



**SNS COLLEGE OF TECHNOLOGY**  
**(AN AUTONOMOUS INSTITUTION)**  
**COIMBATORE-35**

**II YEAR / III SEMESTER**  
**19CET201-ENGINEERING GEOLOGY**

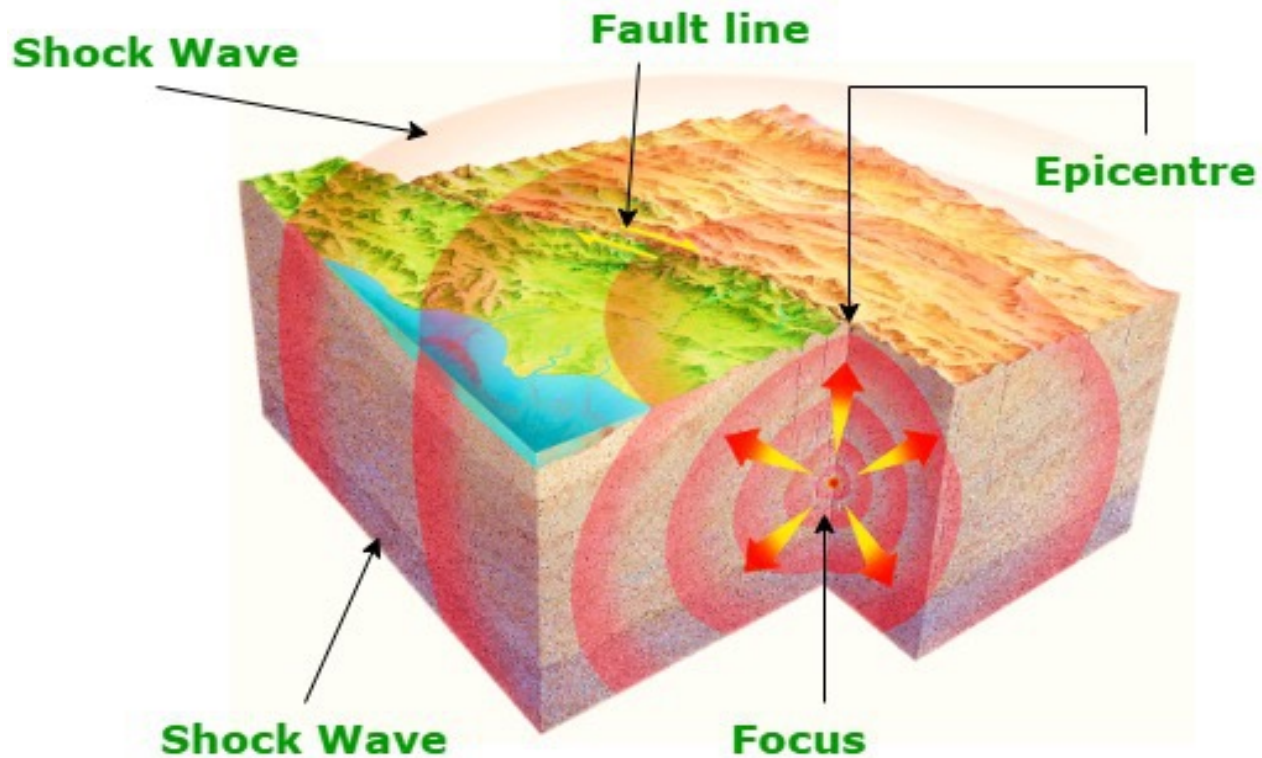


# EARTHQUAKE AND ITS CAUSES

- **Earthquake**, any sudden shaking of the ground caused by the passage of seismic waves through Earth's rocks.
- Seismic waves are produced when some form of energy stored in Earth's crust is suddenly released, usually when masses of rock straining against one another suddenly fracture and “slip.”
- Earthquakes occur most often along geologic faults, narrow zones where rock masses move in relation to one another. The major fault lines of the world are located at the fringes of the huge tectonic plates that make up Earth's crust.



# EARTHQUAKE AND ITS CAUSES





# CAUSES OF EARTHQUAKES

- ❖ **Volcanic Eruptions**
- ❖ **Tectonic Movements**
- ❖ **Geological Faults**
- ❖ **Man-Made**



# VOLCANIC ERUPTION

- ❑ The main cause of the earthquake is **volcanic eruptions**. Such type of earthquakes occurs in areas, with frequent volcanic activities. When boiling lava tries to break through the surface of the earth, with the increased pressure of gases, certain movements caused in the earth's crust.
- ❑ Movement of lava beneath the surface of the earth can also cause certain disruptions. This sends shockwaves through the earth, causing damage. These earthquakes are mild. Their range is also limited. However, there have been certain exceptions, with volcanic earthquakes bring havoc and death to thousands of people.



# VOLCANIC ERUPTION



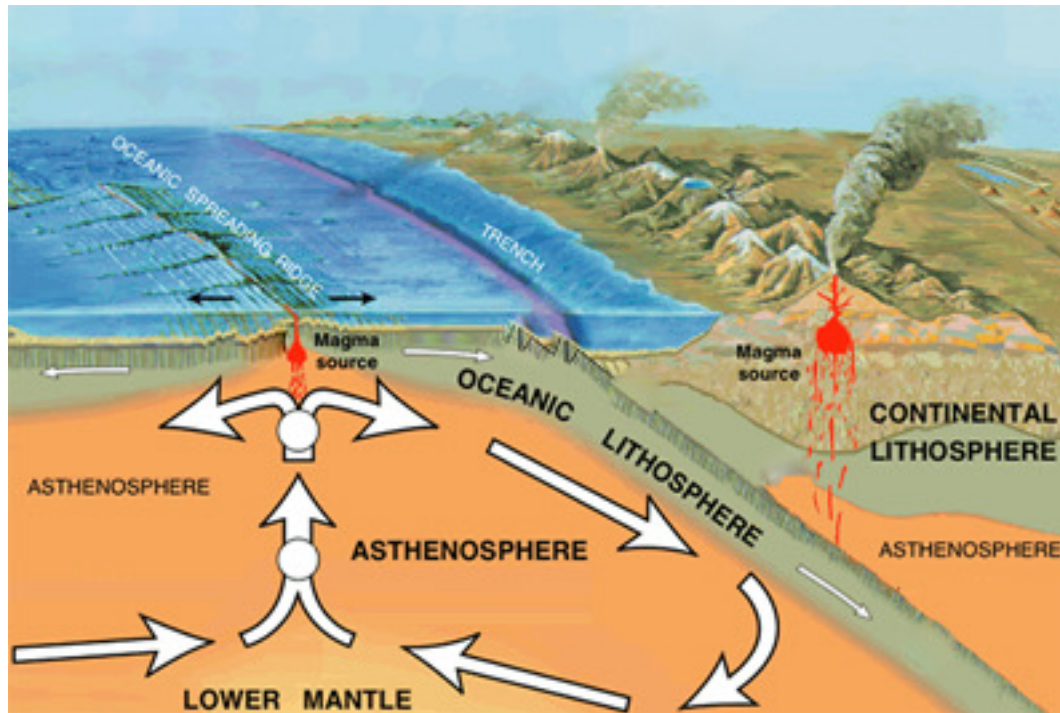


# Tectonic movements

- ❖ The surface of the earth consists of some plates, comprising of the upper mantle. These plates are always moving, thus affecting the earth's crust. These movements categorized into three types: constructive, destructive, and conservative. Constructive is when two plates move away from each other, they correspond to mild earthquakes.
- ❖ When two plates move towards each other and collide, this is known as destructive plate boundaries. This is very destructive. Conservative corresponds to passing by of plates of crust. Earthquakes of this type have varying intensities.



# Tectonic movements







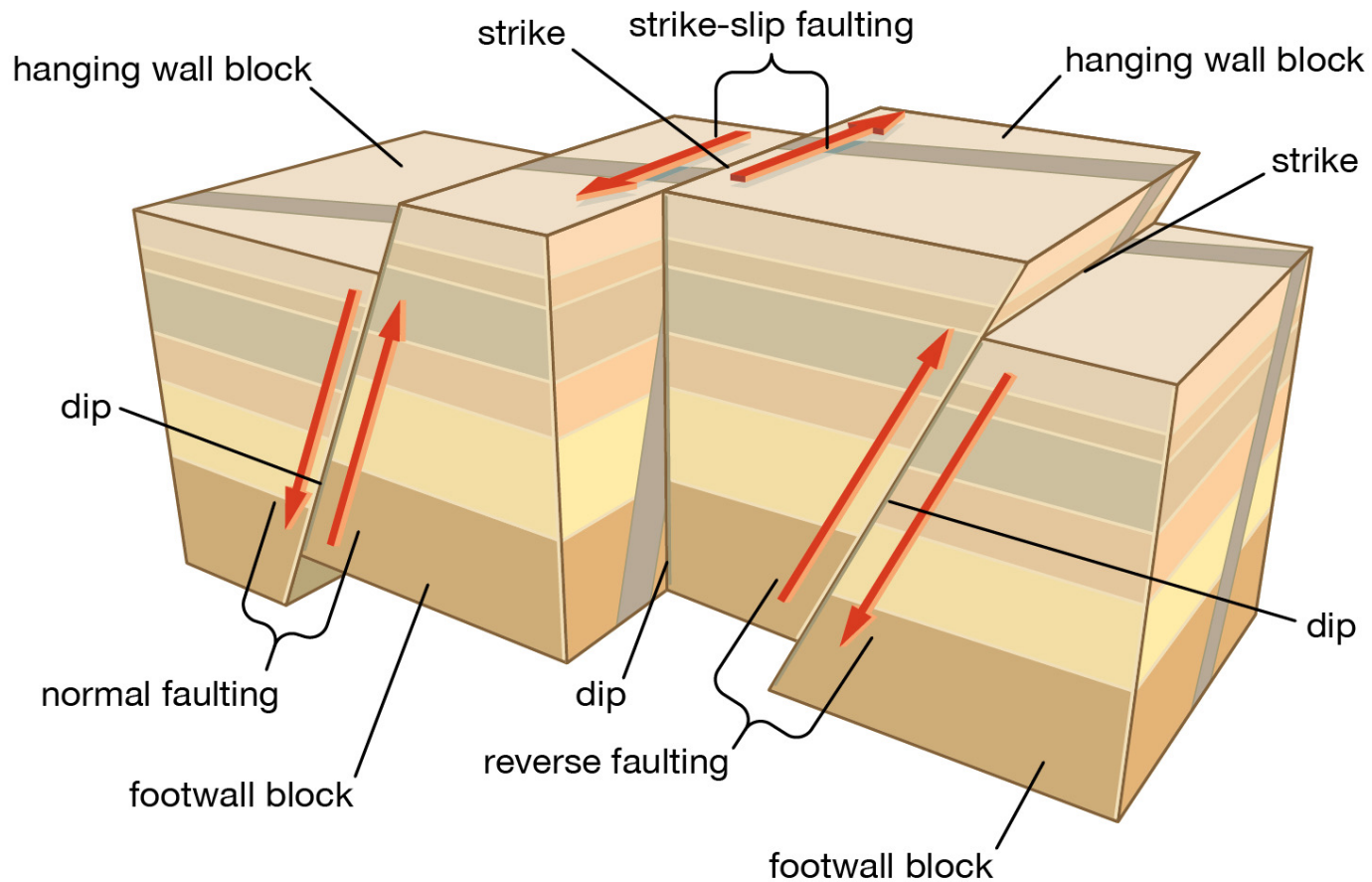
# GEOLOGICAL FAULTS

- ❖ A geological fault is known as the displacement of plates of their original plane. The plane can be horizontal or vertical.
- ❖ These planes are not formed suddenly but slowly develop over a long period. The movement of rocks along these planes brings about tectonic earthquakes.
- ❖ These faults occur due to the impact of geological forces. The displacement of plates creates the fracturing of rocks, which releases a lot of energy. This type of earthquake can be disastrous.





# GEOLOGICAL FAULTS



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## MAN-MADE

- The interference of man with nature can also become a cause of the earthquake.
- The disturbance of crustal balance due to heavy clubbing of water in dams can cause earthquakes.
- Nuclear bombing** can send specific types of shockwaves throughout the surface of the earth, which can disturb the natural alignment of tectonic plates. Mining can also cause disturbance due to the extensive removal of rocks from different areas.



# MAN-MADE





# MINOR CAUSES

- ❑ Some minor causes such as landslides, avalanches, the collapse of heavy rocks, etc. can also cause minor shockwaves.
- ❑ The gases beneath the surface of earth contract and expand, giving rise to movements in plates beneath the crust.
- ❑ The plutonic earthquake occurs because of adjustments in rock beds in the interior of the earth's crust. All these factors correspond to minor earthquakes, but sometimes these can also vary to moderate earthquakes.



