Update of the provincial Regional Geochemical Survey (RGS) database at the British Columbia Geological Survey

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Databases for this paper can be downloaded from

https://www2.gov.bc.ca/gov/content/industry/mineral-exploration-mining/british-columbia-geological-survey/publications/geofiles#GF2020-08

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Summary

The Regional Geochemical Survey (RGS) database stores and manages geochemical data collected by the British Columbia Geological Survey (BCGS), the Geological Survey of Canada (GSC), and Geoscience BC systematically and consistently. It includes data from drainage waters, fluvial deposits such as heavy mineral concentrates (HMC) and moss-mat sediments, lacustrine deposits, and vegetation such as spruce twigs and needles. The RGS data are an integral part of the provincial geochemical datasets, along with those from bedrock (Han and Rukhlov, 2020) and basal till (Bustard et al., 2017). They provide information about the lithochemical, hydrochemical and biochemical dispersion of elements in drainage systems and in vegetation of the province and processing and analyzing RGS data helps mineral exploration, environmental monitoring, and bedrock mapping. The RGS database is now populated with quality-controlled information in a standard format including complete metadata, and new data are integrated with existing data for permanent maintenance and storage. When the database is updated, RGS data products are then derived from the database for release.

Han and Rukhlov (2017) compiled data from 111 sources published between 1976 and 2013. Derived from about 64,800 samples, these data include about 5 million determinations analyzed by 18 analytical methods in 18 laboratories. In the present release we augment these data with new information from BCGS and Geoscience BC sources published between 2016 and 2019 (Fig. 1). The new data are from 656 samples and include about 70,000 determinations analyzed by 12 analytical methods in seven laboratories. Compared with the data in Han and Rukhlov (2017), data in this release have been given further quality control treatment and revision.

- Sample MASTERIDs are standardized. “SS” or “MM” are appended to the MASTERID if more than one sediment type was collected at the same site.
- Data from sediment, HMC, water, and vegetation samples are released in separate sheets, each with its own set of coordinates, map, and geology attributes.
- Missing sample geology attributes are filled with those extracted from the BC digital geology map (Cui et al., 2013). Duplicated ICP analytes in Han and Rukhlov (2017) are removed.
- Data analyzed using experimental, non-RGS analytical methods (i.e., multiple-acid ICP and LA-ICP-MS plus XRF) for conventional stream and moss-mat sediment are excluded.

This GeoFile releases the updated RGS data in two MS Excel files, **‘RGS2020_ data.xlsx’** and ‘**RGS2020_metadata.xlsx’** (BCGS_GF2020-08.zip). The file ‘RGS2020_data.xlsx’ contains sample information and analyte concentrations determined by various analytical methods and consists of eight sheets: 1) **‘litho’** for concentrations derived from sediment and moss mats; 2) **‘hydro’** for concentrations derived from water; 3) **‘litho_selective’** from analysis of archived sediment samples using sodium acetate leaching with ICP-ES finish; 4) **‘HMC’** from heavy mineral concentrates; 5) ‘bio_twig’ from tree twig; 6) **‘bio_ash’** from needle ash; 7) **‘laboratories’** for laboratories and for representations of values below detection limits; and 8) **‘geology_at_sample_site’**, which were extracted from the BC digital geology map (Cui et al., 2013) using a spatial query. The file **‘RGS2020_metadata.xlsx’** also has eight sheets. As the name implied, it provides metadata for the corresponding data sheets in ‘RGS2020_data.xlsx’.

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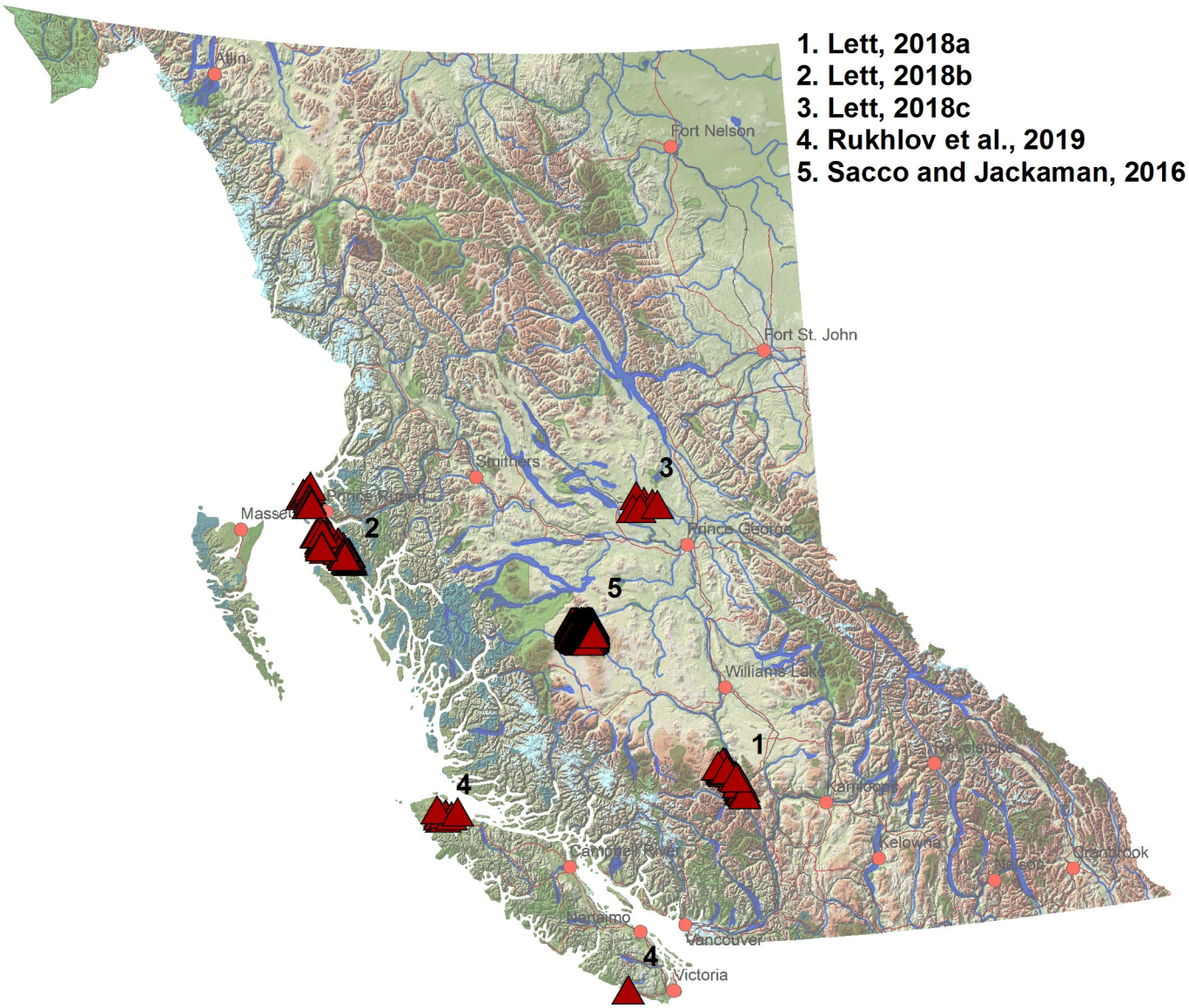

Fig. 1. Sample locations and sources of geochemical data published by the BCGS and Geoscience BC between 2016 and 2019 and added to the RGS database.

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