

Paper Number: 1456

A re-evaluation of the Kumta Suture in southwest India and its extension into Madagascar

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It has long been recognised that Madagascar was contiguous with India until the Late Cretaceous, however the timing and nature of the amalgamation of these two regions is still highly contentious. It has been suggested that Madagascar was contiguous with India by the latest Neoproterozoic to Cambrian, forming the Malagasy Orogeny [1]. Other models suggest a much earlier connection; that the Antongil Domain in Madagascar and the Western Dharwar Craton in India shared a common tectonic evolution history during the Paleo/Mesoarchean [2].

The geology of west peninsular India is poorly constrained, with limited information available from survey maps and published data. Currently available age data is insufficient to precisely correlate the southwest of India with eastern Madagascar. Despite this, it has recently been suggested that a newly defined, west-dipping, 15 km wide suture zone (the so-called Kumta Suture) separates a block centred on southern Goa, northwest Karnataka (the Karwar Block) from the Archean Dharwar Craton, and which forms a continuation of the Betsimisaraka Suture of eastern Madagascar [3]. It is suggested that this suture represents ocean closure during the amalgamation of Rodinia and occurred at c. 1380 Ma in the north; progressing toward the south at c. 750 Ma [3]. The implication that this subduction zone was active for an unlikely period of at least 630 million years has motivated us to re-evaluate the presence of the Kumta Suture; and its extension into Madagascar. Here we present preliminary U-Pb zircon data from magmatic and metasedimentary samples and structural field data from west peninsular India to further constrain the geology and timing of crustal formation and depositional age/provenance in this area. We address the Kumta Suture hypothesis and examine purported links between the Karwar Block/Kumta region and Madagascar.

References:

[1] Collins, A.S. and Pisarevsky, S.A. (2005) *Earth-Science Reviews* 71(3-4): 229-270

[2] Tucker, R.D., et al. (2011) *Precambrian Research* 185(3-4): 109-130

[3] Ishwar-Kumar, C., et al. (2013) *Precambrian Research* 236: 227-251

