

Earth Science

With

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Earth Quakes



Earth Quakes

► Definition:

- A shaking of Earth's crust caused by a release of energy.
- The energy released is from *stress* that builds between tectonic plates along a: **Fault**
- A fault is a break in the lithosphere along which movement occurs.

Earthquakes

▶ Important Terms:

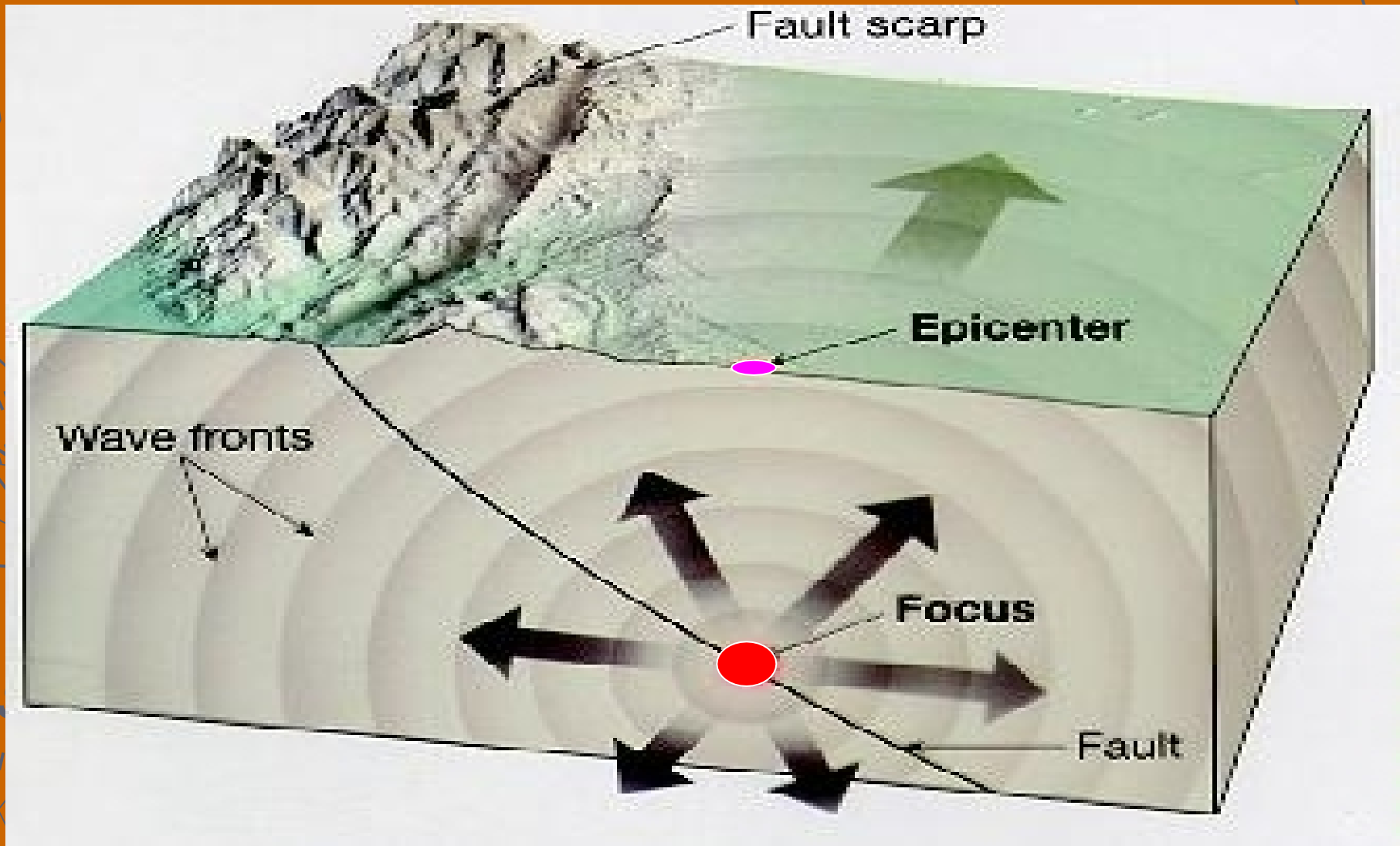
FOCUS

- The point at which the first movement occurs during an earthquake.

Epīcenter

- The point on Earth's surface directly above the focus.

Focus / Epicenter



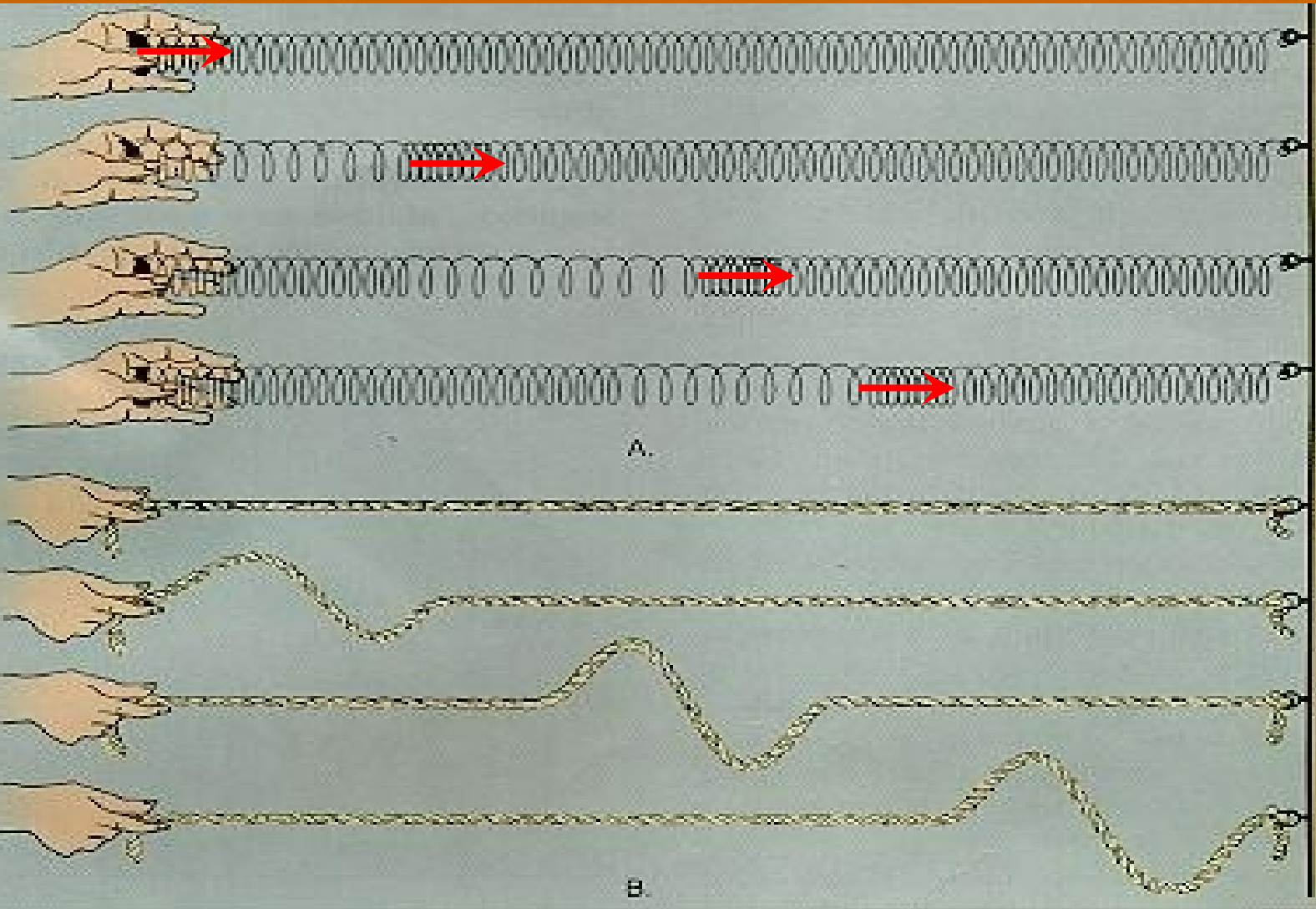
Earthquake Waves

▶ Three Types of Waves are Generated:

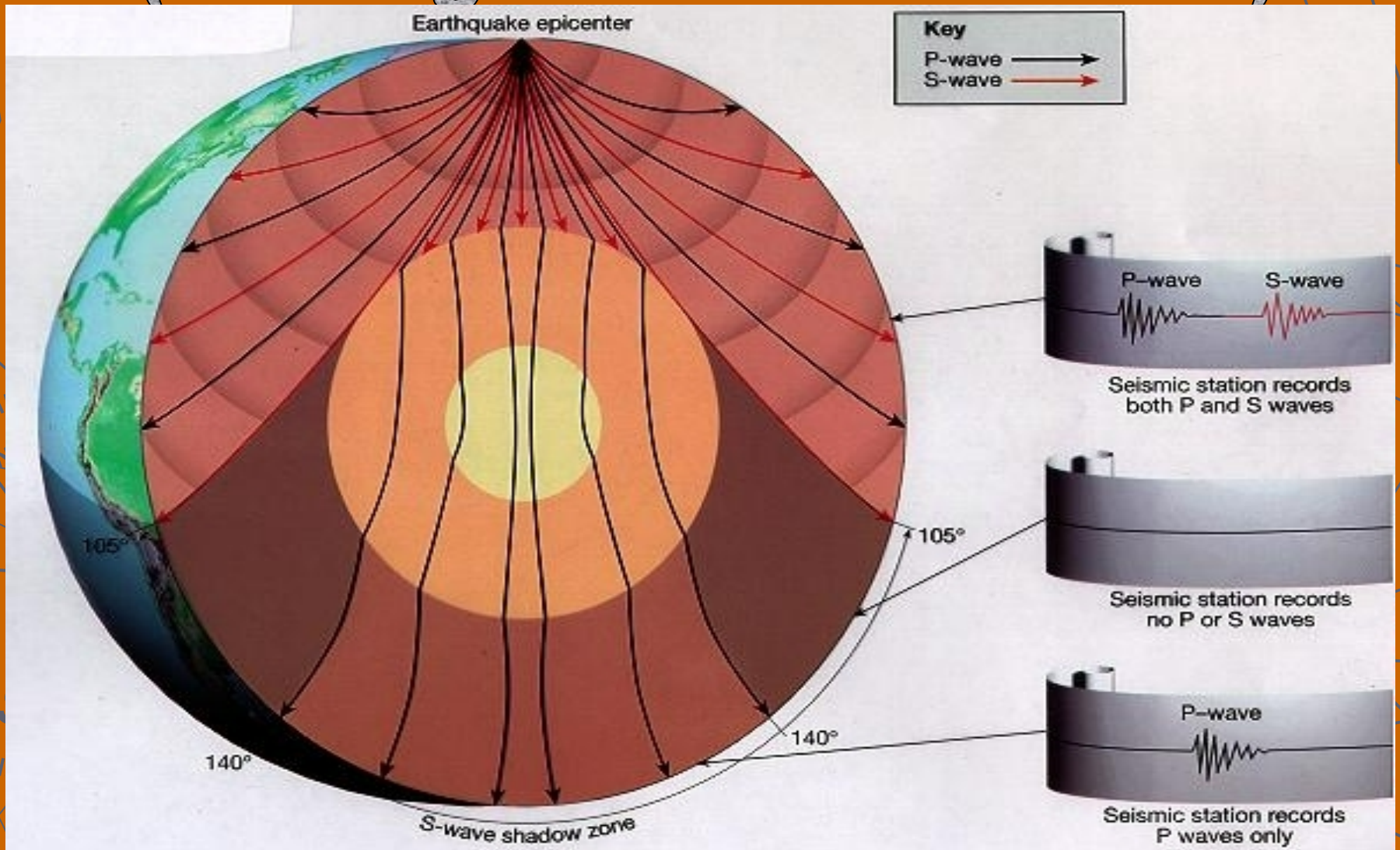
- 1) P-Waves: *Primary waves* or *Compressional waves* can travel through any substance and act like a sound wave.
- 2) S-Waves: *Secondary waves* or *Shear waves* can only travel through solids and force the rock particles to move at right angles to the direction of the wave.
- 3) Surface Waves: Waves that travel along Earth's surface.

Earthquake Waves

Compressional
Shear



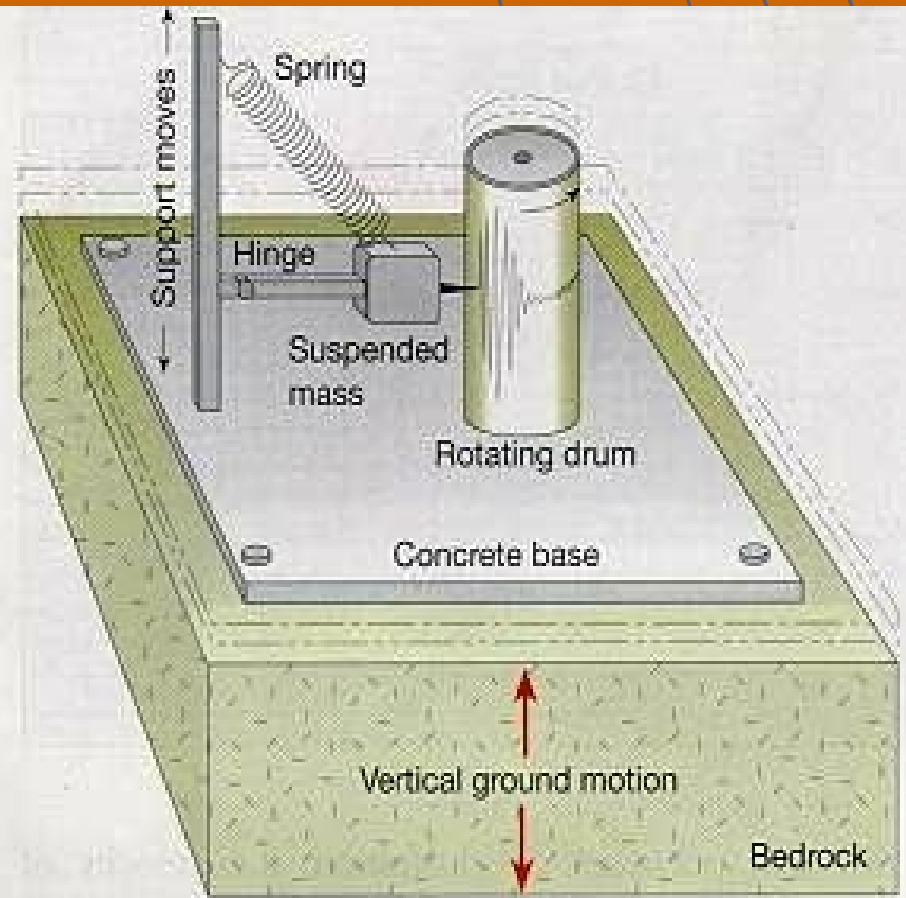
Earthquake Waves (Through Earth's Interior)



Earthquakes

▶ Measurement:

- A **Seismograph** is used to detect and measure earthquakes.
- There are two types of seismographs:
 - ▶ One to measure S-waves
 - ▶ One to measure P-waves



▶ The one above measures: **S-Waves**

Earthquakes

▶ Measuring Magnitudes:

- Magnitude is measured by how much energy is released during the earthquake.
- We use the ***Richter Scale*** to quantify this energy into a scale ranging from 1 to 10.
- Each increase in magnitude is equivalent to 31 times more energy!

Earthquakes

~ Hazards ~

Ground Shaking & Foundation Failure!

Liquefaction

-When loose soil takes on liquid characteristics.

Aftershocks & Fire
Tsunamis (Tidal Waves)

Earthquakes

Damage Prevention:



Better building & Bridge



More efficient evacuation plans.



Better detection

That's it

