

## Yukon whole-rock Nd-Hf-Sr-Pb and feldspar Pb isotope compilation

### Summary:

Whole-rock and feldspar isotopic studies are used by geologists to investigate and understand geologic processes that occur deep below the earth's surface. For example, Nd, Hf and Sr isotopic ratios in plutonic rocks can indicate juvenile (e.g., mantle) or evolved (e.g., crustal) magmatic sources. Lead isotope analyses can indicate which rocks were the source of metal (Pb) in mineral deposits.

### Description:

This compilation includes published Nd, Hf, Sr and Pb (plus minor O, S and C) isotopic data from 1722 whole-rock powders and feldspar separates. About 1200 of these samples are located in Yukon and the remainder are located in British Columbia, Alaska or Northwest Territories. This compilation of whole-rock and feldspar isotopic data builds off of a compilation that Kristen Rasmussen (2013) did as part of her doctoral thesis at the University of British Columbia.

To allow easier integration into a user's GIS platform, and for greater spatial querying of the data, the "database" is presented as a "flat file" (i.e., shapefile, geodatabase and text formats).

This whole-rock and feldspar isotope database will be subject to periodic updates as new data are acquired through ongoing mapping, exploration and other research activities. Any errors, omissions or new data known to users should be reported to the Yukon Geological Survey. Your feedback contributes to improving the accuracy of the geoscience databases for Yukon.

Contact: [Patrick.Sack@yukon.ca](mailto:Patrick.Sack@yukon.ca); [YGS-Bedrock@yukon.ca](mailto:YGS-Bedrock@yukon.ca)

### Reference:

Rasmussen, K.L., 2013. The timing, composition and petrogenesis of syn- to post-accretionary magmatism in the northern Cordilleran miogeocline, eastern Yukon and southwest Northwest Territories. PhD thesis, University of British Columbia, 810 p.

## Yukon sulphide Pb and S isotope compilation

### Summary:

Sulphide S and Pb isotope studies are used in mineral deposit studies to investigate the source of metals. For example, the Pb isotopic ratios of feldspar in plutons near a deposit can be compared to that of galena in mineralized samples; similar Pb isotopic ratios between the two are an indication of magmatic involvement in mineralization. Similarly, S isotope ratios can help distinguish between mineralization processes and S sources in clastic dominated massive sulphide (sedex) deposits.

### Description:

This compilation includes S (1251 analyses) and Pb (1622 analyses) isotopic data from nearly 450 mineral occurrences. Approximately 300 of these occurrences are located in Yukon and the remainder are located in British Columbia, Alaska or Northwest Territories. To facilitate data interpretation, a hierarchical deposit model scheme and mineralization age are ascribed to each occurrence.

The Pb isotope portion of this compilation builds upon the compilation by Collin Godwin (1988) that was subsequently maintained by the University of British Columbia. Data from Alaska are primarily from the Gaccetta and Church (1989) compilation.

This dataset is designed to be used in conjunction with a GIS platform and as such is presented here as a “flat file” (i.e., shapefile, geodatabase and text formats). The simple data structure allows for easier integration into GIS platforms and greater spatial querying of the data.

This sulphide isotope database will be subject to periodic updates as new data are acquired through ongoing mapping, exploration and other research activities. Any errors, omissions or new data known to users should be reported to the Yukon Geological Survey. Your feedback contributes to improving the accuracy of the geoscience databases for Yukon.

Contact: [Patrick.Sack@yukon.ca](mailto:Patrick.Sack@yukon.ca); [YGS-Bedrock@yukon.ca](mailto:YGS-Bedrock@yukon.ca)

#### References:

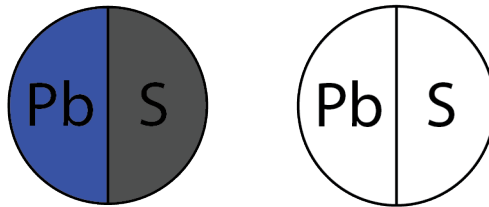
Gaccetta, J.D. and Church, S.E., 1989. Lead isotope database for sulfide occurrences from Alaska. USGS Open-File 89-688, p. 60.

Godwin, C.I., Gabites, J.E. and Andrew, A., 1988. Leadtable: A Galena lead isotope database for the Canadian Cordillera, with a guide to its use by explorationists. British Columbia Mineral Resources Division, Geological Survey Branch, Paper 1988-4, p. 1–24.

## Symbology

The symbology for these layers indicate whether isotopic analysis has been performed for specific elements of interest. A coloured section indicates that the analysis has been completed, while a white section indicates that no analysis has been performed.

*Symbology for Yukon sulphide S and Pb isotope compilation:*



*Symbology for Yukon whole-rock Nd-Hf-Sr-Pb and feldspar Pb isotope compilation:*

