



British Columbia Geological Survey

British Columbia Geological Survey
Mining and Mineral Resources Division
Ministry of Energy and Mines

www.em.gov.bc.ca/geology





The Survey

Founded in 1895, the British Columbia Geological Survey is the oldest scientific agency in the province. The Survey is responsible for the inventory, assessment, and archiving of British Columbia's complex geology and related coal and mineral resources. The Survey publically provides pre-competitive raw data, historical information, and new concepts to guide geological, mineral resource, and environmental decisions.



Structure of the British Columbia Geological Survey

*Cordilleran
Geoscience
Section*

*Resource
Information
Section*

*Mineral
Development
Office*



The British Columbia Geological Survey strives to be a leader in public government geoscience. The Survey provides quality geoscientific data and knowledge to all stakeholders. MapPlace, the Survey's innovative online digital data delivery system, enables all public geoscience data to be easily accessible, ensuring that British Columbia remains a preferred destination for investment in mineral exploration.



Survey Activities

**Generates
Pre-competitive
Geoscience Data**



**Geoscience
Data
Custodian
For BC**



**Advise
Government**



**Confidential
Expertise**



**Monitor Industry
Activity
(Mineral Development Office)**



**Attract Global
Investment**





Role of Public Government Geoscience

Developed nations around the world have publically-funded geological surveys that provide geoscience information to support responsible resource development and encourage investment to stimulate economic growth. Geoscience information is used by government to make informed decisions and create effective policy on resource development, land-use, and environmental stewardship.

Public Government Geoscience

“Our investment in resource exploration will continue to unlock the full economic, mineral and energy potential of the region, while generating new government revenues, private sector investment and jobs.”

- Prime Minister of Canada, August 2013

Exploration and mining is critical to British Columbia’s economy. For 2012, the total value of mine production in British Columbia was over \$7 billion. The total expenditures for evaluation and advanced-stage metal and coal projects in British Columbia reached a record \$680 million in 2012.

Unfortunately, global equity markets have become depressed recently and exploration companies are challenged to raise capital. The role of the British Columbia Geological Survey is becoming more important than ever in stimulating activity and attracting investment.





Public Government Geoscience in the Exploration Industry

Public government geoscience from the British Columbia Geological Survey benefits the exploration industry by

- providing the fundamental geological framework necessary to identify areas with high mineral potential and reducing the cost of exploring unprospective ground
- increasing exploration efficiency by gathering regional information useful for property scale evaluation
- archiving exploration results and activities so that explorationists can advance projects without unnecessarily duplicating previous work



Impact of Public Government Geoscience

“On balance, the evidence indicates that the “Rule of Thumb” that \$1 spent on government geoscience will stimulate \$5 in private sector exploration is reasonable...”

- J.M. Duke for Prospectors and Developers Association of Canada, 2010





Cordilleran Geoscience Section

The Cordilleran Geoscience Section is responsible for generating new, pre-competitive geoscience knowledge through regional, field-based geological mapping programs. This fundamental information provides the geological framework that reduces investment risk.





Cordilleran Geoscience Section geologists conduct field-based projects directed at

- regional bedrock mapping, stratigraphy, lithogeochemistry, geochronology
- mineral deposit studies
- tectonics and Cordilleran evolution
- exploration method development
- Quaternary and surficial geology
- drift prospecting, till geochemistry, and indicator minerals





Laboratory and Sample Archive



The British Columbia Geological Survey maintains publically accessible geochemical databases containing multi-element analyses from rock, till, stream sediment, and water surveys. These data are used to evaluate mineral deposits and to identify new exploration targets.

In 2012, the geochemical and rock archive was upgraded with a new storage library to accommodate over 600 000 geochemical samples collected by the Survey since the 1970s.

The Survey recently refurbished and modernized its geochemical laboratory. New equipment includes rock saws, disc pulverisor, fluid inclusion stage, bench top XRF, Wilfley mineral separation table, ultra pure water system, and mineral separation fume hood.



In 2012, the Province recognized Emeritus Scientist Dr. Ray Lett as a Premier's Award Finalist in the Legacy category for his contribution in developing British Columbia's geochemical database.





Mineral Development Office (MDO)

The Mineral Development Office (MDO) serves as the Vancouver base for the British Columbia Geological Survey. Home to more than 800 global firms, Vancouver has the world's largest concentration of mineral exploration and mining companies. The MDO provides geoscience and industry knowledge that highlights exploration and mining investment opportunities to the domestic and international business communities.

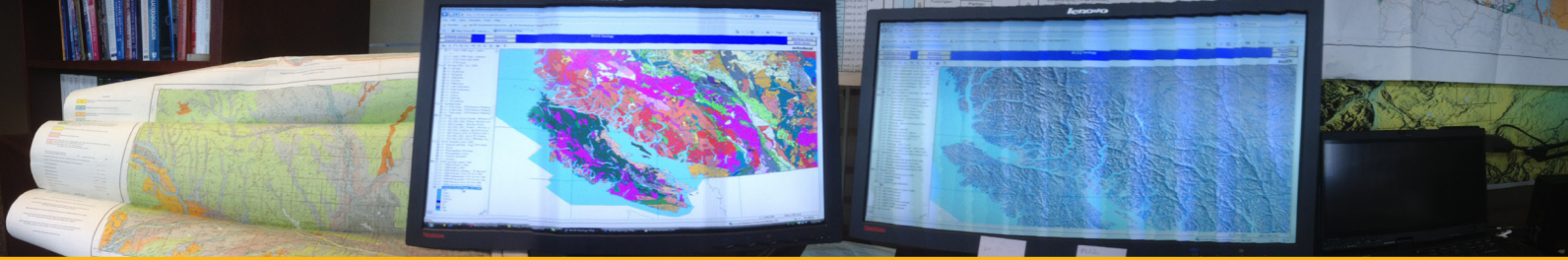


Regional Geologists Program



Regional Geologists are based in five communities in British Columbia. From these communities they monitor exploration and mining activities and provide geological and exploration expertise for their region. Coordinated by the Mineral Development Office, the Regional Geologists prepare annual reports that summarize current exploration and mining activities.





Resource Information Section

The British Columbia Geological Survey preserves, archives, and provides free web-based access to over a century's worth of geoscience information. Since 1995, MapPlace, our database-driven web service, has provided open geoscience data and custom map-making tools to aid in the discovery of deposits and the assessment of mineral potential in British Columbia.



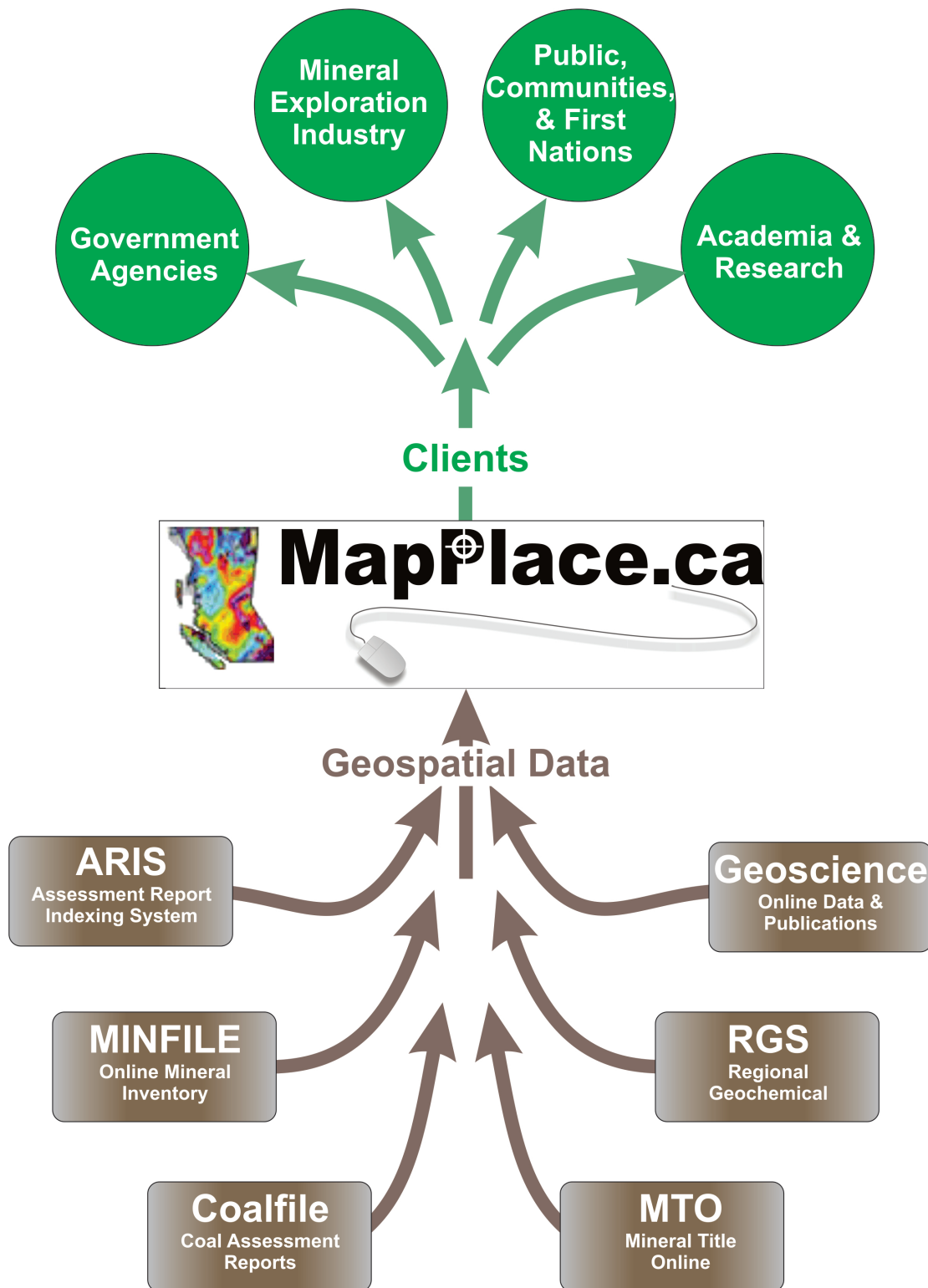
In 2012, thirteen Survey staff who contributed to MapPlace were selected as finalist for a Premiers Award in the Innovation category.

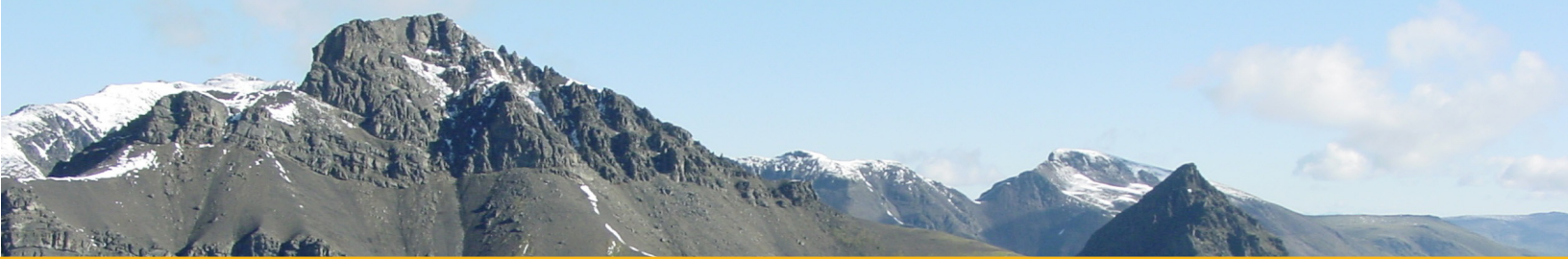
In 2012-2013 the Fraser Institute's Global Ranking of Geological Databases ranked MapPlace third. Since 2005, MapPlace has consistently been ranked in the top ten, including two number one placements.

MapPlace allows users to generate custom maps by querying multiple sources, including the

- industry and government document archive (Property File)
- online mineral inventory (MINFILE)
- mineral assessment report database (ARIS)
- coal assessment report database (COALFILE)
- regional geochemistry survey (RGS)
- Mineral Titles Online (MTO) tenure database
- Survey publication catalogue
- extensive collection of bedrock and surficial geology maps

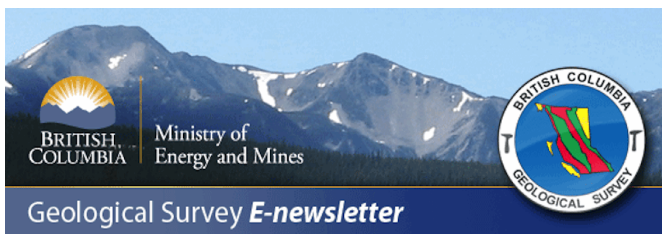






Publications

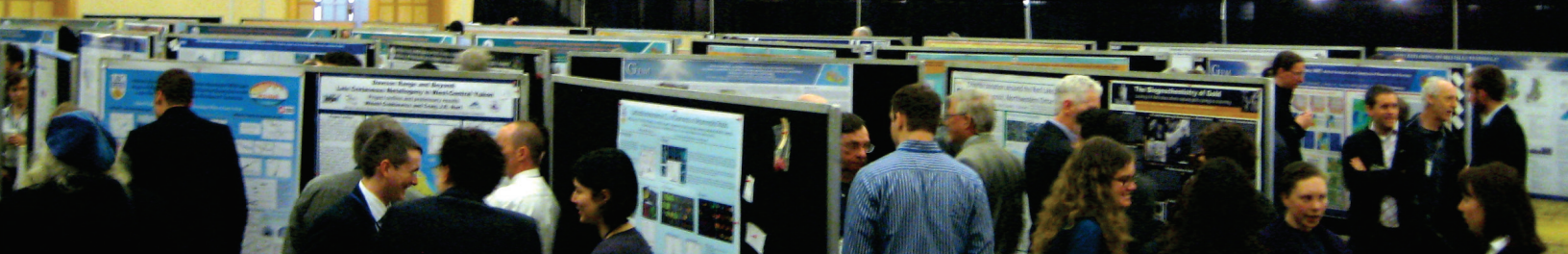
The British Columbia Geological Survey publishes geological Papers, Bulletins, Open Files, GeoFiles, and Information Circulars that are available online free of charge. Geological Fieldwork, published annually in January, includes technical papers that highlight current Survey activities.



All our publications can be downloaded at:
www.empr.gov.bc.ca/Geology

To receive notification of our latest releases
email: Geological.Survey@gov.bc.ca





Meetings

The British Columbia Geological Survey publically distributes geoscience maps and reports at regional, national and international meetings. Survey staff regularly present technical talks and posters highlighting new developments in Cordilleran geology. At these events, staff are available to discuss British Columbia's geology and exploration opportunities.



Look for the British Columbia Geological Survey booth at:

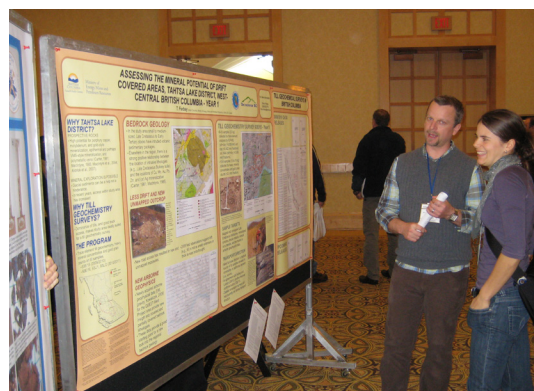
BC Geological Survey Open House
Victoria, BC

Kamloops Exploration Group (KEG)
Kamloops, BC

Minerals South
Southeast Region

Exploration Round-Up
Vancouver, BC

**Prospectors and Developers Association
of Canada (PDAC)**
Toronto, Ontario



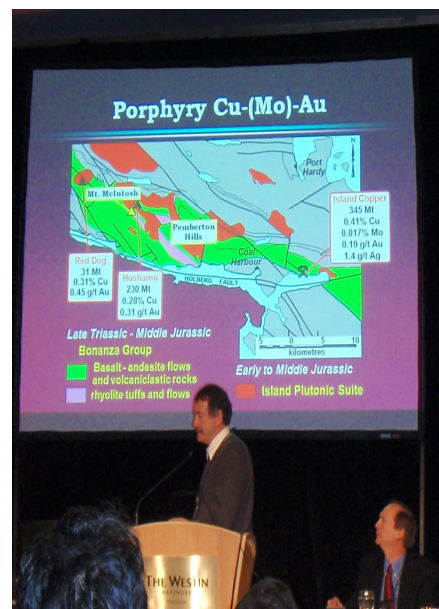


Skills Training

The British Columbia Geological Survey continues to invest in preparing the next generation of exploration geologists by hiring and training student assistants, supporting graduate students, and mentoring student research.



The Survey actively works to help exploration geoscientists, prospectors and professionals learn new exploration skills and better understand Cordilleran geology by regularly providing presentations, short courses, workshops, and field trips.





Partnerships

The British Columbia Geological Survey is a collaborative agency that partners with federal, provincial, and territorial governments, other national and international geoscience organizations, and the mineral exploration and mining industry to develop and deliver geoscience projects.



The Survey is collaborative and continues to develop partnerships with industry, academia, and other geoscience agencies. If you are interested in finding out more about partnership programs and the British Columbia Geological Survey - Industry Partnership Program please contact:

Adrian Hickin, Director Cordilleran Geoscience, at adrian.hickin@gov.bc.ca

2013 Partners:



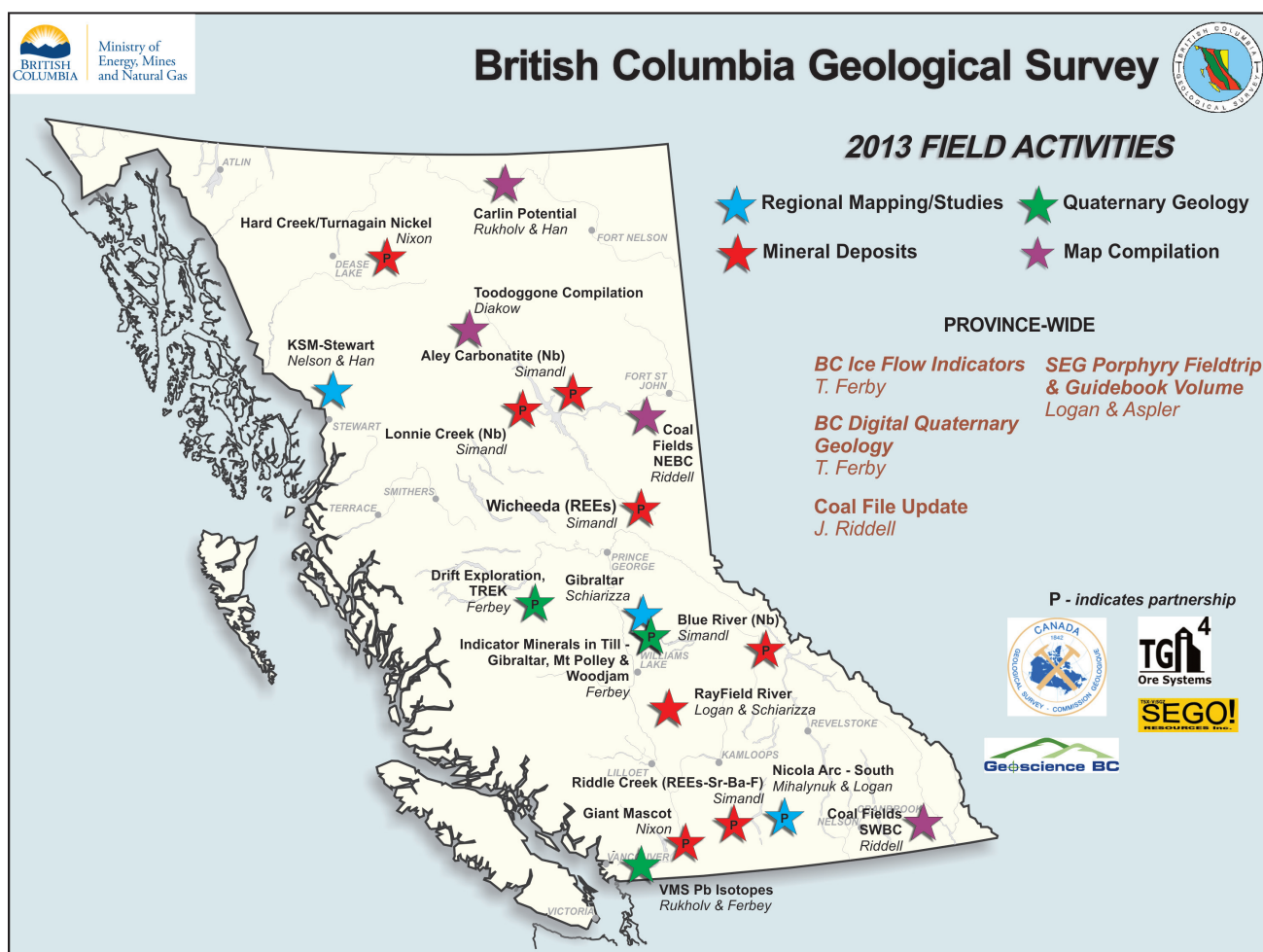
MEM-UVic Partnership Energy and Minerals Projects





2013 Projects

For 2013, the British Columbia Geological Survey's core program focuses on porphyry Cu-Au \pm Ag-Mo deposits, which make up a significant component of the province's mineral wealth. Other important themes include: orogenic Ni-Cu-PGE deposits; specialty metals; developing new geochemical and isotopic tools for exploration, Quaternary geology studies, and province-wide coal field compilation mapping.



Porphyry Deposits in BC

Nicola Arc - North

Is the Gibraltar Cu-Mo mine a Late Triassic porphyry deposit in Cache Creek terrane or a younger shear zone deposit in Quesnel terrane?

Contact: paul.schiarizza@gov.bc.ca

Nicola Arc - North

Porphyry indicator minerals in till, central British Columbia (TGI-4)

Contact: travis.ferbey@gov.bc.ca

Nicola Arc - Central

Rayfield River alkaline porphyry Cu-Au

Contact: jim.logan@gov.bc.ca

Nicola Arc - South

Regional Mapping and Cu-Au porphyry between Princeton and Merrit (with Sego! Resources)

Contact: mitch.mihalynuk@gov.bc.ca

Northwest BC

Do syndepositional faults and reactivated basement structures control Early Jurassic intrusion and mineralization along the Stewart-KSM-Brucejack trend, western Stikinia?

Contact: joanne.nelson@gov.bc.ca

Mineral deposit studies

Orogenic Ni-Cu-PGE at Giant Mascot and Turnagain deposits, British Columbia (TGI-4)

Contact: graham.nixon@gov.bc.ca

Specialty metals (TGI-4)

Contact: george.simandl@gov.bc.ca

Quaternary Geology

Till Potential Maps of the TREK Project area (with Geoscience BC)

Contact: travis.ferbey@gov.bc.ca

Ice-flow indicators of British Columbia

Contact: travis.ferbey@gov.bc.ca

Methods

Trace element systematics in apatite and other resistate minerals (MEM-UVic Partnership)

Contact: alexei.rukhlov@gov.bc.ca

Lead isotopes and trace element geochemistry of till at selected volcanogenic massive sulphide deposits west of Harrison Lake

Contact: alexei.rukhlov@gov.bc.ca

Regional Syntheses and Map Compilation

The Cordillera of British Columbia, Yukon and Alaska: tectonics and metallogeny

Contact: joanne.nelson@gov.bc.ca

Porphyry systems of central and southern BC: Prince George to Princeton

Contact: jim.logan@gov.bc.ca

British Columbia coalfield map compilation

Contact: janet.riddell@gov.bc.ca

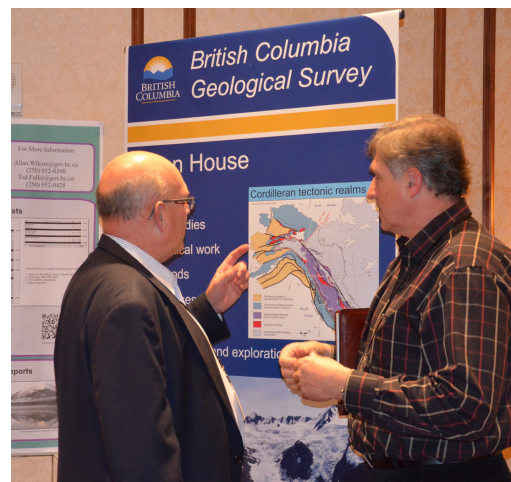
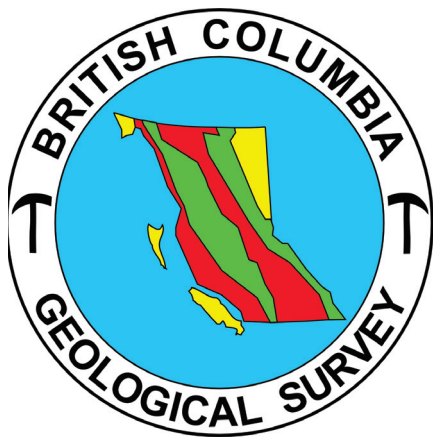
Carlin-type Au in north-central British Columbia?

Contact: alexei.rukhlov@gov.bc.ca



British Columbia Geological Survey Open House

Each year in Victoria, the British Columbia Geological Survey holds an open house co-sponsored with the Pacific Section of the Geological Association of Canada. For 2013, the event was held jointly with the annual Canadian Tectonics Group Workshop.



Thursday, November 14: BCGS Open House featuring presentations by BC Geological Survey staff.

Friday, November 15: Canadian Tectonics Workshop (Structural Geology and Tectonics Division of the Geological Association of Canada), with talks and posters by researchers from across Canada.

Saturday, November 16: Field Trip, Tectonics of southern Vancouver Island: a foot traverse along Victoria's southern coast.

Location:

**Pacific Ballroom, Marriott Hotel
728 Humboldt St., Victoria**



**Structural Geology
& Tectonics Division**



For program and registration information visit
www.em.gov.bc.ca/mining/geoscience/pages/registration
or email Janet.Hughes@gov.bc.ca



British Columbia Geological Survey

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