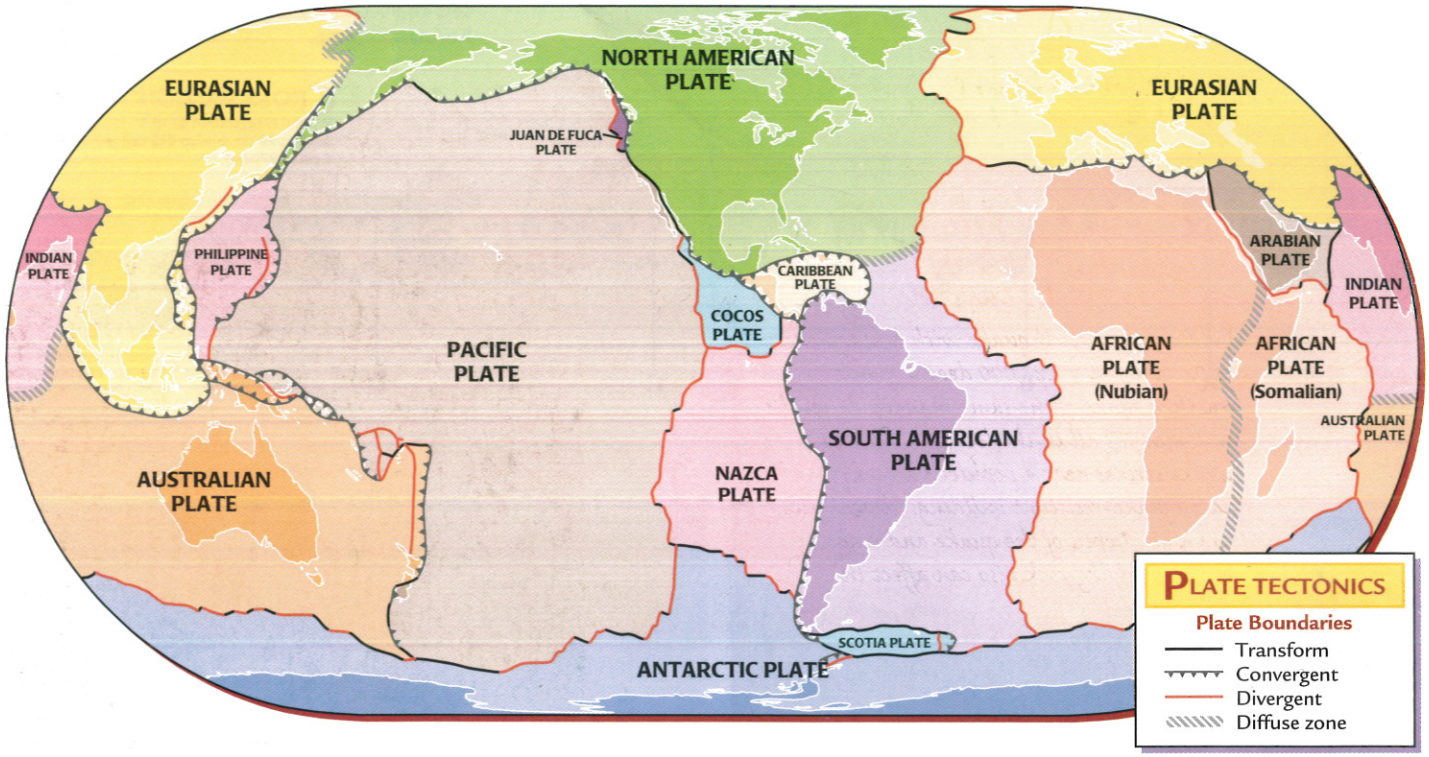
THE MOVING EARTH

World Matters

The land and water features of the earth appear stable, but actually they move between 1 to 5 inches (2.5 to 15 centimeters) each year.

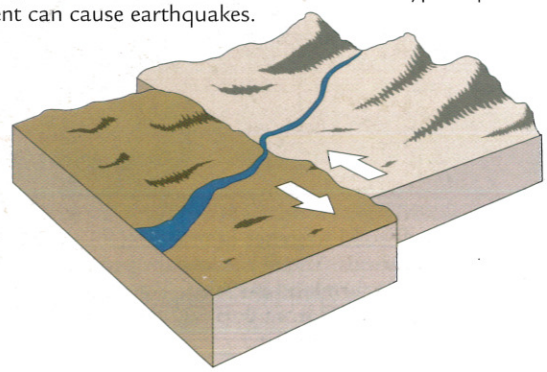
- The earth's crust is made up of about 30 **plates** that float above the molten interior of the planet. Lighter, thicker areas of the plates form the continents. Denser, thinner areas form the ocean floors.
- Plates slide along, bump into, and move away from each other.
- **Earthquakes** and **volcanoes** are common near the boundaries between plates. When an earthquake takes place beneath the ocean, a massive, destructive wave called a **tsunami** may result.

In 2005 an earthquake shook the town of Gunung Sitoli in Indonesia. With a magnitude of 8.7, it destroyed homes and offices and wrecked power lines and sewage systems. Over 900 people died in this quake.



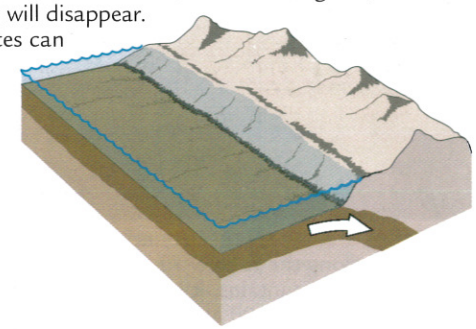
TRANSFORM PLATE BOUNDARIES

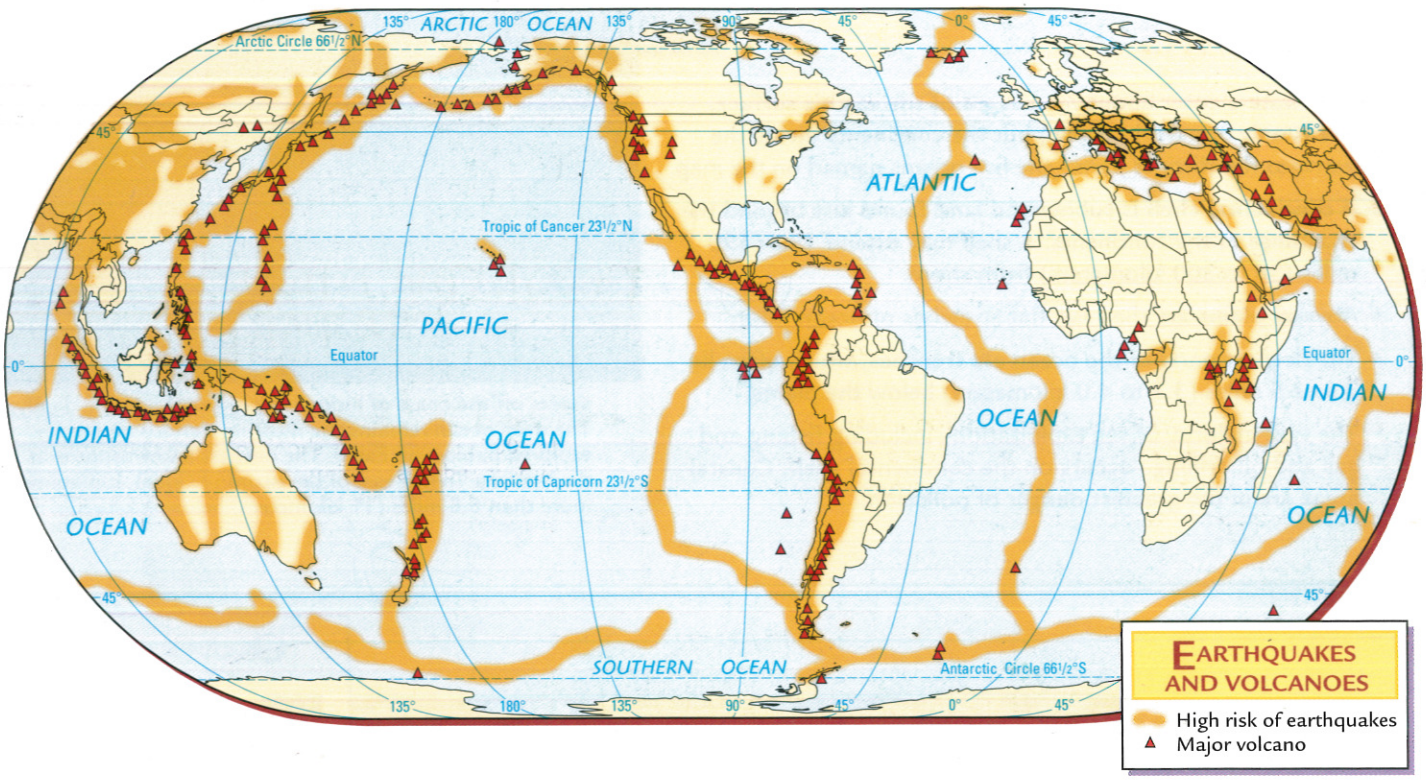
These plates move side-by-side—sometimes in opposite directions, sometimes in the same direction. This type of plate movement can cause earthquakes.



CONVERGENT PLATE BOUNDARIES

When one plate moves under another plate—**subduction**—earthquakes and volcanoes can occur. In the long run, the subducted plate will disappear. Convergent plates can be found near South America and the coasts of Asia, and in the western Pacific.



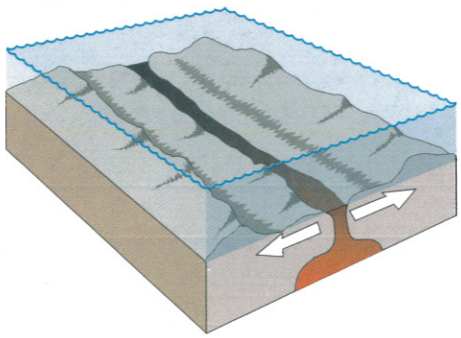


Location, Location

Why does one earthquake with a magnitude of 9.0 cause over 283,000 deaths, while another quake of the same magnitude results in none? It's all in the location. When a quake strikes near a populous area without earthquake-resistant buildings, death rates are high. Depth of the quake and stability of the overlying rock also can affect the death rate.

DIVERGENT PLATE BOUNDARIES

These plates move away from each other in opposite directions. The Mid-Atlantic Ridge is on a divergent plate boundary. This movement causes the Atlantic Ocean to widen by about 1.5 miles (2.5 kilometers) every 100,000 years.



The volcano at Soufriere Hills on the West Indian island of Montserrat buried villages and destroyed the capital city of Plymouth.