



K-T magmatism of northwestern Indian shield: A result of fragmenting continent

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Cretaceous-Tertiary (K-T) boundary marks magmatism at Mer-Mundwara, Sarnu-Dandali and Tavidar in western Rajasthan, northwestern Indian shield. The magmatism is located at the Barmer-Sanchor-Cambay rift margin. Alkaline and associated magmatism, Cambay-Sanchor-Barmer rift basin, Deccan volcanism and separation of the Seychelles micro-continent from India have been interpreted to be the products of Reunion plume activity during K-T period in northwestern India. The Mundwara and Sarnu Igneous complex (68.53 ± 0.16 Ma) are interpreted as pre-outburst plume activity and the main plume outburst phase is described as Deccan volcanism (65.5 ± 0.5 Ma).

The separation of Indian landmass from Eastern Gondwana during Jurassic resulted Rift basins in Kutch (Gujarat) and Jaisalmer (Rajasthan) region and no plume was hypothesized for this. This fragmentation caused alkaline magmatism at ~ 120 Ma in Sarnu region. This date is not within 65 to 68 Ma time framework and excluded from Reunion Plume activity. The geodynamic changes in northwestern Indian shield from Jurassic to K-T boundary were in repose of fragmenting continents rather than Plume interactions. The Gondwana break up during K-T period caused extensional tectonic regime resulting separation of Seychelles from India, origin of Arabian Sea, Deccan volcanism, Cambay-Sanchor-Barmer rift basin and associated magmatism. The presence of ultra-basic circular plutons, carbonatite and lamprophyre dykes at Mer-Mundwara and Sarnu-Dandali signify development of deep crustal fractures. This initiated decompressional melting in northwestern Indian shield under extensional tectonic regime during K-T time rather than any Plume activity.