PSCE NEWSLETTER

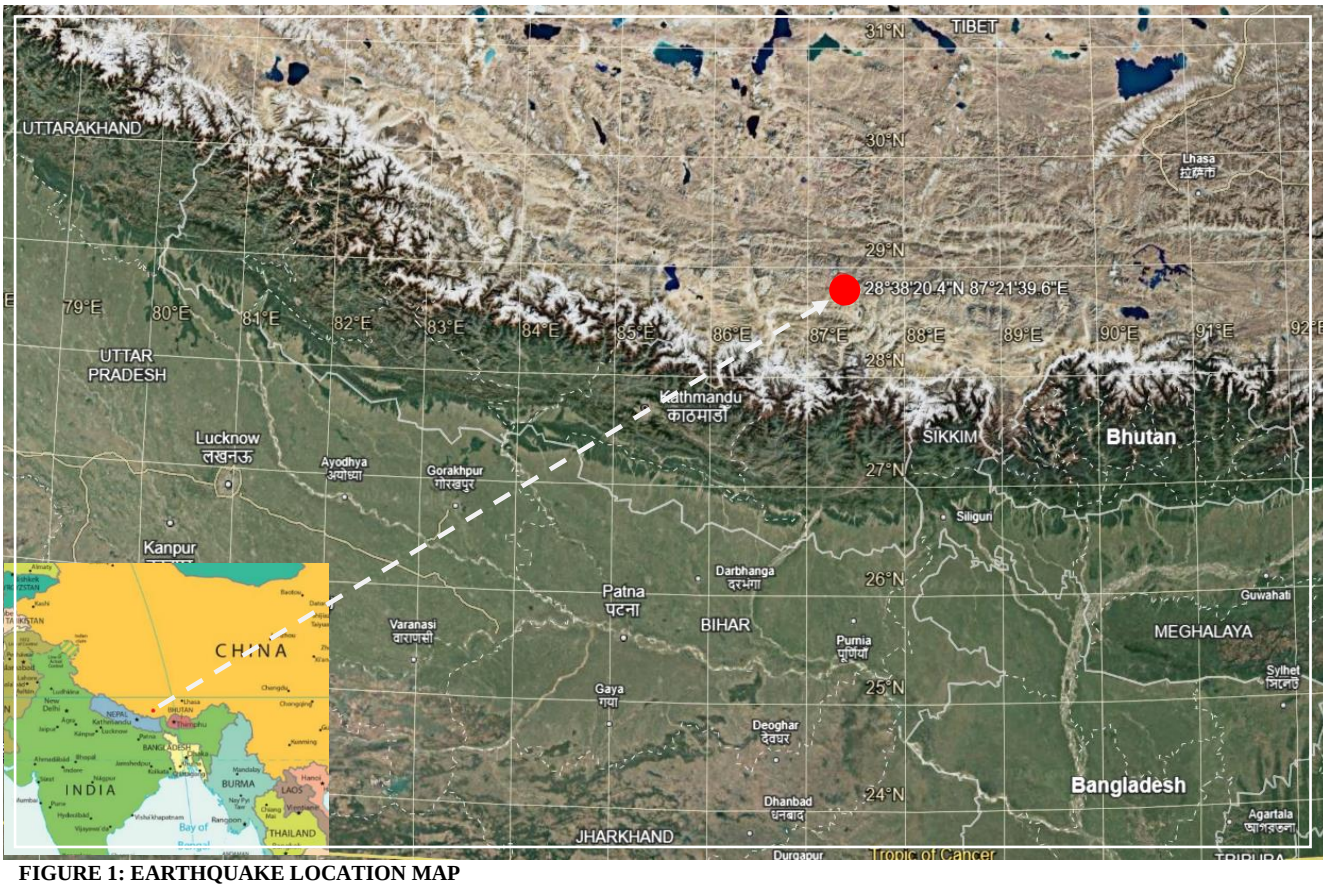

FIGURE 1: EARTHQUAKE LOCATION MAP

Exclusive Seismic Event Issue

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Powerful Earthquake Strikes Tibet

Rizwan Mirza, CE
Editor-in-chief

Hell broke loose, as a powerful earthquake violently shook a remote southern Tibetan Plateau. Tremors were felt in Nepal, Bhutan and many parts of Northern India.

Magnitude, Energy and Depth

The magnitude of the earthquake was M7.1.

The energy released was 8.9 x 1010 joules (24.8 megawatt hours, equivalent to 21.3 tons of TNT) |

The epicentre was 10 km deep.

Normal faulting events of the size of the January 7, 2025 earthquake are typically about 45 km by 20 km (length x width).

Waveform

Following is an image of the waveform:

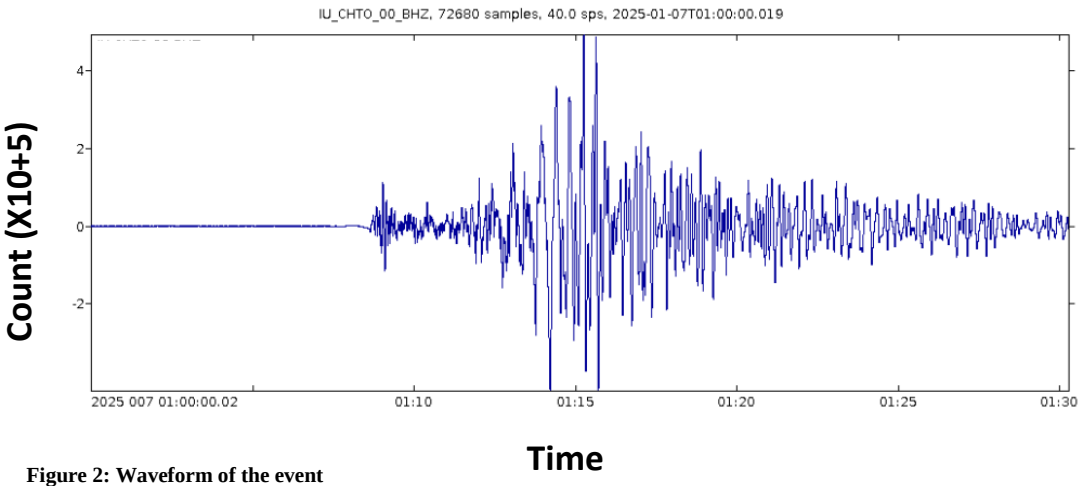

Figure 2: Waveform of the event

Time and Location

The event took place on 7th January, 2025, at 09:05 CST (UTC+8). The hypocentre of the quake was Shigatse (28.639°N 87.361°E), one of the holiest cities of Tibet.

Seismology

This event was associated with a normal fault oriented roughly perpendicular to the plate boundary north of the Himalayan Mountains within the Eurasian plate.

The region is located near the boundary of Indian and Eurasian plates and has a history of large earthquakes. In the past century alone, there have been ten earthquakes of magnitude 6 and greater within 250 km of the current event.

As the following diagram shows, the region is not new to earthquakes:

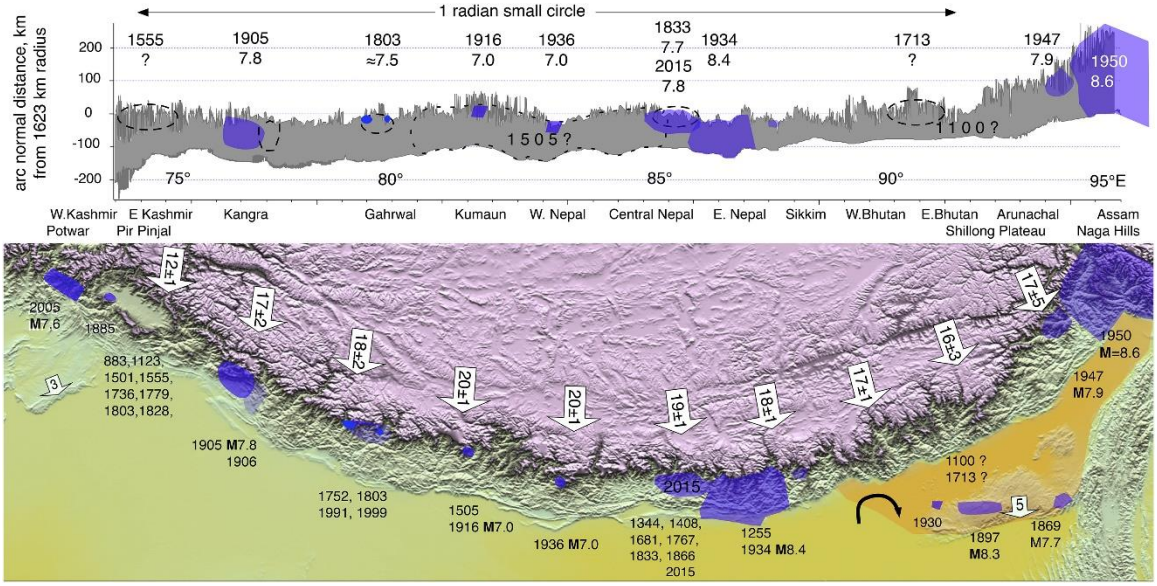

Figure 3: Himalayan seismology, Figure courtesy Dr Bilham, Roger, et. al., 2017

The region near the India and Eurasia plate boundary has a history of large earthquakes. In the past century, there have been 10 earthquakes of magnitude 6 and greater within 250 km of the January 7, 2025, earthquake.

This includes the 2015 M7.3 Nepal earthquake, located about 160 km to the southwest and the 1934 M8.0 earthquake, located about 160 to the south-southwest. The 2015 M7.3 Nepal earthquake was an aftershock of the April 25, 2015 M7.8 Nepal earthquake. This sequence of 2015 events resulted in 8,669 fatalities and widespread damage.

Rescue Operations

Around 1,500 rescue workers arrived on the site. Military has also been mobilised. Helicopters and drones are being used in the mammoth exercise. Rescue operations have faced the challenges of breakdown of communications and power outages. Some twenty-two thousand relief items including tents, coats, quilts and beds have been sent to the area.

figure 4: Picture courtesy Cable News Network

Effects and Damage

At least 126 people died and more than 100 were injured. About 3,000 houses have been damaged. An estimate 46,000 people have been displaced.

Around 4,000 people were exposed to severe shaking, 15,000 to very strong shaking and 57,000 people to strong shaking.

Figure 5: Picture courtesy Reuters

Figure 6: Picture courtesy Reuters

Figure 7: Picture courtesy Xinhua News Agency

Figure 8: : Picture courtesy Xinhua News Agency

Figure 9: Picture courtesy Reuters

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