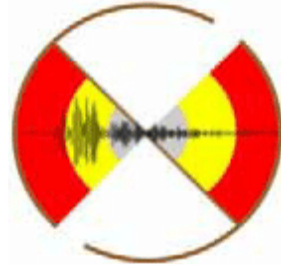




A Preliminary Report of August 14th, 2023 Bangladesh Earthquake (M 5.4)

(Report No.: NCS-NSN-EPG-06)



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An earthquake of magnitude M 5.4 occurred at 20:19:47 IST, epicenter at 25.02° N and 92.13° E at a depth of 16 km. The epicenter is in Bangladesh and it is 49 Km SE of Cherrapunjee, Meghalaya; 143 Km NNW of Aizwal, Mizoram; and 154 Km NE of Agartala, Tripura. The event was well recorded by more than 103 broadband seismic stations installed by National Centre for Seismology. The past seismicity map of the region and epicenter of the 14th August 2023 is shown in **Figure 1**.

Expected intensity of this earthquake is assimilated by NCS, MoES as shown in **Figure 2** which is range from III to VI. The earthquake is widely felt in Meghalaya region and neighboring states. Eighteen felt reports due to this earthquake, have been received from Shillong and Guwahati through NCS website and Mobile App within one hours having intensity III on Modified Mercalli Intensity (MMI) Scale as shown in **Figure 3 & 4**.

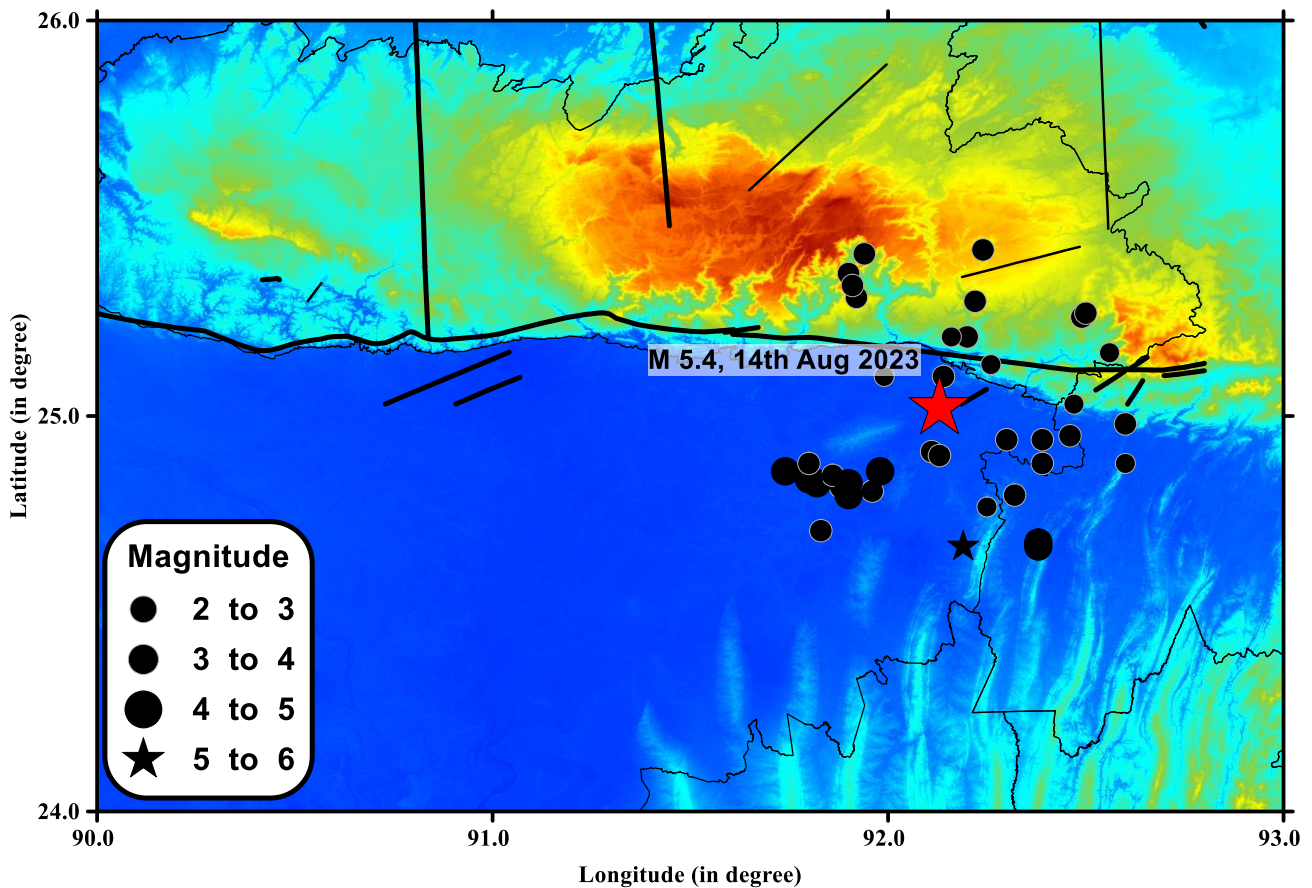


Figure 1: The present earthquake (M 5.4) of 14th August 2023 and seismicity in the epicentral and surrounding region since last 10 years (2012-2023) (source: www.seismo.gov.in; NCS-MoES). The geological faults and lineament were obtained from Bhukosh, GSI. All red star represents the location of mainshock (M 5.4)

The eastern regions of Bangladesh, along with the surrounding areas, are situated within an actively seismic zone, closely linked to the subduction of the Indian plate. The morphotectonic characteristics

of northern Bangladesh underscore a profound connection with the movement of the Dauki fault system and the concurrent uplift of the Shillong plateau. Seismicity within the eastern folded belt conforms to the broader pattern of the Arakan-Yoma anticlinorium, illustrating shallow and low-angle thrust movements consistent with on-site observations. In the deeper basin segments of Bangladesh, the seismotectonic behaviour indicates an intraplate movement within the basement rock along deep-seated faults. The preliminary fault plane solution derived from moment tensor inversion suggests a thrust fault. In addition to the above, it is mention that the occurrence of earthquakes in the region is attributed mainly along Dauki Fault and Kaladan fault besides several local faults and geological demarcated lineaments.

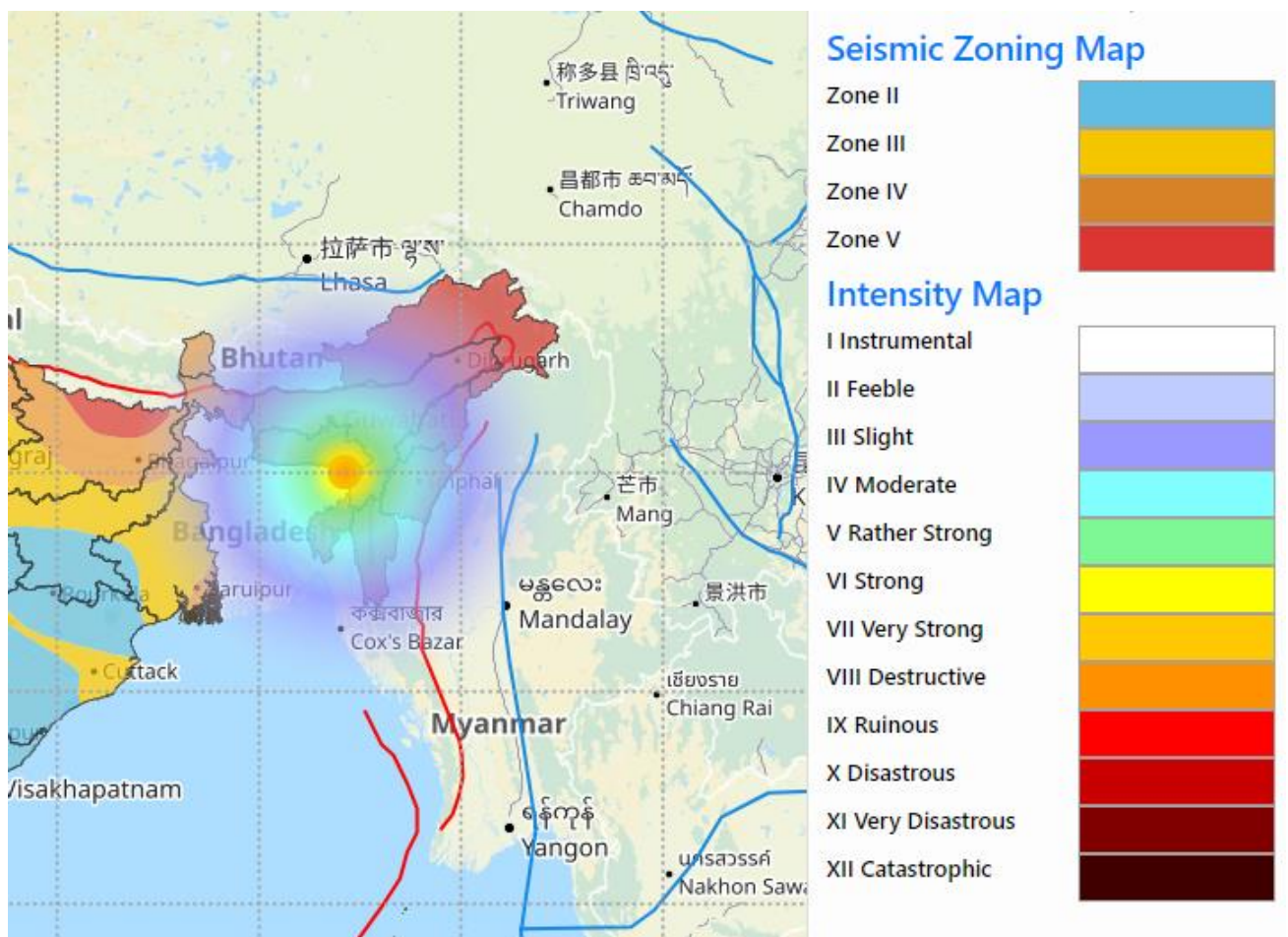


Figure 2: Earthquake Intensity Map of the earthquake of M:5.4 of 14th August 2023.

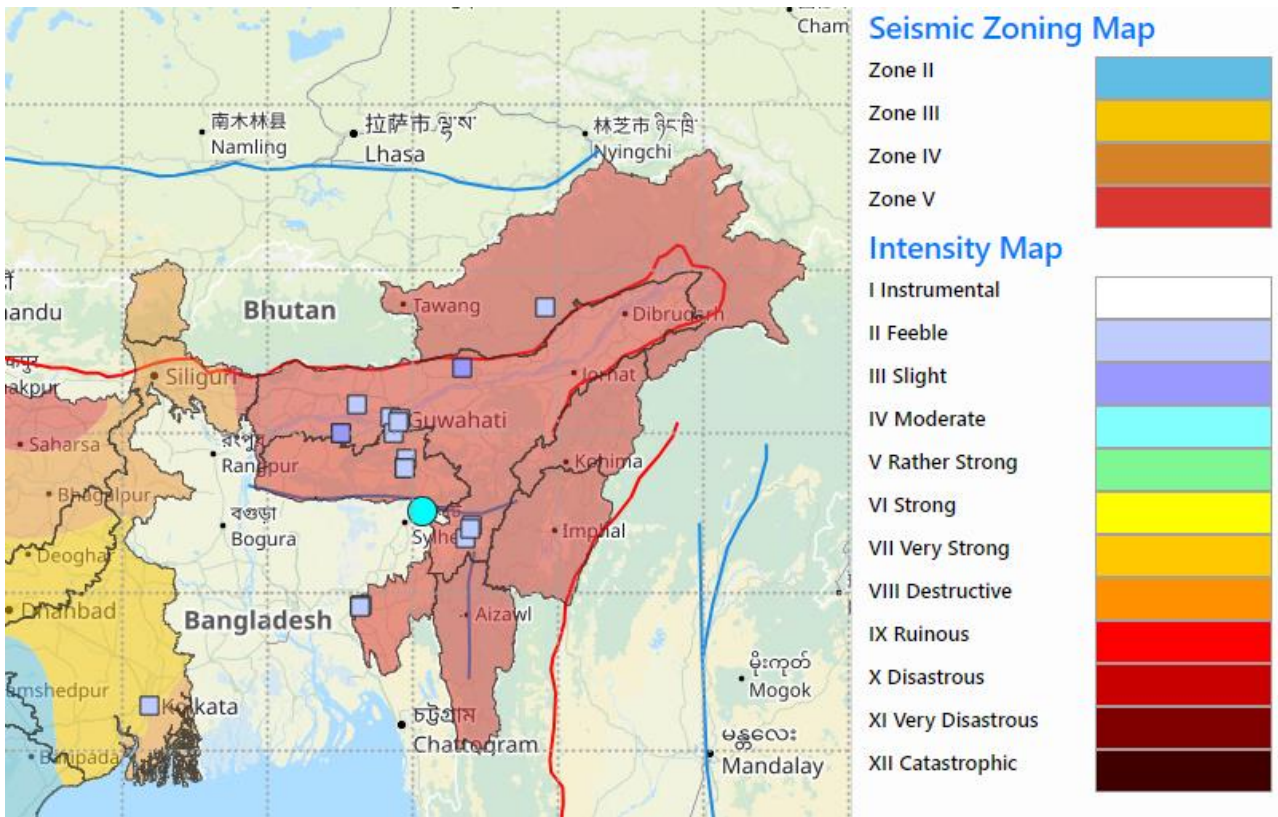


Figure 3: Felt responses (purple squares) of the 14th August 2023 earthquake M:5.4 (circle) from different users reported on website (www.seismo.gov.in) and BhooKamp mobile-app. More than 18 responses were received within One hours from the time of occurrence of earthquake.

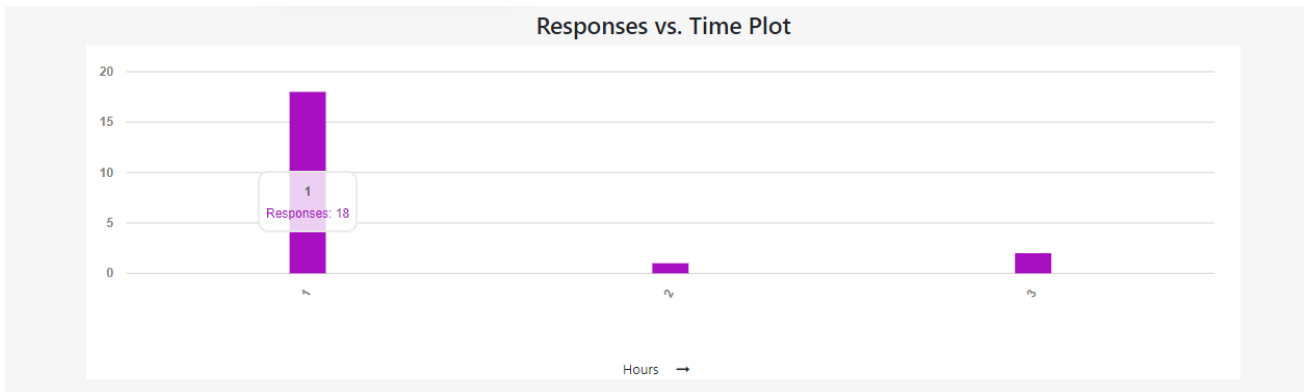


Figure 4: Number of felt responses with respect to time lapses.