

Interrelationships between thrusting, migmatization and generation of a monzonite - anorthosite suite in the Mealy Mountains Terrane, Grenville Orogen, Canada

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The monzonite - anorthosite association is generally considered characteristic of stable-crust, anorogenic settings and is typically linked to generation by crustal rifting. An apparent exception is the Mealy Mountains Terrane (MMT), a large (1300 km²) plutonic suite formed in association with the ca. 1650 Ma Labradorian orogeny, a major crust-forming event in the Grenville Province of Labrador. MMT comprises weakly deformed monzonite, gabbro, anorthosite and lesser granite. During Grenvillian deformation, ca. 1045 Ma, the terrane was translated northwards as a thick thrust slab over Labradorian plutonic and gneissic rocks. Burial of the footwall rocks under the slab resulted in melting, migmatization and generation of granitic melt. Tilting of the northwestern boundary of MMT has revealed

a crustal cross-section from gneissic granulite to upper amphibolite facies rocks at the base, to plutonic rocks which have experienced only greenschist to lower amphibolite conditions, at the top.

Geochemically the rocks of MMT bear more similarity to anorogenic suites than to typical synorogenic (e.g., arc-related) suites. However, monzonite of MMT has been dated at 1640 Ma (Emslie *et al.*, 1983) indicating a close temporal association with the Labradorian event of 1700-1645 Ma. Structural evidence further indicates an overlap between intrusion and deformation. In a preliminary model it is proposed that the monzonite - anorthosite suite was generated as a post-collisional suite following accretion of Labradorian crustal elements to North America.