GEOCHEMICAL AND ISOTOPIC EVOLUTION OF THE MESOPROTEROZOIC CAPE MEREDITH COMPLEX, WEST FALKLAND

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Whole-rock geochemical and Rb-Sr/Sm-Nd isotopic data are presented for the Mesoproterozoic (~1.0 Ga) metamorphic and igneous rocks of the Cape Meredith Complex, W. Falkland. The data indicate that the oldest rocks, the supracrustal gneisses of the Big Cape Formation, probably represent a juvenile calc-alkaline, basalt-andesite-rhyolite volcanic sequence, with ENd values and NdTdm ages of ~ +3 to +6 and ~1100 to 1400 Ma respectively. These metavolcanics were extruded in an island-arc at around 1120 Ma. The Big Cape Formation was intruded by granitoids during and after a collisional orogenic event at around 1090 Ma.The oldest, foliated (G1) granodiorite was emplaced as thin sheets at around 1090 Ma and is characterised by Nd values of ~+1.5 to 4 (Tdm = ~1200 to 1400 Ma), also showing its juvenile nature. The 1067 ± 9 Ma (G2) syn- tectonic granitoid gneisses and 1003 ± 16Ma G3 post-tectonic granites also exhibit juvenile characteristics (ENd = ~0 to +5 and Tdm = 2200 to 1200 Ma respectively). The granitoids show a evolution from Na-rich (G1) granodiorite to potassic, high-HFSE (G3) granites. The age, geochemical, isotopic charac-teristics and geological evolution of the Cape Meredith Complex are comparable with that of the adjacent Gondwana crustal blocks in Natal (SE Africa) and W.Dronning Maud Land (E. Antarctica), supporting models that demonstrate these areas evolving in a contiguous, juvenile arc environment prior to, during, and after a major orogenic event at ~1.1 Ga, which saw the birth of Rodina.