



## **Preliminary study of E-W interseismic coupling variations on the Main Himalayan Thrust from western Nepal to central Bhutan**

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Compared to Nepal, seismogenic potential of Bhutan remains enigmatic due to its low present-day seismicity rate. Over the last three centuries, the only large reported event in this area is a  $M_w=8.1$  earthquake in 1897 that occurred further south of the Main Himalayan Thrust (MHT) near the Shillong Plateau.

New insights from a GPS network in Bhutan surveyed in 2003, 2006 and 2012 permit us to evaluate the convergence rate across the Bhutan Himalaya. Taking advantage of previously published GPS and levelling data in Nepal and Sikkim, we combine this new dataset with all the available velocity fields in a consistent India fixed reference frame. We also take into account the independent motion of the Shillong plateau relative to India and further evaluate the slip rate of the fault probably responsible for the 1897 earthquake.

Assuming that interseismic deformations are related to dislocations in a homogeneous elastic half space, we invert surface displacements to assess the pattern of interseismic coupling on the MHT from western Nepal to central Bhutan. Our preliminary results indicate no major lateral variation in the coupling along the Himalayan arc in the study area. This suggests that elastic strain is building up along the front of Sikkim and Bhutan Himalaya similarly to what is observed along the Nepal Himalaya. Large earthquakes are probably required to release this strain. Despite the low historical seismicity of Sikkim and Bhutan, the seismic hazard might actually be as high there as along the rest of the Himalayan arc.