

Report on Real Time Earthquake Location

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Report of Earthquakes occurred in the month of February 2022

1) Introduction:

National Center for Seismology maintains a National Seismological Network of **152 stations** each having state of art equipment and spreading all across the country (**Figure:1**). Using these stations during the period 01st – 28th February 2022 a total number of 116 earthquakes have

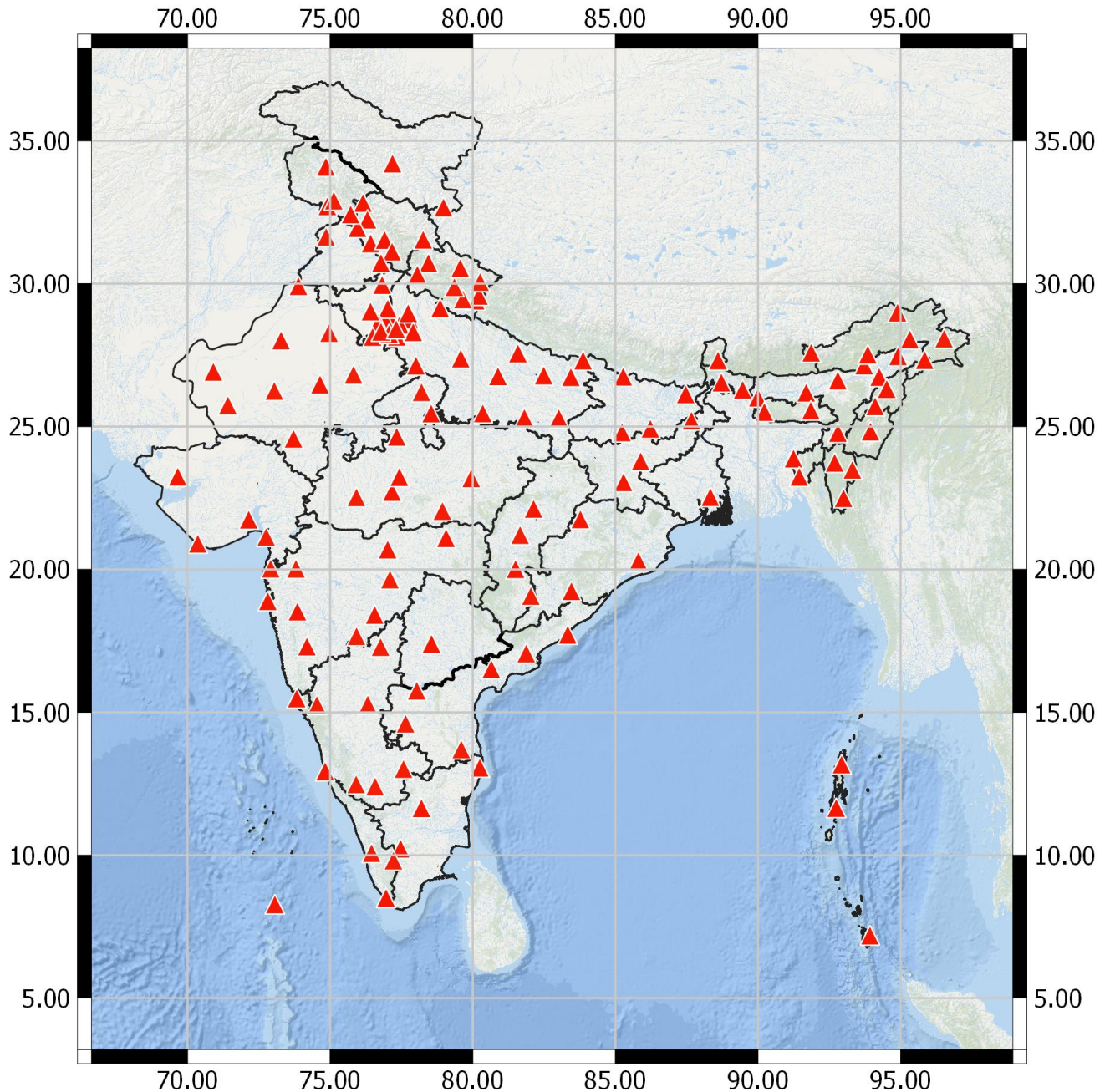


Figure 1: National Seismological Network (NSN) of 152 Stations

been located and disseminated from the center (**Figure:2**), out of which 110 earthquakes has occurred in India and its neighborhood region bounded by the coordinates 0° - 40°N & 60°-100°E (**Figure:3**).

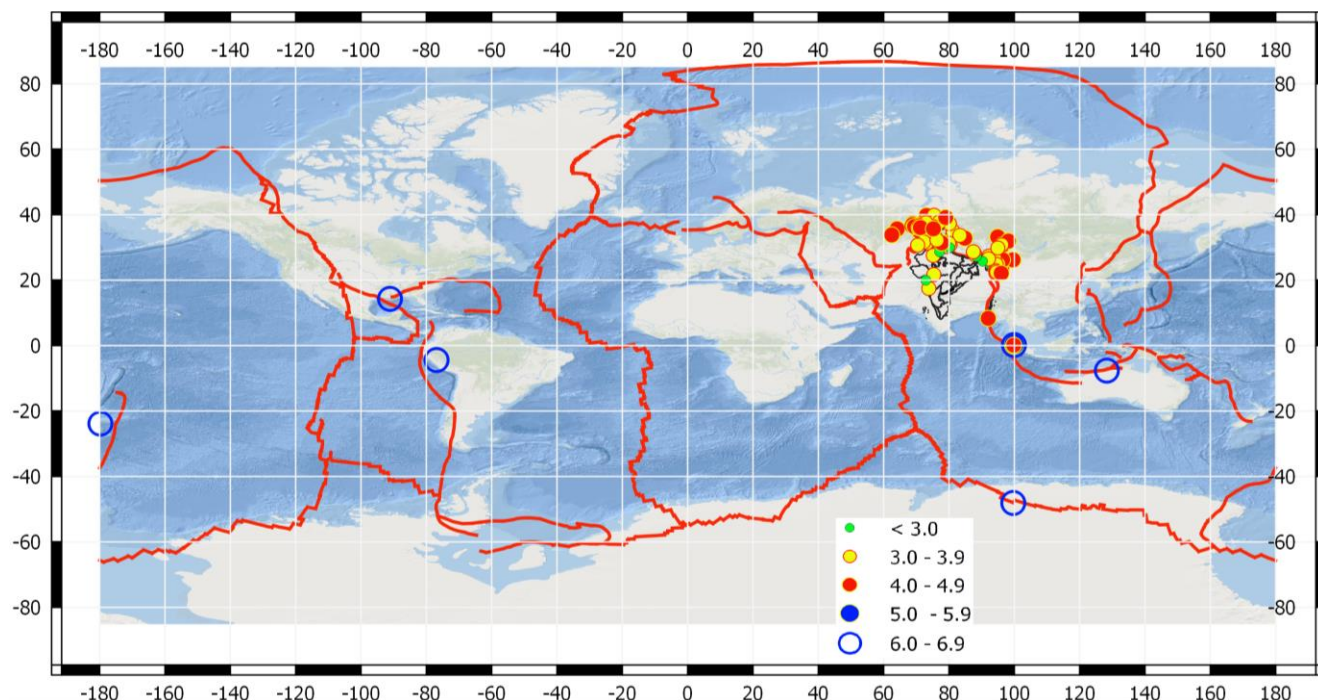


Figure 2: Earthquakes located and disseminated by NCS during 01st – 28th February 2022

2) Seismicity:

During the period, the density of earthquakes in India and its neighborhood region bounded by the coordinates 0- 40°N & 60-100°E; can largely be seen in Hindu Kush region, North and North Eastern part of India as shown in **Figure:3**. Few earthquakes of smaller magnitudes were also reported in Ladakh, Jammu and Kashmir, Himachal Pradesh, Uttarakhand, Haryana, Rajasthan NCT Delhi, Western (Palghar and Satara in Maharashtra) , Central (West Nimar in MP) part of country and Andaman Sea. Seventeen (17) earthquakes of smaller magnitude (M < 3.0) comprising 15% of all earthquakes occurred during 01st to 28th February 2022. **Three** earthquakes of magnitude **M:5.0 and above** occurred during the month in the region; as detailed in following table.

SN	Date	Time (IST)	Lat(°N)	Long(°E)	Depth (KM)	M	Region
1	2022-02-05	09:45:59	36.34	71.05	181	5.7	Afghanistan
2	2022-02-25	07:05:53	0.41	99.97	10	5.0	Northern Sumatra, Indonesia
3	2022-02-25	07:09:29	0.17	99.92	10	6.0	Northern Sumatra, Indonesia

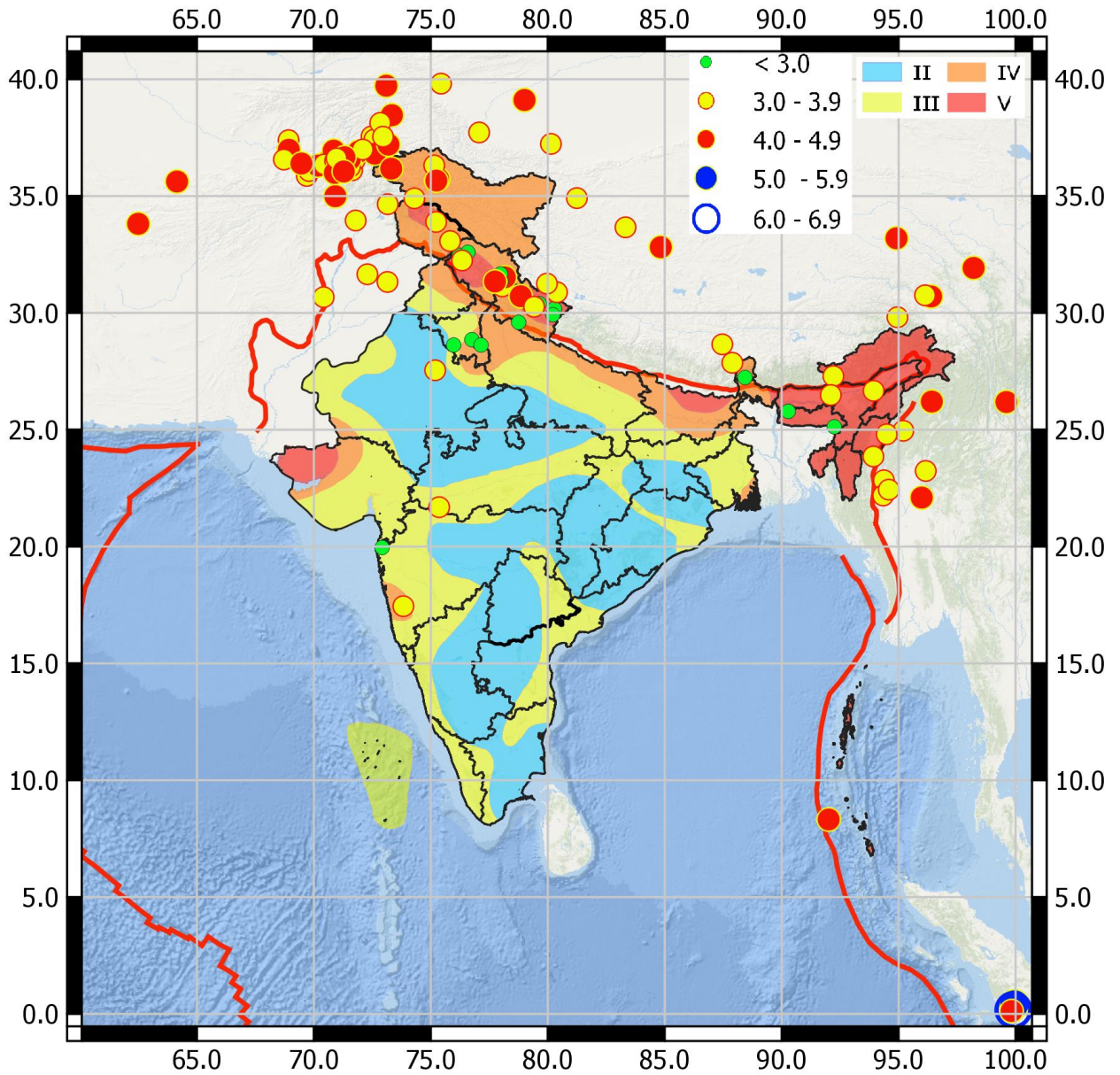


Figure 3: Map showing the seismicity during the period 01st – 28th February 2022 occurred in India and its neighbourhood region along with the seismic zone of India.

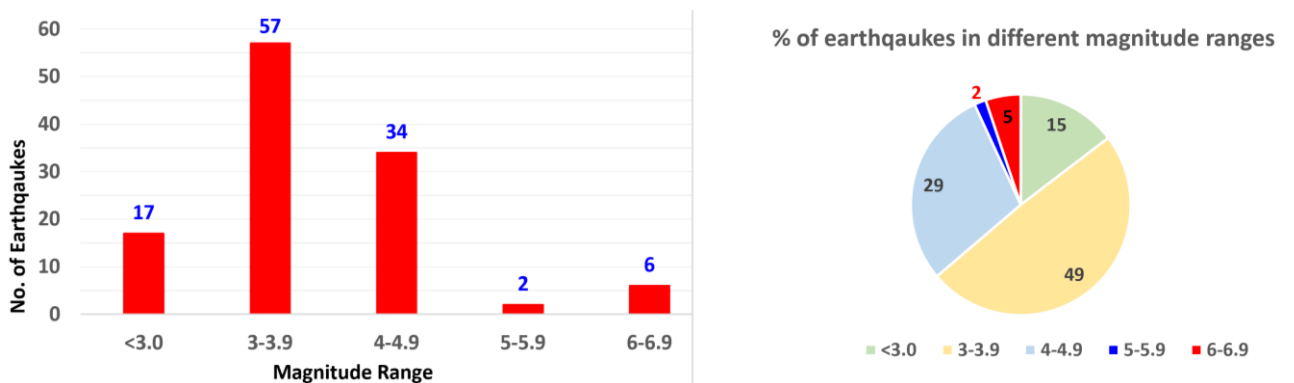


Figure 4: Pie-Chart and Bar-Diagram showing the number of earthquakes occurred in the magnitude range during the period 01st – 28th February 2022.

Out of total 116 earthquakes, **49%** and **29 %** of events occurred in the magnitude range **3.0-3.9** and **4.0 - 4.9** respectively, whereas **two** earthquakes occurred in the magnitude range of **5.0-5.9** as shown in **Figure:4**. **Six** earthquakes occurred in the magnitude range of **6.0-6.9** ; of which **five** were outside the grid of 0- 40°N & 60-100°E; as shown in **Figure:3** and **Figure:4**. Detail list of earthquakes occurred during the month is available at www.seismo.gov.in.

Total **36 earthquakes** occurred **within Indian territory**; of which 8, 7 and 4 earthquakes occurred in Himachal Pradesh, Uttarakhand and Ladakh respectively during the period. State wise distribution of earthquakes occurred during 01st - 28th February 2022 is shown in **Figure 5**.

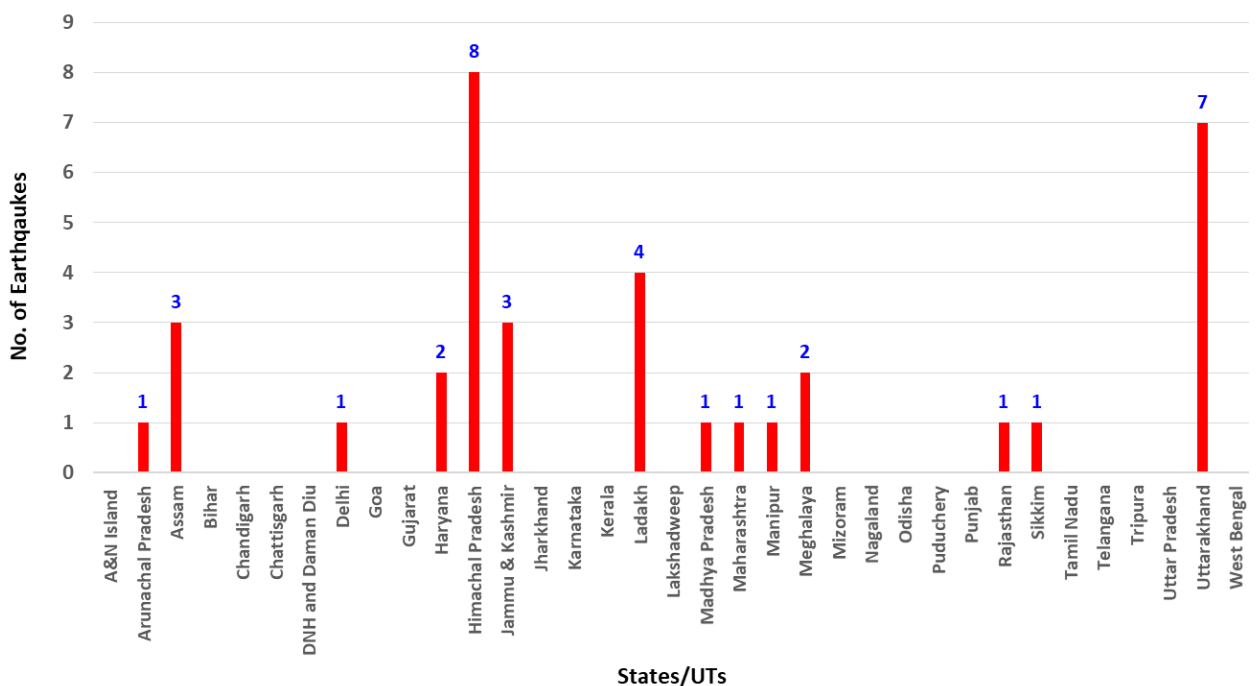


Figure 5: State wise distribution of earthquakes during the period 01st – 28th February 2022.

3) Significant Activity:

- A. **Northern Sumatra Earthquake of M:6.0** occurred at **07:09:29 IST** of **25th February 2022** in Northern Sumatra, Indonesia at 0.17°N and 99.92°E with focal depth of 10 km. The epicentre is 135 km NNW of Padang, Indonesia, 380 km SW of Kuala Lumpur, Malaysia and 1000 km SE of Campbell Bay, India. This earthquake occurred close to the plate boundary and is about **500 Km SE** from **M:8.6** earthquake of **28th March 2005** and **650 Km SE** from **M:9.3** earthquake of **26th December 2004**. Few Responses of MMI II and III from Kuala Lumpur, Malaysia were received through our website and BhooKamp app(**Figure 6**).

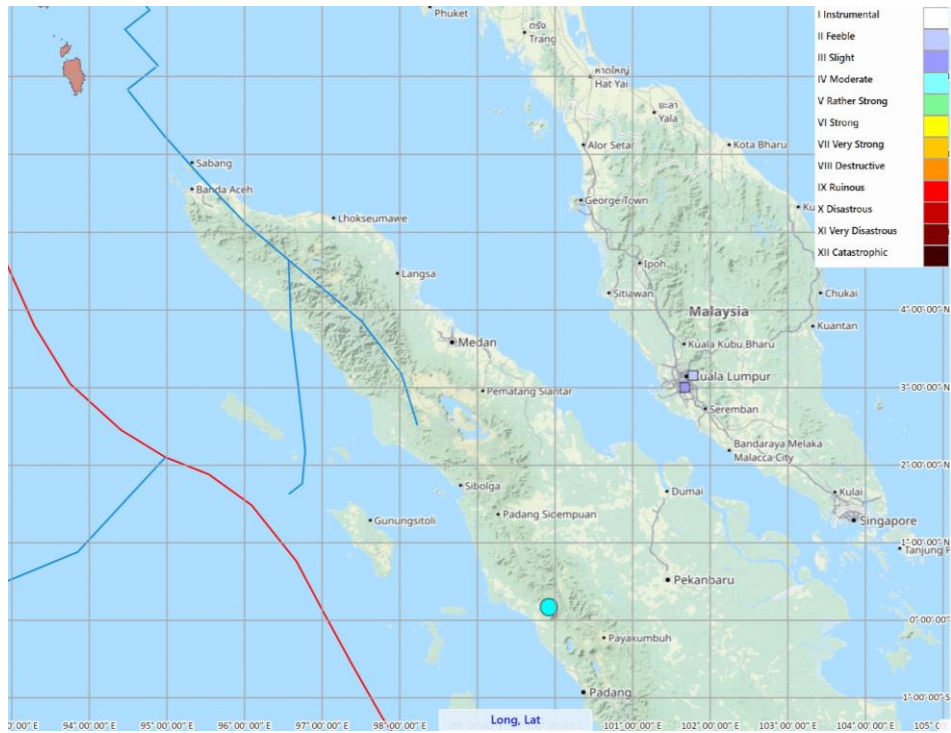


Figure 6: Map showing the epicentre (circle) and felt responses received for Sumatra Earthquake of M:6.0 occurred on 25th February 2022

B. Afghanistan Earthquake of M:5.7 occurred at 09:45:59 IST of 05th February 2022 in Northern Afghanistan, at 36.34°N and 71.05°E with focal depth of 181 km. The epicentre is about 130 km W of Indian (Ladakh) Border, 265 km NE of Kabul, 290 km West of Gilgit and 420 KM NW of Srinagar. Location and intensity map of earthquake is shown in Figure-7. The

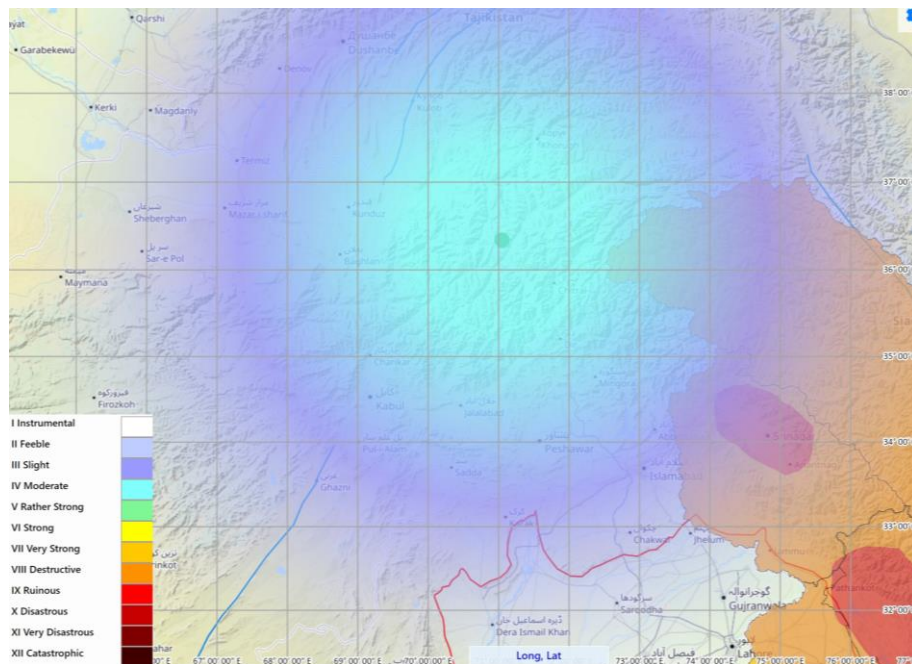


Figure 7: Map showing the epicentre (circle) and intensity of Afghanistan earthquake of M:5.7, occurred on 2022-02-05.

area within 100 km radius of today's earthquake epicenter, has experienced 98 earthquakes of magnitude 4.0 and above during the past one year. The maximum magnitude of M: 6.3 occurred on 20th December 2019 which is about 60 km NE of this event. The earthquake was felt widely due to the propagation of surface waves through various strata of the earth associated with several local and regional seismogenic faults. The felt responses received from Jammu and Kashmir (approx. 390 KM from epicentre), Himachal Pradesh, Punjab and NCT Delhi (approx. 1050 KM from epicentre) in the range of MMI I to MMI IV as shown in **Figure 8(a)**. This earthquake occurred very close to earthquake of M:5.3 of 14th Jan 2022 which was reportedly felt in Afghanistan, Tajikistan and Pakistan **Figure 8(b)** .

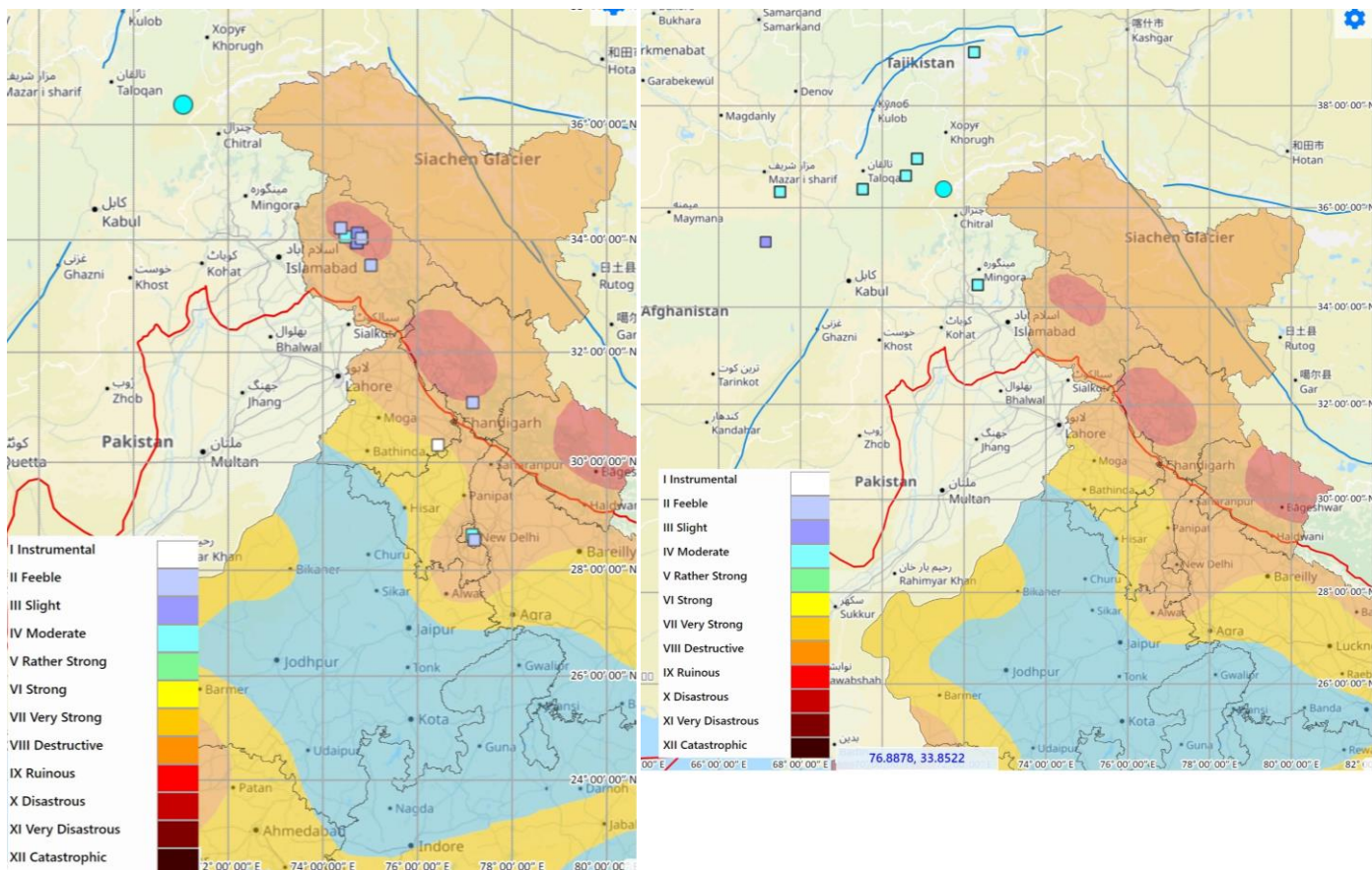


Figure 8(a): Map showing the epicentre (circle) and felt responses received for Afghanistan earthquake of M:5.7, occurred on 2022-02-05. *Figure 8(b): Map showing the epicentre (circle) and felt responses received for Afghanistan earthquake of M:5.3, occurred on 2022-01-14.*

- C. Earthquake of **M:3.8** occurred at **08:01:24 IST** of **18th February 2022** in Deogarh hilly terrain of Aravalli range about 8KM SE of Sikar, Rajasthan at 27.55°N and 75.19°E with focal depth of 5km. The epicentre is about 90 km NW of Jaipur and South of Churu and 220 Km SW of

NCT Delhi. This earthquake was locally felt by many. Location and intensity map of earthquake is shown in **Figure-9**. Felt responses in the range of MMI II to MMI IV were received with in **4km to 230km** from Sikar, Jaipur and Delhi.

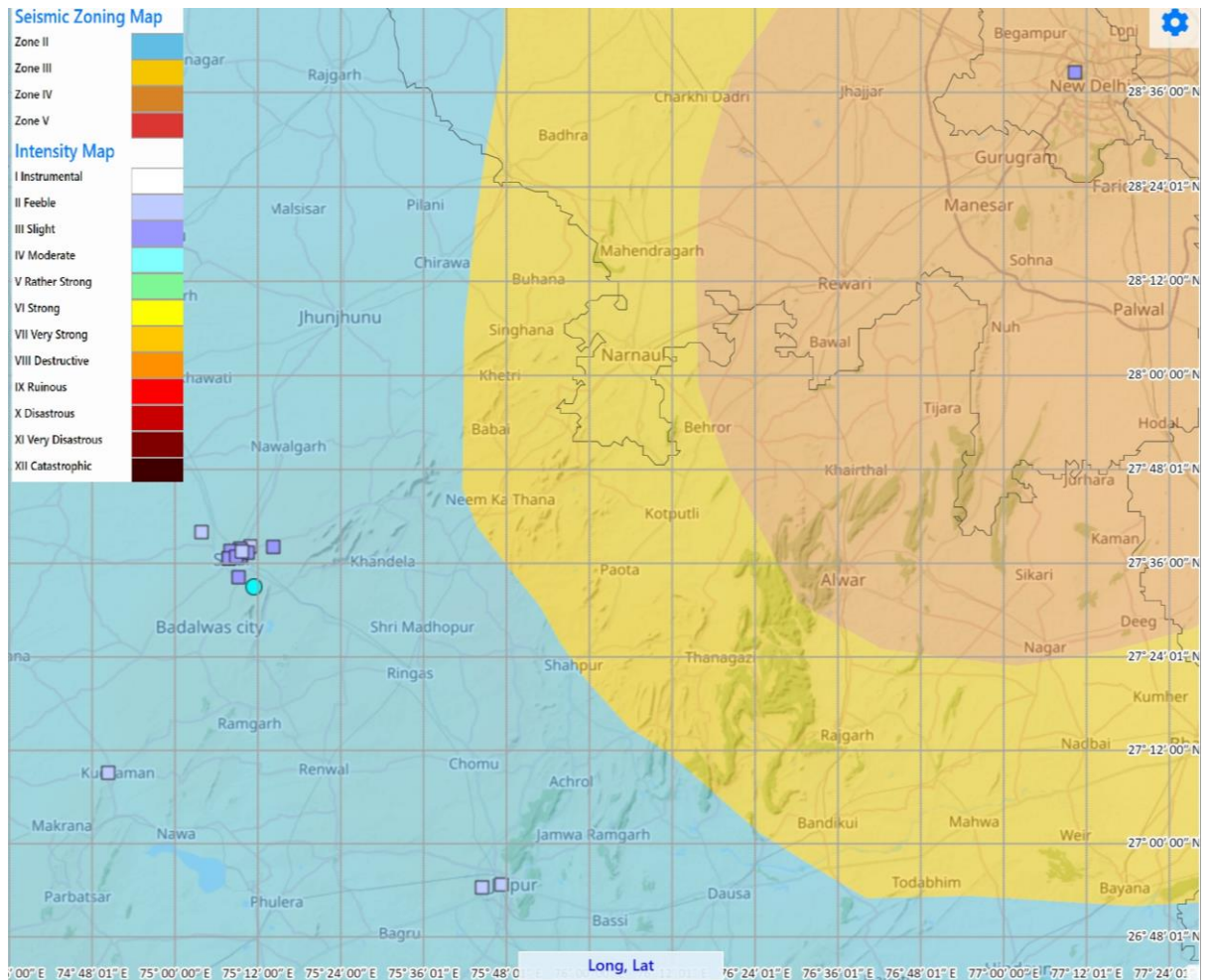


Figure 9: Map showing the epicentre (circle) and intensity of Sikar, Rajasthan earthquake of M:3.8, occurred on 2022-02-18.

4) Dissemination Performance:

More than 60% and 25% earthquakes of $M < 5.0$ were disseminated within 10 and 15 minutes respectively. 67% and 33% earthquakes of $M \geq 5.0$ were disseminated within 10 and 15 minutes respectively as shown in **Figure:10**.

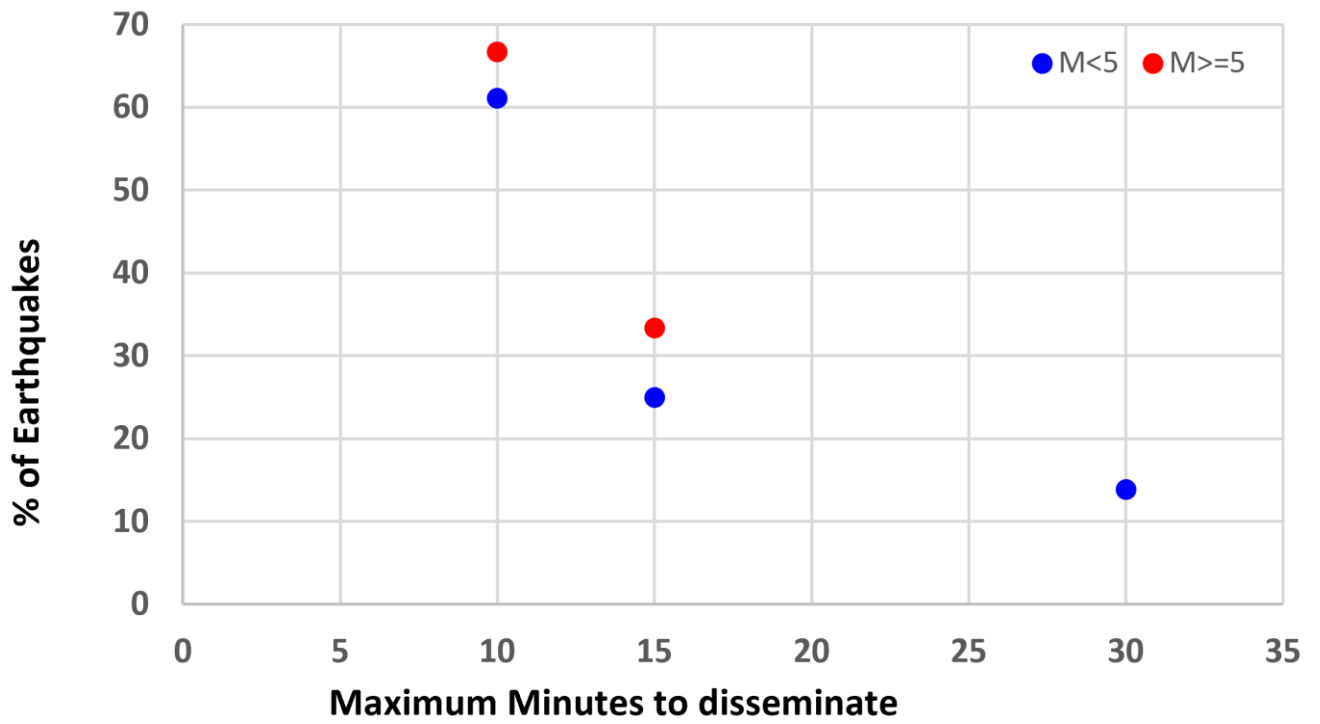


Figure 10: Dissemination of earthquakes within different time ranges (in minutes) during the 01st – 28th February 2022.