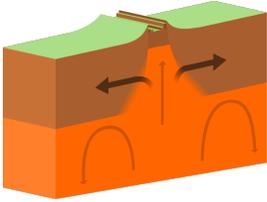
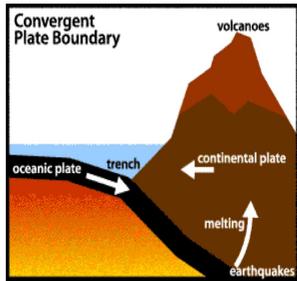


CONSTRUCTIVE/DIVERGENT MARGIN



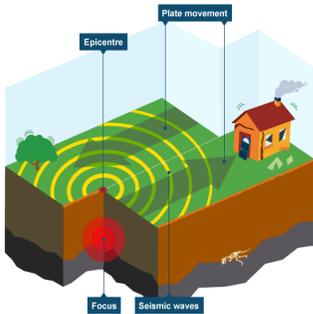
- At a **Divergent** plate boundary, two plates move apart.
- As the two plates move apart, magma rises up to fill the gap through cracks.
- This causes volcanoes. If the boundary is under the ocean, the lava cools when it reaches the surface and can construct new land.
- As the plates move apart, the friction may cause small earthquakes. These do not cause much damage.

CONVERGENT/DESTRUCTIVE MARGIN



- An oceanic plate collides with a continental plate.
- The denser, or heavier, oceanic plate will sink into the mantle and melt. This is called **subduction**.
- When the plate melts, it releases energy.
- The crust becomes molten magma. This may be forced to the surface of the earth causing a violent volcanic eruption.

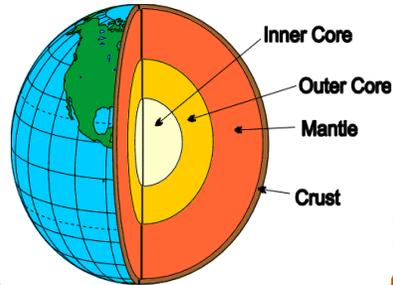
CONSERVATIVE/TRANSFORM MARGIN



- Two plates slide past one another due to the friction of convection currents in the mantle.
- The plates get caught or snagged on each other.
- The pressure continues to build between the plates.
- Eventually, the pressure becomes so great that they suddenly slip past each other.
- This releases huge amounts of energy and causes an earthquake.

Hazards

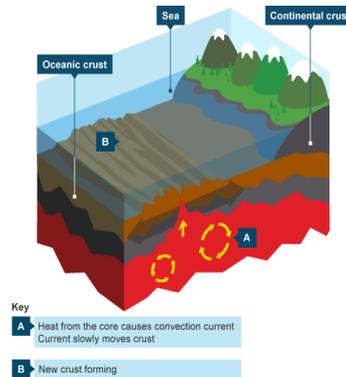
STRUCTURE OF THE EARTH



EARTHQUAKES

SEISMIC WAVES. The energy of the earthquake.
FOCUS: Where an earthquake begins.
EPICENTRE: The area directly above an earthquake. This is where the most damage occurs.

CONVECTION CURRENTS



MEASURING EARTHQUAKES

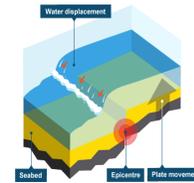
MERCALLI SCALE

Mercalli scale: a means of measuring earthquakes by describing and comparing the damage done, on a scale of I to XII, I being the least damaging, XII being the most damaging.

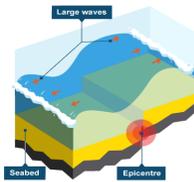
RICHTER SCALE

The Richter scale was used to measure the power of earthquakes. This measures the size of the seismic waves during the earthquake. Each step in the scale is ten times greater than the previous number. This is a logarithmic scale.

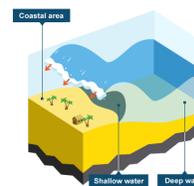
TSUNAMIS



1. Earthquake occurs underwater and a tsunami forms.



2. Water is displaced, creating a wave which spreads out.



3. As the wave approaches the shore, the wave height increases and the wave length shortens.



THE THREE P'S

- **PREDICT:** There may be many pre-shocks before an earthquake that can be measured on a seismograph.
- **PROTECT:** All buildings must comply with strict earthquake planning regulations.
- **PLAN:** Prepare disaster plans. Organise and prepare hospitals and evacuation centres. Organise emergency supplies.



KEYWORDS

BOXING DAY TSUNAMI

On Sunday 26 December 2004, a magnitude 9 earthquake occurred off the West Coast of Northern Sumatra in the Indian Ocean. This caused the Indian Ocean tsunami that affected 13 countries and killed approximately 230,000 people.

SOCIAL IMPACTS

- 1.7 million homeless.
- 1,500 villages destroyed in northern Sumatra



ECONOMIC IMPACTS

Communications damaged, e.g. roads, bridges and rail networks.



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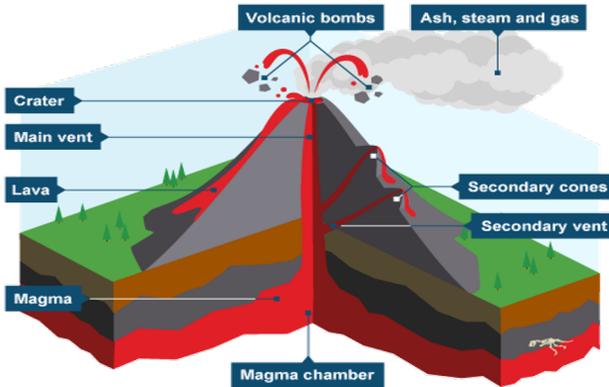
ENVIRONMENTAL IMPACTS

- Crops destroyed.
- Farm land ruined by salt water.



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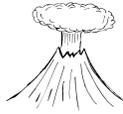
DISTINCTIVE VOLCANOES



TYPES OF VOLCANOES

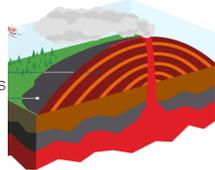


COMPOSITE VOLCANOES are steep-sided and cone-shaped, made up of layers of ash and lava and containing sticky lava which doesn't flow very far.



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SHIELD VOLCANOES have gently sloping sides and runny lava that covers a wide area. Gases escape very easily from shield volcanoes.



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THE VOLCANIC EXPLOSIVITY INDEX (VEI)

VEI/Description	Plume	Volume Height
0 Nonexplosive	<100 m	1,000 m ³
1 Gentle	100–1,000 m	10,000 m ³
2 Explosive	1–5 km	1,000,000 m ³
3 Severe	3–15 km	10,000,000 m ³
4 Cataclysmic	10–25 km	100,000,000 m ³
5 Paroxysmal	>25 km	1 km ³
6 Colossal	>25 km	10 km ³
7 Supercolossal	>25 km	100 km ³
8 Megacolossal	>25 km	1,000 km ³

WHY LIVE NEAR A VOLCANO?

VOLCANIC SOIL

Fertile soil because of all the minerals. This means that it is good for growing crops



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GEOHERMAL ENERGY

A very cheap and environmentally friendly way to create energy

TOURISM

Volcanoes generate money and jobs for the people living near them



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PREDICTION

Volcanologists and scientists monitor volcanoes for activity and put warning systems in place

VOLCANIC ERUPTIONS

LAVA FLOWS rarely cause death or injury. They move slowly and people have time to prepare.



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ASH CLOUDS Ash clouds form when the eruption sends a mixture of gas, fractured rock, and tiny lava droplets into the air. The lava droplets cool quickly into tiny glass like fragments. These are sharp and abrasive.



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PYROCLASTIC FLOW Pyroclastic flows are fast moving clouds of super heated gas, ash and rock. They are deadly as they travel around 110kph.



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LAHARS Pyroclastic flow mixes with water to create destructive mud flows. They form by either snow and ice melting during an eruption or rainfall mixing with the pyroclastic deposits. They can travel at 65kph



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MOUNT ST HELENS

PRIMARY EFFECTS

- Explosions of gas and steam flattened everything in its path



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- Snow melt mixed with ash and mud carried huge amounts of debris



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- Ash clouds circulated the earth for 7 days.



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- The volcanoes height dropped by 400 meters.
- 57 DEAD.

SECONDARY EFFECTS

- Road accidents
- Plant and animal life wiped out
- Rivers polluted



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- \$860 million costs to the economy



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- \$450 million lost in the timber trade



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- \$150 million lost in Tourism
- Rivers polluted, bridges wiped out