

PURANA BASINS, DHARWAR CRATON : IMPLICATIONS ON PROTEROZOIC PERICRATONIC TECTONICS & SEA-LEVELS

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The epicratonic, undeformed and unmetamorphosed Purana Basins of peninsular India host the record of Proterozoic continent margin history. Three of these seven platform basins [Cuddapah : 13,000 m; Kaladgi : 3,600 m; Bhima :200 m] occur on the rim of the Dharwar craton. The structural, sedimentological and subsidence history in these basins are used in conjunction with available age constraints to compare them with contemporary sequences from contiguous segments of Gondwanaland. It is shown that:

- ◆ They evolved in dominantly extensional tectonic regimes (with significant transtensional components in Kaladgi and Bhima).
- ◆ There seems to be a close association between the Mesoproterozoic Indo-Antarctic collision and the geometry and growth of the Cuddapah basin.
- ◆ The Dharwar craton and the adjoining Proterozoic mobile belts were the provenance for sediments in these basins.
- ◆ The climatic conditions prevailing during the erosion of their provenance ranged from warm, humid to moderate subtropical and occasionally arid climates. These climatic variations display a systematic rhythm.
- ◆ After making due allowances for the interplay between tectonics and sea-level changes, three (probably four) independent glacioeustatic high stands (=peak transgressions) of the contemporary sea-level can be recognised from these basins, occurring at
 - i. 1.8 - 1.6 Ga;
 - ii. 0.9 - 0.8 Ga; and,
 - iii. during the Terminal Proterozoic.

Another highstand during the mid-Mesoproterozoic times is weakly indicated. High resolution measurements of the sedimentary sequences and their rhythms have shown that the cycles of sea-level fluctuations during the Proterozoic have imprints of not only the supercontinent assemblies and dispersal, but also (*on a smaller scale*) of glacio-eustasy and orbital forcing.