

## **Investigating the relationship between the Bras d'Or and Aspy terranes in Cape Breton Island, Nova Scotia: insights from Devonian plutonic rocks**

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Located on the eastern margin of North America, Cape Breton Island, Nova Scotia, records a complex geological history that formed during Palaeozoic Appalachian orogenic events. The Appalachian orogen records the accretion of a series of peri-Gondwanan terranes to the composite Laurentian margin. The four major terranes in Cape Breton Island are the peri-Laurentian Blair River Inlier, and the peri-Gondwanan Aspy, Bras d'Or, and Mira terranes. The Bras d'Or terrane is comprised of Neoproterozoic gneissic and metasedimentary units with associated metavolcanic rocks. The Aspy terrane is dominated by younger Silurian– Devonian back arc sedimentary and volcanic rocks that were intruded by post-depositional plutonic rocks. The boundary between the Aspy and Bras d'Or terranes is defined as a regional, east over west, sinistral shear zone named the Eastern Highlands Shear Zone (EHSZ). Devonian plutons of the Black Brook Granite Suite (BBGS) that intruded into the EHSZ form the focus of this study. The BBGS is a peraluminous, muscovite and biotite granitoid suite which was interpreted to have formed from partial melting of metasedimentary rocks. The purpose of this study is to characterize the petrogenesis of the BBGS and other spatially associated “stitching” granitoid plutons such as Park Spur that are also located along the EHSZ. The study will further constrain the timing of the emplacement of the BBGS: preliminary zircon U-Pb data yielded an age of ca. 375 Ma. Geochemical and zircon hafnium isotopic signatures will be analyzed to determine whether the protolith can be linked to either the Bras d'or terrane or the Aspy terrane as well as to better understand the tectonic setting at the time of pluton emplacement. Results will be used to correlate Devonian magmatism in the peri-Gondwanan terranes of northeastern Cape Breton Island that are associated with the EHSZ with coeval magmatic rocks in Newfoundland and New Brunswick that have similar ages, lithologies, and geological histories. [Poster]