Regional targeting of IOCG deposits in Québec

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1. Abstract

IOCG's dominate natural deposits among Proterozoic ore deposits. The Québec region, a 1,1 Ga Ti-iron oxide province, is a key area to study due to its significant IOCG deposits. This study presents a regional exploration strategy that integrates geophysical, geochemical, structural and metallogenic data. The objective is to generate regional exploration targets using data from public databases. The approach is presented at the scale of the province of Quebec and Labrador. The objective is to identify potassic and sodic hydrothermal alteration, characteristic suites of elements (Cu, Ce, U and Co), and structural control along major lineaments. These features collectively represent excellent regional-scale geophysical and geochemical targets.

2. Geophysical Anomalies

Geophysical surveys are crucial for targeting IOCG deposits. In this study, a suite of indicator elements in stream and lake bottom sediments is used to generate regional exploration targets. The approach is applied at the scale of the province of Quebec and Labrador. The results demonstrate that the potential for discovering IOCG deposits in Quebec is good and that an integrated geological and geophysical approach can be used to define favourable areas for exploration.

3. Geophysical Lineaments

Geophysical lineaments are important for IOCG exploration. This study highlights sharp magnetic lineaments interpreted as brittle faults. These lineaments are shown in red. These areas are favourable for iron oxide exploration. The results obtained demonstrate that the potential for discovering IOCG deposits in Nova Scotia is significant, and that an integrated geological and geophysical approach can be used to define favourable areas for exploration.

4. Geochemical Anomalies

Geochemical surveys are essential for IOCG exploration. This study utilizes a fuzzy logic method to identify geochemical anomalies. The results demonstrate that the potential for discovering IOCG deposits in Nova Scotia is significant, and that an integrated geological and geophysical approach can be used to define favourable areas for exploration.

5. Synthesis

The results obtained demonstrate that the potential for discovering IOCG deposits in the central Superior Province is significant, and that an integrated geological and geophysical approach can be used to define favourable areas for exploration.