

# Glossary

**Acoustic release package.** A device that upon command releases current meters or other instruments from the weight that holds them to the sea floor.

**Acoustic system.** Pertaining to a package of devices that puts sound energy into the water column, receives signals reflected from the sea floor and layers of rock and sediment below the sea floor, and displays and records the reflected signals.

**Advection [oceanography].** The horizontal or vertical flow of water as an ocean current.

**Amphipod.** Any small crustacean of the order Amphipoda with vertically thin bodies and sets of legs used for both swimming and hopping; one common variety is the “sand flea.”

**Arc volcanism.** The processes associated with the extrusion of lava on and adjacent to a chain of islands (for example, the Aleutians) rising from the deep sea floor.

**Asthenosphere.** The zone of the Earth’s upper mantle, below the lithosphere, where rock is weak and capable of flowing.

**Basalt.** A dark, fine-grained extrusive igneous rock.

**Bathymetric contour.** A line on a map showing equal depth below sea level on the sea floor.

**Bathymetry.** The measurement of ocean depths and the charting of the topography of the sea floor.

**Bioturbated.** Said of sediments disturbed by organisms.

**Blueschist.** A metamorphic rock with a blue color due to the presence of certain minerals produced at high pressures in the Earth.

**Camera transect.** A track across the sea floor along which a camera takes a series of photographs.

**Chert.** An extremely fine-grained (microcrystalline) sedimentary rock composed of silica ( $\text{SiO}_2$ ), often from the tiny skeletons of aquatic microorganisms.

**Continental margin.** The ocean floor that is between the shoreline and the deep (abyssal) ocean floor.

**Continental shelf.** That part of the continental margin from the shoreline to the continental slope or, where there is no noticeable break in slope, to a depth of about 660 feet (200 meters).

**Continental slope.** That part of the continental margin that is between the continental shelf and the deep (abyssal) ocean floor.

**Convergent boundary [currents].** An area or zone where ocean currents come together.

**Convergent boundary [plate tectonics].** A boundary between two tectonic plates that are moving toward each other.

**Coring device.** An apparatus used to take vertical, cylindrical or rectangular sections of sediment from the sea floor.

**Core sample.** A vertical, cylindrical or rectangular sample of sediment from which the nature or stratification of the sea-floor deposits may be determined.

**Crust [Earth’s].** The outermost layer or shell of the Earth.

**Current meter.** A device that measures the speed and direction of ocean currents.

**Deep submergence vehicle.** A submarine that is capable of submerging to very great depths, usually used for research.

**Diabase.** An dark intrusive igneous rock.

**Diatom.** A microscopic single-celled plant that secretes a silica ( $\text{SiO}_2$ ) skeleton; diatoms are abundant in both marine and fresh water.

**Dike.** A tabular igneous intrusion that cuts across the bedding or foliation of the host rock.

**Dinoflagellate.** A single-celled microscopic organism with resemblances to both plants and animals; most species are marine, and some are the cause of toxic “red tides.”

**Divergent boundary [currents].** The area or zone where different currents or water bodies move apart from each other.

**Divergent boundary [plate tectonics].** A boundary between two plates that are moving apart from each other.

**Eclogite.** A granular rock composed essentially of garnet and sodic pyroxene.

**Ekman transport.** The current generated from wind blowing over the surface of the water, where the surface current moves at 45 degrees to the right of the wind direction (northern hemisphere) and successively deeper layers of water move increasingly to the right until at some depth the water is moving opposite the wind direction; the net transport is 90 degrees to the right of the wind direction.

**El Niño.** An anomalous warming of the surface waters of the eastern tropical Pacific Ocean, which can have worldwide and significant effects on weather, ocean currents, and sea life and can cause droughts, floods, and other natural disasters.

**Entrenched valley.** A deepened, incised valley that suggests rapid vertical uplift or lowering of base level.

**Epicenter.** The point on the Earth’s surface that is directly above the focus of an earthquake.

**Euphausiid.** A group of small planktonic marine shrimp, commonly called krill, that are an important food source for many marine animals, including some whales.

**Eustatic [sea level].** Said of worldwide changes in sea level that affect all the world’s oceans.

**Exotic terrane.** A geologic terrane that has moved far from its place of origin and is unrelated to those adjacent to it.

**Factor analysis.** A mathematical technique used to discover simple patterns in relations among variables.

**Farallon Escarpment.** The steep submarine slope in the region of the Farallon Islands; part of the Continental Slope.

**Farallon Shelf.** The gently sloping part of the sea floor in the vicinity of the Farallon Islands from the shore to the Farallon Escarpment; part of the Continental Shelf.

**Fault.** A fracture or zone of fractures in the Earth along which there has been displacement of the sides relative to one another.

**Flagellates.** Microorganisms possessing whip-like flagella, which they use for propulsion.

**Franciscan Complex/Assemblage.** A disorderly assemblage of rocks of various characteristics in the Coast Ranges of California that have undergone unsystematic disturbance; typical rocks of this assemblage crop out in the vicinity of San Francisco.

**Franciscan mélange.** A variation of Franciscan Assemblage; a mélange is characterized by fragments and blocks of various rock types of all sizes.

**Gabbro.** A dark, granular intrusive rock; the intrusive equivalent of basalt.

**Geomorphological.** Pertaining to the general configuration of the Earth’s surface; the nature and origin of landforms.

**Geophysics.** The study of the Earth by quantitative physical means.

**Glacier.** A large mass of ice formed by the accumulation, compaction, and recrystallization of snow.

**Global Positioning System (GPS).** A network of satellites used for navigation.

**Granite.** A light-colored plutonic rock rich in quartz and feldspar.

**Granitic.** Of or pertaining to granite.

**Gravity corer.** A device with a long cylindrical pipe topped by a heavy weight used to take samples of sea-floor sediments.

**Graywacke.** A dark-gray, hard, coarse-grained sandstone that consists of poorly sorted, angular to subangular mineral grains embedded in a clay matrix.

**Great Valley of California.** Also called the Central Valley, it is a nearly flat alluvial plain in the central part of California about 450 miles long and on average 50 miles wide. Geologically, the Great Valley is a large, elongate northwest-trending structural trough filled with a thick sequence of sediments that range in age from Jurassic to present.

**Heavy minerals.** Detrital minerals that have a specific gravity higher than a standard, usually 2.85.

**Highstand.** Generally referring to the highest eustatic sea levels during any period of geologic time.

**Ice Age.** A time of extensive glacial activity; most recently the Pleistocene, which began about 1.6 million years ago and lasted until about 10,000 years ago.

**Igneous.** Said of rocks or minerals that solidified from molten or partly molten material.

**Intervalometer.** A timing device on a submarine camera that automatically operates the shutter at predetermined intervals.

**Intrusion.** The process of emplacement of magma in preexisting rock, leading to the formation of igneous rocks in the form of dikes, plutons, and batholiths.

**Lava.** Molten material erupted (extruded) at the surface of the Earth; also, the rock that solidifies from such material.

**Limestone.** A sedimentary rock composed chiefly of calcium carbonate ( $\text{CaCO}_3$ ), often from the shells of marine organisms.

**Lithosphere.** The solid outer portion of the Earth; it includes the crust and uppermost mantle, above the asthenosphere.

**Lithostratigraphic unit.** A layer of rock defined on the basis of lithologic characteristics and stratigraphic position.

**Loran-C.** A high-precision navigation system.

**Lowstand.** Generally referring to the lowest eustatic sea levels during any period of geologic time.

**Magma.** Molten rock below the Earth's surface.

**Magnitude (M).** A measure of the strength (energy released) of an earthquake.

**Mantle [Earth's].** The zone of the Earth below the crust and above the core.

**Megalopa (megalops).** An advanced larval stage of crabs, just preceding the adult stage.

**Mesozoic.** An era of geologic time from about 225 to about 65 million years ago, best known as the time of the dinosaurs.

**Metamorphic.** Pertaining to rocks and minerals that have been changed by heat and pressure.

**Oceanic plate.** A tectonic plate of the Earth's lithosphere that is characterized by thin basaltic crust; moves horizontally and adjoins other plates along seismically active zones.

**Pelagic.** Said of marine organisms whose environment is the open ocean, rather than the bottom or shore areas.

**Photic (euphotic) zone.** The upper zone of ocean waters in which sunlight penetrates sufficiently to support photosynthesis; generally the upper 150 to 450 feet of the water column.

**Photosynthesis.** The process by which plants make organic compounds from carbon dioxide and water using the energy of sunlight, a byproduct of which is the production of free oxygen; photosynthesis is the primary basis for food production on Earth.

**Phytoplankton.** Aquatic plants, mostly microscopic, that have a planktonic lifestyle.

**Pillow basalt.** A type of basalt that is characterized by pillow-shaped structures, generally interpreted to indicate that it was erupted under water.

**Plankton.** Aquatic plants and animals, chiefly microscopic, that drift or float in the water and are the main basis of marine food webs.

**Plate tectonics.** A theory of global tectonics in which the lithosphere is divided into a series of plates that move horizontally relative to one another.

**Primary producers.** Green plants, including most phytoplankton; so called because they produce, through photosynthesis, the organic compounds that form the beginning link in food webs.

**Radiolarian chert.** A layered (well bedded) microcrystalline rock consisting of the remains of one-celled marine animals called radiolarians.

**Ranging navigation system [Del Norte/Benthos].** A system used relatively close to shore to determine a precise position at sea.

**Red tide.** A reddish discoloration of seawater caused by a bloom of toxic dinoflagellates.

**Salinian terrane/block (Salinia).** A 300-mile-long slice of rock that forms most of the basement in the central coastal part of California, west of the San Andreas Fault; this terrane has been interpreted to be displaced northward from a southward extension of the Sierra Nevada or possibly from even farther south.

**Sea-floor spreading.** The process in which new ocean crust is created by upwelling of magma at midoceanic-ridge spreading centers; as new crust is created it moves horizontally away from the ridge.

**Seismic-reflection profile.** A profile produced from the return of acoustic energy reflected off the sea floor and off density discontinuities at layers below the sea floor.

**Seismometer.** An instrument that detects Earth motions.

**Serpentine.** A group of common minerals, commonly a mottled shade of green, that form by alteration of olivine and other magnesium-rich minerals found in igneous and metamorphic rocks.

**Serpentinite.** A characteristically green rock consisting almost wholly of serpentine-group minerals; it is a common rock type in coastal central California.

**Shelf break.** An abrupt change in slope that marks the boundary between the Continental Shelf and Slope.

**Sidescan sonar.** An acoustic device that emits sound signals to the side of a ship's track; these signals are reflected back from the sea floor, revealing its character.

**Souter Van Veen grab sampler/corer.** A jawed or clam-like device that grabs or scoops up samples of sediment from the sea floor.

**Stream valley.** An elongate depression in the Earth's surface carved by a stream.

**Structural fold.** A fold in rock or strata produced by deformation.

**Subaerial.** Processes or conditions, such as erosion, that exist or operate in the open air at the Earth's surface.

**Subduction.** The process of one lithospheric plate descending beneath another along a convergent boundary.

**Subduction zone.** A zone along which subduction occurs.

**Tectonic plate.** One of the large plates of lithosphere constituting the surface of the Earth that move horizontally relative to one another.

**Terrane.** A fault-bounded body of rock of regional extent, characterized by a geologic history different from that of adjacent terranes.

**Terrestrial lowland.** An area or place of low-lying land, especially near the coast.

**Towfish.** A device towed on a cable behind a ship; commonly applied to a sidescan-sonar transceiver.

**Transform boundary.** In plate tectonics, a plate boundary that ideally shows pure strike-slip displacement (two plates sliding horizontally past each other).

**Transmissometer.** A device that measures levels of light in the water, providing an estimate of the amount of suspended particulate matter.

**Tsunami.** A gravitational seawave initiated by a short-duration, large-scale disturbance of the sea floor, usually by strong earthquake.

**Unconformity.** A substantial break or gap in the geologic record where a rock unit is overlain by another that is not next in stratigraphic succession.

**Water column.** A vertical section of water from the surface to the bottom of a body of water.

**Zooplankton.** Aquatic animals, mostly microscopic, that have a planktonic lifestyle.