



## Earthquake in Chamoli

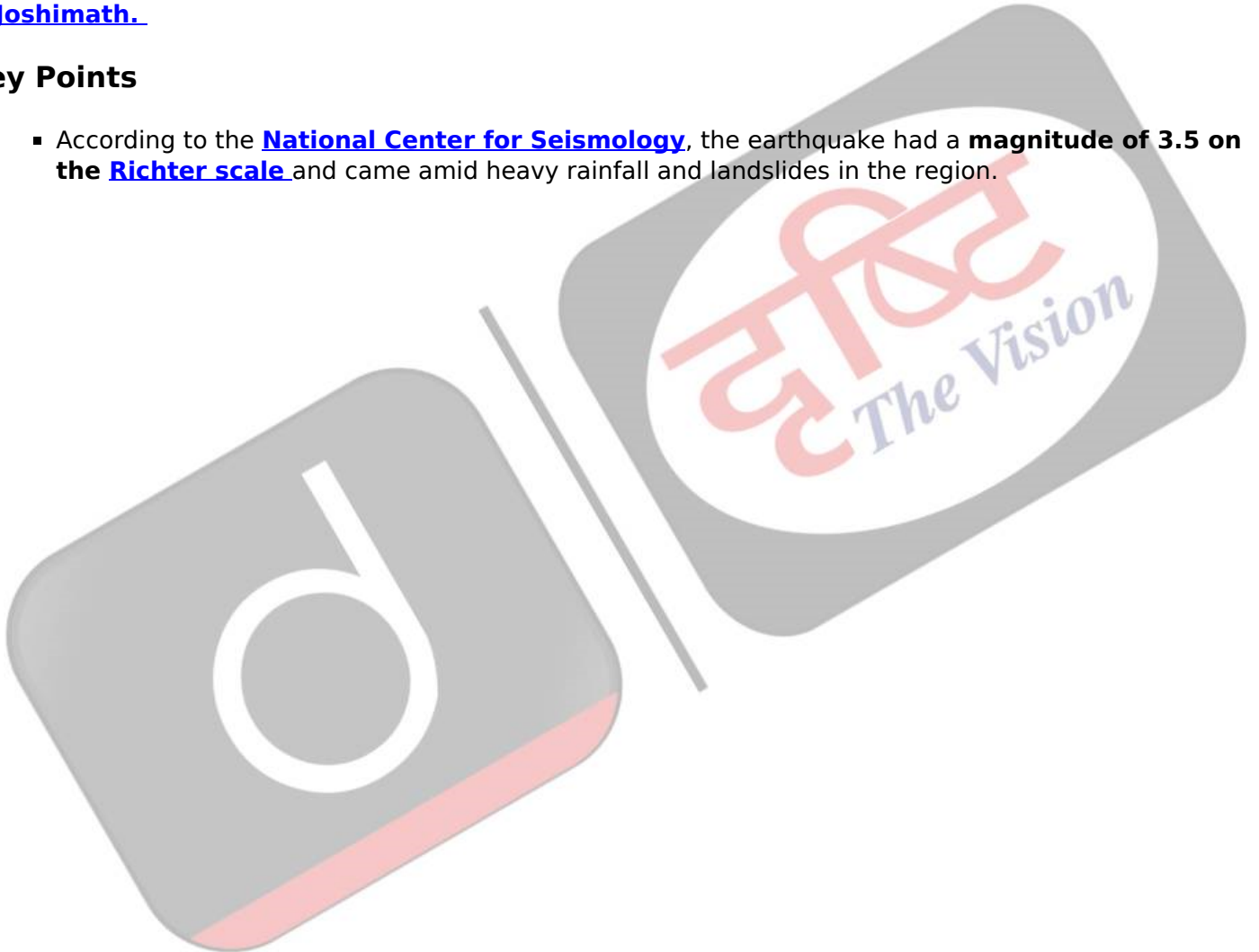
### Why in News?

Recently, an [Earthquake](#) hit the **Chamoli region of Uttarakhand** with its [epicentre](#) near the town of [Joshimath](#).

### Key Points

- According to the [National Center for Seismology](#), the earthquake had a **magnitude of 3.5 on the Richter scale** and came amid heavy rainfall and landslides in the region.

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# EARTHQUAKE



## ABOUT

- Shaking of the earth; caused due to release of energy, generating **seismic waves in all directions**

## HYPOCENTER

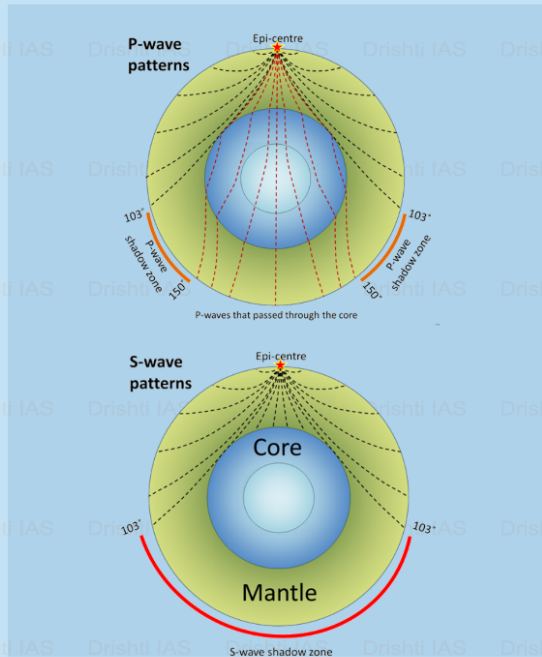
- Location where the earthquake starts (below earth's surface)

## EPICENTER

- Location right above the Hypocenter (on the earth's surface)

## EARTHQUAKE WAVES

- Body Waves:** Move in all directions travelling through the body of the earth
  - P Waves:** Move faster, First to arrive at surface, Similar to sound waves, Travel through gaseous, liquid and solid materials
  - S Waves:** Arrive at surface with some time lag, Travel only through solid materials
- Surface Waves:** Last to report on seismographs, More destructive, Cause displacement of rocks
  - Love Waves:** Same motion as S-waves (horizontal) without vertical displacement, Sideways motion perpendicular to the direction of propagation, Faster than Rayleigh waves
  - Rayleigh Waves:** Cause the ground to shake in an elliptical pattern, Spread out the most of all seismic waves, Move vertically and horizontally in a vertical plane



## CAUSES OF EARTHQUAKES

- Release of energy along a **Fault/Fault Zones** (break in the crustal rocks)
- Movement of **tectonic plates (most common)**
- Volcanic eruption** (stress changes in rock-injection/withdrawal of magma)
- Human activities** (mining, explosion of chemical/nuclear devices etc.)

## EARTHQUAKE IN INDIA

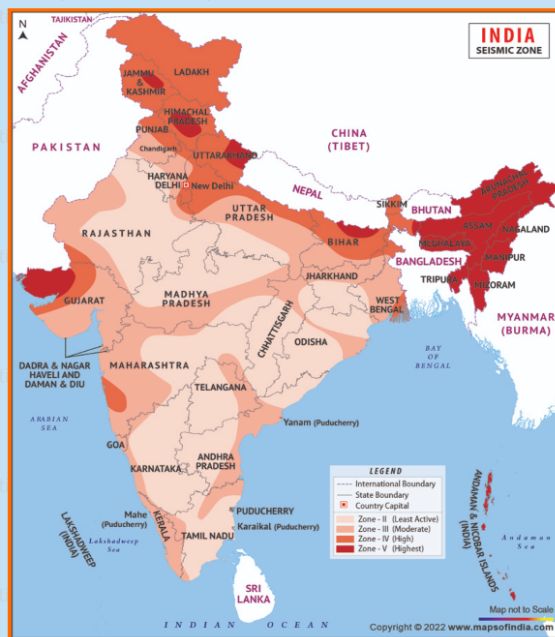
- India is one of the highly earthquake affected countries due to the presence of technically active mountains - the Himalayas.
- India has been divided into **4 seismic zones (II, III, IV, and V)**

## MEASURING EARTHQUAKE

- Seismometers** - Measures seismic waves
- Richter Scale** - Measures magnitude (energy released; range: 0-10)
- Mercalli** - Measures intensity (visible damage; range: 1-12)

## DISTRIBUTION

- Circum-Pacific Belt** - 81% of earthquakes
- Alpide Earthquake Belt** - 17% of the largest earthquakes
- Mid-Atlantic Ridge** - Mostly submerged underwater



## Joshimath

- Joshimath is a hilly town located on the [Rishikesh-Badrinath National Highway \(NH-7\)](#) in **Chamoli district of Uttarakhand**.
- The city serves as a **tourist town as it acts as an overnight rest stop for people visiting [Badrinath](#), [Auli](#), [Valley of Flowers](#), and [Hemkund Sahib](#)**, among other important **religious and tourist locations** in the state.
- Joshimath is also of great strategic importance to **the Indian armed forces and is home to one of the Army's** most important cantonments.
- The town (fall in [high-risk seismic Zone-V](#)) is traversed by running streams with a high **gradient from Vishnuprayag, a confluence of the [Dhauliganga](#) and the [Alaknanda rivers](#)**.

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