

Earth Sciences

Colloquium Series

Tavis Enno

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Genesis of the Archaean Troilus Gold-Copper Deposit, Quebec. Evidence for a multi-stage, mixed genetic origin



Date: Friday, November 22, 2024

Time: 1:30 pm

Location: BGS 0153

Located in the Frotet-Evans greenstone belt of Quebec, Canada's Superior Province, the Archaean Troilus gold-copper deposit is a case study highlighting the challenges of exploration in deformed terranes and the importance of reassessing genetic interpretations as more data becomes available. First discovered almost 40 years ago, the low-grade, high-tonnage Troilus deposit is experiencing a renaissance of exploration. Beginning in 2018, efforts to expand the resource have shown the extent of economic mineralization is continuous beyond the historical open pit workings. As of 2023, the resource has grown from a modest 2 million ounces (Moz) gold and 70,000 tonnes (t) copper produced by the former project to an indicated resource containing 9.32 Moz gold, 17.79 Moz silver, and 364,000 t copper. However, to compound matters, the deposit genesis has been of

considerable debate, with prominent interpretations including porphyry and orogenic type systems, with each model posing significant implications on the nature of the ore system. Considering past debates and current exploration developments, a renewed study on the origins of mineralization was required to better delineate mineralized zones and generate new targets in the region. The geochemistry-focused, petrology-supported approach of this work investigates the signatures of mineralization, its relationship to deformation, and the behaviour of metals in hydrothermal fluids during deposit genesis. In this talk I will provide an abridged history and background of the deposit, the objectives of the current project, and our multi-technique approach to resolving a revised genetic model for the Troilus deposit.

As the award winner of the 2023-2024 G. Gordon Suffel Fellowship for Graduate Studies in Applied Economic Geology, Tavis has been working alongside Dr. Alysha McNeil, assisting in the curation of the Suffel Collection. The Suffel collection is a global collection of ore suites that is home to tens of thousands of specimens donated by students, faculty, and mining companies started around 1940 by Dr. Rod McDonald. In his role as the Suffel award winner, Tavis catalogued a substantial donation of lithium ore and associated host rocks collected from the Whabouchi Mine, Quebec. Although his role as the Suffel award winner has ended, he continues to volunteer in the suite as the economic geology curatorial assistant, assisting with public events and the continued curation of the ever-expanding Suffel Collection.

Coffee and donuts will be served.