

# **Investigating the metamorphism of low-pressure metapelite in the Escoumins Supracrustal Belt, southern central Grenville Province, Quebec**

KIRSTEN COSTELLO

*Department of Earth Sciences, Memorial University of Newfoundland, St. John's, Newfoundland and Labrador A1B 3X5*

It has been proposed that the Grenville Province formed in a hot long-duration orogeny which took place in the late Mesoproterozoic to early Neoproterozoic from ca. 1090– 980 Ma. Complex continental collision between Laurentia and possibly Amazonia included multiple thrusting events and was later modified by extension. The two primary tectonic zones which make up the Grenville Province are referred to as the Parautochthonous belt and the Hinterland. The Parautochthonous belt shows Barrovian sequence metamorphism from mid- to high-pressure (P) conditions, whereas the Hinterland consists of various belts which underwent different grades of Ottawa (1090– 1020 Ma) and Rigolet (1000–980 Ma) metamorphism. The allochthonous High Pressure (aHP) belt and the Mid Pressure (aMP) belt experienced high-pressure granulite to eclogite and mid-P granulite-facies conditions, respectively. In contrast, the allochthonous Low-Pressure (aLP) belt experienced amphibolite-facies conditions, and the orogenic lid has avoided Ottawa metamorphism altogether. This project focuses on metapelite of the Escoumins Supracrustal Belt (ESB), which is part of the aLP belt in the southern central Grenville Province, Quebec. Nine samples of metapelite from four different areas in the ESB were collected mainly during 8 days of field work completed this summer. Methods such as petrography aided by SEM-MLA maps, imaging, and microprobe analyses have been used to determine the mineralogy and composition of these samples. In the near future, phase equilibria modelling will be done to determine the depth and temperature of metamorphism. In addition, if time permits, monazite compositional maps in select samples will be produced by electron microprobe, and specific zones will be dated using LA-ICP-MS, in order to constrain the age of metamorphism. The final results of this honours thesis will illustrate the overall relationship among the low-P metapelites in the ESB.