

A Preliminary Report of March 28, 2025, Mandalay, Myanmar Earthquake (M 7.5)

On 28th March 2025, at 11:50:52 Hr (IST), a significant earthquake of magnitude 7.5 struck the Mandalay District in central Myanmar. The event had far-reaching impacts, not only within Myanmar but also in neighbouring countries like Thailand, China, and India. The earthquake occurred at a relatively shallow depth of 10 km, with its epicentre located at coordinates 21.93° N and 96.07° E. This earthquake, "mainshock," was followed by a secondary earthquake, which occurred approximately 10 minutes later with a magnitude of 7.0, struck to the south of the mainshock's epicentre. The two events also occurred northeast of the Myanmar event are unrelated to the M 7.5 earthquake; they are separate incidents.

The events occurred approximately 250 km north-northwest of Naypyidaw, the capital city of Myanmar, and around 390 km southeast of Imphal, India. It was also located about 410 km southeast of Aizawl, India, and approximately 1100 km northwest of Bangkok, Thailand.

Preliminary seismic analysis indicates that these earthquakes occurred near the Sagaing Fault, which is a well-documented strike-slip fault system. This fault is known to be seismically active, and it has been the source of numerous significant earthquakes in the region in the past. The fault plane solution, derived from waveform inversion, suggests that the mechanism of faulting for both earthquakes was strike-slip in nature. The analysis also indicates that the centroid depth was found to be 35 km (Figure 1).

The occurrence of these two earthquakes, particularly the significant magnitude difference between the mainshock and the aftershock, raises concerns regarding the potential for further seismic activity in the area. The region's proximity to the Sagaing Fault and the relatively shallow depth of the events make it susceptible to future aftershocks. The preparation of report 3, aftershocks, has been reported by the National Centre for Seismology.

The earthquake was widely felt across the Myanmar region and neighbouring countries, with calculated intensities ranging from IX to V on the Modified Mercalli Intensity (MMI) scale within a distance of approximately 0 to 500 km from the epicentre (Figure 2). A total of 8 felt reports were received through the NCS website and mobile app, indicating intensities between III and VI on the MMI scale (Figure 3).

Myanmar is situated along the boundary of the Indo-Australian and Eurasian plates, making the region seismically active. The Sagaing Fault is a major structural feature, responsible for much of the earthquake activity in this region. The Sagaing Fault has been a significant source

of seismic activity in the region, with several major earthquakes reported in the past (Figure 1). Historical events along this fault include today powerful quakes that have caused widespread damage and fatalities. The tremors were severely felt in **Bangkok**, Thailand, where buildings swayed and there were reports of a high-rise under construction collapsing in the Chatuchak district as reported by media. No damage report has been reported in the Northeastern region of India.

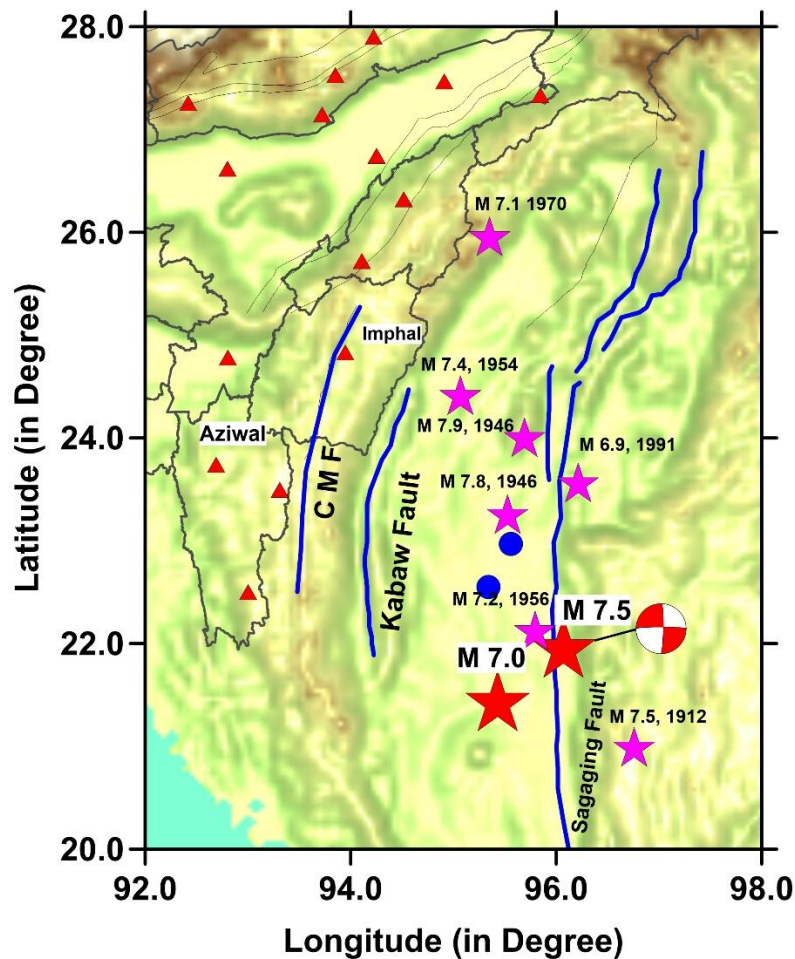


Figure 1. The earthquakes M 7.5 and M 7.0 occurred on 28th March 2025, shown as a Red star, and the last major earthquake was shown as a Magenta star. The geological faults and past seismicity obtained from Yang et al., 2024. The blue circles are the aftershock of today's event.

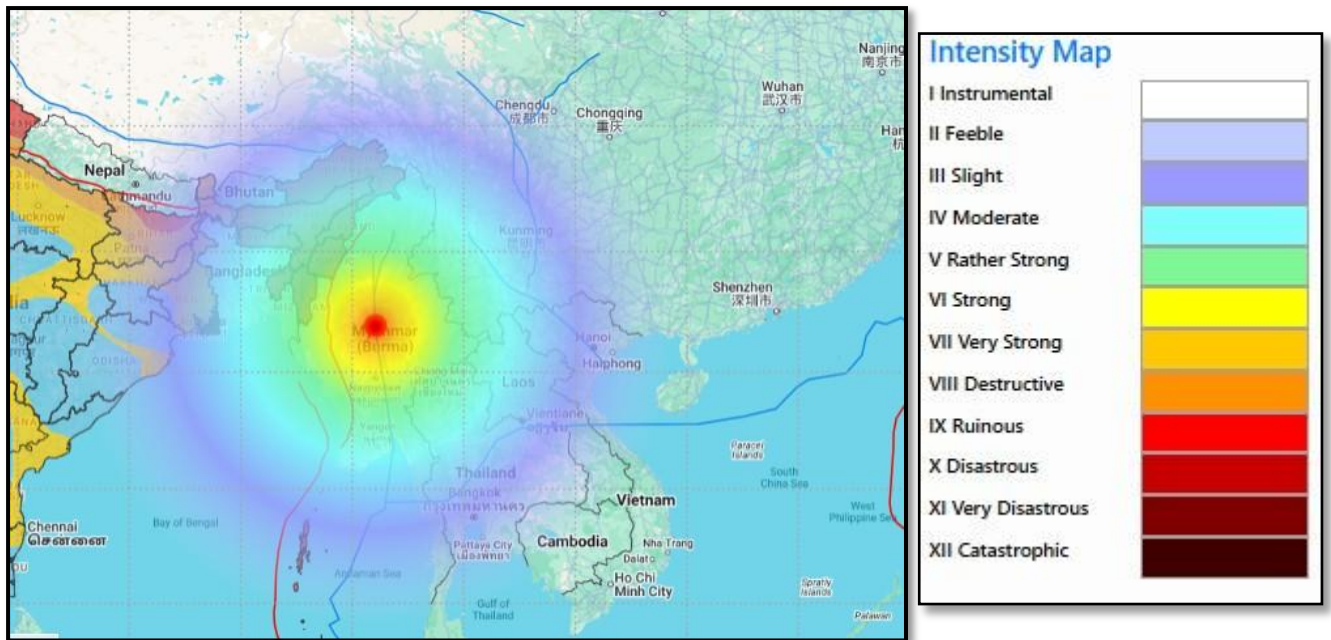


Figure 2. Earthquake intensity map of M 7.5 of 28th March 2025.

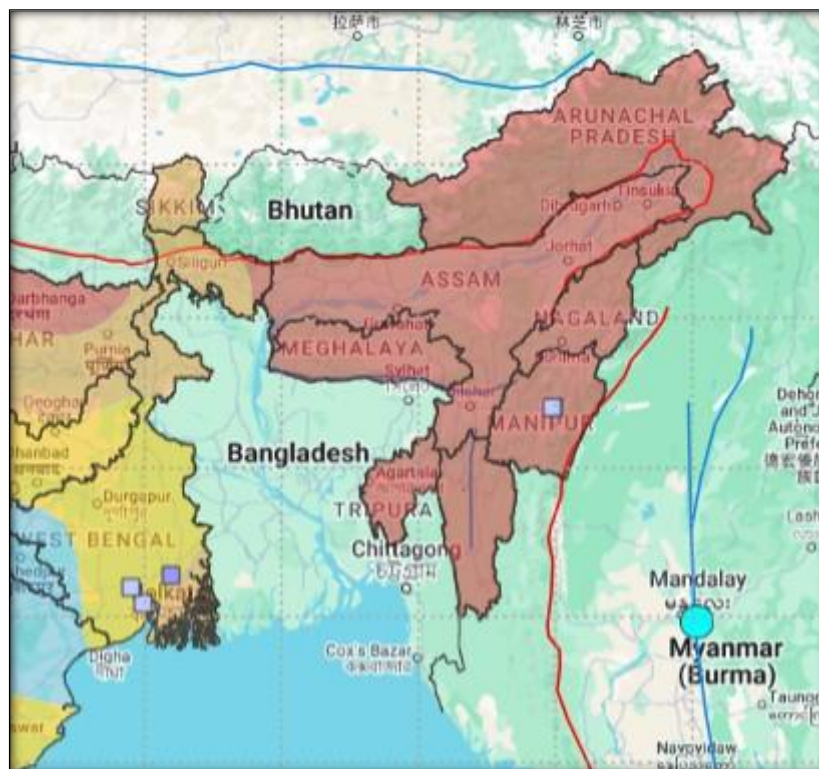


Figure 3: Felt responses (squares) of the 28th March 2025 earthquake M 7.5 (circle) from different users reported on www.seismo.gov.in and BhooKamp mobile app. 8 responses were received within one hour from the time of occurrence of an earthquake.