

# Volcanoes







**This active volcano  
in Washington State  
erupted in 1980.**

## Kinds of Volcanoes

The word volcano probably makes you think of red-hot lava erupting from a mountain. This is correct for some volcanoes, at least while the volcano erupts. However, many volcanoes are extinct. An extinct, or dead volcano will never erupt again.

Active volcanoes are volcanoes that might erupt again. The world has more than 1,500 active volcanoes. Some active volcanoes are quiet for hundreds of years before they erupt again.

Some volcanoes have small eruptions. Others explode with great force. Scientists who study volcanoes can usually tell when a volcano will erupt. Sometimes, though, volcanoes can surprise even scientists.

Scientists believed that Mount St. Helens in the state of Washington might erupt at some time in the future. However, in 1980, when it did erupt, 57 people died and large areas of the state were covered with volcanic ash.

### Key Notes:

**What are two kinds of volcanoes?**

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**This diver is swimming in the crack between two plates of the Earth's crust.**

## How Volcanoes Form

A volcano is an opening in the crust, or outside later, of Earth. The opening leads to a deeper layer of Earth called the mantle. Inside the mantle, pockets or chambers of hot, liquid rock called magma can form.

Earth's crust is broken into pieces called plates. When plates separate, a crack opens. Separation of plates often cause earthquakes. If magma and gas have built up in the chambers, they can force their way to the surface. A volcano occurs when the magma and gas push through the Earth in a column and spill out.

Volcanoes can also occur when plates move together and overlap. As the bottom plate sinks into the Earth's mantle, rock from the sinking plate can melt into magma. The melted rock can push through the cracks.

### Key Notes:

**How does a volcano's cone form?**

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The lava coming from this volcano is called pahoehoe.

## When Volcanoes Erupt

One type of volcanic eruption happens when magma is forced up through the Earth's mantle. When the magma hits the surface it is called lava. Lava can reach a temperature of 2,000 degrees Fahrenheit. A temperature of 2,000 degrees Fahrenheit is almost four times hotter than the hottest setting of an oven. As lava flows, it burns the plants and trees in its path. Even trees that are miles away can die because the heat from the eruption dries out their sap.

Another type of eruption shoots clouds of hot, poisonous gases from inside Earth into the air. These gases are dangerous to breathe. The force of the eruption's blast quickly cools the lava turning it into tiny bits of glass and ash. Volcanic ash can fall like snow for miles

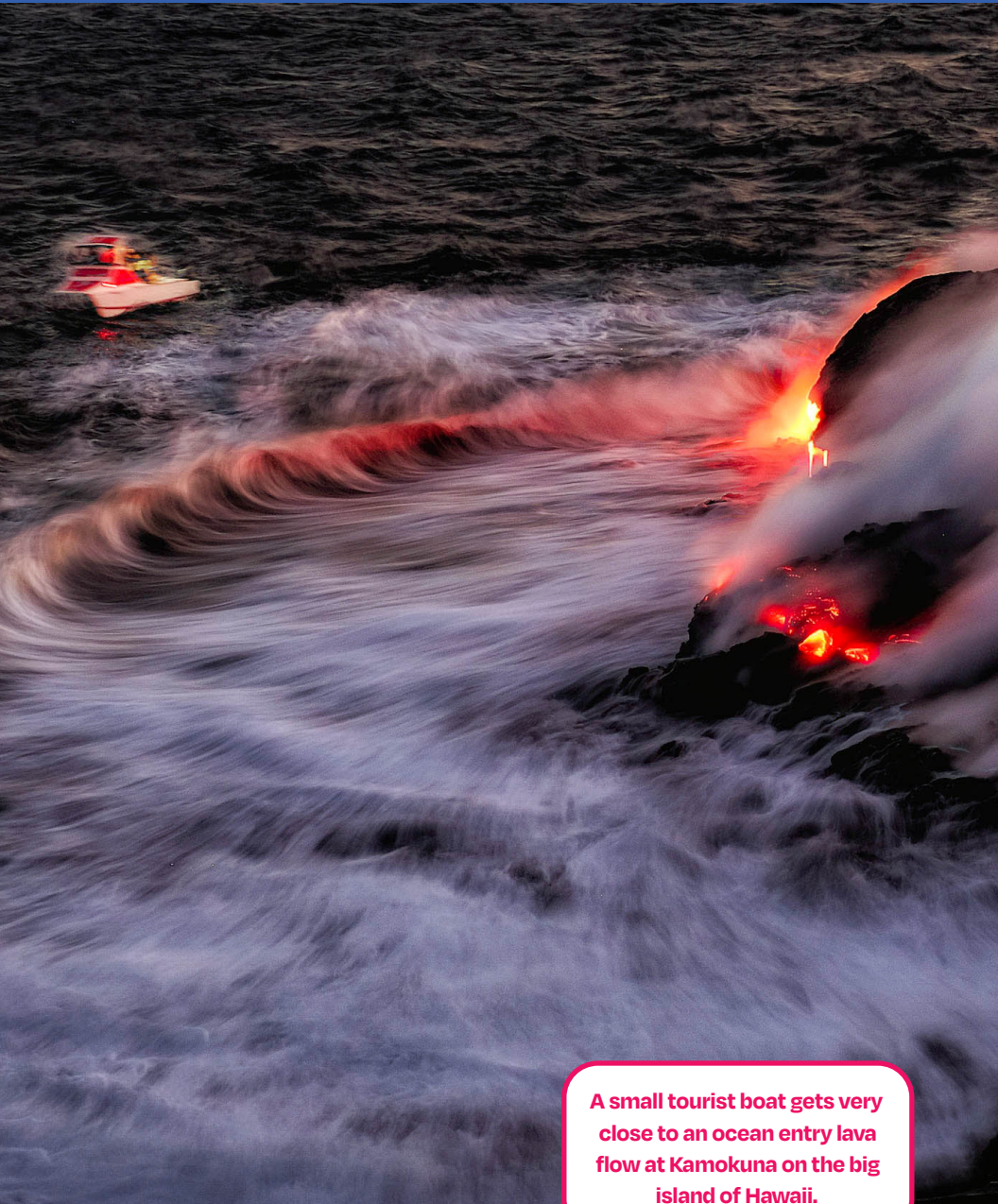
### Key Notes:

What happens when volcanoes erupt?

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A small tourist boat gets very close to an ocean entry lava flow at Kamokuna on the big island of Hawaii.

# Volcanic Island

The islands of Hawaii were formed by volcanoes that erupted from a hot spot in Earth’s mantle. Hot spots are places where huge amounts of magma built up in Earth’s mantle and often erupt. Where Hawaii is now, ancient eruptions of lava flowed onto the ocean floor and cooled to become hard rock. Later eruptions spilled new lava, and, as the process was repeated, the pile of rock grew.

With each new eruption, the pile of cooled lava grew higher. When the cooled lava reached the ocean’s surface, an island formed. As the plate moved above the hot spot, a new volcano formed and another island began. By repeating this process, the hot spot slowly built a chain of islands. The state of Hawaii is made up of islands like these.

## Key Notes:

How were the islands of Hawaii formed?

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