



Earthquakes

Glossary

aftershock: an earthquake that follows a larger earthquake or main shock and originates in or near the rupture zone of the larger earthquake. Generally, major earthquakes are followed by a number of aftershocks that decrease in size and frequency with time. Aftershocks can cause further damage to weakened buildings.

asthenosphere: the asthenosphere is a part of the mantle below the lithosphere. The upper portion of the asthenosphere is a region with a plastic, semisolid consistency that bends and flows in response to pressure inside the interior of the earth.

coast: the land bordering the ocean or sea; the seashore

compression: squeezing in order to occupy less space; compacting P waves are called compression waves because they consist of alternating compression and dilation, or expansion.

continental crust: the sections of crust, the outermost layer of the earth, that include the continents

convection current: a circular movement in the air or in a fluid that is caused by a difference in temperatures. In convection currents, hot material rises, and cold material sinks.

convergent plates: tectonic plates that are moving toward each other

dip-slip faults: faults where the main sense of movement on the fault plane is vertical

divergent plates: tectonic plates that are moving apart, permitting magma to move upward, hardening as it cools to create new crust. This divergent movement is in response to forces in the earth's mantle. Features formed at divergent plate boundaries include mid-ocean ridges and rift valleys.

Drop, Cover and Hold On: the sequence of simple steps people should take to protect themselves at the first sign of an earthquake. Drop under a sturdy desk or table, protect your eyes by pressing your face against your arm and hold on. If there is no table or desk nearby, sit on the floor against an interior wall away from windows, bookcases or tall furniture that could fall on you. Teach children to Drop, Cover and Hold On.

earthquake: a sudden, rapid shaking of the earth caused by the release of energy stored in the earth's crust



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epicenter: that point on the earth's surface directly above the focus of an earthquake. The focus is the place within the earth where an earthquake's energy is first released.

evacuate: to withdraw from a place in an organized way for protection from unsafe conditions, such as fire, the release of hazardous materials or an approaching hurricane. "Evacuation" may refer to leaving individual buildings, neighborhoods, communities or even cities.

extinguish: to put out, as in a fire; to quench

fault: a fracture or break in the earth's crust. Faults are planes where the rocks on one side have moved in some direction relative to the other. Earthquakes always occur on faults.

geologist: a scientist who specializes in the scientific study of the origin, history, behavior and structure of the earth

hazard: a risk; an object or situation that has the potential to cause injury or damage

high ground: a land elevation high enough to afford safety from a tsunami

implode: to collapse inward as if from external pressure

inland: situated away from an area's coast

inner core: the dense solid center of the earth, composed mostly of iron and nickel

landform: a natural feature relating to the earth's surface, such as a mountain, hill or plateau

landslide: an abrupt movement of soil and bedrock downhill in response to gravity. Landslides can be triggered by an earthquake or other natural causes. Undersea landslides can cause tsunamis.

lithosphere: the solid outer region of the earth in which earthquakes occur. The lithosphere contains the crust and the uppermost portion of the mantle.

longitude: the location of a point east or west of the prime meridian. Longitude is represented on a map or globe as north-south lines parallel to the prime meridian, which passes through Greenwich, England. The lines of longitude run from pole to pole.

Love waves: surface seismic waves that cause the ground to ripple back and forth, creating a snake-like movement.



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normal slip fault or normal fault: a fault on a plane that is at an angle to the surface so that one side moves down and away from the other during an earthquake

oceanic crust: the earth's crust under an ocean

outer core: the liquid layer of the earth's core that surrounds the solid, inner core

Pangaea (pan-GEE-ah): the name that scientist Alfred Wegener gave to the large landmass made up of all the continents, which he believed existed before it broke apart to form the present-day continents

plate tectonics: the theory that the earth's crust and upper mantle, the lithosphere, are broken into a number of more or less rigid, but constantly moving, segments

primary waves (P waves): waves of energy released during an earthquake. P waves are the fastest body waves and arrive at earthquake measurement stations before S waves, or secondary waves. P waves carry energy through the earth as longitudinal waves, causing particles in rocks to compress and stretch apart in the direction of the wave.

Rayleigh waves: surface waves that move in an elliptical motion, producing both a vertical and horizontal component of motion in the direction of wave propagation

reverse (thrust) fault: a dip-slip fault marked by a hanging wall that has moved upward relative to the footwall; often caused by the convergence of lithospheric plates

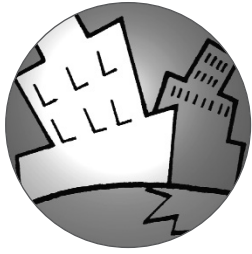
Ring of Fire: a zone around the perimeter of the Pacific Ocean containing about two-thirds of the world's active volcanoes. The majority of the earthquakes and volcanic eruptions occur along plate boundaries, such as the boundary between the Pacific Plate and the North American plate. One of the most active plate boundaries, where earthquakes and eruptions are frequent, is around the massive Pacific Plate, commonly referred to as the Pacific Ring of Fire, or simply, the Ring of Fire.

sea level: the height of the surface of the sea midway between the average high and low tides

secondary waves (S waves): waves of energy released during an earthquake or other disturbance (for example, an explosion) that travel through the earth by causing particles inside rocks to move at right angles to the direction of the waves. S waves move more slowly than P waves (primary waves), but have higher amplitudes. S waves cannot travel through the outer core because they cannot exist in fluids, such as water or molten rock.



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seiche (saysh): an internal wave oscillating in a landlocked body of water due to an earthquake. The back-and-forth movement, called oscillation, is similar to the sloshing motion of water in a moving container. A seiche can occur in a lake, swimming pool, or any body of water and is caused by the ground shaking in an earthquake. It may continue for a few moments or hours, long after the generating force is gone. A seiche can also be caused by wind or tides.

seismic waves: the energy waves that move outward from the focus of an earthquake and make the ground quake

seismicity: the relative frequency and distribution of earthquakes

seismogram: the graphic representation of the vibrations of the earth recorded by a seismograph and transcribed into a zigzag or wiggly trace. Seismologists use the data expressed in seismograms to determine the time, location and relative size of an earthquake.

seismograph: an instrument that detects, records and measures vibrations produced by earthquakes, explosions and other sources

strike-slip fault: a vertical fault or break between two sections of the earth that are sliding horizontally past each other. A strike-slip fault is also called a transform fault.

subduction zones: areas on the earth's surface where two plates move toward each other and the oceanic plate plunges beneath the other tectonic plate. Subduction is the process in which one tectonic, or lithospheric, plate collides with another plate, and its leading edge is forced under the other plate and drawn down into the earth's mantle.

surface waves: waves that move over the surface of the earth. Rayleigh waves and Love waves are surface waves.

transverse: waves that vibrate particles in a direction perpendicular to the wave's direction of motion (S waves).

tsunami: a huge sea wave or a series of such waves caused by earthquakes or other large-scale disturbance of the ocean floor; a seismic sea wave. (Tsunamis are sometimes referred to incorrectly as tidal waves, although these waves have nothing to do with tides.) The word "tsunami" is Japanese, meaning "harbor wave," because the Japanese islands have a history of tsunamis along their low-lying coasts.

tsunami detection: an early warning system to detect a potential tsunami

tsunami WARNING: an emergency communication indicating that a tsunami is imminent and that people in the warned area should evacuate immediately to high ground



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tsunami WATCH: an official notification issued by the National Oceanic and Atmospheric Administration's West Coast and Alaska Tsunami Warning Center or Pacific Tsunami Warning Center advising that a tsunami was or may have been generated, but is at least two hours travel time to the area for which the WATCH has been issued.

volcanoes: vents or fissures and the mountains surrounding them. Volcanic mountains are created by the overflow of lava from the vent during an eruption.



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