Ashur university collage

Dept. of Biology

First-year

General geology
Lec. 2

Assist. Lecturer. Al-Hassan Talib

An earthquake is a trembling or shaking of the ground caused by the sudden release of energy stored in the rocks beneath Earth's surface.

Like a bending stick, rock can deform only so far before it breaks. When a rock breaks, waves of energy are released and sent out through the Earth. These are seismic waves, the waves of energy produced by an earthquake.

Seismic waves are caused by the sudden movement of materials within the Earth.

The point within the Earth where seismic waves first originate is called the focus (or hypocenter) of the earthquake.

Two types of seismic waves are generated during earthquakes:

1- Body waves are seismic waves that travel through the Earth's interior.
2- Surface waves are seismic waves that travel on Earth's surface away from the epicenter.

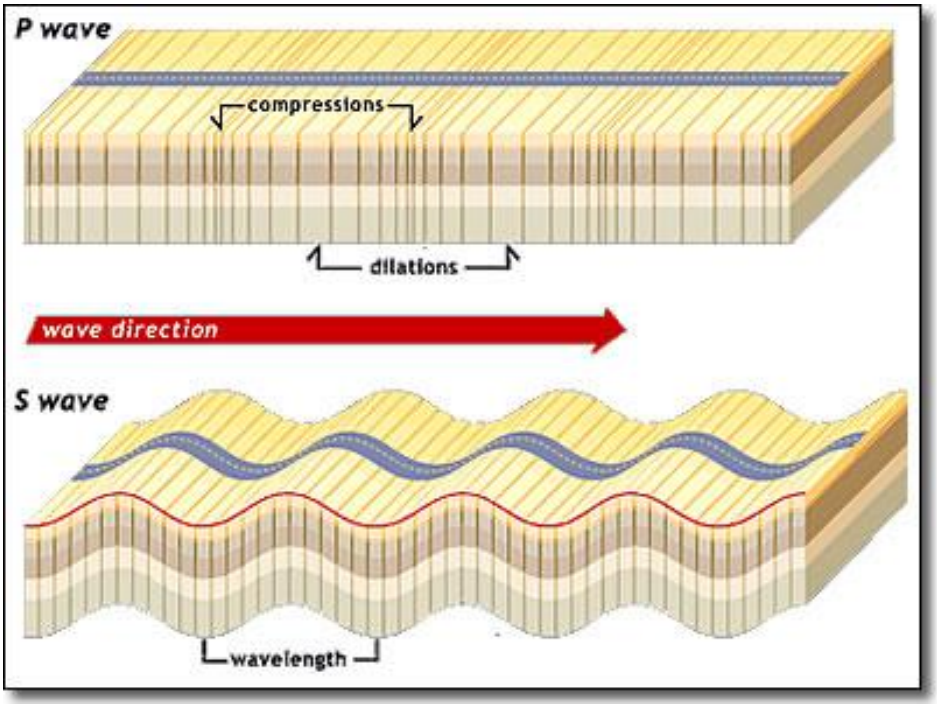
There are two types of body waves

1- A P wave is a compressional (or longitudinal) wave.

P wave is the first (or primary) wave to arrive at a recording station following an earthquake.

2- S wave (secondary) and is a slower, transverse wave

Both **P** waves and **S** waves pass easily through solid rock. A P wave can also pass through a fluid (gas or liquid), but an S wave cannot.



The two most important types of surface waves are **Love waves** and **Rayleigh waves.**

1- Love waves are most like S waves The ground moves side to side in a horizontal plane.
2- Rayleigh waves cause the ground to move in a rolling circular motion.

Volcanoes are geological formations that are formed by the accumulation of molten rock, ash, and gas that escape from the Earth's interior. They can be found in various parts of the world, typically in areas where tectonic plates meet, such as around the Pacific Rim, also known as the "Ring of Fire."

Volcanoes can be classified into two broad categories: active and dormant. Active volcanoes are those that have erupted recently or are currently erupting, while dormant volcanoes have not erupted for a long time but still have the potential to do so in the future.

Volcanic ejecta: refers to the various materials that are expelled during a volcanic eruption.

1- Volcanic gases: Volcanoes release a variety of gases during an eruption, including water vapor, carbon dioxide, sulfur dioxide, and hydrogen chloride. These gases can be harmful to human health and can also contribute to climate change.
2- Pyroclastic materials: Pyroclastic materials are a mixture of hot gas and volcanic ash that are expelled from a volcano during an eruption. These materials can be classified based on their size, with larger fragments known as bombs and smaller fragments known as ash.
3- Lava flows: Lava is molten rock that flows out of a volcano during an eruption.
4- Volcanic bombs: Volcanic bombs are large fragments of molten rock that are ejected from a volcano during an eruption.

