

More than 40 percent of Kumaun Himalaya is susceptible to permanent displacement in case of major earthquake

More than 40 percent of Kumaun Himalaya is susceptible to permanent displacement in case of earthquake of magnitude ranging from 7 to 8.6 Mw, says a new study.

Several studies suggest that this region is prone to a great future earthquake of 8.0Mw or greater. In this context, mapping of the co-seismic landslide has become important. Landslides caused due to earthquakes are generally termed as co-seismic landslides. These co-seismic landslides are one of the important hazard phenomena in the hilly and seismically active mountainous region, as often the destruction caused due to the earthquake-induced landslides is much greater than the destruction caused by direct ground shaking of an earthquake.

A team of Scientists including Sandeep Kumar, Vikram Gupta, Parveen Kumar & Y. P. Sundriyal from the Wadia Institute of Himalayan Geology, Dehradun, an autonomous institute under the Department of Science and Technology, Govt of India, carried out a probabilistic assessment of co-seismic landslides for the Goriganga valley located in the Kumaun Himalaya as it lies in the highest seismically active zone of the seismic zoning map of India. They estimated the Newmark permanent displacement, which provides the distribution of predicted slope failure in the area.

It was found that more than one-third of the area was vulnerable to the co-seismic landslide and that earthquakes of magnitudes 7.0, 8.0, and 8.6 (Mw) might moderately damage the area of about 1459 km², 1256 km², and 1134 km² in the study region, respectively. This research has been published in the '*Bulletin of Engineering Geology and the Environment*' recently.

This work is the first of its kind in the Himalayas region, in which earthquake-induced landslides have been explored in view of future major to great probabilistic earthquakes.

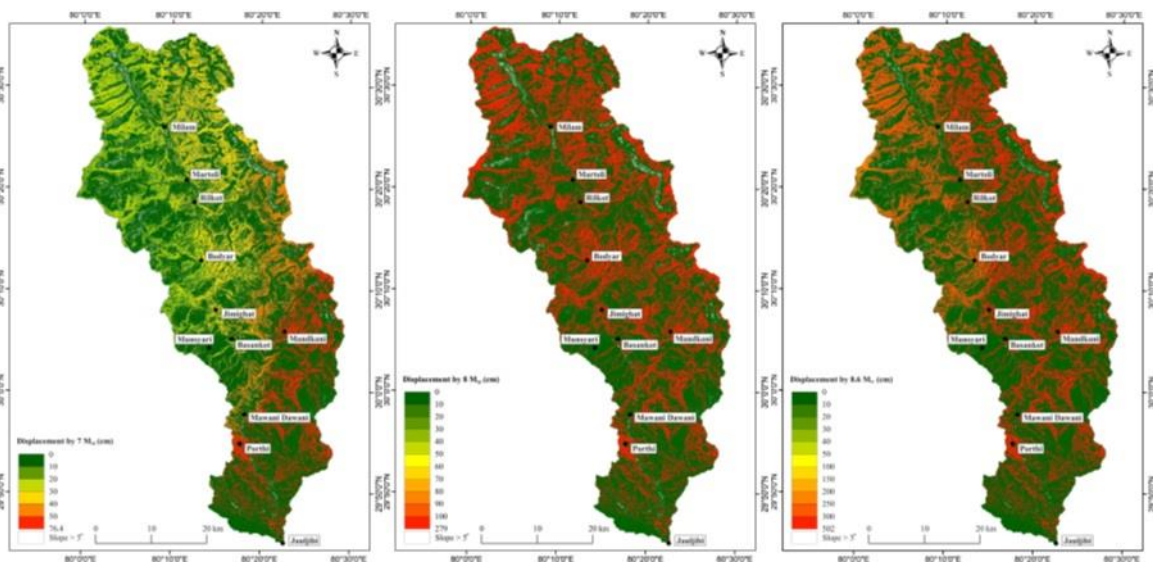


Figure 1 Figures depicting Newmark displacement (landslides) due to potential different magnitude earthquakes in the Goriganga valley, Kumaun Himalaya

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