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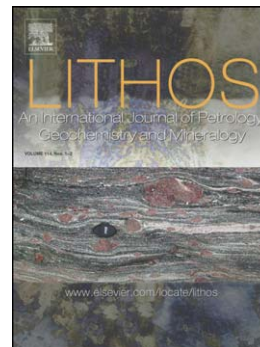
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Zonation of the Newry Igneous Complex, Northern Ireland, based on geochemical and geophysical data

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Abstract: The Late Caledonian Newry Igneous Complex (NIC), Northern Ireland, comprises three largely granodioritic plutons, together with an intermediate-ultramafic body at its northeastern end. New whole-rock geochemical data, petrological classifications and published data, including recent Tellus aeromagnetic and radiometric results, have been used to establish 15 distinct zones across the four bodies of the NIC. These become broadly younger to the southwest of the complex and toward the centres of individual plutons. In places, zones are defined by both current compositional data (geochemistry and petrology) and Tellus results. This is particularly clear at the eastern edge of the NIC, where a thorium-elevated airborne radiometric signature occurs alongside distinct concentrations of various elements from geochemistry. However, in the northeastern-most pluton of the NIC a prominent ring-shaped aeromagnetic anomaly occurs independent of any observed surface compositional variation, and thus the zones in this area are defined by aeromagnetic data only. The origins of this and other aeromagnetic anomalies are as yet undetermined, although in places these closely correspond to facies at the surface. The derived zonation for the NIC supports incremental emplacement of the complex as separate, distinct magma pulses. Each pulse is thought to have originated from the same fractionally crystallising source that periodically underwent mixing with more basic magma.

Key words: Zonation; Aeromagnetic; Radiometric; Incremental emplacement; Magma evolution

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