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**The Meguma Supergroup of southern Nova Scotia:  
new insights on stratigraphy, tectonic setting,  
and provenance**

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The easternmost tectonic element of the northern Appalachian orogen, the Meguma terrane, traditionally includes the Cambrian-Ordovician Goldenville and Halifax formations (Meguma Group) and the younger White Rock and Torbrook formations, intruded by mainly Devonian plutonic units and overlain by Carboniferous and younger rocks. Recent mapping in the Meguma Group, combined with petrographic and chemical studies, has resulted in re-evaluation of its stratigraphy, tectonic setting, and provenance. As previously proposed, the lower metasandstone-dominated Goldenville Formation and upper slate-dominated Halifax Formation should be formally elevated to “group” status, because the new mapping has demonstrated that both formations can themselves be subdivided into formations and

members. Thus, the Meguma Group will be elevated to a “supergroup”. The redefined Goldenville Group consists of massive metasandstone with minor interbeds of metasilstone and slate (Church Point, Green Harbour, Tangier, and Taylor Head formations), and grades upwards into thinly bedded metasandstone, metasilstone, and silty slate (Government Point Formation). The uppermost unit (Moshers Island and Beaverbank formations) is characterized by numerous Mn-rich calcareous concretions. Units in the overlying slate-rich Halifax Group include the lower Acacia Brook/Cunard formations and the upper Bear River/Feltzen/Glen Brook formations.

The Church Point Formation of the Goldenville Group contains a distinctive metasilstone unit (High Head member) with abundant trace fossils, including the early Cambrian deep-water ichnofossil *Oldhamia*. The stratigraphically lowermost exposed unit in the Goldenville Group is located 3 km in stratigraphic thickness below the High Head member. This metasandstone unit yielded 555 Ma detrital zircon, providing a maximum depositional age for the exposed part of the Goldenville Group. The upper part (Tancook member) of the Government Point Formation of the Goldenville Group has yielded an early Middle Cambrian shelf-lithofacies trilobite fauna of Acado-Baltic affinity. In the overlying Halifax Group, the upper part of the Bear River Formation locally contains the graptolite *Rhabdinopora flabelliformis* and acritarch species that are Early Ordovician. The gap in age between this formation and the overlying late Ordovician–Early Silurian White Rock Formation indicates that a significant unconformity exists between the Halifax Group and White Rock Formation.

Protoliths of the metasandstone units in the Goldenville and Halifax groups were predominantly feldspathic wacke to arenite. Preliminary whole-rock geochemical data from this clastic material suggest that the Meguma Supergroup was deposited near an active or recently active continental margin, and not at an Atlantic-style passive continental margin as previously assumed. This interpretation is further supported by the presence of numerous syn-depositional mafic sills of within-plate chemical character along the northwestern section of the Meguma Supergroup, suggesting that deposition was in a rift environment, possibly related to Late Neoproterozoic to early Paleozoic separation of the Meguma terrane from Gondwana. The lowest exposed metasandstone bed contains a detrital zircon population that is almost exclusively Late Neoproterozoic, indicating an age-homogeneous source area. In contrast, a sample from the Tancook member yielded a broad spectrum of detrital zircon ages extending back into the Archean, suggesting that the source area had changed significantly by the time (Middle Cambrian) when that member was being deposited.