

INDIA-ANTARCTICA CONNECTION: CONSTRAINTS FROM DEFORMED ALKALINE ROCKS AND CARBONATITES

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Deformed Alkaline Rocks and Carbonatites (DARCs) are markers of suture zones where continents have rifted apart and later amalgamated [1]. Petrological and geochronological data indicates that parts of India and East Antarctica may have been involved in several episodes of collision and breakup during the assembly of past supercontinents [2]. DARCs at the eastern margin of the Eastern Ghats Province (EGP) in India preserve the record of these amalgamation and breakup events. It is thought that the Napier Complex of East Antarctica collided with the Dharwar Craton of India at ca. 1.60 Ga forming the central and eastern Indian shield [3]. New zircon U-Pb ages from DARCs at the EGP margin show that the alkaline complexes (Kamakhyanagar: 1350±14 Ma; Rairakhol: 1379±6 Ma; Khariar: 1478±5 Ma; Koraput: 1387±34 Ma; Kunavaram: 1360±5 Ma; Jojuru: 1352±6 Ma) were emplaced in a narrow time interval. The alkaline magmatism marks an episode of rifting in the Indo-Antarctic continental fragment, correlatable with breakup of the Columbia supercontinent. Metamorphic zircon from the alkaline rocks furnish age populations at 917-950 Ma, 792-806 Ma and 562-569 Ma. The 917-950 Ma ages are correlated with the closure of an oceanic basin between the Ruker Terrane of East Antarctica and the Indian Shield during the assembly of the Rodinia supercontinent. This led to the collision of the Ruker Terrane with the combined India-Napier Complex producing the Grenville-age EGP-Rayner Complex orogen [2, 3]. The 792-806 Ma ages record the disintegration of Rodinia when Greater India started to break away from East Antarctica [4]. In the early Paleozoic, India reconverged towards Antarctica and Australia during Gondwanaland assembly. The 562-569 Ma zircon ages date the resulting collisions during Pan-African orogenesis.

[1] Burke *et al.* (2003) *Geology* **3**, 391-394. [2] Upadhyay (2008) *Precambrian Research* **162**, 59-69. [3] Harley *et al.* (2003) *Geol. Soc. London Spl. Pub.* **206**, 203-230. [4] Li *et al.* (2008) *Precambrian Research* **160**, 179-210.