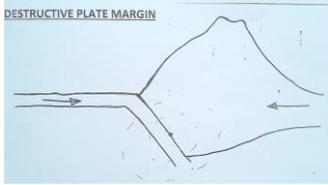
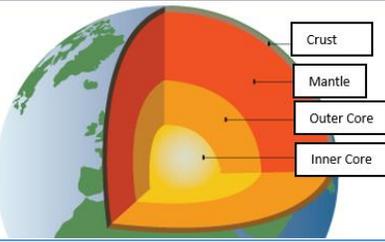
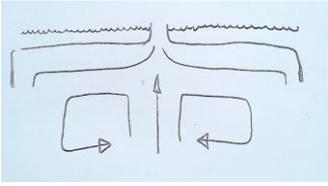
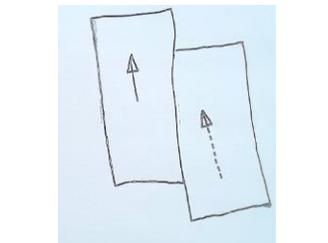
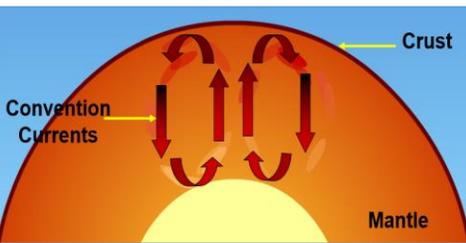
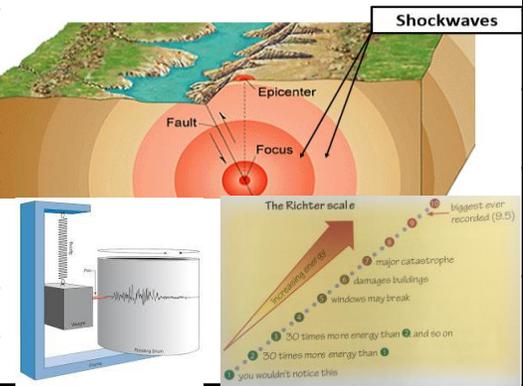


<p><b>Natural Hazard</b></p>	<p>A <b>natural process that poses a threat to people and property</b>. If it poses no threat to humans it is called a natural event.</p>	<p><b>Plate Margin</b></p>		<p><b>Description</b></p>	<p><b>Example</b></p>	
<p><b>Meteorological hazard</b></p>	<p>A hazard that occurs in the atmosphere (e.g. hurricane, thunder and lightening, tornado, drought)</p>	<p><b>Destructive Plate Margin</b></p>		<p>Two plates move towards each other due to <b>CONVECTION CURRENTS</b> in the mantle. The more dense plate is <b>SUBDUCTED</b> beneath the less dense plate. The point of subduction is known as the subduction zone.</p> <ul style="list-style-type: none"> <li><b>Volcanoes</b> – as the more dense plate sinks into the mantle, it melts forming magma. This rises up through the crust until it reaches the surface = violent eruptions.</li> <li><b>Earthquakes</b> – as the more dense plate sinks beneath the less dense plate, pressure builds up. When this pressure is suddenly released it causes explosive earthquakes.</li> </ul>	<p><i>The Nazca oceanic plate is being subducted beneath the South American continental plate.</i></p>	
<p><b>Hazard risk</b></p> <p>There is a higher risk if....</p>	<p><b>The probability that a natural hazard occurs.</b></p> <ul style="list-style-type: none"> <li>It occurs in an urban area due to the higher population density.</li> <li>It occurs in an LIC as they have poor quality buildings and less planning and prediction strategies.</li> <li>Type of hazard: e.g. earthquakes are much harder to predict than tropical storms, floods occur more often than volcanic eruptions.</li> </ul>	<p><b>Tectonic hazards at a destructive margin:</b></p>				
<p><b>Layers of the earth</b></p>	<p>There are four layers of the earth: the inner core, outer core, mantle and crust.</p>		<p><b>Constructive Plate Margin</b></p>		<p>The plates move away from each other due to convection currents in the mantle. This leaves a gap. Magma rises to fill this gap, creating volcanoes. The lava that is erupted creates new land. This usually happens under the oceans. The continued <b>CREATION OF NEW LAND</b> and movement of plates results in <b>SEA-FLOOR SPREADING</b>.</p>	<p><i>The North American and Eurasian plates are moving away from each other. This has created the Mid Atlantic Ridge in the middle of the Atlantic Ocean. This ocean is getting larger by 2cm/yr</i></p>
<p><b>Tectonic Plates</b></p>	<p>The crust is split into several pieces (like a cracked egg shell). These pieces of rock are called tectonic plates. They float on the mantle.</p>		<p><b>Tectonic hazards at a constructive margin:</b></p>		<ul style="list-style-type: none"> <li><b>Volcanoes</b> – magma rises to the surface to form volcanic eruptions, however there is little pressure = gentle eruptions.</li> <li><b>Earthquakes</b> – as the magma rises, small tremors occur = gentle earthquakes.</li> </ul>	
<p><b>Oceanic Crust</b></p>	<p>Crust found under the oceans (thinner, younger, more dense, basalt)</p>					
<p><b>Continental Crust</b></p>	<p>Crust found under land (thicker, older, less dense, granite)</p>					
<p><b>Continental Drift</b></p>	<p>Theory that said the earth's continents are very slowly moving in different directions.</p>		<p><b>Conservative Plate Margin</b></p>		<p>Two plates move past each other due to convection currents in the mantle. They can move in the same direction at different speeds or in opposite directions. The line between the two plates is called the <b>FAULT LINE</b>.</p>	<p><i>The North American and Pacific plates are sliding past each other. They are moving in the same direction however at different speeds. This fault line is known as the San Andreas Fault.</i></p>
<p><b>Convection currents</b></p>	<p>Convection currents are circular currents in the mantle that cause the overlying plates to move.</p>		<p><b>Tectonic hazards at a conservative margin:</b></p>		<ul style="list-style-type: none"> <li><b>No volcanoes</b> (there is no subduction or creation of magma)</li> <li><b>Earthquakes</b> – as the two plates slide past each other, pressure builds up. This is suddenly released, it causes violent earthquakes</li> </ul>	
<p><b>Plate boundary/plate margin</b></p>	<p>The line between the two plates. This is also known as a fault line.</p>					
<p><b>Subduction</b></p>	<p>Goes underneath.</p>					
<p><b>Subduction zone</b></p>	<p>The point at which the more dense is subducted beneath the less dense plate.</p>					

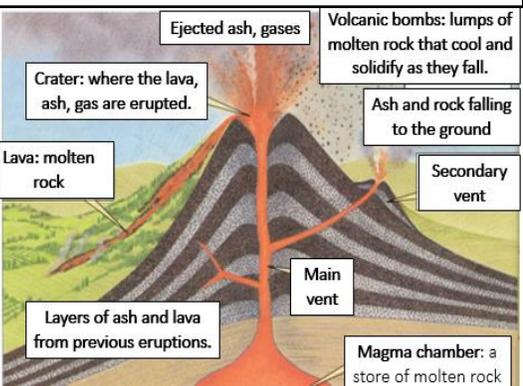
**EARTHQUAKES**

<b>Earthquake</b>	A sudden movement of tectonic plates due to a release of energy of pressure. It is followed by a series of aftershocks.
<b>Focus</b>	The point of movement in the earth's crust.
<b>Epicentre</b>	The point directly above the focus on the earth's surface.
<b>Shockwaves / Seismic waves</b>	As tectonic plates suddenly move, they send out SHOCK WAVES (seismic waves) that travel through the earth's crust and cause the ground to shake.
<b>Magnitude</b>	The amount of energy released during an earthquake.
<b>Richter Scale</b>	The scale that measures the magnitude of an earthquake.



**VOLCANOES**

<b>Volcano</b>	A volcano is an opening in the ground from which lava, ash and gases erupt.
<b>Magma Lava</b>	Molten rock that has been erupted from a volcano. Erupted magma is known as lava.
<b>Shield volcano</b>	A volcano found at constructive plate margins. It has runny lava, is low in height and has frequent eruptions. <i>For example Laki in Iceland.</i>
<b>Composite volcano</b>	A volcano found at destructive plate margins. It has thick lava, is tall in height with steep sides and has explosive eruptions. <i>For example Mt Fuji in Japan.</i>



**EFFECTS OF THE HAITI EARTHQUAKE**

Haiti is located in the Caribbean. It lies on a conservative plate boundary between the Caribbean and North American plates. The plates are sliding past each other at a rate of 2cm/yr. On **12 January 2010**, a magnitude **7.0** earthquake hit Haiti. The **epicentre** was 25km west of Port-au-Prince (the capital) at a depth of 13km.

**Primary effects** happen straight away or are a direct cause of the earthquake.  
**Secondary effects** happened after the earthquake and are often as a result of a primary effect.

<b>Primary effects</b>	<ul style="list-style-type: none"> <li>• 220,000 dead and 300 injured.</li> <li>• 300,000 buildings damaged.</li> <li>• 8 hospitals and 5000 schools damaged.</li> <li>• Transportation routes broken or damaged.</li> <li>• Service lines (water, gas, electricity) destroyed</li> </ul>
<b>Secondary effects</b>	<ul style="list-style-type: none"> <li>• Trauma and diseases from dead bodies.</li> <li>• 1.3 million Haitians in temporary camps</li> <li>• Aid supplies could not reach victims.</li> <li>• 2 million Haitians with no food, electricity, water</li> <li>• A rise in unemployment.</li> <li>• Cost :\$11.5 billion</li> </ul>



**EFFECTS OF THE MONTSERRAT ERUPTION**

Montserrat is a small island in the Caribbean. It is located next to a destructive plate margin. The denser North American plate is being subducted beneath the less dense Caribbean plate. Rising magma has created a volcano called Chances Peak, located in Soufriere Hills. It erupted between 1995 – 1997. In June 1997, a large eruption resulted in a pyroclastic flow & large ash cloud.

- **Pyroclastic flow:** *very hot gases and ash (800°C) rush down the volcano at speeds of 500mph, destroying everything in its path.*
- **Ash cloud:** *the ash that is ejected from the volcano falls across large distances, causing respiratory problems.*



<b>Social impacts</b>	<ul style="list-style-type: none"> <li>• 19 people were killed.</li> <li>• Respiratory problems were caused due to ash and gases in the atmosphere.</li> <li>• The capital, Plymouth, was covered in 12m of mud = homes, hospitals and schools were destroyed.</li> <li>• Local and international flights were cancelled.</li> </ul>
<b>Economic impacts</b>	<ul style="list-style-type: none"> <li>• Many industries were destroyed = a rise in unemployment, which reached 50%.</li> <li>• 7000 people were displaced. It was expensive to relocate people.</li> <li>• Tourism was suspended = loss of income.</li> </ul>
<b>Environmental impacts</b>	<ul style="list-style-type: none"> <li>• 2/3rds of Montserrat was covered in ash, including farmland = destruction of ecosystems and habitats.</li> </ul>

**REDUCING THE IMPACT OF EARTHQUAKES: PREDICTION + PREPARATION = PROTECTION**

<b>Measure for Small Tremors</b>	Before a larger earthquake often there is an increase in the number of small tremors. Scientists use seismometers to record any ground movement.
<b>Unusual Animal Behaviour</b>	Animals act strangely before an earthquake. In China, the city of Haicheng was evacuated following strange animal behaviour. Days later a 7.3 magnitude earthquake struck. The evacuation saved 150,000 lives.
<b>Earthquake Proof Buildings</b>	<i>Using flexible steel frames which sway as the ground moves; Rubber foundations that absorb the shockwaves/shaking; Building with a larger base than top will be less likely to topple over.</i>
<b>Practice Drills</b>	Educate people about to do should an earthquake occur to prevent panic during the disaster (e.g. practice drills and planned evacuation routes). <i>In Japan they practice earthquake drills 4 times a year.</i>
<b>Emergency Kit</b>	Residents are encouraged to have an emergency kit, including <i>a torch, canned food, batteries, radio, medical kit...</i>

**REDUCING THE IMPACT OF VOLCANIC ERUPTIONS: PREDICTION + PREPARATION = PROTECTION**

<b>Measure for Small Tremors</b>	Just before a volcanic eruption often there is an increase in earthquake activity as the magma rises. Earthquakes are recorded using a seismometer.
<b>Measure sulphur emissions</b>	Just before an eruption the concentration of gases (such as sulphur dioxide) emitted can change. You can use this to help predict an eruption.
<b>Geothermal monitoring</b>	You can see the temperature of the ground using satellite images. These can show rising magma, which would appear red.
<b>Tiltmeters</b>	Tiltmeters are placed on the ground to measure slight changes in the tilt of the ground caused by rising magma.
<b>Divert lava flow</b>	Concrete walls are built to divert the flow of lava away from areas of high land value (e.g. towns and cities).