



सत्यमेव जयते

# **A Preliminary Report of 04<sup>th</sup> December 2024 Mulungu, Telangana Earthquake (M 5.3)**

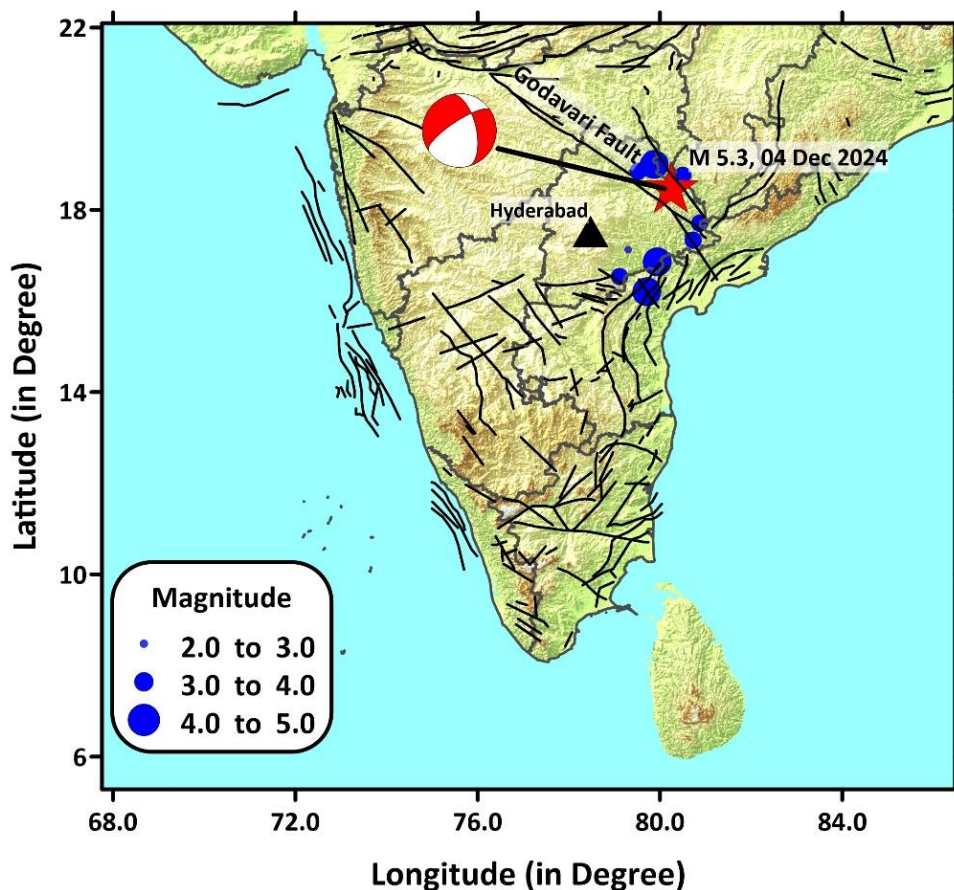
**(Report No.: NCS-NSN-EPG-05)**



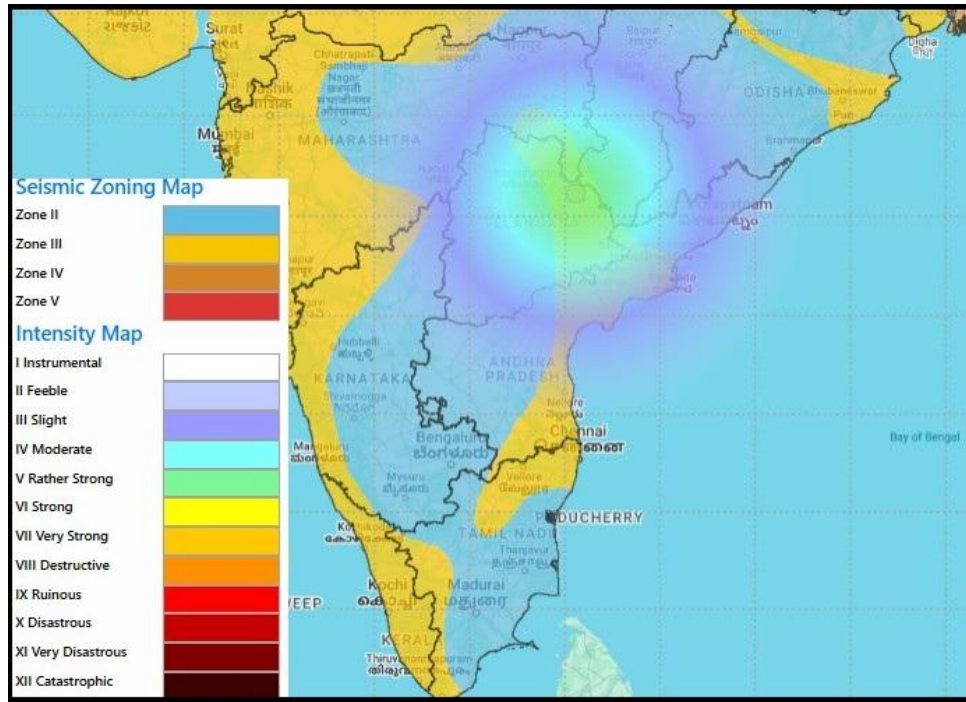
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## Earthquake Report of M 5.3 occurred in Mulugu, Telangana on 4<sup>th</sup> December, 2024

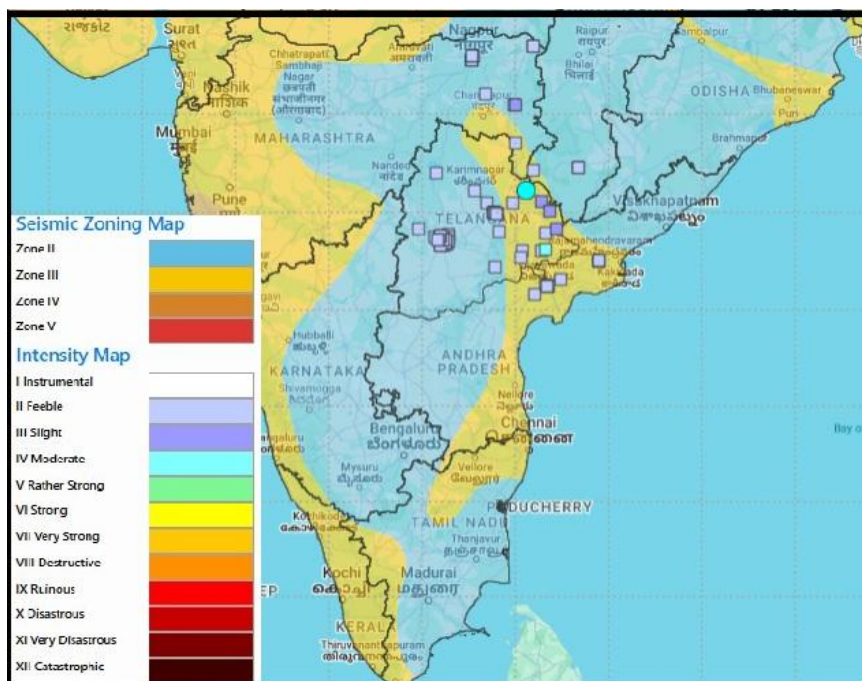
1. An earthquake of magnitude M 5.3 occurred at 07:27:02 IST on 4<sup>th</sup> December 2024 in Mulugu district, with its epicentre at 18.44°N and 80.24°E and a focal depth of 40 km. The epicenter was approximately 85 km northeast of Warangal (Telangana), 65 km southwest of Bijapur (Chhattisgarh), 218 km Northwest of Hyderabad and 212 km north of Vijayawada. The epicentre location, along with past earthquakes and major faults in the area, is shown in Figure 1.
2. The epicenter of the earthquake lies within the NW-SE Godavari Fault which is a major Normal fault in the region. The preliminary fault plane solution obtained from waveform inversion suggests that the dominant mechanism for the event was normal faulting with minor strike-slip component, indicating the causative source of the event.
3. The expected intensity due to this earthquake is shown in Figure 2, ranging from IV to V in Modified Mercalli Intensity (MMI) scale. More than 100 felt responses due to this earthquake were received from Telangana and neighbouring states through the NCS website and Mobile App (Fig. 3).



**Fig 1.** A map showing the epicentre of a magnitude 5.3 earthquake, marked by a red star, which occurred on 4th December 2024 in Mulugu district, Telangana. The major fault systems in the epicentral region are depicted with continuous thick black lines, Blue circles represent seismic events recorded in the vicinity of the epicenter and surrounding regions over the past decades.



**Fig 2.** Map showing the intensity map of magnitude (M 5.3) earthquake occurred on 4th December 2024 in Mulugu, Telangana.



**Fig 3.** Felt responses (squares) of magnitude (M 5.3) earthquake that occurred on 4th December 2024 in Mulugu, Telangana, from different users reported on [www.seismo.gov.in](http://www.seismo.gov.in) and BhooKamp mobile-app.

### **Preliminary Conclusion**

The 4<sup>th</sup> December earthquake (M 5.3) in the district of Mulugu occurred at 07:27:02 IST with its epicentre at 18.44°N and 80.24°E and a focal depth of 40 km, which was located approximately 218 km to the Northwest of Hyderabad and 212 km to the north of Vijayawada. The epicentre location of the earthquake is confined to the Godavari fault system and its vicinity where several earthquakes in the past happened and it is therefore, the zone of strain energy release and occurred at the deeper layers that caused the lesser degree of shaking than expected due to dissipation of maximum seismic energy at the deeper depth.

Detailed analysis is under process.