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Comparison of Sr-Nd isotope data from N. Mozambique and Dronning Maud Land and Sor Rondane, Antarctica.

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GRANTHAM, Geoffrey[1*] ; SATISH-KUMAR, Madhusoodhan[2] ; OTSUJI, Naho[3] ; BURGER, Erasmus[4] ; KAWAKAMI, Tetsuo[5] ; ISHIKAWA, Masahiro[6] ; TSUCHIYA, Noriyosh[7] ; LE ROUX, Petrus[8]
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[1]Department of Geology, University of Johannesburg, South Africa., [2]Department of Geology, Niigata University, Japan, [3]Graduate School of Science and Technology, Niigata University, Japan, [4]Department of Geology, University of Pretoria, South Africa, [5]Department of Geology and Mineralogy, Kyoto University, Japan, [6]Graduate School of Environment and Information Sciences, Yokahama National University, Japan, [7]Department of Geoscience and Technology, Graduate School of Engineering, Tohoku University, Japan, [8]Department of Geological Science, University of Cape Town, South Africa
[1]Department of Geology, University of Johannesburg, South Africa., [2]Department of Geology, Niigata University, Japan, [3]Graduate School of Science and Technology, Niigata University, Japan, [4]Department of Geology, University of Pretoria, South Africa, [5]Department of Geology and Mineralogy, Kyoto University, Japan, [6]Graduate School of Environment and Information Sciences, Yokahama National University, Japan, [7]Department of Geoscience and Technology, Graduate School of Engineering, Tohoku University, Japan, [8]Department of Geological Science, University of Cape Town, South Africa

A recently proposed mega-nappe model for the Neoproterozoic?Cambrian-age Kuunga Orogeny involves collision between N. and S. Gondwana. S.Gondwana is inferred to have comprised southern Africa (consisting of the Kalahari Craton and parts of adjacent metamorphic belts including the Barue and Nampula complexes of the Mozambique Belt), western Dronning Maud Land (WDML), Antarctica (consisting of the Grunehogna Craton and the Maud Belt) and Sri Lanka (consisting of the Vijayan Complex). N. Gondwana is inferred to have comprised parts of south central Africa, Sri Lanka, Madagascar and India (consisting of the Tanzanian Craton and parts of adjacent metamorphic belts including the Xixano Complex of Cabo Degado Complex, the Highlands and Wanni Complexes, the Central Dronning Maud Land and Sor Rondane areas and Lutzo Holm Bukta areas.

Differences in published geochronological data from the metamorphic belts of the various areas are fundamental to defining the various components of the mega-nappe model. Comparison of published and unpublished Sr and Nd radiogenic isotope data, calculated at 500Ma from the metamorphic belt basement gneisses of the mega-nappe component areas, show broad differences between the different areas from N and S Gondwana.

Neoproterozoic to Cambrian-age granitoids which intrude the various areas mostly mirror their host country rocks suggesting localised anatexis without significant juvenile input. Sr and Nd isotope data from some of these intrusions suggest that they were sourced in the footwall but intrude the hanging wall components of the mega-nappe. The Sr-Nd data from the N Gondwana correlated areas dominantly show marginally negative, less evolved ϵNd characteristics but similar, positive, wide ranged ϵSr characteristics compared to the S. Gondwana correlated areas.

Comparison of the Sr-Nd isotopic provinces show broad similarities with various geophysical domains defined by recently published aeromagnetic and gravity data sets from Antarctica.

The data are evaluated in terms of their implications for the meg-nappe model for the Kuunga Orogeny.

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