National Award for Geoscience & Technology
Prof. G. V. R. Prasad

Prof. Prasad's work has effectively improved the palaeobiodiversity of Deccan Volcanic Province (DVP) from pre-1980 record of 13 taxa to 79 taxa, which in turn provided palaeontological constraints on the age of initiation and duration (short duration of 5 m.y.) of Deccan volcanism. His work has further demonstrated that the initial volcanic activity has little effect on contemporary biota and freshwater faunas, particularly detritus feeders, were least affected by the volcanic activity. (Published in the Journal Geological Society, London 152: 289-296, 1995; Journal Geological Society, London 157: 257-260, 2000; Bull. Soc. Geol. France 183(6): 597-610, 2012; Geological Society of America Special Paper 505: 1–18. 2014).

The find of first Cretaceous (66 m.y.) tribosphenic (eutherian) mammals from India is considered as a landmark discovery as it demonstrated that India was a possible center of origin for this group of mammals during its northward drift and these mammals had later dispersed to Africa and Europe at the Cretaceous-Palaeogene (K/Pg) boundary. This implies that these mammals had survived the K/Pg boundary mass extinction event and lived for about 10 million years after this biotic event. (Published in Nature 332(6164): 638-640, 1988; Journal of Vertebrate Paleontology 14(2): 260-277, 1994; ComptesRendusPalevol 9: 63-71, 2010; Naturwissenschaften 97(4): 365-377, 2010; PNAS 108 (39): 16333-16338, 2011).

Quantitative analysis on the faunal similarities between the biota of Upper Cretaceous DVP, the Upper Cretaceous Kallamedu Formation of Cauvery Basin in South India and the Upper Cretaceous Maevarano Formation of Madagascar has demonstrated low degree of similarity between the faunas of DVP of central India and Cauvery Basin of South India and greater faunal similarity between the Mahajanga Basin of Madagascar and Cauvery Basin. This implied that the Cauvery Basin was ecologically distinct from Central India at the time of Deccan volcanic eruptions and may have formed a distinct biogeographic entity that maintained significant faunal exchanges with Madagascar in the west, but with limited north-south dispersal (Published in Journal of Vertebrate Paleontology 33(6): 1260-1268, 2013; Palaeogeography, Palaeoclimatology, Palaeoecology 468: 70-75, 2017).

The report of anomalous occurrence of a troodontid dinosaur from the Late Cretaceous of Cauvery Basin is highly significant from the palaeobiogeographic point of view as its fossil record is currently restricted to the Laurasian landmasses. Its presence in the Late Cretaceous of India is suggestive of either Pangaean (worldwide) distribution or dispersal from the Northern Hemisphere continents. (Published in Nature Communications 4:1703DOI:10.1038/ncomms2716/ www. nature.com/ naturecommunications).

The discovery of oldest archaic ungulate mammal from the Late Cretaceous of Cental India implies that either the basal stock of archaic ungulates originated in India/Gondwanaland or immigrated from a Eurasian landmass (Published in Science 318:937, 2007). These finds in conjunction with discoglossid frogs, anguimorph lizards and troodontid dinosaurs of Holarctic affinity introduced a new perspective to the Late Cretaceous palaeobiogeographic reconstructions of the Indian plate and as a consequence, faunal dispersal events between Greater India, Africa, Madagascar and Asia in the Late Cretaceous-Early Palaeocene times across island-arc (Oman-Kohistan-Dras) systems have been visualized (Published in C.R.Acad. Sci. Paris, Ser. II, 313: 273-278, 1991; Cretaceous Research 16: 95-107, 1995; Bull. Soc.Geol.France 180(4): 369-381, 2009).

Based on simultaneous discovery of high-crowned, multituberculate-like (gondwanathere) mammals of South American affinity from the Upper Cretaceous (66 m.y.) rocks of India and Madagascar, it was demonstrated that these mammals were cosmopolitan in distribution and a terrestrial dispersal route existed between Indo-Madagascar block and South America via Antarctica and Kerguelen Plateau (Published in Nature 390: 504-507, 1997).

He has been instrumental in documenting vertebrate microfossils represented by hybodont sharks, sphenodontid reptiles, iguanian lizards, pterosaurs, ornithischian and theropod dinosaurs, and mammls (symmetrodont, triconodont, morganucodontid, docodontharamyid, and multituberculate mammals), previously known only from the Northern Hemisphere continents, from the continental Jurassic rocks of Pranhita-Godavari valley which has considerably improved the Jurassic vertebrate biodiversity of India and helped in better understanding the evolution of vertebrate fauna during the break-up and subsequent drifting apart of former Gondwanaland continents.

More recently, his team has discovered the first Jurassic ichthyosaur (marine reptile) from India and the first complete skeleton of ichthyosaur from the Mesozoic rocks of India This finding improved the fossil record of ichthyosaurs from the Gondwanan continents and also suggested close biogeogeographic connections between western Tethys region and southern Indian Ocean in the Late Jurassic. (Published PLoS ONE 12(10):e0185851, 2017).

In recognition to his outstanding contributions in the field of Geoscience and Technology, Ministry of Earth Sciences (MoES) honours Prof. G. V. R. Prasad with the “National Award in the field of Geoscience and Technology” for the year 2019.