

## Volcanic activity

A popular way of classifying magmatic volcanoes is by their frequency of eruption, with those that erupt regularly called active, those that have erupted in historical times but are now quiet called dormant, and those that have not erupted in historical times called extinct. However, these popular classifications—extinct in particular—are practically meaningless to scientists. They use classifications which refer to a particular volcano's formative and eruptive processes and resulting shapes, which was explained above.

There is no real consensus among volcanologists on how to define an "active" volcano. The lifespan of a volcano can vary from months to several million years, making such a distinction sometimes meaningless when compared to the lifespans of humans or even civilizations. For example, many of Earth's volcanoes have erupted dozens of times in the past few thousand years but are not currently showing signs of eruption. Given the long lifespan of such volcanoes, they are very active. By human lifespans, however, they are not.

Scientists usually consider a volcano to be active if it is currently erupting or showing signs of unrest, such as unusual earthquake activity or significant new gas emissions. Many scientists also consider a volcano active if it has erupted in historic time. It is important to note that the span of recorded history differs from region to region; in the Mediterranean, recorded history reaches back more than 3,000 years but in the Pacific Northwest of the United States, it reaches back less than 300 years, and in Hawaii, little more than 200 years. The Smithsonian Global Volcanism Program's definition of 'active' is having erupted within the last 10,000 years.

Dormant volcanoes are those that are not currently active (as defined above), but could become restless or erupt again. Confusion however, can arise because many volcanoes which scientists consider to be active are referred to as dormant by laypersons or in the media.

Extinct volcanoes are those that scientists consider unlikely to erupt again. Whether a volcano is truly extinct is often difficult to determine. Since "supervolcano" calderas can have eruptive lifespans sometimes measured in millions of years, a caldera that has not produced an eruption in tens of thousands of years is likely to be considered dormant instead of extinct. For example, the Yellowstone Caldera in Yellowstone National Park is at least 2 million years old and hasn't erupted violently for approximately 640,000 years, although there has been some minor activity relatively recently, with hydrothermal eruptions less than 10,000 years ago and lava flows about 70,000 years ago. For this reason, scientists do not consider the Yellowstone Caldera extinct. In fact, because the caldera has frequent earthquakes, a very active geothermal system (i.e. the entirety of the geothermal activity found in Yellowstone National Park), and rapid rates of ground uplift, many scientists consider it to be an active volcano.