

Geomorphic indicators of active growth and lateral propagation of fault-related folds: Mohand Ridge anticline, NW Himalaya

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The Himalayan orogen is a result of collision of Indian and Eurasian plates. The collision and continued convergence has resulted in development of three south verging crustal-scale thrust faults all along the E-W trending orogen dividing into three litho-tectonic units *viz.* Higher Himalaya, Lesser Himalaya and Sub-Himalaya from north to south in that order. The Sub-Himalayan zone is characterized by the presence of fault-related folds that are conspicuously marked by the linear ridges running parallel to the orogen. These fault-related folds are segmented by a number of transverse strike-slip faults. The present study investigates the geomorphology of the Mohand Ridge anticline, bound between the two strike slip faults i.e. Yamuna fault towards the west and Ganga fault towards the east. The geomorphic

features related to the interaction of pre-existing through-going drainage, tributary pattern on the ridge and topographic profiles suggest that the Mohand Ridge anticline is growing towards west. Further this information is also supported by morphometric data of watersheds developed on the ridge. A progressive decrease in drainage density (Dd) of watersheds from east to west has been observed in addition to an increase in hypsometric integral (HI) values in that direction. Both these parameters (Dd and HI) have been demonstrated to evolve with time in response to neotectonic activity. Hence based on the geomorphic observations and lateral variation in morphometric data it is inferred that the Mohand Ridge anticline has evolved through by vertical growth and lateral propagation from east towards west.