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Seismotectonics of the April-May 2015 Nepal earthquakes: An assessment based on the aftershock patterns, surface effects and deformational characteristics

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Abstract

Occurrence of the April 25, 2015 (Mw 7.8) earthquake near Gorkha, central Nepal, and another one that followed on May 12 (Mw 7.3), located ~140 km to its east, provides an exceptional opportunity to understand some new facets of Himalayan earthquakes. Here we attempt to assess the seismotectonics of these earthquakes based on the deformational field generated by these events, along with the spatial and temporal characteristics of their aftershocks. When integrated with some of the post-earthquake field observations, including the localization of damage and surface deformation, our observations suggest that although the mainshock slip was mostly limited to the Main Himalayan Thrust (MHT), the rupture did not propagate to the Main Frontal Thrust (MFT). Field evidence, supported by the

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