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# Exhumation of lower crust in the Pre Cambrian terrain of Indian shield.

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Kavali-Udipi Deep Seismic Sounding (DSS) profile cuts across important geological structures of Pre-Cambrian age in south Indian shield. Along the eastern part, it passes through upper Proterozoic Cuddapah basin and granulite belt of the Eastern Ghat Mobile Belt (EGMB). At the contact of eastern margin of the Cuddapah basin and Eastern Ghat Mobile Belt (EGMB), a conspicuous bi-polar bouguer anomaly is observed associated with geological anomalies, like high-grade metamorphism represented by Anorthosites. The EGMB has witnessed orogeny during Pre-Cambrian under compressional regime.

The present analysis based on a re-look of original records/ and modeling of the DSS data of eastern part of the Kavali-Udipi DSS profile, facilitates a revised velocity model. It shows that the velocity of 6.0 km/s (granitic layer) generally observed in the sedimentary basins as their basement are either absent / missed in the DSS data or has very less thickness to be missed in the present set of refraction data. We have interpreted our modeling results in the context of pre and post compressional regime. It has been interpreted that the 6.4 km/s velocity was prevalent all along the basin followed by a layer of 6.7 km/s, which has been over thrusted along the low angle thrust faults, caused by compressional forces, at the eastern margin of the Cuddapah basin. Subsequent erosion of the surface has removed the top and brought the 6.7 km/s layer closer to the surface. The lateral difference in the zones, based on velocity model, was not possible on the basis of the generalized velocity-depth model (Kaila et al., 1979, J. Geol. Soc. India, 20, 307-333). This type of crust, where the upper crust is found to be very thin, has also been reported at southern limit of the Proterozoic Vindhyan basin along Hirapur-Mandla DSS profile in central India. This region has also witnessed compressional tectonics of the same period as of EGMB. The results will be discussed in the unified regional tectonic framework.