

Report on Real Time Earthquake Location

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Month: January 2021
Technical Report No: NCS/2021/01

Report of Earthquakes occurred in the month of January 2021

1) Introduction:

National Center for Seismology maintains National Seismological Network of 115 stations each having state of art equipment and spreading all across the country. Using these stations during the period 01st -31st January 2021 a total number of 102 earthquakes have been located and disseminated from the center (**Fig:1**), out of which 92 earthquakes has occurred in India and its neighborhood region bounded by the coordinates 0°- 40°N & 60°-100°E (**Fig:2**).

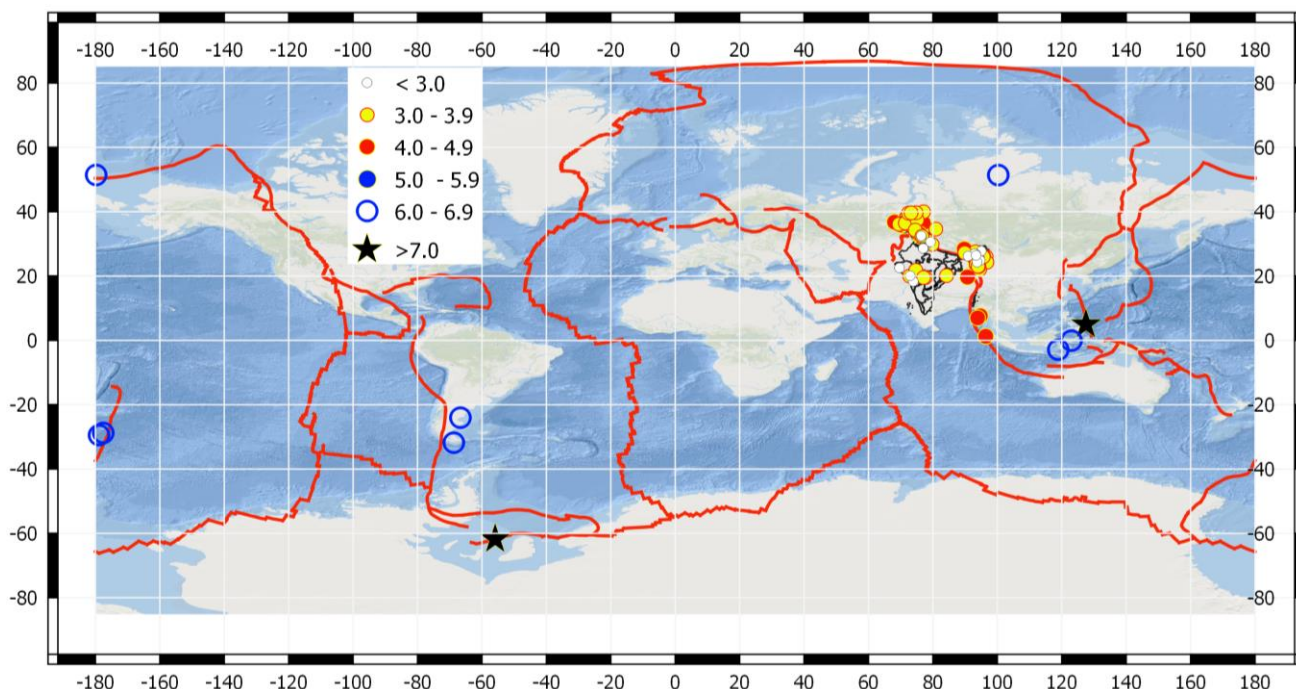


Fig:1 Earthquakes located and disseminated by NCS during 01st – 31st January 2021

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 Eastern part of India as shown in **Fig:2**. Few earthquakes of smaller magnitudes ($M < 3.0$) also occurred in and around Delhi Region. Few earthquakes in the magnitude rang from $M:3.2$ to $M:3.5$ occurred in central India.

Out of total 102 earthquakes, around **23%** of events occurred in the magnitude range **4.0-4.9** and around **65%** occurred with magnitude less than **4.0**, whereas only three, eight and two earthquakes occurred in the magnitude range, **5.0-5.9** , **6.0-6.9** and ≥ 7.0 respectively as shown in **Fig 3**. Detail list of earthquakes occurred during the month is available at www.seismo.gov.in.

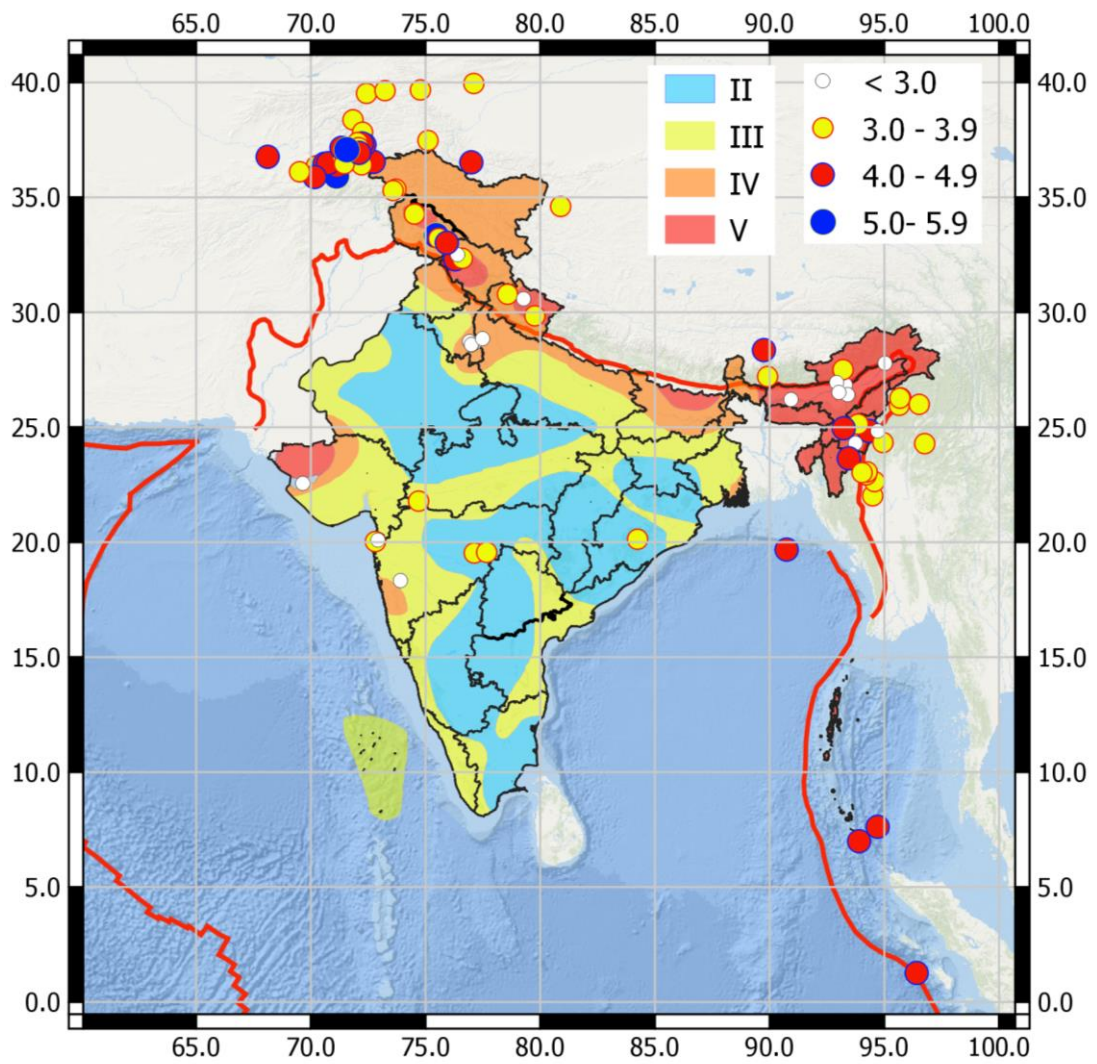


Figure 2: Map showing the earthquakes occurred during the period 01st – 31st January 2021; in India and its neighbourhood region along with the seismic zone of India.

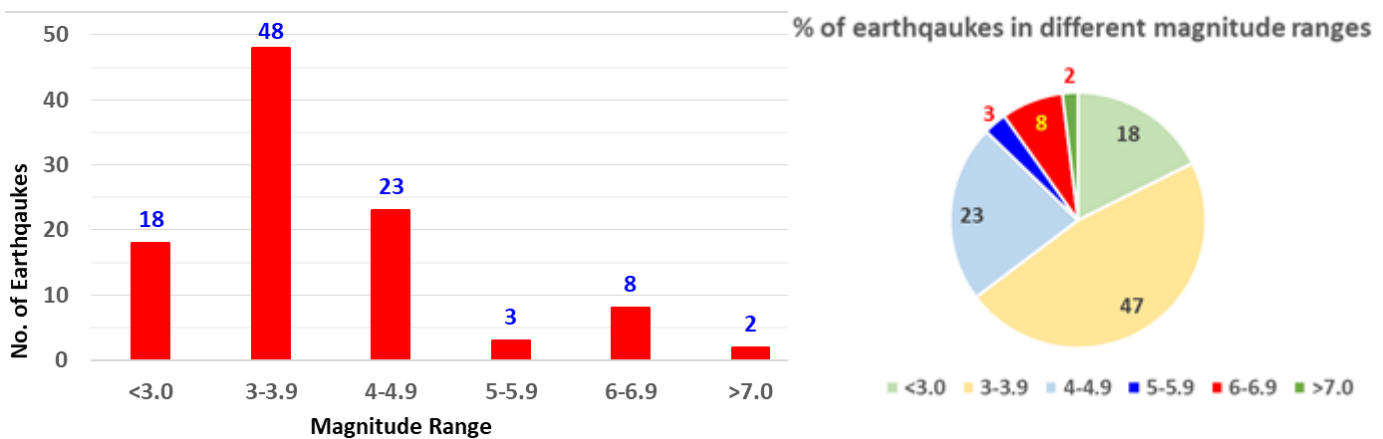


Figure 3: Bar-Diagram and Pie chart showing the number of earthquakes and their distribution in terms of percentages occurred in the magnitude range during the period 01st – 31st January 2021 that was disseminated.

3) Significant Earthquakes:

During the period 01st -31st January 2021 an earthquake of **M:5.1** occurred on 2021-01-11 at 19:32:04 IST (14:02:04 UTC) in Jammu and Kashmir. Besides this two earthquakes of M:7.0 were occurred on 21st and 23rd January 2021 in Philippine-Indonesia region and South Shetland Islands respectively.

Jammu and Kashmir: An earthquake of magnitude M: 5.1 occurred in Doda, Jammu and Kashmir having epicentre at 33.34° N and 75.47° E and focal depth of 5 km at **19:32:04 IST** on 11th January 2021. Epicenter is about 86 km North –East from Jammu, 100 km South- East of Srinagar, and about 120 km North of Pathankot. The epicenter lies in seismic Zone IV of as per seismic zonation map of India. The area within 100 km radius from the epicentre of this earthquake has experienced 7 earthquakes of magnitude 5.0 and above during past 20 years. The maximum magnitude of M: 5.6 occurred on 1st May 2013 which is 27 km SE of this earthquake event. Damage report (Cracks on walls) has been reported from Doda (Near epicentre). Felt report of Intensity II and III (MMI Scale) have been reported from a distance around 700 km and 300 KM from the epicentre respectively (Fig:4).

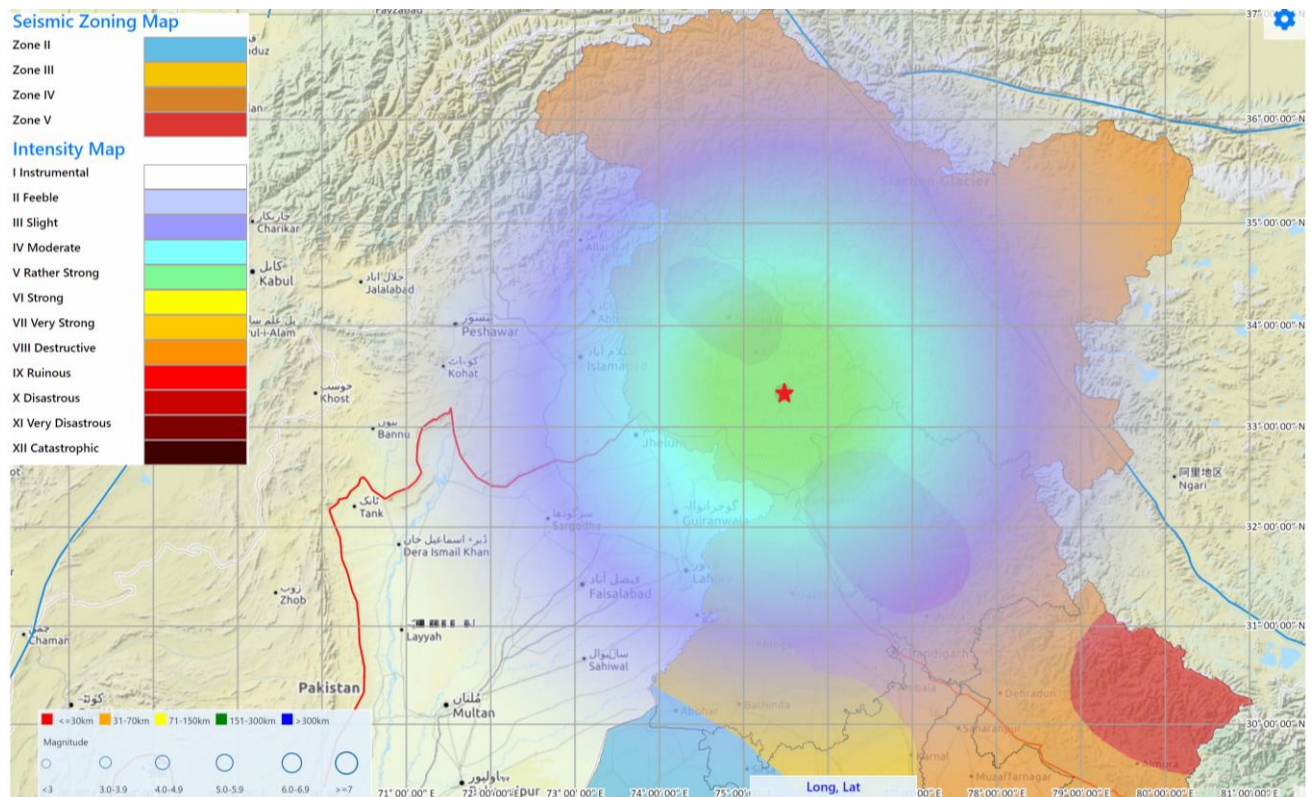


Figure 4: Map showing the epicentre (red star) and intensity of Jammu and Kashmir earthquake occurred on 11th January 2021. Zonation (zone IV) of the region can also be seen.

Philippines-Indonesia: An earthquake of 7.0 M at a depth of 124 km occurred offshore between southern Philippines and northern-eastern Indonesia on 21 January 2021 at 12:23:07 UTC. The epicentre [Latitude: 4.98°N and Longitude: 127.53°E] located in the southern Philippine Sea

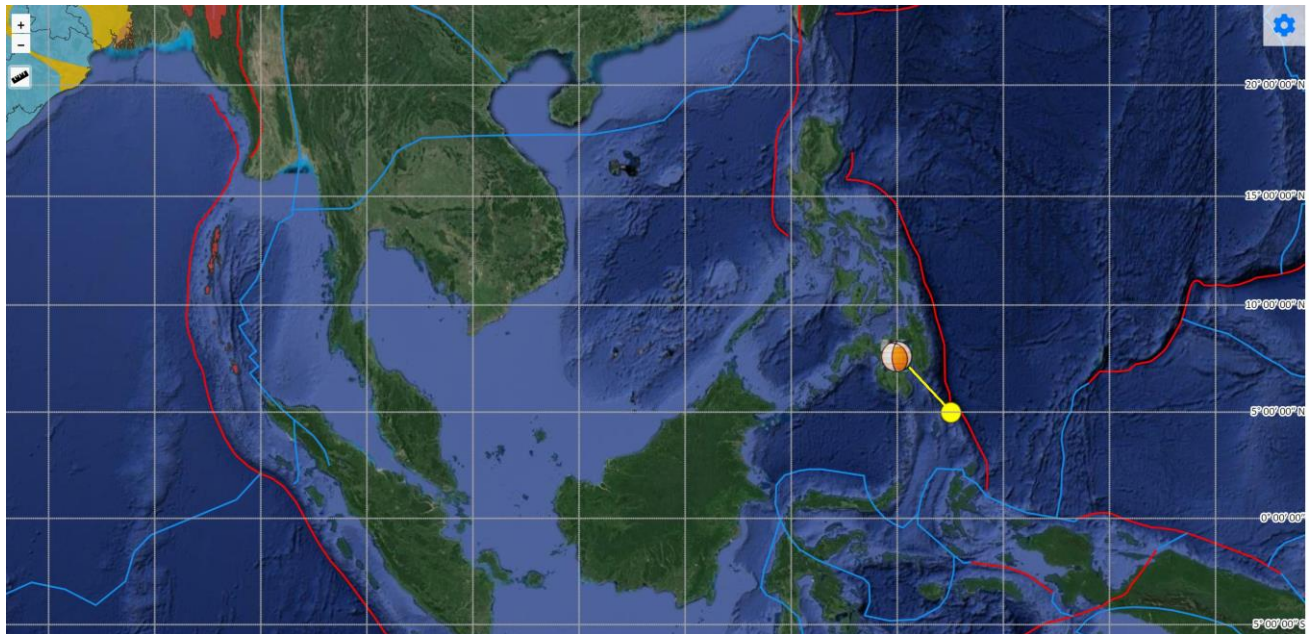


Fig:5 Map showing the epicenter and CMT Solution of M:7.0 Earthquake

approximately 93 km northeast of Karakelong Island (Talaud IsIndonesia), 200 km south-east of the southeastern coast of Mindanao Island (southern Philippines) and 592km NE of Kotamobagu, Sulawesi, Indonesia (**Fig:5**). The Fault plane solution indicates source mechanism of reverse faulting. Mw and other CMT parameters are tabulated below

Moment Tensor Details	Latitude (°N)	Longitude (°E)	Depth (KM)	Mw	Moment
	4.98	127.53	90	7.0	3.66x10 ¹⁹ NM
Nodal Plane(NP)	NP1		NP2		
Strike (°)	181		331		
Dip(°)	63		29		
Rake(°)	104		63		