

Record: 1

- Title:** The Parts of the Earth.
- Subject Terms:** EARTH -- Surface; EARTH -- Crust; EARTH -- Mantle; EARTH -- Core; ROCKS
- Authors:** Georges, Jason; Irons-Georges, Tracy
- Source:** Rourke's World of Science Encyclopedia; 1999 Earth Science, Vol. 4, p7 (Click to view "Table of Contents") 9p, 8 color
- Publisher:** Rourke Publishing, LLC.
- ISBN:** 0865934827
- Abstract:** Most of the Earth's surface is underwater, while the rest is land. The crust, the mantle, and the core are the three major layers from the surface of the planet to its center. The crust has three basic kinds of rocks, igneous, metamorphic, and sedimentary. The ocean has a big effect on life on land. The first living things evolved in the ocean. The Earth is covered by a layer of gases called the atmosphere. (Copyright applies to all Abstracts)
- Lexile:** 620
- Full Text Word Count:** 1203
- Accession Number:** 7681475
- Database:** Book Collection: Nonfiction

The Parts of the Earth

Much of the surface of our planet is underwater, mostly under the oceans. The rest of the surface is called land. Below the surface are different layers of rocks and other materials. Above the surface are different layers of air. All of these parts work together to make life on Earth possible.

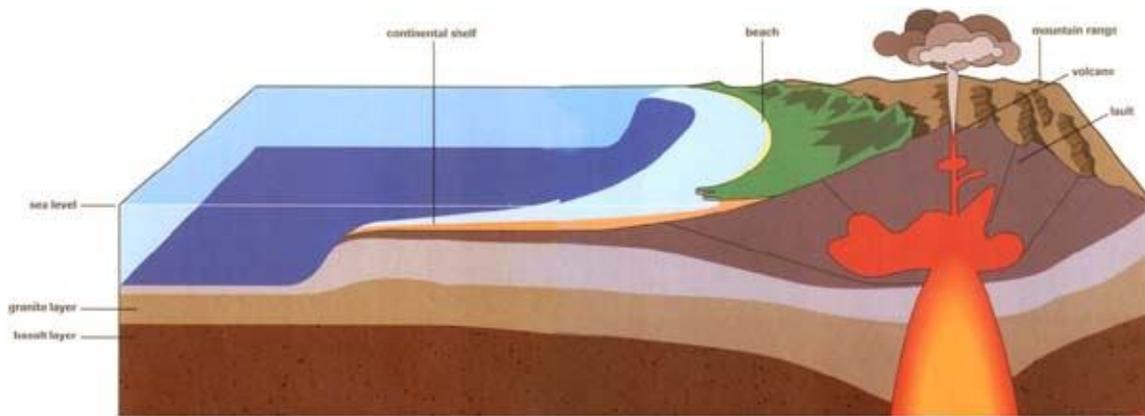


Most of the Earth's surface is covered in water.

Earth's Layers

There are three major layers from the surface of the planet to its center. They are the crust, the mantle, and the core. The top, thinnest layer of the Earth is called the crust. The crust is thicker in different parts. It is about 5 miles thick under the oceans. It can be over 40 miles thick below the tallest mountains. All life on the planet lives above the crust.

Below the crust is the mantle. The mantle is a very thick layer. It goes down over 1,800 miles (2,900kilometers). Most rocks of the Earth are in the mantle. Rocks in the mantle are more dense. This means that they are packed a lot closer than rocks in the crust. They are under the weight of all the rocks on top of them. The temperature in the mantle is very hot. Some rocks even melt.



SECTION OF THE EARTH'S CRUST

The middle of the Earth is called the core. The core has two different layers of its own. Directly beneath the mantle is the outer core. The outer core goes over 1,000 miles (2,000 kilometers) below the mantle. It is made up of a combination of the metals iron and nickel. There may even be sulfur in the outer core. The outer core is a liquid because it is so hot and under so much pressure. At the center of the Earth is the inner core. The inner core is made of solid metal. From the edge of the inner core to the center of the earth is about 850 miles (1,370kilometers). It also is made of iron and nickel and is very hot. It is solid metal because the pressure is so high.

Rocks

The crust of the Earth has three basic kinds of rock. They are igneous (IG-nee-us), metamorphic (meh-tuh-MORE-fick), and sedimentary (sehduh-MEN-tuh-ree) rocks. The substances that make up most of rocks are called minerals (MIH-nuh-rulz). The most common type of rocks in the crust are igneous rocks. They are formed with the cooling of magma (MAG-muh), hot liquid rock from the crust and mantle. These rocks include granite (GRAH-nut) above the oceans and basalt (BUH-salt) below the ocean floor. Metamorphic rocks are made when one type of rock changes into another because of high temperatures or pressures. Diamonds are made when carbon is put under a lot of pressure and heat. Sedimentary rocks are made from parts of other rocks, chemicals, or the remains of dead plants and animals.



Rocks

Sedimentary rocks often form layers in the crust. These layers are called strata (STRA-tuh). Each layer tells about Earth's past. Strata near the surface are newer than those further underground. Old bones, or fossils, from plants and animals are sometimes found in different

strata. The history of the Earth learned from these fossils is called the fossil record.

Scientists have used the fossil record to create a history of the Earth since life first evolved. This is called the geologic time scale. Simple living things first appeared almost 4 billion years ago during the Precambrian (preKAME-bree-un) era. The earliest fish, reptiles, and land plants evolved during the Paleozoic (pay-lee-uh-ZOHick) era. The dinosaurs were alive during the next period, called the Mesozoic (meh-zuh-ZOH-ick) era. They suddenly became extinct 65 million years ago. Large mammals and humans evolved in the most recent period, the Cenozoic (seh-nuh-ZOH-ick) era.



GETTING TO KNOW...

Andrija Mohorovicic

Andrija Mohorovicic (mah-har-ah-VEE-cheech) was born in 1857 in what is now Croatia (kroh-AY-shuh). He earned a degree in mathematics and physics. Mohorovicic studied the atmosphere and set up a weather station.

In 1901, a strong earthquake was felt in Croatia. Mohorovicic became interested in **seismology** (size-MAW-luh-jee), the study of earthquakes. He got a **seismograph** (SIZE-muh-graf), a device that measures earthquakes. A very destructive earthquake happened in Croatia in 1909. Mohorovicic studied the seismograph recordings. Waves of energy from the earthquakes were reflected by a change in density under the Earth's surface. This **discontinuity** (dis-kon-tuh-NEW-uh-tee) is the line between the crust and the mantle. It occurs all over the world. The layer is now called the **Moho** (MOH-hoh), after Mohorovicic.

Andrija Mohorovicic

The Ocean

The ocean is very important to life on our planet. The first living things evolved in the ocean. Today, many plants and animals live in the sea. Much of the weather on Earth is controlled by this large body of water. How the ocean moves also has a big effect on life on land.

Tides are the rising and falling of the ocean level near the shore. A high tide is when the water level rises. A low tide is when the water level falls. This movement is mostly controlled by the Moon. The gravity of the Moon pulls the water in the ocean toward it. The Sun also affects the tides. It is larger than the Moon and has more gravity, but the Sun does not pull on the oceans as strongly as the Moon. The Sun is much farther away from the Earth. Plants and animals near the shore spend their lives adapting to high and low tides. Land at the shores, called coastlines, is built up and torn down by the movement of the ocean tides.



The Ocean

The coastlines are also changed by the movement of waves. Beaches are made by waves, which break up rocks into smooth pieces of sand. Waves can form in several ways. Tides are actually the largest waves. Most smaller waves on the surface of the ocean or a lake are caused by the wind. Waves formed by strong winds in the middle of the ocean can make waves that hit a beach very far away. Waves can also be formed by underwater earthquakes or eruptions of volcanoes. A giant wave called a tsunami (soo-NAW-mee) can be made in this way. It is sometimes called a tidal wave, even though it is not like tides. A tsunami causes great destruction if it reaches land.



Tides

The Atmosphere

An atmosphere is the layer of gases that covers the surface of a planet. Most planets have some kind of atmosphere. The atmosphere of Earth lets many different organisms live on the land and in the water. It is very important to all plants and animals. The atmosphere protects our planet from dangerous radiation from the Sun. It also provides gases that animals need to breathe and that plants need to make food. Earth's atmosphere is made mostly of nitrogen (NI-truh-jun) and oxygen (AWK-sih-jun), with small amounts of argon, carbon dioxide, hydrogen, methane, and other gases. Ash from volcanoes, dust, and small drops of water called vapor are also in the atmosphere.



The Atmosphere



Atmosphere's Layers

Earth's atmosphere has many different layers. The one closest to the surface is called the troposphere (TROH-puh-sfeer). It is where most changes in the weather happen. The layer above the troposphere is the stratosphere (STRAH-troh-sfeer). The stratosphere contains the ozone layer. Ozone (OH-zone) is a form of oxygen that stops most of the Sun's ultraviolet radiation from reaching the lower part of the atmosphere. The mesosphere (MEH-zuh-sfeer) is the next layer up, followed by the thermosphere (THUR-muh-sfeer). The ionosphere (i-AH-nuh-sfeer) is the highest layer in the atmosphere. It reflects radio waves and its height is affected by the Sun. The changing height of the ionosphere increases the range of radio stations after dark.

© 1999 Rourke Corporation, Inc.

~ ~ ~ ~ ~

By Jason Georges and Tracy Irons-Georges

This article is copyrighted. All rights reserved.
Source: Rourke's World of Science Encyclopedia