

Early-Mid Eocene Continental Flood Basalt from the Himalayan foreland basin and their tectonic significance

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Early-Mid Eocene basalts occur discontinuously along the entire length of the Himalayan foreland basin. The Abor volcanics from the Siang window in the east is inter-banded with Paleocene - mid Eocene shallow marine sediments. Eocene sediments and basalts from Dowar-khola, Central Nepal, are wedged within the Siwalik belt. Peontra volcanics occur within the early Eocene sediments from Deoban window. Rhyolitic tuffs occur within such sediments from the Riasi belt, Jammu. Except for minor rhyolites from Riasi and within the Abor, the dominant volcanics are tholeiitic ($Y/Nb < 2$), with the Abor suite containing alkaline basalts. The pattern of enrichment in incompatible elements in the suite is similar to OIB and CFB. $[La/Ce]_N$ systematically increase 0.94 to 1.42 westward suggesting increasing crustal residence. Dowar-khola and Peontra suite are depleted in Ti, Nb.

Late Paleocene-mid Eocene sediments in western and eastern syntaxes are the oldest preserved foreland rocks. These are similar in facies and marine fauna. The presence of chrome-spinel in the basal sediments in the former indicates creation of Paleogene foreland basin soon after emplacement of Himalayan nappes. Normal faults are common on collisional foredeeps caused by high-amplitude lithospheric flexure. Some deep faults produced at the edge of flexed Indian continental lithosphere during early-mid Eocene may be responsible for CFB-Type volcanism in the Himalayan foreland basin.