

Report on Real Time Earthquake Location

**From: Earthquake Monitoring Center (EMC) of NCS
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Report of Earthquakes occurred in the month of August 2024

1) Introduction:

National Center for Seismology maintains a National Seismological Network of **160 stations** each having state of art equipment and spreading all across the country (**Figure:1**). Using these stations during the period 01st – 31st August 2024 a total number of 102 earthquakes have

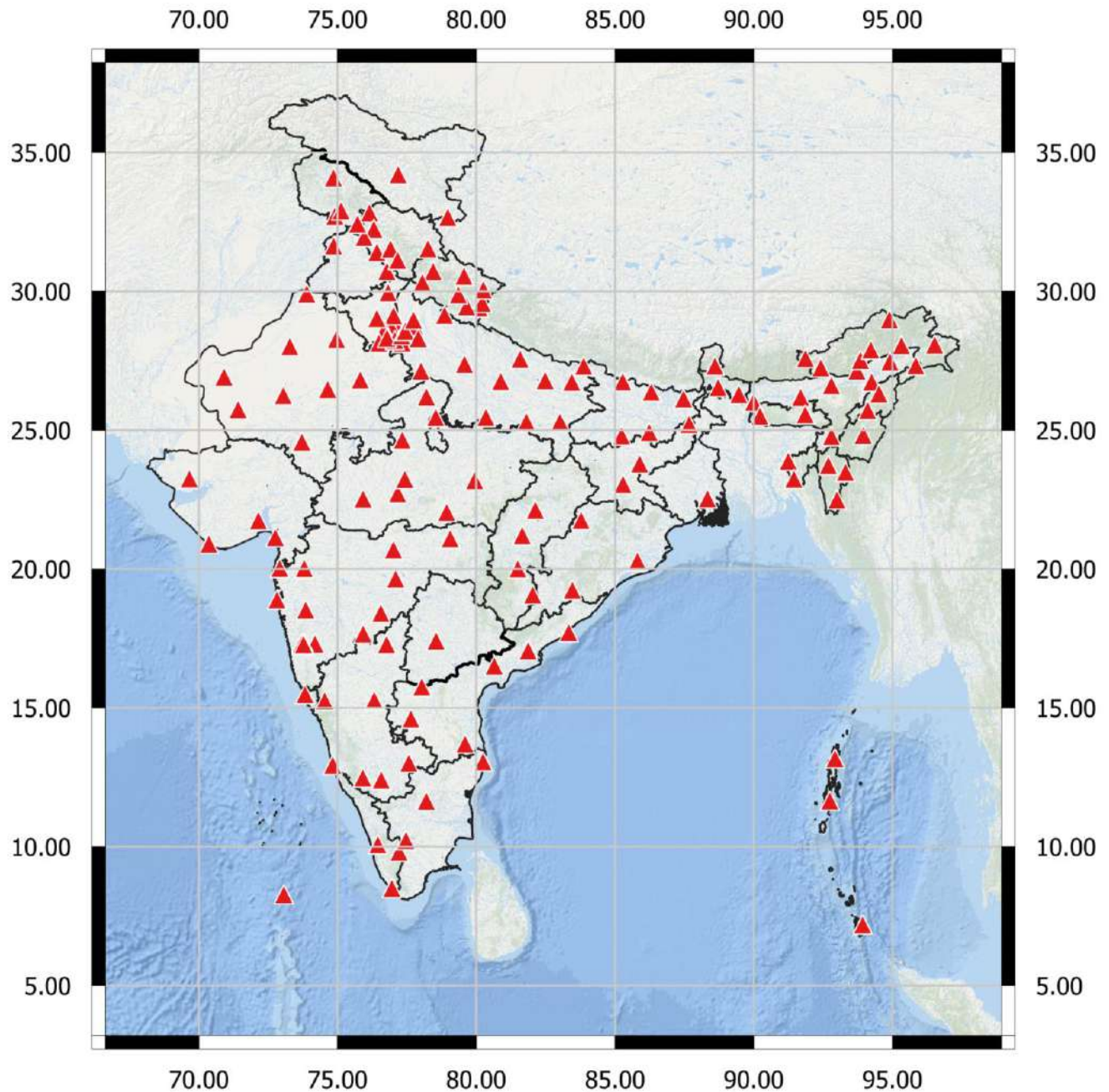


Figure 1: National Seismological Network (NSN) of 160 Stations

been located and disseminated from the center (**Figure:2**), out of which 97 earthquakes has occurred in India and its neighborhood region bounded by the coordinates 0° - 40°N & 60° -100°E (**Figure:3**).

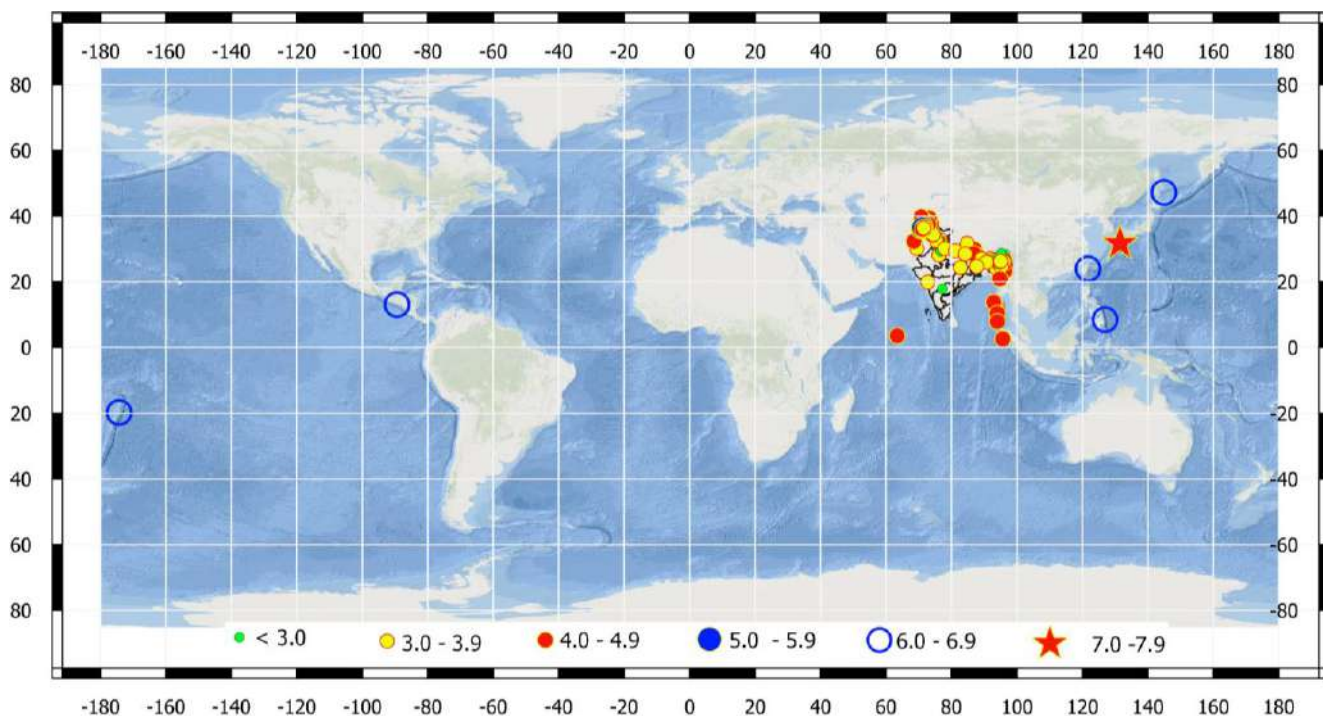


Figure 2: Earthquakes located and disseminated by NCS during 01st – 31st August 2024

2) Seismicity:

During the period, the majority of earthquakes within India and its neighbourhood region bounded by the coordinates 0-40°N & 60-100°E; were located in Hindu Kush region, North India (Jammu and Kashmir, Himachal Pradesh and Uttarakhand), North East India (Arunachal Pradesh, Assam, Meghalya, Manipur, Nagaland and Sikkim) as shown in **Figure 3**.

Few earthquakes of smaller magnitudes were also reported in northern (Ludhiana in Punjab; Panipat and Mahendragarh in Haryana; East Delhi in NCT Delhi and Sonbhadra in Uttar Pradesh), western (Palghar in Maharashtra); southern (Bidar in Karnataka) and eastern (Pakur in Jharkhand) part of country. **Seveteen** earthquakes of smaller magnitude (**M < 3.0**) comprising **17%** of all earthquakes occurred during 01st to 31st August 2024. **Two** earthquakes of magnitude **M:5.0 and above** occurred during the month in the region; as detailed in **Table:1**.

Table:1 Earthquakes of $M \geq 5.0$ occurred during August 2024 within India and its neighbourhood

SN	Date	Time (IST)	Lat($^{\circ}$ N)	Long($^{\circ}$ E)	D (KM)	M	Region
1	2024-08-15	01:06:11	36.20	70.86	150	5.1	Hindu Kush, Afghanistan
2	2024-08-29	11:26:38	36.51	71.12	255	5.7	Afghanistan

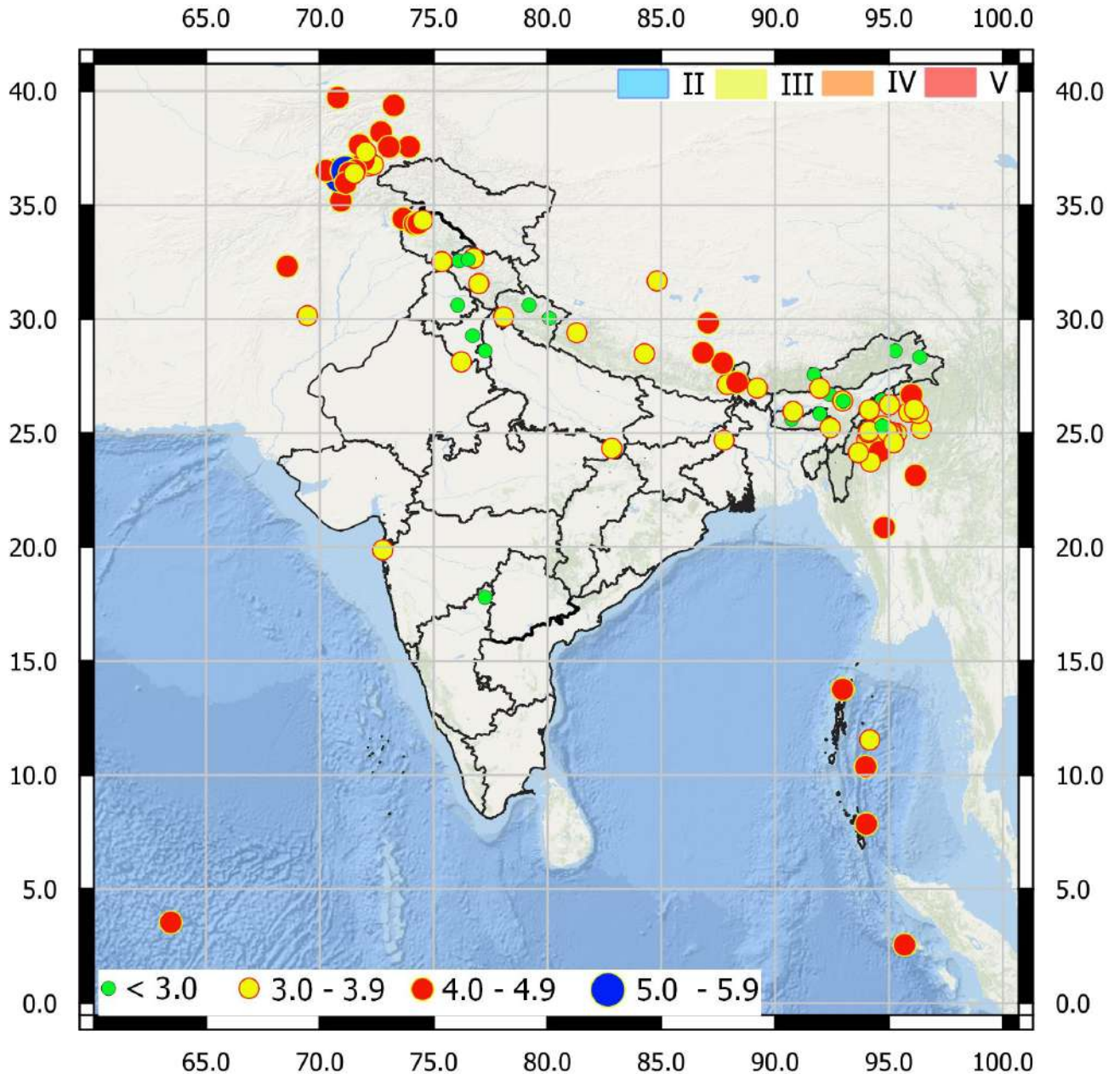


Figure 3: Map showing the seismicity during the period 01st – 31st August 2024 occurred in India and its neighbourhood region along with the seismic zone of India.

Out of total 102 earthquakes **41%** and **34%** earthquakes occurred in the magnitude range **3.0-3.9** and **4.0-4.9** respectively; whereas **two** earthquakes in the magnitude range 5.0-5.9 occurred during the period were inside the grid of 0- 40 $^{\circ}$ N & 60-100 $^{\circ}$ E as shown in **Figure 3**. All the **five** earthquakes in the magnitude range of **6.0-6.9** and **one** earthquake of magnitude **7.1** were

occurred outside the grid of 0- 40⁰N & 60-100⁰E; as shown in **Figure 2** and **Figure 4**. Detail list of earthquakes occurred during the month is available at www.seismo.gov.in

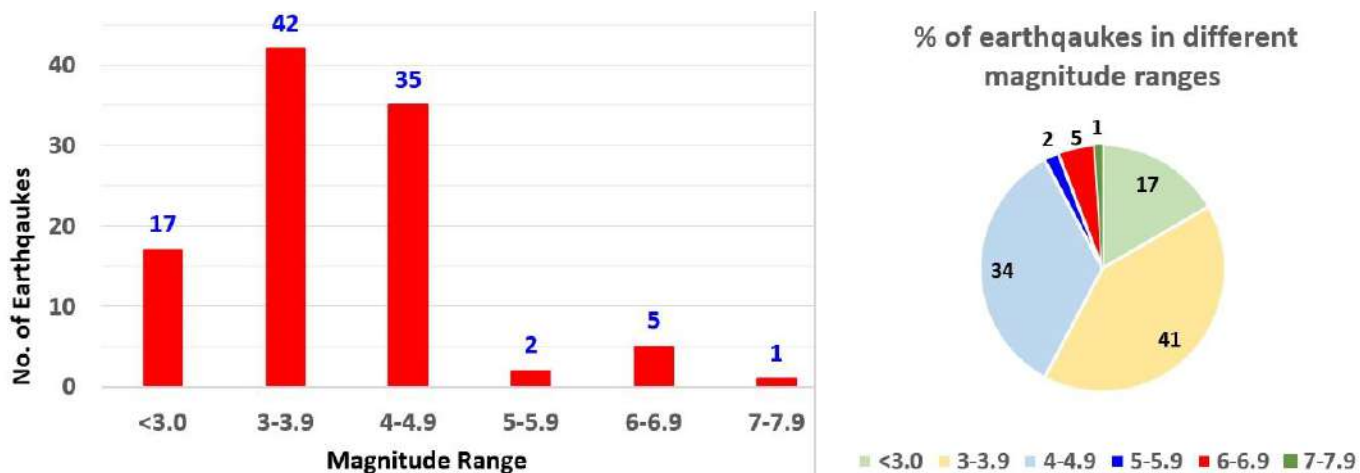


Figure 4: Distribution of earthquakes in the different magnitude range during 01st – 31st August 2024.

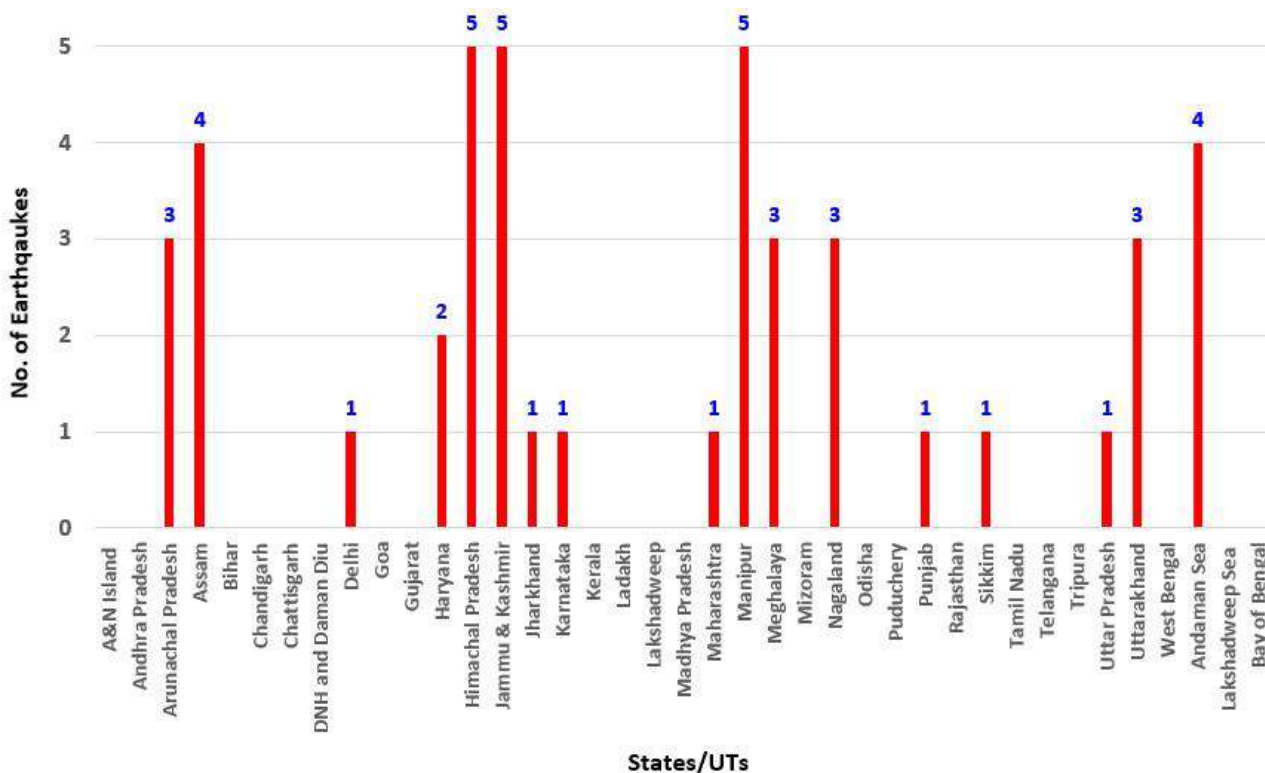


Figure 5: State wise distribution of earthquakes during the period 01st – 31st August 2024.

Total **44** earthquakes occurred within Indian territory; of which 5 each earthquakes occurred in Jammu and Kashmir; Himachal Pradesh and Manipur during the period. Out of 44 earthquakes **18** and **19** earthquakes occurred in **North** and **North-East** region respectively. State/UT and

region wise distribution of earthquakes occurred during 01st – 31st August 2024 is shown in **Figure 5** and **Figure 6** respectively.

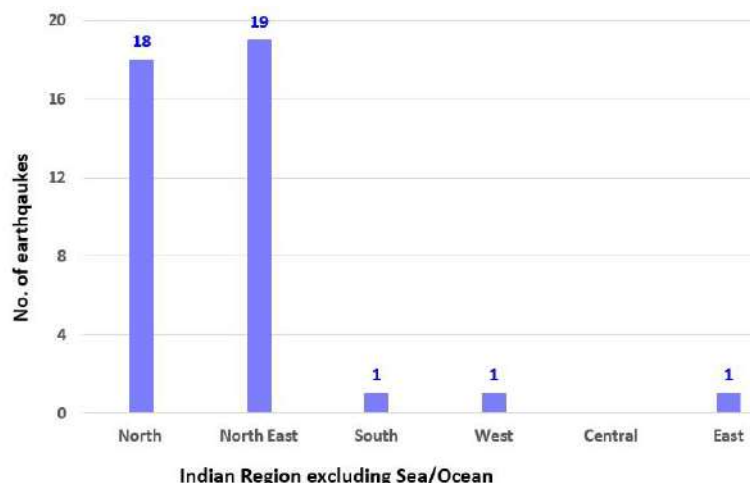


Figure: 6 Region wise distribution

3) Significant Activity:

Twin Baramulla Earthquakes: Two moderate-magnitude earthquakes (M:4.9 and M:4.8) occurred on **20th August 2024**, in the Baramulla district of Jammu and Kashmir **within a span of seven minutes**. The **first** earthquake, with a magnitude of **M:4.9**, occurred at **06:45:57 IST**, with an epicenter at 34.17° N and 74.16° E at a focal depth of 5 km. This epicenter was approximately 60 km northwest of Srinagar. The **second** event, with a magnitude of **M:4.8**, followed at **06:52:29 IST**. This epicenter was 34.20° N and 74.31° E with a focal depth of 10 km. Both earthquakes occurred within Seismic Zone V, indicating a high seismic hazard. Both earthquakes had their epicenters along the

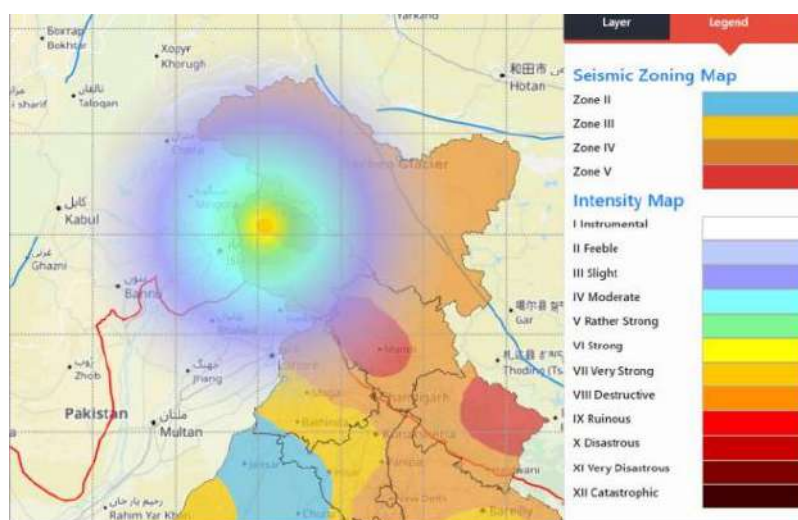


Figure 7: Intensity map of earthquake of M 4.9 occurred on 20th August 2024 at Baramulla District, Jammu and Kashmir.

Main Central Thrust (MCT), a major NW-SE trending fault line in the Himalayan region. The MCT is a significant tectonic boundary where the Indian Plate is being thrust beneath the Eurasian Plate, leading to frequent seismic activity in the region. The maximum intensity of M:4.9 earthquake estimated near the source region is MMI VI (**Figure 7**); which typically results in strong shaking felt by most. The tremors were widely felt across Jammu and Kashmir, particularly in areas close to the epicenters. Within two hours of the events, more than 15 felt reports ranging from MMI II to IV were received through NCS website and “BhooKamp” App, indicating light to moderate shaking in the region (**Figure 8**). Following URLs may be visited for details of M:4.9 and M:4.8 earthquakes respectively.

<https://riseq.seismo.gov.in/riseq/earthquake/event/czZaQzZhSWVBYs3TWtneGY2Sm9XQT09/Reviewed>

<https://riseq.seismo.gov.in/riseq/earthquake/event/TnZSdWVTQ3pvTDZKTINvZkpLbllzdz09/Reviewed>

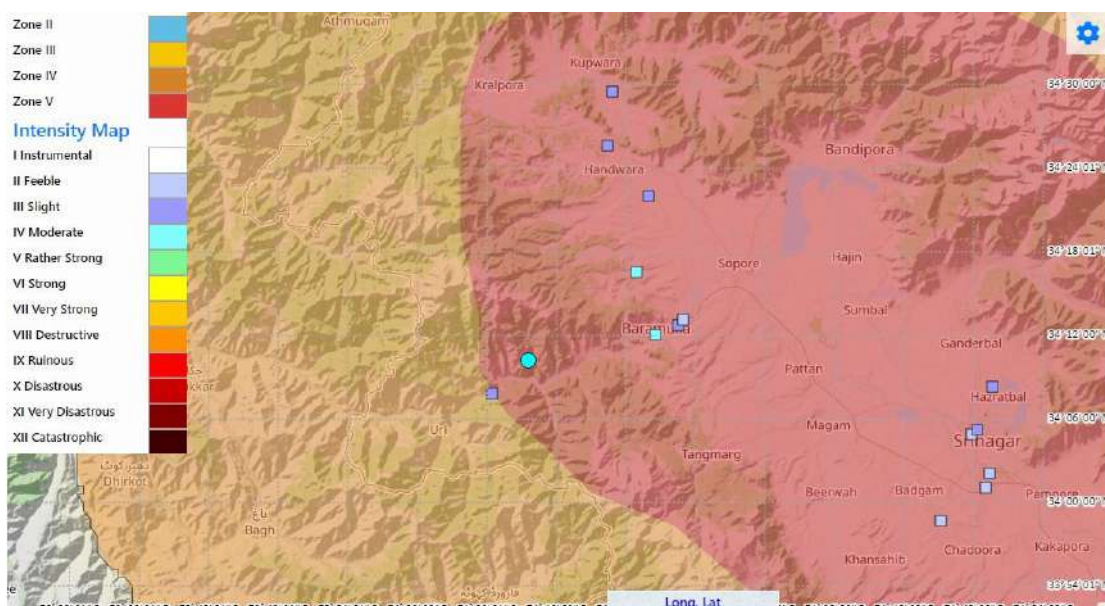


Figure 8: Felt responses (squares) of the 20th August 2024 earthquake of M 4.9 (circle) received through www.seismo.gov.in and BhooKamp App.

4) Dissemination Performance:

More than **80%** earthquakes of **M<5.0** occurred within India and its neighbourhood region bounded by the coordinates 0-40°N & 60-100°E were disseminated within 10 and all the 2 (100%) earthquakes of **M≥5.0** were disseminated within 10 minutes as shown in **Figure 9**.

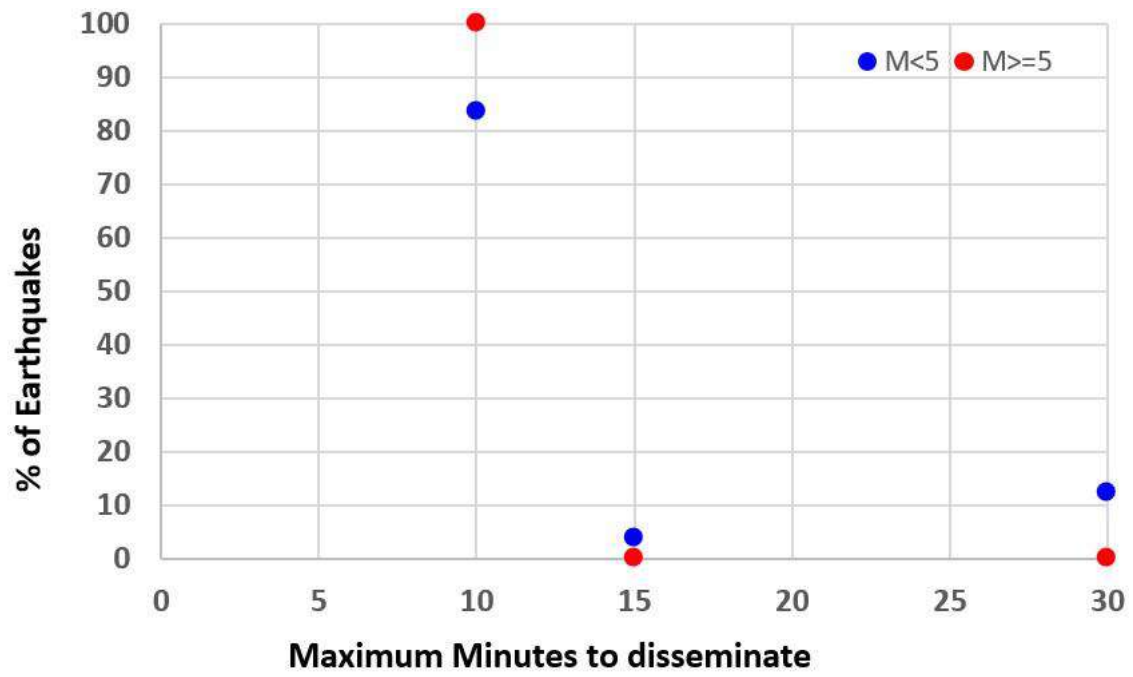


Figure 9: Dissemination of earthquakes within different time ranges during 01st –31st August 2024.