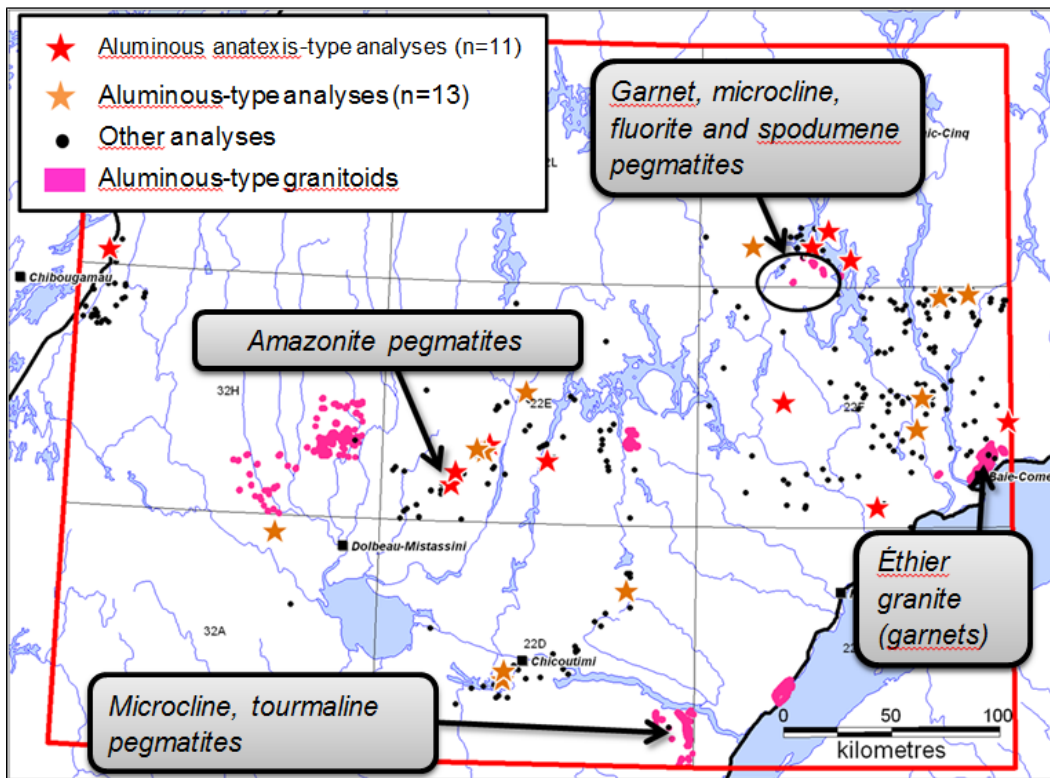


## Project 2011-03: Uranium and rare metal mineralisation potential in the granitoid suites of the central Grenville

The Grenville Province is characterised by numerous granitoid suites of varying ages and compositions. A synthesis of the different petrological and metallogenic studies shows that the tholeiitic to calc-alkaline to alkaline to aluminous intrusive suites, all have a potential for metal mineralisation with very different types of metals. The purpose of this study is to identify the suites favourable for rare earth element (REE), rare metal (Li-Cs-Ta-Y-Nb-Zr...) and U-Th mineralisation, and then locate areas of favourability in the Grenville Province.

The Grenville Province, however, suffers from a very heterogeneous level of information with gaps in the number of lithogeochemical analyses. The Saguenay-Lac-Saint-Jean – Haute Côte Nord region, located in the Central Grenville, was chosen to test the approach. A method was selected that combined the lithological characterisation of the granitoids where available (which is more discriminating) with mineralogical and petrographic characterisations (which have greater coverage) based on the classification of the granitoids into 7 classes (according to Barbarin, 1999).



Favourable aluminous granitoids (pink) determined by combining data from mineralogical descriptions and favourable lithogeochemical analyses of aluminous anatexis-type granitoids (red stars) and from favourable analysis of aluminous-type granitoids (orange stars).

Based on the literature review, the desired mineralisation may be associated with three types of deposits:

- 1) peraluminous granites and pegmatites (Li-Cs-Ta-Sn);
- 2) peralkaline granites (REE-Y-Nb-Zr) and
- 3) leucogranites (alaskites) associated with Rössing-type U-Th deposits.

Layers of information were thus generated for each of the three granitoid families from mineralogical descriptions (MRNF reports, CGC, scientific articles) and lithogeochemistry when possible. The lithogeochemical characterisation was established from compiling reference databases on a global scale.

The superposition of layers of mineralogical favourability (peraluminous and peralkaline granitoids, alaskites) with layers of lithogeochemical favourability (analyses of peraluminous and peralkaline granitoids, alaskites) (**Figure above**) in addition to metal showings (SIGEOM) and the results from new lake-bottom sediment surveys (MRNF, 2011) has identified exploration targets or areas to be re-examined. All in all, they represent more than 50 new favourable targets.

Project 2011-03: Summary	
Objectives	<ul style="list-style-type: none"><li>• To characterise the various granitoid suites of the Grenville.</li><li>• To identify suites favourable for rare metal and U-Th mineralisation.</li><li>• To identify favourable areas in the Saguenay-Lac-St-Jean/Haute-Côte-Nord region.</li></ul>
Results	<ul style="list-style-type: none"><li>• Methodology for the exploration for various substance depending on the types of granite.</li><li>• Identification of 50 targets favourable for rare metal and U-Th exploration.</li></ul>
Innovations	<ul style="list-style-type: none"><li>• Approach combining lithogeochemistry and mineralogical and petrographic descriptions to characterise granitic suites and their mineralisation potential.</li></ul>