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MESO- TO NEOPROTEROZOIC CRUSTAL EVOLUTION IN WESTERN DRONNING MAUD LAND (WDML): A SYNTHESIS SHOWING CO-EVOLUTION OF THE GRUNEHOGNA PROVINCE AND MAUD BELT WITHIN A COHERENT GEODYNAMIC FRAMEWORK

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A review of recent investigations in WDML of polymetamorphic rocks of the Meso- to Neoproterozoic Maud Belt (MB) and juxtaposed Mesoproterozoic Ritscherflya Supergroup (RSG) cover-sequence of the Grunehogna Province (GP), demonstrates that these distinct crustal entities shared a protracted, linked evolutionary history, extending from Rodinia assembly until Gondwana fragmentation. In the MB, field relationships and SHRIMP U-Pb ages support the contention that regionally significant top-to-NW shearing fabrics and associated collinear structures are Pan-African in age, and reflect continental collisional tectonics during Gondwana assembly. Evidence for Late Mesoproterozoic orogenesis is restricted to low-strain domains, despite the ubiquity and continuity of Mesoproterozoic magmatic protolith suites within the MB. Moreover, although Pan-African tectonic reworking of these Mesoproterozoic protoliths locally attained eclogite / upper-amphibolite facies, a decrease in the intensity of overprinting is evident from east to west, and lateral metamorphic gradients between adjacent, apparently contiguous areas are extreme. No juvenile Pan-African crust has been recognized within the MB of WDML, with the exception of voluminous late- to post-orogenic granitic suites in the easternmost exposures. The oldest calc-alkaline orthogneisses in the MB are coeval with volcanoclastic elements of the RSG, and these are considered to represent a magmatic arc sequence and its associated forearc / continental foreland basin respectively. Structures developed along the present southern margin of the GP, reflect RSG cover deformation associated with tectonism of the underlying basement: Progressive deformation, resulting from NNW-SSE orientated transpression, led to the formation and rotation of megascopic folds and the development of curvilinear, sinistral faults. Moreover deformation of the Neoproterozoic / Cambrian Urfjell Group occurred within a restraining bend on a NE-SW strike-slip fault system. Consequently deformation of the RSG and Urfjell sedimentary sequences is attributed to oblique sinistral continental convergence and collision during Gondwana assembly.