



## **Rupture process of the Mw7.9 2015 Gorkha earthquake (Nepal): insights into Himalayan megathrust segmentation**

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We investigate the rupture process of the 25 April 2015 Gorkha earthquake (Mw7.9) using a kinematic joint inversion of teleseismic waves, strong-motion data, high-rate GPS, static GPS and SAR data. The rupture is found to be simple in terms of coseismic slip and even more in terms of rupture velocity, as both inversion results and a complementing back projection analysis show that the main slip patch broke unilaterally at a steady velocity of 3.1-3.3km/s. This feature likely contributes to the moderate peak ground acceleration (0.2g) observed in Kathmandu. The  $\sim$ 15km deep rupture occurs along the base of the coupled portion of the Main Himalayan Thrust, and does not break the area ranging from Kathmandu to the front. The limitation in length and width of the rupture cannot be identified in the pre-earthquake interseismic coupling distribution, and is therefore discussed in light of the structural architecture of the megathrust.