

## A REVELATION OF THE LATERAL PROPAGATION AND TILTING OF A SIWALIK TECTONIC BLOCK, CENTRAL HIMALAYA, INDIA

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**ABSTRACT:** A number of faults and thrusts subdivide the Himalaya into several distinct tectonic blocks. However, no study has so far been focused on understanding their tectonic development. The present study is an attempt in this direction. It deals with the geomorphic investigations of a tectonic block of the Siwalik range of Central Himalaya. Its southern boundary is defined by the Himalayan Frontal Thrust (HFT) thrust, along which it is thrust southwards over the Ganga Plain sediments, and its northern boundary is defined by the Main Boundary Thrust (MBT), along which the Lesser Himalaya is thrust over it. In the west, it is delimited by the Kathgodam Fault.

Drainage pattern, drainage deflections and drainage texture have been carefully observed and geomorphic indices like Basin Asymmetry Factor (AF), Transverse Topographic Symmetry Factor (T), Valley-floor Width to Height Ratio ( $V_f$ ) and Mountain-front Sinuosity ( $S_{mf}$ ) have been calculated for nineteen drainage basins of third and higher order streams to understand the tectonic development of this block. Satellite imagery and Survey of India topographical maps are the data source and all the calculations were done in the ArcGIS.

The drainage basins show sub-dendritic to sub-rectangular drainage pattern. However, some tributary streams exhibit semi-trellis drainage patterns. The  $S_{mf}$ ,  $V_f$ , drainage pattern and morphology of hill-slope facets together suggest active uplift of this tectonic block along the HFT, whereas AF, T and drainage texture reveal its westward tilting, indicating differential uplift along the HFT. The uplift of the eastern part of the block is more than the western part. The drainage pattern and deflections in and around the block reveals its lateral propagation from east to west.