



## 3.7 Magnitude of Earthquake in Rajasthan

### Why in News?

According to the [National Center for Seismology](#), an [Earthquake](#) of magnitude 3.7 shook Pali, Rajasthan, recently.

### Key Points

- 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.
- **Types of Earthquakes:** Fault Zones, Tectonic Earthquakes, Volcanic Earthquake, Human Induced Earthquakes.
- **Earthquake in 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 that occurred in the past and tectonic setup of the region.

# EARTHQUAKE



## ABOUT

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

## HYPOCENTER

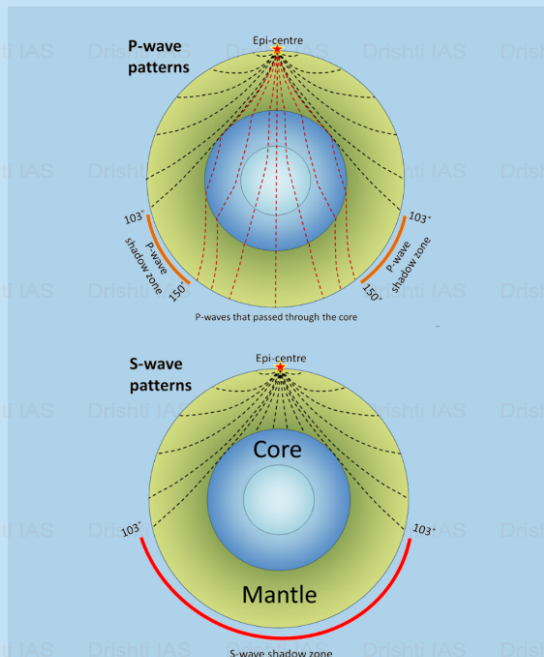
- Location where the earthquake starts (below earth's surface)

## 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

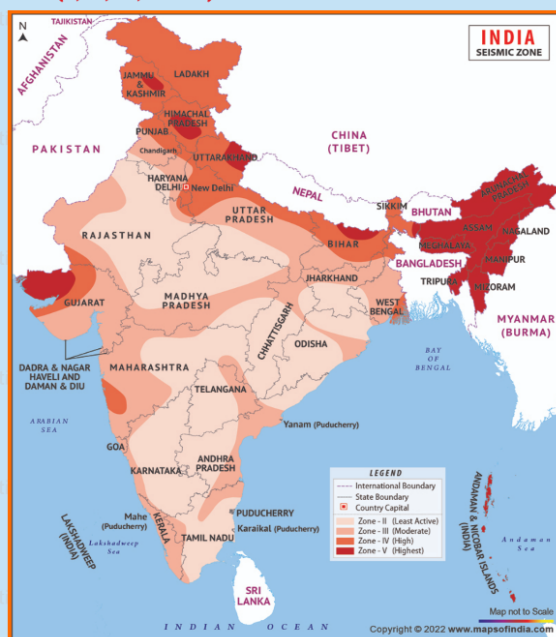
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## MEASURING EARTHQUAKE

- 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



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