# Abstract

The Sub-Himalaya has accommodated nearly the entire amount of crustal shortening across the Himalayan orogen since the Late Pleistocene. The resulting strain accumulated due to the intraplate convergence of Indian and Eurasian plate, however not only distributed to the Southernmost deformation front, the Himalayan Frontal Thrust (HFT), but, is partitioned across several active structures. This study presents the ongoing crustal shortening in the Jammu sector in Western Himalaya. Fluvial bedrock incision rate across Surain-Mastgarh Anticline (SMA) and Mandili-Kishanpur Thrust (MKT) has been calculated. OSL dated fluvial strath terraces shows high fluvial incision rates of 5.1±0.6 - 5.4±0.4 mm/yr at MKT hangingwall since last~20-22kyr, while the footwall shows incision rates of 2.7±0.1 - 2.8±0.2 mm/yr. The SMA shows Holocene fluvial incision rates of 1.0±0.1 - 2.3±0.2 mm/yr. Considering fluvial incision rate is equal to bedrock uplift rate, MKT portrays average shortening rates of 4.5±1.0-5.1±0.9 mm/year since 20 ka and SMA shows Holocene shortening rates of 3.1±0.1 mm/year. Murree Thrust (MT) located upstream of MKT has a shortening rate of 1.6±0.2 mm/year since 10 kyr. This gives a cumulative shortening rate of 9.5±1.3 mm/yr. Hence, ~70-75% of the geodetic convergence rates estimated for the entire western Himalaya have accommodated in these SH structures. The shortening rate of MKT correlates well with the shortening rate of contemporary structures in the adjacent areas- the Frontal Riasi Thrust (FRT) in Kashmir Himalaya and Jwalamukhi Thrust (JMT) in Kangra recess. So, FRT-MKT-JMT is most probably a continuous splay of Main Himalayan Thrust (MHT) and is regionally the most active tectonic structure since the Late Pleistocene.