

Neoproterozoic to Cambrian granitoids of northern Mozambique and Dronning Maud Land Antarctica

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Granitoid intrusions with ages between ~570Ma and ~490Ma are common in the southern Namuno and Nampula Terranes of northern Mozambique as well as western and central Dronning Maud Land. The granitoids have widely varying compositions from per-aluminous andalusite-bearing varieties to metaluminous granodioritic types. The latter types include charnockitic examples in central Dronning Maud Land however in northern Mozambique, western Dronning Maud Land and eastern Dronning Maud Land (Sor Rondane) charnockitic varieties are rare to absent. The chemistry of many of the intrusions are typical of A2 type granites which have been interpreted to be typical of granites generated in extensional settings or in areas which have involved thickened crust in continental collision settings. The granites are typically late-synkinematic to post tectonic. In Sor Rondane and western Dronning Maud Land, the granites intrude as shallowly inclined sheets locally forming conjugate sets as well as sheet-like plutons. Poor exposure in Mozambique does not permit insights into their morphologies except north of the Lurio Belt where ring complex intrusions are recognized. The geometry of the inclined sheets are consistent with contractional emplacement. Radiogenic isotope data and inherited zircons from the intrusions in northern Mozambique and western Dronning Maud Land indicate genesis by partial melting of the Mesoproterozoic gneiss basement and, locally adjacent to the Kalahari Craton, contributions from the Archaean Kalahari basement are recognized. The older inheritance is reflected in Sm/Nd, Rb/Sr whole rock data and in xenocrystic zircon fractions. Intrusion of some of the granitoids are apparently synchronous with the deposition of the sillimanite-bearing migmatitic Mecuburi Group sediments. Sillimanite genesis as a consequence of depositional burial and partial melting would require ~4-6kb (~12-18kms) equivalent of burial. This thickness is not seen in the Mecuburi. The granitoids are interpreted to have been generated by heating in the footwall of a mega nappe during amalgamation of North and South Gondwana.