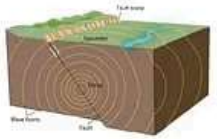


Seismic Waves



Waves generated by the earthquakes called seismic waves

Study of earthquake is called Seismology

Speed of Seismic Waves

In crust is around 2-8 km per second

In mantle is around 8-13 km per second

Instruments used to measure seismic waves

Seismograph

Accelerometer

Geophone

Hydrophone



Characteristics

The velocity of waves changes as they travel through materials with different densities.

Waves travel with higher velocity in denser materials

Waves change their direction as they reflect or refract across materials with different densities

1. Body Waves

generate due to release of energy at the focus

body waves travel through the body of Earth in all direction.

Two types

P-waves

P- waves are faster and are the first to arrive at the surface

Also called as primary waves

P-waves are similar to sound waves

They vibrate parallel to the direction of waves

They travel through gaseous, liquid and solid materials

S-waves

S- waves arrive at the surface with some time lag

Also called as secondary waves

they can travel only through solid materials

S- waves vibrate in direction perpendicular to the wave direction

S- waves are more destructive than P-waves

used by scientist to understand the structure of the interior of the Earth

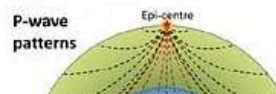
2. Surface Waves

Body waves interact with the surface rocks and generate new set of waves called surface waves.

Surface waves travel along the surface

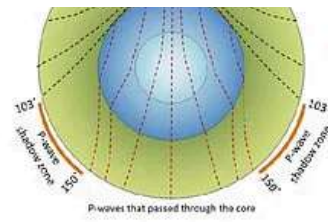
Areas where the earthquake waves are not reported

For each earthquake, there exists an altogether different shadow zone .

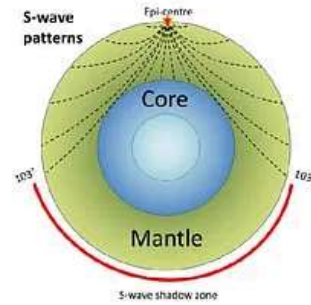


Shadow Zones

Shadow zones of P-waves



Shadow zones of S-waves



Observation

- Siesmographs located within 105 from the epicentre, recorded the arrival of both P and S- waves
- Siesmographs located beyond 145 from epicentre, recorded P- waves, but not S- waves
- Zones between 105 and 145 from epicentre is the shadow zones for both the types of waves
- Entire zones beyond 105 does not recieve S- waves
- The shadow zone of S- waves is much larger than that of the P- waves