

SEISMIC WAVES

When an earthquake occurs the shockwaves released energy that shake the earth and temporarily turn soft deposit such as clay into jelly (liquefaction) are called seismic waves. Seismic waves are usually generated by movement of the earth's tectonic plates but may also be caused by explosions, volcanoes and landslides.

Seismologists use seismographs to record the amount of time it takes seismic waves to travel through different layers of the earth. As the waves travel through different densities and stiffness the waves can be refracted and reflected. Because of the different behavior of waves in different materials seismologists can deduce the type of material the waves are travelling through. The results can provide a snapshots of the earth's internal structure and help us to locate and understand fault planes and the stresses and strains acting on them. This waves behavior can also be used on a small scale by recording waves generated by explosions or ground vibrates in the search for oil and gas. There are three basic types of seismic waves ...P-waves, S-waves, and surface waves. P-waves and S-waves are sometimes collectively called body waves.

P-waves:- P-waves, also known as primary waves or pressure waves, travel at the greatest velocity through the earth. When they travel through air, they take the form of sound waves-they travel at the speed of sound (300 m/s) through air but may travel at (500 m/s) in granite. Because of their of their speed, they are the first waves to be recorded by a seismograph during an earthquake.

S-waves:- S- waves, also known as secondary waves, shear waves or shaking waves, are transverse waves that travel slower than P-waves. The particle of motion is perpendicular to the direction of waves propagation. S-waves can't travel through air or water but are more destructive than P-waves because of their larger amplitudes.

Surface waves:- Surface waves, are similar in nature to water waves and travel just under the earth's surface. They are typically generated when the sources of the earthquake is closed to the earth surface. Although surface waves travel more slowly than S-waves, they can be much larger in amplitude and can be the most destructive type of seismic waves. There are two basic kind of surface waves, they are -

- Rayleigh waves
- Love wave

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