Factsheet: Plate Tectonics

Key Facts

The Earth's surface is made up of a series of large plates (like pieces of a giant jigsaw puzzle).

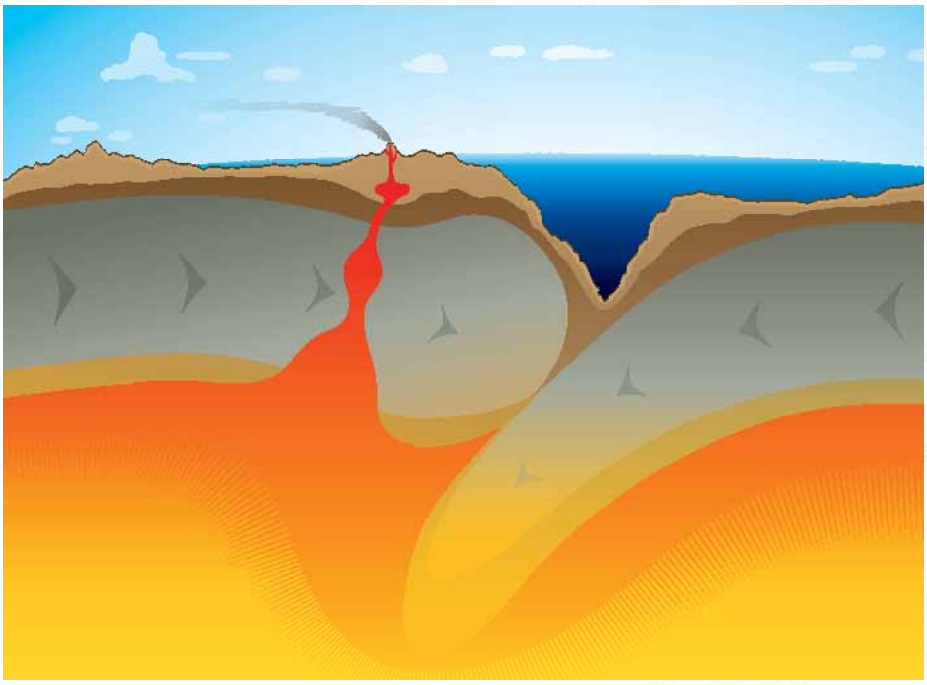
These plates are in constant motion travelling at a few centimetres per year.

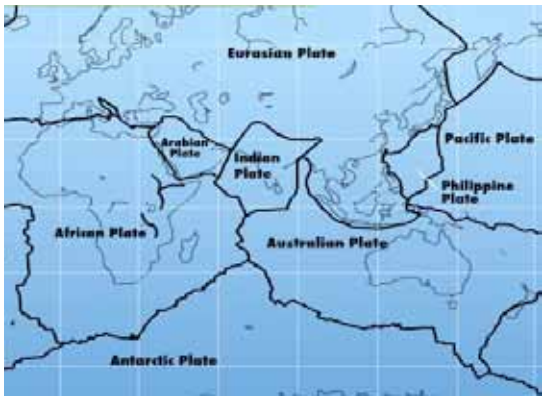
The ocean floors are continually moving, spreading from the centre and sinking at the edges.

Convection currents beneath the plates move the plates in different directions.

The source of heat driving the convection currents is radioactive decay which is happening deep in the Earth.

The edges of these plates, where they move against each other, are sites of intense geologic activity, such as earthquakes, volcanoes, and mountain building.





Some of the tectonic plates contain continents and others are mostly under the ocean. The type of crust that underlies the continents is called **continental crust**, while the type found under the oceans is called **oceanic crust**. The border between two tectonic plates is called a **boundary**.

> The plates make up Earth's outer shell, called the lithosphere. (This includes the crust and uppermost part of the mantle.)

> Present-day continents are fragments of a "supercontinent" (Pangaea) that broke up about 225 million years.

> More than 80% of the world's earthquakes and volcanoes occur along or near boundaries of the tectonic plates.

> Plate tectonics processes almost certainly have been operating since the formation of the Earth. However, the evidence of such processes very early in Earth's history have been masked or obliterated by younger geologic processes and deposits.

> There are nine major plates: the Eurasian, African, South American, North American, Nazca, Antarctic, Pacific, Juan De Fuca and Indian-Australian.

> Most of the edges of these plates are geologically active.

There are three types of boundaries between plates:

> Divergent boundaries occur where plates move away from each other and fresh magma wells up to fill the gap creating new crust as it cools and solidifies.

> Convergent boundaries occur where plates collide and one plate is pushed underneath the other (subducted). Crust is returned to the interior of the Earth and as the old plate sinks the rock melts and erupts as volcanoes at the surface.

> Transform fault boundaries, where plates slide past one another. Movement is not smooth but more like a stick-slip process, where sudden slips can cause damaging earthquakes.