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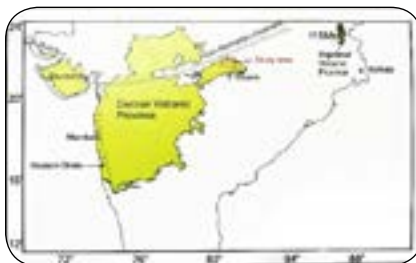
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Magmatism in western India

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Tholeiites and alkali basalts occurring in the southern coastal belt of Kutch rift basin, Gujarat are the northernmost on-land exposure of Deccan Traps. The Deccan Traps are of global interest for their possible links to Cretaceous-Tertiary (K-T) mass extinction event and global climate change. Further north, mafic dykes, sill and a differentiated alkaline plutonic complex occur along deep-seated rift-related faults. Volumetrically Phonolite is small compared to the tholeiitic and alkali basalts of Kutch but is highly magnesian and evolved in nature. The geochemical characters of the Phonolite suggest an alkaline magnesian source. The pericratonic Kutch basin has undergone repeated rifting during the Mesozoic. The magma formation was possibly controlled by rifting in a continent-ocean marginal setting. Radiogenic Isotopic similarity between Deccan and Reunion lavas has been used as an evidence to suggest that Deccan magmas were supplied by the Deccan-Reunion plume-head. Platinum group element abundances in the western Ghat samples of the Western Ghats and Kutch and the Eastern Deccan volcanic provinces are broadly similar in a chondrite normalized plot. Nickel-Ir-Ru in the western province exceeds those of the eastern province by approximately two times. There is however, consistency in Pd, Au and Cu in both eastern and western provinces. Radiometric dating of Deccan Trap lavas and intrusions have shown that bulk of the magmatic activities occurred 65 (± 1) Ma. ago. Earliest rift-related magmatism occurred at 75 Ma, rest of the igneous activities occurred in two episodes – the most voluminous episode coincided with Deccan age (65-67 Ma) whereas a small volume igneous activity took place at ca. 61 Ma. We suggest that the 75 Ma pre-Deccan rifting-magmatic events is a relict of magmatism that occurred during separation of Madagascar from India, which was caused by the Marion plume.



Biography

Dalim Paul from Calcutta has obtained PhD from the University of Leeds, U K in 1970 on a Commonwealth Scholarship and DSc from the University of Calcutta in 1992. He specializes in Petrology, Geochemistry and Geochronology of volcanic and ultramafic rocks. As a post-doctoral fellow, he did research in McMaster University, Canada and at the University of Western Australia. He worked with the Geological Survey of India and was the Director of Indian School of Mines, Dhanbad. He has published over 50 scientific papers in refereed journals and authored many professional reports. He is a Fellow of the Indian National Science Academy and the Academy of Third World Sciences.

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