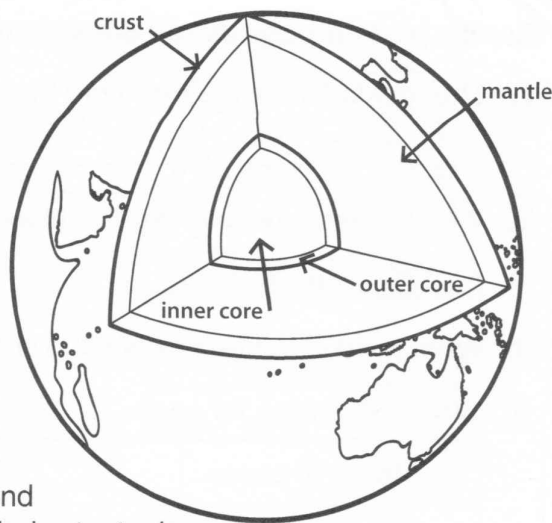


What causes a volcanic eruption? – I

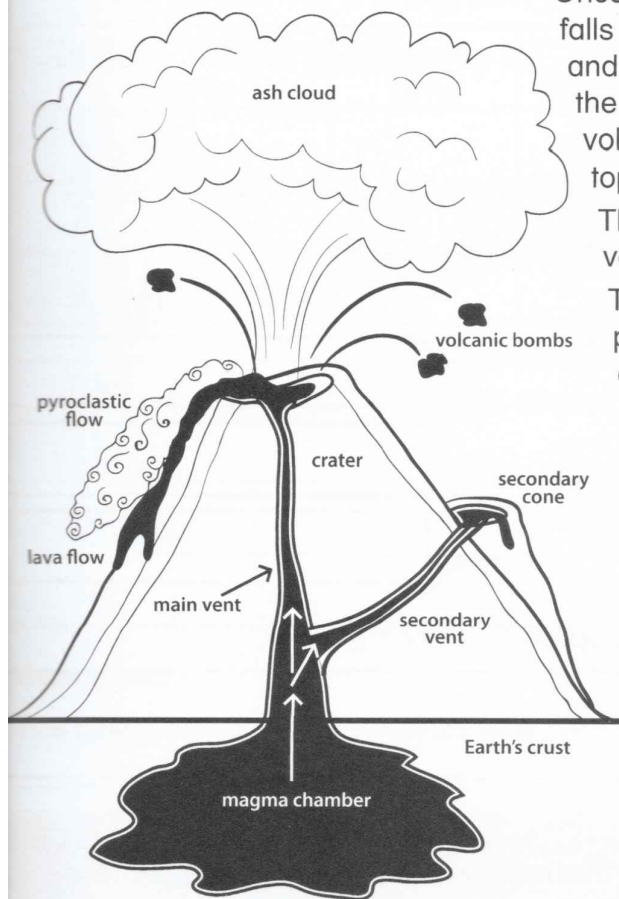
Planet Earth is made of four layers:

- The *inner core* is a solid ball of metal. Even though it is incredibly hot (hot enough to melt metal), the pressure pushing down on it is so great that it remains solid.
- The *outer core* is a layer of molten metal that moves around the inner core.
- The *mantle* is the thickest layer. It is solid, but the heat from the core causes it to move very slowly and this causes the movement of the Earth's crust.
- The *crust* is the thin outer layer of the planet, and is (on average) about 35 kilometres deep. It is made up of eight large pieces and a number of smaller ones, and fits together like an irregular jigsaw. Each piece is called a *tectonic plate*.



The heat deep inside the mantle is so intense that solid rock can melt to form *magma*. This molten rock is hotter and lighter than the rock it came from and so it rises to the top of the mantle until it comes to rest in *magma chambers* a few kilometres below the Earth's surface.

The chambers are located near *fault lines* in the Earth's crust where tectonic plates meet. As a chamber fills with magma, the pressure in it builds. Sometimes the pressure is so great, it cracks the earth above it and seeps (or explodes) out of the Earth's surface. These cracks act like *valves* to release the pressure, and the magma is released through large and small *vents* as a volcanic eruption of lava, rocks (bombs) and ash.



Once above ground, the magma is called *lava*. As it falls to or runs along the ground, it cools and hardens and forms solid rock. Each time the magma erupts, the cooling lava creates a new layer of rock and the volcanic mountain increases in size. The hole at the top of the volcano is called a *crater*.

There are many elements associated with a volcanic eruption:

The **lava** moves slowly, giving enough time for people to evacuate the area. It generally covers a small area because it cools quickly, forming obsidian and pumice rock.

Falling ash and magma-formed rock (known as *tephra*) can cover a wide area, having exploded violently from the volcano in a huge column.

Pyroclastic flows are a mixture of very hot gas and tephra. They can move very quickly down the slopes of a volcano, giving little time for evacuation.

The **mud and debris** that belongs to a volcano that has collapsed during an eruption can flow downhill with the lava and pyroclastic flow. If there is a glacier on top of the erupting volcano, the melting ice can turn the flow into a devastating mudslide.