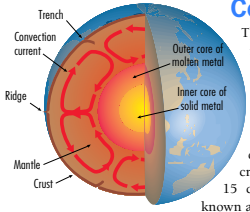




# THE ACTIVE EARTH

## Continental plates



The Earth's shell or crust is split into a number of plates. These plates fit together like a huge jigsaw puzzle. The plates float on the semi-molten rocks of the Earth's mantle.

Heating from the Earth's core causes the semi-molten material in the mantle to churn in currents. These currents carry the crustal plates slowly along up to as much as 15 centimetres per year. This movement is known as continental drift.

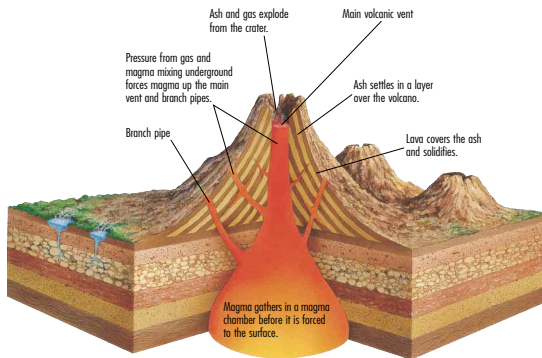
Sometimes the Earth's plates collide, pushing up mountain ranges. The contact between these converging plates can also cause earthquakes and volcanoes. Plates beneath the ocean move much more quickly than plates beneath the continents.

## Volcanoes

A volcano forms when magma, hot molten rock from beneath the crust, emerges on the Earth's surface through a fissure or opening. When it does, this molten rock is called lava.

A volcanic cone forms when there is an explosive eruption of ash and cinders. These fall back to Earth, solidifying to form a steep volcanic cone like Mt Paricutin in Mexico.

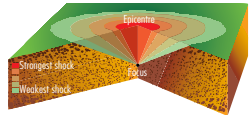
A composite cone volcano, such as the one in the diagram on the right, is made up of layers of ash and lava because the eruptions alternate between explosive (ash) and quiet (lava). Mt Fuji in Japan and Mt Etna in Italy are examples of a composite cone.



Volcanic eruption

## Earthquakes

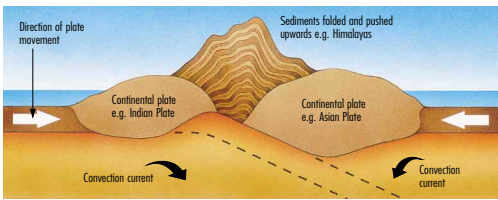
Earthquakes are caused by movements in the Earth's crust where the continental plates converge. Earthquakes always have an epicentre, the point on the Earth's surface from which the shock waves radiate. It is directly above the focus, the area underground where the stresses that result in the earthquake have built up. The shock waves decrease in intensity the further they are from the epicentre. After-shocks of lesser intensity may occur for weeks after the main earthquake.



The focus and epicentre of an earthquake

## Mountain building

Most of the world's great mountain regions are formed when crustal rocks are buckled as the plates slide underneath each other. This folding process formed the Himalayas in Asia and the Rocky Mountains in North America. The process where rocks crack and sections move up or down is known as faulting and it forms both mountains and rift valleys such as those in Africa.



Mountain building

