

## **40Ar/39Ar GEOCHRONOLOGY OF THE QUÉBEC APPALACHIANS: RECURRENT COMPRESSION AND EXHUMATION DURING THE PALEOZOIC.**

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The Northern Appalachian Belt extends from New England (USA) to Newfoundland (Canada). It is attributed to multiple Paleozoic orogenic pulses with variable metamorphic conditions and structures; the Taconian (Middle-Late Ordovician), Acadian (Devonian) and Alleghanian (Permian) orogenies. In Québec, the Appalachians result from superposed metamorphism and deformation related to the Taconian and Acadian orogenies. Taconian metamorphism occurs mainly in Cambrian-Ordovician continental margin rocks of Laurentia. Acadian metamorphism is locally found in the Laurentian margin but is predominant in Ordovician rocks of Iapetus and in Silurian-Devonian sedimentary basins.

In southern Québec, a regional geochronological study, based on the Ar isotopic dating of ~100 single-grains of amphiboles and micas, reveals the coexistence of three age groups; (1) Middle Ordovician (469-460 Ma), (2) Late Silurian-Early Devonian (431-411Ma), and (3) Middle Devonian (380-370Ma). Group 1 is preserved in the hangingwall of normal faults and record crustal thickening of the Laurentian margin during the Taconian orogeny. Group 2 occurs in metamorphic cores located in the footwall of detachment and normal faults, and is attributed to the tectonic exhumation of Laurentian margin metamorphic terranes. This event, referred to as the Salinic orogeny in Newfoundland, has been coeval with crustal extension and the formation of major sedimentary basins in mainland Canada and New England. Group 3 occurs mostly in oceanic rocks of Iapetus and in Silurian-Devonian rocks. It records a renewed crustal compression in Devonian times, which has been followed by orogenic collapse and basin formation in Late Devonian-Carboniferous times.