



Strong Coupled and Segmented Nature of the Himalaya and the Adjoining Gangetic Foreland Basin

B. Parkash, S. Rathor, and P. Pati

Department of Earth Sciences, Indian Institute of Technology Roorkee, Roorkee -247 667, India (parkash1941@gmail.com)

Our studies in the Gangetic plains and review of the work on the Himalaya suggest that both these features are marked by abrupt changes across the Rapti River, flowing N-S in the plains and region N to it, instead of a gradual change from E to W as postulated earlier. The Eastern Nepal Himalaya N to the Middle Gangetic Plains (east of the Rapti River) is characterized by a high rate of convergence, which sustains the highest peaks in the world, including the Mount Everest. These lofty peaks cause significant crustal loading leading to high rate of subsidence in the foreland basin and also shed large sediment load, carried by the rivers to the plains to form megafans (e.g. Kosi and Gandak megafans). In the NW and the W Nepal Himalaya, rates of crustal shortening due to movements along the Himalayan Frontal Thrust (HFT) are low, which are able to support lower heights of the Himalayan ranges (< 7000 m). These ranges shed small amounts of sediments, which are carried by streams to the plains. The adjoining foreland basin, the Upper Gangetic plain lying W to the Rapti River, is subsiding at a low rate, all major rivers are incised, and form large uplands. Moderately to strongly developed soils occur on the upland plains. These situations indicate the prevalence of separate steady states between the Upper- and Middle Gangetic plains and adjoining Himalaya.