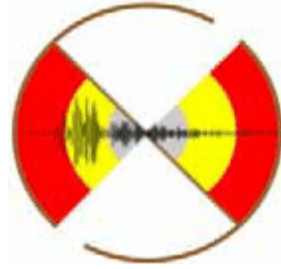




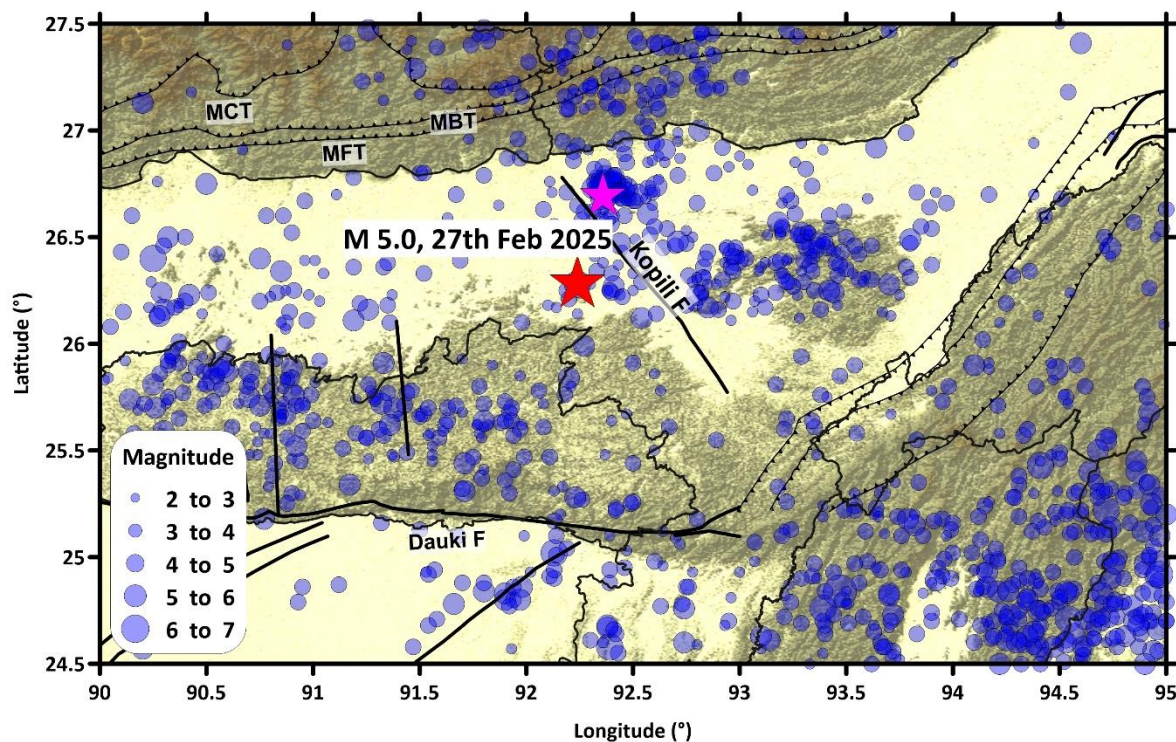
# **A Preliminary Report of February 27, 2025 Morigaon, Assam Earthquake (M 5.0)**

**(Report No.: NCS-NSN-2025-03)**



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An earthquake of magnitude 5.0 occurred in Marigoan District, Assam on 27<sup>th</sup> Feb 2025 at 02:25:40 Hr (IST) at a depth of 16 km with epicentre at 26.28 N, 92.24 E. The event was recorded by the National Centre for Seismology and located 58 km NE of Guwahati city of Assam State and 68 SE of Tezpur, 202km WSW of Jorhat, Major Town in Assam. The preliminary analysis shows that the events are located near the Kopili Fault and closer to the 28<sup>th</sup> April 2021 M 6.4 Sonitpur earthquake. The preliminary fault plane solution derived from moment tensor inversion suggests a strike-slip fault. Figure-1 also depicts the region's seismicity ( $M \geq 2.0$ ) during the period Feb 2015 -Feb 2025 (last 10 years).



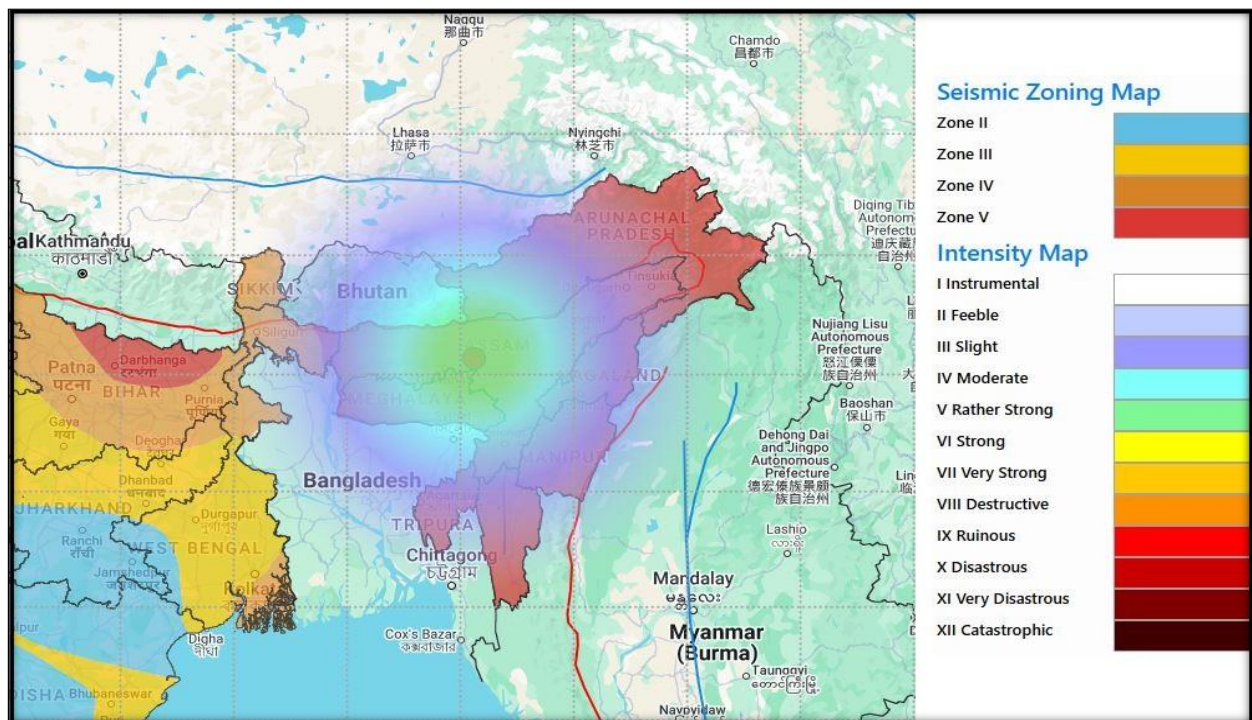
**Figure 1.** The earthquakes ( $M 5.0$ ) of 27<sup>th</sup> February 2025 (Red star) and seismicity in assam and the surrounding region of the last 10 years. The Magenta star is location of  $M 6.4$  28<sup>th</sup> April 2021 event (earthquake data source: *seismo.gov.in*). The geological faults and lineament obtained from Bhukosh, GSI.

The historical and instrumentally recorded earthquake data (NCS catalogue) reveals that the region is affected by moderate to large earthquakes (Fig. 1). The most prominent events among these are  $M 6.4$  28<sup>th</sup> April 2021,  $M 6.4$  21<sup>th</sup> Sept 2009 Bhutan earthquake and 29<sup>th</sup> July 1960 Assam earthquake of  $M 6.0$ .

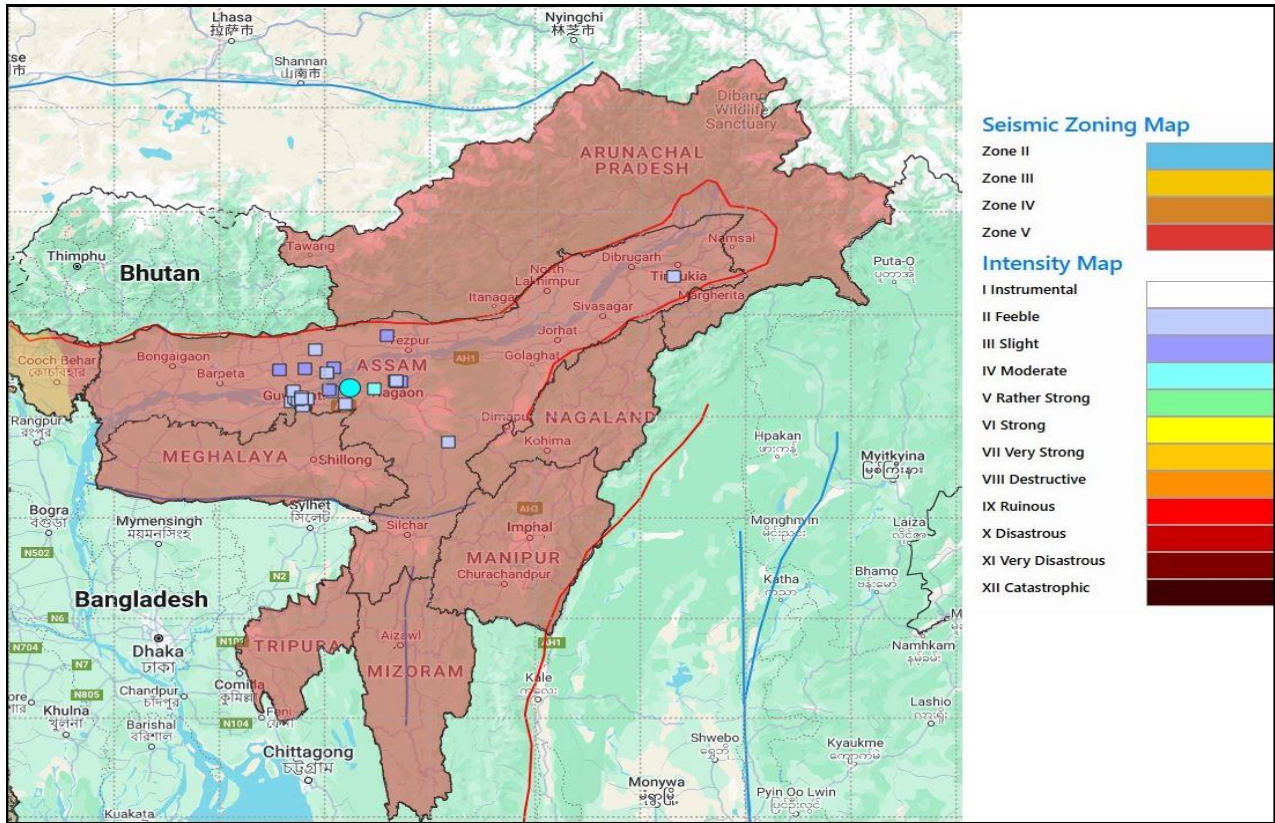
In addition to above, noteworthy earthquakes, originating in the Assam and neighbouring region are often felt in the region with slight to strong intensity. The occurrence of earthquakes in the region is

attributed mainly to the tectonic sources in the Himalaya such as Himalayan Frontal Thrust (HFT), Main Boundary Thrust (MBT) and Main Central Thrust (MCT), Kopili Fault and Dhubari Fault. Seismologically as well as geologically, it is evidenced that the region has been quite active. The Assam region falls in the high seismic zones V of the seismic zoning map of Bureau of Indian Standards (BIS).

The earthquake was widely felt across Assam and neighboring states, with calculated intensities ranging from II to V on the Modified Mercalli Intensity (MMI) scale within a distance of approximately 0 to 300 km from the epicenter (Figure 2). A total of 37 felt reports were received through the NCS website and mobile app, indicating intensities between III and VI on the MMI scale (Figure 3).



**Figure 2:** Earthquake intensity map of *M 5.0* of 27<sup>th</sup> February 2025.



**Figure 3:** Felt responses (squares) of the 27<sup>th</sup> February 2025 earthquake M 5.0 (circle) from different users reported on [www.seismo.gov.in](http://www.seismo.gov.in) and BhooKamp mobile app. 23 responses were received within one hour from the time of occurrence of an earthquake.

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

Site	Maximum PGA (in g)	Distance from epicentre (km)
Guwahati	0.0023	42
Itanagar	0.0024	191
Jorhat	0.0009	221