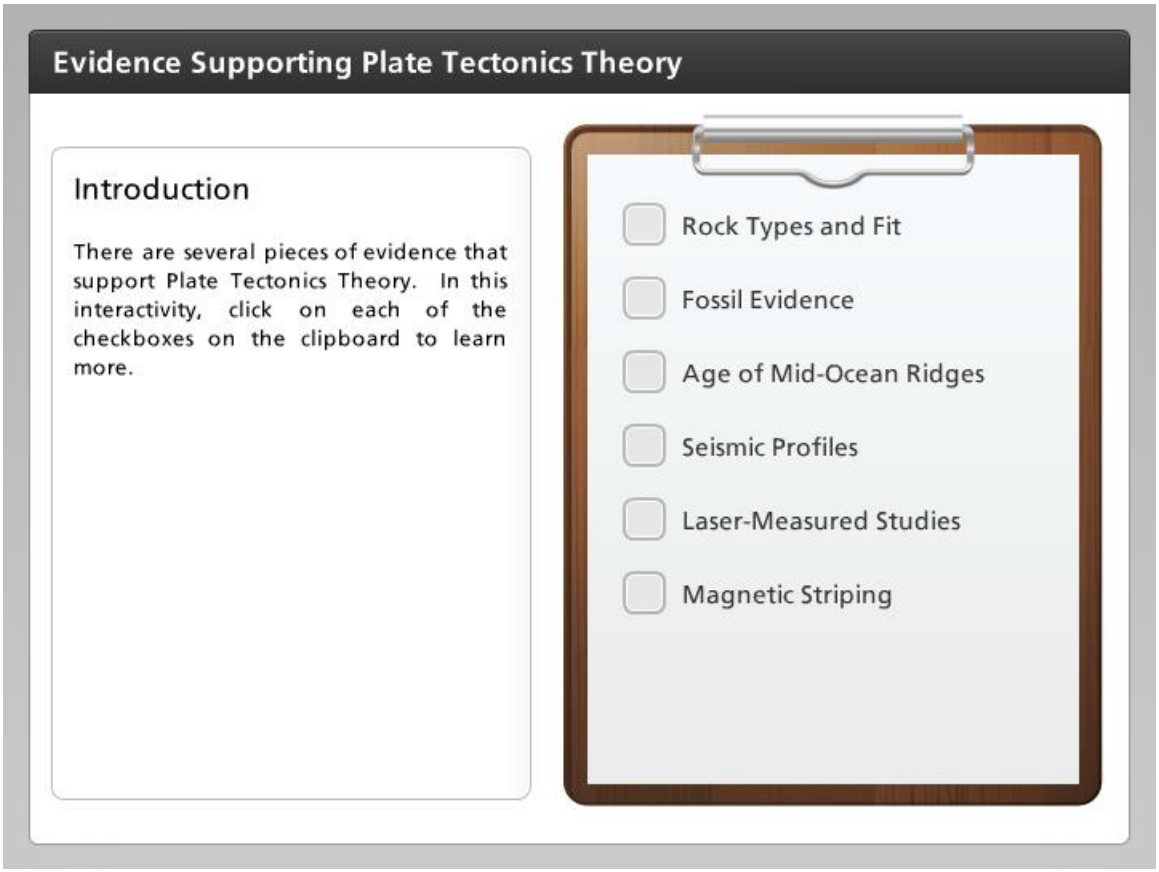
Module 7: Plate Tectonics and Earth's Structure
Topic 2 Content: Evidence Supporting Plate Tectonics Theory Notes

Introduction



There are several pieces of evidence that support Plate Tectonics Theory. In this interactivity, click on each of the checkboxes on the clipboard to learn more.

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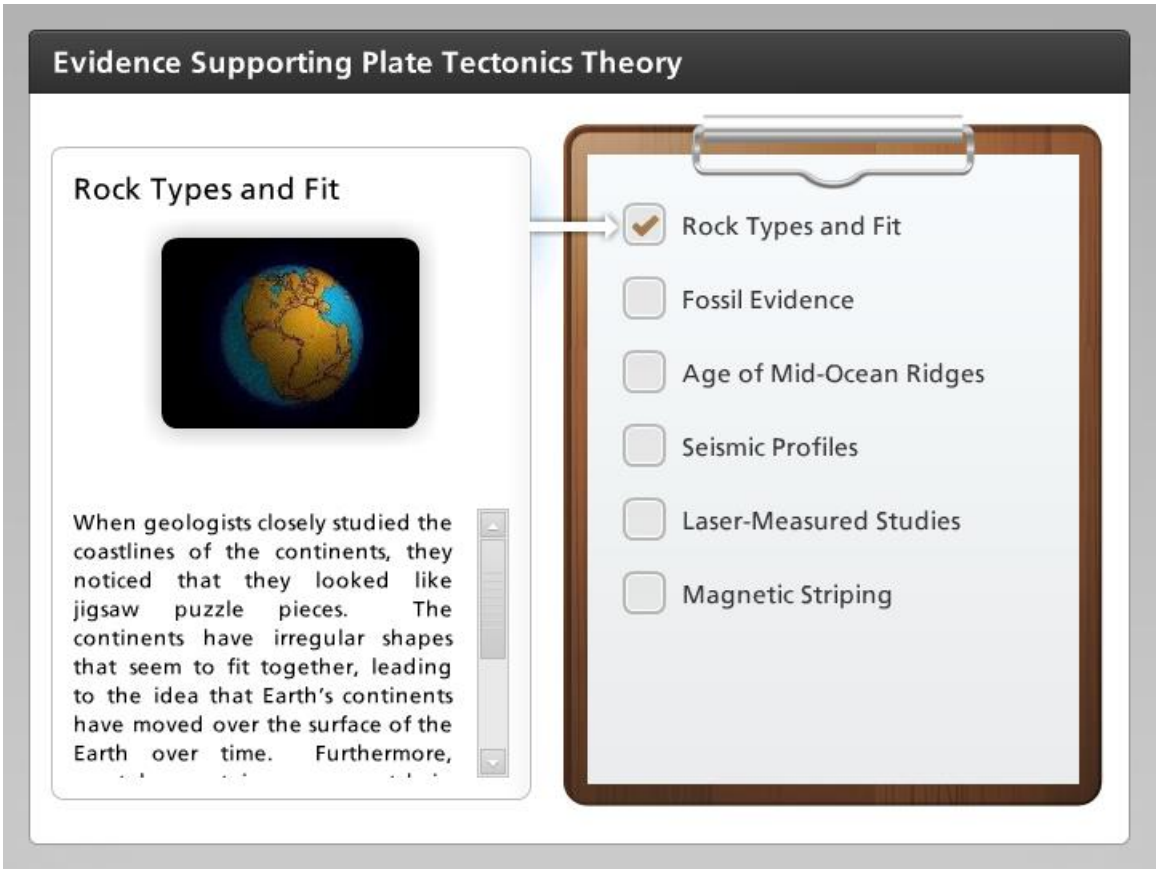
Rock Types and Fit



When geologists closely studied the coastlines of the continents, they noticed that they looked like jigsaw puzzle pieces. The continents have irregular shapes that seem to fit together, leading to the idea that Earth's continents have moved over the surface of the Earth over time. Furthermore, coastal mountain ranges match in both rock age and rock type, supporting the idea that they used to be located together. The coast of Africa and South America are one example of these coastal matching mountain ranges.

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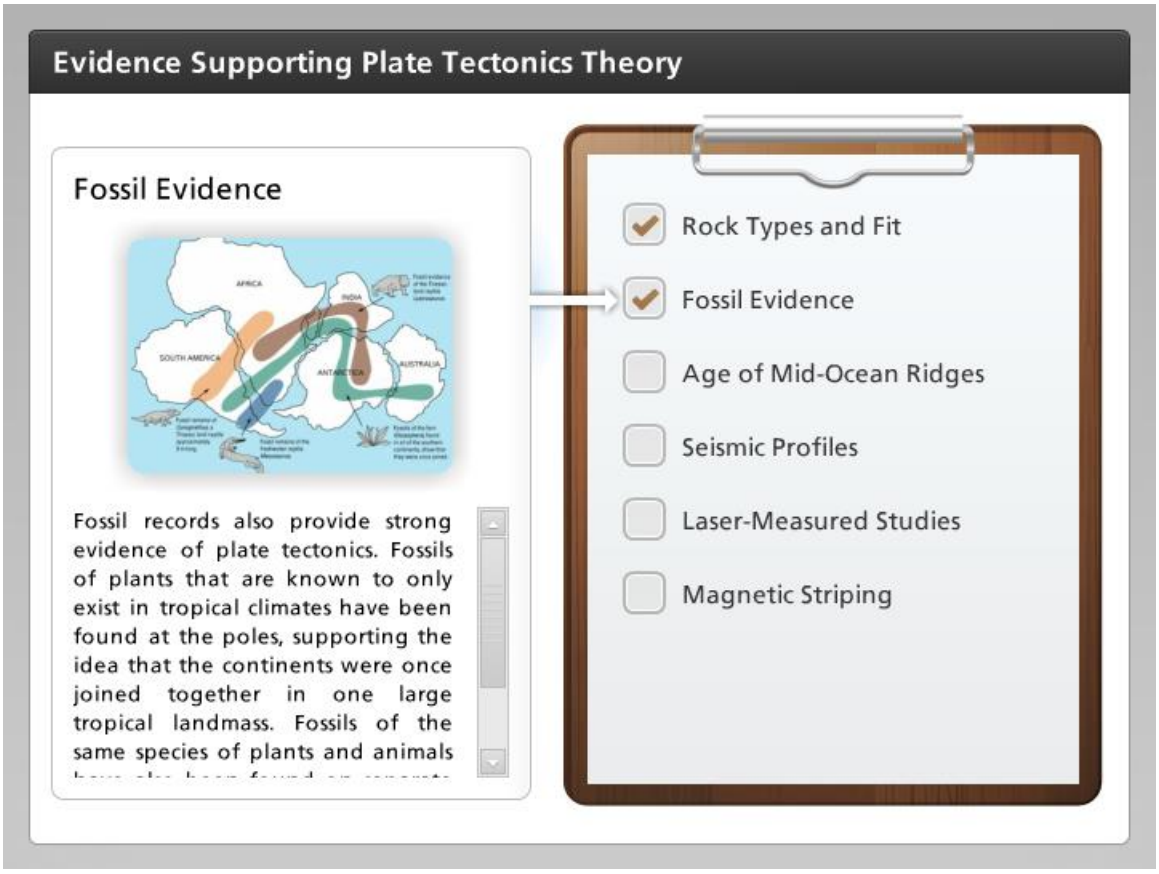
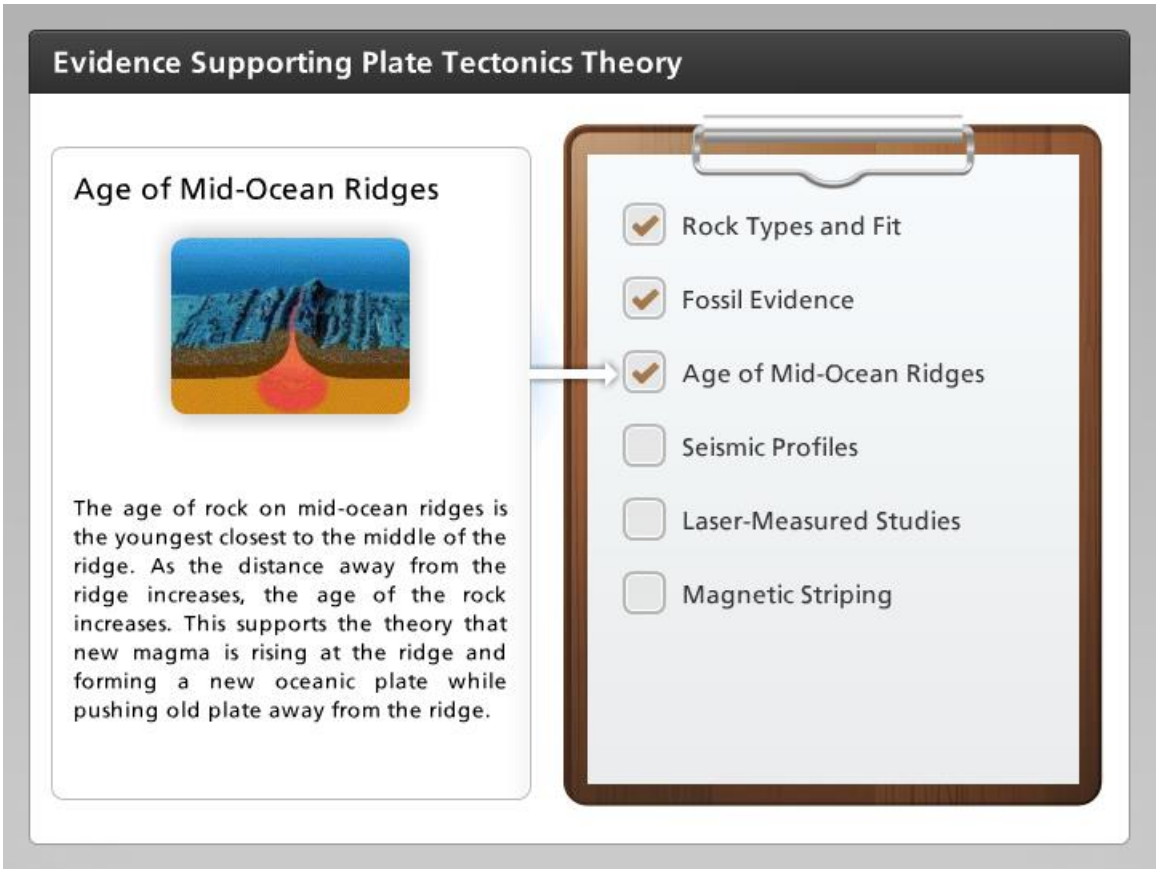
Fossil Evidence



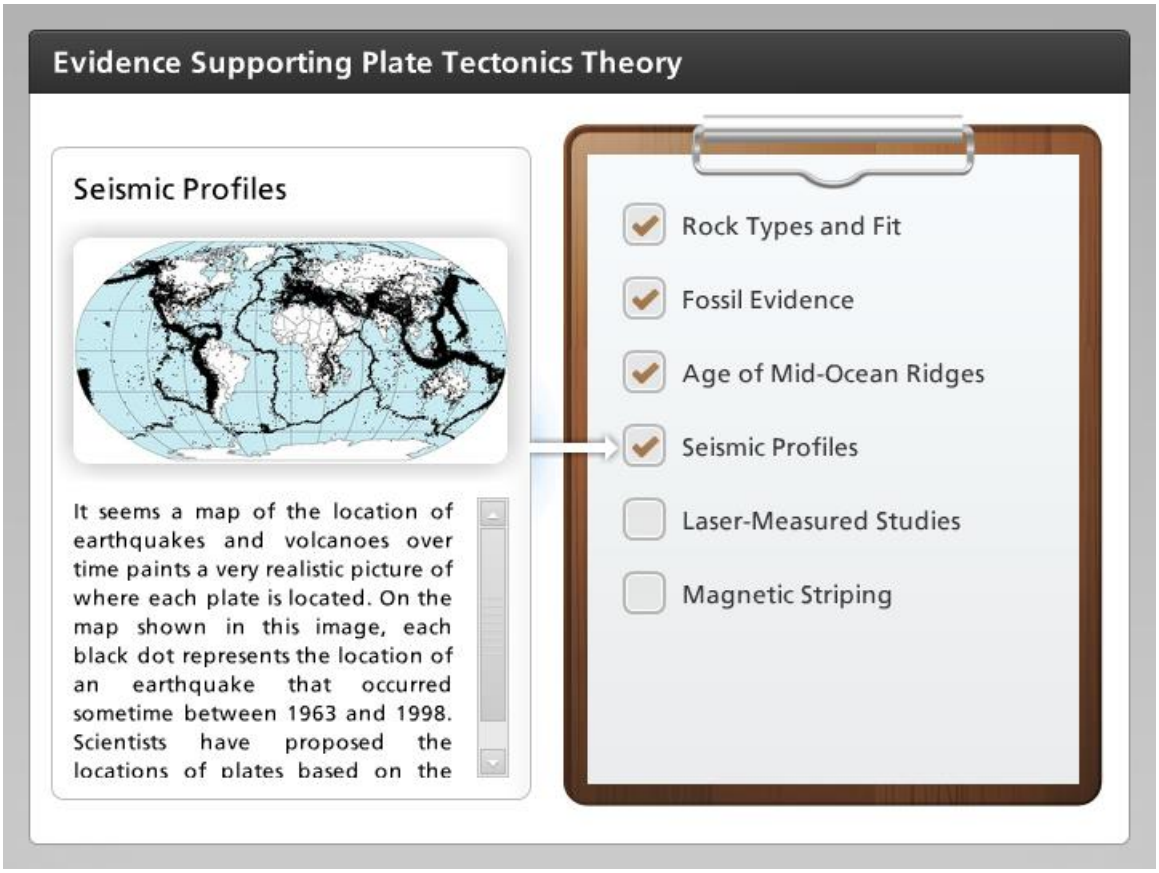
Fossil records also provide strong evidence of plate tectonics. Fossils of plants that are known to only exist in tropical climates have been found at the poles, supporting the idea that the continents were once joined together in one large tropical landmass. Fossils of the same species of plants and animals have also been found on separate continents, leading scientists to accept that these continents were once connected.

Age of Mid-Ocean Ridges



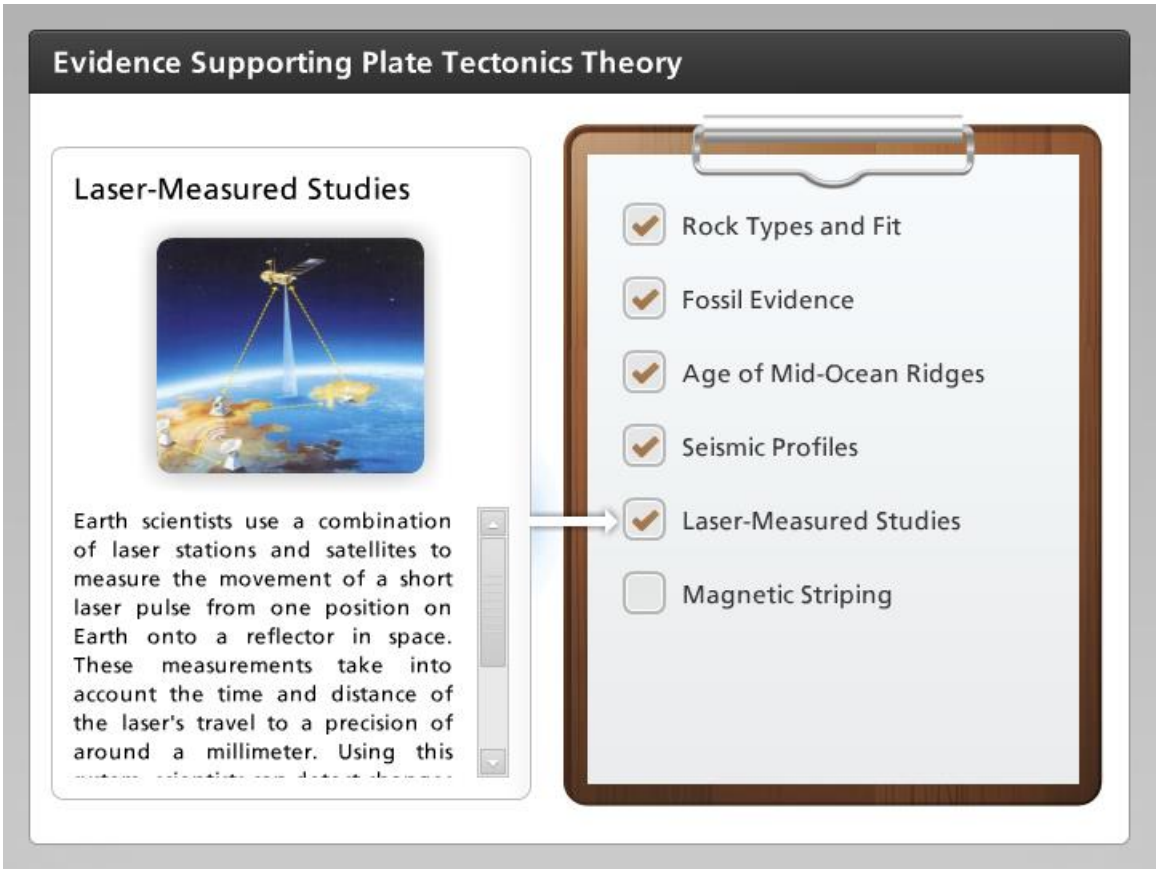
The age of rock on mid-ocean ridges is the youngest closest to the middle of the ridge. As the distance away from the ridge increases, the age of the rock increases. This supports the theory that new magma is rising at the ridge and forming a new oceanic plate while pushing old plate away from the ridge.

Seismic Profiles



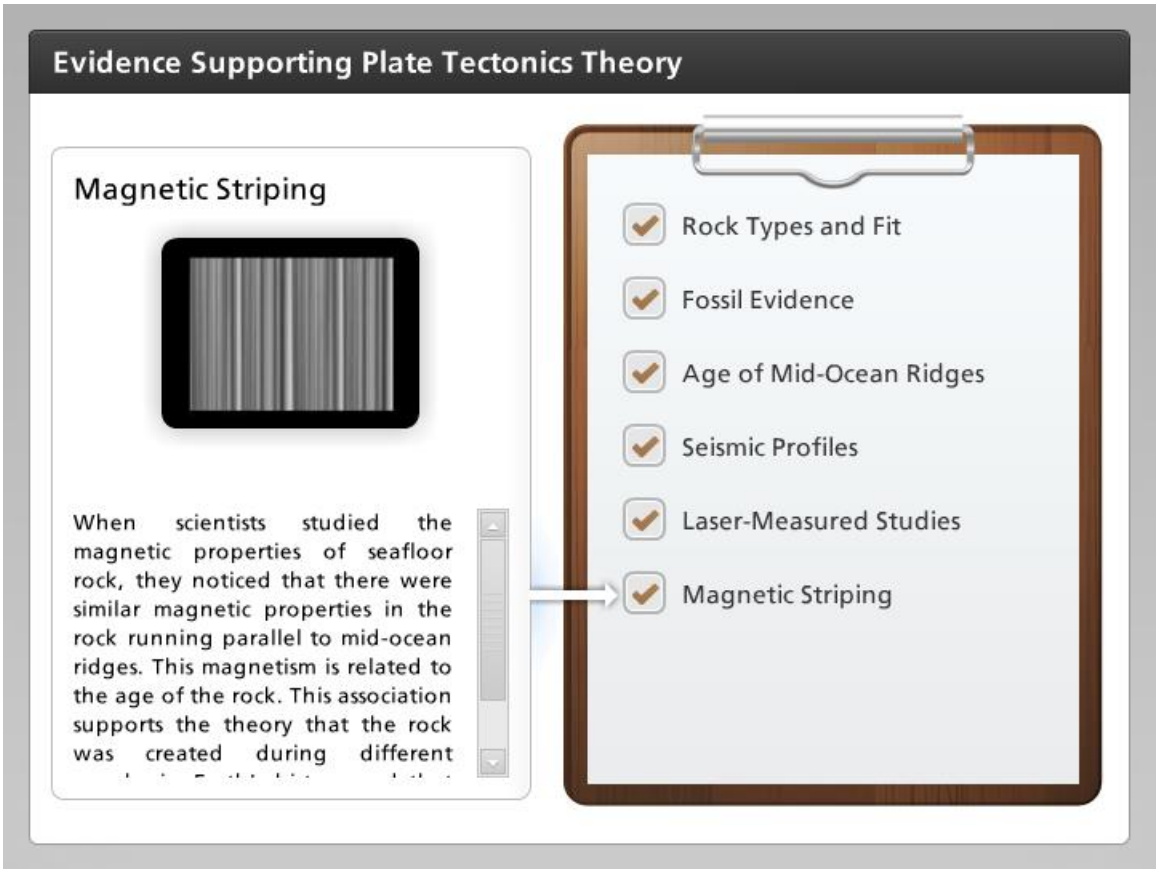
It seems a map of the location of earthquakes and volcanoes over time paints a very realistic picture of where each plate is located. On the map shown in this image, each black dot represents the location of an earthquake that occurred sometime between 1963 and 1998. Scientists have proposed the locations of plates based on the outlines on this map.

Laser-Measured Studies



Earth scientists use a combination of laser stations and satellites to measure the movement of a short laser pulse from one position on Earth onto a reflector in space. These measurements take into account the time and distance of the laser's travel to a precision of around a millimeter. Using this system, scientists can detect changes in the size and location of places on Earth. The data collected from these studies have supported that Earth's plates are converging, diverging, and transforming.

Magnetic Striping



When scientists studied the magnetic properties of seafloor rock, they noticed that there were similar magnetic properties in the rock running parallel to mid-ocean ridges. This magnetism is related to the age of the rock. This association supports the theory that the rock was created during different epochs in Earth's history and that new seafloor was being provided through rising magma.