Mineral potential modelling at the British Columbia Geological Survey

BRITISH COLUMBIA
Ministry of Mining and Critical Minerals

Information Circular 2025-07

Mineral potential modelling

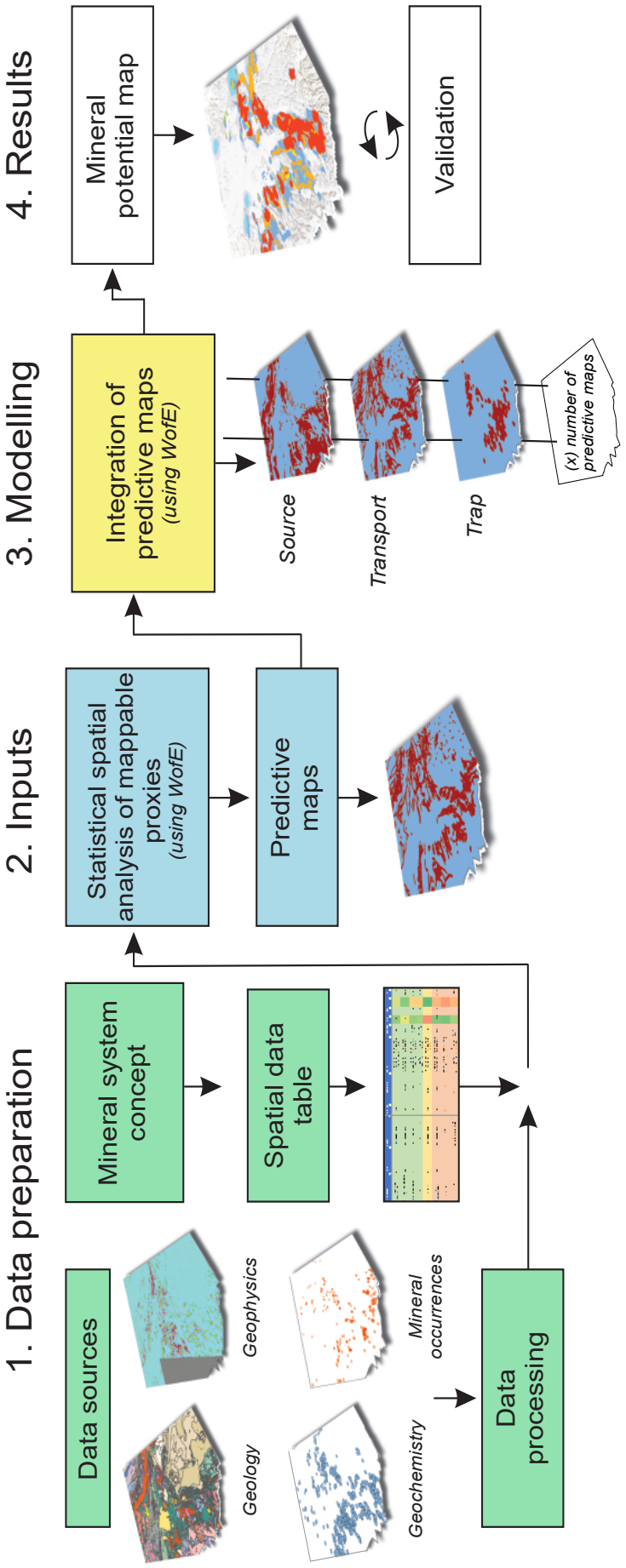
The British Columbia Geological Survey is revitalizing its mineral potential mapping. The modelling will be used to evaluate the provincial endowment of critical minerals, particularly in underexplored areas. In addition, robust mineral potential information is a key component to guide land-use and investment decisions by government, Indigenous groups, and industry.

Coupled with advances in computing technology, the new modelling takes advantage of information gained since the 1990s. The current work adopts a mineral systems approach and considers the components that control generating deposits.

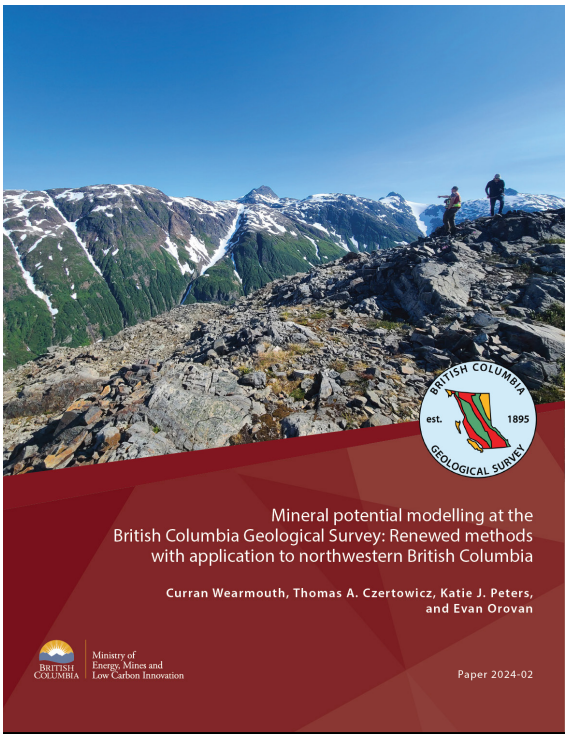
Amenable to machine learning as new data become available, the modelling uses multiple geological features as proxies for complete mineral systems to create maps that portray the relative ranking of mineral potential.

British Columbia is Canada's largest producer of copper and only producer of molybdenum. The current modelling focusses on the mineral systems containing these commodities. It also includes systems that contain nickel, cobalt, rare earth elements (REE), niobium, tantalum, platinum group elements (PGE), and zinc.

Preliminary mineral potential modelling maps have been completed for large parts of northwestern and northeastern British Columbia. These maps indicate areas that are more likely and less likely to host mineralization, information needed by decision makers considering possible future exploration interests and economic opportunities.



Modelling methods

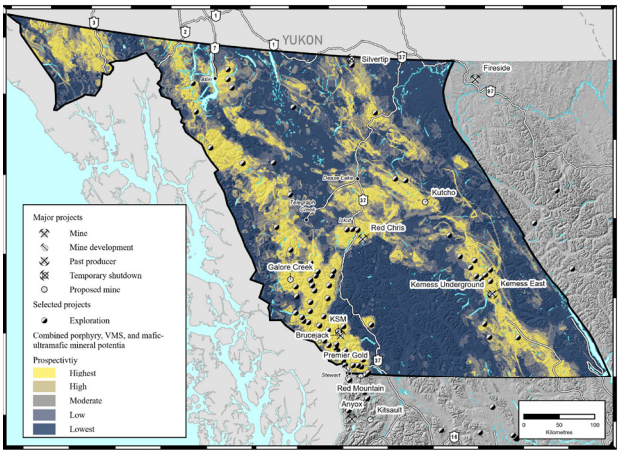


A detailed analysis of the methods used in the mineral potential modelling is available in British Columbia Geological Survey Paper 2024-02, in press.

A comparison of results between modelling done by the Survey in the 1990s and the current program is available.

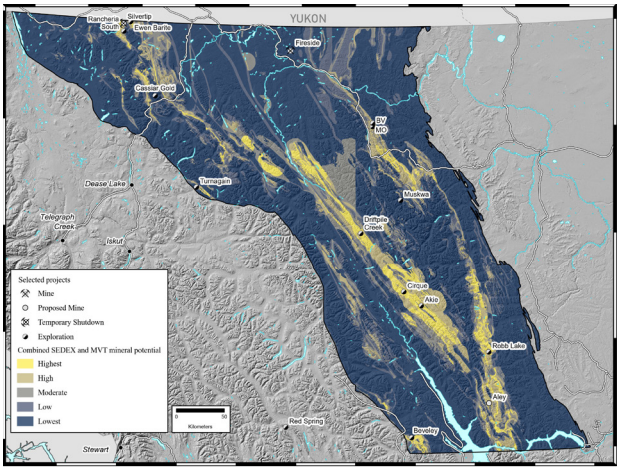
Wearmouth, C.D., Peters, K.J., Czertowicz, T.A., and Orovan, E.A., 2024. Mineral potential modelling results for northwestern British Columbia, a comparison between past and current work at the British Columbia Geological Survey. In: Geological Fieldwork 2023. British Columbia Ministry of Energy, Mines and Low Carbon Innovation, British Columbia Geological Survey Paper 2024-01, pp. 79-95.

Preliminary modelling for northwestern British Columbia



Examining the porphyry, volcanogenic massive sulphide (VMS) and mafic to ultramafic sulphide mineral systems, this map portrays the potential for copper, molybdenum, gold, silver, and nickel as primary commodities and possible companion metals such as the platinum group elements (PGE), rhenium, tellurium, beryllium, bismuth, lithium, niobium, the rare earth elements (REE), tantalum, tungsten, gallium, germanium, indium, antimony, zinc, lead, cobalt, vanadium, titanium, and chromium.

Preliminary modelling for northeastern British Columbia



Examining the sedimentary exhalative (SEDEX) and Mississippi Valley-type (MVT) mineral systems, this map portrays the potential for lead, zinc, and barite as primary commodities and possible companion metals such as silver, magnesium, gallium, germanium, indium, the rare earth elements (REE), and fluorine.

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