

PROJECTS RELATED TO BASE METALS (Cu, Zn, Pb, Ni, Co)

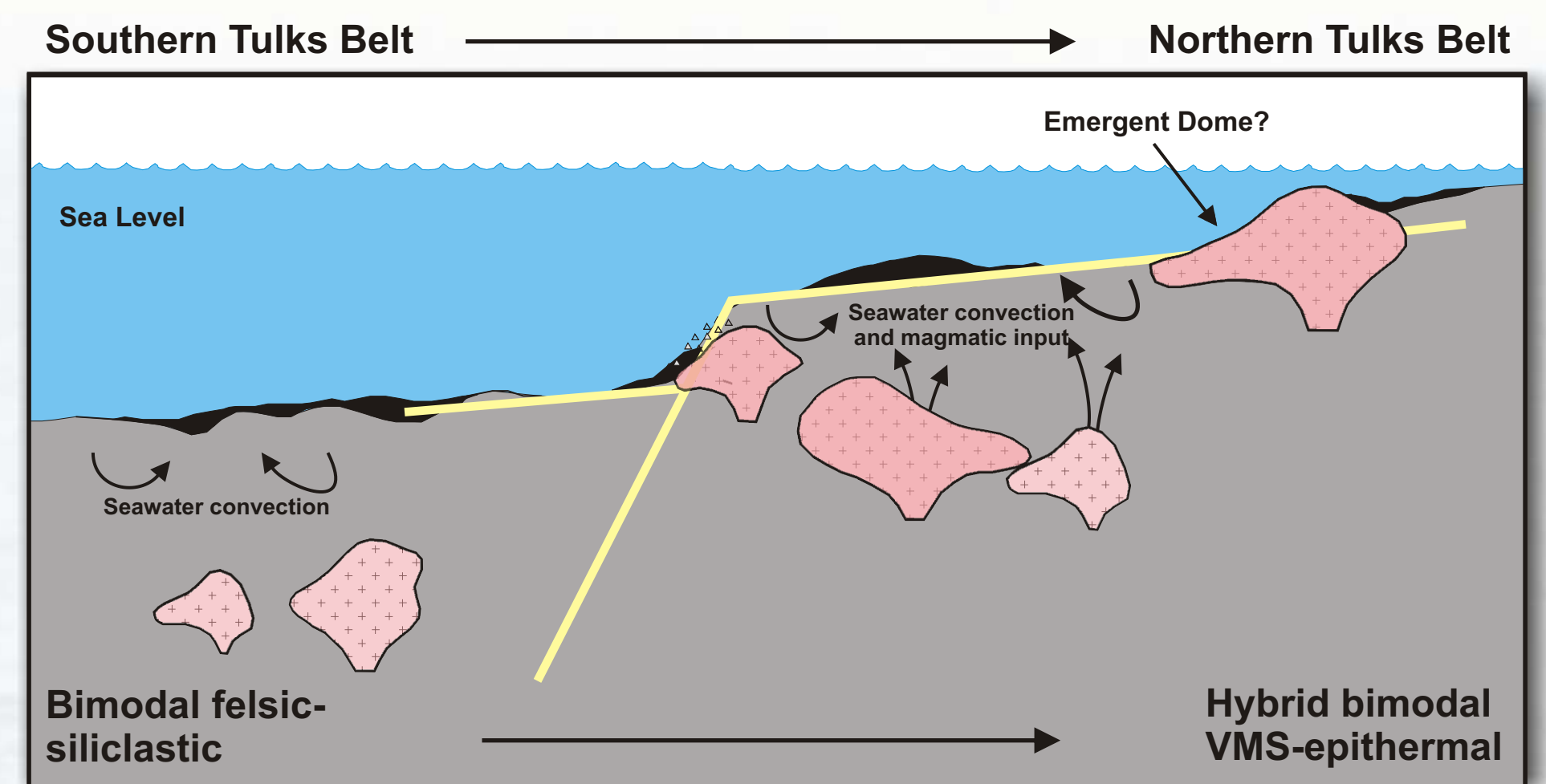
Base-metal deposits in Newfoundland and Labrador fall into essentially three groups, all of which have provided significant production over time. The most widespread and diverse deposits of Cu, Zn and Pb are associated with early Paleozoic volcanosedimentary

sequences in central Newfoundland, and are products of volcanogenic massive sulphide (VMS) systems. There is also significant potential for carbonate-hosted Zn-Pb deposits in western Newfoundland.

Polymetallic VMS Mineralization in the Victoria Lake Supergroup

Research into VMS metallogeny since 2006 has been focused in the Victoria Lake Supergroup (VLSG), in the region south and east of Red Indian Lake. These rocks include the Duck Pond deposit, which entered production in May 2007, and several high-profile exploration projects, including Boomerang (Messina Minerals), LeMarchant (Paragon Minerals), Bobbys Pond (Mountain Lake Resources) and Daniels Pond (Royal Roads). In 2008, this project was office-based, focused on the preparation of an integrated report and accompanying database. Results indicate that the VLSG includes several distinct styles of VMS mineralization, and that the character of mineralization varies systematically with the host sequences and geography, from north to south.

VMS subgroups include bimodal-siliciclastic, bimodal-felsic and hybrid VMS-epithermal environments. Deposits in the north (e.g., Daniels Pond, Bobbys Pond) have affinities to the latter types, suggesting a shallower-water setting with significant high-level magmatic input. In contrast, deposits in the south are developed within volcanoclastic settings, and are at least in part formed by pervasive replacement of host sequences, likely in deep-water settings. Geochronological resolution of host sequences continues to be complicated by the paucity of zircon in volcanic rocks, and work is ongoing. New data indicate



Styles of VMS mineralization in the Tulks Belt of the Victoria Lake Supergroup

that the Boomerang deposit host sequence formed ca. 491 Ma, and may thus be distinct from the ca. 498 Ma Tulks Group, although they appear geochemically similar. We are currently attempting to better resolve the latter with a second attempt to date the host rocks at Daniels Pond, using a felsic tuff from the immediate footwall.

SEDEX and/or VMS Potential in the Central Mineral Belt of Labrador



Sulphide-rich pelitic metasedimentary rocks, Post Hill Group

The Central Mineral Belt (CMB) of Labrador is best-known for uranium and copper, but it also contains stratiform sulphide zones in two early Proterozoic supracrustal sequences. The majority of these are within the Moran Lake Group, and are locally Zn-enriched. Pyrite- and pyrrhotite-rich sulphide zones also exist in the Post Hill Group. In 2008, a pilot project was initiated in Labrador to assess the potential of these sequences using the geochemical signatures of argillaceous



Silicate-facies iron formation, Moran Lake Group

sedimentary rocks (i.e., shales and pelitic schists) and exhalative units (sulphide- and oxide-facies iron formations) as pathfinders. This is in part an application of methodology developed through the Geological Survey of Canada "Deep Search" TGI project. Sulphide showings were visited to update existing MODS information, and new sulphide showings were documented in the Post Hill Group in the Kaipokok Bay area.

Magmatic Sulphide Mineralization in Labrador

The Voisey's Bay deposit represents a major source of nickel and copper. Exploration continues for analogues of this world-class deposit, but Survey activities in 2008 were limited to monitoring of results, and some follow-up geochronology on intrusions from western Labrador.

Work in 2007 confirmed that mineralized intrusions in the Evening Lake area are part of the ca. 1450 Ma Shabogamo gabbro suite; geochronological work on the Michikamau Intrusion is ongoing.