

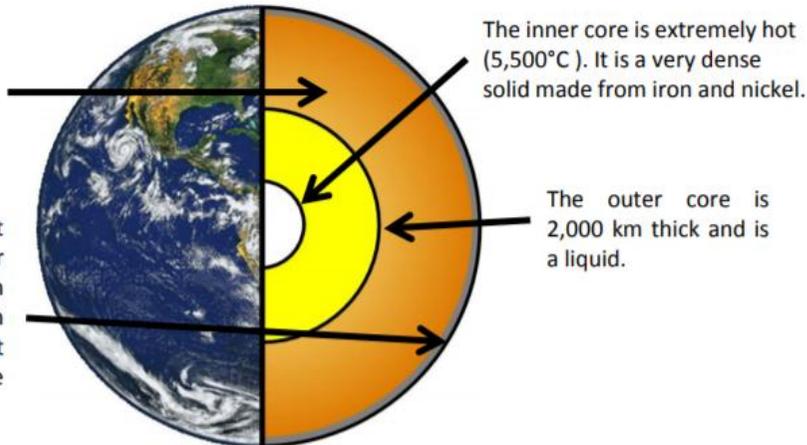
Extreme Earth

The earth's structure:

The Earth has four main layers : the **inner core**, the **outer core**, the **mantle** and the **crust**.

The mantle is semi-molten and about 3,000 km thick. The closer the mantle is to the core, the more liquid it is.

The crust is the rocky outer layer. It is thin compared to the other sections, approximately 5 to 70 km thick. If the Earth was scaled down to the size of an apple, the crust would be about the thickness of the apple skin.

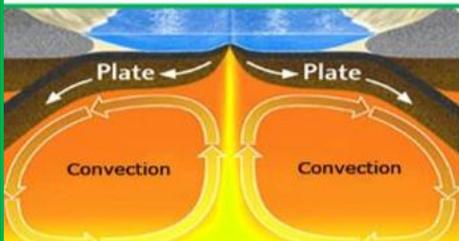
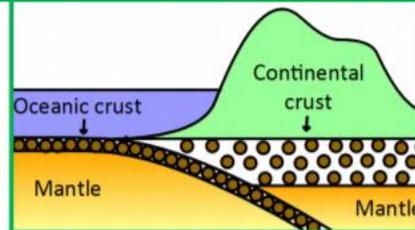


The inner core is extremely hot (5,500°C). It is a very dense solid made from iron and nickel.

The outer core is 2,000 km thick and is a liquid.

The earth's crust:

- The earth's crust is broken up into plates, called tectonic plates.
- There are two types of tectonic plate oceanic and continental.
- Oceanic plates carry **the oceans**. They are **thinner** but **more dense** than continental plates.
- Continental plates carry **the land**. They are **thicker** but **less dense** than oceanic plates.



- Heat from the core causes convection currents in the mantle. These cause the mantle to move as it heats and cools.
- These currents slowly move the crust around.
- In some places the crust is destroyed. In other places new crust is formed.

Volcanoes:

- Volcanoes are a vent in the earth's crust from which lava, ash and gas is released.
- Most volcanoes form at destructive and constructive plate boundaries.
- Volcanoes do not form at conservative boundaries.
- If a volcano forms at a plate boundary, they are either composite or shield volcanoes.
- Of these two types, volcanoes can be active, dormant or extinct.

Key vocabulary:

Crust: The rocky outer layer of the earth, made up of oceanic and continental crust.

Mantle: Semi-molten rock, moving beneath the earth's crust. It is the movement in the mantle which cause tectonic plates to move

Outer core: A 2000km thick liquid made up largely of iron and nickel.

Core: A dense solid of extreme temperature (5,500°C) made up of iron and nickel.

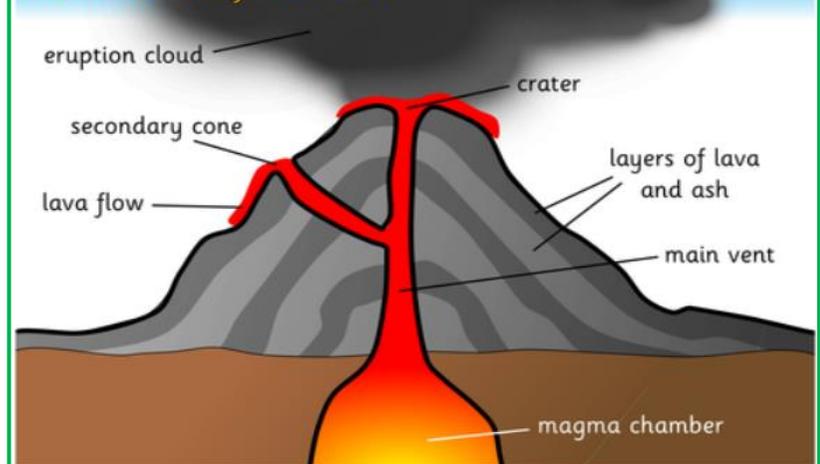
Magma: Molten rock from the mantle before it reaches the surface of the earth.

Lava: Magma, once it reaches the surface.

Vent: The central tube which magma travels through.

Cone: A hill produced around a volcano by the eruption of lava and ash

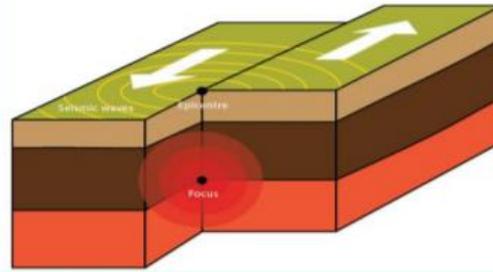
A Cross Section of a Volcano



Extreme Earth

Earthquakes on conservative plate boundaries:

- Earthquakes can occur at all plate boundaries. However, conservative plate boundaries clearly show how earthquakes happen.
- The **San Andreas Fault** is part of the plate boundary between the **Pacific plate** and the **North American plate**.
- The Pacific plate moves slightly faster than the North American plate. This means that, even though the plates are moving in the same direction, they can get stuck, causing a build up of **pressure**.
- This build up and release of pressure caused two major earthquakes during the last century, in 1906 and in 1989.
- However, this area experiences constant small earthquakes, with Los Angeles experiencing 10 earthquakes per day on average!
- Because of this movement, Los Angeles should be in line with San Francisco in roughly 20 million years.



Tsunamis:

- Tsunamis are a series of ocean waves which are caused when earthquakes or other disturbances displace a large amount of water.
- Tsunamis are not caused by tides, and so it is technically incorrect to refer to them as “tidal waves”.
- Tsunamis are usually barely noticeable in water, but get larger and more powerful as they approach land.
- As a result, tsunamis can have a huge effect on countries which are hit by them

Key vocabulary

Volcano: A vent in the earth’s crust from which lava, ash and gas is released.

Earthquake: A sudden shaking of the ground, caused by movement in the earth’s crust.

Crater: A bowl-shaped basin in the top of the volcano.

Tectonic plates: Huge plates (oceanic and continental) that make up the earth’s crust, and which move because of convection currents.



Tornadoes:

- A tornado is a rapidly spinning tube of air that touches both the ground and a cloud above.
- Tornadoes are sometimes called twisters.
- Not all tornadoes are visible but their high wind speeds and rapid rotation often form a visible funnel of condensed water.
- Most tornadoes have wind speeds less than 100 miles per hour (161 kilometres per hour).
- Extreme tornadoes can reach wind speeds of over 300 miles per hour (483 kilometres per hour).
- Most tornadoes travel a few miles before exhausting themselves.