Lutley Primary School

Learning, Caring, Aiming High - Together

Year 3

Earthquakes & Volcanoes

Things I need to know to help me with this topic:

You will apply your locational knowledge from Key Stage 1, where you named and located the world's seven continents and five oceans when studying the locations of different volcanoes and earthquakes. Also, you will use your skills of using world maps, atlases and globes.

Books, texts, primary and secondary sources you may use:

- BBC Bitesize website – the natural world
- Escape to Pompeii – Christina Balit
- The Pebble in my Pocket: A history of our Earth – Meridith Cooper and Chris Coady
- Survivors – David Long and Kerry Hyndman
- Volcanoes and Earthquakes – Kathy Furgang

Suggested family experience:

- Make your own volcano using the Natural History Mueseum's guide – click here
- Use Google Earth to visit volcanos around the world – click here

National Curriculum:

- Describe and understand key aspects of: physical geography, including: climate zones, biomes and vegetation belts, rivers, mountains, **volcanoes and earthquakes**, and the water cycle.
- use maps, atlases, globes and digital/computer mapping to locate countries and describe features studied

Fieldwork Skills:

We will use maps, globes and atlases to look at the location of the Pacific Ring of Fire to explore the reasons why so many volcanoes occur in this area.

Vocabulary you will use:

Word	Definition
collision	When one moving object hits another
core	Inner layer of the Earth, mainly made of metal
crust	Layer of the Earth that we can see
dormant	Not active, but capable of becoming active in the future
earthquake	Shaking of the ground caused by movements of the Earth's crust
erupt	To start suddenly or violently with great force
intensity	Measure of strength or power
mantle	Layer of the Earth which is mainly rock.
meteoric	Sudden and extremely strong
subduction	Where one plate is pushed below another
tectonic plates	Pieces of the Earth's surface
tsunami	A very large wave, caused by an earthquake
volcano	A mountain from which lava, gas, steam and ash from inside the Earth burst

Quick Summary

Earthquakes and volcanoes are caused by the movement of tectonic plates and the structure of the Earth. They have an impact on both our human and physical geography. They can sometimes cause natural disasters.

Volcanoes

Click here or scan the QR code to find out more about volcanoes.

Earthquakes

Click here or scan the QR code to find out more about earthquakes.

Questions we'll ask you throughout the unit to check your knowledge and understanding

Label and describe the Earth's:

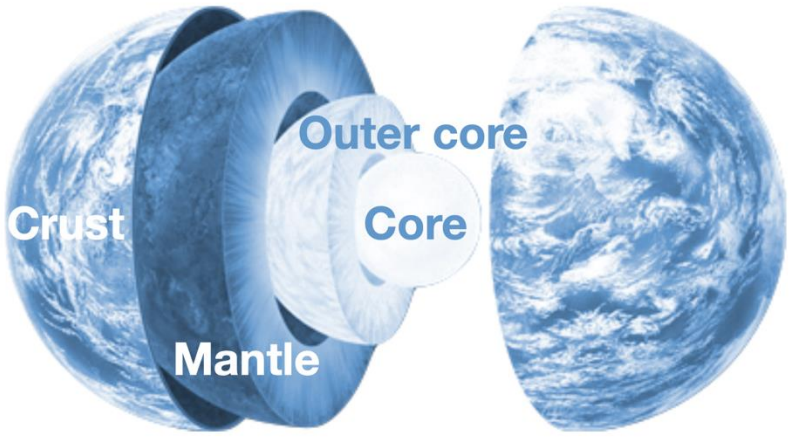
- core
- outer core
- mantle
- crust

What causes an earthquake?

Explain the physical features of a volcano.

Describe the impact of volcanoes and earthquakes.

Structure of the Earth



The Earth has an inner and outer core, a mantle and a crust.

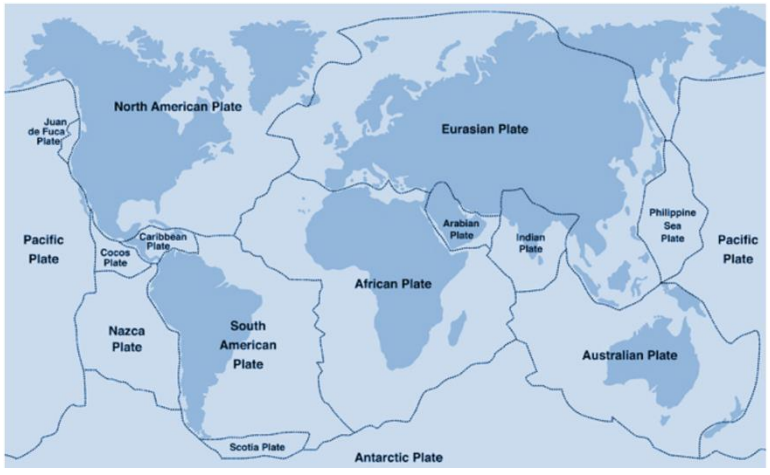
The crust is the rocky surface that makes up the surface of the Earth and floats on top of the mantle.

The crust has 'cracks' in it and so it is actually in pieces. These pieces are called plates. The plates move very slightly, by no more than a few centimetres a year, and when they do, earthquakes occur and volcanoes form or erupt.

Plate tectonics provides an explanation of how earthquakes, mountains, volcanoes and oceans are formed.

Physical features

Plate tectonics



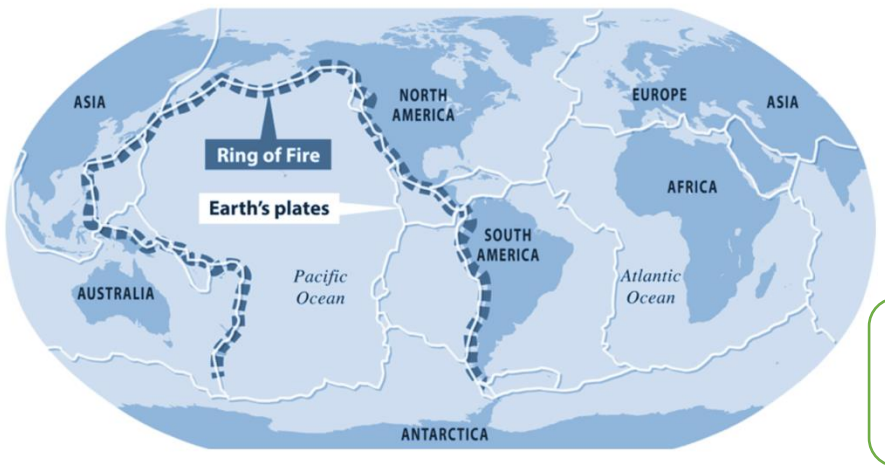
The boundaries of the plates are called fault lines and movement along these lines causes earthquakes and volcanoes.

The plates move in three different ways:

- away from each other, which forms ridges
- towards each other, which causes earthquakes and forms volcanoes and mountains
- side by side, which causes earthquakes.

Physical features · Location · Human processes · Techniques

Location: Ring of Fire



The Pacific Ring of Fire is an area on the boundaries of the Pacific Ocean. It follows the eastern side of Australia and Asia and the western side of North and South America.

The Pacific Ring of Fire is an arc around the Pacific Ocean where most of the world's volcanoes and earthquakes are formed.

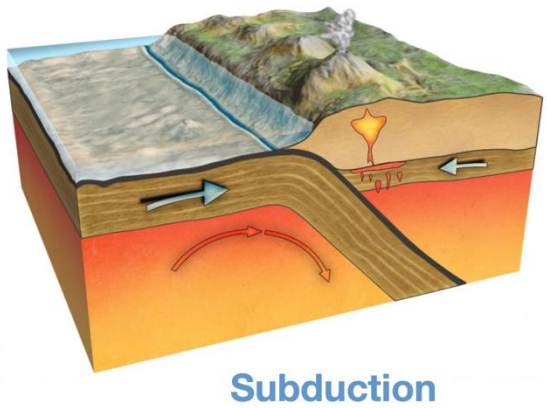
About three-quarters of the world's dormant and active volcanos are here. The ring is 25,000 miles (40,230 km) long, and there are 452 volcanoes on it. About 90% of the world's earthquakes, including 15% of the world's largest earthquakes occur along the Ring of Fire.

Location

Physical processes: Ring of Fire

The Ring of Fire is a result of plate tectonics – the movement and collision of the plates that make up the Earth's crust.

The Pacific Ring of Fire is a result of plate tectonics: plates are colliding with each other which causes a process called subduction where one plate is pushed below another. The heat and the pressure forms mountains and volcanoes.

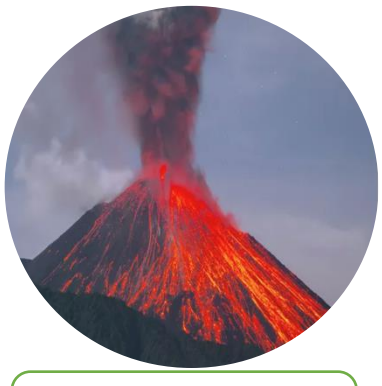


Subduction

Physical features · Location · Physical processes

Volcanoes

Volcanoes differ in their magnitude. Some are more violent than others. Volcanoes are graded on their intensity using the Volcanic Explosivity Index (VEI). The VEI ranges from 0 (Hawaiian volcanoes are constantly erupting with low explosivity) to 8 (Ultra Plinian volcanoes erupt about every 50,000 years with extremely high explosivity). When volcanoes with high explosivity erupt they can cause natural disasters.



Click here to learn more about volcanoes.

In 79 CE, Mount Vesuvius in Italy erupted with tremendous force. It sent a deadly cloud of gas into the air and ejected ash, rocks and lava which fell on the nearby Roman towns of Pompeii and Herculaneum. Thousands of people were killed by the falling ash and rocks, and some were killed instantly as the deadly gas suffocated them.

Click here for some facts about volcanoes.

Click here to find out more about the eruption in Pompeii.

Human processes · Physical features · Physical processes

Earthquakes

The scale for measuring the magnitude of earthquakes is called the Richter scale. Micro earthquakes measure less than 2.0 on the scale, while meteoric earthquakes measure 10 or above. When earthquakes with high magnitude occur they can cause natural disasters.

Click here to learn more about Earthquakes

Click here to learn more about tsunamis.

The 2004 Boxing Day earthquake measured 9.3 on the Richter scale. It occurred under the Indian Ocean and was caused by the movement of the Burma and India tectonic plates. It created tsunami waves 30 metres (98 ft) high and caused an estimated 228,000 deaths in countries bordering the Indian Ocean.

The 1906 San Francisco earthquake in the United States of America had a magnitude of 7.9 and caused violent shaking. Buildings collapsed and fires broke out in the city and lasted for several days. Up to 3000 people died and over 80 per cent of the city of San Francisco was destroyed.