

Volcano Facts and Types of Volcanoes



A volcano is a vent or fissure in Earth's crust through which lava, ash, rock and gases erupt. A volcano is also a mountain formed by the accumulation of these eruptive products. Let's take a look at how volcanoes form:

Earth's crust is 40 to 250 miles (64 to 402 kilometers) thick. It is broken up into 14 major and 38 smaller pieces called tectonic plates. These plates float on a layer of magma — semi-liquid rock and dissolved gases. At the boundaries of these plates — where they move past, are pushed under, or move away from each other — magma, which is lighter than the surrounding solid rock, is often able to force its way up through cracks and fissures. Magma can explode from the vent, or it can flow out of the volcano like an overflowing cup. Magma that has erupted is called lava.

Principal types of volcanoes

Cinder cone volcanoes (also called **scoria cones**) are the most common type of volcano and are the symmetrical cone shaped volcanoes we typically think of. They may occur as single volcanoes or as secondary volcanoes on the sides of stratovolcanoes or shield volcanoes. Airborne fragments of lava, called tephra, are ejected from a single vent. The lava cools rapidly and builds up around the vent, forming a crater at the summit. Cinder cone volcanoes are fairly small, generally only about 300 feet (91 meters) tall and not rising more than 1,200 feet (366 meters). They can build up over short periods of a few months or years.

Stratovolcanoes are also called **composite volcanoes** because they are built of layers of alternating lava flow, ash and blocks of unmelted stone. They are larger than cinder cones, rising up to 8,000 feet (2,438 meters). Stratovolcanoes result from a conduit system of vents leading from a magma reservoir beneath the surface. When dormant, they typically have steep concave sides that sweep together at the top around a relatively small crater.

Stratovolcanoes erupt with great violence. Pressure builds in the magma chamber as gases, under immense heat and pressure, are dissolved in the liquid rock. When the magma reaches the conduits the pressure is released and the gases explode, like soda spewing out of a soda can that you shook up and opened suddenly. Because they form in a system of underground conduits, stratovolcanoes may blow out the sides of the cone as well as the summit crater.

Stratovolcanoes are considered the most violent eruptions. Mount St. Helens, in Washington state, is a stratovolcano that erupted on May 18, 1980. Approximately 230 square miles (596 square kilometers) of forest was completely obliterated and 57 people were killed. Ash was blown up into the atmosphere and fell over 11 states.

Shield volcanoes are huge, gently sloping volcanoes built of very thin lava spreading out in all directions from a central vent. They have wide bases several miles in diameter with steeper middle slopes and a flatter summit. The gentle convex slopes give them an outline like a medieval knight's shield. Eruptions are not generally explosive, more like liquid overflowing around the edges of a container. The world's largest volcano, Mauna Loa in Hawaii, is a shield volcano. Mauna Loa is about 55,770 feet (17,000 meters) from its base beneath the ocean to the summit, which is 13,681 feet (4,170 meters) above sea level. It is also one of the Earth's most active volcanoes and is carefully monitored. The most recent eruption was in 1984.

Lava domes are built up when the lava is too viscous to flow. A bubble or plug of cooling rock forms over a fissure. This cooler, thick lava usually rises near the end of an explosive eruption and lava domes often form within the craters of stratovolcanoes. Mount St. Helens has several well-defined lava domes inside the crater.

Other volcanic landforms

Besides the symmetry of well-known stratovolcanoes such as Mount Fuji in Japan and Kilimanjaro in Tanzania, volcanic activity is responsible for several other distinctive landforms.

Calderas: A caldera is a bowl-shaped depression formed when a volcano collapses into the void left when its magma chamber is emptied; there are three types. The first type is a crater lake caldera. This is the result of a stratovolcano collapsing into its magma chamber during a violent eruption. Basaltic calderas have a concentric ring pattern resulting from a series of gradual collapses rather than a single event. They are often found at the summit of shield volcanoes such as the craters at the tops of Mauna Loa and Kilauea. Resurgent calderas are the largest volcanic structures on Earth. They are the result of catastrophic eruptions that dwarf any eruptions ever recorded by human beings. Yellowstone caldera, sometimes called the "super volcano," is one example.

Volcanic plugs: When magma solidifies in the fissure of a volcano the hard dense rock may form a “neck” that remains when softer surrounding rock has been eroded away. This can result in dramatic landmarks such as Ship Rock in New Mexico, and Devil’s Tower in Wyoming.

Volcanoes in history

A.D. 79: One of the most famous volcanoes is **Mount Vesuvius**, which sits along the Bay of Naples in southern Italy. It has erupted more than 50 times in the past 2,000 years. The A.D. 79 eruption, which buried Pompeii, made Vesuvius famous, but another eruption in 1631 killed some 4,000 people.

1669: In Sicily, **Mount Etna** sent a river of lava through the streets of Catania, killing some 20,000 people there and in the surrounding region.

1783: The eruption of **Mount Skaptar** in Iceland devastated farming and fishing, causing a famine that killed a fifth of the country's people.

1815: Whirlwinds and tsunamis from the eruption of **Mount Tambora**, on Sumbawa Island in Indonesia, killed 12,000 people. The volcano sent a cloud ejecta into the atmosphere that was more than four times the amount ejected by Mount Pinatubo in 1991.

1883: Another Indonesian volcano, **Krakatoa**, erupted in an explosion heard 3,000 miles away. Seventy-pound boulders landed on islands 50 miles away, and a 130-foot tsunami devastated hundreds of villages, including Java and Sumatra. About 36,000 people died. Dust high in the atmosphere caused the Moon to appear blue, and sometimes green, for two years.

1902: **Mount Pelée**, on the island of Martinique, smothered the town of Saint-Pierre in deadly gas and hot ash, killing 29,933 of the 29,937 residents.

1980: **Mount St. Helens** in Washington state blew 1,300 feet off its top, killing 57 people and causing a midday darkness in towns 85 miles away.

1991: After 600 years of dormancy, **Mount Pinatubo** in the Philippines rumbled for days before erupting and killing about 750 people. Ash was more than 6 feet deep in a two-mile radius around the volcano, and buried a U.S. air base 15 miles away.

Pinatubo's cloud of sulfuric acid, some 20 million tons of it, climbed to more than 12 miles in the stratosphere. Over the next several weeks, the cloud encircled the equator and spread to the poles, covering the entire planet. The particles reflected sunlight and cooled the Earth by nearly a full degree Fahrenheit.

What is a Volcano?

A volcano is a landform (usually a mountain) where molten rock erupts through the surface of the planet.

In simple terms a volcano is a mountain that opens downward to a pool of molten rock (magma) below the surface of the earth. It is a hole in the Earth from which molten rock and gas erupt.

What is the difference between lava and Magma?

Magma is liquid rock inside a volcano.

Lava is liquid rock (magma) that flows out of a volcano. Fresh lava ranges from 1,300° to 2,200° F (700° to 1,200° C) in temperature and glows red hot to white hot as it flows.

How many volcanoes are there in the world?

There are around 1510 'active' volcanoes in the world. We currently know of 80 or more which are under the oceans.

What causes volcanoes to erupt?

The Earth's crust is made up of huge slabs called **plates**, which fit together like a jigsaw puzzle. These plates sometimes move.

Between the Earth's crust and the mantle is a substance called **magma** which is made of rock and gases.

When two plates collide, one section slides on top of the other, the one beneath is pushed down. **Magma** is squeezed up between two plates.

Did you know?

The name "volcano" has its origin from the name of **Vulcan**, a god of fire in Roman mythology.

As pressure in the molten rock builds up it needs to escape somewhere. So it forces its way up "**fissures**" which are narrow cracks in the earth's crust. Once the magma erupts through the earth's surface it's called lava.