

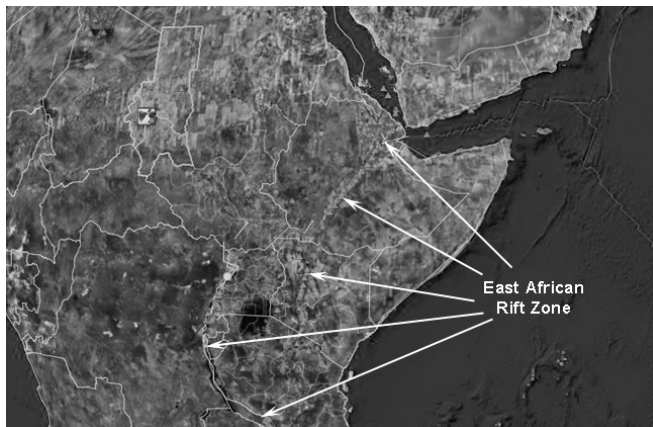
## East African Rift Valley, Ethiopia



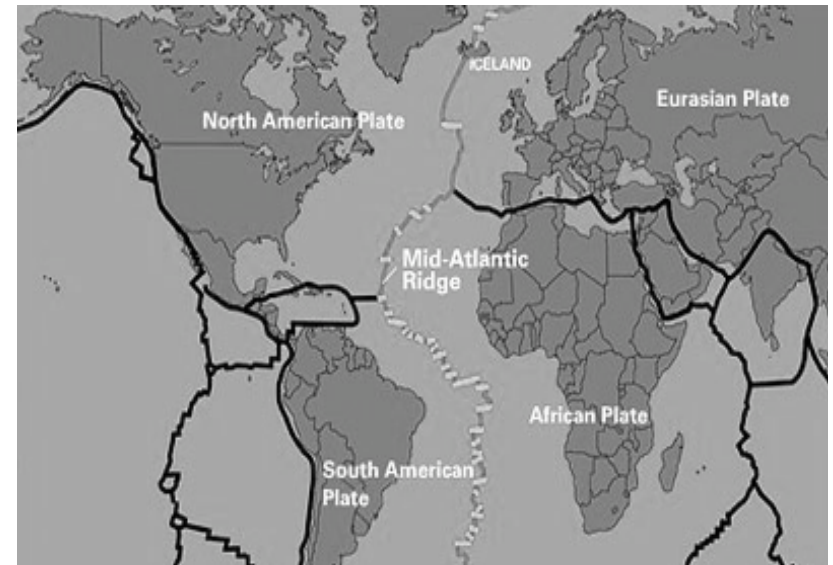
The Arabian Plate is rifting away from the African plate along an active divergent ridge system, to form the Red Sea and Gulf of Aden. The rifting then extends southwards where the African Plate is itself becoming stretched along the line of the East African Rift Valley and is splitting to form two new plates; the Nubian and Somalian Plates.

In time, as Nubian and Somalian plates move further away from each other, the area between them will grow thinner and drop below sea level. New ocean lithosphere may form along the centre of the rift, producing a new narrow ocean basin with its own mid ocean ridge.

Source: <http://www.geolsoc.org.uk>



## Mid-Atlantic Ridge



The North American and Eurasian Plates are moving away from each other along the line of the **Mid Atlantic Ridge**. The Ridge extends into the South Atlantic Ocean between the South American and African Plates. The ocean ridge rises to between 2 to 3 km above the ocean floor, and has a rift valley at its crest marking the location where the 2 plates are moving apart.

Because of these two plates moving apart, the Atlantic Ocean widens about this much per year: -----.

## San Andreas Fault

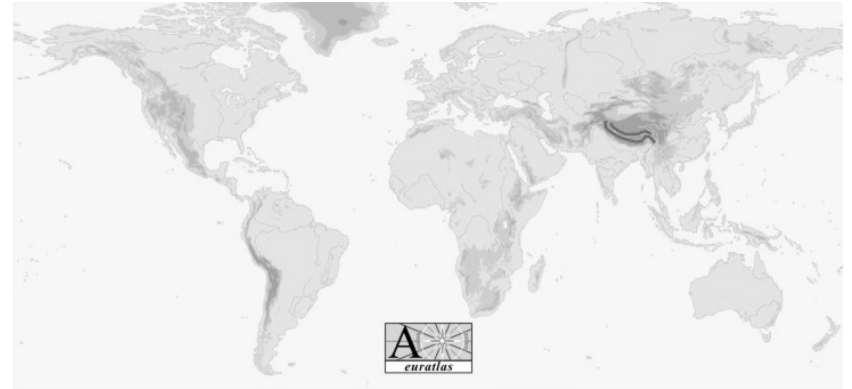


The San Andreas Fault runs about 1,000 miles through California, and is where the Pacific Plate and North American Plate meet. The two plates aren't smashing into each other or anything, so there aren't any spectacular physical features. However, the San Andreas Fault generates powerful earthquakes, because of the pressure that builds up as the two plates slide against one another.

Find Los Angeles in the map below. It moves an average of 6 centimeters a year. In 10 million years, Los Angeles and San Francisco will be side by side!



## The Himalaya Mountain Range



The Himalayan mountain range and Tibetan plateau have formed as a result of the collision between the Indian Plate and Eurasian Plate which began 50 million years ago and continues today.

The Himalayas are still rising by more than 1 cm per year as India continues to move northwards into Asia, which explains the occurrence of shallow focus earthquakes in the region today.

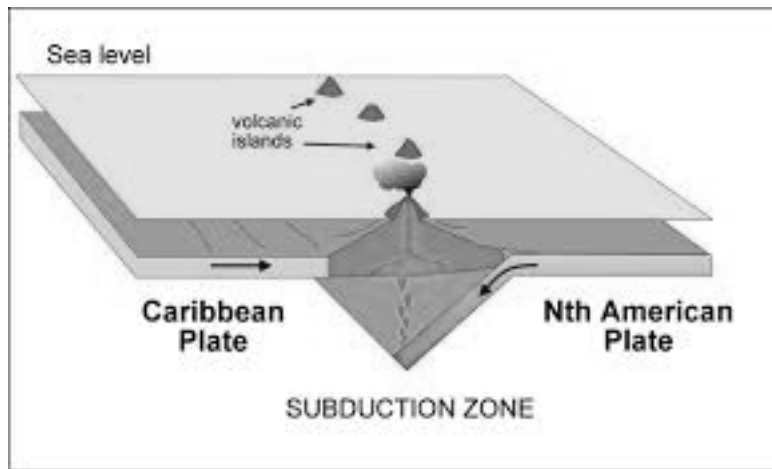
Source: <http://www.geolsoc.org.uk>

## The Caribbean Islands



The South American Plate is moving toward Caribbean Plate. When they meet, the South American Plate descends (subducts) beneath it.

Intense heat and pressure gradually force water-containing magma to rise into the Earth's mantle and fuel the many active volcanoes in the region.



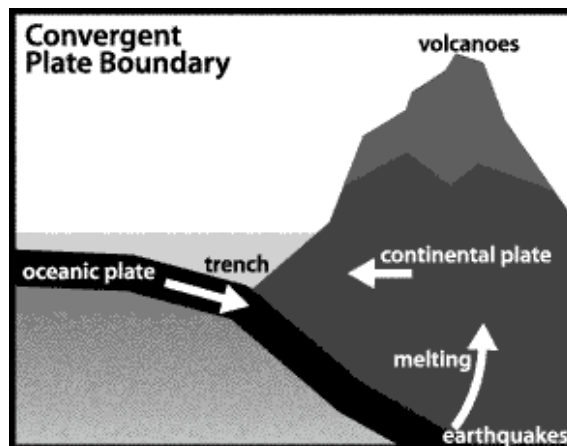
## Transform Boundaries

Places where plates slide past each other are called transform boundaries. Since the plates on either side of a transform boundary are merely sliding past each other and not tearing or crunching each other, transform boundaries lack the spectacular features found at convergent and divergent boundaries. Instead, transform boundaries are marked in some places by linear valleys along the boundary where rock has been ground up by the sliding. In other places, transform boundaries are marked by features like stream beds that have been split in half and the two halves have moved in opposite directions.

## Convergent Boundaries

“Places where plates crash or crunch together are called convergent boundaries. Plates only move a few centimeters each year, so collisions are very slow and last millions of years. Even though plate collisions take a long time, lots of interesting things happen.

For example, in the drawing below, an oceanic plate has crashed into a continental plate. Looking at this drawing of two plates colliding is like looking at a single frame in a slow-motion movie of two cars crashing into each other. Just as the front ends of cars fold and bend in a collision, so do the "front ends" of colliding plates. The edge of the continental plate in the drawing has folded into a huge mountain range, while the edge of the oceanic plate has bent downward and dug deep into the Earth. A trench has formed at the bend. All that folding and bending makes rock in both plates break and slip, causing earthquakes. As the edge of the oceanic plate digs into Earth's hot interior, some of the rock in it melts. The melted rock rises up through the continental plate, causing more earthquakes on its way up, and forming volcanic eruptions where it finally reaches the surface. An example of this type of collision is found on the west coast of South America where the oceanic Nazca Plate is crashing into the continent of South America. The crash formed the Andes Mountains, the long string of volcanoes along the mountain crest, and the deep trench off the coast in the Pacific Ocean.”



Source: <http://www.cotf.edu>

## Divergent Boundaries

Places where plates are coming apart are called divergent boundaries. As shown in the drawing above, when Earth's brittle surface layer (the lithosphere) is pulled apart, it typically breaks along parallel faults that tilt slightly outward from each other. As the plates separate along the boundary, the block between the faults cracks and drops down into the soft, plastic interior (the asthenosphere). The sinking of the block forms a central valley called a rift. Magma (liquid rock) seeps upward to fill the cracks. In this way, new crust is formed along the boundary. Earthquakes occur along the faults, and volcanoes form where the magma reaches the surface.

Source: <http://www.cotf.edu>