Glossary

How to Use This Glossary

This Glossary provides the definitions of the key terms that are shown in boldface type in the text. (Instructional boldfaced words such as "observe" and "explain" are not included.) The Glossary entries also show the sections where you can find the boldfaced words. A pronunciation guide, using the key below, appears in square brackets after selected words.

a = mask
ae = same, day
ah = car, farther
aw = dawn, hot
e = met, less
ee = leaf, clean
ih = idea, life
i = simple, this
oh = home, loan
oo = food, boot
u = wonder, Sun
uh = taken, travel
uhr = insert, turn

A

abiotic [AE-bi-o-tik] non-living; refers to non-living things in the environment, such as water, soil, or air (1.1)

acid rain burning fossil fuels produces nitrogen and sulphur which combine with water vapour to make acid; this falls to the ground as acid rain (3.2)

adaptation a characteristic that is inherited and that helps an organism survive in its environment (1.1)

algal blooms huge increases in the amount of algae in water caused by certain nutrients (phosphates and nitrates) from fertilizers that enter aquatic ecosystemsfertilizer run-off (12.3)

alloy a solution that is made from two or more metals (7.2)

B

baseline data measurements that form a starting point from which later changes can be monitored (3.3)

bedrock the solid rock that lies beneath the soil (11.2)

beds visible layers of sedimentary rocks formed by cementation and compaction (10.2)

bimetallic strip the strip is made of two different types of metals that expand by different amounts when heated (4.2)

biotic [bih-O-tik] living; refers to living things in the environment, such as humans, trees, or fish (1.1)

body temperature an important indicator of your health; a normal human body temperature is 37°C (4.1)

boiling point the temperature at which a liquid boils to become a gas (5.3)

C

calibrate to accurately assign the numbers on a scale (4.2)

carnivores animals that eat other animals; examples include wolves and hawks (2.2)

Celsius scale the most common scale for measuring temperature; on the Celsius scale, water at sea level boils at 100°C and freezes at 0°C (4.2)

cementation the process in which pieces of sediment are held together by another material (10.2)

change of state the change from any of the three states (solid, liquid, gas) to any other state (5.3)

chemical weathering the break-up or disintegration of rocks through the effects of chemical reactions upon them (12.1)

cleavage the splitting of a mineral along smooth, flat planes (10.1)

climate change by monitoring the environment, scientists have noted that the Earth is undergoing major shifts in climate that will result in warmer average temperatures (3.3)

climax community a diverse group of species that form a stable ecosystem which can remain relatively unchanged for centuries if there is no disturbance (3.1)

commensalism a symbiotic relationship between two different types of organisms, in which one partner benefits and the other partner does not appear to lose or gain anything (2.1)

community a group made up of all the interacting populations that live in an area (1.3)

compaction the process in which layers of sediment are squeezed together by the weight and pressure of water and other sediment, to form sedimentary rock (10.2)

composting the breakdown of plant material; decomposition (12.3)

concentrated solution a solution that has a large mass of dissolved solute for a certain quantity of solvent (8.2)

concentration the quantity of solute that is dissolved in a certain quantity of solvent (8.2)

condensation the process in which a gas or vapour changes in state to become a liquid; for example, water vapour condenses into liquid water (5.3)

conduction the transfer of thermal energy that occurs when warmer particles come in contact with cooler particles and transfer energy to the cooler particles (6.1)

consumers organisms that eat other organisms (other consumers as well as producers) the food made by producers; can be a herbivore, carnivore, or omnivore (2.2.)

continental drift the theory that the continents move very slowly over the Earth's surface (11.1)

convection the process in which a warm gas or liquid moves from one place to another, carrying heat with it (6.1)

convection currents in geology, a movement of material produced by the rising of warmer magma and the sinking of cooler and denser magma (11.1); also, patterns of movement where a warm gas or liquid rises and cooler gas or liquid falls to replace it (6.1)

convergent boundary a plate boundary at which the plates move towards each other and collide (11.1)

crust the thin, outer layer of Earth; made of solid rock (11.1)

D

decomposers organisms that break down (decompose) dead or waste materials, such as rotting wood, dead animals, or animal waste (2.2.)

deposition a change of state from a gas to solid (5.3); the process in which eroded material is deposited in another area (12.1)

desertification [de-zuhrt-i-fi-KAE-shuhn] the process in which deserts are formed through the erosion of nutrient-rich topsoil; after desertification the soil is no longer able to support plant life (12.3)

dilute solution a solution that contains a small mass of solute for a certain quantity of solvent (8.2)

dissolve to mix a solute completely with a solvent to form a solution; the physical properties of the solute and solvent combine into one set of properties (8.1)

divergent boundary a plate boundary at which the plates move away from each other (11.1)

E

earthquake shaking of the ground caused by the sudden release of energy stored in the bedrock (11.2)

ecosystem all the interacting organisms that live in an environment, as well as the abiotic (non-living) parts of the environment that affect the organisms (1.1)

endangered when a species has such a low population it is nearly extinct (3.2)

energy pyramid a model that shows how energy is lost at each link in a food chain; animals at the top of the pyramid are less numerous than those below them because there is less energy available for them to use (2.3)

environmental impact assessment a report that outlines how an activity will affect the environment (3.3)

environmental monitoring checking and monitoring different parts of the environment at regular intervals; indicates how well ecosystems are functioning and how they change over time (3.3)

epicentre [e-pi-sen-tuhr] the location on Earth's surface that is directly above the focus of an earthquake (11.2)

erosion the process of moving soil and rock from one place to another; caused by the effects of wind and/or water (12.1)

evaporation the process in which a liquid changes into a gas or vapour as energy is added; also, a common separation technique to recover the solid solute from a solution (9.1) for example, liquid water evaporates to become water vapour (5.3)

extinct when there are no longer any living individuals of a species anywhere in the world (3.2)

extrusive rock a type of igneous rock formed when lava cools on Earth's surface (10.2)

F

Fahrenheit scale the first widely used temperature scale; on the Fahrenheit scale, water at sea level boils at 212°F and freezes at 32°F (4.2)

fault the surface along which rocks break and move during an earthquake (11.2)

fermentation the process where yeast cells feed on sugary food, breaking down the sugars and producing alcohol and carbon dioxide gas; this process is used to make beer, wine, bread, cheese, pickled vegetables, and some sausages (2.2)

fertilizers substances that provide nutrients for plants (12.3)

filtration a type of mechanical sorting that relies on particle size to separate particles from a solution by pouring the solution over a device with holes in it (9.1)

focus the place deep in Earth's crust where an earthquake begins (11.2)

fold a bend in rock layers (11.3)

food chains models that show how food energy passes from organism to organism (2.3)

food webs networks of interconnected food chains in an ecosystem (2.3)

fossil evidence of once-living organisms (11.3)

fractional distillation a process that uses the boiling points of substances to separate a complex mixture into its parts (9.2)

fracture in a mineral, the characteristic of breaking with rough or jagged edges (10.1)

freezing the process in which a liquid changes into a solid; for example, liquid water freezes into ice (5.3)

G

gas one of the phases or states of matter; a gas has no particular shape or size and can be compressed; a gas is sometimes known as a vapour (5.2)

geological timescale divides Earth's history into smaller units based on the appearances of different kinds of life forms in the fossil record (11.3)

H

habitat the place in which an organism lives (1.1)

hardness in a mineral, the characteristic of resisting being scratched (10.1)

heating curve a graph that demonstrates the changing of states of a substance by plotting temperature versus time, when energy is continuously added to the substance (5.3)

herbivores animals that eat only plants (2.2)

heterogeneous mixture a combination of two or more different types of matter that retain their own properties and that can be detected quite easily (7.1)

homogeneous mixture a combination of two or more different types of matter that appear to be the same throughout the mixture and have the same properties (7.1)

host the organism that a parasite lives and feeds on (2.1)

humus [hyew-mus] the dark-coloured part of soil that is rich in nutrients, such as nitrogen, phosphorus, potassium, and sulfur (12.2)

hypothermia the condition where your body temperature drops a few degrees below 37°C; the heart begins to slow down and body organs do not function properly (4.1)

I

igneous the type of rock that forms when hot magma or lava cools and becomes solid (10.2)

individual a single organism (1.3)

inner core the deepest and hottest layer of the earth (11.1)

insoluble unable to dissolve in a particular solvent (8.1)

insulators materials that are very poor conductors of heat (6.2)

introduced species species that have spread beyond their natural range into new territory because of human activity (3.2)

intrusive rock a type of igneous rock that forms when magma slowly cools beneath Earth's surface (10.2)

K

Kelvin scale a scale used for measuring temperatures in scientific experiments; on the Kelvin scale, pure water freezes at 273 K and boils at 373 K; the coldest possible temperature (also known as absolute zero) is 0 K (4.2)

kinetic energy [kin-E-tic] energy that particles or an object has due to its motion (5.1)

L

leaching the process by which materials in soil are dissolved and carried away by water (12.2)

liquid one of the states or phases of matter; in the liquid state, a material has a specific size or volume but not a specific shape (5.2)

long-term monitoring checking and monitoring the environment over a period of many years; used to determine if an environment is changing in a significant way (3.3)

lustre a measure of how much light is reflected from the surface of mineral; how shiny the mineral is (10.1)

M

magma molten material found below Earth's surface (10.2)

magnetometer a sensitive instrument that can detect the direction and strength of a magnetic field (11.1)

mantle a large and complex layer of rock, both solid and molten, that lies under Earth's crust (11.1)

matter anything that takes up space, has mass, and is made up of particles (5.1)

mechanical sorting a way to separate parts of a mixture based on properties such as particle size or magnetism (9.1)

mechanical weathering [of rocks], the break-up or disintegration by the actions of physical forces generated by ice, plants, or animals (12.1)

melting the process in which a solid changes into a liquid; for example, solid water (ice) melts into liquid water (5.3)

melting point the temperature at which a solid melts to become a liquid; also called the freezing point (5.3)

metallic ores rocks that contain a high proportion of metals and metal oxides (10.3)

metamorphic rocks types of rocks produced when heat, pressure, or fluids change one type of rock into a new form (10.2)

mineral a pure, naturally occurring, inorganic solid substance (10.1)

mixture a combination of two or more different types of matter that can be separated by physical changes (7.1)

monoculture planting large areas with a single crop (3.2)

mutualism [MYOO-choo-al-is-uhm] a symbiotic relationship between two different types of organisms, in which each partner benefits from the relationship (2.1)

N

native species wild species that have lived in their environment since before humans settled the land (3.2)

natural resources materials and products found in nature that people use to meet their basic needs (3.2)

niche [NEESH] the role that is undertaken by an organism in an ecosystem; one organism may fill several different niches (1.3)

no-till farming plant stalks are left in the field to prevent erosion; farmers push the new seeds through the stubble of the previous crop into undisturbed soil (12.3)

nutrient cycles the processes that move nutrients back and forth between the biotic and abiotic environment (2.4)

nutrients contained in food, nutrients are used to repair cells and tissues (2.4)

O

omnivores animals that eat both plants and animals (2.2.)

ore a rock mixture that contains one or more valuable substances (9.2)

organism any living thing, such as a plant or animal (1.1)

outer core the deep layer close to the centre of Earth that is made of liquid iron and nickel (11.1)

P

Pangaea [pan-JEE-uh] a theoretical, huge land mass that once, hundreds of millions of years ago, included all the continents (11.1)

paper chromatography a type of separation technique used to separate the coloured substances in a mixture; the solution is poured onto a paper to see how fast the dissolved substance is carried by the solvent as the solute is absorbed by the paper (9.1)

parasites organisms that live on or in another organism (the host) and feed on it (2.1)

parasitism a symbiotic relationship between two different types of organisms, in which one partner benefits and the other partner is harmed (2.1)

parent rock the original rock that has been changed by pressure and heat into a metamorphic rock (10.2)

particle theory of matter a scientific model of the structure of matter; according to the particle theory, all matter is made up of extremely tiny particles, and each pure substance has its own kind of particle, different from the particles of other pure substances (5.1)

permanent plot sample areas of habitat that scientists monitor year after year (3.3)

permeability a measure of the ease with which liquids and gases pass through a soil or a rock (12.2)

petroleum a complex mixture of liquid, solid and gaseous substances; also called crude oil; the source of most of the fuels and lubricants that run the machines we use (9.2)

pioneer species species that are the first to appear in an area and can establish themselves with little or no soil and few nutrients (3.1)

plate tectonics the theory that the Earth's crust is broken up into pieces (called plates) that are moving on Earth's mantle (11.1)

pollutants substances that cause harm to the air, soil, water or living things (3.2)

population a group of organisms of the same species, living together in one ecosystem (1.3)

porosity the amount of empty space in a soil or rock (12.2)

primary succession the sequence of changes that starts with bare rock and eventually develops into a complex community of plants and animals (3.1)

producers organisms that make their own food rather than eating other organisms to obtain food; for example, a plant (2.2)

pure substance a material that is composed of only one type of particle; examples of a pure substance include gold, oxygen, and water (7.1)

R

radiation the transfer of energy in a wave-like form (6.1)

range of tolerance the range of abiotic conditions within which an organism can survive (1.2)

renewable resources living natural resources that, after harvesting, can be replaced by natural processes in a relatively short period of time (3.2)

resource of a rock or mineral, mined and used for a specific purpose (10.3)

Richter scale [RIK-tuhr] a scale used to describe the magnitude (strength) of an earthquake (11.2)

Ring of Fire the volcanoes encircling the Pacific ocean (11.2)

rock cycle the naturally occurring processes by which rocks are continually changed over long periods of time (10.3)

rock a natural material composed of one or more minerals (10.2)

room temperature the temperature at which most people are comfortable; usually between 20°C and 23°C (4.1)

S

saturated solution a solution in which no more of a solute will dissolve at a particular temperature (8.2)

scavengers organisms that eat decaying plant or animal matter (2.2)

secondary succession the re-growth of a community in an area that has changed dramatically after a disturbance such as a fire (3.1)

sedimentary rocks types of rocks formed by compacting and/or cementing sediment (loose material) (10.2)

seismic waves [SIHZ-mik] the energy waves that are released by an earthquake and that travel outward from its focus (11.2)

seismograph [SIHZ-moh-graf] a machine used by scientists to measure the strength of earthquakes (11.2)

simple distillation a type of separation technique used to recover a single solute and a single solvent from a solution; the solution is heated until the solvent becomes a gas and the cooled until it becomes a liquid; the solute is left behind (9.1)

soil profile a description of the characteristics of the different layers that make up a particular soil (12.2)

soil a mixture of weathered rock, organic matter, mineral fragments, water, and air (12.1)

solid one of the states or phases of matter; in the solid phase, materials keep a specific shape and size (5.2)

solubility the mass of a certain solute that can dissolve in a certain volume or mass of solvent, at a certain temperature (8.2)

soluble able to dissolve in a particular solvent (8.1)

solute a substance that can be dissolved in a solvent, to form a solution (8.1)

solution a homogeneous mixture of two or more substances; the composition of the mixture is the same throughout the sample and from one sample to another (7.2)

solvent a substance into which a solute dissolves, to form a solution (8.1)

sonar a technology used to gather information about the sea floor, in which the time that the sound waves take to bound back from the ocean floor is recorded (11.1)

species a group of organisms that can successfully mate with each other and reproduce (1.3)

specific heat capacity the amount of energy required to raise the temperature of 1.00 g of a substance 1.00°C (6.3)

streak the colour of the powdered form of a mineral (10.1)

subduction zones places on the Earth's crust where high pressure pushes an oceanic plate under another plate into the mantle (11.1)

sublimation the process in which a solid changes directly into a vapour, for example, dry ice (frozen carbon dioxide) will sublime into carbon dioxide gas at room temperature (5.3)

subsoil the layer of soil underneath topsoil; it is more tightly packed and lighter in colour than topsoil because there is little or no humus (12.2)

succession the process by which a biological community changes over time (3.1)

sustainable when resources are replaced by natural processes or human activity at the same rate as they are used up by humans (3.2)

symbiosis [sim-bih-OH-sis] a biological relationship in which two species live closely together in a relationship that lasts over time (2.1)

symbiotic a word used to describe a situation in which two species live closely together in a relationship that lasts over time (2.1)

T

temperature a relative measure of how hot or cold something is; the average kinetic energy of the particles in a substance (5.1)

texture of soil, how it feels to the touch; texture is affected by the size of the particles in the soil (12.2)

thermal conductivity the rate at which a substance conducts heat (6.2)

thermal contraction the decreases in the volume of a substance as the temperature decreases (5.2)

thermal energy the total kinetic energy of the particles of a substance; heat (6.3)

thermal expansion the volume of an object or substance increases when the temperature increases (5.2)

thermocouple used to measure temperature; thermocouples are made of two different types of metal wires that are connected at both ends; temperature differences between the ends cause an electric current to travel along the wires (4.2)

thermogram an image generated by a device that detects infrared radiation and converts it into colours that represent temperature differences (4.2)

thermometer a device used to measure temperature (4.2)

thermoscope developed before thermometers; a thermoscope shows whether the air is hot or cold but does not measure temperature since there is no numerical scale (4.2)

theory of continental drift a theory proposing that the continents change position very slowly, moving over the surface of the Earth a few centimetres every year (11.1)

topsoil the topmost layer of soil, which is dark-coloured and rich in humus (12.2)

transform boundary a plate boundary at which plates slide past each other (11.1)

U

unsaturated solution a solution in which more solute can be dissolved in the solvent at a particular temperature (8.2)

unsustainable when resources are used faster than they can be renewed (3.2)

V

volcano an opening in Earth's crust that can release lava, smoke, and ash when it erupts (11.2)

W

weathering the process in which rocks are broken down and sediment is formed by mechanical and chemical means (12.1)