Neoproterozoic Collision Tectonics in the Eastern and Southern India and the Genesis of Syn-, Post-kinematic Magmatic Complexes

Y.J. BHASKAR RAO*, E.V.S.S.K. BABU and T. VIJAYA KUMAR National Geophysical Research Institute, Council of Scientific and Industrial Research, Uppal Road, Hyderabad – 500007 India *corresponding author - Phone No. +91-40-23434609 e-mail: yjbhaskarrao@gmail.com

The Archaean (>2.5 Ga) Bastar and Dharwar cratons, India are surrounded by younger Precambrian mobile belts referred to widely as Eastern Ghats Granulite Belt and the Cauvery Shear Zone system. These comprise Palaeo- to Neoproterozoic terrains that were accreted by multiple collisional events. However, the chronology and spatial correlations of the discrete terrains are poorly established owing to inadequate geochronological data and a general overprinting by pervasive Neoproterozoic deformation and high-grade metamorphism that includes highpressure and ultra high-temperature regimes. The anastomosing network of Neoproterozoic crustal-scale shear zones is also loci for syn- to post-kinematic felsic, mafic and ultramafic magmatic complexes. Common petrological associations include norite-anorthosite-mangerite-charnockite, granite-alkali granite and rarely pyroxenite-peridotite. Major and trace element compositions of the igneous complexes suggest general arc affinities. The suites show high- ${}^{87}\text{Sr}/{}^{86}\text{Sr}_{i}$ and extremely low initial ɛNd (-6 to -20). The compositions are consistent with collision tectonics and a scenario where the high-temperature juvenile mantle melts derived from lithospheric sources that incorporated ancient continental crust.

Keywords: Neoproterozoic, suture zones, geochronology, Sr-Nd isotope systematics, southern India.