# Volcanoes

## Introduction

A volcano is said to be a rapture which occurs in the crust of the earth and it allows lava, dangerous gasses as well as volcanic ash to escape to the surface of the earth from the magma which is placed in areas below the earth. The volcanic activities on earth have a deep history which shows that they have been active for a long time. The volcanoes on earth usually occur when the crust on the surface of the earth is broken into tectonic plates. The tectonic plates usually float on the hotter and the softest layer in its own mantle. This shows that the volcanic activities on earth usually occur where the tectonic plates on earth are either converging or diverging. The erupted volcanoes can be very hazardous in various special ways. They are not only hazardous to the areas which are affected by the volcanoes but also elsewhere. To the aircraft, the volcanoes can be hazardous because of the volcanic ash which gets into the jet engines to alter the operations of the turbines. Larger eruptions usually affect the temperatures on the surface of the earth and this causes a lot of problems in the lower atmosphere of the earth. Also, it can lead to famines on earth because of the volcanic winters which occur after the eruptions. This research will elaborate more about the volcanic activities and how the volcanoes work. Additionally, it will describe the measures which people have to take in order to better prepare for volcanic activities.

## History of how volcanoes came to be

The word volcano is said to have originated from the Vulcan who was said to be the roman god of fire. The roman god of fire is believed to have forged the volcanic activities in many areas. The smoke from the volcanoes has always been attributed to originating from the Vulcan forge. However, the scientist came to discover that the smoke is the volcanic gas which is released from activities of both inactive am active volcanoes on the surface of the earth.

All over the world, there are more than 1500 known volcanoes with the Hawaii’s volcanoes said to be the largest which have ever occurred on the surface of the earth. Indonesia is said to have the largest number of volcanoes on earth which means that the tectonic plates in this area are converging or diverging. Most of the volcanic activities on the surface of the earth are said to be more than 10,000 years old. In fact, some of the volcanic activities on earth are 100,000 years old. This shows that the history of the formation of volcanoes has been dated back in the ancient times.

There are historical myths which explain how the volcanoes came to be in Hawaii. There was a goddess of volcanoes in Hawaii who was called Pele who had various periods of anger and she was believed to cause mass eruptions (McNutt, 2015). The volcanic activities and the earthquakes in Hawaii are believed to have been formed using Peles magic stick. All over the world, each community living in the volcanic areas usually had a myth or folktales which explained the origin of the volcanoes and it was associated with gods.

Scientifically, the formation of volcanoes can be explained from the melting of the mantle. The mantle is found between the molten iron core and the crust at the surface of the earth. After the mantle melts, it moves to the surface of the earth through the crust and it releases some of the most dangerous gasses on the surface of the earth. The melting of the mantle is caused by the high temperatures which are found in that zone and also the high pressure found in this area. This causes the rock to melt in order to become a liquid rock. On the surface of the earth, the magma called lava after it has been extracted from the magma reservoir. This explains the formation of the volcanic eruptions since they started appearing on the surface of the earth.

The history of volcanic activities can also be explained using the various eruptions which occurred on the surface of the earth many million years ago. Mono lake is an example of an active volcano which was created after several volcanoes occurred many years ago. There are mountains which have been formed as a result of the early volcanic era on earth and it explains the existence of the mono lake. Mon craters on the earth’s surface are said to be the latest active volcanoes which occurred 700 years ago at the panum crater. The mono craters are explained to be originating from a series of volcanic eruptions which existed 40,000 years ago. The volcanic activities on the earth’s surface are believed to have left landmarks like lakes, and mountains. This shows that the volcanic activities on the surface of the earth have been occurring for a long time.

There are some of the volcanic activities which occurred on the surface of the earth some of them have become famous because of the mass destruction which they brought on the surface of the earth. In Thera, Greece back in 1600, there was a volcanic activity which occurred as a result of the mass deposition of magma on the surface of the earth. In Italy, back in AD 79, the same happened in Mount Vesuvius which is considered to be one of the most dangerous volcanoes on earth. The earthquakes and the volcanic activities in this area came as a result of the movement of the tectonic plates on the surface of the earth which made the pressure to build inside the volcanoes and this led to mass destruction of the surface of the earth. In New Zealand, the same happened in AD 180 in Hatepe (Siebert, 2013). The volcanic activity was huge which made the skies in china and in Rome to turn red. This was caused as a result of the movement of the tectonic plates on the surface of the earth. The same activities have been happening on the surface of the earth which have led to claiming a lot of lives.

## How the volcanoes work

The working of the volcanic activities originates from the pressures which are created o the mantle. The mantle usually covers a distance of 500 to 1000 km and it creates a well on the lower earth. The well creates a hotspot at a particular point on the surface of the earth which then erupts in order to form the eruptions. Below the earth’s crust, there are high temperatures which are found there and this leads to melting of the mantle leading to the formation of magma (Sigurdsson, 2015). There are a string of volcanoes which are created and they usually die out as the magma makes its way through the created hotspot. The Hawaii is an example of a hotspot which came as a result of the weakening of the tectonic plates.

 The density of the liquid rock is lower as compared to the density of the solid rocks. The differences in the density of the rocks within the crust makes the magma on the liquid rock to push up with a higher pressure. As the liquid magma pushes up, it helps in melting more rocks which make the magma to be more. The creation of more magma as it pushes up shows that the temperatures of the magma are very high and they can melt anything on its way out. This explains why most of the volcanic activities usually destroy a lot of property.

If the upward pressure is more than the downward pressure of the surrounding rocks, then the magma keeps on moving outwards which creates a lot of pressure on the rocks. The magma which is created after all these activities collect in the magma chambers which are below the surface of the earth. A rise in the magma pressures increases to higher levels which later cracks open in the crust of the earth and lets the magma flow out of it.

The flowing magma which occurs on the surface of the earth then leads to the creation of lava which flows on the earth’s surface. The structure which is formed in the volcanoes and the intensity of the volcanic activities depends on what is found in the magma (Harris, 2017). The magma which is found on the surface of the earth is believed to have originated from the first 100 kilometers of the mantle. Adding an extra pressure on the rock as well as water creates a lot of heat which is enough to melt the rocks.

Most of the smaller flows of volcanos on the surface of the earth usually form the cinder cones while the larger ones lead to the creation of domes on the surface of the earth. The shield volcanoes which occur have an effect of the creation of broad cones which are not tall. There are shallow lava flow chambers which help in the formation of bowl-shaped calderas which are considered to be the largest structures on the surface of the earth. The working of the volcanoes is therefore attributed to several factors which make the natural disasters to be catastrophic because it assists in destroying anything which comes on its way.

The scientists have developed a measurement of volcanoes based on its working. The volcanoes are measured using the volcanic explositivity index (VEI). According to scientists, one of the most deadly volcanoes is the VEI 8 which is considered to cause a lot of natural disasters like the global changes in climate as well as leads to the mass reduction of the human species due to high death rates.

## Preparation of volcanic eruptions

Preparation activities of the volcanic eruptions have to be done before the eruption, during the eruption, and after the eruption. Therefore, the people who are affected by the volcanoes have to find an appropriate plan during these times in order to save their lives.

Before the volcanic eruptions start, the people who are affected have to build up an emergency supply kit. The emergency supply kit should have all the basic necessities which are required for people to live. It should include the non-perishable foods, a portable kit with clothes and flashlights (Rollins, 2014). Water is also a basic necessity which has to be present during this time before the people start planning for evacuations. There should be a family emergency plan which makes the people affected to easily contact their families in case of disaster strikes.

During the volcanic activities, the people who are affected should follow the orders which are directed to them concerning their evacuation from the volcanic activities. There are mudflows during the volcanic activities and therefore the people have to be aware of the mudflows. People are advised not to cross the rivers when the mudflows are approaching because it moves at a faster speed than a normal person would run. River valleys have to be avoided as much as possible during the volcanic flow as well as the low-lying areas. In helping the neighbors, special assistance is required in order to avoid losing a lot of lives during the volcanic activities. Protection from the falling ash requires the people to stay indoors with closed windows and doors until the ashes settle down (Rollins, 2014). The people have to stay tuned to televisions and the radio stations in order to get informed about the emergency issues.

After the volcanic activities, the people are advised to go to the public shelters in order to make them feel safe from the volcanic activities. This will enable them to be able to monitor all the volcanic activities and listen to the various changes if any as they get medical care.

### Conclusion

Volcanoes are disastrous and therefore people have to take precautions when there I an announcement concerning the volcanic activities within their areas. The formation of the volcanic activities originates from the pressures of the magma from the lower earth to the upper earth. The liquid rock can be a major disaster and therefore it has to be avoided. From the history of volcanoes, there are areas which are considered to be hotspots of volcanic activities and therefore people have to avoid those places.

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