

# Glossary

A glossary is an alphabetical list of important words found in the sections in this book. Use this glossary just as you would use a dictionary: to find out the meaning of unfamiliar words. This glossary gives the meaning that applies to the words as they are used in the sections of this book. As with any subject, science has its own vocabulary. The study of science is more meaningful if you know the language of science.

## A

**active volcano** – a volcano that is erupting or that has erupted recently.

**atom** – a particle of matter.

## B

**basalt** – a dark-colored rock that is not silica-rich.

**bathymetric map** – a map that shows the depths of a body of water such as a lake or an ocean.

**beach** – a sandy zone above the foreshore in a shallow marine environment.

**biomes** – major climate regions with particular plant and animal communities. Earth has six important biomes.

**body waves** – seismic waves that travel through the interior of Earth.

**braided stream** – a stream that has many channels that criss-cross each other.

**buoyant force** – an upward lifting force that acts on an object when it pushes aside a fluid.

## C

**caldera** – the bowl-shaped vent of a volcano after it has erupted.

**carnivore** – a consumer that eats only animals.

**channel** – the path that a river or stream follows.

**chemical weathering** – weathering of rock that involves chemical reactions.

**cinder cone** – a volcano that has low-silica magma with high levels of dissolved gas; these volcanoes produce "fire fountain" eruptions.

**climate** – the long-term record of temperature, precipitation, and wind for a region.

**coast** – the boundary between land and a body of water like the ocean.

**competition** – happens when members of an ecosystem depend on the same limited supply of food.

**composite volcano** – a tall, explosive, cone-shaped volcano formed by layers of silica-rich lava and ash.

**conduction** – transfer of heat by direct contact of atoms and molecules.

**consumer** – a living thing that eats other living things for food and energy.

## D

**continental drift** – the idea that continents move around on Earth’s surface.

**continental plates** – thick, less-dense lithospheric plates that are made of granite and form the continents.

**continental shelf** – the ocean bottom that extends from a coast; where the continental shelf ends, the ocean become distinctly deeper.

**contour lines** – curved lines on a topographic (or bathymetric) map that indicate all the points where the elevation is the same.

**control variable** – a variable that is held constant in an experiment.

**convection** – transfer of heat through the motion of liquids and gases.

**convection cells** – large wind patterns in Earth’s atmosphere caused by convection.

**convergent boundary** – a lithospheric plate boundary where two plates come together.

**core** – the center of Earth; it is divided into the inner core and the outer core.

**crest** – the high point of a wave.

**cross bedding** – when a graded bedding pattern in a sedimentary rock is cut off and covered with another graded bedding pattern running in another direction.

**crust** – the outermost surface of Earth.

**data** – pieces of information collected to test a hypothesis.

**decomposer** – a living thing that breaks down waste and dead things.

**deep ocean currents** – density- and temperature-driven currents that move slowly within the ocean; also called thermohaline currents.

**density** – the mass of an object divided by the object’s volume.

**dependent variable** – a variable that is affected by the change to the independent variable. The dependent variable is sometimes called the responding variable.

**desert** – a climate region that averages less than 35 centimeters of rainfall per year.

**direction of younging** – the order in which sedimentary rock layers are formed—from larger to finer particles.

**disturbance** – a movement that begins in one location and sets things in motion farther away.

**divergent boundary** – a lithospheric plate boundary where two plates move apart.

**dormant volcano** – a volcano that is not erupting now, but that may erupt in the future.

## E

- earthquake** – the movement of Earth’s crust resulting from the building up of stored energy between two stuck lithospheric plates.
- ecosystem** – a group of living things and their physical surroundings.
- element** – a substance composed of only one kind of atom.
- elevation** – the height of an object measured from a reference level.
- emissions** – tiny particles and gases released into the air.
- energy** – a measure of a system’s ability to change.
- energy pyramid** – diagram that shows how energy moves from one feeding level to the next in a food chain.
- epicenter** – a point on Earth’s surface right above the focus of an earthquake.
- equator** – an imaginary line around the middle of Earth between the north and south poles.
- evaporation** – occurs when a liquid changes to a gas.
- experiment** – an activity performed to support or refute a hypothesis.
- extinct volcano** – a volcano that no longer erupts and is in the process of eroding.

## F

- fault** – a region on Earth’s surface that is split into two pieces.
- flooding** – an event that occurs when water overwhelms normally dry land.
- floodplain** – flat land near a river that tends to flood and that is usually located some distance from the source of the river.
- fluid** – matter that can flow, usually a liquid or a gas.
- focus** – the point below Earth’s surface where a rock breaks and causes an earthquake.
- food chain** – shows how each member of an ecosystem community gets its food.
- food web** – a group of overlapping food chains in an ecosystem.
- fossil** – a part of a dead animal or plant that has been preserved for a long time.
- fossil fuels** – substances found in Earth’s crust that were formed over millions of years from the remains of dead organisms.
- frost wedging** – physical weathering that results from freezing water.

## G

- geologic cycle** – a set of processes that keep rocky material moving from place to place on Earth.
- geology** – the study of rocks and rock formations.

**graded bedding** – the order of rocks from large to small that settle on a lake or pond bottom when water flow slows down.

**gram** – the basic unit of mass in the SI Units measuring system; one-thousandth of a liter.

**granite** – a light-colored igneous rock with large, visible quartz and feldspar crystals made from silica-rich magma.

**graph** – a picture that shows how two variables are related.

**grasslands** – climate regions with too little rainfall to support a forest. Grasslands have grasses as the main vegetation.

**gyre** – a circular motion, such as a circular ocean current.

## H

**heat** – a form of energy caused by the motion of atoms and molecules.

**herbivore** – a consumer that eats only plants.

**hot spot** – the top of an established mantle plume.

**hurricane** – wind that blows at speeds greater than 119 kilometers (74 miles) per hour. Hurricanes start as tropical storms and form over oceans.

**hypothesis** – a possible answer to a scientific question based on observations.

## I

**igneous rocks** – rocks that are formed from magma or lava.

**independent variable** – a variable that is changed in an experiment. The independent variable is sometimes called the manipulated variable.

**inference** – a statement based on experiences.

**intertidal zone** – the zone of a marine environment below the beach and between the high and low tide lines; also called the foreshore.

## K

**kinetic energy** – energy of motion.

## L

**lahars** – a mudflow that results from a volcanic eruption.

**landslide** – a large mass of soil or rock that slides down a volcano or mountain. Landslides can be caused by volcanic events, earthquakes, or other factors.

**latitude** – east-west lines that are north or south of the equator.

**lava** – magma after it leaves the vent of a volcano.

**lava bombs** – blobs of glowing lava thrown from an explosive eruption.

**lava lake** – a lake that contains lava that has formed in a caldera.

**legend** – a special area on a map that lists the symbols that are used.

**liquefaction** – when sediment shakes so much during an earthquake that it acts like a liquid.

**liter** – the basic unit of volume in the SI Units measuring system.

**lithosphere** – a layer of Earth that includes the crust and a thin part of the upper mantle.

**lithospheric plates** – large pieces of Earth’s lithosphere that move over the asthenosphere.

**longitude** – vertical lines that are east or west of the prime meridian. north-south lines that are east or west of the prime meridian.

**longshore drift** – the flow of sand along a coast.

## M

**magma** – underground melted rock.

**magma chamber** – a location inside a volcano where magma collects before it leaves the volcano. a location where magma collects inside Earth.

**mantle** – the warm, flowing, solid layer of Earth between the crust and the core.

**mantle plume** – heated lower mantle rock that rises toward the lithosphere because it is less dense than surrounding mantle rock.

**map** – a representational drawing of a location.

**marine** – a term that describes things that are part of or from the ocean.

**mass** – the amount of matter that an object has.

**matter** – the substance of all objects; all matter is made of atoms and has mass.

**meanders** – S-shaped curves in a river.

**measurement** – a number that includes a unit.

**Mercalli Intensity scale** – a scale that rates the damage suffered by buildings, the ground, and people during an earthquake.

**metamorphic rock** – a rock formed from another kind of rock due to heat and pressure.

**meteorologist** – an individual who uses scientific principles to forecast the weather.

**meter** – the basic distance unit for the SI Units system of measurement.

**mid-ocean ridges** – long chains of undersea mountains.

**molecule** – a group of atoms.

**Moment Magnitude scale** – a scale that rates the total energy released by earthquakes.

## N

**natural hazard** – an event in nature that can cause extensive damage to land and property, and that threatens human lives.

**natural resource** – a feature of Earth that benefits people.

**nonrenewable resource** – a natural resource that is not replaced as it is used.

## O

**oceanic plates** – thin, dense lithospheric plates that are made of basalt and form the ocean floor.

**omnivore** – a consumer that eats both plants and animals.

## P

**Pangaea** – an ancient, huge landmass composed of earlier forms of today's continents; an ancient supercontinent.

**petroleum** – another name for the natural resource called oil.

**photosynthesis** – the process plants use to make food from sunlight, water, and carbon dioxide.

**physical weathering** – physical forces that break rocks down into smaller pieces.

**plate tectonics** – a theory explaining how the pieces of Earth's surface (the plates) move.

**pollutant** – a variable that causes harm to an organism.

**pollution** – a change to the environment that is harmful to humans or other living things.

**power plant** – a place where electricity is generated.

**predators** – animals that feed on other animals.

**prey** – animals that are killed for food by a predator.

**prime meridian** – an imaginary line through Greenwich, England that is perpendicular to the equator.

**producer** – a living thing that can make its own food.

**P-waves** – seismic waves that move with a forward-and-back motion; these waves are faster than S-waves.

**pyroclastic flow** – a destructive cloud of volcanic material that moves quickly down the side of a volcano after an explosive eruption.

## R

**radiation** – heat transfer that involves energy waves and no direct contact or movement by atoms.

**radioactive decay** – refers to how unstable atoms lose energy and matter over time.

**relative dating** – a method of putting events in the order in which they happened.

**renewable resource** – a natural resource that can be replaced.

**resource conservation** – protecting, preserving, and managing Earth's natural resources.

**resurgent dome** – a mound in the vent of an erupted volcano.

**revolution** – the motion of Earth moving around the Sun; one revolution is called a year.

**Richter scale** – a scale that rates earthquakes according to the size of the seismic waves.

**Ring of Fire** – a region of Earth's plate boundaries where oceanic crust is subducting under other plates.

**river** – a large body of water that flows into an ocean or lake.

**rotation** – the motion of Earth spinning on its axis; one rotation is called a day.

## S

**science** – a process for answering questions.

**scientific law** – a statement that describes an observed phenomenon; it is supported by evidence collected from many observations and experiments.

**scientific method** – a series of steps including observation, forming a question, stating a hypothesis, collecting data, and reaching a conclusion.

**scientific theory** – a statement that explains a complex idea; it is supported by evidence collected from many experiments.

**sea level** – the average level of the ocean; the halfway point between high tide and low tide.

**sea-floor spreading** – a hypothesis that new sea floor is created at mid-ocean ridges and that in the process the continents are pushed apart from each other.

**sediment** – small pieces and grains of weathered rock; also, small pieces of material from living things.

**sedimentary rocks** – rocks that are made of sediments.

**seismic waves** – vibrations that travel through Earth and are caused by events like earthquakes or human-made blasts.

**seismograph** – an instrument that measures and records seismic waves.

**seismologist** – a scientist who detects and interprets

seismic waves.

**shield volcano** – a flat and wide volcano that has low-silica magma with low or high levels of dissolved gas.

**silica** – an ingredient in magma and lava that makes them thick and sticky; quartz is a mineral made of silica.

**slumping** – an event that occurs when soil particles become surrounded by water so that the ground slides or “slumps.” Slumping is a form of mass wasting which is the falling of rock and soil due to the influence of gravity.

**solar energy** – energy from the Sun.

**stream** – a small river.

**subduction** – a process that involves a lithospheric plate sinking into the mantle.

**surface ocean currents** – wind-driven currents that move at the ocean surface, often for very long distances.

**surface waves** – body waves that reach and travel along Earth’s surface.

**S-waves** – seismic waves that move with a side-to-side motion and are slower than P-waves.

**symbiosis** – an interaction where two species live together for a long time and at least one of the species benefits.

**system** – a group of objects and the factors that affect the objects.

## T

- taiga** – the largest climate region, found in the higher latitudes; also known as a boreal or coniferous forest.
- temperate deciduous forests** – climate regions in the mid-latitudes that have seasons.
- temperature** – a measure of the average speed of a sample containing lots of atoms.
- thermal** – small heat-driven air current.
- tidal flat** – a flat, muddy area in the intertidal zone.
- topographic map** – maps that use contour lines to show elevation.
- transform fault boundary** – a lithospheric plate boundary where two plates slide by each other.
- trench** – a valley in the ocean created where one lithospheric plate subducts under another.
- tropical rainforests** – climate regions found near the equator that have a lot of rainfall and high biodiversity.
- trough** – the low point of a wave.
- tsunami** – a huge ocean wave caused by underwater earthquakes, volcanic eruptions, or slumping.
- tundra** – a climate region located in high latitudes; known as the coldest land biome.

## U

- unit** – a specific quantity that is counted to make a measurement.

## V

- variable** – a factor that affects an object; examples include mass, temperature, speed, and time.
- volcanic ash** – fine particles of cooled magma.
- volcanic island** – a volcano that forms away from a plate boundary on an oceanic plate.
- volcanic island chain** – a series of volcanoes formed by a hot spot as a lithospheric plate moves over the hot spot.
- volcanic neck** – solid remains of magma that filled the conduit of an extinct volcano. The neck is exposed as the volcano erodes.
- volcano** – an erupting vent through which molten rock reaches Earth's surface, or a mountain built from the products of an eruption.
- volume** – a measurement of how much space is occupied by an object.

## W

- water cycle** – a set of processes energized by the Sun that keep water moving from place to place on Earth.
- water vapor** – water in gas form.
- wavelength** – the distance between two wave crests, or the distance between two wave troughs.
- weather** – the condition of the atmosphere as it is affected by wind, water, temperature, and atmospheric pressure.
- weathering** – the process of breaking down rock.



**weight** – a measure of mass and the force of gravity on an object.

**wildfire** – an unwanted fire that burns in a forest or other natural area.

**wind** – air that flows, often because of heating and cooling of air or unequal air pressure.