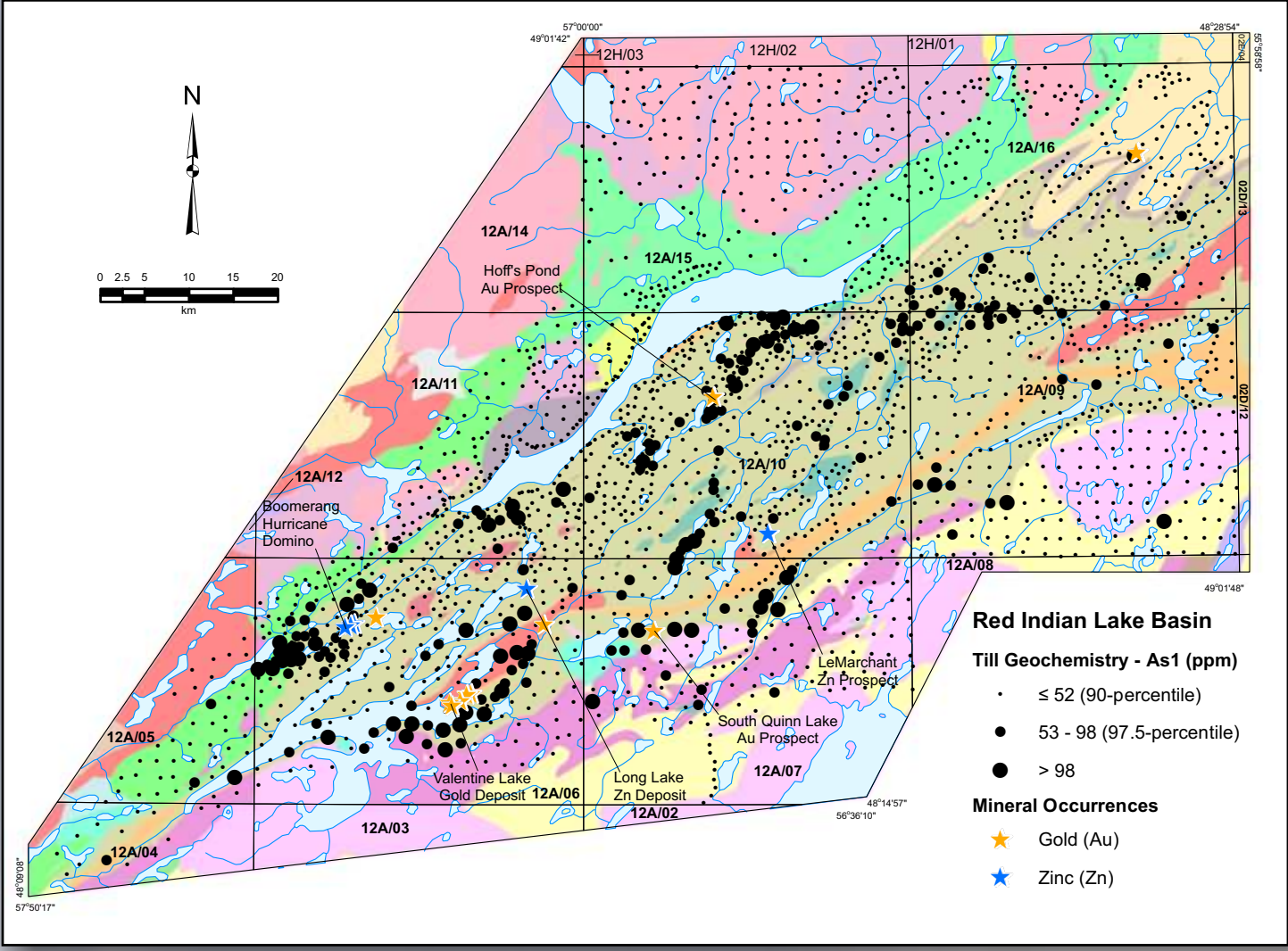


LAKE, TILL, STREAM AND ROCK GEOCHEMISTRY

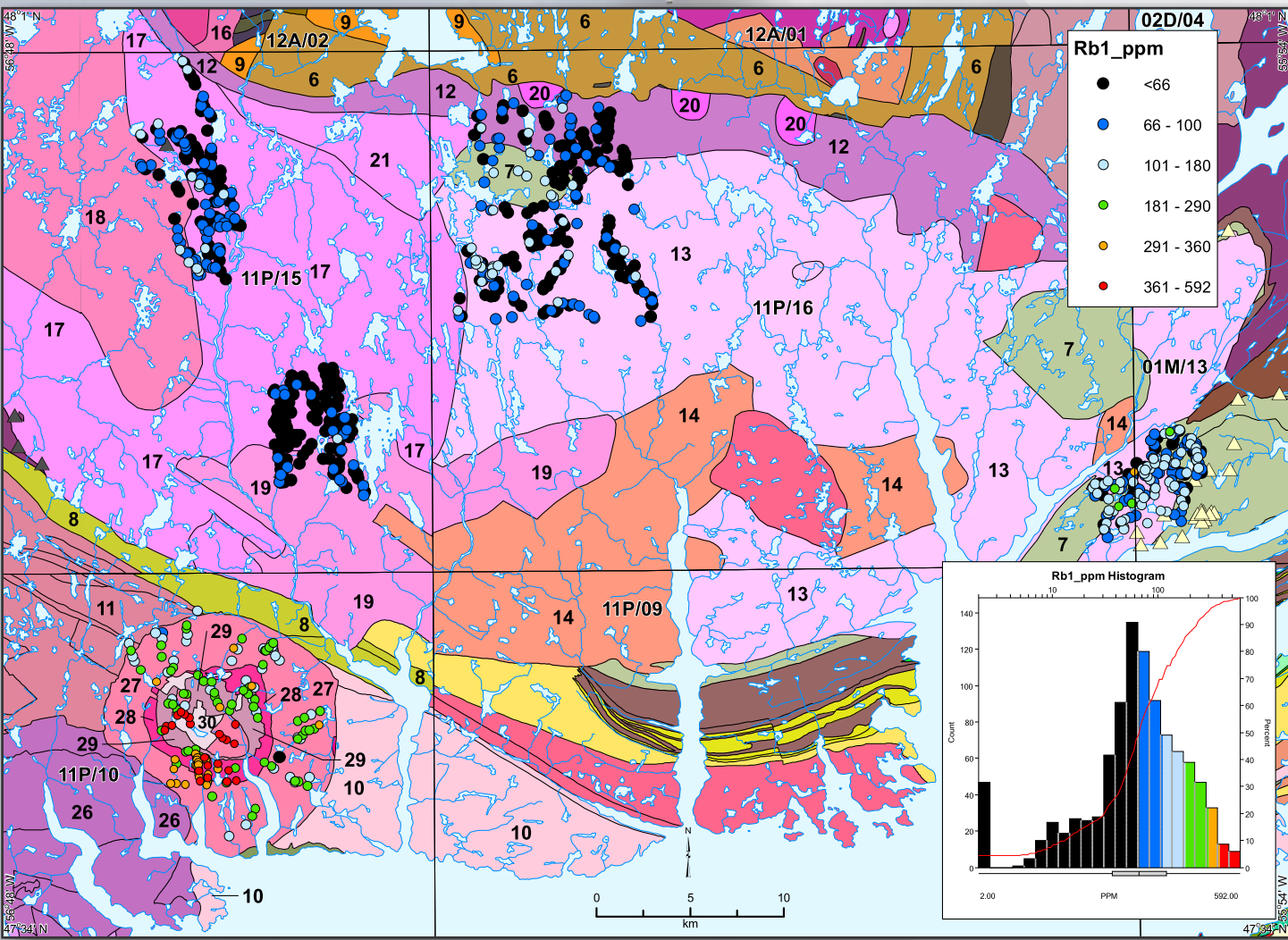
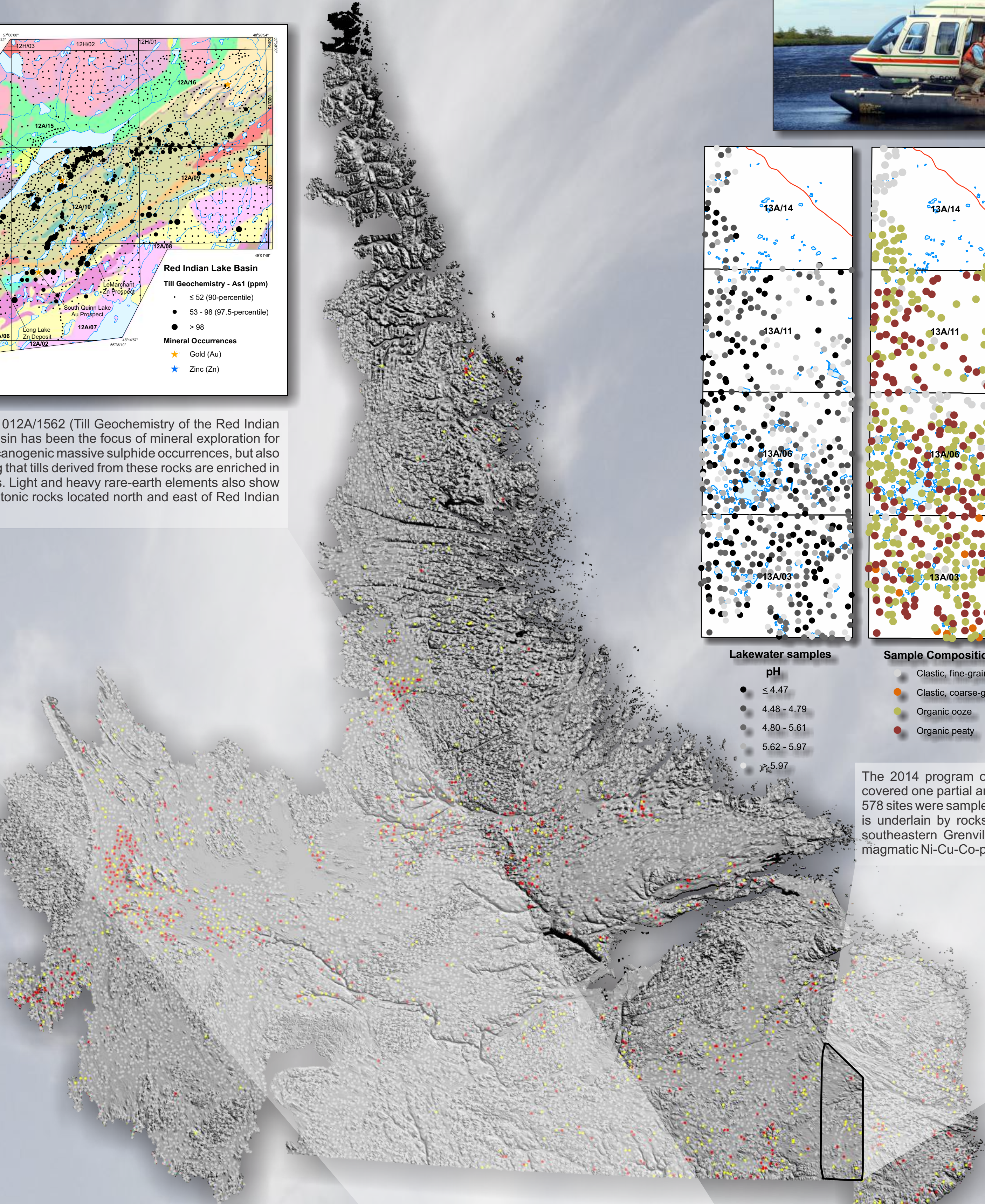


Recent and Current Work

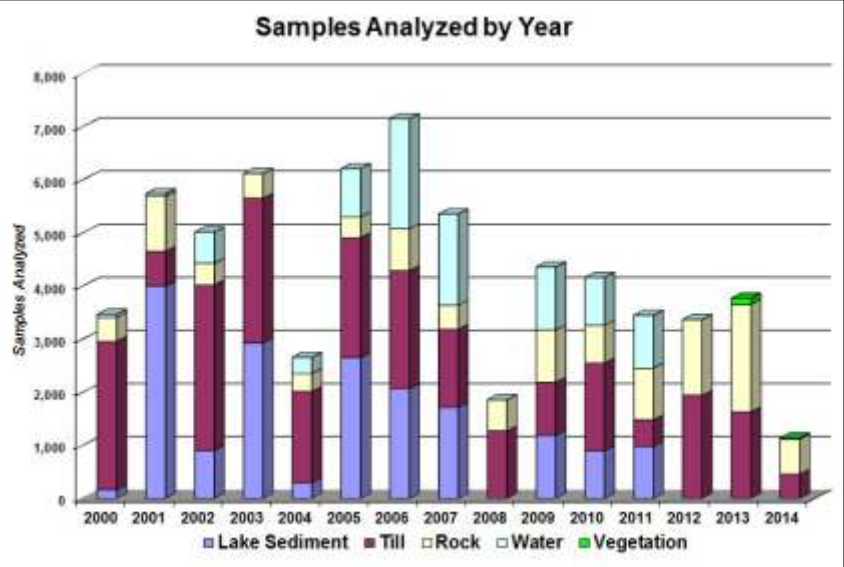


Jennifer Smith released Open File 012A/1562 (Till Geochemistry of the Red Indian Lake Basin) in August 2014. The Basin has been the focus of mineral exploration for nearly 100 years, in particular for volcanogenic massive sulphide occurrences, but also for gold. It is, therefore, not surprising that tills derived from these rocks are enriched in these elements and their pathfinders. Light and heavy rare-earth elements also show elevated values, in tills overlying plutonic rocks located north and east of Red Indian Lake.

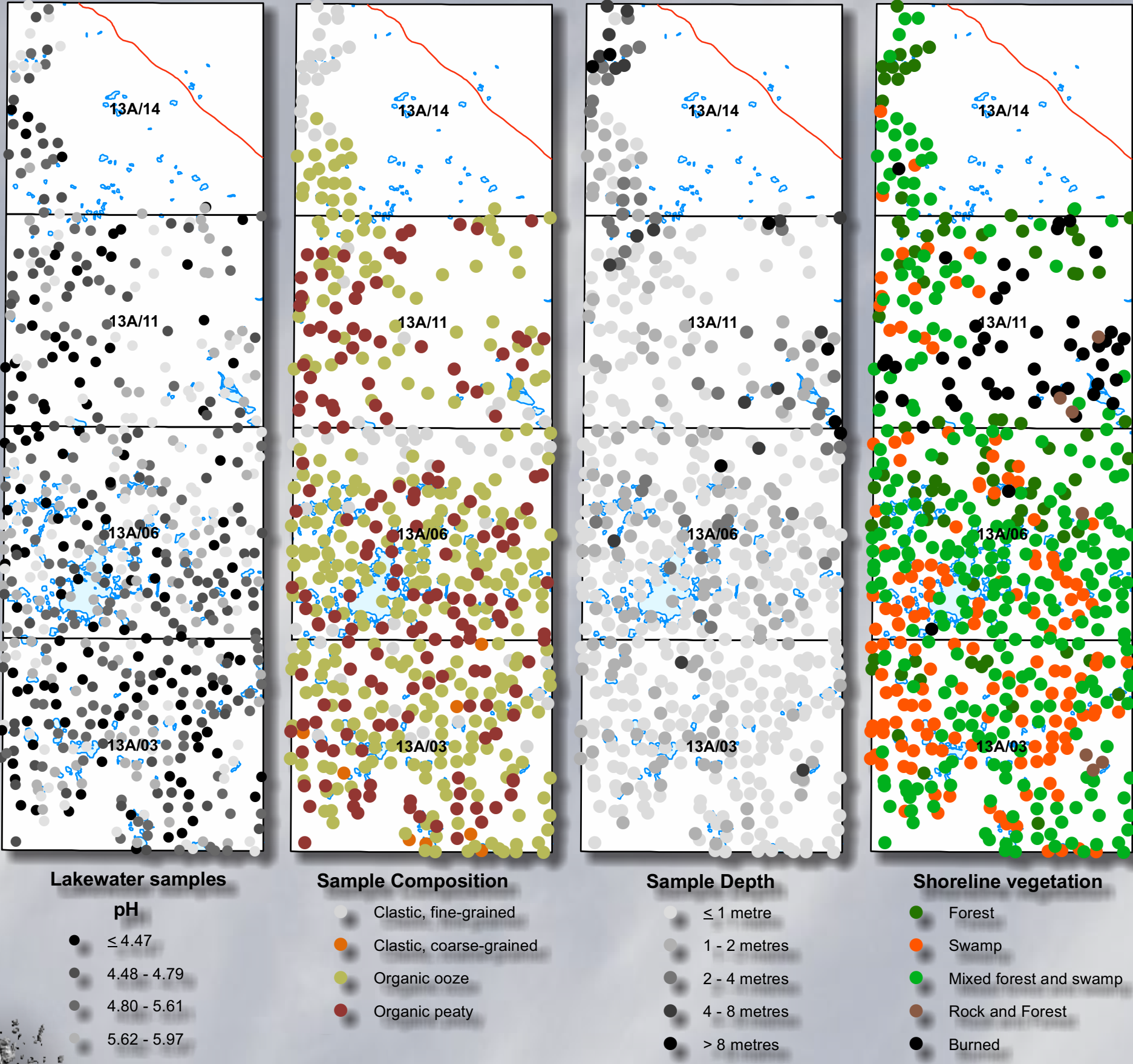
The content of Ba, and a number of other elements, in lake sediment is strongly dependent on the relative amounts of clastic (inorganic) and chemical (mostly organic) material. Regression analysis can be used to compensate for this environmental component and isolate the residual component attributable to other sources. In the map to the right, positive Ba residuals define a number of features attributable to bedrock. In Labrador, a strong positive residual-defined anomaly is present west of the Smallwood Reservoir; barite was detected in esker gravels from the same area. In Newfoundland, areas defined by high residual values of Ba include one that is underlain by Cambro-Ordovician sedimentary rocks in the Great Northern Peninsula, the Isthmus (where a number of barite occurrences have been documented) and most of the Burin Peninsula.



Rock samples and stream-sediment and/or soil samples were collected from seven areas of granitic terrane in southern Newfoundland. This map shows the distribution of rubidium (Rb) in stream sediments from five of the survey areas. While the Rb is not economically significant, the map shows the potential of stream-sediment geochemistry to map geochemical patterns in underlying till and bedrock. The highest values (shown by red symbols) over the Francois Granite are restricted to a few of the youngest and most highly differentiated units and are likely a direct reflection of bedrock geochemistry.



The Geological Survey of Newfoundland and Labrador supports mineral exploration in the province by making surficial geochemical data available for download, free of charge, from one of the most user-friendly websites in North America. New exploration targets are continuing to be recognized through detailed examination and re-examination of these data. Most of the analyses are performed "in house" at the GSNL's own laboratory in St. John's.



The 2014 program of lake-sediment and water sampling in southeastern Labrador covered one partial and three complete NTS 1:50,000 map areas, over which a total of 578 sites were sampled at an average density of one site per 5.0 km². The sampled area is underlain by rocks of the Interior Magmatic Belt and Exterior Thrust Belt of the southeastern Grenville Province, and has been the focus of recent exploration for magmatic Ni-Cu-Co-platinum group metals and pegmatite-hosted U.



Denise Brushett conducted surficial geological mapping and till-geochemistry sampling in the Eastern Pond, Miquel's Lake, St. Alban's and Cold Spring Pond areas in the second year of a multi-year field program in south-central Newfoundland. The sampling accompanied surficial mapping, carried out to reconstruct the glacial history of the area and support mineral-exploration activities. A bulk till-sampling project was also conducted over and down-ice of the Chrome Pond chromium prospect, to characterize further a ribbon-shaped Cr dispersion train suggested by lake-sediment data. One rock sample from the prospect itself has been subjected to electrostatic pulse disaggregation (EPD) to characterize its component heavy minerals and compare them to those in the dispersion train.

