

Layers of the Earth

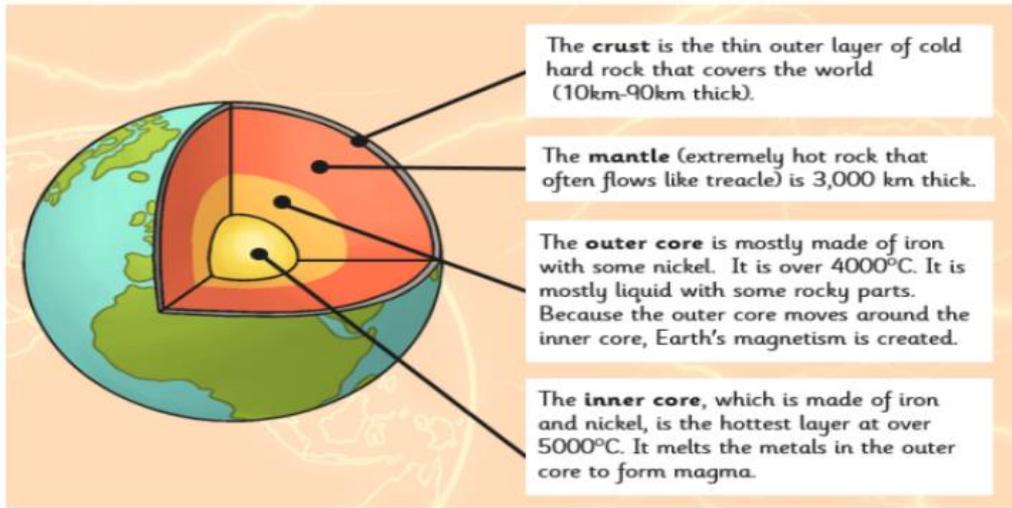
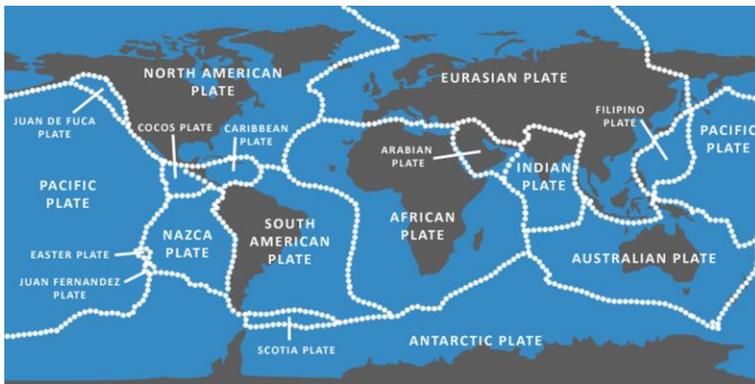


Plate tectonics is the theory that Earth's outer shell is divided into several plates that glide over the mantle, the rocky inner layer above the core. The plates act like a hard and rigid shell compared to Earth's mantle. This strong outer layer is called the lithosphere, which is 100 km (60 miles) thick.



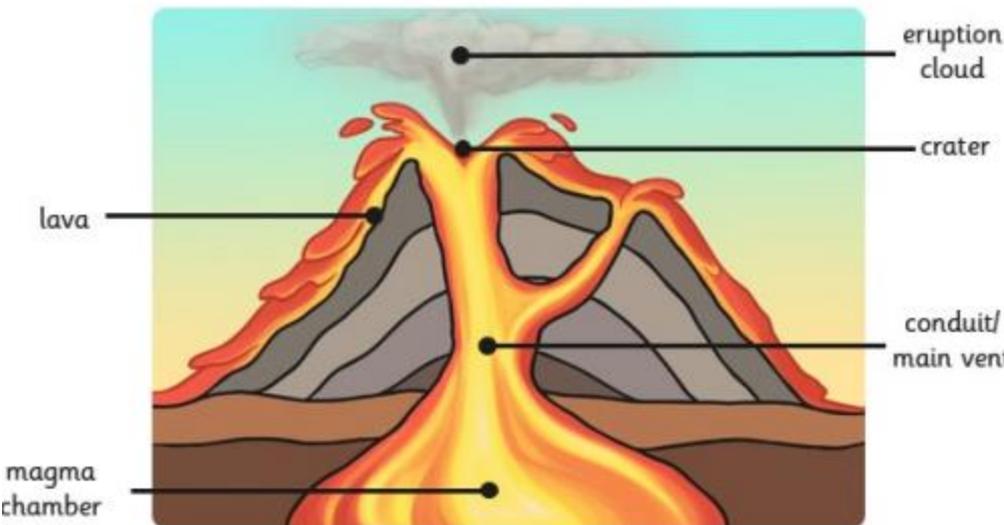
The earth has 1,500 active volcanoes across the globe.

Core Vocabulary

- **Ash:** Fine particles of rock dust blown from an explosion vent.
- **Vent:** A vent is an opening at the Earth's surface of a volcanic conduit.
- **Conduit:** A passage (pipe) followed by magma in a volcano.
- **Crater:** A steep-sided, usually circular depression formed by either explosion or collapse at a volcanic vent.
- **Lava:** Magma which has reached the surface through a volcanic eruption. Streams of liquid rock that flow from a crater or fissure.
- **Magma:** Molten rock beneath the surface of the earth.
- **Mantle:** The zone of the earth below the crust and above the core.
- **Volcanic eruption:** When hot rocks and lava burst from a volcano.
- **Volcano:** A vent in the surface of the Earth through which magma and associated gases and ash erupt; also, the form or structure, usually conical, that is produced by the ejected material.
- **Ring of fire:** The circle of earthquake sites and volcanoes in the Pacific Ocean.

How a volcano erupts

Inside the earth, heat and pressure causes rock to melt and turn into magma. The magma is forced up from the magma chamber, through the main vent, to the earth's crust where it erupts. This happens through the crater cone.



An active volcano is one that has erupted in the last 10,000 years. This means it takes many thousands of years for volcanoes to go dormant and closed off from the earth's underground magma.

Affects of volcanoes

Destructive elements

- Houses, buildings, roads, and fields can get covered with ash.
- Lava flows can run over houses, roads, and any other structures.
- Pyroclastic flows are mixtures of hot gas and ash, and they travel very quickly down the slopes of volcanoes. They are so hot and choking that if you are caught in one it will kill you.

Gases

- Sulfur dioxide, carbon dioxide, hydrogen, carbon monoxide, hydrogen sulfide, and hydrogen fluoride are all released from the vent which can be dangerous for people with respiratory problems.

Cities and towns

- Under certain conditions, eruption and/or topographic conditions, lahars, pyroclastic flows, and/or ash fall could enter settlements causing death and destruction.

Benefits

- Geothermal energy can be harnessed by using the steam from underground which has been heated by the Earth's magma. This steam is used to produce electricity for domestic and industrial use.
- Volcanoes attract millions of visitors around the world every year. This creates many jobs for people in the tourism industry.
- Lava from deep within the earth contains minerals which can be mined once the lava has cooled. These include gold, silver, diamonds, copper and zinc, depending on their mineral composition.

Prior Learning

Exploring key physical features in the UK and introducing fieldwork

Understanding key features of rivers, and the opportunities and challenges that settlements near rivers face

Building Towards

Understanding why earthquakes take place and what affects they can have on human settlements.

Posing questions, completing fieldwork and presenting a geographical investigation.