Sr isotope chemostratigraphy of metacarbonate rocks from East Gondwana; Implications for depositional environments and correlations

Momoko Shirakawa[1], *Madhusoodhan Satish-Kumar[2], Sanjeewa Malaviarachchi[3], Krishnan Sajeev[4], Geoffrey Hugo Grantham[5]

1. Graduate School of Science and Technology, Niigata University, 2. Department of Geology, Faculty of Science, Niigata University, 3. University of Peradeniya, Peradeniya, Sri Lanka, 4. Indian Institute of Science, Bangalore, India, 5. University of Johannesburg, South Africa

Sri Lanka, southern India, Madagascar, Mozambique and the Dronning Maud Land in East Antarctica forms an integral part of the Latest Proterozoic to Early Cambrian collision zone in the East African-Antractic Orogen (EAAO). The Mozambique Ocean is supposed to have existed between East- and West-Gondwana, before its final amalgamation to form a single Gondwana supercontinent, where carbonate depositions by chemical precipitation was prominent. Carbonate rocks can be ideal for considering the geochemical information of the paleo-ocean that separated continents and cratons that existed prior to the Gondwana amalgamation.

Taking advantage of the characteristics of metacarbonate rocks to understand the depositional history of oceanic basins, we compile data from several terrains in the EAAO belt and attempt to correlate between the terrains. Pure carbonate samples that were least influenced by alteration (that consist of calcite/ dolomite mineral or only with minor amounts of calc-silicate minerals) were selected for this purpose. Based on thin section observation, oxygen and carbon isotopic composition and trace and rare earth element patterns we selected the purest samples for Sr isotope analysis. The $\delta^{18}O$ values of meta-carbonate rocks above 20 ‰and those with flat REE patterns were the best candidates for Sr isotope analysis.

The Sr isotopic compositions was compared with standard late Proterozoic Sr isotope chemostratigraphic curve, which suggest apparent depositional ages between 900 Ma to 660 Ma. Comparable Neoproterozoic sedimentation histories were obtained from the Highland Complex, Sri Lanaka, Madurai Block, southern India, and Dronning Maud Land, East Antarctica. In this presentation we discuss the possible correlation between different blocks within the East Gondwana ensemble.

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