

Appalachian foreland and platform architecture in Québec, New Brunswick and Newfoundland: an up-to-date NATMAP contribution to the Geological Bridges of Eastern Canada

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The Appalachian Foreland and Platform project is the NATMAP funded component of a multi-disciplinary and multi-agency collaborative endeavour called the Geological

Bridges of Eastern Canada. The Bridges traverse critical geological segments of southeastern Québec, northwestern New Brunswick, and western Newfoundland. The objective of

the Bridges is to use five narrow geological transects to bridge the knowledge gaps that exist between the crystalline basement, the St. Lawrence platform, the Appalachian foreland thrust-fold belt and successor basins, from the Neoproterozoic to the Quaternary. Bridge segments are regularly spaced, and were chosen to elucidate in 4D (from surface to depth, and through geological time) the complex, multi-phased history of basin formation, infilling, deformation and erosion that formed the outer parts of the Appalachians.

The NATMAP component consists of new bedrock and surficial mapping in conjunction with planned provincial geological mapping projects, and a series of thematic studies to complement the mapping. Surface and subsurface thematic studies focus on: (1) stratigraphy (litho-, bio-, chemo- and chrono-) and sedimentology of Neoproterozoic to Quaternary

sections; (2) documenting structural styles through mapping, geochronology, remote sensing, geophysics and bathymetric data, both onshore and offshore; and (3) diagenetic, petrographic, geochemical and thermal maturation studies, in order to help assess the mineral, petroleum and groundwater potential of these areas and so generate new exploration models for the resource exploration industry.

For the first year of the project, new field work (maps and thematic studies) and compilation of existing data were made for the Montreal-Appalachians transect (#1), for the Québec City-Appalachians transect (#2), for the Matane-New Brunswick transect (#3) and for the Western Newfoundland transect (#5). A total of 12 new maps were produced as well as a major 1:100 000 compilation map for transect #1.