

## 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 <u>National Center for Seismology</u>, the earthquake had a magnitude of 3.5 on the <u>Richter scale</u> 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

#### 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 rockinjection/withdrawal of magma)
- Human activities (mining, explosion of as chemical/nuclear devices etc.)

#### MEASURING EARTHQUAKE

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

#### DISTRIBUTION

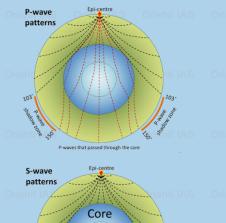
- Circum-Pacific Belt 81% of earthquakes
- Alpide Earthquake Belt 17% of the largest earthquakes
- Mid-Atlantic Ridge Mostly submerged
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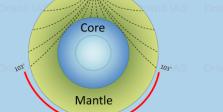


#### HYPOCENTER

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

- EPICENTER HILLAS Dright LAS Dright LAS
  - Location right above the Hypocenter (on the earth's surface)





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#### EARTHQUAKE IN INDIA

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



## Joshimath

- Joshimath is a hilly town located on the <u>Rishikesh-Badrinath National Highway (NH-7)</u> in Chamoli district of Uttarakhand.
- The city serves as a tourist town as it acts as an overnight rest stop for people visiting <u>Badrinath</u>, Auli, <u>Valley of Flowers</u>, and <u>Hemkund Sahib</u>, 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 <u>high-risk seismic Zone-V</u>) is traversed by running streams with a high gradient from Vishnuprayag, a confluence of the <u>Dhauliganga</u> and the <u>Alaknanda rivers</u>.

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