



British Columbia Geological Survey

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

www.empr.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 assessing British Columbia's geology and related coal and mineral resources. The Survey provides raw data, historical information, and new concepts to guide geoscience-based 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. MapPlace 2, the Survey's new online geospatial platform, serves the needs of government, the mineral exploration industry, public safety agencies, environmental organizations, communities, First Nations, research organizations, and the general public. It provides easy access to geospatial and geological databases and the tools to analyze and customize this information.



Survey Activities

Generates
pre-competitive
geoscience data



Preserves
geoscience data



Advises
government



Provides
expertise

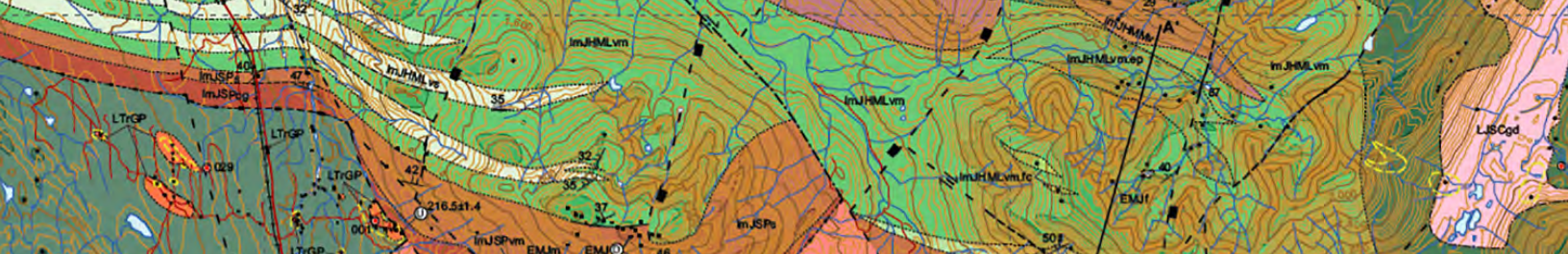


Monitors
industry activity



Attracts
global investment

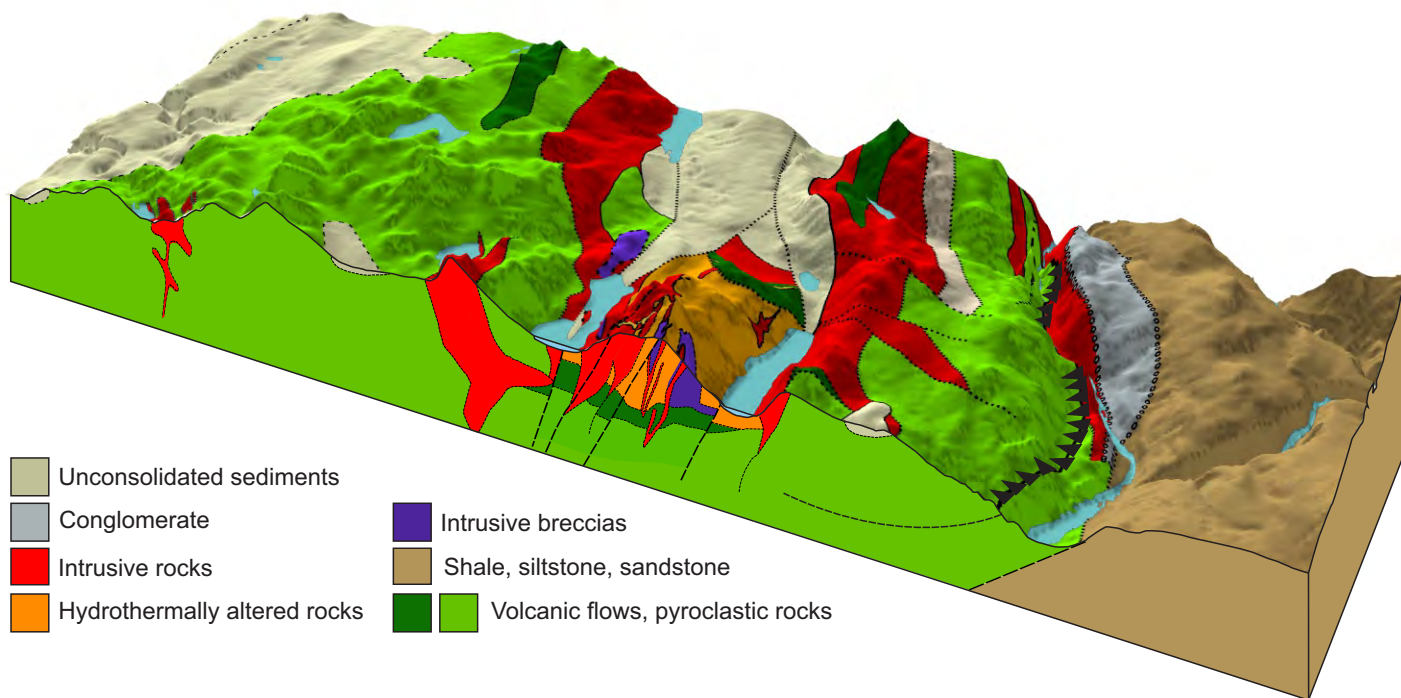




Role of Public Government Geoscience

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

Mapping is the most fundamental form of geoscience research and British Columbia Geological Survey geologists undertake field and laboratory projects to document and better understand the land base of the province in three dimensions.



Geoscience maps are used to

- *estimate mineral and aggregate potential*
- *document geochemical patterns in rocks, soils, sediments, and waters*
- *unravel the origin and geological evolution of the province*
- *establish geotechnical properties for engineering projects*





Government Geoscience in the Exploration Industry

Exploration and mining are critical to the economy of British Columbia. For example, in 2016 the total value of mine production was \$7.15 billion. Despite challenging equity markets, exploration companies continue to persevere, making significant investments that benefit the province.

Government geoscience from the British Columbia Geological Survey benefits the exploration industry by

- providing the geological framework to identify areas with high mineral potential and reduce 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 duplicating previous work



The British Columbia Geological Survey has an important role in stimulating activity, attracting investment, and providing continuous research based on a corporate memory that extends back more than 100 years.

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 (Prospectors and Developers Association of Canada presentation, 2010)



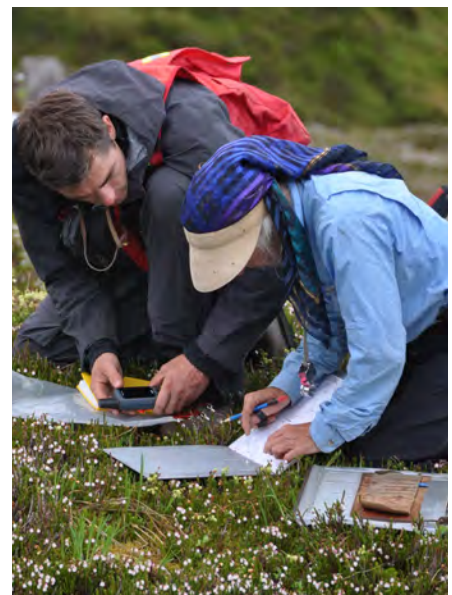


Skills Training

The British Columbia Geological Survey invests in the next generation of geoscientists by hiring and training student assistants, supporting graduate students, and mentoring student research.



The Survey helps geoscientists learn new skills and better understand Cordilleran geology by providing presentations, short courses, workshops, and field trips.





Partnerships

The British Columbia Geological Survey is a collaborative agency.

We partner with federal, provincial, and territorial governments, universities, 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 the British Columbia Geological Survey - Industry Partnership Program please contact:

Adrian Hickin, Director, Cordilleran Geoscience
Adrian.Hickin@gov.bc.ca

2017 Partners



MEM-UVic Partnership Energy and Minerals Projects

Ministry of
Energy, Mines and
Petroleum Resources



**University
of Victoria**

MDRU
Mineral Deposit Research Unit



Geoscience BC



Cordilleran Geoscience Section

The Cordilleran Geoscience Section is responsible for generating new geoscience knowledge through regional, field-based geological mapping programs, regional geochemical surveys, and targeted mineral deposit studies.



JoAnne Nelson was awarded the 2017 Provincial and Territorial Geologists Medal for the breadth of her contributions to northern Cordilleran geology, tectonics, and mineral deposits, including collaborations on many 'big picture' projects.



JoAnne Nelson receiving the medal from Jim Carr, Minister of Natural Resources Canada (left) and Rick Doucet, Minister of Energy and Resource Development, New Brunswick.

In 2016, JoAnne was awarded a Special Tribute by the Association for Mineral Exploration, to recognize her distinguished career focused on the tectonics, structural geology, and metallogeny of the northern Cordillera and, in 2015, was presented with the Gold Pick Award by the Kamloops Exploration Group, acknowledging her outstanding contributions to the minerals industry.





Cordilleran Geoscience Section geologists conduct field-based projects directed at

- regional bedrock mapping, stratigraphy, lithogeochemistry, and geochronology
- mineral deposit studies
- establishing the tectonic evolution of the Cordillera
- developing exploration methods
- Quaternary and surficial geology
- drift prospecting, till geochemistry, and indicator minerals





Laboratory, Geochemical Databases, Sample Archive

The British Columbia Geological Survey operates a geochemical laboratory that includes sample preparation and mineral separation facilities, a benchtop portable XRF, and a Linkam fluid inclusion stage. The Survey maintains geochemical databases that contain multi-element analyses from rock, till, stream- and lake-sediment, water, and coal ash samples. These databases include over 5 million determinations from more than 85,000 samples. The upgraded storage library accommodates more than 600,000 samples collected by the Survey since the 1970s.





Mineral Development Office (MDO)

The Mineral Development Office (MDO) is the Vancouver base of the British Columbia Geological Survey. The MDO links the Survey with the more than 800 global exploration and mining companies headquartered in Vancouver.

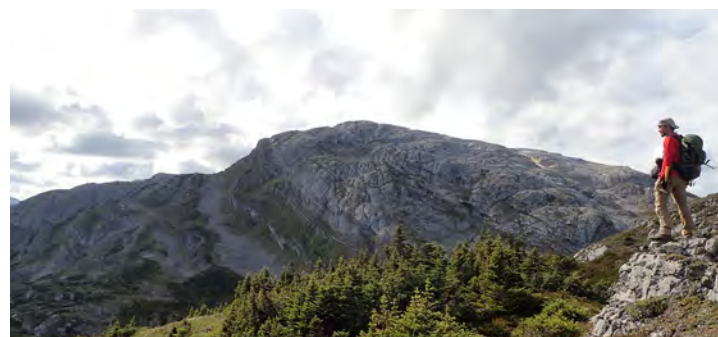
The MDO distributes British Columbia Geological Survey data and provides technical information and expertise about mineral opportunities to the investment community. It also coordinates the exploration and mining reviews produced each year by the Regional Geologists.



Regional Geologists Program



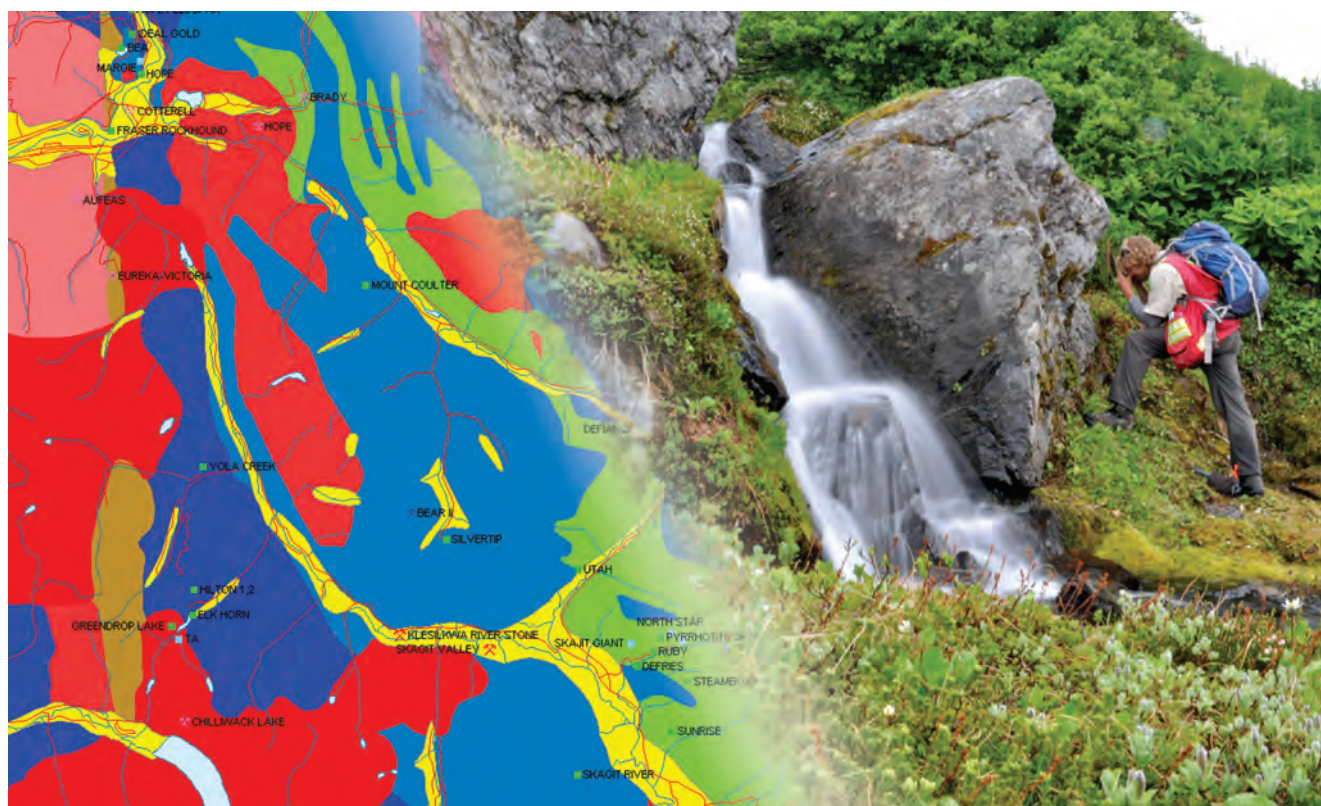
Regional Geologists are based in Smithers, Prince George, Kamloops, Cranbrook, and Vancouver. They monitor exploration and mining activities, and provide expertise to prospectors and mineral exploration companies. They also work in their communities to enhance understanding of local geoscience and to foster a healthy and prosperous minerals sector.





Resource Information Section

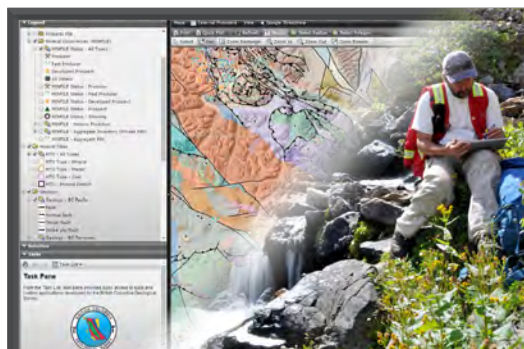
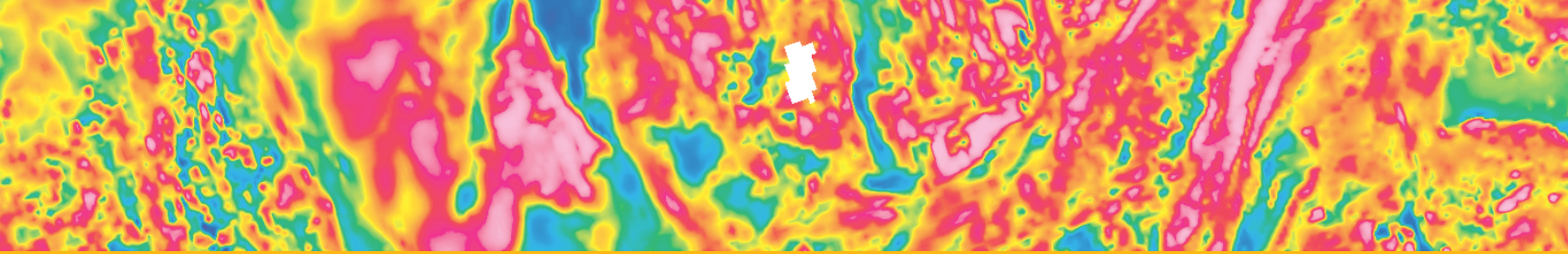
The British Columbia Geological Survey preserves, archives, and provides free web-based access to more than a century's worth of geoscience information. Since 1995, MapPlace, our database-driven geospatial web service, has provided open geoscience data and custom map-making tools to help decision-makers from diverse disciplines reduce the costs of accessing and analyzing information on the geology of British Columbia. Building on MapPlace, MapPlace 2 allows anyone with an Internet connection to mine multiple provincial geoscience databases.



MapPlace is more than just a viewing platform: through MapPlace, databases talk to each other. With a simpler interface, MapPlace 2 is easier to use, faster, handles larger datasets, provides access to third-party base maps and imagery and can be used on either a Mac or PC.

MapPlace 2 beta is now available at www.empr.gov.bc.ca/mining/geoscience/MapPlace2





MapPlace 2 (beta) Workshop

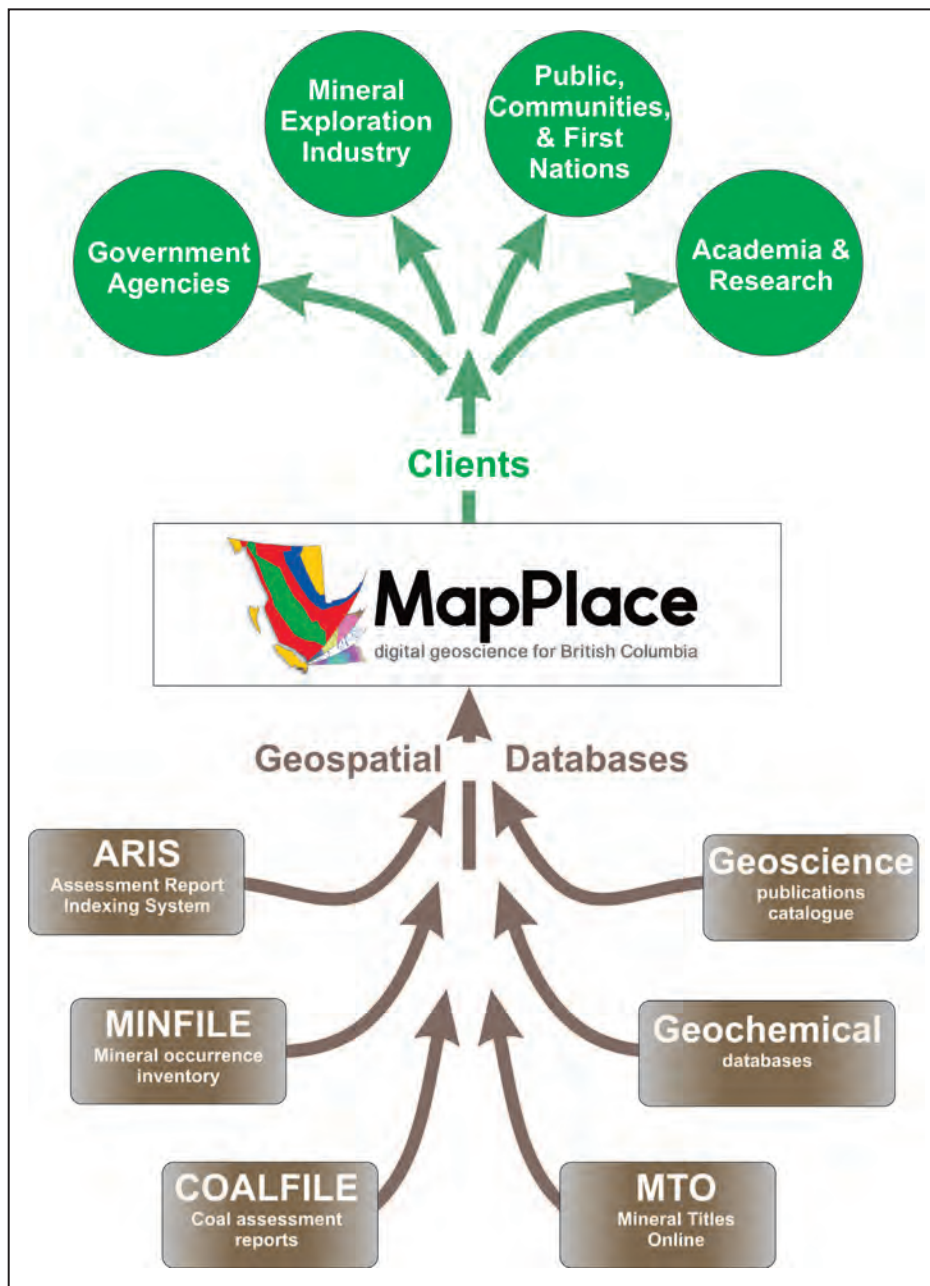
Yao Cui, Gabe Fortin, Sarah Meredith-Jones, Steven Zhao,
and Larry Jones



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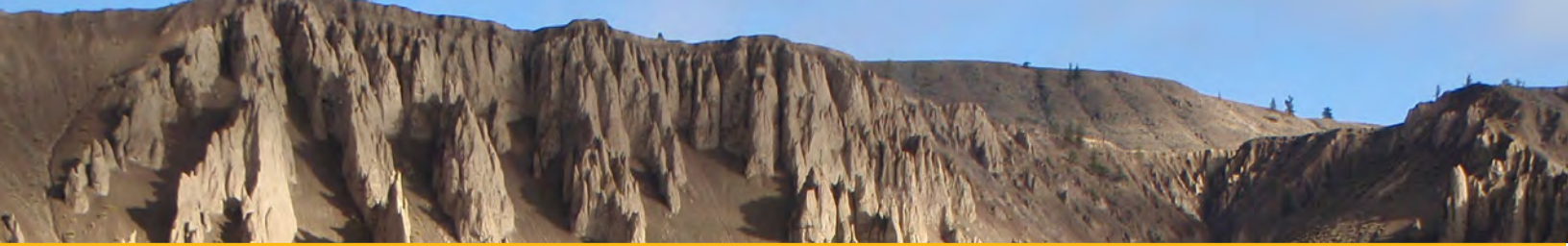


British Columbia Geological Survey Information Circular 2017-3



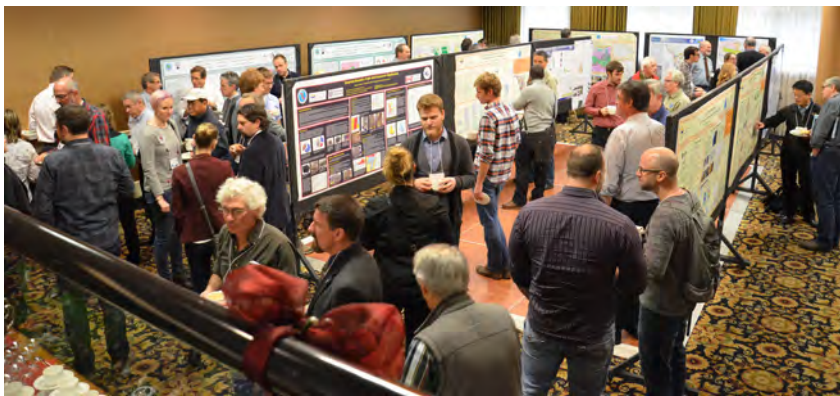
The British Columbia Geological Survey regularly offers workshops that use scenario-based exercises to help users get the most out of MapPlace 2.





British Columbia Geological Survey Open House

Each November, the British Columbia Geological Survey holds an Open House in Victoria. Co-sponsored with the Pacific Section of the Geological Association of Canada, the Open House features talks, posters, and fieldtrips devoted to Cordilleran geoscience.





Other Meetings

The British Columbia Geological Survey distributes maps and reports at regional, national, and international meetings. Survey staff regularly give presentations highlighting new developments in Cordilleran geology.

Look for the BCGS booth at the Kamloops Exploration Group (KEG) meeting in Kamloops, the Minerals South meeting in Nelson or Cranbrook, the Mineral Exploration Roundup in Vancouver, and the Prospectors and Developers Association of Canada (PDAC) meeting in Toronto.



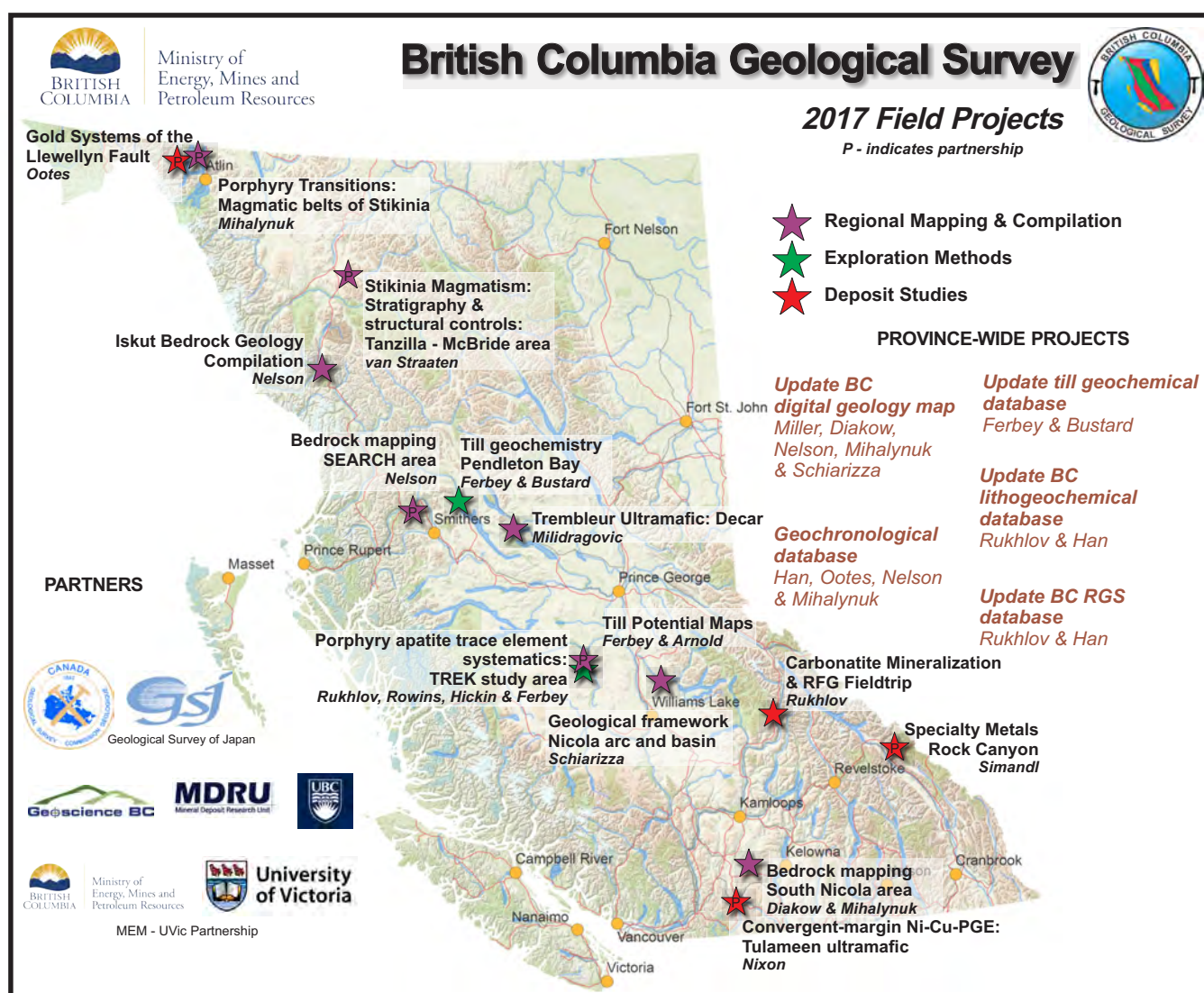
The Survey is a technical partner of the Resources for Future Generations conference being held in Vancouver, June 2018, under the auspices of the International Union of Geological Sciences. Conference themes address the availability and responsible use of the world's finite resources.
www.rfg2018.org

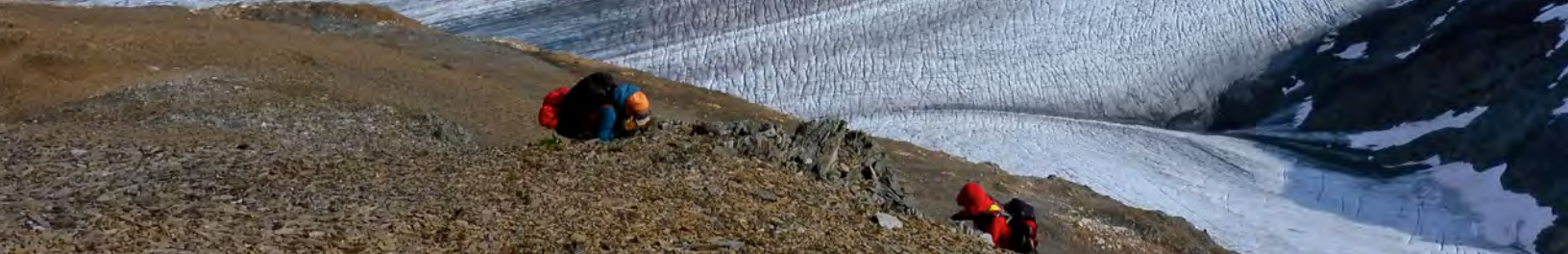




2017 Projects

For 2017, the Survey's core program included geological mapping and mineral deposit studies (porphyry Cu-Au-Mo, epithermal and orogenic Au, orogenic Ni-Cu-PGE, carbonatite mineralization, specialty metals); developing exploration methods (indicator minerals, apatite trace elements, till geochemistry); generating province-wide compilations (digital map of BC); updating province-wide geochemical databases; and creating a new geochronologic database.





Regional mapping and compilation

Northwest BC

Iskut bedrock geology compilation
Contact: joanne.nelson@gov.bc.ca

Northwest BC

Stikinia magmatism: Stratigraphic and structural controls: Tanzilla-McBride
Contact: bram.vanStraaten@gov.bc.ca

Northwest BC

Bedrock mapping SEARCH area
Contact: joanne.nelson@gov.bc.ca

Northwest BC

Porphyry transitions: magmatic belts of Stikinia
Contact: mitch.mihalynuk@gov.bc.ca

Central BC

Trembleur ultramafic, Decar
Contact: dejan.milidragovic@gov.bc.ca

South-central BC

Geological framework, Nicola arc and basin
Contact: paul.schiarizza@gov.bc.ca

South-central BC

Bedrock mapping, south Nicola region
Contact: larry.diakow@gov.bc.ca

South-central BC

Till potential maps
Contact: travis.ferbey@gov.bc.ca

Exploration methods

Indicator Minerals

Apatite trace element systematics: TREK area
Contact: alexei.rukhlov@gov.bc.ca

Till geochemistry, Pendleton Bay

Contact: travis.ferbey@gov.bc.ca

Deposit studies

Gold systems of the Llewellyn fault

Contact: luke.ootes@gov.bc.ca

Convergent margin Ni-Cu-PGE, Tulameen

Contact: graham.nixon@gov.bc.ca

Carbonatites, Blue River

Contact: alexei.rukhlov@gov.bc.ca

Specialty metals, Rock Canyon Creek

Contact: george.simandl@gov.bc.ca

Province-wide projects

BC Digital Geology

Contact: yao.cui@gov.bc.ca

Lithogeochemical database updating

Contact: alexei.rukhlov@gov.bc.ca

Till geochemical database updating

Contact: travis.ferbey@gov.bc.ca

Regional Geochemical Survey database updating

Contact: alexei.rukhlov@gov.bc.ca

Geochronologic database

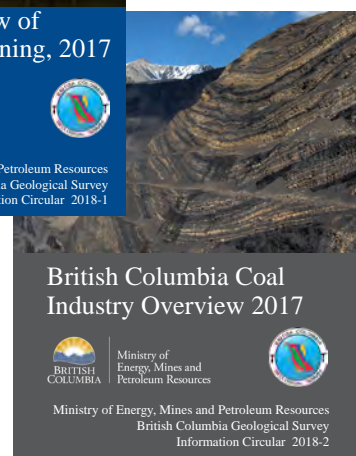
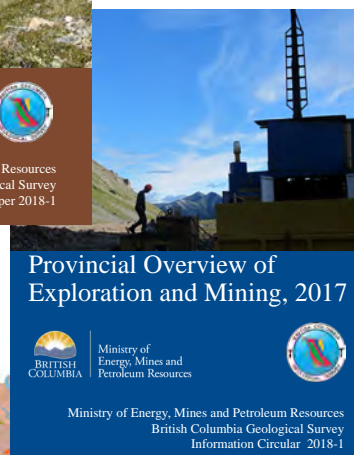
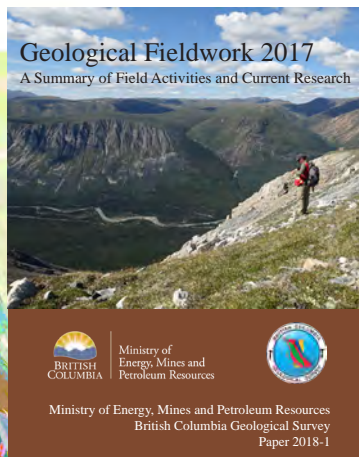
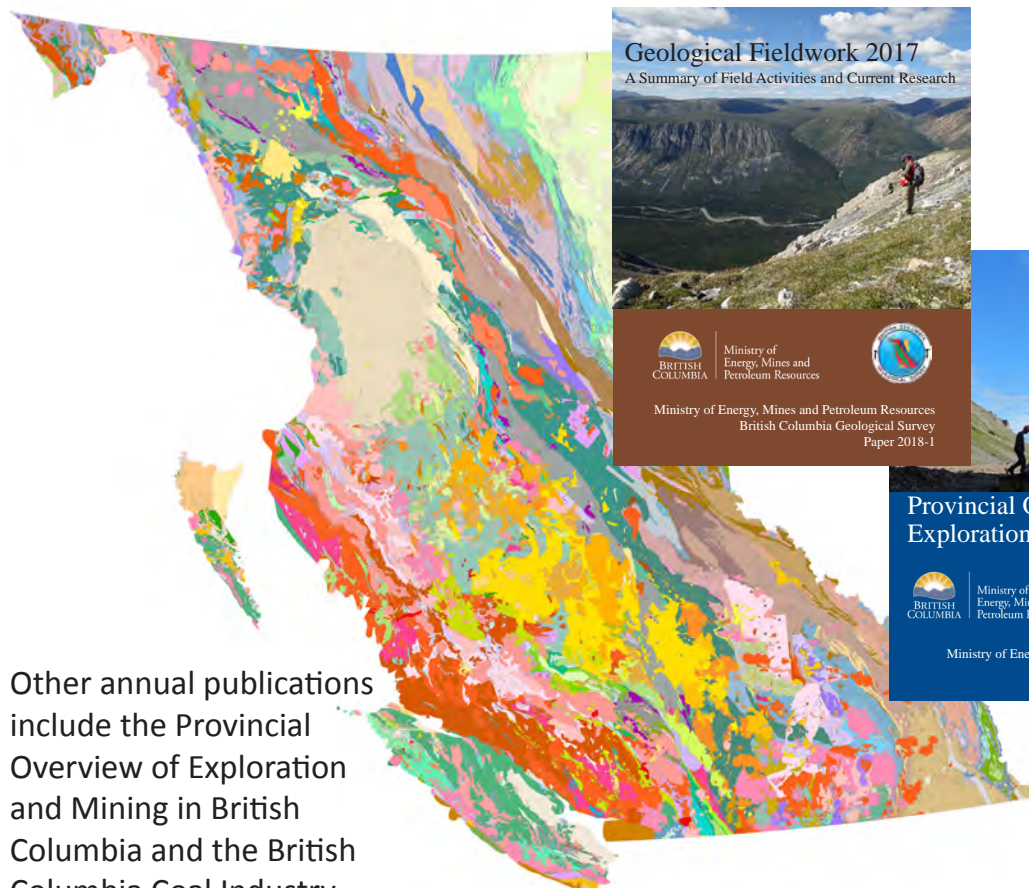
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Publications

The British Columbia Geological Survey publishes Papers, Geoscience Maps, Information Circulars, Open Files, and GeoFiles. All publications are available online, free of charge. Geological Fieldwork, published each January, includes papers highlighting current activities.



Other annual publications include the Provincial Overview of Exploration and Mining in British Columbia and the British Columbia Coal Industry Overview.



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





British Columbia Geological Survey

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