Report on Real Time Earthquake Location

From: Earthquake Monitoring Center (EMC) of NCS
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National Center for Seismology
Ministry of Earth Sciences
Government of India

Month: April 2025
Technical Report No: NCS/2025/4

Report of Earthquakes occurred in the month of April 2025

1) Introduction:

National Center for Seismology maintains a National Seismological Network of **166 stations** each having state of art equipment and spreading all across the country **(Figure:1).** Using these stations during the period 01st – 30th April 2025 a total number of 172 earthquakes have been located and

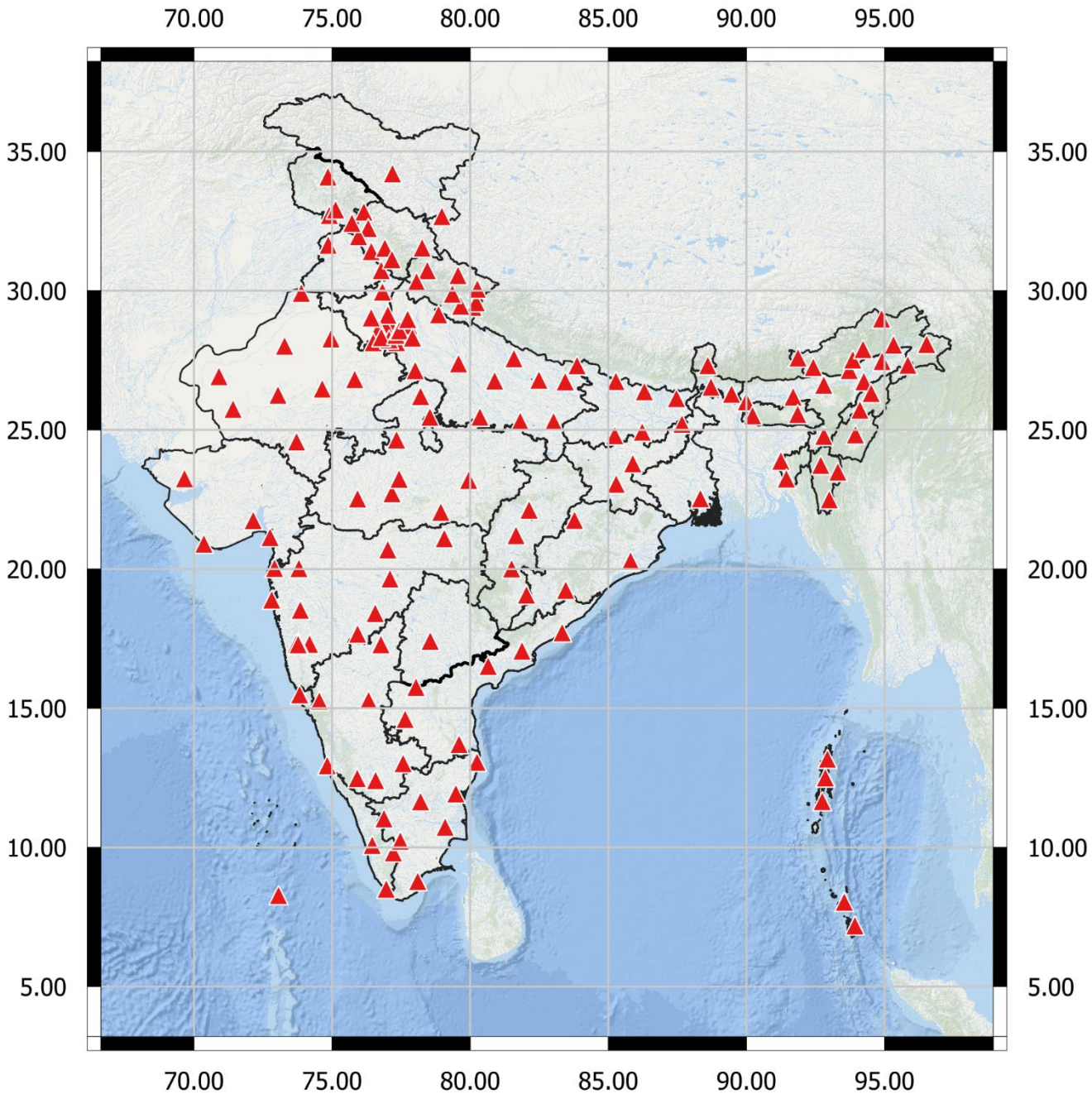


Figure 1: National Seismological Network (NSN) of 166 Stations

disseminated from the center **(Figure:2)**, out of which 162 earthquakes have occurred in India and its neighborhood region bounded by the coordinates 0˚- 40˚N & 60˚-100˚E **(Figure:3)**.

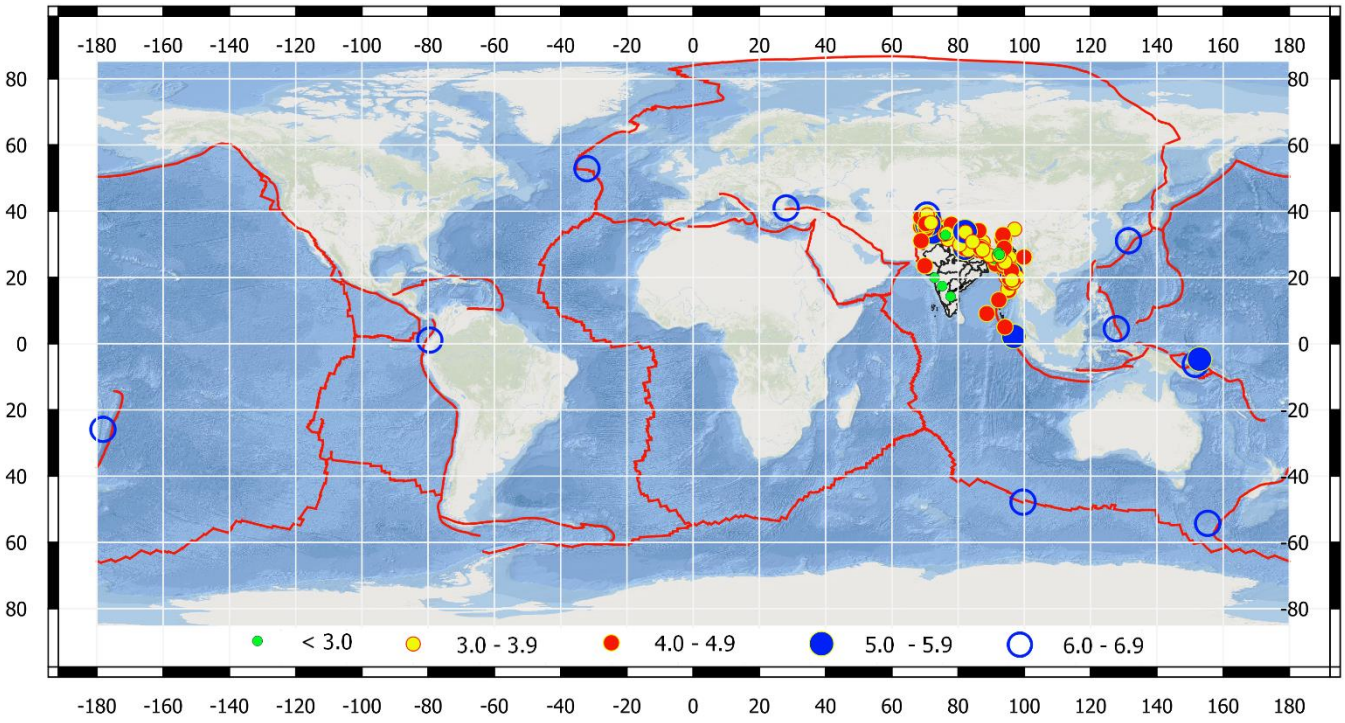


Figure 2: Earthquakes located and disseminated by NCS during 01st – 30th April2025

2) Seismicity:

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

Few earthquakes of smaller magnitudes were also reported in western (Kachchh in Gujrat; Palghar and Solapur in Maharashtra); eastern (Alipurduar in West Bengal) and southern (Sri Sathyasai in Andhra Pradesh) part of country. **Twenty** earthquakes of smaller magnitude (**M < 3.0)** comprising **12%** of all earthquakes occurred during 01st to 30th April2025. **Eight** earthquakes of magnitude **M:5.0 and above** occurred during the month in the region; as detailed in **Table:1**.

Out of total 172 earthquakes **44%** and **34%** earthquakes occurred in the magnitude range **3.0-3.9** and **4.0-4.9** respectively; whereas **eight** earthquakes in the magnitude range 5.0-5.9 occurred

Table:1 Earthquakes of M≥5.0 occurred during April 2025 within India and its neighbourhood

SN	Date	Time (IST)	Lat(^{0}N)	Long(^{0}E)	D (KM)	M	Region
1	2025-04-04	19:52:53	28.83	82.06	20	5.0	Nepal
2	2025-04-08	01:19:25	2.19	96.87	37	5.7	Northern Sumatra, Indonesia
3	2025-04-12	13:00:55	33.70	72.43	10	5.3	Pakistan
4	2025-04-13	07:54:58	21.13	96.08	10	5.1	Myanmar
5	2025-04-13	09:54:02	38.86	70.61	10	6.1	Tajikistan
6	2025-04-16	04:43:58	35.83	70.60	75	5.9	Hindu Kush, Afghanistan
7	2025-04-19	12:17:53	36.10	71.20	130	5.8	Afghanistan
8	2025-04-29	13:47:24	33.86	82.11	20	5.0	Tibet

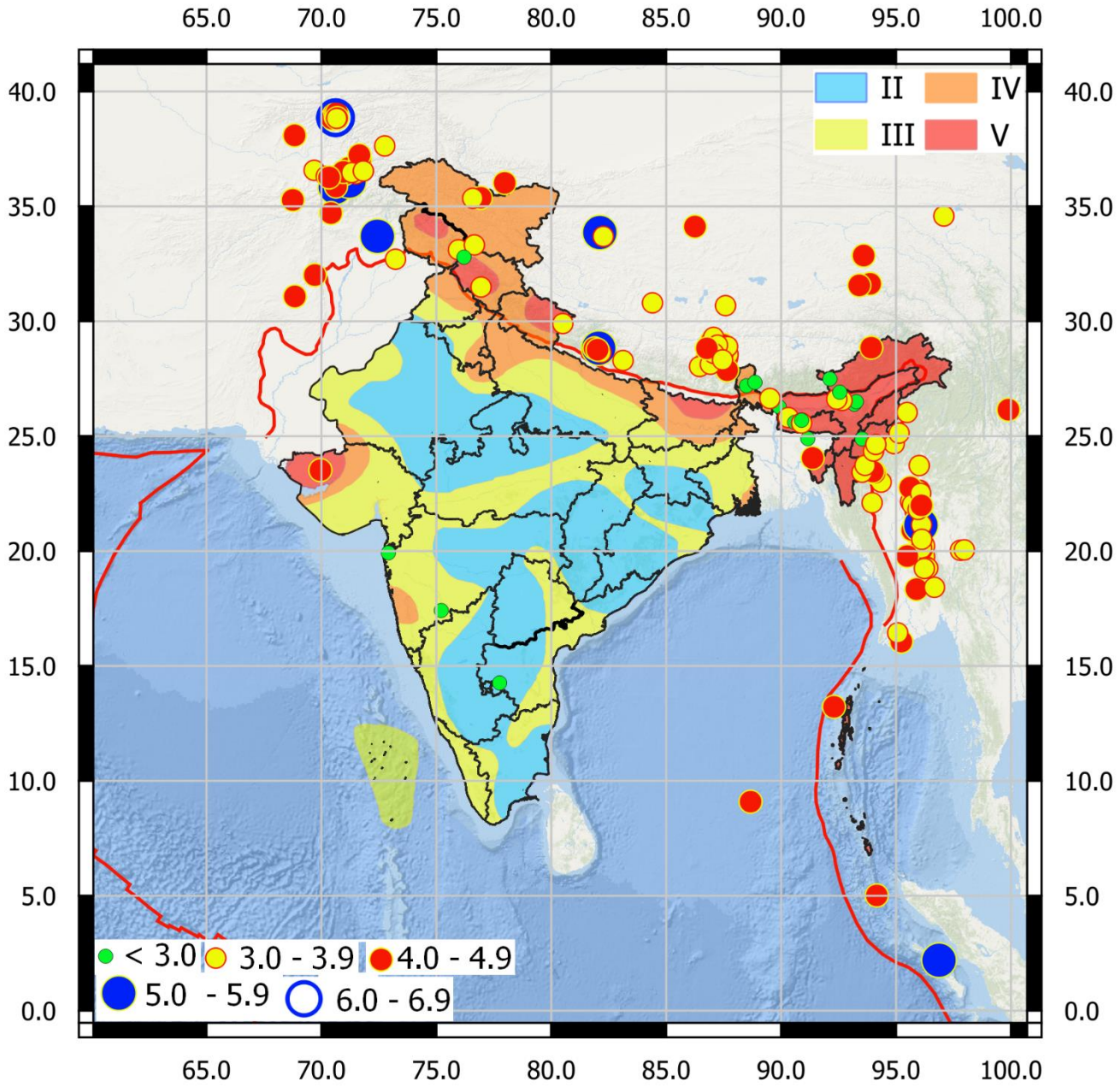


Figure 3: Map showing the seismicity during the period 01st – 30th April2025 occurred in India and its neighbourhood region along with the seismic zone of India.

during the period of which one was outside the grid of 0- 40^{0}N & 60-100^{0}E as shown in **Figure 2 and Figure 3. Ten** earthquakes in the magnitude range 6.0-6.9 occurred during the period except one all were outside the grid of 0- 40^{0}N & 60-100^{0}E as shown in **Figure 2** and **Figure 4(a).** Detail list of earthquakes occurred during the month is available at www.seismo.gov.in .

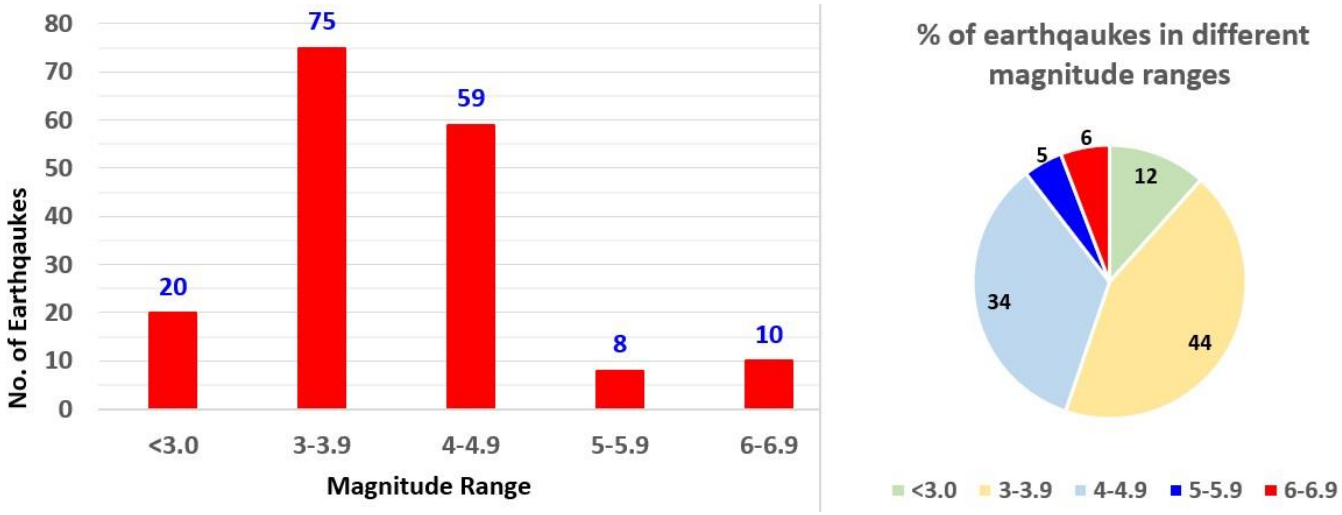


Figure 4 (a) : Distribution of earthquakes in the different magnitude range during 01st – 30th April2025.

There is no change in number of earthquakes in the magnitude range of <3.0 and 5.0 -5.9 with respect to previous month (March); however small change in other magnitude ranges is shown in Figure 4 (b).

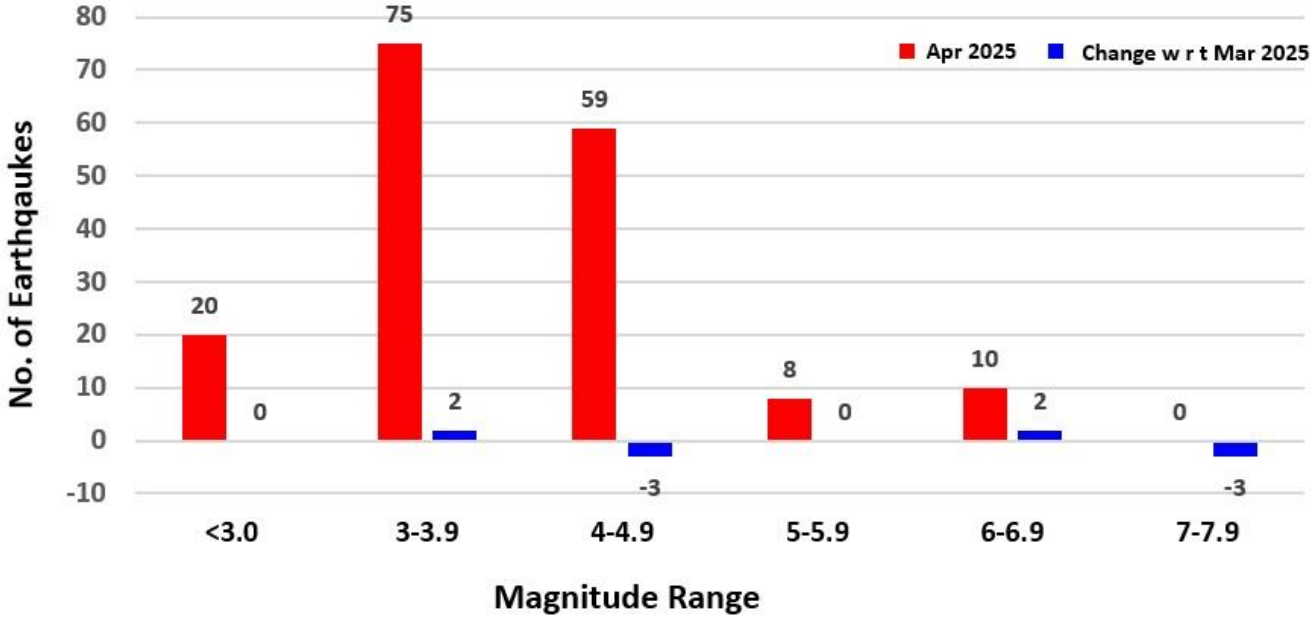


Figure 4 (b) : Change of occurrence of earthquakes in different magnitude ranges w r t previous month

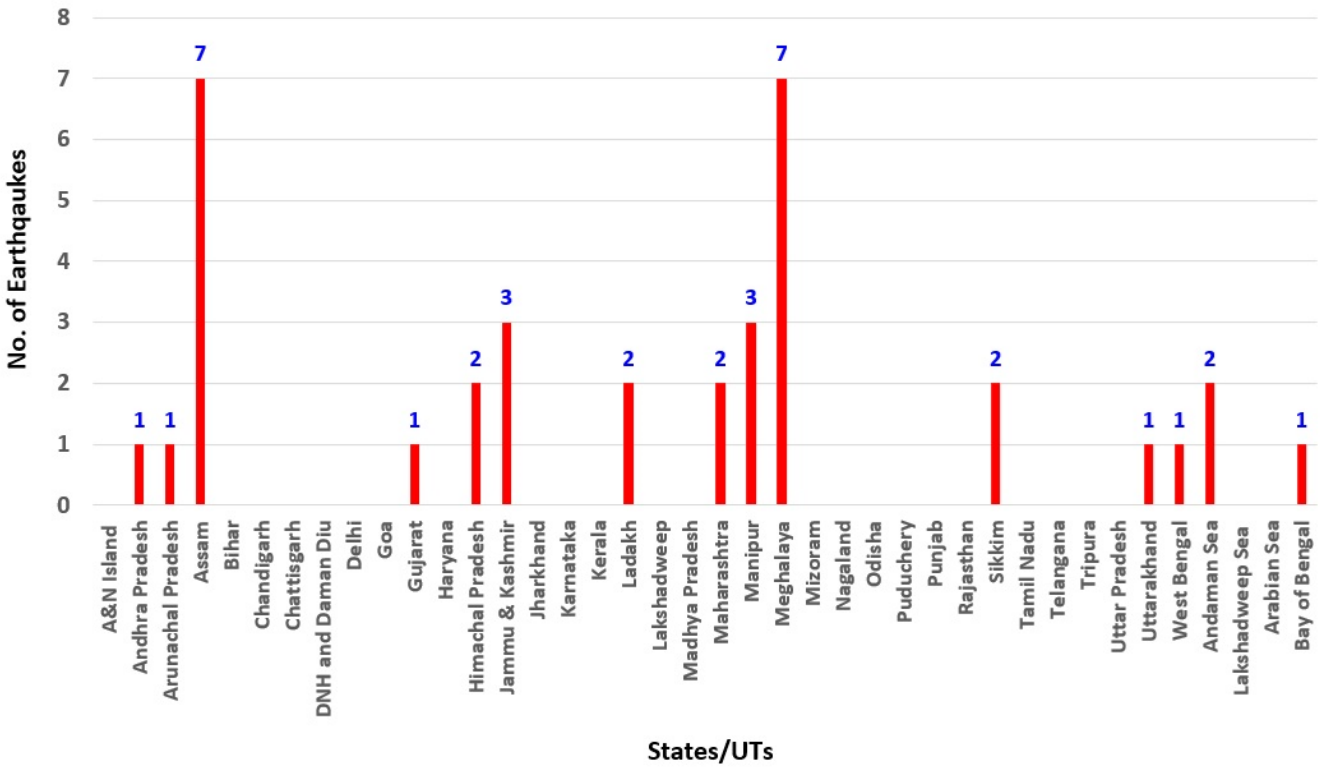


Figure 5: State wise distribution of earthquakes during the period 01st – 30th April2025.

Total **36** earthquakes occurred within Indian territory; of which 7 earthquakes occurred each in Assam and Meghalaya during the period. Out of 36 earthquakes **8** and **20** earthquakes occurred in **North** and **North-East** region respectively. State/UT and region wise distribution of earthquakes occurred during 01st – 30th April 2025 is shown in **Figure 5** and **Figure 7** respectively**.** There was no activity in central part of the country and spars activity reported in western, eastern and southern part of the country during the 01st – 30th April2025 **(Figure 3** and **Figure 6**).

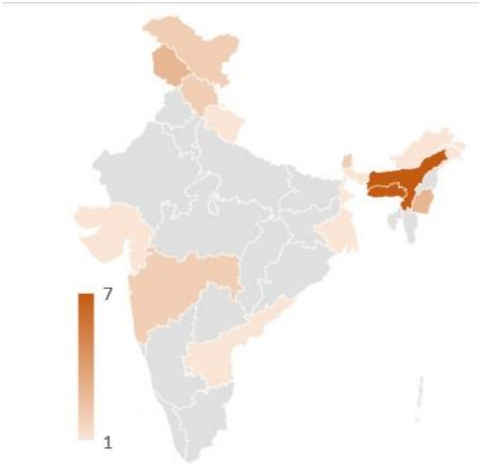


Figure: 6 Earthquake Density map

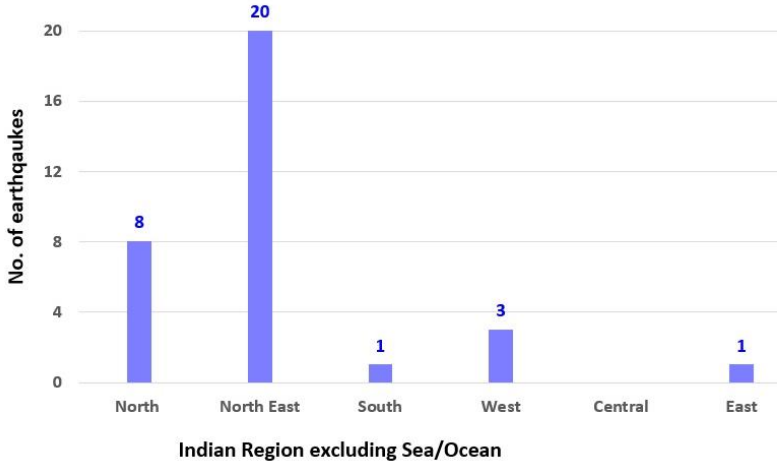


Figure: 7 Region wise distribution

3) Significant Activity:

A. **Nepal Earthquake:** An earthquake of **M:5.0** occurred at **19:52:53 IST** of **04th April 2025** in Pajaru, Nepal at 28.83° N and 82.06° E with focal depth of 20 km. The epicentre was approximately 145 Km NE of Bahraich; 195 Km ESE of Pithoragarh; 200 Km NW of Pokhra (Nepal) and 250 Km NE of Lucknow. This earthquake was located in the collision zone of Indian and Eurasian plates. 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).**Figure 8** depicts the expected intensity of this earthquake around the source zone. The earthquake was widely felt in UP,Uttarakhand, Delhi and Bihar. https://riseq.seismo.gov.in/riseq/earthquake/event/Zi96clJFYjFUMmZtN2FEN3dUcGFNQT09/Reviewed URL may be visited for more information about this earthquake.

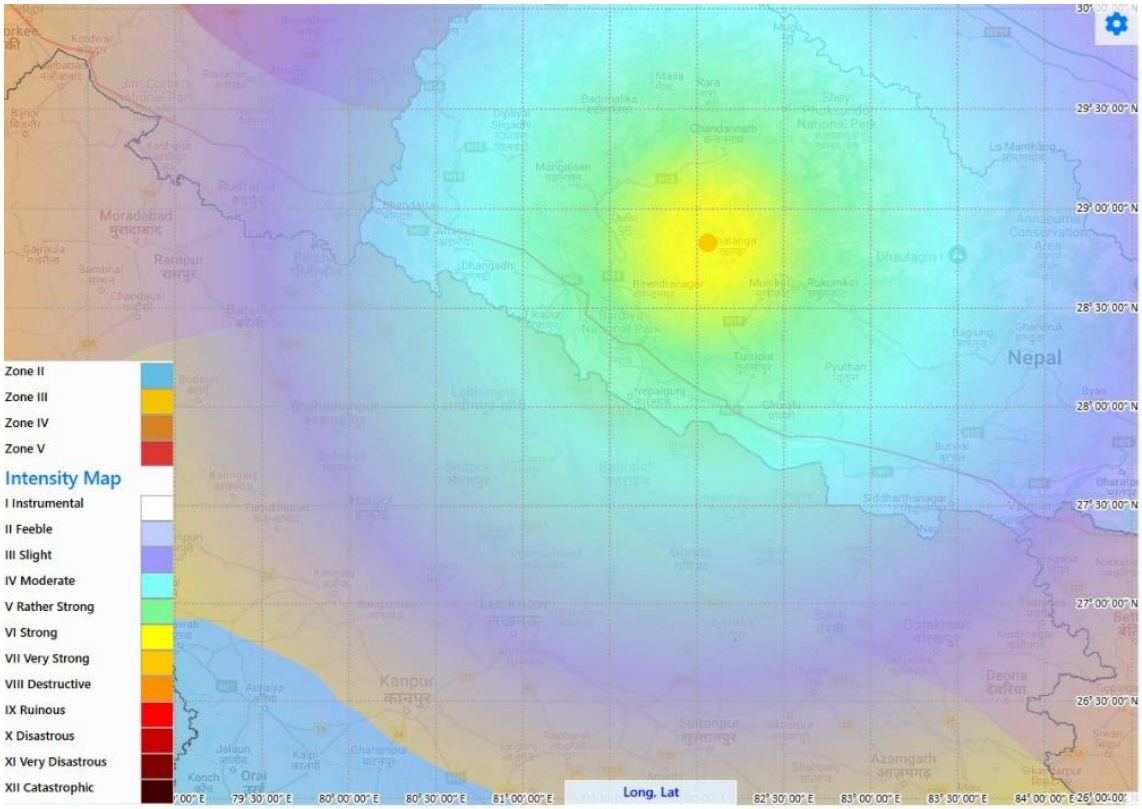


Figure 8: Intensity map of earthquake of M 5.0 occurred on 04th April 2025 in Nepal.

B. **Afghanistan Earthquake**: An earthquake of **M:5.9** occurred at **04:43:58 IST** of **16th April 2025** in Kuran Wa Munjan, Afghanistan (Hindukush region) at 35.83° N and 70.60° E with focal depth of 75 km. The epicentre was approximately 190 Km NE of Kabul(Afghanistan); 340 Km SE of Dushanbe (Tajikistan); 350 Km W of Gilgit, Ladakh and 400 Km NW of Srinagar. This earthquake was located in the collision zone of Indian and Eurasian plates. 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). **Figure 8**

depicts the expected intensity of this earthquake around the source zone. The earthquake was widely felt in the region. More details about this earthquake are available at the URL https://riseq.seismo.gov.in/riseq/earthquake/event/TUMwZVllWlRWN0lBcGhwOWFrQUw1QT09/Reviewed

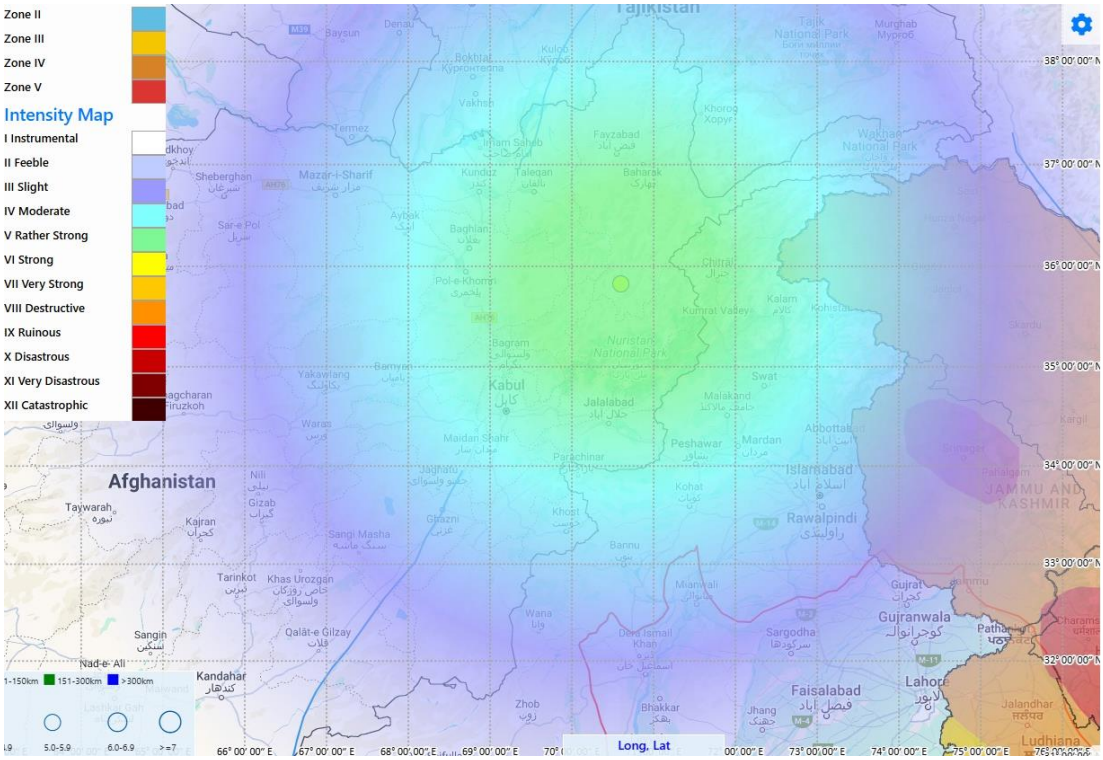
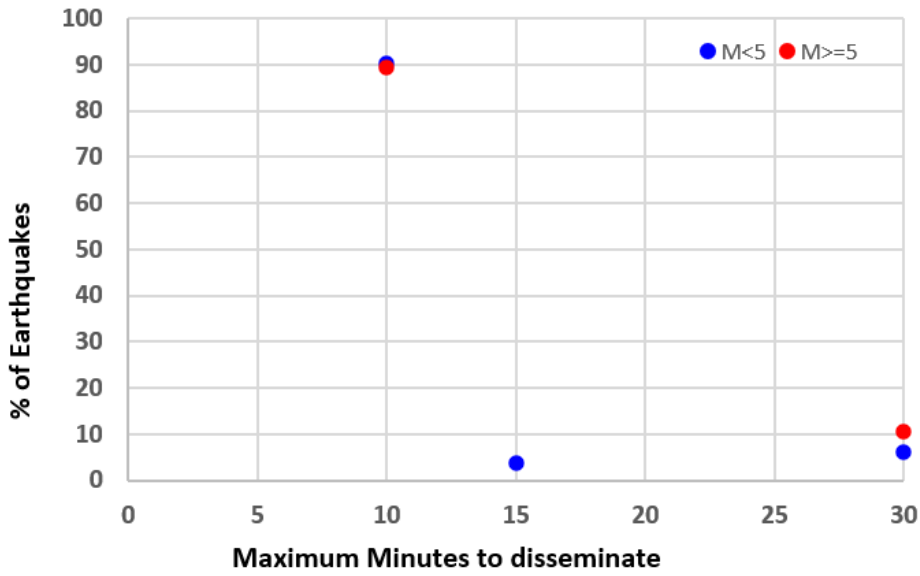


Figure 9: Intensity map of earthquake of M 5.9 occurred on 16th April 2025 in Afghanistan.

4) Dissemination Performance:



About **90%** earthquakes of **M<5.0** and **M>5.0** occurred within India and its neighbourhood region bounded by the coordinates 0-40°N & 60-100°E were disseminated within 10 minutes as shown in **Figure 10.**

Figure 10: Dissemination of earthquakes within different time ranges during 01st –30th April 2025.