

Lake: ocean and lakes

[Science](#), [Geology](#)



A lake is a body of relatively still water of considerable size, localized in a basin, that is surrounded by land apart from a river, stream, or other form of moving water that serves to feed or drain the lake. Lakes are inland and not part of the ocean and therefore are distinct from lagoons, and are larger and deeper than ponds. [1][2] Lakes can be contrasted with rivers or streams, which are usually flowing. However most lakes are fed and drained by rivers and streams. Natural lakes are generally found in mountainous areas, rift zones, and areas with ongoing glaciation.

Other lakes are found in endorheic basins or along the courses of mature rivers. In some parts of the world there are many lakes because of chaotic drainage patterns left over from the last Ice Age. All lakes are temporary over geologic time scales, as they will slowly fill in with sediments or spill out of the basin containing them. Many lakes are artificial and are constructed for industrial or agricultural use, for hydro-electric power generation or domestic water supply, or for aesthetic or recreational purposes. Lake, large, inland body of fresh or salty standing water.

Lakes are distinguished from bodies of water such as bays and gulfs, and some seas, that have an interchange with the ocean and are subject to tides. Lake basins are formed by many geologic processes, such as buckling of stratified rock into large folds, displacement of large masses of rock by faults (see Fault), and blocking of valleys by landslides. Lakes also form by glaciation. Glaciers carve out large basins by scooping up bedrock and redistributing loose material. Many of the lakes of North America formed this way, including the Great Lakes and New York's Finger Lakes.

The source of lake water is atmospheric precipitation that reaches the lake directly and by means of springs, brooks, and rivers. Lakes form and disappear over the course of varying lengths of geologic time (see Chronology). They may evaporate, as the climate becomes more arid, or they may fill up with sediment, leaving a bog or swamp in their place. In arid regions where precipitation is slight and evaporation great, lake levels rise and fall with the seasons and sometimes dry up for long periods. In lakes where evaporation prevents the water from overflowing the basin rims, substances dissolved in the water become concentrated.

The dissolved matter, brought by tributary streams, varies in composition with the nature of the rocks in the local drainage system. The primary mineral constituent of salt lakes is common salt; bitter lakes contain sulfates; alkali lakes contain carbonates; borax lakes contain borates; and some lakes contain combinations of these substances. Lakes form at all altitudes and are distributed throughout the world. Almost one-half of the world's lakes are in Canada. Lakes are abundant in high latitudes, particularly in mountain regions subjected to glacial action.

Many lakes are important commercially as sources of minerals and fish, as shipping arteries, and as vacation resorts. The largest lakes in the world include the Caspian Sea, Lake Superior, and Lake Victoria. The Dead Sea is the world's lowest lake, 408 m (1, 340 ft) below sea level. The Caspian, the world's largest lake, covers an area of 370, 998 sq km (143, 243 sq mi). Lake Baikal is the deepest freshwater lake in the world, with a maximum OCEAN An ocean (from Ancient Greek ??????? (Okeanos); the World Ocean of

classical antiquity[1]) is a body of saline water that composes much of a planet's hydrosphere.

On Earth, an ocean is one or all of the major divisions of the planet's World Ocean - which are, in descending order of area, the Pacific, Atlantic, Indian, Southern (Antarctic), and Arctic Oceans. [3][4] The word sea is often used interchangeably with " ocean" in American English but, strictly speaking, a sea is a body of saline water (generally a division of the World Ocean) that land partly or fully encloses. [5] Earth is the only planet that is known to have an ocean (or any large amounts of open liquid water).

Saline water covers approximately 72% of the planet's surface ($\sim 3.6 \times 10^8$ km²) and is customarily divided into several principal oceans and smaller seas, with the ocean covering approximately 71% of the Earth's surface. [6] The ocean contains 97% of the Earth's water, and oceanographers have stated that only 5% of the World Ocean has been explored. [6] The total volume is approximately 1.3 billion cubic kilometres (310 million cu mi)[7] with an average depth of 3,682 metres (12,080 ft). [8] The ocean principally comprises Earth's hydrosphere and therefore is integral to all known life, forms part of the carbon cycle, and influences climate and weather patterns.

It is the habitat of 230,000 known species, although much of the ocean's depths remain unexplored, and over two million marine species are estimated to exist. [9] The origin of Earth's oceans remains unknown; oceans are believed to have formed in the Hadean period and may have been the impetus for the emergence of life. Extraterrestrial oceans may be composed of water or other elements and compounds. The only confirmed large stable

bodies of extraterrestrial surface liquids are the lakes of Titan, although there is evidence for the existence of oceans elsewhere in the Solar System.

Early in their geologic histories, Mars and Venus are theorized to have had large water oceans. The Mars ocean hypothesis suggests that nearly a third of the surface of Mars was once covered by water, and a runaway greenhouse effect may have boiled away the global ocean of Venus. Compounds such as salts and ammonia dissolved in water lower its freezing point, so that water might exist in large quantities in extraterrestrial environments as brine or convecting ice.

Unconfirmed oceans are speculated beneath the surface of many dwarf planets and natural satellites; notably, the ocean of Europa is believed to have over twice the water volume of Earth. The Solar System's gas giant planets are also believed to possess liquid atmospheric layers of yet to be confirmed compositions. Oceans may also exist on exoplanets and exomoons, including surface oceans of liquid water within a circumstellar habitable zone. Ocean planets are a hypothetical type of planet with a surface completely covered with liquid.

Ocean and Oceanography, great body of salt water comprising all the oceans and seas that cover nearly three-fourths of the surface of the earth, and the scientific study of the physical, chemical, and biological aspects of the so-called world ocean. The major goals of oceanography are to understand the geologic and geochemical processes involved in the evolution and alteration of the ocean and its basin, to evaluate the interaction of the ocean and the atmosphere so that greater knowledge of climatic variations can be attained, and to describe how the biological productivity in the sea is controlled.

The world ocean covers 71 percent of the earth's surface, or about 361 million sq km (140 million sq mi). Its average depth is 5, 000 m (16, 000 ft), and its total volume is about 1, 347, 000, 000 cu km (322, 300, 000 cu mi). The three major subdivisions of the world ocean are the Atlantic Ocean, the Pacific Ocean, and the Indian Ocean, which are conventionally bounded by the continental masses (see Continent). The two minor subdivisions of the world ocean are the Southern Ocean, bounded by the Antarctic Circumpolar Current to the north and Antarctica to the south, and the Arctic Ocean, almost landlocked except between Greenland and Europe.

From the shorelines of the continents a submerged part of the continental mass, called the continental shelf, extends sea ward an average distance of 75 km (43 mi); it varies in width from nearly zero to 1, 500 km (930 mi). The shelf gives way abruptly at a depth of about 200 m (660 ft) to a steeper zone known as the continental slope, which descends about 3, 500 m (12, 000 ft). The continental rise, a gradually sloping zone of sediment that is considered part of the ocean bottom, extends about 600 km (370 mi) from the base of the continental slope to the flat abyssal plains of the deep-ocean floor.

In the central parts of the oceans are the midocean ridges, which are extensive mountain chains with inner troughs that are heavily intersected by cracks, called fracture zones. The ridges are sections of a continuous system that winds for 60, 000 km (40, 000 mi) through all the oceans. The Mid-Atlantic Ridge extends from the Norwegian Sea through the volcanic islands of Iceland and the Azores to the South Atlantic, where it is equidistant from the African and South American coasts.

The ridge continues into the Indian Ocean, with a branch that reaches into the Gulf of Aden and the Red Sea, then passes between Australia and Antarctica and into the eastern South Pacific. The East Pacific Rise extends north to the Gulf of California; Easter Island and the Galapagos are volcanic islands that are part of this submarine mountain chain. The ridge system seems to merge into the continents in several areas, such as the Red Sea and the Gulf of California, and such areas are regions of great geologic activity, characterized by volcanoes, or earthquakes and faults (see Earthquake; Fault; Volcano).