

Geology, Continental Drift and Plate Tectonics

What is Geology?

Geology: The scientific study of the origin, history, and structure of the earth

- Part of studying geology is understanding the processes of the earth and how it was created.

The Theory Continental Drift

- In 1915, Alfred Wegener, a German scientist came up with this theory
- He suggested that 300 million years ago, all of the earth's land masses collided to form one supercontinent.
- He called it **Pangaea** – “all land”
- **Panthalassa** – “all sea” – the ocean that surrounded Pangaea
- About 200 million years ago, Pangaea began to break up and the pieces drifted apart

The Earth 300 Million Years Ago



How Could He Prove His Theory?

1. He recognized that some continents appeared to fit together like pieces of a jigsaw puzzle
2. He found fossils of the same animals and plants on South America and Africa, which means, millions of years ago, they were one joined
3. He noticed that there were mountains in the U.S. and Canada that were similar in age and size to mountains in Europe, meaning North America collided with Europe and Africa around 300 million years ago
4. Evidence of ice sheets that covered Africa, India, Australia, and South America 250 million years ago, so they must have been once near the South Pole

But How Does the Land Move?

- We don't really know all of the forces that move the land. However, we do know that heat from deep within the Earth moves the plates around

Convection Currents: The circular movement of heat deep within the Earth

The Theory of Plate Tectonics

- In the 1968, J. Tuzo Wilson, a Canadian, came up with a new theory called plate tectonics
- This theory suggests that the earth's outer shell is made up of about 20 'plates'
- Most of which are made up of a continent and an ocean
- Tectonics: the internal forces that deform the earth's crust

