



सत्यमेव जयते

Report on Real Time Earthquake Location

Month: September 2020

Technical Report No: NCS/2020/09

From: Earthquake Monitoring Center (EMC) of NCS

(R. K. Singh, Ambikapathy Ammani, VedPraksh, Shanker Pal and Narendra Pandey)

**National Center for Seismology Ministry of Earth
Sciences Government of India**

Report of Earthquakes occurred in the month of September 2020

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 -30th September 2020 a total number of 132 earthquakes have been located and disseminated from the center, out of which 119 earthquakes has occurred in India and its neighborhood region bounded by the coordinates 0- 40°N & 60-100°E.

2) Seismicity:

During the period, the density of earthquakes occurred in India and its neighborhood region bounded by the coordinates 0- 40°N & 60-100°E; is largely seen in the Hindu Kush region and in the North Eastern part of India as shown in Fig1. Few events can also be seen in the Palghar, Maharashtra Region.

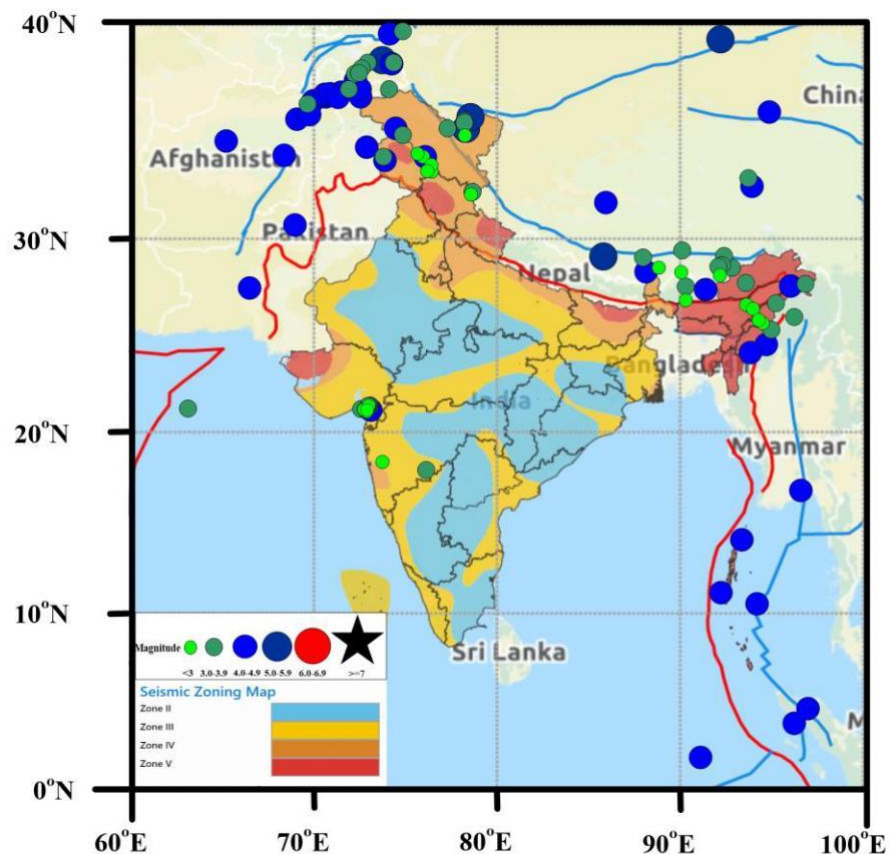


Figure No: 1 Map showing the seismicity during the period 01st – 30th September 2020 occurred in India and its neighbour region along with the seismic zone of India.

Out of total 132 earthquakes majority of events had magnitude less than 4.9, while 5 events each occurred in the magnitude range 5.0-5.9 and 13 events in the range 6.0-6.9, as shown in Fig 2. Detail list of earthquakes occurred during the month is available at <https://seismo.gov.in/>

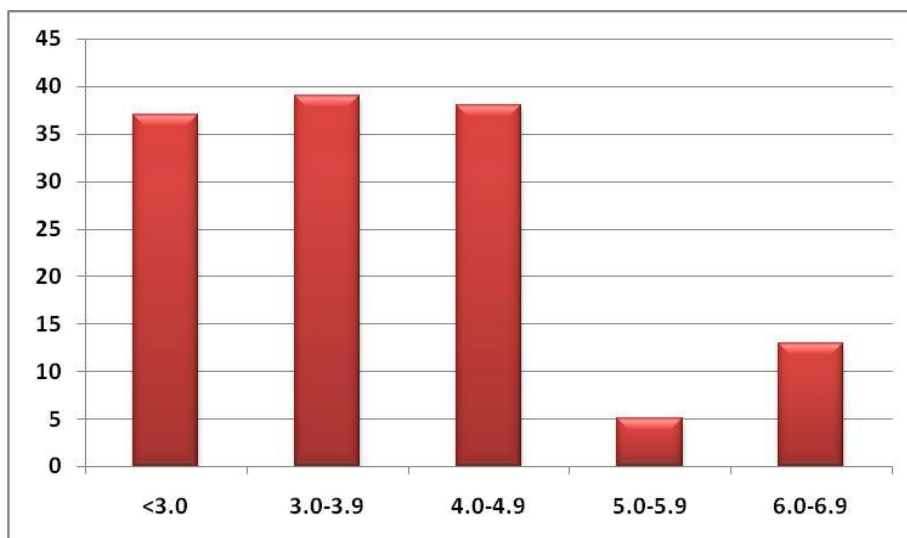


Figure 2: Bar-Graph showing the number of earthquakes occurred in the magnitude range during the period 01st – 31st August 2020 that was disseminated.

3) Significant Earthquakes:

During the period 01st -30th September 2020 earthquakes, Palghar, Maharashtra was active. Two earthquakes of magnitude greater than 5.0 occurred also during the period in Ladakh region. Chile region also witnessed of earthquake of **M 6.7** (04:30:02 UTC) occurred on 01th September 2020.

I. Palghar Earthquakes:

The Palghar, Maharashtra region lies in seismic zone III; witnessed 21 earthquakes during the month September 2020 in the magnitude range 2.0-4.0. The largest event of M4.0 occurred on 04th September 2020 (18:11:54 UTC), this was followed by M3.8 on 08th September 2020 (04:20:42). Six events in magnitude range 3.0 - 3.6 and 13 events of magnitude range 2.0-2.9 occurred during this month.

For the event of **04th Sep2020 (M:4.0)**, 11 felt responses were reported through website (seismo.gov.in) and App(RISEQ) within the radius of about 200km from the epicentre (shown in fig 3). The maximum intensity of III in MMI scale was reported at a distance of 13.38km from the epicentre. For the event with M3.8, one felt response was reported at a distance of 34.98km with MMI scale of II.

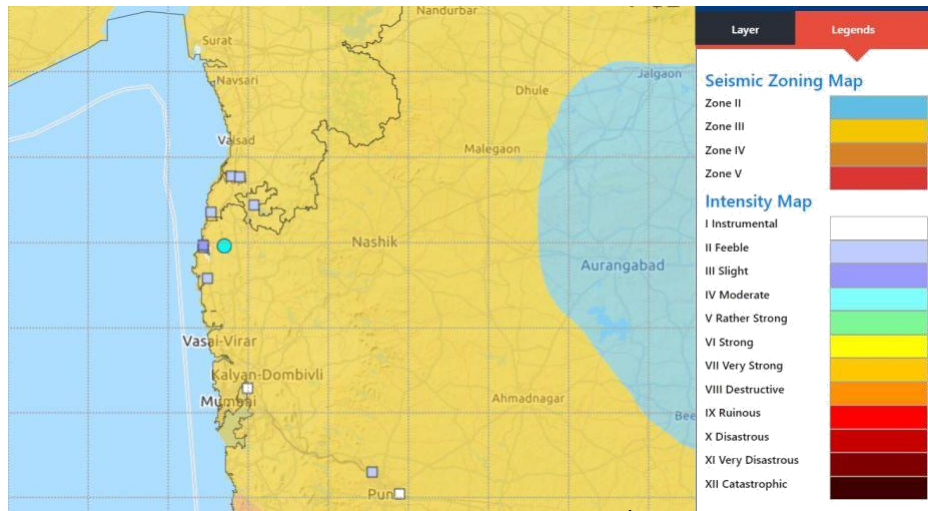


Figure3: Map showing the felt response (squares) due to 04th September 2020 (M4.0) Palghar earthquake (circle)

II. Ladakh Earthquakes:

Couple of earthquakes with $M > 5.0$ occurred in Ladakh region during this month. Ladakh lies on Zone-IV as per seismic zoning map of India. On **25th September 2020 (10:57:06 UTC)** and **27th September 2020 (17:27:42 UTC)** earthquake of **M:5.4** and **M:5.1** respectively occurred in Ladakh region. Area has seen of maximum earthquake of **5.1(MB)** in the year 13th October 2000 during last 30 Years. If we consider the area with radius of 150km around the epicentre of above two earthquakes around 185 event in the magnitude range 1.5-5.0 have occurred in past 30 year.

Earthquake of M5.4 occurred at a distance of around 90 km North East of Leh city, with focal depth of 10 km. 11 felt responses were reported through website (seismo.gov.in) and App(RISEQ), with intensity of MMI II and III, within the distance of about 360km from the

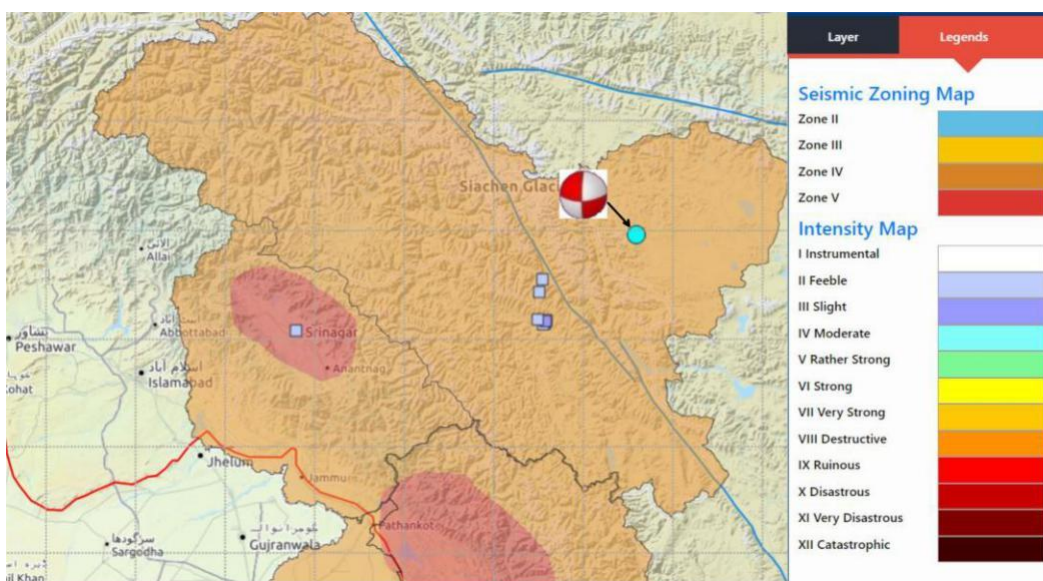


Figure 4: Map showing the felt response (squares) due to 25th September 2020 (M5.4) Ladakh earthquake (circle with FPS)

epicentre (shown in fig 4). The maximum of III in MMI scale was registered at a distance of 127.25 km from the epicentre. The Fault Plane Solution (FPS) shows following values:

Nodal Plane (NP)	Strike (°)	Dip (°)	Rake (°)	Seismic Moment (Nm)	Magnitude (Mw)	Depth (Km)
NP 1	180	84	-155	9.39E+16	5.3	22
NP 2	88	65	-5			

Earthquake of M5.1 occurred at a distance of around 74 km East North East of Leh city, with focal depth of 10 km. 03 felt response was registered in the website, with MMI scale II, within the distance of about 360km from the epicentre (shown in fig 5). The Fault Plane Solution (FPS) shows following values:

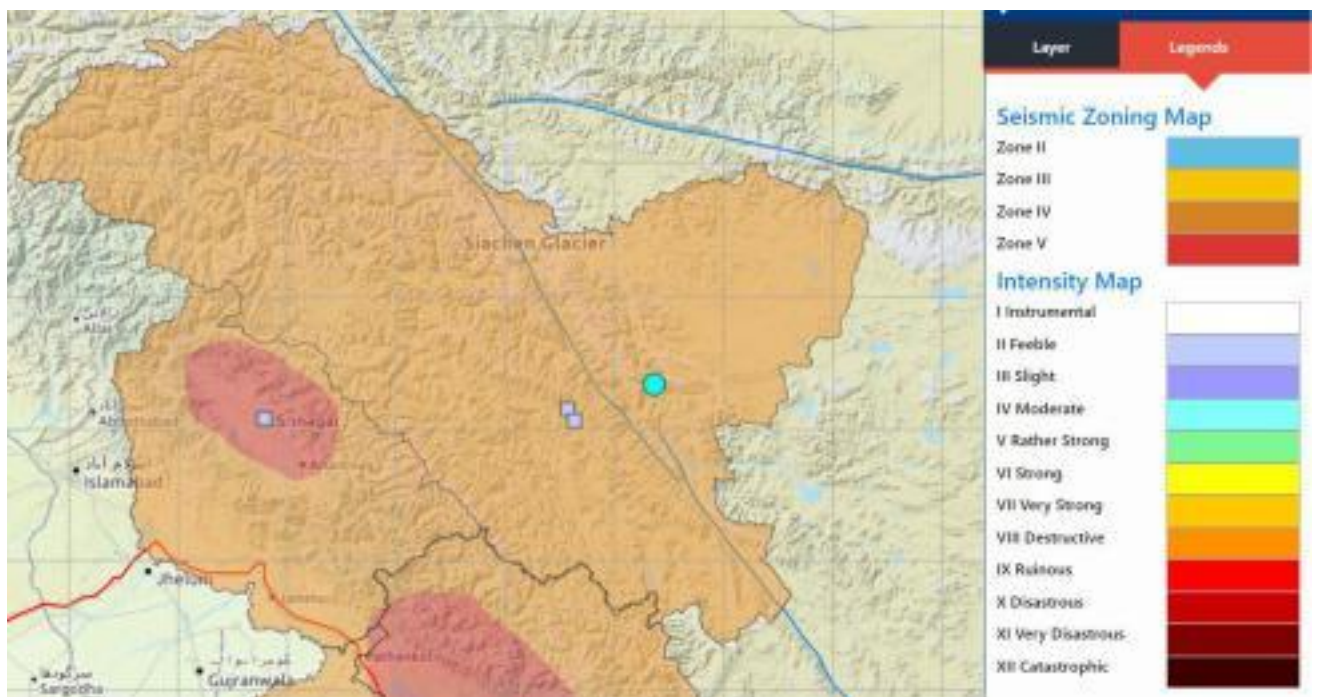


Figure 5: Map showing the felt response (squares) due to 27th September 2020 (M5.1) Ladakh earthquake (circle)

III. Chile Earthquake:

An earthquake of M6.7 occurred on 01st September 2020 (04:09:28 UTC) along the Chile subduction zone with 10km depth.