

Year 9 - Is the world becoming more hazardous?

Types of Hazard

The Big Picture



Key Terms

- Atmospheric hazard** – Hazards to humans created in the atmosphere.
- Biological hazard** – Hazards posed by living things e.g. forest fires.
- Geomorphological hazard** – Hazards that originate on or near the Earth's surface.
- Hazard risk** – The probability or chance that a natural hazard may take place.
- Natural hazard** – A natural event that has the potential to cause damage, destruction or death.
- Tectonic hazard** – Hazards created through the movement of the Earth's tectonic plates.

Factors Affecting Risk

Natural events, such as volcanic eruptions or earthquakes that occur away from humans and properties are not natural hazards. When they happen close to human populations and property they are considered natural hazards. Different factors affect natural hazard risk.

Development

Hazard risk is affected by standard of living and quality of life. Areas with low developed are less likely to be well prepared.

Climate change

The magnitude and frequency of some climatic hazards, including droughts and tropical storms, will be affected by climate change.

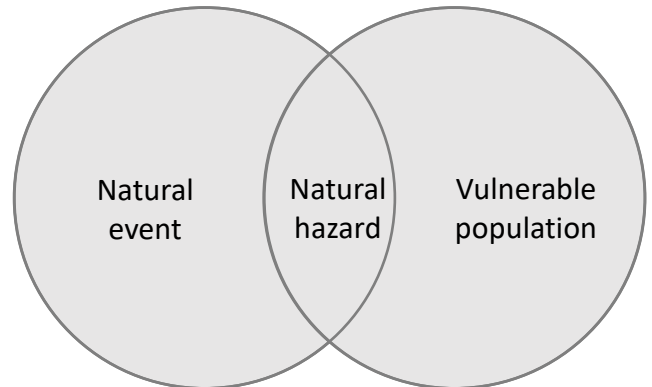
Urbanisation

Urban areas face the most significant risk due to high population densities. Urbanisation is rapid in LICs and NEEs.

Land use

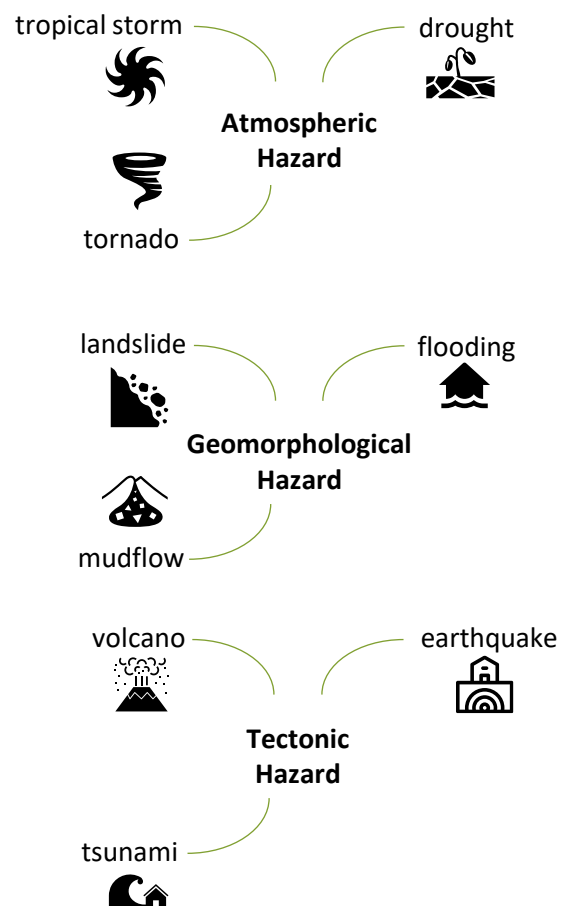
Changes in land use, e.g. deforestation and urbanisation, can increase hazard risk for climatic and geomorphological hazards.

What is a Natural Hazard?



A natural hazard is a natural event (for example flood, volcanic eruption, earthquake, tropical storm) that threatens people or has the potential to cause damage, destruction and death.

Types of Natural Hazard






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Plate Tectonics

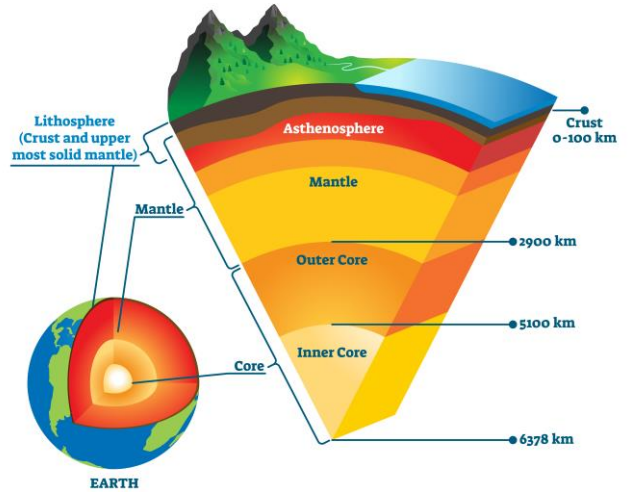
The Big Picture



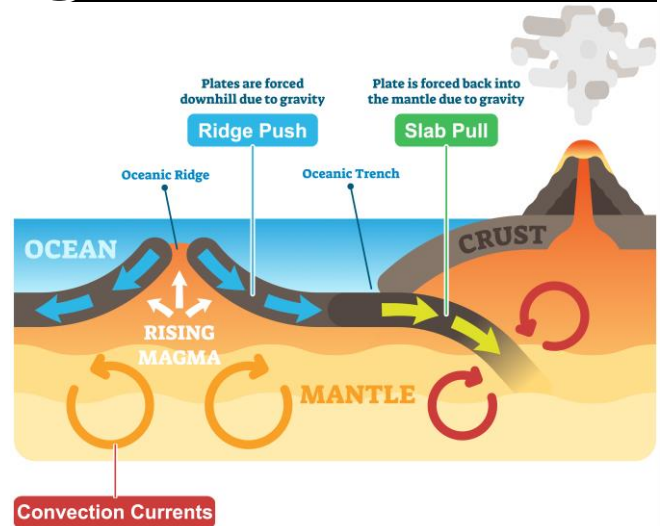
Key Terms

-  **Asthenosphere** – The upper layer of the Earth’s mantle.
-  **Crust** – The rigid shell that surrounds the mantle. Oceanic crust is thinner but more denser than continental crust.
-  **Distribution** – The way something is spread out or arranged over a geographic area.
-  **Inner core** – The solid centre of the Earth made up of iron and nickel.
-  **Lithosphere** – The more rigid outer part of the Earth.
-  **Mantle** – Semi -solid material surrounding the core that can flow very slowly.
-  **Outer core** – The liquid layer of iron and nickel surrounding the inner core.
-  **Tectonic plate** – A section of the Earth’s crust.
-  **Plate margin** – The margin or boundary between two tectonic plates.

The Structure of the Earth



How do Plates Move?



The Distribution of Earthquakes and Volcanoes



- The distribution is not random.
- Narrow bands along plate margins.
- Occur on both land and sea.
- Volcanoes are found at constructive and destructive plate margins.
- Earthquakes occur at all three boundaries.

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Plate Margins

The Big Picture



Key Terms









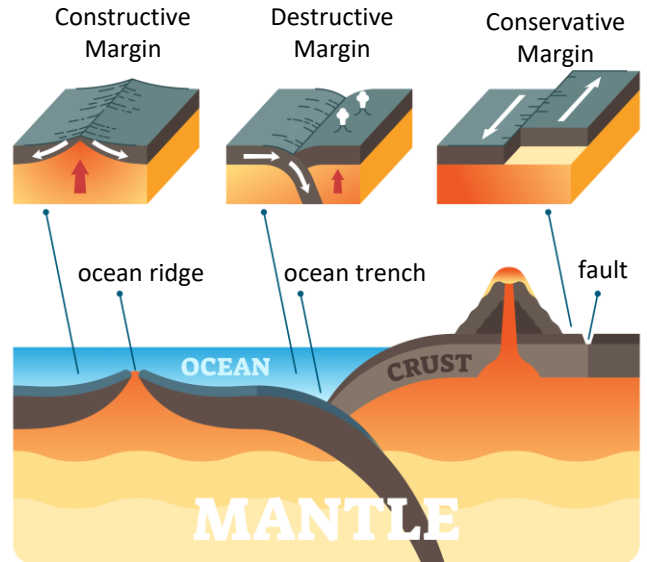
-  **Conservative margin** – Where two tectonic plates move past each other.
-  **Constructive margin** – Where two tectonic plates move apart.
-  **Destructive margin** – Where a continental plate is subducted by an oceanic plate.
-  **Fold mountains** – Mountains formed from the folding of the Earth's crust.
-  **Ocean trench** - Long, narrow depression on the seafloor where oceanic crust is forced under continental crust.
-  **Rift valley** – A steep sided valley formed where two tectonic plates move apart.
-  **Shield volcano** – A wide, low volcano that erupts basic, runny lava.
-  **Subduction zone** – An area where oceanic crust is travels under a continental plate at a destructive margin.

Plate Margins



Destructive Margin

Crust: Oceanic and continental
 Landforms: Fold mountains, ocean trench and composite volcanoes
 Hazards: Earthquakes and volcanoes

Constructive Margin

Crust: Oceanic & oceanic / continental & continental
 Landforms: ocean ridge / rift valley, shield volcanoes
 Hazards: Earthquakes and volcanoes

Conservative Margin

Crust: Both
 Landforms: Faults
 Hazards: Earthquakes

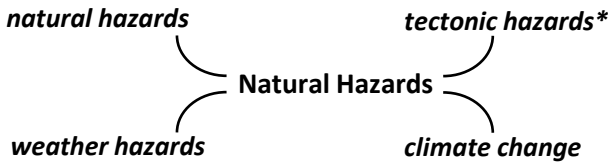
Tectonic Plates











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Tectonic Hazards - Effects & Responses

The Big Picture



Key Terms

-  **Earthquake** - A sudden violent shaking of the ground as a result of movements within the Earth's crust or volcanic action.
-  **Lahar** – A moving fluid mass of volcanic material and water.
-  **Immediate responses** - The reaction of people as the disaster happens and in the immediate aftermath.
-  **Long-term responses** - Later reactions that occur in the weeks, months and years after the event.
-  **Primary effects** - The initial impact of a natural event on people and property, caused directly by it.
-  **Pyroclastic flow** - A dense, destructive mass of very hot ash, lava fragments, and gases ejected explosively from a volcano and typically flowing at great speed.
-  **Secondary effects** - The after-effects that occur as indirect impacts of a natural event, sometimes on a longer timescale.
-  **Volcano** – An opening in the Earth's crust from which lava, ash and gases erupt.

Immediate Responses

Immediate responses to tectonic hazards include:

- Issuing warnings
- Rescue teams searching for survivors
- Providing treatment to injured people
- Food, drink and shelter provided
- Bodies recovered
- Fires extinguished

Primary Effects

Earthquakes

- People injured and killed.
- Property, homes and buildings destroyed.
- Roads, railways, ports and bridges destroyed.
- Water and gas pipes and electricity lines damaged.

Volcanoes

- People and livestock injured and killed due to pyroclastic and lava flows and ash.
- Farmland and property destroyed.
- Water supplies contaminated.

Secondary Effects

Earthquakes

- The economy slows as business activity is reduced and money spent on repairs.
- Emergency services are hindered by blocked transport infrastructure leading to further fatalities.
- Fires can start due to broken gas pipes and damaged electricity cables.
- Lack of clean water and sanitation due to burst pipes leading to the spread of disease.

Volcanoes

- Lahars occur due to the mixing of ash with rain/glacial melt water which can lead to deaths and damage to property.
- Tourism increases with those interested in volcanoes.
- Ash breaks down, providing nutrients to farmland.

Long-term Responses

Long term responses to tectonic hazards include:

- Rebuilding and repairing properties
- Rebuilding and repairing transport infrastructure
- Improving building regulations
- Restoring utilities such as water, electric and gas
- Resettling local people
- Developing opportunities for the economy to recover
- Install monitoring equipment