



Fold segment linkage and uplift rates along the Janauri and Chandigarh anticlines, Northwestern India

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The deflection of the Sutlej and Beas rivers in NW India is evidence for fold segment linkage and growth of the Janauri and Chandigarh blind thrust anticlines since the early Quaternary. Constraining fault geometry and slip rates along the anticlines is important for assessing seismic hazards in the densely populated frontal portion of the Himalaya. A digital elevation model (DEM) was used to perform landscape analysis to constrain uplift rates and areas of segment linkage along the anticlines. Basin shape and relief, range-scale factors such as range asymmetry and mountain front sinuosity, and segmentation and steepness of river profiles were assessed. The basin dimensions, range asymmetry and normalized steepness indices of river profiles along the Janauri anticline define six sections with varying uplift rates, with the fastest uplift rate occurring at the northwest end. In contrast, the Chandigarh anticline shows a gradual increase in total uplift from northwest to southeast along its length. The hydrologic and range-scale factors associated with segment linkage and uplift variability identified in this study can be applied to other active blind thrust anticlines to constrain fault geometry, uplift rates, and seismic hazard risk.