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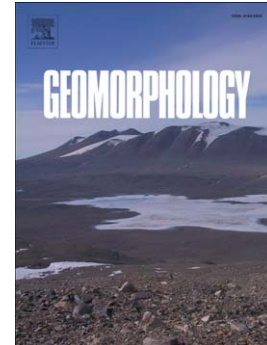
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S.S. Bhakuni, Khayingshing Luirei, Girish Ch. Kothiyari, Watinaro Imsong

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Transverse tectonic structural elements across Himalayan mountain front: implication of superposed landform development on analysis of neotectonics, eastern Arunachal Himalaya, India

S.S. Bhakuni*¹, Khayingshing Luirei¹, Girish Ch. Kothiyari², Wataro Imsong¹

¹Wadia Institute of Himalayan Geology, Dehradun, India

²Institute of Seismological Research, Raisan, Gandhinagar, India

*Corresponding author. Tel.: +91 9411110968; E-mail: bhakuniss@rediffmail.com (S.S. Bhakuni).

ABSTRACT

Structural and morphotectonic signatures in conjunction with the geomorphic indices are synthesised to trace the role of transverse tectonic features in shaping the landforms along the frontal part of the eastern Arunachal sub-Himalaya. Mountain front sinuosity (S_{mf}) index values close to one are indicative of the active nature of the mountain front all along the eastern Arunachal Himalaya, which can be directly attributed to the regional uplift along the Himalayan Frontal Thrust (HFT). However, the mountain front is significantly sinusoidal around junctions between HFT/MBT (Main Boundary Thrust) and active transverse faults. The high values of stream length gradient (SL) and stream steepness (K_s) indices together with field evidence of fault scarps, offset of terraces, and deflection of streams are markers of neotectonic uplift along the thrusts and transverse faults. This reactivation of transverse faults has given rise to extensional basins leading to widening of the river courses, providing favourable sites for deposition of recent sediments. Tectonic interactions of these transverse faults with the Himalayan longitudinal thrusts (MBT/HFT) have segmented the mountain front marked with varying sinuosity. The net result is that a variety of tectonic landforms recognised along the mountain front can be tracked to the complex interactions among the transverse and longitudinal tectonic elements. Some distinctive examples are: in the eastern

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