



British Columbia radiogenic isotope compilation (Sr-Nd-Hf-Pb)

British Columbia Geological Survey



Ministry of
Mining and
Critical Minerals

GeoFile 2025-08

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Responsible Mining and Competitiveness Division
British Columbia Geological Survey

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Summary

As part of province-wide geochemical re-analysis, the British Columbia Geological Survey is collecting hundreds of new whole rock radiogenic isotope and trace-element data. Here we contribute whole rock and mineral Sr-Nd-Hf-Pb and galena Pb isotopic data, compiled from 1439 samples (Rukhlov et al., 2025). For each sample, corresponding metadata was captured from the publication source. Some published sample data did not include geographic coordinates. In such cases, sample sites were estimated from location maps in the original publications, although the precise location of some samples could not always be captured. We include citations to the original source references for the reader to refer to.

The isotopic data are released in [BCGS_GF2025-08.zip](#) an Excel file with 3 tabs: 1) Master; 2) Explanation of headers; and 3) atomic_ratio_calculator. The Master tab holds isotopic data captured from the original source, wherein each row corresponds to a sample and each column to an attribute value of either metadata, measured result, or calculated ratio. The Explanation of headers tab explains each column header in the Excel file. The atomic_ratio_calculator tab contains all formulas used to determine the calculated atomic ratios and parameters.

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References cited

Galer, S.J.G., and Abouchami, W., 1998. Practical application of lead triple spiking for correction of instrumental mass discrimination. *Mineralogical Magazine*, 62A, 491-492.

Hamilton, P.J., O'Nions, R.K., Bridgwater, D., and Nutman, A., 1983. Sm-Nd studies of Archaean metasediments and metavolcanics from West Greenland and their implications for the Earth's early history. *Earth and Planetary Science Letters*, 62, 263-272.

Iizuka, T., Yamaguchi, T., Hibiya, Y., and Amelin, Y., 2015. Meteorite zircon constraints on the bulk Lu-Hf isotope composition and early differentiation of the Earth. *Proceedings of the National Academy of Sciences of the United States of America*, 112, 5331-5336.

Jacobsen, S.B., and Wasserburg, G.J., 1980. Sm-Nd isotopic evolution of chondrites. *Earth and Planetary Science Letters*, 50, 139-155.

Jaffey, A.H., Flynn, K.F., Glendenin, L.E., Bentley, W.C., and Essling, A.M., 1971. Precision measurement of half-lives and specific activities of ^{235}U and ^{238}U . *Physical Review*, C4, 1889-1906.

Le Roux, L.J., and Glendenin, L.E., 1963. Half-life of thorium-232. In: *Proceedings of the National Conference on Nuclear Energy*, Pretoria, South Africa, pp. 83-94.

Lugmair, G.W., and Marti, K., 1978. Lunar initial $^{143}\text{Nd}/^{144}\text{Nd}$: differential evolution of lunar crust and mantle. *Earth and Planetary Science Letters*, 39, 349-357.

Rehkämper, M., and Hofmann, A.W., 1997. Recycled ocean crust and sediment in Indian Ocean MORB. *Earth and Planetary Science Letters*, 147, 93-106.

Rotenberg, E., Davis, D.W., Amelin, Y., Ghosh, S., and Bergquist, B.A., 2012. Determination of the decay-constant of ^{87}Rb by laboratory accumulation of ^{87}Sr . *Geochimica et Cosmochimica Acta*, 85, 41-57.

Rukhlov, A.S., Ootes, L., and Han, T., 2025. British Columbia radiogenic isotope compilation (Sr-Nd-Hf-Pb): Introduction and examples of utility. In: *Geological Fieldwork 2024*, British Columbia Ministry of Mining and Critical Minerals, British Columbia Geological Survey Paper 2025-01, pp. 177-188.

Söderlund, U., Patchett, P.J., Vervoort, J.D., and Isachsen, C.E., 2004. The ^{176}Lu decay constant determined by Lu-Hf and U-Pb isotope systematics of Precambrian mafic intrusions. *Earth and Planetary Science Letters*, 219, 311-324.

Todt, W., Cliff, R.A., Hanser, A., and Hofmann, A.W., 1996. Evaluation of ^{202}Pb - ^{205}Pb double spike for high-precision lead isotope analysis. In: Basu, A.I. and Hart, S.R., (Eds.), *Earth Process: Reading the Isotopic Code*. *Geophysical Monograph*, 95, pp. 429-437.



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