

Alfred wegener ideas about continental drift



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Alfred Wegener ideas about Continental drift Alfred Wegener played crucial role in developing ideas understanding of geology. His ideas were revolutionary and innovative at that time. He pointed out that coastal lines of different continents have a lot in common, and that due to those similarities current landmasses might be fit together like pieces of a puzzle. For example east coastline of South America fit with the western coast of Africa. These observations allowed him to conclude that all continents were once a part of one big landmass. About 300 million years ago this big landmass (he called it Pangaea) was split into different pieces and drifted apart (Garrison, p 69). Wegner's ideas on plate motion were later on developed by different researchers. One of them is Kiyoo Wadati, who suggested that plate motion has resulted in often earthquakes in Japan, and those earthquakes are connected to the continental drift. He compared data from different earthquakes and identified a specific earthquake zone in the oceanic trench (Garrison, p. 70). Hugo Benioff pointed out that Kiyoo Wadati's findings were related to the "subduction of the seafloor" ("The Giants of Science"). Harry Hess was able to move beyond Wegener's ideas and develop them in a different direction. He discovered how the seafloor spreading operates and what role magma plays in it by filling in the deep oceanic trenches ("Harry Hammond Hess: Spreading the Seafloor") Ronald Dietz arrived at the same conclusion, however the Hess owns the idea that continents move together with an attached oceanic basin on the same crust (Garrison, p. 70). Tuzo Wilson analyzed Hawaiian Islands and their relation to tectonic plates. He concluded that these island were created as a result of plate's movement northwest over the "hotspots" ("J. Tuzo Wilson: Discovering Transforms and Hotspots"). The Wilson's concept of plate tectonics created a revolution in

geology since it refuted some findings of continental drift concept. The Plate tectonics theory states that there are seven (some scientists believe that there are eight) tectonic plates that move in connection with each other. Plates might collide, diverge or converge. In the places where they connect earthquakes, volcanism or trenches might occur. Idea of the seafloor spreading connects theories of plate tectonics and continental drift. It basically claims that in the places where lithospheres are shaped seafloor spreading appears with the help of volcanic activities. Wilson's findings have discredited theory of continental drift. Precisely he pointed out that oceanic and continental crusts create tectonic plates that constantly move or "drift" together ("Continental Drift and Seafloor Spreading"). Therefore the term "continental drift" is inaccurate, since both the continent and the oceanic crust move. However the theory of plate tectonics has some inconsistencies and flaws. For example Wilson's idea that volcanism appears as a result of plate's movement over the hotspot is rather debatable. Nowadays it is believed that not every volcano chain is time-progressive and also hotspots are "neither deep phenomena nor "fixed" in position over geologic time, as assumed in the popular plume model." ("J. Tuzo Wilson: Discovering Transforms and Hotspots") Tectonic plate's theory does not answer all the answers and leaves some unclear areas; it also does not refute the theory of continental drift entirely. There are many debates and the scientists have to address all these challenges adequately.