IMPLICATIONS OF THE DIVERSE PALAEOTECTONIC REGIMES IN CENTRAL INDIA ON THE PRECAMBRIAN EVOLUTION OF THE NARMADA — SON STRUCTURE

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The enigmatic, ENE — WSW trending Narmada — Son structure, which cuts across the Indian Peninsular Shield has been a subject of considerable investigations and discussions. The geomorphic and geophysical expressions of this linear zone of crustal inhomogenity are irrefutable. Views regarding its origin, nature and palaeotectonic implications have been however, as variegated as the contradistinctive geological characters of the various stratigraphic units exposed along its length and on either side of it in Central India.

Relatively little is doubted vis-a-vis its implications on various Phanerozoic horizons, such as the (Upper Palaeozoic — Mesozoic) fluvioglacial Gondwana Supergroup, the Mesozoic marine, Tethyan transgressives into the Peninsular shield and the (Late Cretaceous-Ecoene) Deccan Trap Volcanics. Numerous evidences recording the post-Trappean activity of this structure are also available. The origin and the episodic Precambrian activity along this linear structure have been however, debated for long. Lack of exhaustive geochronological and geochemical data has been a major bottleneck in this debate.

Two significant implications suggested by the assorted geological features along the Narmada — Son structure are :—

(*a*) the unique parallelism of the structural trends of different horizons, which is remarkably uniform independent of age-considerations; and;

(*b*) the apparent inconsistancy of the plaeotectonic environments decipherable for synchronous stratigraphic units on either side of this structure.

The distinctive parallelism of the structural trends is used to primarily point out that, the episodic stress-systems operating in this region were in some way, channelised parallel to this zone of crustal instability. The diverse geological evidences from different domains, seperated by the Narmada — Son structure, are elucidated to highlight the inference that, this linear zone was probably initiated as a Late Archaean — Early Proterozoic suture. It welded the southern (Dharwar) and eastern (Singhbhum) protocontinental nucleii with their northern (Bundelkhand) counterpart of the Indian Shield, possibly through the process of A-subduction. The contemporanity of this activity with the global event of the consolidation of the Proterozoic Supercontinent predicted from palaeomagnetic (APW) interpretations. Local development of small, linear mobile-belts (parallel to this structure), generation of the northern, Atlantic-type, passive cratonic margin of the Vindhyan Sea and the Late Proterozoic upheaval, are rationalised to conform to the contemporary (predicted) tectonic styles.

New data and the proposed model are used to reassess the earlier postulated 'fit' of the Indian Shield in the reconstruction of the Proterozoic Supercontinent, and the intercratonic 'extensions' of this linear structure in the reassembled, contemporary Gondwanaland fragments.