



## Assam Earthquake

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### Why in News

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Recently, a powerful earthquake **measuring 6.4 on the Richter Scale** jolted Assam and other parts of Northeast.

According to the **National Centre for Seismology (NCS)** report, the tremors have been attributed to **Kopili Fault zone closer to Himalayan Frontal Thrust (HFT)**.

NCS is the **nodal agency of the Government of India for monitoring earthquake activity in the country**. It comes under the **Ministry of Earth Sciences**.

### Key Points

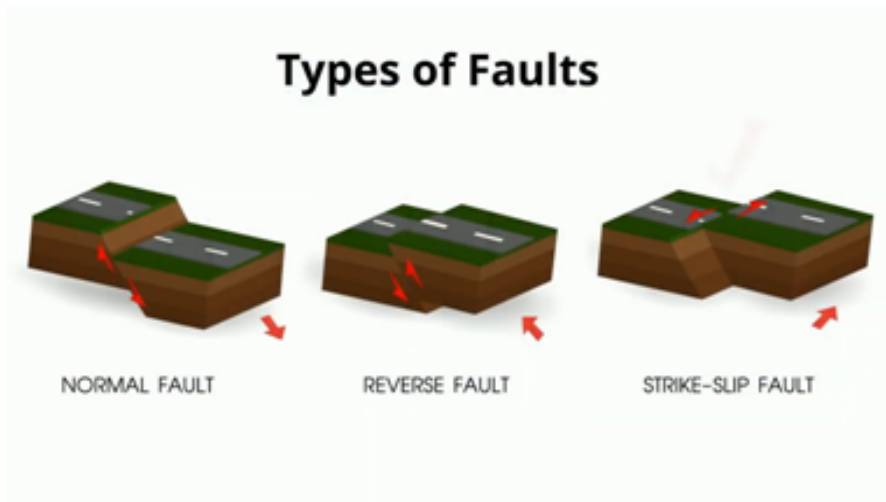
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- **Himalayan Frontal Thrust (HFT):**

HFT, also known as the **Main Frontal Thrust (MFT)**, is a geological fault along the boundary of the **Indian and Eurasian tectonic plates**.
- **Kopili Fault Zone:**
  - The Kopili fault zone is a 300 km long and 50 km wide lineament (linear feature) extending from the **western part of Manipur up to the tri-junction of Bhutan, Arunachal Pradesh and Assam**.
  - The area is seismically very active falling in the highest **Seismic Hazard zone V** associated with collisional tectonics where **Indian plate subducts beneath the Eurasian Plate**.
    - Subduction is a geological process in which one crustal plate is forced below the edge of another.
    - Squeezed between the subduction and collision zones of the Himalayan belt and Sumatran belt, the North East is highly prone to earthquake occurrences.

- **Fault:**

- A fault is a fracture along which the blocks of crust on either side have moved relative to one another parallel to the fracture.
- When an earthquake occurs, the rock on one side of the fault slips with respect to the other.
- The fault surface can be **vertical, horizontal, or at some angle to the surface of the earth.**



**Tectonic Plates:**

- A **tectonic plate** (also called lithospheric plate) is a massive, irregularly-shaped slab of solid rock, generally composed of both continental and oceanic lithosphere.
- A tectonic plate may be a continental plate or an oceanic plate, depending on which of the two occupies the larger portion of the plate.
- The Pacific plate is largely an oceanic plate whereas the Eurasian plate is a continental plate.

**Earthquake**

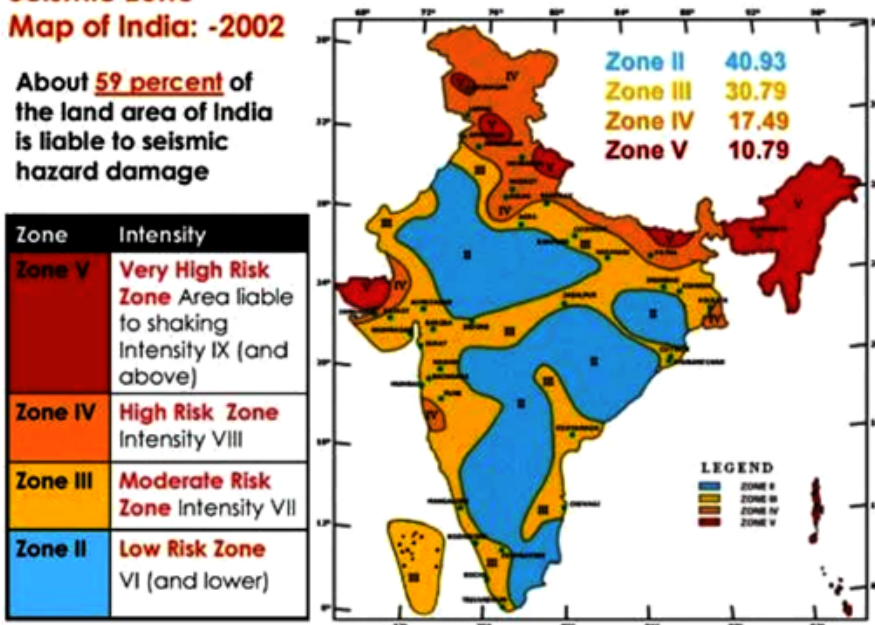
- An earthquake in simple words is the shaking of the earth. It is a natural event. It is caused due to release of energy, which generates waves that travel in all directions.
- The vibrations called **seismic waves** are generated from earthquakes that travel through the Earth and are recorded on instruments called seismographs.
- The location below the earth's surface where the earthquake starts is called the **hypocenter**, and the location directly above it on the surface of the earth is called the **epicenter**.
- **Types of Earthquake:** Fault Zones, Tectonic Earthquakes, Volcanic Earthquake, Human Induced Earthquakes.

**Seismic Hazard Map of India**

- India is one of the highly earthquake affected countries because of the presence of technically active young fold mountains - Himalaya.
- India has been divided into **four seismic zones (II, III, IV, and V)** based on scientific inputs relating to seismicity, earthquakes occurred in the past and tectonic setup of the region.
  - Previously, earthquake zones were divided into five zones with respect to the severity of the earthquakes but the **Bureau of Indian Standards (BIS)** grouped the country into four seismic zones by unifying the first two zones.
  - BIS is the official agency for publishing the seismic hazard maps and codes.

### Seismic Zone Map of India: -2002

About **59 percent** of the land area of India is liable to seismic hazard damage



- **Seismic Zone II:**  
Area with minor damage earthquakes corresponding to intensities V to VI of MM scale (MM-Modified Mercalli Intensity scale).
- **Seismic Zone III:**  
Moderate damage corresponding to intensity VII of MM scale.
- **Seismic Zone IV:**  
Major damage corresponding to intensity VII and higher of MM scale.
- **Seismic Zone V:**
  - Area determined by pro seismically of certain major fault systems and is seismically the most active region.
  - Earthquake zone V is the most vulnerable to earthquakes, where historically some of the country's most powerful shocks have occurred.
  - Earthquakes with magnitudes in excess of 7.0 have occurred in these areas, and have had intensities higher than IX.

**Source: IE**