



**A Preliminary Earthquake Report of February 28, 2025,  
Chautara, Nepal (M 5.5)**

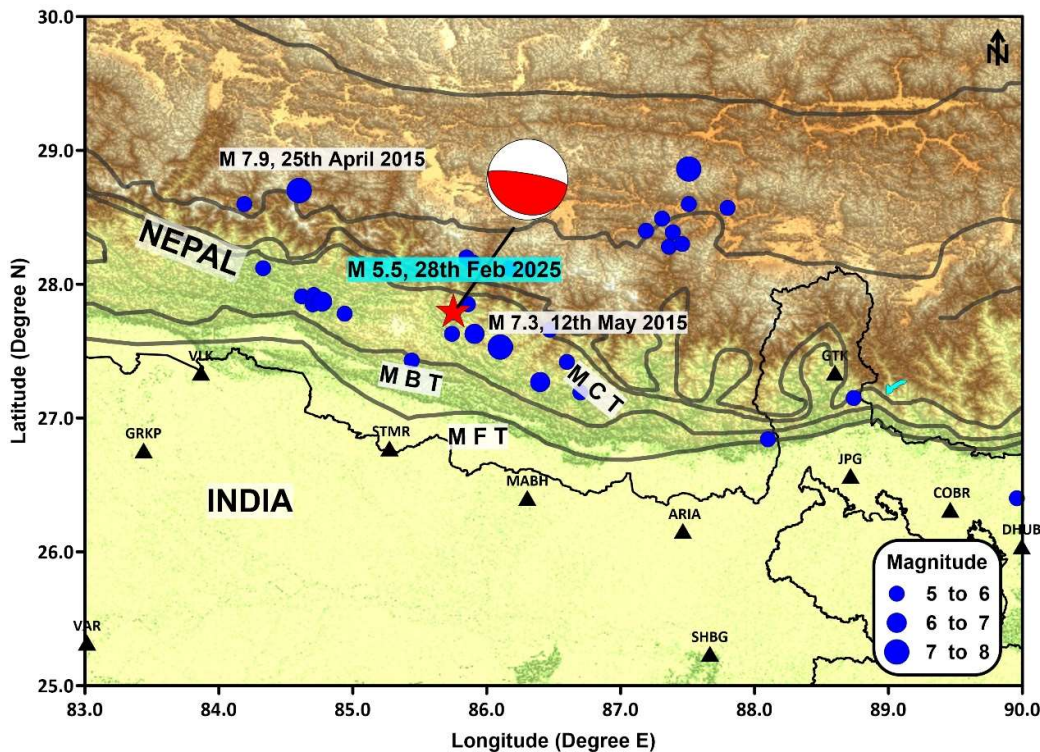
**(Report No.: NCS-NSN-2025/05)**



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An earthquake of magnitude M 5.5 occurred at 02:36:12 IST, located in Chautara, Sindhupalchowk District, Central Nepal. The epicentre is at 27.79°N and 85.75°E with a shallow depth of 10 km; which is 45 Km NE of Kathmandu; 130 km North of Sitamarhi, Bihar and 265 km ENE of Gorakhpur, Uttar Pradesh. The today epicenter is 45 km NW to M: 7.3 12<sup>th</sup> May 2015 Nepal earthquake and 120 km SE of M:7.9 26<sup>th</sup> April 2015 Gorkha earthquake. The area is seismically very active and associated with collisional tectonics where the Indian plate colliding with Eurasian Plate.

The event was well recorded by the National Seismological Network of NCS. The analysis of seismic data shows that the events are occurred on Main Central Thrust (MCT) that provides a very apt location for triggering the mainshock due to appreciable structural heterogeneity in and around mainshock. The preliminary fault plane solution derived from moment tensor inversion suggests a thrust fault with low dip angle. Felt reports of maximum Intensity VI (MMI scale) in epicentral region and minimum intensity of II (MMI Scale) have been reported from a distance of around 5 km and 400 km from the epicenter respectively (Fig. 2).



**Figure 1:** The present earthquake (M 5.5) of 28<sup>th</sup> February 2025 (Star in Red colour) and seismicity (M > 5.0) in the epicentral and surrounding region along with recent past earthquake near epicentral region, (source: [www.seismo.gov.in](http://www.seismo.gov.in); NCS-MoES. The triangles are the seismic stations. The geological faults and lineament were obtained from Yin et al., 2006.

The recorded earthquakes as per EQ Catalogue of NCS reveals that the region is associated with

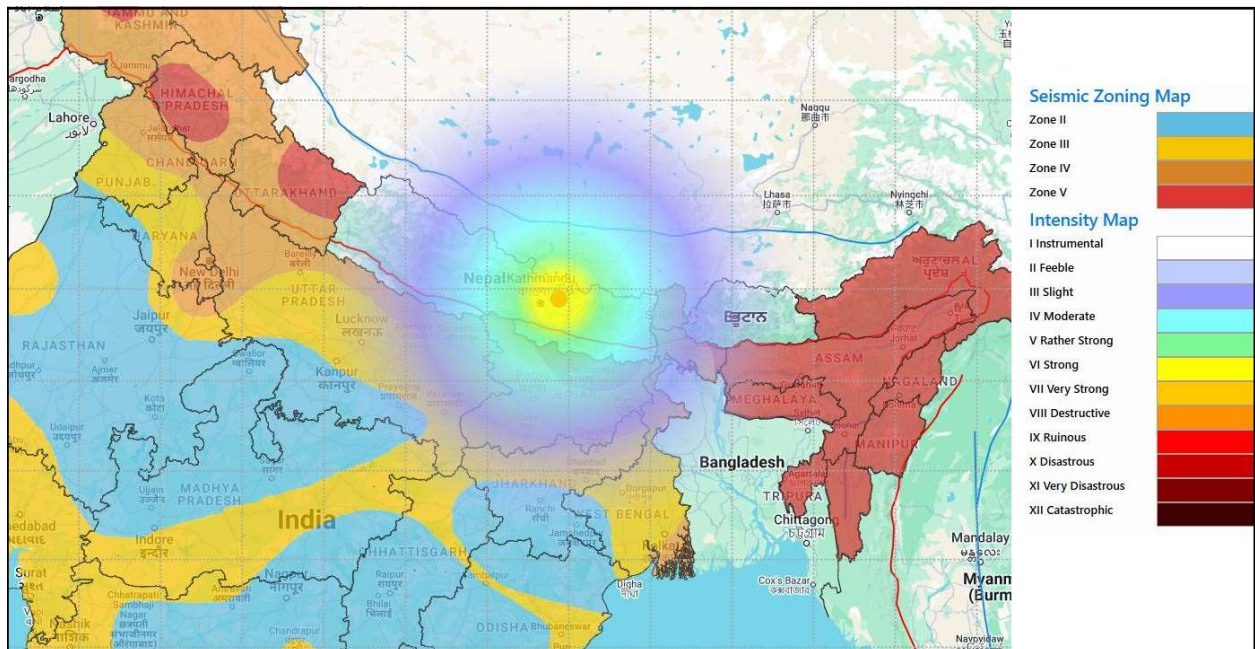
moderate to large earthquakes with varying magnitude (**Fig.1**) in the last 10 years. The occurrence of earthquakes in the region is attributed mainly to the tectonic settings of the Himalaya comprising Himalayan Frontal Thrust (HFT), Main Boundary Thrust (MBT) and Main Central Thrust (MCT) besides several local faults and geological demarcated lineaments. The preliminary fault plane solution derived from moment tensor inversion suggests a thrust fault.

Felt reports of maximum Intensity of VI (MMI scale) in the epicentral region and minimum intensity of II (MMI Scale) have been reported from a distance of around 400 km from the epicentre (**Fig. 2**).

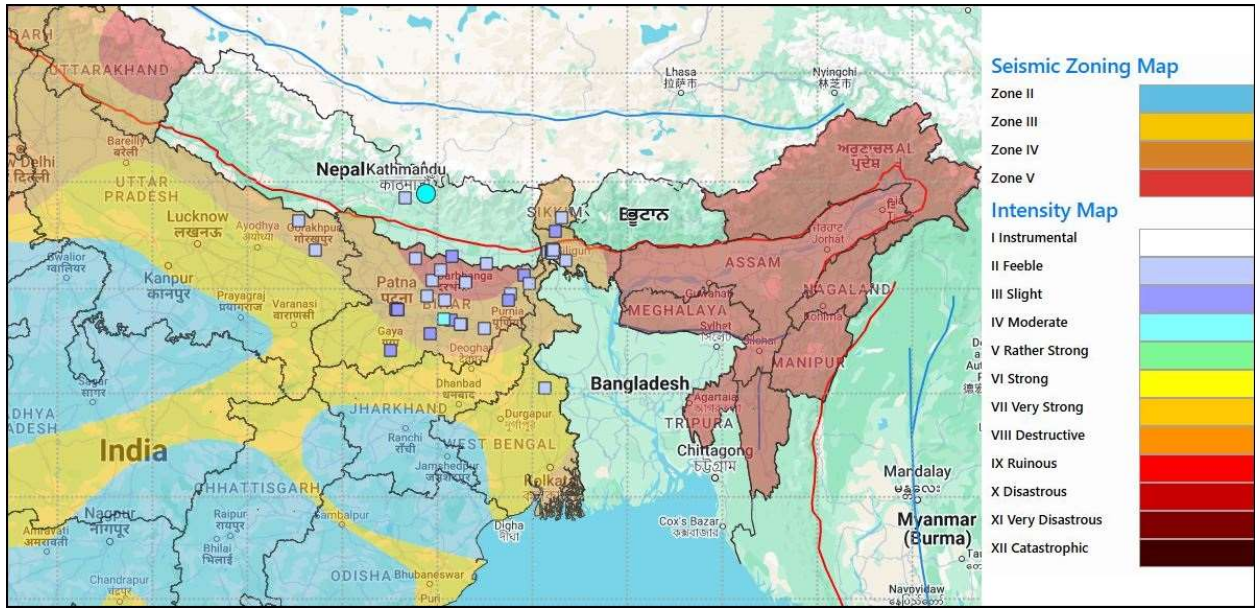
The details of the maximum peak ground motion (PGA) recorded, is tabulated below

Site	Maximum PGA (in g)	Distance from epicenter (km)
Valmikinagar	0.003	184
Gangtok	0.001	286
Jalpaiguri	0.006	324
Jamui	0.003	334
Varanasi	0.001	391
Cooch Behar	0.002	410

The earthquake is widely felt in Bihar, Sikkim, Uttar Pradesh, West Bengal and Nepal (**Fig. 2**). Within two hour more than 36 felt reports due to this earthquake, have been received from Bihar, Sikkim, Uttar Pradesh and West Bengal through NCS website and Mobile App having intensity ranging from II to IV on Modified Mercalli Intensity (MMI) Scale (**Fig. 3**).



**Figure 2:** Estimated earthquake Intensity Map of the earthquake of M:5.5 of 28<sup>th</sup> February, 2025.



**Figure 3:** Felt responses (squares) of the 28<sup>th</sup>, February 2025 earthquake M:5.5 (circle) from different users reported on [www.seismo.gov.in](http://www.seismo.gov.in) and Bhookamp mobile-app.