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BIOTIC RESPONSE TO CRETACEOUS-EOCENE TECTONIC EVENTS AT THE NORTHERN MARGIN OF THE INDIAN PLATE AND THE INDUS-TSANGPO SUTURE ZONE, LADAKH HIMALAYA, INDIA

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ABSTRACT

The Cretaceous-Eocene successions of the Indus-Tsangpo Suture Zone (ITSZ) and the Zanskar Tethyan Zone (ZTZ) of the Ladakh Himalaya were laid down during progress of the India-Asia collision and have well preserved imprints of the event. In the ITSZ, the northward drift of the Indian Plate during the Early Cretaceous led to subduction of its oceanic crust under the Asian Plate leading to the creation of the Nindam forearc basin, in which was deposited the Nindam Formation with planktic foraminifers and radiolarians in its lower part and larger foraminifers in the upper. The contact of the oceanic crust of the Indian Plate with that of the Asian Plate towards the end of Cretaceous created the Indus Basin, which received sediments of the Danian-Cuisian Indus Formation with shallow marine biota in its lower part and fluvial-brackish in the upper part as well as of the overlying middle-late Eocene Hemis Formation with fluvial biota. In the ZTZ, the deposition of the Giumal Formation with shallow marine biotas occurred after the deep marine sedimentation of the Spiti Shales. The subduction of oceanic crust of the Indian Plate under the Asian Plate steepened the Zanskar shelf, creating deep marine conditions during the deposition of the Cenomanian-Turonian Chikkim/ Shillakong formations with planktic foraminifers. Similar conditions persisted in North Zanskar during the deposition of the Goma Formation with planktic foraminifers up to early Thanetian, whereas in South Zanskar its coeval Kangi La-Marpo-Stumpata succession with deep to shallow marine biotas witnessed gradual shallowing due to contact of Indian oceanic crust with the Asian Plate. The marine conditions continued up to Cuisian when the Dibling/ Lingshet-Kong succession with shallow marine biotas was deposited. Afterwards, the region was uplifted due to the India-Asia collision, leading to deposition of the Chulung La Formation under continental conditions.

Keywords: Cretaceous-Eocene, Biotic response, India-Asia collision, Indus-Tsangpo Suture Zone, Zanskar Tethyan Zone