Plate Tectonics

Scientist Alfred Wegener

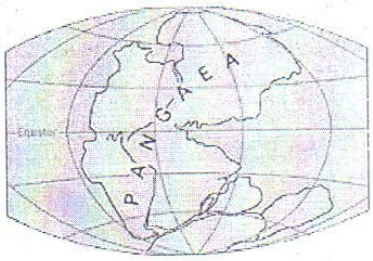
In the early 1900s, the German scientist **Alfred Wegener** noticed that the coastlines of Africa and South America looked like they might fit together. He also discovered evidence that the same plant and animal fossils were found along the coasts of these continents, although they were now separated by vast oceans. In addition, he noticed that geologic formations, like mountain ranges, on the two continents also matched up.

In 1915, Wegener published his book, *The Origin of Continents and Oceans*, suggesting that the earth's continents were once joined together in one large mass. He called the original landmass (or supercontinent) "**Pangaea**," the Greek word for "all the earth." According to Wegener, over time "Pangaea" split apart and the different landmasses, or continents, drifted to their current locations on the globe. While other scientists of the time vehemently rejected Wegener's ideas, they became the basis for the development of the theory of plate tectonics.

Continents on the Move

200 million years ago	135 million years ago	65 million years ago	50-40 million years ago
Pangaea begins to break up and splits into two major landmasses — Laurasia in the north, made up of North America and Eurasia, and Gondwana in the south, made up of the other continents.	Gondwana splinters further — the South America-Africa landmass separates from the Antarctica-Australia landmass. The Indian landmass breaks away from the Antarctica-Australia landmass.	Major rifting of Laurasia, with the North American landmass separating from Eurasia. South America and Madagascar separate from Africa.	Greenland separates from North America. Australia separates from Antarctica and moves north. The Indian landmass collides with Asia.

The modern **plate tectonics theory**, which has become widely accepted since the 1960s, states that the earth's outer layer, or **lithosphere**, is broken into several large slabs called **plates**. These plates, which hold the continents and oceans, are slowly but constantly moving around the planet. The movement of the plates not only supports our understanding that continents are not fixed and moved over time, but also explains how and why earthquakes, volcanoes, and other geologic events occur.



See if you can trace how the earth's continents have shifted over time.