

Distinguishing the “signal” from one source of “noise” in Labrador Lake sediments

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An association consisting primarily of the elements Al, Ba, Hf, K, Li, Mg, Na, Nb, Rb, Sc, Sr, and Ti is universal in the analyses of lake sediments from Labrador. Analyses of seven of these twelve elements were made available for the first time in a program of re-analysis whose results were released in 2012. The element association appears to be related to the amount of inorganic clastic material in the sediment, and may mask the responses of these elements (some of which are of potential economic significance) to local geology. It is not, however, directly complementary to the amount of organic material in the sediment, as represented by loss-on-ignition (LOI).

Modelling the clastic component numerically by regression analysis enables the identification of departures from the model, in the form of regression residuals. The effectiveness of this method of removing the clastic contribution from the lake sediments' composition, thereby highlighting local areas of enrichment and depletion, is demonstrated by the emergence of a number of features whose geological significance is indisputable. Furthermore, the method has drawn attention to certain well-defined features whose source is unknown, but which may be related to mineralization: specifically, the Colville River and Bondurant Lake Ba anomalies, and the Thompson Lake/ Michikamats Li anomaly, all in western Labrador.