Report on Real Time Earthquake Location

From: Earthquake Monitoring Center (EMC) of NCS
(R. K. Singh, S. K. Prajapati, Shanker Pal, Prashant Chingtham, Narendra Pandey and Munish Gorsi)

National Center for Seismology
Ministry of Earth Sciences
Government of India

Month: November 2024
Technical Report No: NCS/2024/11

Report of Earthquakes occurred in the month of November 2024

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 November 2024 a total number of 168 earthquakes have

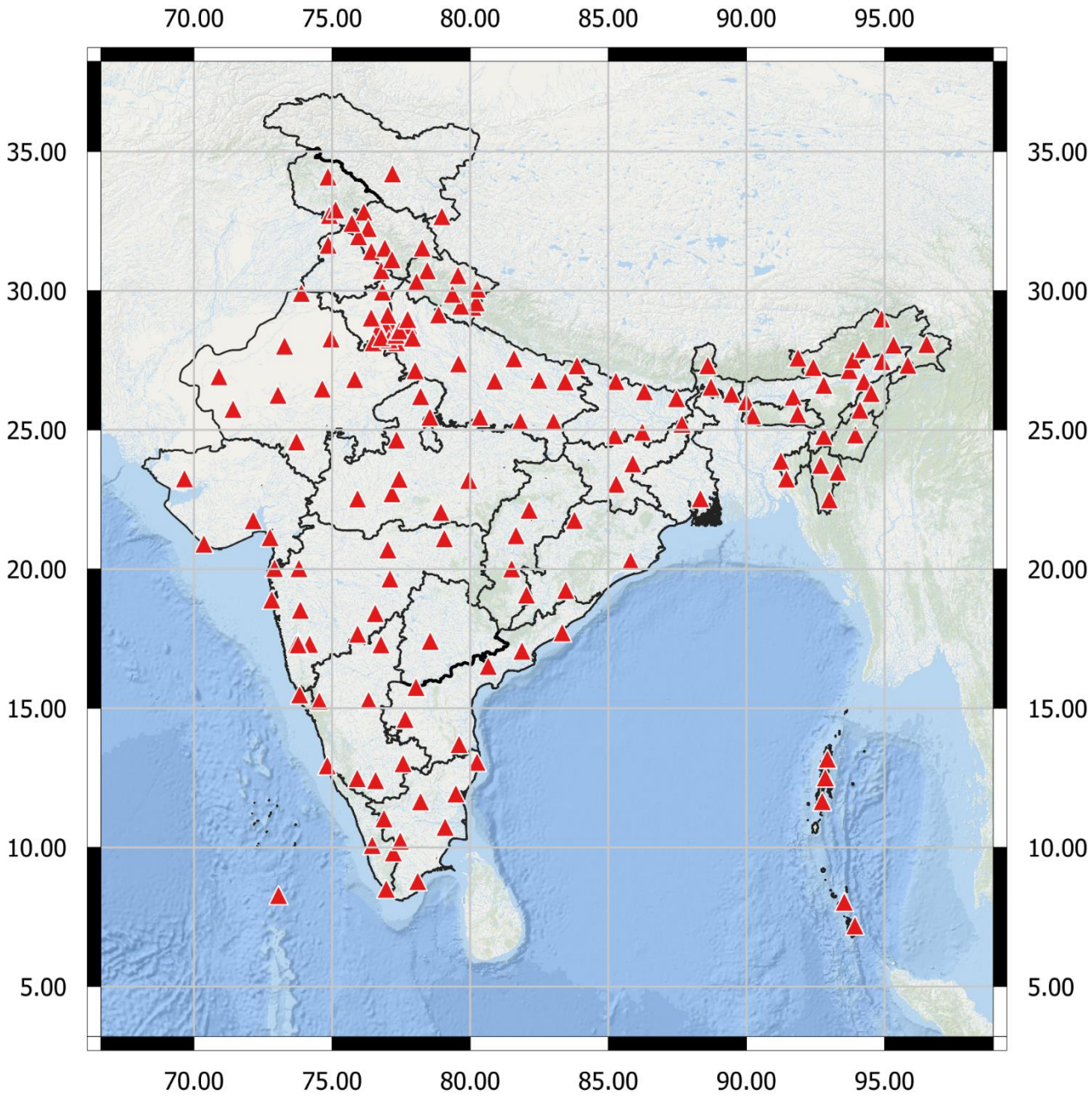


Figure 1: National Seismological Network (NSN) of 166 Stations

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

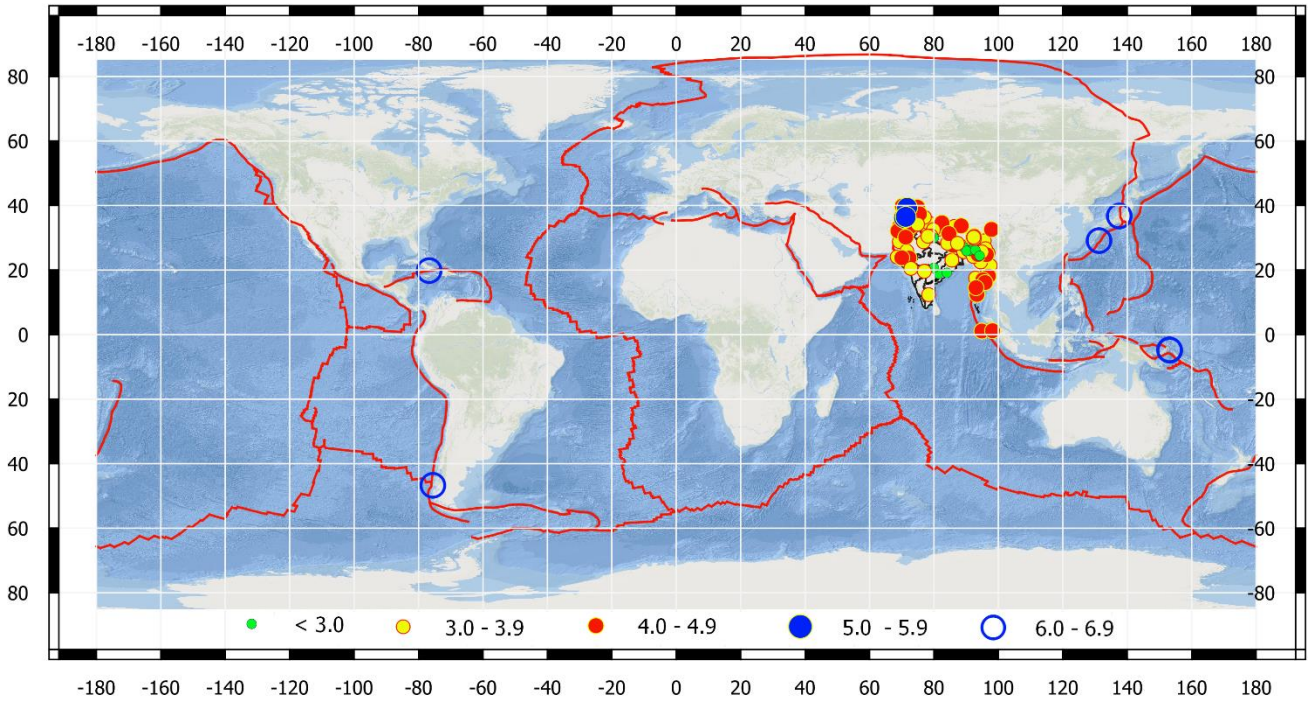


Figure 2: Earthquakes located and disseminated by NCS during 01st – 30th November 2024

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, Meghalya, Manipur, Nagaland, Tripura and Sikkim) as shown in **Figure 3**.

Few earthquakes of smaller magnitudes were also reported in northern (Faridabad and Rohtak in Haryana), western (Barmer in Rajasthan; Mahesana and Kachchh in Gujrat; Hingoli and Gondia in Maharashtra); southern (Krishnagiri in Tamilnadu); central (Dantewada in Chhatisgarh) and eastern (Khunti in Jharkhand and Keredanga in Odisha) part of country. **Eighteen** earthquakes of smaller magnitude (**M < 3.0)** comprising **11%** of all earthquakes occurred during 01st to 30th November 2024. **T**

Four 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≥5.0 occurred during November 2024 within India and its neighbourhood

SN	Date	Time (IST)	Lat(⁰N)	Long(⁰E)	D (KM)	M	Region
1	2024-11-13	10:43:19	36.38	71.15	192	5.2	Afghanistan
2	2024-11-13	21:17:57	36.17	70.72	140	5.0	Afghanistan
3	2024-11-23	14:03:02	39.29	71.68	10	5.0	Tajikistan
4	2024-11-28	16:19:00	36.49	71.27	165	5.8	Afghanistan

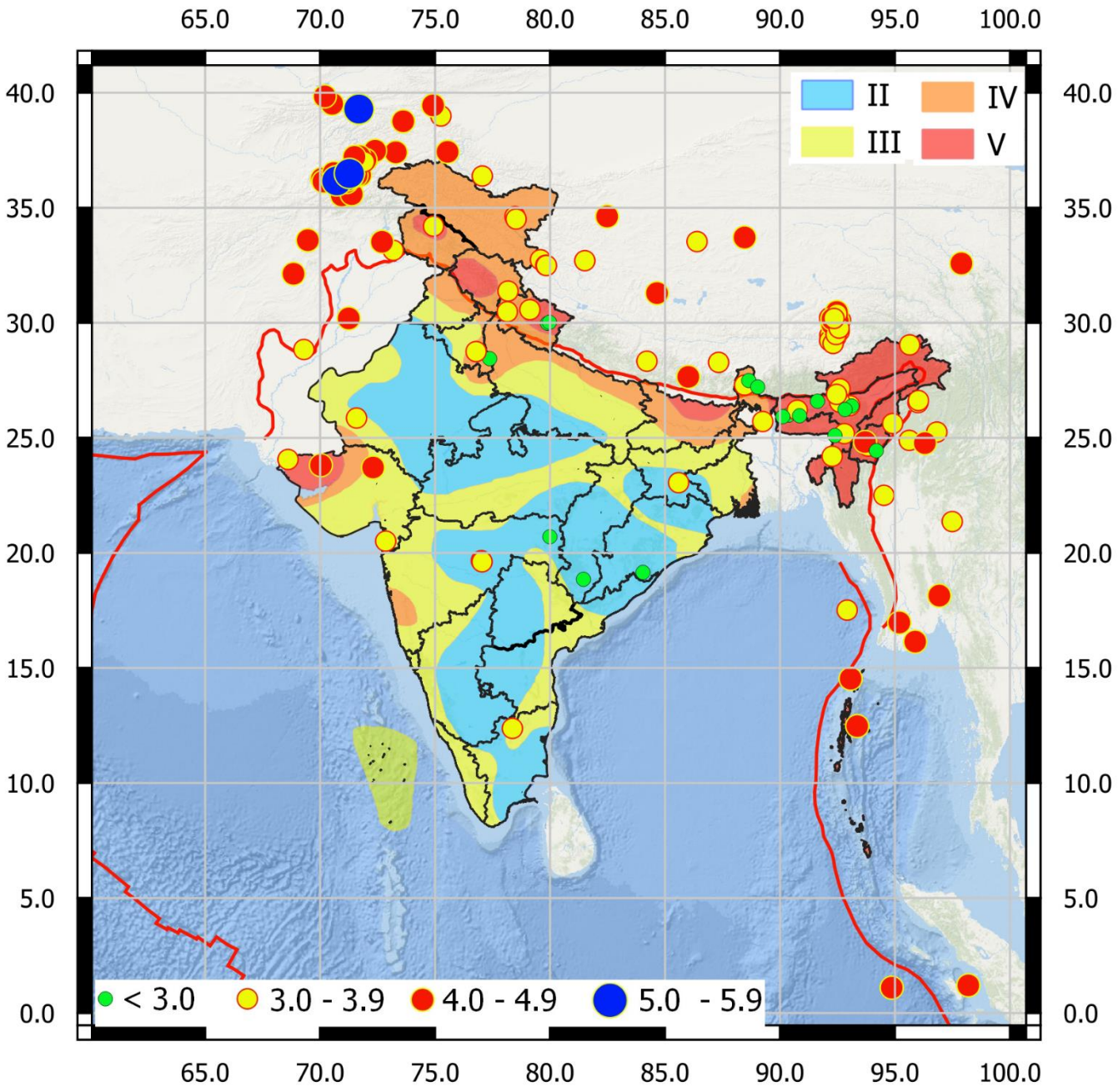


Figure 3: Map showing the seismicity during the period 01st – 30th November 2024 occurred in India and its neighbourhood region along with the seismic zone of India.

Out of total 168 earthquakes **51%** and **32%** earthquakes occurred in the magnitude range **3.0-3.9** and **4.0-4.9** respectively; whereas **four** earthquakes in the magnitude range 5.0-5.9 occurred during the period of which three were inside the grid of 0- 40^{0}N & 60-100^{0}E as shown in **Figure 3.** All the **six** earthquakes in the magnitude range of **6.0-6.9** were occurred 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 .

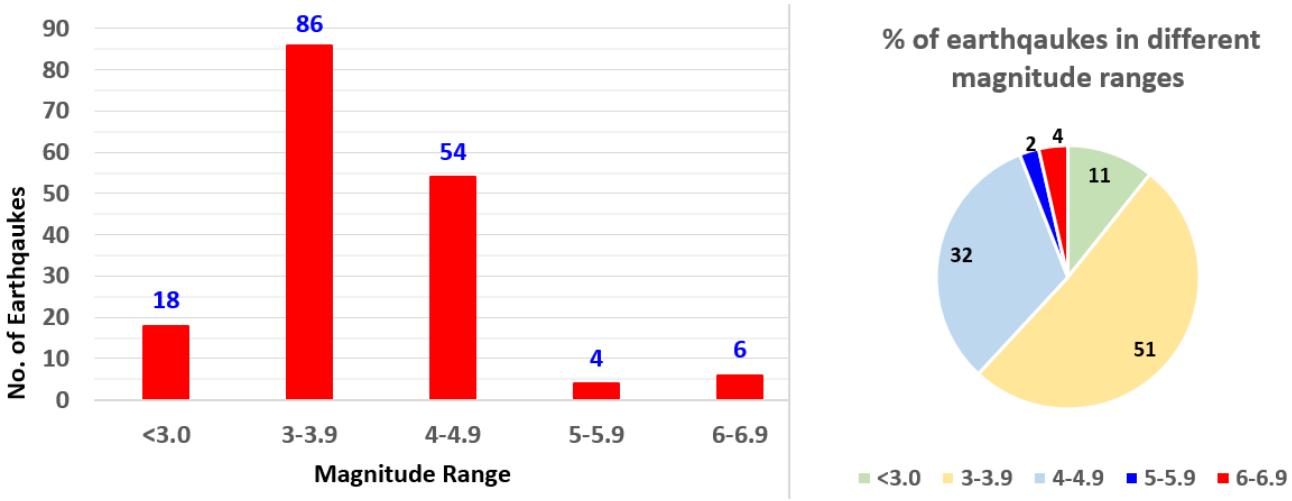


Figure 4 (a) : Distribution of earthquakes in the different magnitude range during 01st – 30th November 2024.

There is positive change in number of earthquakes with respect to previous month (October 2024) in the magnitude range of 3.0 -3.9, 4.0 -4.9 and 5.0 – 5.9 except in <3.0 as shown in Figure 4 (b) .

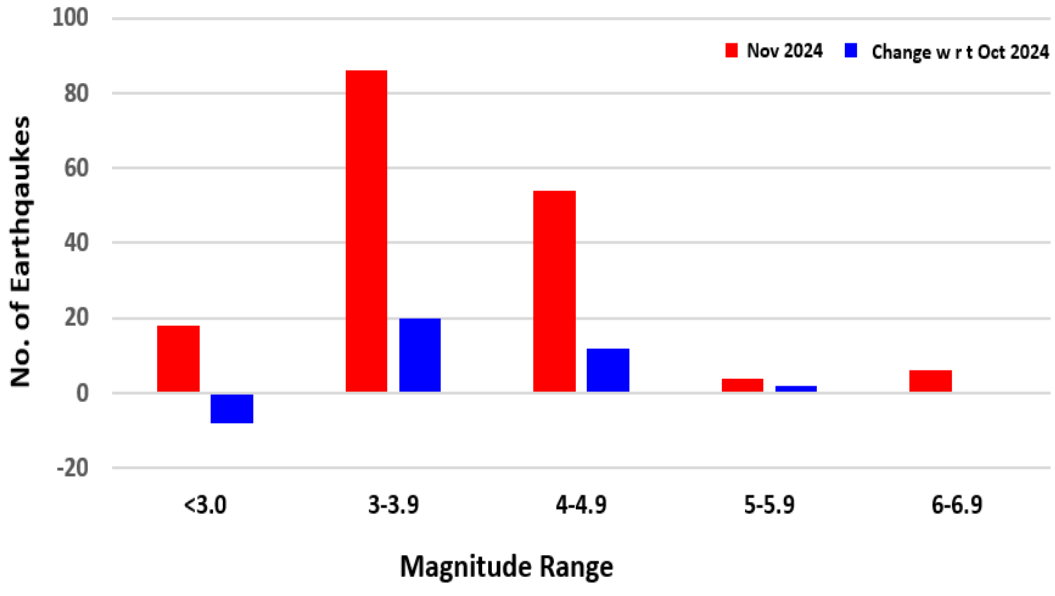


Figure 4 (b) : Change of occurrence of earthquakes in different magnitude ranges w r t previous month

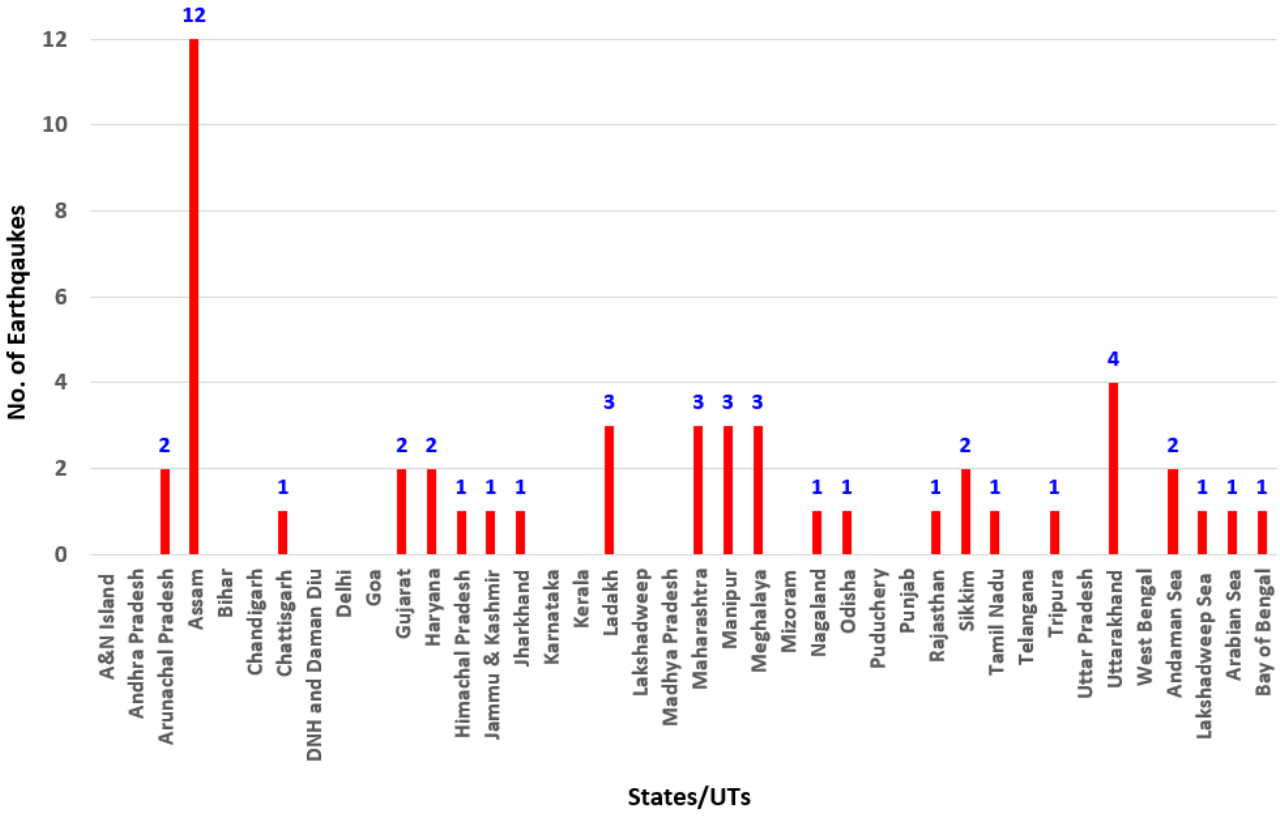


Figure 5: State wise distribution of earthquakes during the period 01st – 30th November 2024.

Total **50** earthquakes occurred within Indian territory; of which 12 earthquakes occurred in Assam and 4 in Uttarakhand during the period. Out of 50 earthquakes **11** and **24** earthquakes occurred in **North** and **North-East** region respectively. State/UT and region wise distribution of earthquakes occurred during 01st – 30th November 2024 is shown in **Figure 5** and **Figure 7** respectively**.** There was sparse activity in central, eastern and south part of the country during the 01st – 30th Nov 2024**(Figure 3** and **Figure 6**).

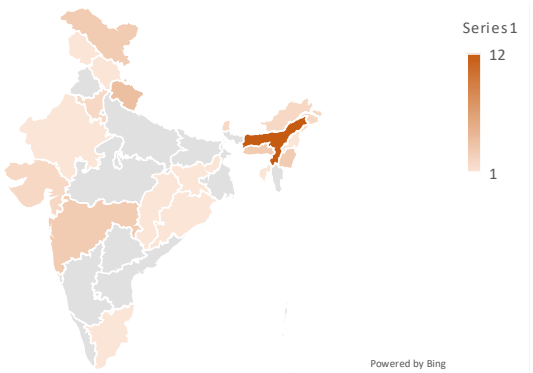


Figure: 6 Earthquake Density map

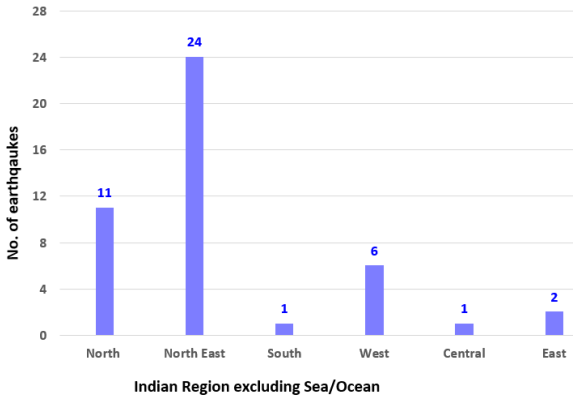


Figure: 7 Region wise distribution

3) Significant Activity:

Afghanistan Earthquakes: An earthquake of **M:5.8** occurred at **16:19:00 IST** of **28th November 2024** in Keda, Afghanistan at 36.49°N and 71.27°E with focal depth of 165 km. The epicentre is about 95 Km SE of Fayzabad(Afghanistan); 190 Km E of Yasin Valley(Ladalh); 250 Km NE of Kabul and 410 Km NW of Srinagar. **Figure 8** depicts the expected intensity of this earthquake around the source zone. This earthquake was reportedly felt in Jammu and Kashmir. More details are available at the URL https://riseq.seismo.gov.in/riseq/earthquake/event/ZVhZT1VQRk54UVNlUUFTeXVUL1ZnZz09/Reviewed .

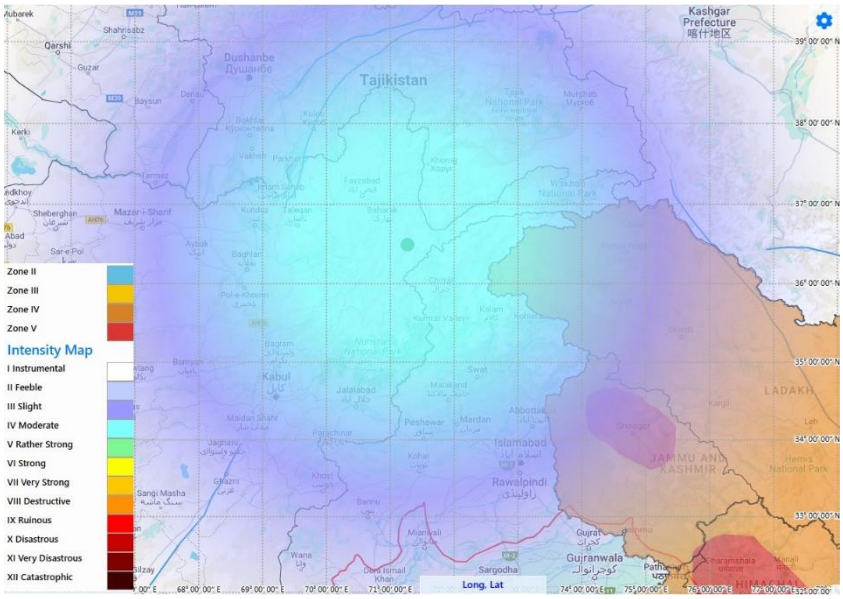
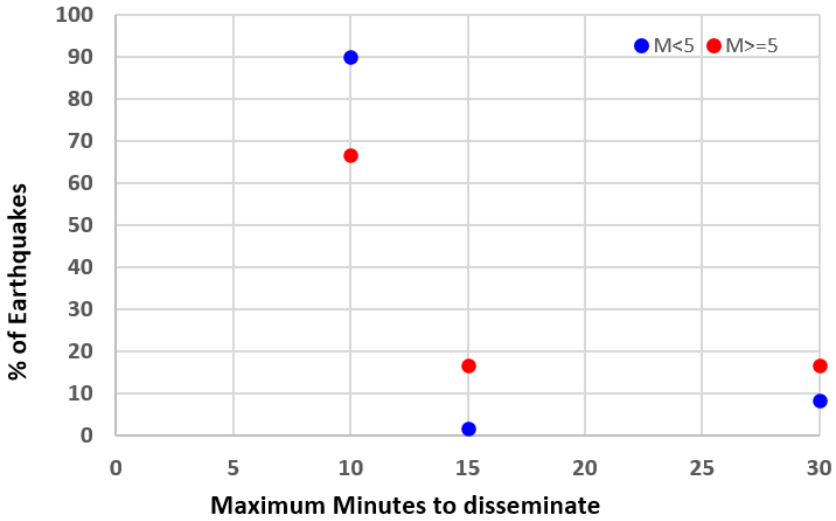


Figure 8:Intensity map of earthquake of M 5.8 occurred on 11th November 2024 at Multan, Pakistan.

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 and 15 minute respectively as shown in **Figure 9.**

Figure 9: Dissemination of earthquakes within different time ranges during 01st –30th November 2024.