



# **A Preliminary Earthquake Report of November 06, 2023, Karnali provinces, Western Nepal (M 5.6)**

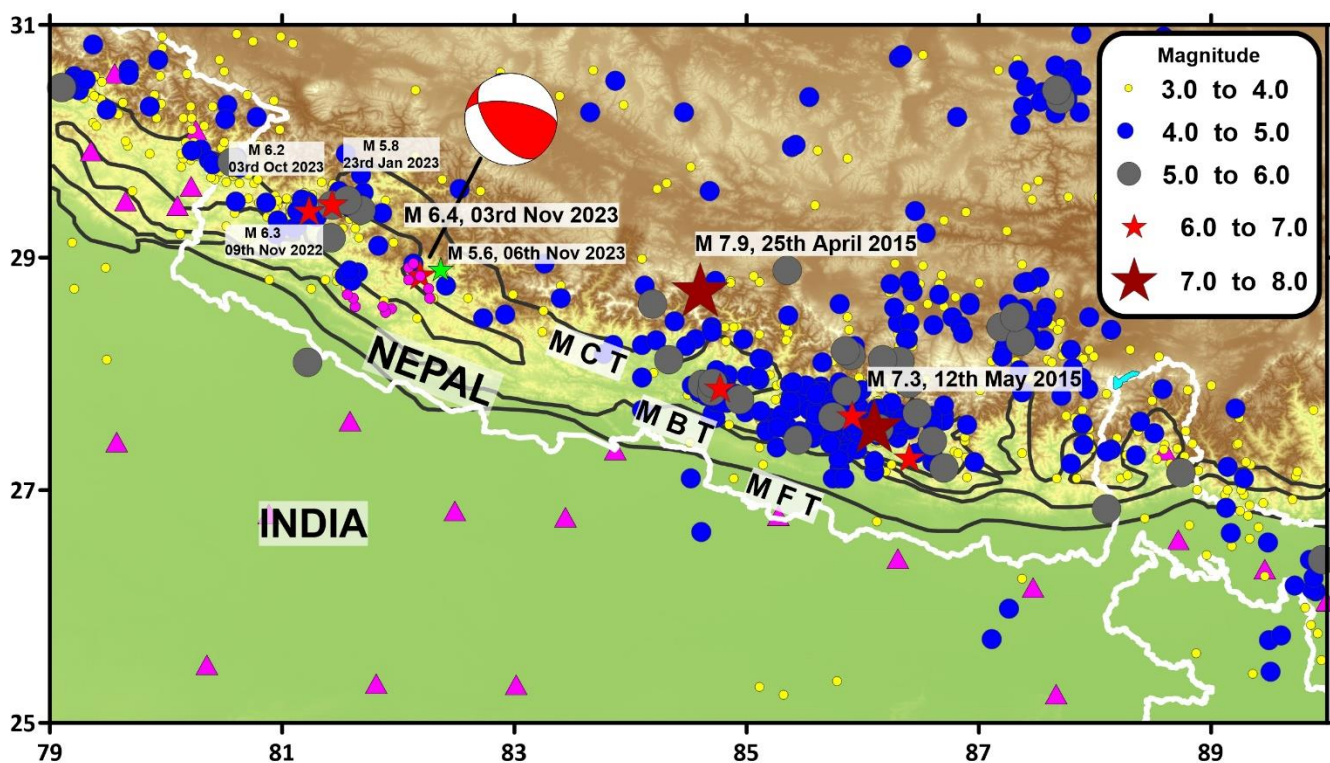
**(Report No.: NCS-NSN-EPG-08)**



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An earthquake of magnitude M 5.6 occurred at 16:16:40 IST, located in the Jajarkot, Karnali province, Western Nepal, whose epicenter at 28.89°N and 82.36°E at a shallow depth of 10 km. The epicenter is 228 Km ESE of Pithoragarh; 337 Km SE of Joshimath; 270 Km NNE of Lucknow and 3101 Km WNW of Kathmandu. The epicenter is NE of the mainshocks of M 6.4 occurred on 3<sup>rd</sup> Nov 2023. The earthquake (M 5.6) of 6th November 2023 is found to be the greatest aftershock of the 3<sup>rd</sup> November 2023 mainshock (M 6.4) that occurred within 72 hours in the rupture zone of the mainshock at about 20km away to the northeast of the mainshock".

The event was well recorded by more than 60 broadband seismic stations installed by National Centre for Seismology. The analysis of seismic data shows that the events are occurred on Main Central Thrust (MCT) that provides a very apt location for triggering the mainshock due to appreciable structural heterogeneity in and around mainshock. The preliminary fault plane solution derived from moment tensor inversion suggests a thrust fault. Felt reports of maximum Intensity VI (MMI scale) in epicentral region and minimum intensity of II (MMI Scale) have been reported from a distance of around 5 km and 500 km from the epicenter respectively (Fig. 2).



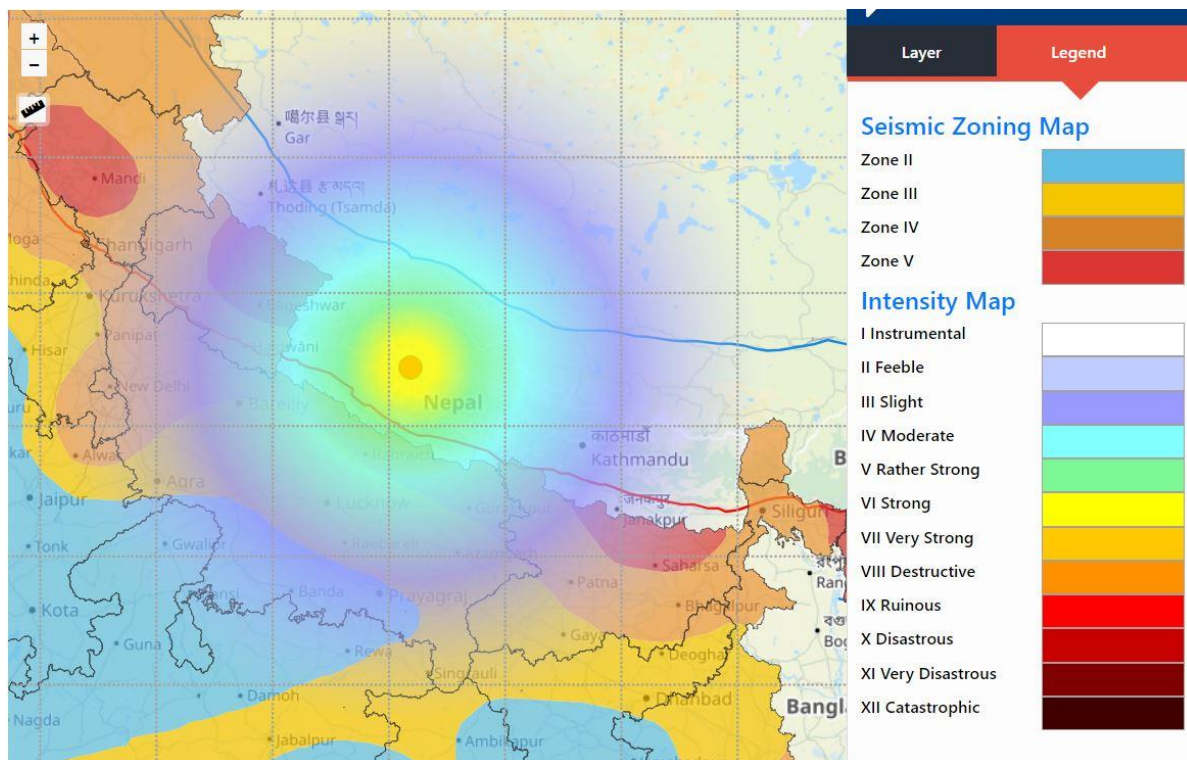
**Figure 1:** The present earthquake (M 5.6) of 06<sup>th</sup> November 2023 (Star in Green colour) and seismicity ( $M > 5.0$ ) in the epicentral and surrounding region along with recent past earthquake near epicentral region, (source: [www.seismo.gov.in](http://www.seismo.gov.in); NCS-MoES). The magenta circle is the aftershock of the M 6.4 earthquake occurred on 3<sup>rd</sup> Nov 2023. The triangles are the seismic stations. The dark red stars are the 2015 Gorkha Nepal earthquake. The geological faults and lineament were obtained from Bhukosh, GSI.

The recorded earthquakes as per EQ Catalogue of NCS reveals that the region is associated with moderate to large earthquakes with varying magnitude (**Fig.1**) in the last 13 years.

In addition to the above, it is noteworthy that prior to the recent earthquake, M 6.4 event occurred on 3<sup>rd</sup> Nov 2023 and today event is aftershock of 3<sup>rd</sup> Nov 2023 event. There were three prominently events recorded on 09<sup>th</sup> November 2022 of M 6.3, 23<sup>th</sup> January 2023 of M 5.8 and 3<sup>rd</sup> October 2023 of M 6.2 occurred Northwest of the recent event. which were also felt with slight to moderate intensity in Delhi-NCR and others neighboring states. The occurrence of earthquakes in the region is attributed mainly to the tectonic settings of the Himalaya comprising Himalayan Frontal Thrust (HFT), Main Boundary Thrust (MBT) and Main Central Thrust (MCT) besides several local faults and geological demarcated lineaments. The preliminary fault plane solution derived from moment tensor inversion suggests a thrust fault.

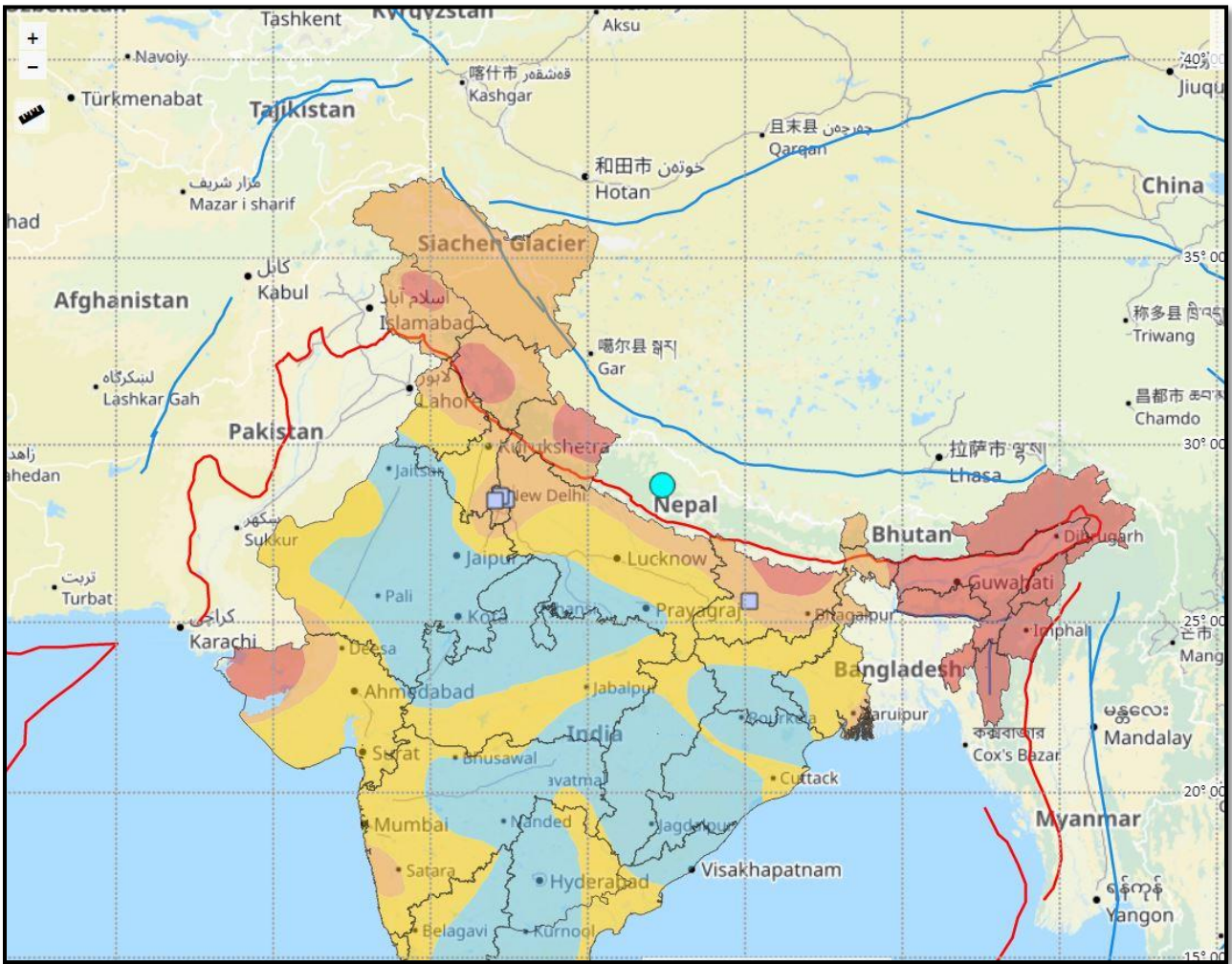
Felt reports of maximum Intensity of VI (MMI scale) in the epicentral region and minimum intensity of II (MMI Scale) have been reported from a distance of around 500 km from the epicentre (**Fig. 2**).

The earthquake is widely felt in Delhi-NCR region and neighboring states (**Fig. 3**). Within one hour more than ~8 felt reports due to this earthquake, have been received from Delhi-NCR, Bihar, Haryana through NCS website and Mobile App having intensity ranging from I to III on Modified Mercalli Intensity (MMI) Scale (**Fig. 4**).

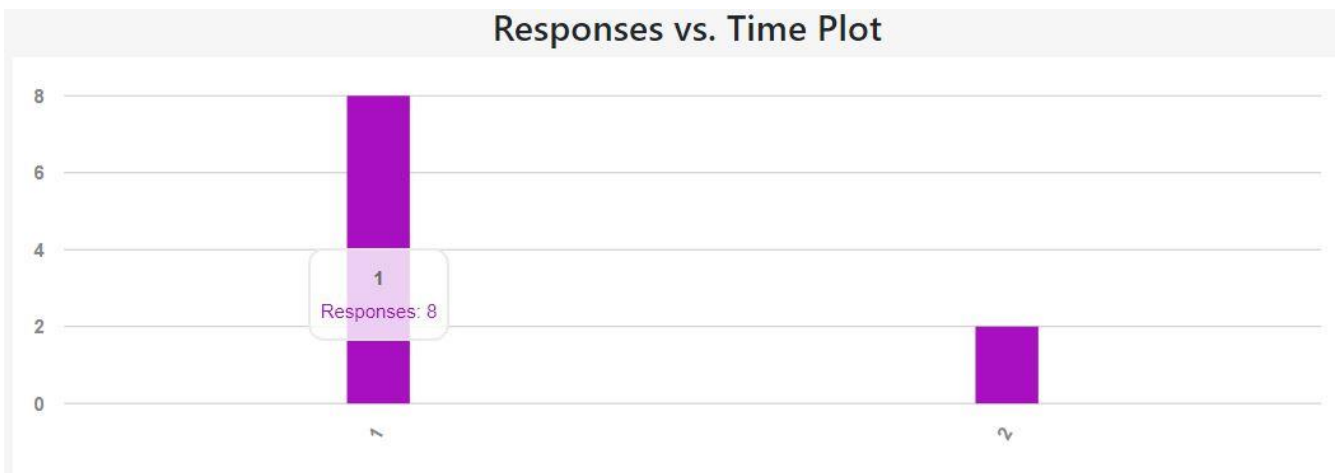


**Figure 2:** Estimated earthquake Intensity Map of the earthquake of M:5.6 of 06<sup>th</sup> November 2023.





**Figure 3:** Felt responses (squares) of the 06<sup>th</sup> November 2023 earthquake M:5.6 (circle) from different users reported on [www.seismo.gov.in](http://www.seismo.gov.in) and BhooKamp mobile-app. 8 responses were received within one hours from the time of occurrence of earthquake.



**Figure 4:** Number of felt responses with respect to time lapses