



The structure of the Earth

The Crust	Varies in thickness (5-10km) beneath the ocean. Made up of several large plates.
The Mantle	Widest layer (2900km thick). The heat and pressure means the rock is in a liquid state that is in a state of convection.
The Inner and outer Core	Hottest section (5000 degrees). Mostly made of iron and nickel and is 4x denser than the crust. Inner section is solid whereas outer layer is liquid.

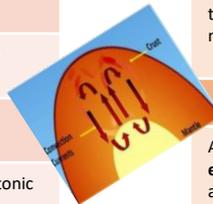


Yr7: Our Dangerous planet

Convection Currents

The crust is divided into tectonic plates which are moving due to convection currents in the mantle.

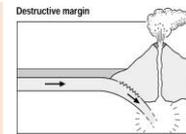
- 1 Radioactive decay of some of the elements in the core and mantle generate a lot of heat.
- 2 When lower parts of the mantle molten rock (Magma) heat up they become **less dense** and **slowly rise**.
- 3 As they move towards the top they cool down, become **more dense** and **slowly sink**.
- 4 These **circular movements** of semi-molten rock are **convection currents**
- 5 Convection currents create **drag** on the base of the tectonic plates and this causes them to move.



Types of Plate Margins

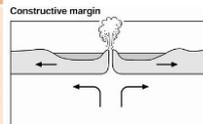
Destructive Plate Margin

As plates move together the denser oceanic plate subducts beneath the continental, friction causes it to **melt and become molten magma**. The magma forces its way up to the surface to form a volcano. This margin is also responsible for **devastating earthquakes**. An example is where the Nazca plate meets the South American plate



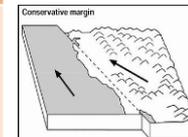
Constructive Plate Margin

Here two plates are **moving apart** causing new magma to reach the surface through the gap. Volcanoes formed along this crack as the magma cools. This can cause a **submarine mountain range** such as those in the **Mid Atlantic Ridge**.

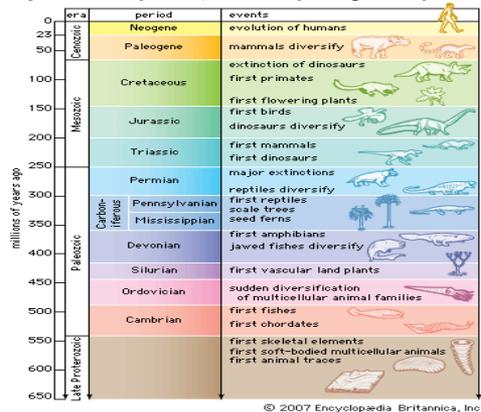


Conservative Plate Margin

A conservative plate boundary occurs where plates **slide past each other** in opposite directions, or in the same direction but at different speeds. This is responsible for earthquakes such as the ones happening along the San Andreas Fault, USA.



Major evolutionary events, 650 million years ago to the present



Active Volcanoes, Plate Tectonics, and the "Ring of Fire"



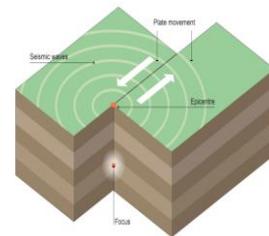
Causes of Earthquakes

Earthquakes are caused when two plates become **locked** causing **friction** to build up. From this **stress**, the **pressure** will eventually be released, triggering the plates to move into a new position. This movement causes energy in the form of **seismic waves**, to travel from the **focus** towards the **epicentre**. As a result, the crust vibrates triggering an earthquake.

The point directly above the focus, where the seismic waves reach first, is called the **EPICENTRE**.

SEISMIC WAVES (energy waves) travel out from the focus.

The point at which pressure is released is called the **FOCUS**.



CONTINENTAL DRIFT

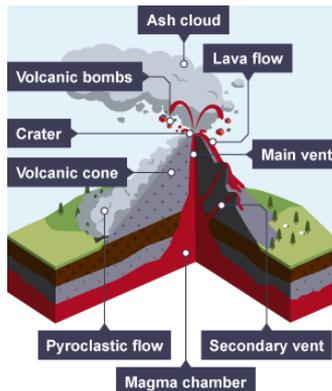
The earth's continents are carried on slowly moving tectonic plates. They have changed position over millions of years. This is called continental drift.



Distribution of Earthquakes and volcanoes

Volcanoes and Earthquakes can be found at:

- Plate boundaries
- In narrow belts
- Along the west coast of North and South America
- Around the Pacific ring of fire
- In countries such as Japan



Earthquake Management

PROTECTION

You can't stop earthquakes, so earthquake-prone regions follow these three methods to reduce potential damage:

- Building earthquake-resistant buildings
- Raising public awareness
- Improving earthquake prediction

