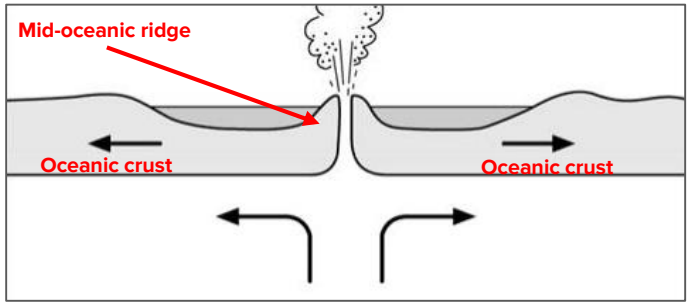
9.2 Year 9 Module 2

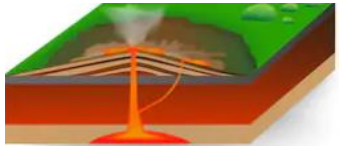
The Restless Earth

Geography Knowledge Organiser

9.2.1-Constructive boundaries

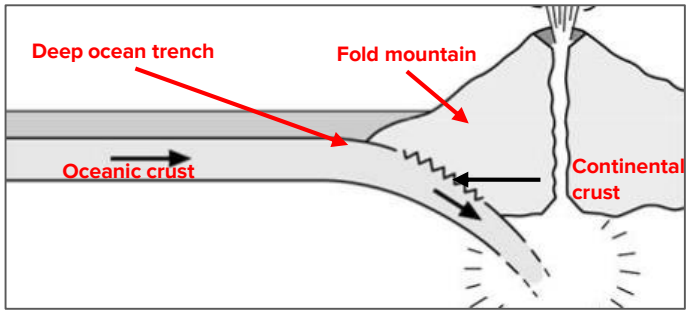


Oceanic plates- Heavier, thin, newer, can be destroyed
Mid-oceanic ridge- an underwater mountains formed at the plate boundary by cooling lava.
Rift valley- a deep straight sided valley formed when part of the plate sinks at the plate boundary

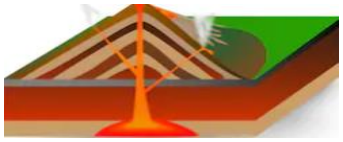


Shield volcano characteristic
Low profile
Wide base
Thin runny lava
Made up of layers of lava
Frequent and gentle eruptions

9.2.2 - Destructive boundaries

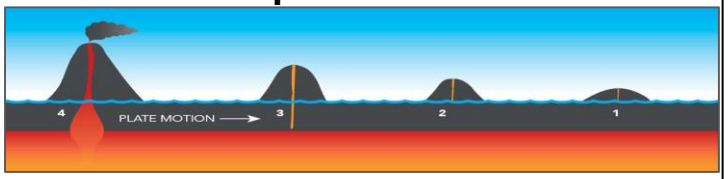


Continental plates- Lighter, thicker, older, cannot be destroyed
Deep ocean trench- an extremely deep trench in the sea between the two plates at the boundary
Fold mountains- a mountain range formed by the compression caused by two plates moving towards each other



Stratovolcano characteristic
High profile
Narrow base
Thick, slow lava
Made up of layers of mainly ash
Infrequent and violent eruptions

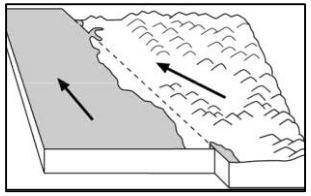
9.2.3 - Hot spots



- Superheated section of the mantle melts the plate above;
- Magma forces onto the surface and cools.
- This is a submarine volcano (an underwater volcano);
- More layers build up until the volcano sticks out of the water, creating an island. These volcanoes are SHIELD VOLCANOES;
- The plate is moving due to convection currents and the volcano eventually leaves the hotspot. This means it cannot erupt anymore (we call these extinct volcanoes);
- The process continues, making lots of volcanic islands in a row.

9.2.4 – Conservative boundaries

- Two tectonic plates slide past each other
- Friction causes them to get stuck This is a submarine volcano (an underwater volcano);
- Over time pressure builds up until the friction is overcome which results in the plates slipping.
- When the pressure is released it sends out huge amounts of energy causing an earthquake
- Earthquakes along conservative plate margins can be very large, up to magnitude 8,
- There are no volcanoes at a conservative plate margin.



- Richter scale – scale of numbers used to tell the power (or magnitude) of earthquakes
- Mercalli scale - scale to measure the intensity of earthquakes (observational)

9.2.5 - Risks & opportunities

Volcano RISKS

Lahars (Mudflows)	Fast flowing water and ash/mud
Lava flows	Streams of molten rock
Volcanic gases	Poisonous gases in the magma
Ash fall	Flakes of ash and small pebbles
Pyroclastic flows	Super-heated rock and ash

Human VULNERABILITIES

- **Education**
- **Proximity to hazard**
- **Wealth / GDP**
- **Emergency services**
- **Population density**
- **Infrastructure**
- **Government**
- **Relief of land**

Volcano OPPORTUNITIES

- Ash decomposes and can make **good soil for farming**
- Money from **tourism**
- Lava close to the surface allows for **geothermal energy**
- Volcanic activity can develop **fossil fuels** (coal/oil)
- Volcanic activity can develop **valuable minerals** (gold/lead)

9.2.6 - Case study

Montserrat 1995-7 CAUSES

Erupted on 18 july 1995
Destructive plate boundary: North American plate subducting (sinking) under the Caribbean Plate

Montserrat 1995-7 EFFECTS

[Social] 19 people died & many homes destroyed from the falling ash
[Social] Access to a hospital and airport on the island was disrupted
[Economic]Montserrat lost a lot of tourism
[Economic] Loss of money as the farmers crops were destroyed
[Environmental] Ash poisoned oceans and destroyed marine habitats
[Environmental] South of the island vegetation and wildlife destroyed

Montserrat 1995-7 RESPONSES

[Short] Evacuation of the residents from the south of the island
[Short] The British government gave money for aid.
[Long] An exclusion zone was set up in the volcanic region.
[Long] A volcanic observatory was built to monitor the volcano.
[Long] New roads and a new airport were built.