

Meguma terrane, Nova Scotia, and the Harlech Dome, Wales: A petrological comparison of sills and dykes in metasedimentary rocks

Lisa Mundry and Sandra Barr - *Department of Earth and Environmental Science, Acadia University, Wolfville, Nova Scotia B4P 2R6, Canada <105425m@acadiau.ca>*

The Meguma terrane of southern Nova Scotia and the Harlech Dome of North Wales have similar Cambrian metasedimentary successions consisting of thick basal units of quartzose turbidite deposits, grading upward into early to middle Cambrian mud-rich and sand-rich units, containing manganese-rich layers, and overlain by turbidites deposited in anoxic environments and Tremadocian mudstone. Coarse clastic units low down in both successions contain similar detrital zircon age populations, and both areas are considered to have originated as peri-Gondwanan terranes. Their similarities have led to the suggestion that both areas were part of one palaeogeographic domain, for which the name Megumia has been proposed.

In addition to their stratigraphic similarities, both areas are characterized by abundant sills and dykes. In the Harlech Dome, most of the sills and dykes, and small, likely related, plutons, are of mafic to intermediate composition, and generally assumed to be related to the Ordovician Rhobell and Aran volcanic groups. In the Meguma terrane, northwest of the Chebogue Point Shear Zone, mafic sills and dykes are abundant. Some are Cambrian–Early Ordovician based on evidence for syn-sedimentary emplacement in their host rocks, and some are Silurian–Devonian based on their presence in the Rockville Notch Group. A comparison of petrographic and chemical characteristics of the intrusions has been undertaken to shed additional light on the possibility of a paleogeographic relationship between the Harlech Dome and the Meguma terrane, using a compilation of petrological data from previous studies as well as analyses of new samples collected in both areas for the present study. Samples from the Harlech Dome range from mafic to felsic whereas those from the Meguma terrane are mafic. The Harlech Dome samples are calc-alkalic and likely formed in a magmatic arc setting at a convergent plate margin. In contrast, the mafic sills in the Meguma terrane are tholeiitic, transitional to alkalic, and formed in a within-plate tectonic setting. Differences also exist among the Meguma terrane sills, such as between younger coarser grained sills and the older smaller sills, which may be more alkalic.