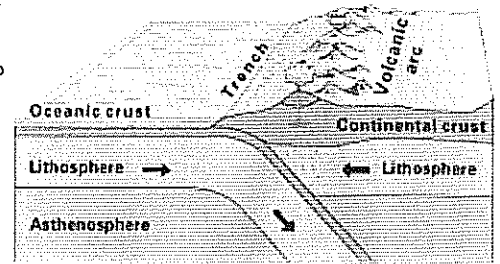




What Causes Plates to Move?

By Patti Hutchison

- 1 They say a watched pot never boils. But do you know what happens when a pot of water does boil? The water is hotter near the bottom where the heat source is located. The cooler water on top sinks to the bottom. The hotter water on the bottom is pushed to the top. This is a kind of convection current.
- 2 Scientists think convection currents are what cause earth's plates to move. A convection current is caused by differences in temperature. Mantle material close to earth's core is very hot. Mantle material near the lithosphere is cooler.
- 3 The cooler, denser material sinks toward the core. The hot material near the core expands and becomes less dense. It rises and takes the place of the cooler material. The sinking material becomes hotter and rises. This is a continuous circular motion.
- 4 Earth's convection currents can be thousands of kilometers across. But they move very slowly. They flow at rates of a few centimeters per year. Scientists believe this movement of mantle material carries the plates of the lithosphere with it. It causes the plates to move.
- 5 The rising material in this convection current spreads out. It pushes the plates upward and outward. These are divergent boundaries. The material moving downward in the current pulls the plates down with it. These are convergent boundaries.
- 6 The plates of the lithosphere are made of two different types of crust. Most contain both oceanic and continental crust. Only the Pacific plate contains just oceanic crust. As the plates move, these different types of crust cause different events.
- 7 Oceanic crust is denser than continental crust. As an oceanic plate bumps into a continental plate, the oceanic plate moves under the continental plate. The oceanic plate is subducted. It is forced down into the trench. The continental plate is folded upward.
- 8 Two continental plates have the same density. When they collide, neither plate is forced downward. The edges of these plates fold upward. Mountains are formed.
- 9 When two oceanic plates run into each other, one is forced under the other. This forms a deep trench. The crust of the subducted plate melts. The magma flows upward. Volcanoes are formed.
- 10 Plates move in different directions and at different speeds. These differences cause other events to occur. Scientists believe that they sometimes run together and form one large plate. Other plates break apart. Still others might be subducted into a trench and disappear.
- 11 What does all this plate movement mean for our earth? Scientists believe that more than 500 million years ago, the land masses were many different small fragments. Later they moved together to form one large mass. This was the continent Wagener called Panagea. It was surrounded by one large ocean.
- 12 Scientists believe this large mass then broke into two large continents. Over time they broke apart into the continents we know today. Many scientists think that the continents are moving at a rate of one to five centimeters per year.
- 13 In about fifty million years, the Atlantic and Indian Oceans will become larger. The Pacific will shrink. Africa and Australia will join Asia once again. If this happens, the earth will look very different than it does today.



Oceanic-continental convergence
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What Causes Plates to Move?

<p>1. What causes a convection current?</p>	<p>2. What are Earth's convection currents?</p>
<p>3. What occurs when an oceanic plate meets a continental plate?</p>	<p>4. What is formed when two continental plates collide?</p>
<p>5. What happens when there is a collision of two oceanic plates?</p>	<p>6. What do scientists think will happen to Africa, Asia, and Australia if continental drift continues?</p>