

# Plate tectonics (earthquakes and volcanoes)

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Plate tectonics (earthquakes and volcanoes) Introduction Plate tectonics refers to the theory that earth's outer layer comprising of plates, which have moved throughout the earth's background information. The theory reveals on the knowhow behind mountains, volcanoes and earthquakes in ancient times as well as currently. It tells that similar animals may have lived at the same time on what is currently classified as separate continents. The Earth probably would not be recognized 225 million years ago. During that time, all major continents formed one giant supercontinent called Pangaea. Moreover, due the heat that built underneath the vast continent caused the Pangaea to split apart in around 200 million years ago. In that case oceans filled the areas between the created new sub-continents. Also, the land mass moves apart continuously as it rides on its plate till it reached a place that resides now. The said continents are still on the move to currently. The occurrence of plate tectonics has not been known exactly what drives despite the existence of theories. From one of the theory, it mentions that the convection that exist within the earth's mantle pushes the plate in much similar way as air heated by our bodies as it rises upward and gets deflected sideways once it reaches the ceiling. From another theory, it associates gravity with the pulling of the older, colder and the heavier ocean floor forces than that newer and lighter seafloor. Plate tectonics activity occurs at four types of boundaries. They include the divergent boundaries where new crust is created, convergent boundaries have its crust consumed, collision boundaries have its land masses colliding whereas the transform boundaries has its later sliding against each other (Conrad & Lithgow 13).

#### Background Information

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Plate tectonics occurred from the theory that was first initiated in the early 20th century by a meteorologist named Alfred Wegener. In the year 1912, Wegener identified that the coastlines of both the east coast of South America and west coast of Africa were in a position to fit together like the common jigsaw puzzle. From further examination of the globe, it revealed that all of the earth continents fitted together in a way. At that instance, Wegener suggested that all continents in one time connected in single supercontinents called Pangaea. The researcher believed that the continents gradually drifted apart around 300 million years ago. In 1929 Arthur Holmes, who was a British geologist came up with the theory of thermal convection that explained the movement of the earth's continent (Conrad & Lithgow 13).

#### Plate tectonics innovations

The innovations are mainly responsible for material and heat circulation in earth. That does not apply in mars. The strength of planetary material is mainly the main control of on a plate tectonic as properties that are physical such as temperature, pressure stress and chemical composition lead to strong rheological layering and convection in planetary interiors. From deformation experiments attempted the crustal plagioclase as much weaker than mantle olivine at conditions that correspond to moho in Venus. At the peripheral areas of the Pacific Ocean basin, it contains at its boundaries several plates that are dotted with many active volcanoes to form a ring of fire. The ring provides an excellent example of plate boundary volcanoes. Most volcanoes are related to plate margins. It forms either at mid-ocean ridges or above subduction zones. It is only a few that forms within plates

due to hot spots activity. On another case, in some steep mountains, in the world results because of the interplay that exist between terrain uplift that occurs with plate tectonics and the powerful cutting of streams into hills that lead to erosion causing landslides (Conrad & Lithgow 13).

Also plate tectonics explains that earths have a rigid outer (lithosphere) that it is broken into a mosaic of ocean. it has continental plates that are regarded to slide over the asthenosphere at the uppermost layer of the mantle. As plates are in constant motion they interact in their margin thus essential geological processes occurs such as the formation of mountain belts and earthquakes (Conrad & Lithgow 13).

In conclusion, plate tectonic research is needed for identifying natural hazards such as earthquakes and volcanic eruption before it occurs. It does not occur randomly but in specific areas such as along boundaries; hence, aiding in evacuation. This calls for more research in order to mitigate further calamities.

#### Works Cited

Conrad, Clinton P. & Lithgow, Bertelloni. C.. How Mantle Slabs Drive Plate Tectonics. New York. Princeton Publishers. 2002. Print.