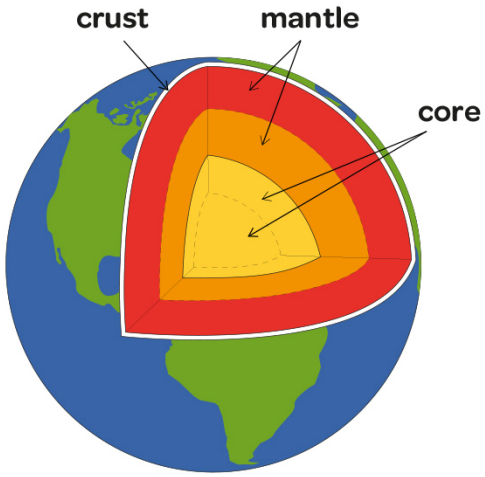
FACT-FILE VOLCANOES

The layers of the Earth

Our Earth is rather like a giant gobstopper – it's made up of different layers, called the **crust**, **mantle** and **core**.

The crust, the outer layer of the Earth, is broken into large pieces. These huge slabs of rock are called **plates**. The plates move across the surface of the Earth, along with part of the mantle underneath. It's this movement that creates **earthquakes** (when the ground shakes) and violent volcanic eruptions. Wherever plates crash into one another, you're likely to find volcanoes and earthquakes. They're also found where plates pull apart.

Most of the world's volcanoes are found on or close to a **plate boundary**, where one plate ends and another begins.



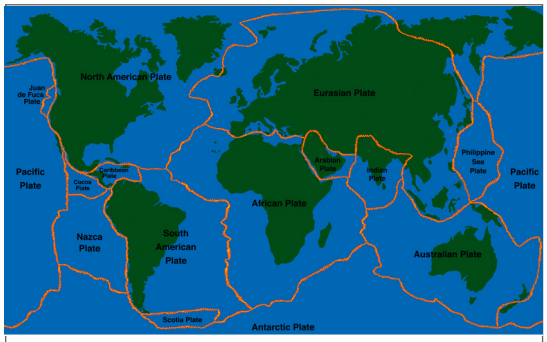
The structure of the Earth

Did you know?

The Earth's plates move at about the same speed as your fingernails grow – pretty slowly!

What is a volcano?

A volcano is a mountain formed by the eruption of molten rock from underground. Lava (hot, runny rock) spews out of the crater of the volcano during an eruption. With each new eruption, over time, the volcano grows a little taller.



Map of the Earth's plates

Italy's Mount Etna erupts, in 2013

Active, dormant or extinct?

Some volcanoes won't ever erupt again: just like the dodo, they're extinct (dead). Others are dormant (asleep), which means they haven't erupted for a long time, but could do so again, like East Africa's Mount Kilimanjaro.

And there are also active volcanoes, which have erupted recently and are likely to erupt again soon! There are approximately 1,500 active volcanoes on Earth.

What happens when a volcano erupts?

Eruptions can be spectacular, like a great sound and light show. But be cautious before you buy tickets for this spectacle! Along with all of that molten rock (lava) gushing out of the mountain, there could be super-heated gases and large bits of broken rock (volcanic bombs) flying out at you. Look out - whoosh!

Not to mention the tonnes and tonnes of volcanic ash which, once thrown up into the air, will begin to fall onto you and the surrounding land moments later.

Mount St Helens: before the eruption of 1980

Mount St Helens: after the eruption

Lava covers this house on Mount Etna, Italy

A geothermal power station in Iceland

The eruption of Mount St Helens, USA

A volcanic mountain might be shorter in height after an eruption, if the volcano has literally 'blown its top': check out the 'before' and 'after' shots of Mount St Helens, a volcano that erupted in 1980.

Spot the warning signs

Thankfully, scientists can now spot the warning signs that a volcano is about to erupt. So people who live nearby can get out of there - **evacuate**!

Signs include:

- a change in the number or the strength of earthquakes in the local area
- a change in the type of gases emitted from a volcano (volcanic gas can smell like rotten eggs – pooh!)
- a growing bump on the side of the mountain. A sure sign that magma is building up underground.

Effects of an eruption

Homes and schools, businesses and roads are destroyed by ash, lava or mudflows. People are made homeless.

Poisonous gases or clouds of hot ash travelling at high speed can kill people and animals living on or close to the mountain. Dust can cause breathing difficulties for anyone who has survived.

Falling ash may cover plants, leaving animals with nothing to eat and destroying crops. In a worse-case scenario, an eruption could lead to local food shortages, or even a famine.

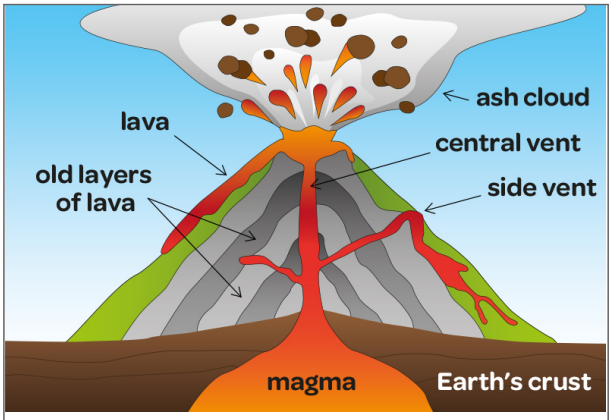
Why live near a volcano?

A volcanic eruption is a dangerous **natural hazard**, but people still choose to live close to volcanoes. Why take the risk?

Ash from the volcano makes soil on the mountain's slopes extremely **fertile**. This is brilliant for farming, giving bumper harvests. In Sicily, in southern Italy, there are many farms on the slopes of Mount Etna.

Volcanoes can be very useful. As the world's population grows, so does our need for energy. In Iceland, steam from volcanic activity is used to drive turbines to create electricity. One-quarter of the electricity that Icelanders need is produced in this way, and almost everyone heats their home using **geothermal** energy (heat from the earth).

Geothermal is an exciting new source of energy. It's a **renewable** energy source – it won't run out – and it doesn't produce climate-changing 'greenhouse gases'. It's great news for the planet.



Inside a volcano

Key Words: **boundary** **core** **crater** **crust** **earthquake** **eruption** **evacuate** **fertile** **geothermal** **mantle** **natural hazard** **plate**

YOUR MISSION: **Volcanoes**

NAME:

1. Draw yourself in the circle to become a detective!
2. Answer the questions below to complete your mission.

A. Tick 'true' or 'false' for the statements below.

Statements	True	False
1. The Earth's crust is made up of giant pieces called plates.		
2. A volcanic eruption is a really big earthquake.		
3. An active volcano will never erupt again		

B. Circle the correct answer.

4. Lava is...

a. runny rock underground
b. rock that flows out of a volcano
c. hot ash

5. An extinct volcano...

a. is sleeping
b. is a forgotten bird
c. won't erupt again

6. Geothermal energy is...

a. renewable
b. running out
c. red

Draw three things that an erupting volcano could throw at you!

D. Describe how an eruption can affect people living nearby.

OBSERVER ODD'S MISSION: **Volcanoes**

NAME:

Observer Odd needs your help!

His mission is to write a report on the facts presented in *Volcanoes.*

Answer the questions below in full sentences so that he can use the information in his report.

1. What is a volcano?

2. Are all volcanoes dangerous?

3. Make a list of signs that a volcanic eruption is about to take place.

4. Why do you think a volcanic eruption is described as 'spectacular'?

5. What is a plate boundary?

GO ONLINE: Find out more about a famous volcano like Mount St Helens by visiting www.oddizzi.com – Physical Features – Volcanoes – Famous Volcanoes

INSECTOR IZZI'S MISSION: **Volcanoes**

NAME:

Inspector Izzi has a new job and needs a hand!

Her task is to write a detailed analysis of the Volcanoes Fact file. She needs you to help her read 'between the lines' and answer the questions below in full sentences.

6. What is a natural hazard?

7. Why does a volcano get taller with each eruption (in most cases)?

8. What happened when Mount St Helens erupted in 1980?

9. Why do people live near volcanoes when they know that eruptions are dangerous?

EXTRA MISSIONS:

1. Which plate do you live on? Find out more about the Earth's giant plates by completing The Earth's Plates activity sheet.
2. Can you label a diagram of a volcano, with all of the key terms? Check out Oddizzi's Inside a volcano activity.