

What is the power of a volcano?

The power of a volcano is extremely great. This is because volcanic eruptions are capable of causing mass destruction, even beyond the immediate effects of their eruptions. It is commonly known that a volcano infamously destroyed the ancient city of Pompeii in the Roman Empire. In the year 79, Mount Vesuvius erupted, and the eruption covered large areas with lava, including the entire ancient city of Pompeii, and for this reason it is one of the most remembered volcanic eruptions to this day. However, there have been many other, sometimes more influential, instances of volcanic eruptions, which are listed below.

Firstly, volcanoes are capable of changing the weather. In 1815, Mount Tambora, a volcano located in modern-day Indonesia, erupted. Its eruption not only killed thousands of people, but sent 10 to 120 million tons of sulphur into the stratosphere, causing the following year of 1816 to become known as the "year without a summer" even as far away as Europe. In 1816, average global temperatures decreased by 0.4-0.7°C, causing the year of 1816 to experience winter throughout its entire duration. This had many side effects, including a typhus epidemic in parts of Europe which killed 60,000 people, and several famines across the world. The fact that one singular volcano was able to cause such destruction is enough to demonstrate the power of a volcano.

Volcanoes are also capable of producing some of the loudest sounds ever heard. The loudest sound ever heard by humans was the 1883 Krakatoa Eruption. In 1883, the volcanic island of Krakatoa in what is now Indonesia erupted, not only destroying the entire island, but creating a shockwave of 310 decibels. The shockwave was so loud that it was heard as far away as Australia and India, and deafened everyone within 64 kilometres. To understand the scale of 310 decibels, the decibel scale is logarithmic, meaning that going up 10 decibels multiplies the sound by 10 times. For example, 90 decibels is 10 times larger than 80 decibels, which in turn is 10 times larger than 70 decibels, because going up by one decibel is equivalent to multiplying the sound by 1.2589..., or the tenth root of ten. Since 90 decibels is the sound of a lawn mower, 310 decibels is 10 sextillion times louder than a lawn mower. Since 200 decibels is a sonic boom, the sound an aircraft makes when it travels faster than sound, the Krakatoa Eruption was 100 billion times louder than a sonic boom. This means that volcanoes have the power to produce incredibly loud sounds.

Volcanoes are also capable of destroying the entire world. 75,000 years ago, the Toba Volcano, a Supervolcano located in modern-day Indonesia, erupted. This eruption was so powerful that it reduced the human population at the time down to several thousands, causing the closest that humanity has ever been to extinction, as well as having impacts on the spread of humans across the world. However, this could potentially happen again, because in Wyoming, USA, there is a volcano known as the Yellowstone Supervolcano. Located on a hotspot, Yellowstone last erupted 640,000 years ago, and it erupts once every 600,000-700,000 years, meaning that its next eruption is due to occur eventually. It has a 1 in 700,000 chance of erupting each year, and, if it were to erupt again, the vast majority of the United States of America would be covered in volcanic ash, resulting in worldwide apocalyptic effects, including great economic recession and a ten year long worldwide

winter. While its potential future eruption is unlikely, it still shows the potential power volcanoes have.

However, by far the greatest power that volcanoes have had in the history of Earth is causing the Permian Extinction 250 million years ago, also known as the Great Dying. 250 million years ago, a large amount of volcanoes erupted in northern Pangaea, in modern-day Siberia, releasing more than 4 million cubic kilometres of lava in the region. This had many effects, including acidifying the oceans and heating the atmosphere, both of which were huge factors in the Permian Extinction, which was so powerful that it wiped out around 83% of all life on Earth at the time. The few survivors of the Permian Extinction included the Therapsid clade and the Archosaur clade, the former of which would later evolve into the mammals, and the latter of which would later evolve into the dinosaurs, meaning that volcanic eruptions were technically responsible for not only the emergence of the dinosaurs and the beginning of the Triassic Period, but the existence of almost all life that exists on Earth today. The Permian Extinction was the largest extinction in Earth's history, and it was even larger than the infamous extinction which wiped out all of the dinosaurs 65 million years ago, demonstrating the great power that volcanoes have had on many events in Earth's ancient past.

Therefore, in conclusion, volcanoes have many powers. These include the power to change the weather, the power to produce the loudest sound ever heard, the power to destroy the entire world, and the power to change the world forever.