

Curriculum Intent:

To equip children with knowledge about places, people, resources and both natural and human environments, together with a deep understanding of

Subject	Term	Unit	Year
Geography	Spring 1	Volcanoes and Earthquakes	4
Prior knowledge Building on knowledge and skills		National Curriculum Focus	
<p>KS1 units Great Britain countries and oceans. The physical and human geography of Kenya , Continents and the Artic and Antarctic regions.. Year 3 Marvellous Mountains and a Local study observing how an area has changed geographically over time .</p>		<p><u>Human and physical geography</u> Describe and understand key aspects of: physical geography, including: climate zones, biomes and vegetation belts, rivers, mountains, volcanoes and earthquakes, and the water cycle</p>	

What?	Understanding the structure of the inside of the Earth and finding out why this leads to volcanoes and Earthquakes .
Why?	To understand how the Earths physical geography has been affected by volcanoes and earthquakes . To understand how humans and settlements are affected by volcanoes and earthquakes.
How?	To investigate the structure of inside the Earth .To learn how and why volcanoes erupt and the effect this can have on the landscape and settlements living close by. To find out about what tectonic plates are . Why earthquakes happen . How earthquakes affect the landscapes and settlements . To know the names and locations of key volcanoes around the world in particular Mount Etna. To take part in Now Press Play – “Natural Disasters”. A school field trip to “Barrow Hill Nature Reserve” making models, annotated drawings and field sketches to record observations.

Key vocabulary			
Mount Everest	Tallest mountain in the Himalayas	Volcano	A landform where molten rock erupts through the surface of the Earth.
Pompeii	The ancient Roman city of Pompeii was located in what is now the Campania region of Italy, southeast of Naples.	Mountain	A large landform, rising above the surrounding land, which is formed by tectonic movement.
Mount Etna	On the east coast of Sicily, Italy, in the Metropolitan City of Catania	Tectonic plates	The Earth’s outer shell is made up of huge slabs of moving rock called tectonic plates. Volcanoes, earthquakes and mountain ranges tend to occur along the edges of these plates.
Eruption	An explosion of steam or lava from a volcano	Earth’s crust	The crust is the thin outer layer of the Earth’s surface.
Magma	Hot fluid or semi-fluid material below or within the Earth’s crust from which lava is formed.	Eruption	An explosion of steam or lava from a volcano.
Dormant	A volcano that is temporarily inactive. It has not erupted in	Calcite	A white or colourless mineral consisting of calcium carbonate. It is

	10,000 years but is expected to erupt again.		a major constituent of sedimentary rocks such as limestone.
Lava	Hot, molten or semi-fluid rock that erupts from a volcano, or solid rock resulting from cooling of this.	Earthquake	A sudden violent shaking of the ground, typically causing great destruction, as a result of movements within the earth's crust or volcanic action.
Fieldwork	Practical work conducted by a researcher in the natural environment, rather than in a laboratory or office.		

Key Questions

1. What the inside of the Earth like? Name the layers
2. What a tectonic plates and how do they affect the Earth?
3. Where are the Himalayas? How are mountains formed?
4. Why do volcanoes occur?
5. What happens when a volcano erupts?
6. What is Mount Etna and where is it located?
7. How do tectonic plates cause earthquakes?
8. Where in the world are earthquakes most likely to happen – Locate the “Ring of Fire on a World map”
9. What happens when an earthquake occurs?
10. What are the differences between “Barrow Hill Dudley’s volcano and Mount Etna?”

Key learning: (Specific link to the NC here)

Objective	Learning
Can I describe the structure of the inside of the Earth?	<p>Link today's lesson to year 3 text “The Earth Beneath my Feet” An interactive fold out book by Charlotte Guillain and Yuval Zommer.</p> <p>Liken the earth to a Cadbury Creme Egg. Nice and solid on the outside but gooey liquid on the inside. Explain that the inside of the Earth is split into 4 layers.:</p> <p>The crust – the outer layer we live on . Its covered by land and oceans. It is very hard and solid but it is very thin compared to the other layers.</p> <p>Mantle: This is a very thick layer of the Earth. It is made up of hot molten rock called magma . This is the gooey part of the Cadbury’s egg.</p> <p>Outer Core:</p> <p>It is even hotter than the mantle. It’s so hot that the outer core is a layer of liquid. Scientists believe it is made of the metals iron and nickel.</p> <p>Inner Core:</p> <p>This is the centre of the Earth. It’s the hottest at 6,000c There is so much pressure that it is solid , not liquid. Its big super hot a solid ball of iron and nickel.</p> <p>No one has actually travelled to the centre of the earth. Scientists have looked at other planets in our solar system and calculated lots of complicated maths problems to work it out.</p>
Can I explain what tectonic plates are and how they effect the Earth?	<p>The Earth’s surface seems solid under our feet , but actually it’s constantly moving. The thin crust is split into pieces which “float” on the mantle. The pieces are called tectonic plates. Waves of heat from the mantle make the plates move. The tectonic plates move at a very very slow pace- just a few centimetres every year. In fact the Atlantic plate underneath the USA moves away from Europe at around the same speed that a finger nail grow.</p>

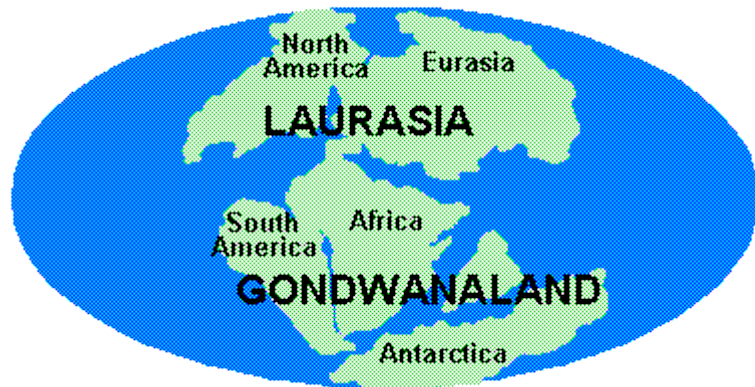
Over thousands of years this adds up to thousands of kilometres . The world has changed shape a lot – the land has pulled apart and come closer together. Today the world is made up of seven continents.but this has not always ben the case.

The continents were once all connected but slowly they were pulled apart by teutonic plates moving benathe the earth’s surface.

1. 225 Million years ago A super continent Pangaea



2. 200 million years ago
2 areas called Laurasia and Gondwana



3. Today



Scientists predict there will be another supercontinent in the next 250 million years.

Can I explain where the Himalayan mountains are and how were they formed?

<https://www.bbc.co.uk/bitesize/articles/zyhf3j6#zwj6p4j> How mountains are formed – folded mountains when tectonic plates collide and volcanoes .



Map of main mountain ranges in the world . Location of the Himalayan mountains.

Map of tectonic plates .The Himalayan mountains were formed like this when two tectonic plates pushed together.The Eurasian plate and the Australian plate .Included India . Fact that the plates are still moving and pushing together so the mountains are getting higher 6.1 cm a year.

<https://www.youtube.com/watch?v=YqQhV1PwnX4>
3.10 minutes in .

Can I explain why volcanoes occur and what happens when a volcano erupts?

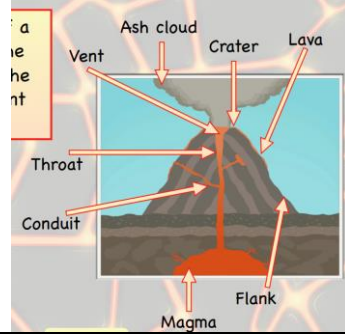
Destructive plate boundaries – where two tectonic plates move towards each other. When an oceanic plate (a plate that's mostly under the sea) meets a Continental plate (a plate that's mostly under the land) the oceanic plate is forced under the continental one. The place where is where is called a subduction zone. The oceanic plate melts as it's forced downwards. This causes magma to rise up to the surface where it breaks through to form volcanoes. Earthquakes can also happen here as the two plates catch on each other. Volcanoes can also form when two plates moves apart and the gap fills with magma . The magma cools down as it come sto the surface and forms a new crust . Sometimes this magma rises up to form volcanoes.

Not all volcanoes erupt in the same way :

Explosive eruptions shoot rocks , ash and gas into the air. This is caused by hot bubbly magma that blows apart at the surface.

Effusive eruptions happen when liquid lava flows down the side of the volcano. This is caused by hot runny magma .

Diagram of a volcano .



Can I share what is Mount Etna is and where is it located?

Find the famous volcanoes in the world
 Krakatoa Mount St. Helens Cotopaxi Mount Vesuvius Mount Ruiz Mount Tambora
 Mauna Loa Mount Fuji.

Mount Etna is a volcano located on the eastern coast of the island of Sicily. It is the tallest and most active volcano in Europe.

Mount Etna is a composite volcano (also known as a stratovolcano). It has more than one active centre. The base of the volcano measures around 150km (93 miles) across. In 2021, a series of small eruptions added around 30 metres (100ft) to the height of the volcano and it is now thought to measure around 3357 metres (11,013ft) tall.

More than one million people live around the volcano, including within the city of Catania. The lower slopes of the volcano are very fertile and are home to vineyards, orchards and olive groves. Forests are found on higher slopes. Towards the summit of the volcano, it is mainly ashes and sand as fewer plants can survive there.

The name Etna comes from the Greek word Aitne which means 'I burn'.

- Mount Etna has been erupting on and off for around 500,000 years.
- The eruptions can last for a long time. Mount Etna once erupted for a period of 13 years, starting in 1679 and finishing in 1692.
- The largest and most destructive eruption in recorded history was in 1669. Many villages and towns were wiped out by the lava flow and earthquakes during this particularly immense eruption.

Explore why people have chosen to live near volcanoes. Here are some :

Minerals, fertile soil, geothermal energy and tourism

Can I discuss how do tectonic plates cause earthquakes?
 What happens when an earthquake occurs?

<https://www.bbc.co.uk/bitesize/articles/zj89t39#z2d9kty>

Earthquakes happen where tectonic plates get stuck as they slide past each other. Pressure builds as the plates try to move until they suddenly jerk past each other. The pressure is released in waves of energy. This causes the ground to shake.

The place on the ground directly above where the earthquake starts is called the epicentre.

The further away from the epicentre you are the less you feel the ground move.

Sometimes there are smaller earthquakes before the main one these are called foreshocks.



There are usually smaller earthquakes after the main one called after shocks. If the earthquake takes place at sea or near to the sea it can cause a tsunami. A tsunami is a very large wave that floods the land.



Tsunami and earthquake destruction in Japan in 2011.

A machine called a seismometer can record the earth's shaking. Scientists can use this tool to tell where an earthquake happened. The strength of the shaking is measured using the Richter scale. On the Richter scale each level of earthquake is ten times stronger than the one before. So an earthquake measuring 4 is ten times more powerful than one measuring 3.

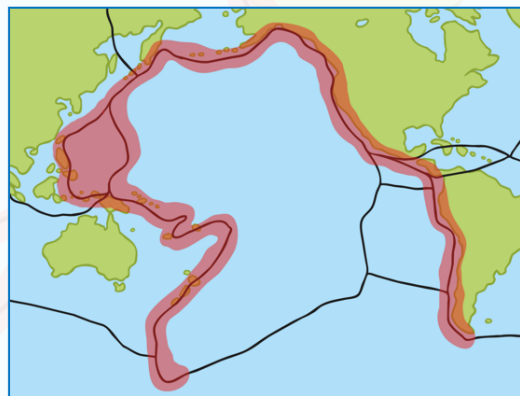
Can I locate where in the world are earthquakes most likely to happen?

<https://www.youtube.com/watch?v=Vu6t3e4ogrE> 1:41

Most of the world's volcanoes are found at the edges of tectonic plates. This is also where earthquakes are most likely to happen.

The Ring of Fire is a horseshoe-shaped line on a map which is home to around 75% of the world's volcanoes and 90% of the world's earthquakes.

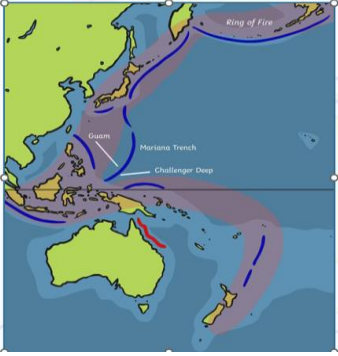
The area is a 25 000 mile line of volcanoes, tremors and earthquakes around the edge of the Pacific Ocean.



One way that tectonic plates meet and move is when one slides under the other creating what is known as a subduction zone.

The boundary of the Ring of Fire is mostly subduction zones which are more likely to cause earthquakes.

The subduction also leaves behind trenches. Trenches are the very deepest parts of the oceans.

	<h2 style="text-align: center;">The Mariana Trench</h2> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>The Mariana Trench is the deepest known trench in Earth's oceans. It was formed when one tectonic plate moved beneath its neighbour.</p> <p>It is 7 miles deep and is found just to the east of the island of Guam.</p> <p>Challenger Deep is the deepest part and also the deepest known part of our oceans. It is 10 898m which is bigger than the height of Mount Everest which is only a tiny 8848m!</p> </div> <div style="width: 45%; text-align: center;">  </div> </div> <p>Lots of the countries that are in the ring of fire prepare for earthquakes and volcanic eruptions. But many of these countries are so poor they do not have much money to prepare.. These countries are often the hardest hit by the effects of an earthquake or volcanic eruption.</p> <p>Over a million earthquakes happen every year all over the world ,but many are so small that we just don't notice them. In the UK we have 200 earth quakes a year.</p> <p>Lots of people live near volcanoes or in places that get lots of earthquakes . It has its advantages, but it can be risky too. Scientists monitor volcanoes and plate boundaries for signs of upcoming eruptions. Or earthquakes. That way action can be taken to protect people nearby.</p>
<p>Can I execute my own field work at Barrow Hill Dudley?</p>	<p>https://bcgs.info/pub/wp-content/uploads/2014/10/dudley_volcano_leaflet.pdf</p> <p>Field work skills :</p> <ul style="list-style-type: none"> • Drawing freehand maps of routes (e.g. of a walk to a site in the local area) • Relating a large-scale plan of the local area or fieldwork site to the environment, identifying features relevant to the enquiry • Recording selected geographical information on a map or large-scale plan, using colour or symbols and a key. • Taking digital photos and annotating them with labels or captions • Making digital audio recordings for a specific purpose (e.g. traffic noise) • Collecting, analysing and presenting quantitative data in charts and graphs <ul style="list-style-type: none"> • Developing a simple method of recording their feelings about a place or site <p>Children will be able to talk about the effects on past volcanic activity. The UK landscape has been shaped by volcanic activity .- Ben Nevis and Snowdon all spent volcanoes.</p> <p>Identify the mineral calcite in the disused quarry linked to the volcano activity. They will identify the mineral calcite at the disused quarry that is linked to volcano. They will link prior learning from year 4 on Tribal Tales- earliest evidence of human presence at the site were two burial chambers (barrows) found on the northern slopes of Barrow Hill, believed to date back to the Bronze Age, 2000BC to 700BC.</p>
<p>Can I share what are the differences between “Barrow Hill Dudley’s volcano and Mount Etna are?</p>	<p>Using a Venn diagram, previous study in this topic and photographs compare human and physical geography of two areas. The advantages of living near an active volcano and the dangers.</p>

Websites

<https://www.bbc.co.uk/bitesize/articles/zyhf3j6#zwj6p4j>

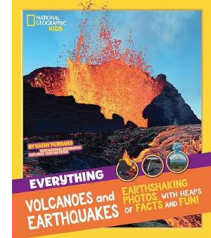
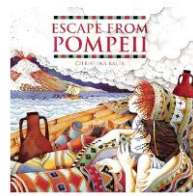
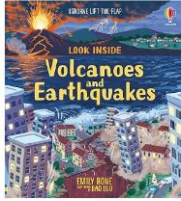
<https://www.youtube.com/watch?v=YqQhV1PwnX4>

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https://bcgs.info/pub/wp-content/uploads/2014/10/dudley_volcano_leaflet.pdf

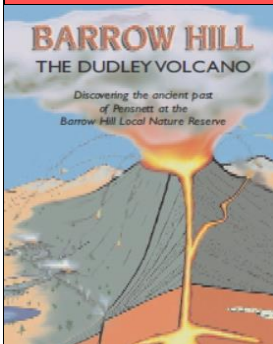
Recommended Reads



Golden Thread

Global awareness : Save our seas, save our trees and save our planet...

Experience Day (Trip / visitor)



Field Trip