

India and Adjacent blocks in the Tonian: East Central Gondwana

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The position of India in the supercontinent of Rodinia is enigmatic. Most models relegate Peninsular India to the margins of Rodinia. This is due to limited paleomagnetic data. A recent compilation of reliable paleomagnetic data from India lists a single pole for the assembly of Rodinia (~1.1 Ga) and breakup (~770 Ma). In many reconstructions, it remains linked to the East Antarctic craton and Australia in an East Gondwana configuration. Links between India and Yangtze in the Rodinia supercontinent are based on stratigraphic similarities and isotopic/detrital zircon studies. Other reconstructions place India and the Yangtze craton in proximity although separated from one another by other micro-continents. India's location in these reconstructions relied on the ~770 Ma MIS suite pole. We recently reported a new U-Pb titanite age of 820 ± 15 Ma on a lamprophyre in the Harohalli region of southern India. This lamprophyre is part of a large region of alkaline intrusions previously studied for paleomagnetism. We have reviewed the paleomagnetic data in those studies and calculated an updated pole for the alkaline dykes at 36.1° N, 84.0° E ($A95=11.3^\circ$, $K=30$). Coeval data from Yangtze at 824 Ma (Yanbian Dykes-A) and 770 Ma (Yangtze dykes) can be used to reconstruct India and South China. The fit between the two pairs of similar age poles from both cratons is excellent. If we assume that the Yangtze craton and India were fellow travelers during the 825-770 Ma interval, then we can use other poles from Yangtze to evaluate the drift rate of both cratons. This allows us to evaluate potential true polar wander in the Tonian by enlarging the total database to cover India and Yangtze. Furthermore, recent data from Oman posits that India was part of a larger amalgam of continental crust which included parts of Madagascar, Seychelles, Mauritius and Pakistan prior to the final assembly of Gondwana during the latter Ediacaran. In this talk, we will discuss the new geochronological data from the Harohalli region and the broader implications for Tonian paleogeography.

