

Volcanoes and Their Characteristics Essay

Main body

Volcanoes always presented a broad area for researches in terms of their close relationship between their forms, structures, the styles of their eruption, and the mineral composition of their magma and lava. In the following paper, different types of volcanic mountains will be examined and compared in order to make conclusions concerning the relationship between the volcanoes' structure and their features. Generally, after evaluating data, it appears that depending on the process of volcano formation it may be related to one of the four existing volcano types which are known for their different characteristics and "conduct" while eruptions.

First of all, speaking about different types of volcanoes' structure, it should be mentioned that depending on their geographic location and, thus, appurtenance to a certain lithosphere platform with varied features, volcanoes demonstrate different ways of eruption ranging from the so-called "quiet" ones to the very disastrous and dangerous (Furniss 56). In general, volcanoes are subdivided into the following categories: shield volcanoes, composite volcanoes, lava domes or plug domes, and, finally, cinder cones which can be distinguished by their sizes, forms, and functioning. All of these volcano types have their peculiarities in structure and way of eruption.

In addition, the very notion of "volcano" is to be explained. A volcano is a geological landform that is made up of two parts – the upper one called a cone, and the lower one called fissure where volcanic material is accumulated (Hess 391). According to Furniss (57),

The vast majority of volcanoes are found along the boundaries of tectonic plates. Convergent boundaries, where the plates are crashing into each other, host around 90 percent of what we generally think of as volcanoes. Here, as one plate is pushed below another—a process is known as subduction—it melts, the resultant magma rising and causing volcanic eruptions. Volcanoes also form away from plate boundaries, above so-called volcanic hotspots.

Volcanoes are known for their disastrous nature which many times led to serious tragedies for humanity. During volcanoes' eruptions, numerous developing processes in the crust of the earth are taking place. According to Furniss (58),

Several factors are used to assign eruptions a score, including the volume of erupted material, the height of the eruption column, and the duration. The index ranges between zero and eight, with each increase in score representing a ten-fold increase in the various factors. The highest score on the list, VEI8, is reserved for eruptions that emit more than 1,000 cubic kilometers of material.

Below, all the four types of volcanoes will be addressed along with their features and popularities.

Discussing shield volcanoes, it should be said that they are formed as a result of a huge amount of free lava spilling from a vent and coming up abundantly and widely; gradually congealing lava

forms a low and wide mountain of dome shape which is called a shield volcano. These types of volcanoes can be very high. Among them are popular volcanoes in Hawaii.

With regards to composite volcanoes, it should be stated that they are formed as a result of the eruption of both lava and tephra which occurs from a central vent. At the end of the erupting process lava and tephra form a cone in the shape of a tower which is called a composite volcano. These volcanoes tend to develop into mountains of beautiful and symmetrical forms. Among the most famous volcanoes of this type are Mount Fuji in Japan and Mount Rainer in Washington (Hegner 88).

Addressing plug domes, it should be stated that they are formed as a result of congealing of very viscous lava (for example, rhyolite one) which is too thick to flow at a remote distance. As a result of this process, the mountain grows from below and from within. This mountain is called a plug dome. The volcanoes of this type are rather young and can be found in numerous parts of the earth including Mono Lake in California.

And finally, speaking about cinder cones, it should be stated that they are formed as a result of tephra's building up. A cone-shaped mountain that is the result of this process is called a cinder cone volcano. These volcanic mountains are the smallest ones of all types and are generally less in their size than 500 meters. An example of such a volcanic mountain is SP Mountain situated in Arizona, and belonging to the Colorado Plateau.

Conclusion

Concluding on all the information related above, it should be stated that there exists a close connection between the structure of any particular volcano and the style of its functioning and its magma and lava nature. Evaluating a row of facts about the functioning of different types of volcanoes, it appears that depending on the process of volcano formation it may be related to one of the four existing volcano types which are known for their different characteristics and "conduct". In general, volcanoes are subdivided into the following categories: shield volcanoes, composite volcanoes, lava domes or plug domes, and, finally, cinder cones.

References

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