TILL GEOCHEMISTRY
SHEFFIELD LAKE - TOPSAILS AREA

Newfoundland Labrador
Natural Resources

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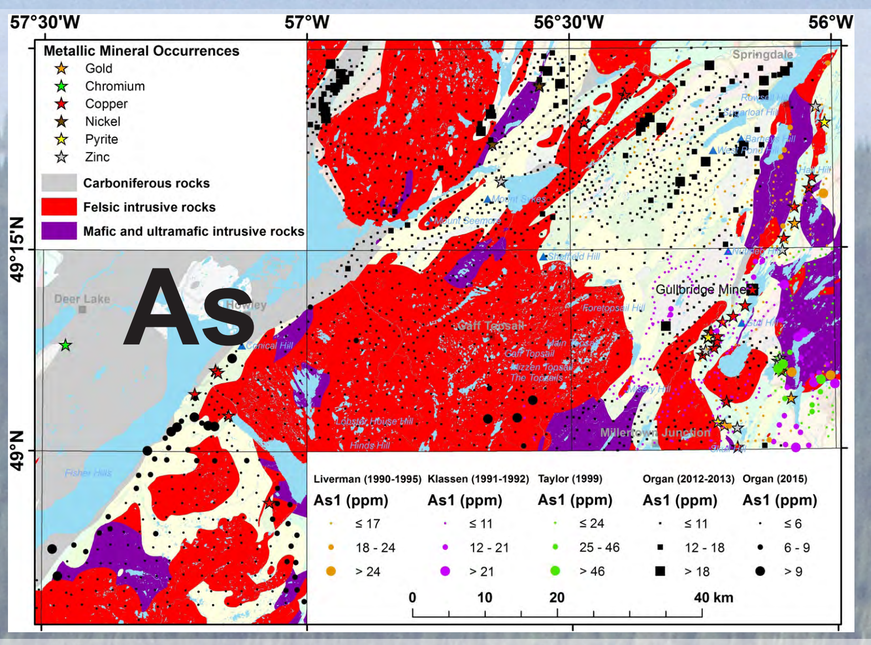
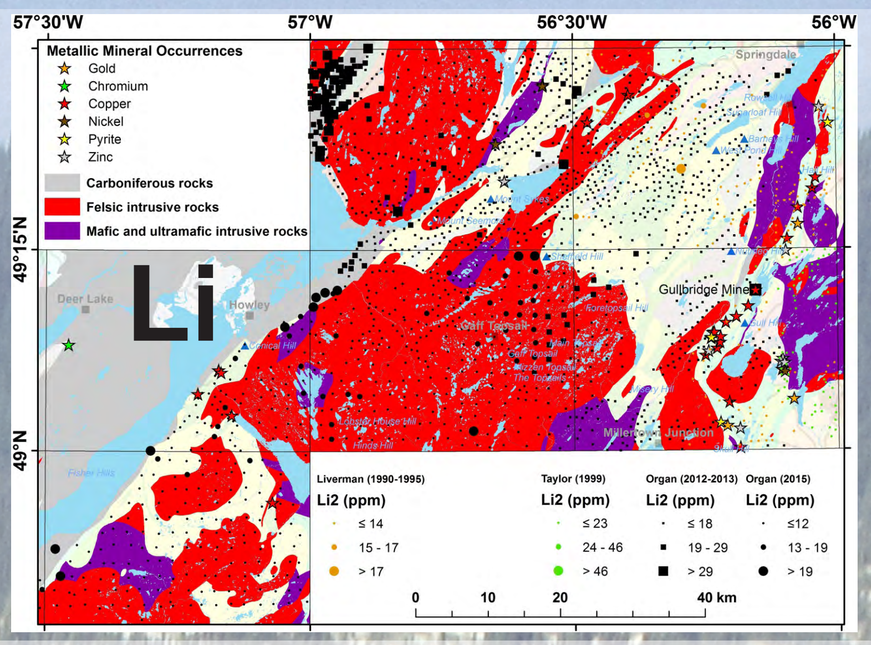
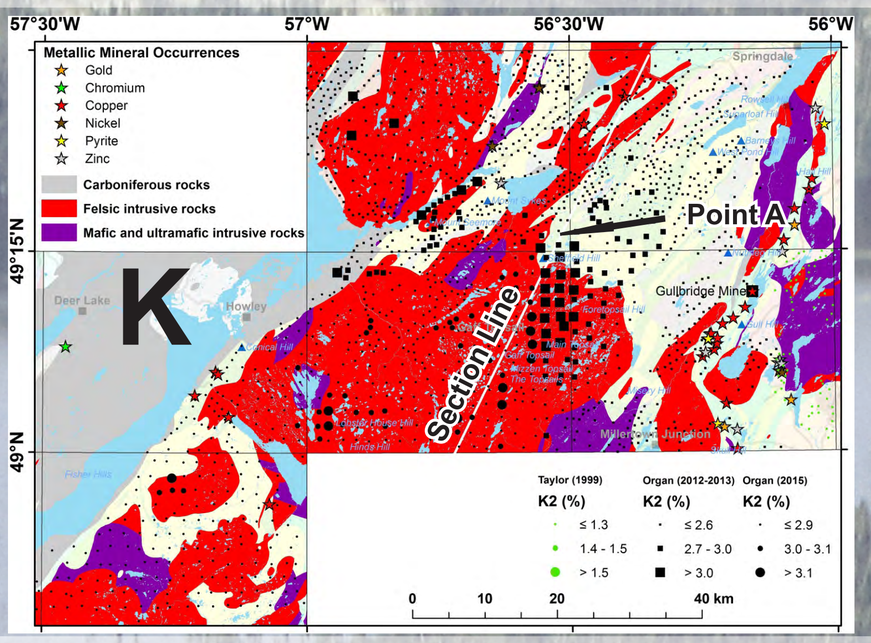
Analytical results for 1,527 till samples collected in 2012-2013 and 2015 in the adjacent Sheffield Lake (NTS 12H/07) and Topsails (NTS 12H/02) areas have just been released. Samples were analyzed for Ag, As, Au, Ba, Be, Br, Ca, Cd, Ce, Co, Cr, Cu, Cs, Dy, Eu, Fe, Hf, K, La, Li, Lu, Mg, Mn, Mo, Na, Nb, Ni, P, Pb, Rb, Sb, Sc, Se, Sm, Sr, Ta, Tb, Th, Ti, U, V, W, Y, Yb, Zn, Zr and loss-on-ignition (LOI).



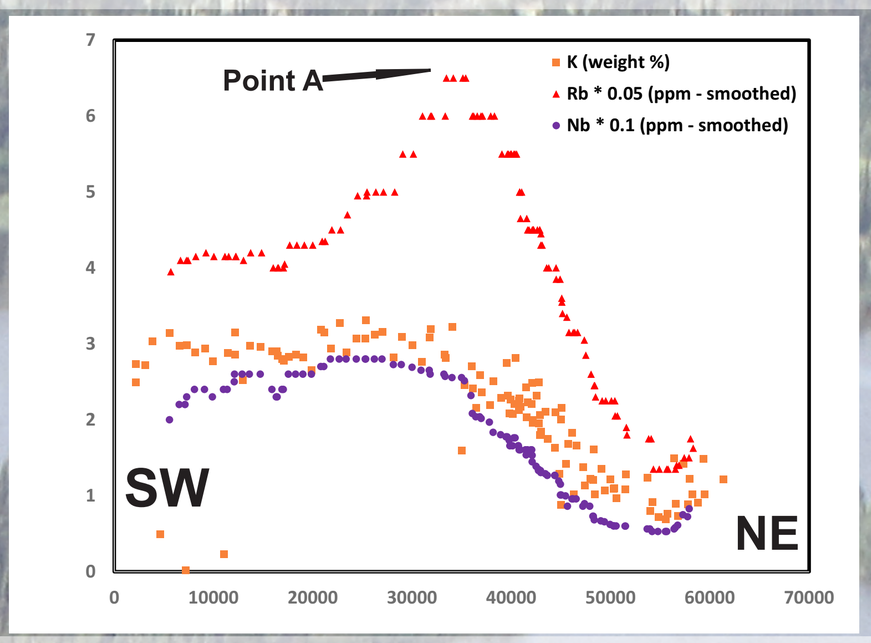
Arsenic shows a response to the carbonaceous shales of the Carboniferous Saltwater Cove Formation in the northwest. A few anomalous As values are present southwest of Springdale; the most south-westerly of them lie within the extent of a linear Au anomaly (see below). Sb values show similar distribution.



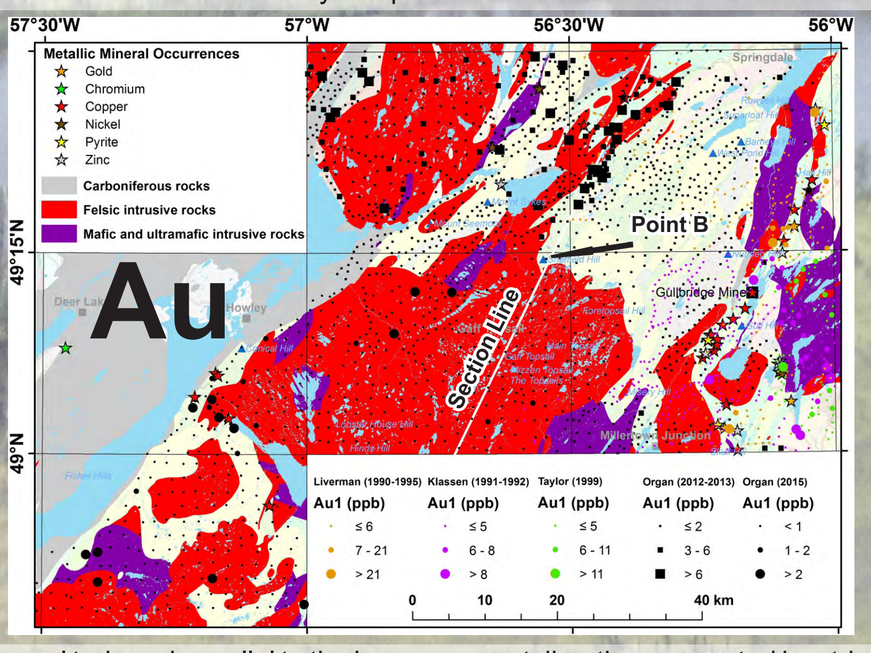
Lithium also responds strongly to the Carboniferous rocks, and forms a local maximum, of more subdued values, within the Topsails granite in the vicinity of the Topsails themselves. Other elements enriched in tills derived from Carboniferous rocks include Co, Cs, Cu, Fe, Mo, Sc, Ti, V, W and Zn.



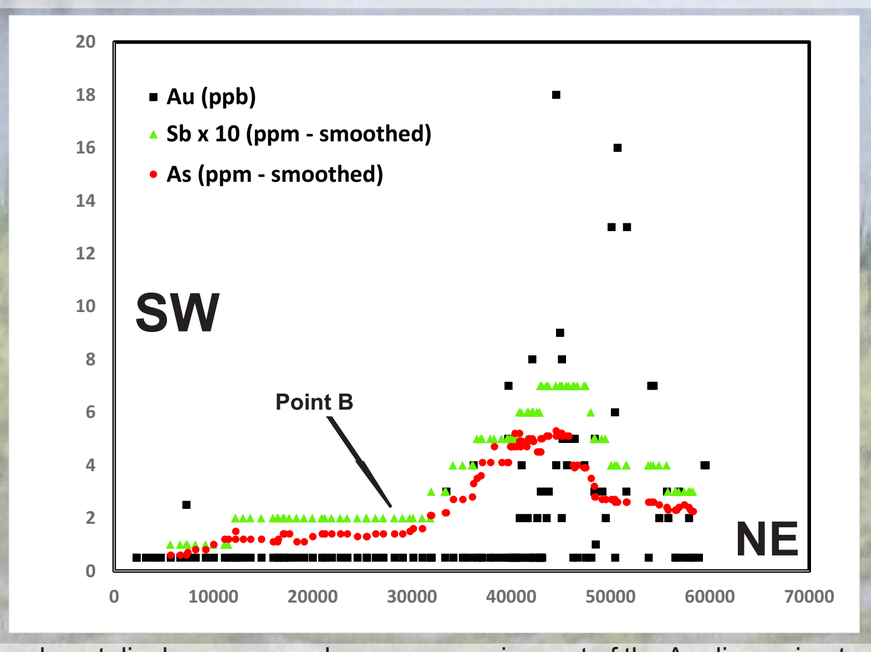
Potassium also reaches its highest concentration in tills near the Topsails though elevated values extend almost 20 km beyond the mapped occurrence of granite. Potassium analyses are unavailable for the early samples.



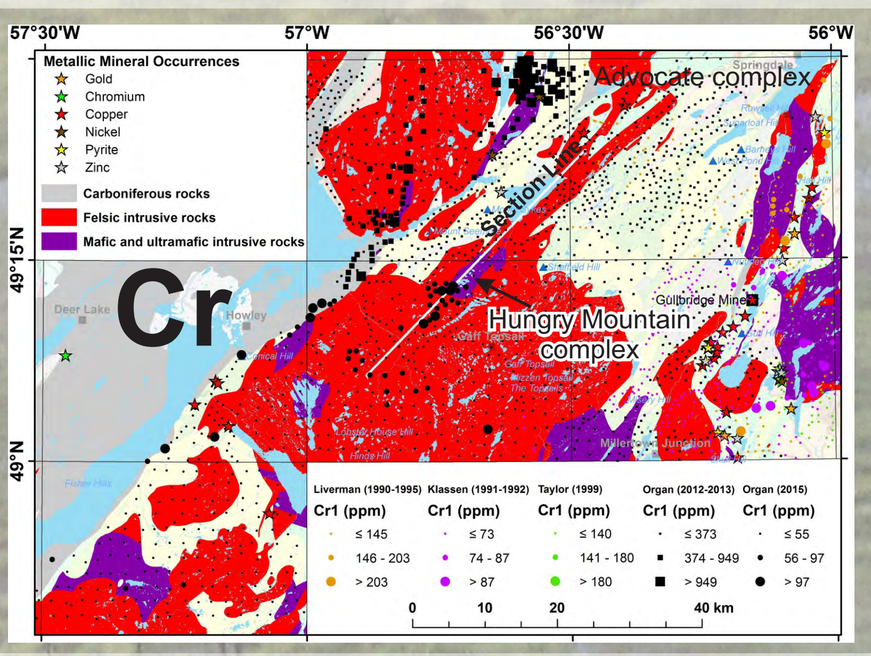
Potassium (and, more particularly, rubidium) reach a maximum at the contact between the Topsails granite and the country rocks to the northeast. Elements showing similar behaviour include Dy, Hf, Li (see above), Lu, Pb, Ta, Th, U, Y, Yb, Zn and Zr.



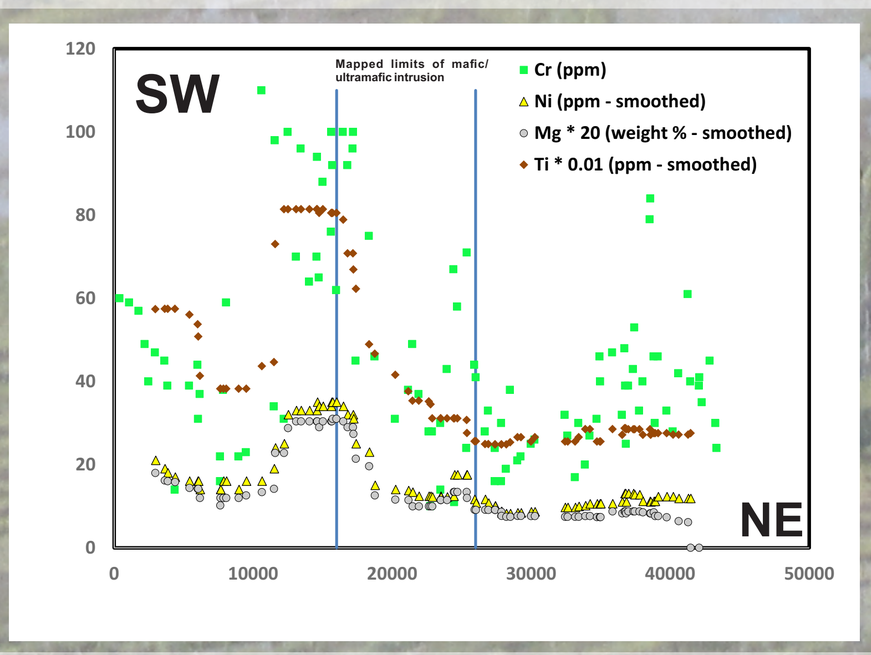
An Au dispersal train, subparallel to the ice-movement direction suggested by striations, is present northeast of Sheffield Lake. Response is subdued (maximum 18 ppb over background of 2 ppb) but the anomaly is well-defined with sharp contrast.



Although they do not display an anomalous response in most of the Au dispersion train, As and Sb show modest corresponding enrichment when viewed in profile; indeed, their values begin to increase to the northeast of Point B, suggesting that this is where the source of the gold may lie.



The Advocate and Hungry Mountain mafic / ultramafic suites show a strong Cr signature. The apparent southwestward dispersion from one Hungry Mountain intrusion is opposite to that suggested by dispersion trains elsewhere, and by striation measurements.



A profile through the intrusion and its associated geochemical responses shows a slightly more gentle decrease to the northeast than to the southwest, but this is not conclusive evidence of a northeastward ice flow, even if the extent of the intrusion is not as mapped.

References:

Organ, J.S. and Amor, S.D. , 2017. Till Geochemistry of The Topsails and Rainy Lake (NTS Map Areas 12H/02 and 12A/14) and Surrounding Areas. Government of Newfoundland and Labrador, Department of Natural Resources, Geological Survey, Open File NFLD/3301.

Organ, J.S. and Amor, S.D. , 2017. Till Geochemistry of Sheffield Lake, Springdale, Dawes Pond and The Topsails (NTS Map Areas 12H/07, 08, 01, 02). Government of Newfoundland and Labrador, Department of Natural Resources, Geological Survey, Open File 012H/2212.