

Wegener and the theory of continental drift

[Science](#), [Geology](#)



Prepared for Dr. Heather Hauser Shorter University EASC 2060 The Natural World Submitted by Lillie Momon December 6, 2011 Running head: Wegener and the Theory of Continental Drift Alfred Wegener (1880-1930) was a German scientist in the fields of meteorology, astronomy, and geology. He was one of the first scientists to theorize about the continental drift or continents in motion, which supports the belief that the Earth's continents once were a single land mass. Wegener called this land mass, "Pangaea", because the continents began to break up, and various parts drifted away from one another.

According to Wegener, "the eastern shoreline of Africa and the western shoreline of South America fit together like a piece of jigsaw puzzle, and when you align the continents at their continental shelves, their fit is even better" [(Wegener, 2007)]. When scientist and geologist began to travel around the world, it was even more evident that Wegener's theory of continental drift could be possible, because scientist had once thought that the continents had started off in their places, where they now lie. However, Wegener's theory began to change the way people looked at the world.

Based on the theory of continental drift, Wegener began to gather evidence from around the world from landforms, fossils, and climate and put it in a book titled "The Origin of Continents and Oceans," which was published in 1915. Wegener's theory was rejected because he could not provide evidence on the force that moved the continents. Base upon the reading of, Conceptual Integrated Science, Harry Hess and Robert Dietz, both scientists came up with a hypothesis that linked, Wegener's theory of continental drift, to seafloor spreading. The seafloor is repeatedly changing; as new

<https://assignbuster.com/wegener-and-the-theory-of-continental-drift/>

lithosphere forms in mid ocean the older lithosphere is pushed from the ridge into a deep ocean trench, which causes the continents to shift" [(Weil, 1997)]. According to Dr. Heather Hauser, a professor at Shorter University, in the late nineteen fifties, geologists found new evidence of continental drift, such as two rocks matching exactly. Both rocks were the same age, and had the same exact genetic structure. These two landforms were discovered in 1958. The location of these rocks, were western South America and south eastern Africa.

This discovery helps prove that continental drift has actually occurred, because it is nearly impossible for two rocks of the same kind to turn up on two separate continents [(Hauser, 2011)]. Then in 1912, Wegener also found a tropical plant on the island of Spitsbergen. This island lies north of Norway in the Atlantic Ocean. Today Spitsbergen is covered in ice and has polar climate. This is important because today no tropical plant can grow in Spitsbergen, because its temperature is too cold. Wegener indicated that, Spitsbergen was once closer to the equator.

He thought that this was the only possible solution for the unusual discovery. At the same time when Spitsbergen was warm and tropical, Africa's temperature was freezing, but today Africa is known for its hot and tropical climate. Some geologists have concluded that the temperature was once freezing by discovering rocks that are covered in deep scratches. These scratches were caused by continental glaciers. Today, Africa's weather is too mild for any type of glacier to form. Wegener concluded that when Pangaea existed, it was closer to the South Pole.

Based on science research, when any continent moves to either pole, their temperature begins to drop. Based upon, all of the evidence from the landforms, fossils and climate, leads one to believe that continental drift did occur [(Wagner, 2008)]. Scientist also discovered particular fresh water reptile fossils that have been found in Africa and South America. These two continents were separated by the Atlantic Ocean, making it extremely difficult for the same fossil to be found on to different continent. Which makes Wegener's theory more plausible?

Scientist later discovered a fernlike plant, which had existed about two hundred and fifty years ago. Wegener used this plant to prove his theory of continental drift could have occurred, because this plant was found in many locations [(Wagner, 2008)]. Also based upon, the evidence from the landforms, fossils and climate, leads scientist and geologist alike to believe that continental drift, actually did occur. We also have our reading material from, Conceptual Integrated Science and a short documentary film on the earth crust that was showed in our Science class, the Natural World, which took place at Shorter University, supervised by, Dr. Heather Hauser, which implies that the plate tectonics are the main forces behind the changes that happen here on Earth. If we were to use some of the evidence of plate tectonics, using the boundary between the Pacific Plate and the North American Plate to illustrate just a few of the fascinating features that are created along these boundaries. According to the evidence reviewed, the earth's crust is not a solid mass. It is shaped more like a jigsaw puzzle that is made up of continental plates that shift around on top of the mantle.

This movement takes place very slowly and large scale movement can only be measured in millions of years according to Dr. Hauser [(Hauser, 2011)]. Wegener's theory is largely based on a combination of two main ideas: Continental Drift and Sea flooring. Each piece of the puzzle slides and grinds past, under, over, or away from the other pieces around it. The boundary where the Pacific Plate and the North American Plate meet is called, a convergent boundary. This is where one plate (The Pacific Plate) moves into and then underneath the other one (North America).

This creates a whole lot of grinding, folding, pushing, and otherwise violent forces [(Hewitt, 2007)]. So therefore, based upon the evidence which have been provide in reference to the landforms, fossils, climate, seafloor spreading, and plate tectonic compels one to believe, that Alfred Wegener, theory of the continental drift really did occurred and that continental drift will continue for millions and millions or years, long after humans are gone.

Hauser, D. H. (2011, November 29). The Natural World. (L. Momon, Interviewer) Hewitt, P. G. (2007). Conceptual Integrated Science. San Francisco: Pearson. Wagner, I. 2008, Aug 11). The Great Continental Drift Mystery. Retrieved November 28, 2011, from Yale Educational Curriculum: <http://www.yale.edu/ynhti/curriculum/units/1991/6/91.06.05.x.html> Watson, J. (1999, Oct 11). Dynamic Continents. Retrieved November 26, 2011, from <http://pubs.usgs.gov/gip/dynamic/continents.html> Wegener, A. (2007). Continental Drift-An Idea Before Its Time. In P. G. Hewitt, Conceptual Integrated Science (pp. 511-517). San Francisco: Pearson. Weil, A. (1997, Mar 6). The Rocky History of an Idea. Retrieved November 26, 2011, from Plate Tectonics: <http://www.ucmp.berkeley.edu/geology/techist.html> <https://assignbuster.com/wegener-and-the-theory-of-continental-drift/>