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Himalayan Paleogene Foreland Basin, its collision induced early volcanic history and failed rift initiation

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Abstract

The Himalayan Foreland Basin was formed over a failed rift zone that produced early Paleogene volcanism, which was synchronous to Indo-Asia collision. The rift zone was located over acutely flexed leading edge of the Indian continental crust. The volcanism preceded upliftment of the proto-Himalaya. The Jammu Himalaya is one of the few areas exposing the basal part of the foreland basin comprising a persistent horizon of volcanisedimentary rhyolitic chert breccia at the base of the Subathu Formation, which unconformably overlies the Precambrian Jammu Limestone. Contemporaneous felsic ash beds occur in the Subathu-Kalka area in the Simla Hills at the base of the Subathu Formation unconformably overlying the Precambrian Simla Group. In Arunachal Pradesh, in the eastern-most Himalaya, early-mid Eocene foraminifera fauna bearing Yinkiong Formation overlies the Abor Volcanics. The age of the latter is disputed: whether it is early Permian or Eocene in age, or it exposes a mixture of both components. Recent U-Pb SHRIMP zircon geochronological study indicates Abor Volcanics being part of the Kerguelen mantle plume trail traversing Southern Tibet, Sylhet, Rajmahal, Bunbury and Kerguelen Plateau. Trace element geochemistry of the Abor Volcanics, the exposed volcanic rocks around Yinkiong and those exposed between Pangin and Rotung indicate rift signature. In the frontal belt, early Eocene shallow marine sediments locally associated with mafic volcanics occur tectonically

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