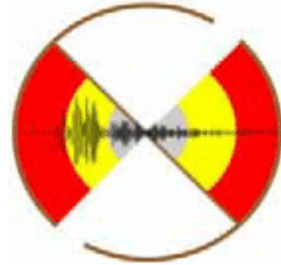




A Preliminary Report of December 18, 2023 Kargil, Ladakh Earthquake (M 5.5)

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An earthquake of magnitude M 5.5 occurred at 15:48:53 IST located in the Zaskar, District Kargil Ladakh, whose epicenter at 33.41°N and 76.70°E at a shallow depth of 10 km. The epicenter is in Zaskar, Ladakh and it is 100 km from Leh, 535 Km NW of New Delhi; 261 Km NE of Amritsar. The area is seismically very active associated with collisional tectonics where Indian plate collide with the Eurasian Plate. Following the main shock, four aftershocks ranging from M 3.8 to 4.8 were also reported.

The event was well recorded by more than 20 broadband seismic stations of National Centre for Seismology. The analysis of seismic data shows that the events were occurred within Zaskar Shear zone which is northeast of Kishtwar nappe (Figure 1). These shear zones, owing to considerable structural heterogeneity in and around the mainshock, serve as an ideal location for triggering the main event. Preliminary fault plane solutions derived from moment tensor inversion suggest a pure thrust fault with a northeast-dipping plane. The earthquake is 150 km NE of M 5.4 of 13th June 2023 event. Felt reports of maximum Intensity V (MMI scale) in epicentral region and minimum intensity of II (MMI Scale) have been reported from around 5 km and 500 km from the epicenter respectively (Figure 2).

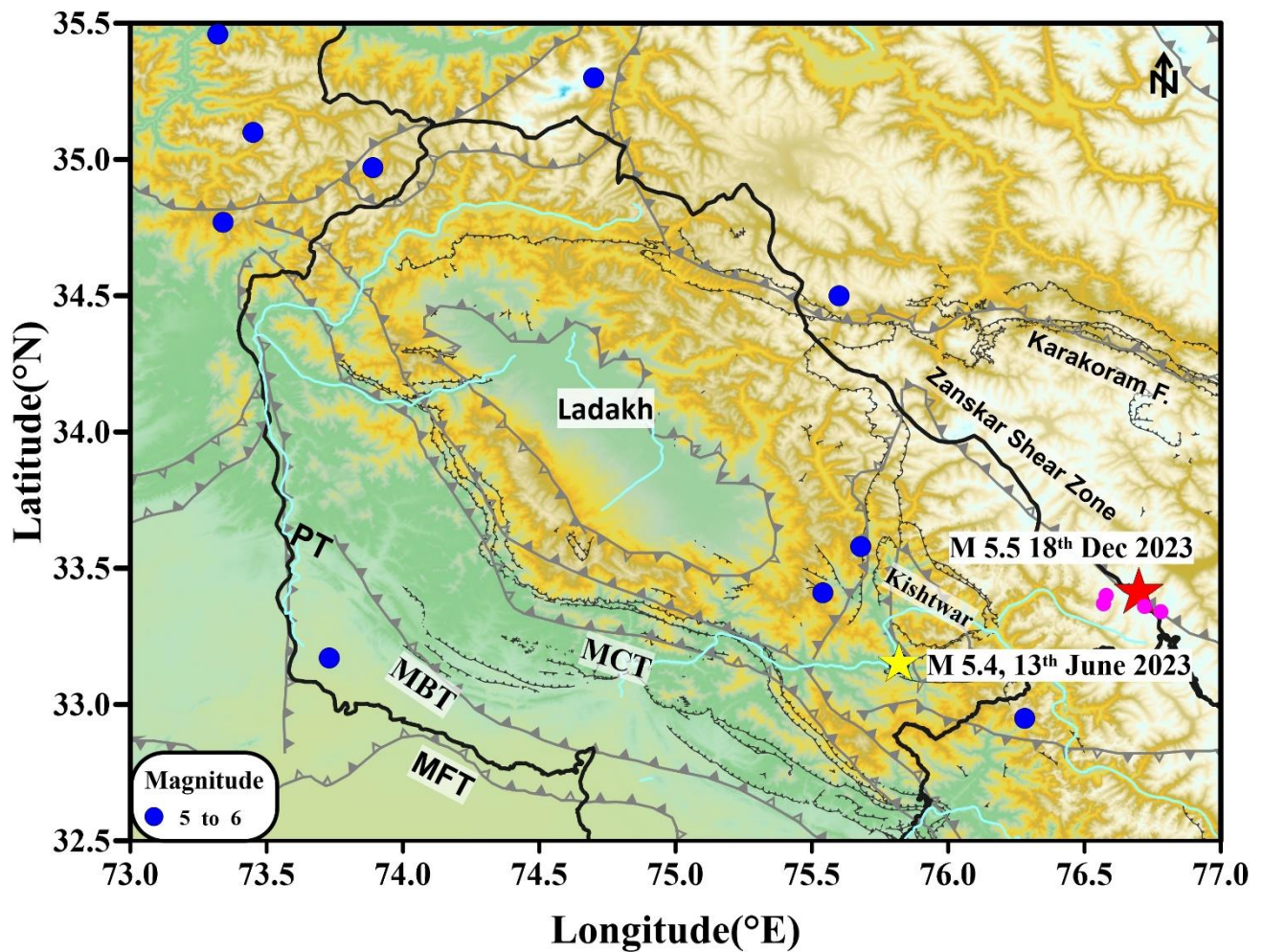


Figure 1: The present earthquake (M 5.5) of 18th December 2023 (Red Star), magenta circles are the aftershocks. The geological faults and lineament were obtained from Bhukosh, GSI. The yellow star is the past earthquake ($M \geq 5.0$) occurred within one year closer to the present epicenter.

The recorded earthquakes as per EQ Catalogue of NCS reveals that the region is associated with moderate to large earthquakes with varying magnitude (Fig. 2) in the last 10 years. The earthquake is widely felt in Jammu and Kashmir and neighboring states. 06 felt reports due to this earthquake, have been received from Jammu and Kashmir and Chandigarh through NCS website and Mobile App having intensity ranging from II to III on Modified Mercalli Intensity (MMI) Scale (**Figure 3**).

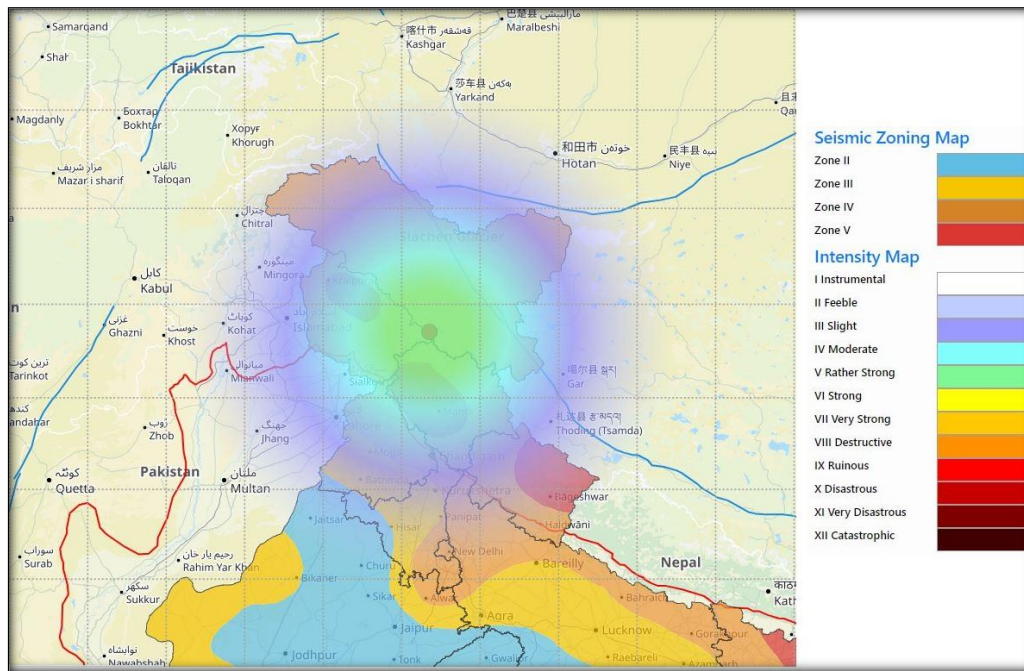


Figure 2: Earthquake intensity map of $M 5.5$ of 18th December 2023.

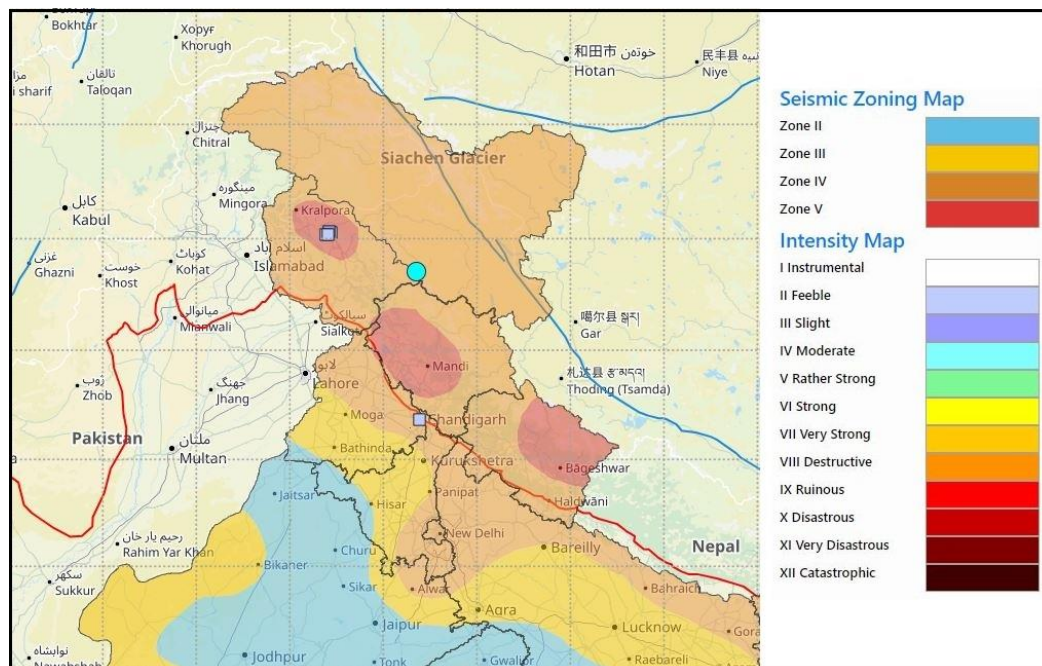


Figure 3: Felt responses (squares) of the 18th December 2023 earthquake $M 5.5$ (circle) from different users reported on www.seismo.gov.in and BhooKamp mobile-app. 06 responses were received within one hour from the time of occurrence of earthquake.