

Géologie des chaînes du Haut-Himalaya et du Pir Panjal au Haut Lahul (NW Himalaya, Inde). Paléogéographie et tectonique

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The High Himalaya and Pir Panjal Ranges of Upper Lahul are situated at the transition zone between the High Himalaya Crystalline and the Tethyan Zone. Based on a geological study of this area, the Upper Precambrian to Triassic paleogeographic evolution of this segment of the Indian continent, as well as its structural development during the Himalayan orogeny, are reconstructed.

The Indian continent, bounded to the "north" by the Cimmerian micro-continents, was part of Gondwana during the Late Precambrian and Paleozoic. The stratigraphic record for this period was influenced by a Cambro-Ordovician Pan African event, and probably also by a Paleo-Tethyan rifting phase between the Silurian and Devonian. The first tectonic movements leading to the breaking up of the Cimmerian micro-continents from India occurred during the Early Carboniferous and they correspond to a synsedimentary transtensional phase, probably associated with basaltic intrusions. An important thermal uplift event between the Late Carboniferous and Early Permian marked the onset of the extensional phase of the Neo-Tethys rifting. The oceanization phase was contemporaneous with middle Permian basaltic extrusions (Panjal Traps). The thermal subsidence of the passive margin began during late Permian and was followed by the development of a carbonate platform.

During an early phase of the Himalayan orogeny (Eocene to Early Oligocene) , the southern part of Upper Lahul underwent a NE-vergent overthrusting associated with the development of the Shikar Beh Nappe. This event created the Tandi Syncline, which is a Mesozoic Tethyan sequence folded within the High Himalaya Crystalline paragneisses. During the subsequent Upper Oligocene to Lower Miocene SW-vergent deformation phases, two major nappe systems affected the units of the Upper Lahul area. The southern part of this region was the root zone of the crystalline nappes associated with the tectonic movements along the Main Central Thrust. The northern part of this region was located at the front of the Nyimaling-Tsarap Nappe, carrying the Tethyan Zone units of east Zaskar toward the SW. A syn- to late-metamorphic ductile dextral shearing event subsequently deformed the High Himalaya Crystalline-Tethys Himalaya transition zone during the Early Miocene. The gradual passage between these two units indicates that this deformation was not strong enough to cause structural detachment, as observed in many other parts of the Himalaya.