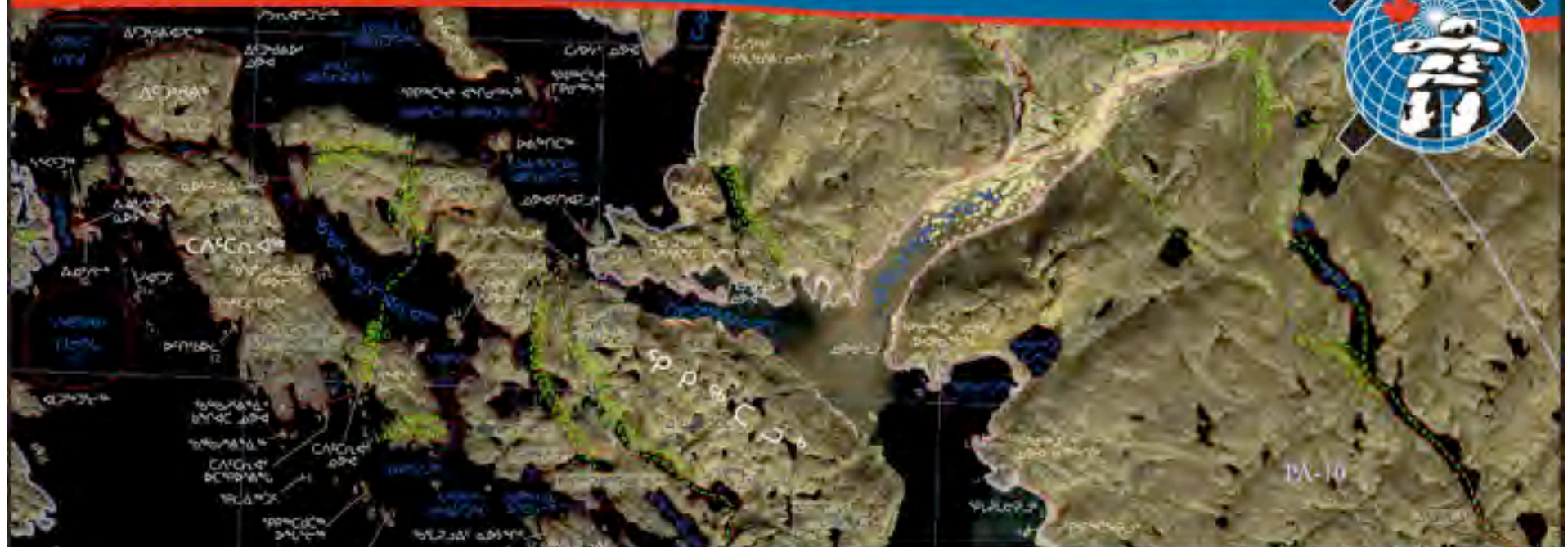
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Traditional Inuktitut Place Names



	NAME	FEATURE	EXPLANATION	
✓ 5-2	ᑕᑦᑕᑦᑎᑦᑕ	Taqqiqaqtaq	Route	The continuation of the route from the other island
✓ 7-1	ᑕᑦᑕᑦᑎᑦᑕ	Taqsiq Nuxa	Peak	Point near Taqsiq for 7-11
✓ 7-2	ᑕᑦᑕᑦᑎᑦᑕ	Tigget	Mountain	Tigget was a person who fell on the mountain and died. He and his wife were having marital problems and he ran from the campsite at Taqqiqaqtaq for 7-41 to the coast and did not come back. Nine days later he found his wife. She was very sad to see him. Good hunting. Anchorage good.
✓ 7-3	ᑕᑦᑕᑦᑎᑦᑕ	Tiqsiqtaq	Bay	
✓ 7-4	ᑕᑦᑕᑦᑎᑦᑕ	Tiqsiqtaq Ukiuk	Passage	Expensive at low tide. Place to go to get into Taqqiqaq for 7-5
✓ 7-5	ᑕᑦᑕᑦᑎᑦᑕ	Tiqsiqtaq Nuxa	Coastal feature	Dancing area. But not a very good one.
✓ 7-6	ᑕᑦᑕᑦᑎᑦᑕ	Tiqsiqtaq Nuxa	Point	Point of Tiqsiqtaq for 7-6
✓ 7-7	ᑕᑦᑕᑦᑎᑦᑕ	Tiqsiqtaqtaq	Passage	To Tiqsiqtaq for 7-8
✓ 7-8	ᑕᑦᑕᑦᑎᑦᑕ	Qaqsiq	Stream	Place to get water before you get to Tiqsiqtaq for 7-8
✓ 7-9	ᑕᑦᑕᑦᑎᑦᑕ	Qaqsiq	Island	Island
✓ 7-10	ᑕᑦᑕᑦᑎᑦᑕ	Qaqsiq	Point	North of Qaqsiq for 7-10
✓ 7-11	ᑕᑦᑕᑦᑎᑦᑕ	Nuxa Ukiuktaq	Point	Short and stout.
✓ 7-12	ᑕᑦᑕᑦᑎᑦᑕ	Iqsiqtaq Ukiuk	Islet	Expensive at low tide. Place to go to get into Taqqiqaq for 7-5
✓ 7-13	ᑕᑦᑕᑦᑎᑦᑕ	Tiggettaq	Route	Shortcut, used as an alternative to Taqqiqaq for 7-4
✓ 7-14	ᑕᑦᑕᑦᑎᑦᑕ	Ukiuk	Coastal area	IM camp. Good fishing and for hunting. Point. Aqsiqtaq's family used to overwinter here.
✓ 7-15	ᑕᑦᑕᑦᑎᑦᑕ	Iqsiqtaq Ukiuktaq	Bay	Open water year round. Can't walk upstream at low tide.



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Data Dissemination: Nunavutgeoscience.ca



- Continued developments on Nunavutgeoscience.ca, including an online, searchable version of Exploration Overview.
- NUMIN: mineral occurrences in Nunavut
- Assessment file reports
- Links to geoscience data

Nunavut Geoscience

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Exploration Overview
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Exploration Overview

Year: 2006 (140 projects)

This overview is about the exploration activities conducted in Nunavut in 2006. Individual exploration projects are plotted on the right (a project is labeled when there is room right above it).

The territory of Nunavut was created in April 1999 as a result of the Nunavut Land Claims Agreement (NLCA), the largest Aboriginal land settlement in Canadian history. NLCA is a final settlement whereby all land claims in Nunavut have been settled with the Inuit of Nunavut, thus providing an unmatched level of land tenure certainty. Land claims overlapping Hudson Bay and the southern most Kivalliq are being negotiated with residents of northern Quebec and northern Manitoba respectively.

The lists below group projects by Nunavut region, commodity group, and company. The numbers in parenthesis are the number of projects in the corresponding group. Click on a group to see the breakdown of the associated projects.

To see the details of a project, click on a link in the project list.

[Download year 2006 projects](#) | [Download overview](#)

Regions:	Commodity Groups:	Companies:	Projects:
• Kitikmeot (61)	• Base Metals (30)	• Adnira Resources Inc. (3)	• Aberdeen
• Kivalliq (52)	• Diamonds (37)	• Advanced Exploration Inc. (1)	• Amisuk
• Qikiqtaaluk (27)	• Gemstones (2)	• Agrico-Eagle Mines Limited (3)	• Amer Lake
	• Gold (28)	• Arctic Star Diamond Corp. (1)	• Amer Lake East (North Thelon Uranium)
	• Iron (2)	• AREVA Resources Canada Inc. (7)	• Amer Lake West (North Thelon Uranium)
	• Nickel-copper PGE's (9)	• Aura Silver Resources Inc. (1)	• Anisuk
	• Precious Metals (4)	• Aurora Energy Resources Inc. (1)	• Anisuk (Au)
	• Uranium (48)	• Baffinland Iron Mines Corporation (1)	• Anisuk (Committee Bay)
		• Becowater Uranium Corporation (8)	• Aslak River
		• Bear Lake Gold Ltd. (7)	• Asut



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CNGO Community Engagement



- Developed a community engagement best practices template (*Mines and Energy Ministers Meeting, Whistler, 2007*)
- Pre-project visits to hamlets to meet with Hamlet Councils, Hunters and Trappers Organizations, public meetings and schools.
- Negotiations with Hamlet Councils, HTOs and local service providers to provide employment and logistics services.
- Elders visits and camp-move-out inspections.
- Post-project visits and communication.



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Communities and Geological Survey Activities in Nunavut



Inuit Elders visit geological survey projects to discuss science activities, impacts of projects and the resource industry.



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GEM: Geo-Mapping for Energy and Minerals

- In August 2008, Prime Minister Harper announced the 5-year, \$100 M Geo-Mapping for Energy and Minerals (GEM) initiative.
- The objective of GEM is to ensure long-term resource investment in Canada's North through improvements to the geoscience database.
- In Nunavut, projects are operated as GSC - CNGO partnerships, where possible, with an emphasis on training, sustainable skills development and inclusion.

Helping the North realise its full social and economic potential.



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Geo-Mapping for Energy and Minerals (GSC - CNGO)

GEM Minerals

- **Field based:** Commodities focussed on regions having poorly understood geology (e.g., Melville and Cumberland peninsulas).
- **Office based:** A 'new generation' geologic map for Nunavut; managing, evaluating and disseminating data (e.g., till and indicator-mineral data).

GEM Energy

- **Evaluating hydrocarbon systems and exploration potential in Hudson Bay and Foxe basins.**



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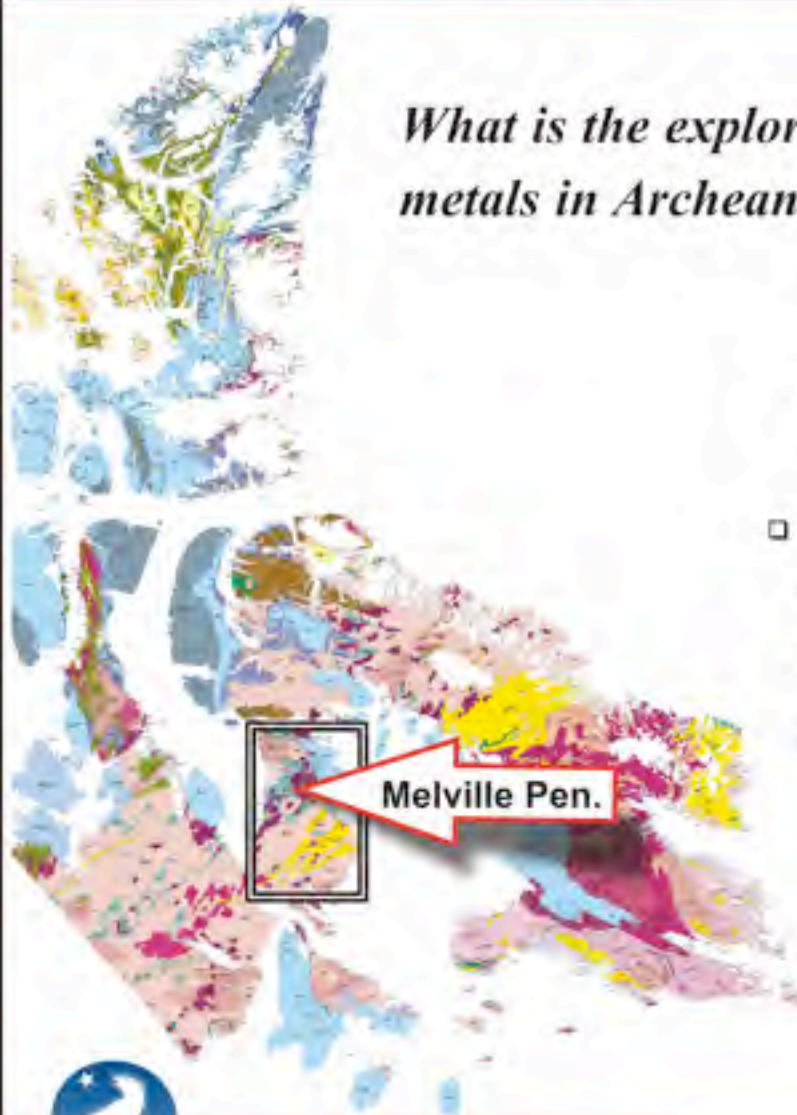
Multiple Metals and Diamonds



What is the exploration potential for uranium, base and precious metals in Archean and Paleoproterozoic supracrustal sequences?

Melville Peninsula:

- Archean supracrustal rocks (continuation of the Committee Bay belt), gneisses and granitoid rocks, Paleoproterozoic supracrustal rocks (Penrhyn Group) and plutonic rocks



D. Corrigan, T. Tremblay, 1:45 PM, Tuesday



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Multiple Metals and Diamonds

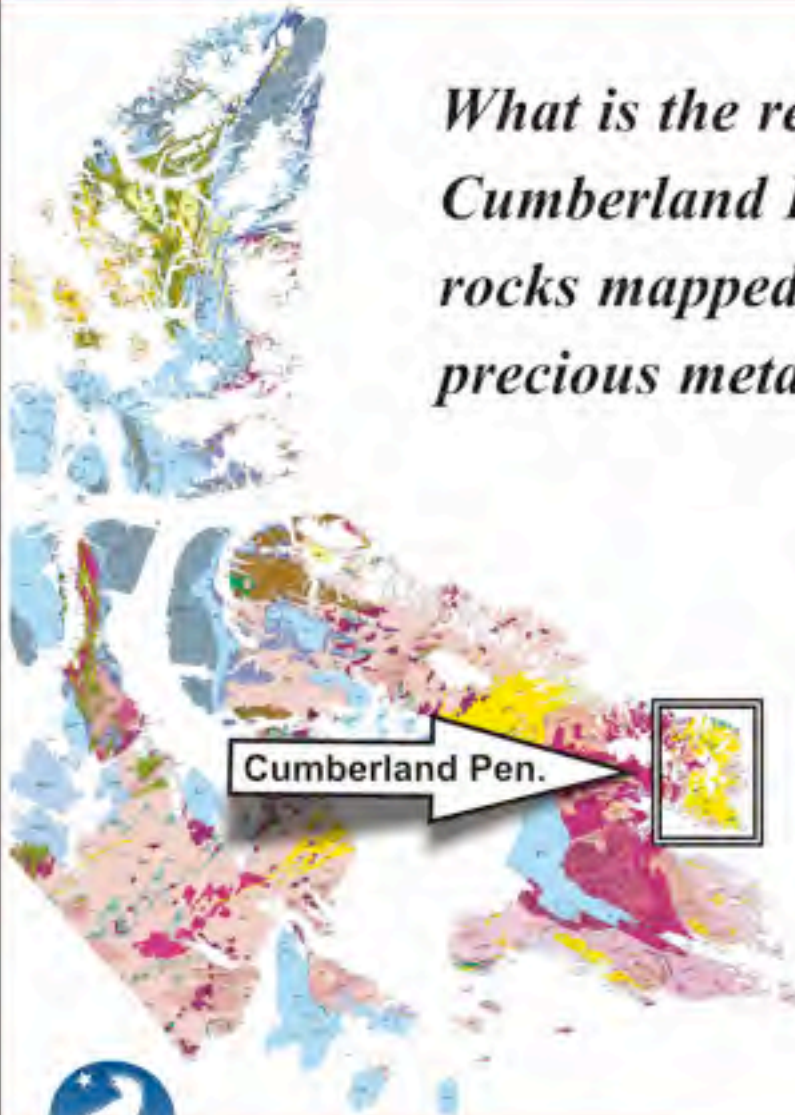


What is the regional tectonic affinity of the Cumberland Peninsula? Do the supracrustal rocks mapped in 2009 have potential for base and precious metals?

Cumberland Peninsula:

- Paleoproterozoic supracrustal rocks and Archean rocks of uncertain tectonic affinity; no regional metallogenic context.

M. Sanborn-Barrie, 2:35 PM Tuesday



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Strategic Investments in Northern Economic Development: SINED-Supported Geoscience

- Mineral Deposit - Mineral District Studies
- Protecting Economic Investments in Infrastructure
- Industrial Minerals and Aggregates
- Innovation
- Data Dissemination

*Acknowledge: CanNor and Government of Nunavut
CNGO, University, GSC, private-sector partnerships*



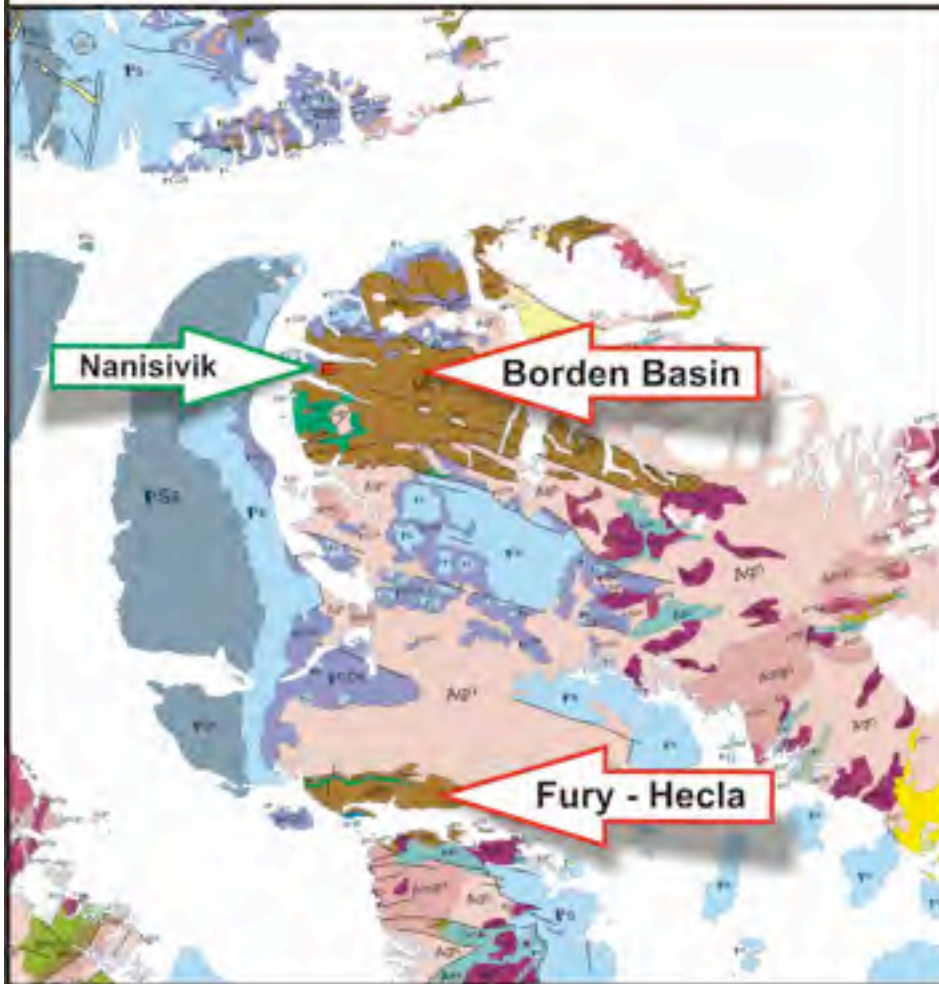
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Mineral District Studies: Mesoproterozoic Basins



What are the stratigraphic and structural controls on base-metal mineralization in the Mesoproterozoic basins in NE Nunavut?

Are the clastic sedimentary rocks in the lower part of the basin prospective for uranium?

- Base metals in black shale
- Unconformity-type uranium deposits in basal units

E. Turner, D. Long, Laurentian University



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Protecting Economic Investments in Infrastructure



*Identification of risks to communities and infrastructure as a result of climate change.
Developing mitigation strategies and Nunavut-based planning capacity.*



*Climate Change Geoscience Program,
Laval University*

**Landscape Hazard Mapping:
Community-scale permafrost and
terrain mapping to provide baseline
information for assessing degrees of
hazard in areas subject to permafrost
degradation.**



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Industrial Minerals: Limestone (carbonate)



What is the potential for development of industrial-use limestone deposits on southern Southampton Island?



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Testing and Developing Remote Exploration Tools

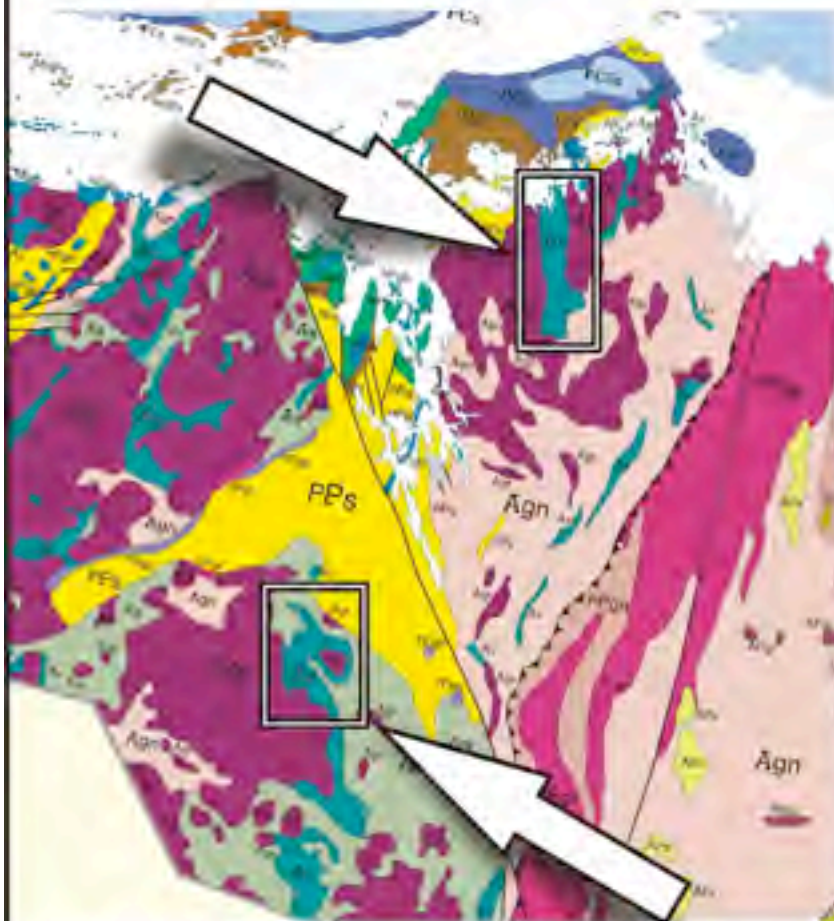


Dave Coulter. 1:30 PM, Thursday

How useful are hyperspectral methods in detecting alteration systems / minerals around orogenic gold and VMS deposits in the geologic, geographic and 'latitude' environment of Nunavut?

Studies in the Hope Bay and Hackett River belts

- CNGO / SINED supported research at the CNGO (remote) with support from Newmont, Sabina Silver and Minerals and Metals Group.



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The Canada - Nunavut Geoscience Office



Celine Gilbert: GIS Specialist,
Traditional Place Names

Shunxin Zhang: Hydrocarbon
Studies, Industrial Carbonates

Tommy Tremblay: Melville and
Boothia districts, surficial
geology

Serge Basso: Geotechnology
Analyst, Data Dissemination



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