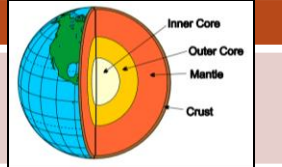


What are Natural Hazards?

Natural hazards are physical events such as earthquakes and volcanoes that have the potential to do damage to humans and property. Tectonic hazards include earthquakes, volcanoes and tsunamis.

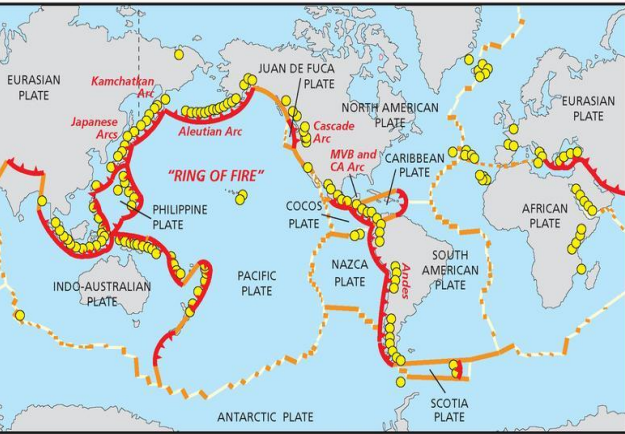
Structure of the Earth

The earth has 4 layers
The core (divided into inner and outer), mantle and crust.

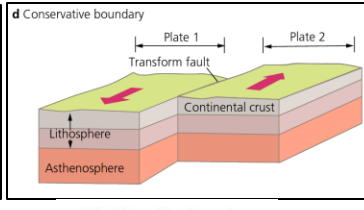
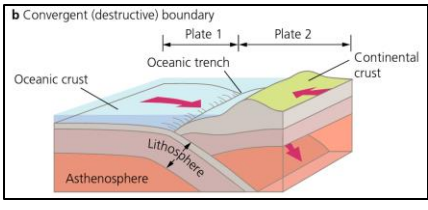
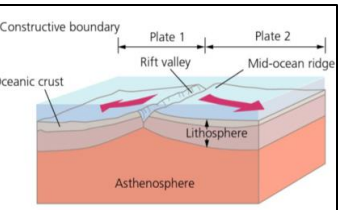


Distribution of tectonic activity

- Along plate boundaries.
- On the edge of continents.
- Around the edge of the Pacific in the Pacific Ring of Fire.



Plates either move towards each other (**destructive margin**) away from each other (**constructive**) or past each other (**conservative**).



Examples

- Constructive – North American and Eurasian plates at the Mid Atlantic Ridge (Iceland)
- Destructive – Nazca and South American plates on the Pacific Ring of Fire
- Conservative – Pacific and North American plates (San Andreas Fault line in California)

Year 9

How do physical processes impact people around the world?

Effects of Tectonic Hazards

Primary effects happen immediately. Secondary effects happen as a result of the primary effects and are therefore often later.

| Primary - Earthquakes | Secondary - Earthquakes |
|---|---|
| <ul style="list-style-type: none"> - Property and buildings destroyed. - People injured or killed. - Ports, roads, railways damaged. - Pipes (water and gas) and electricity cables broken. | <ul style="list-style-type: none"> - Business reduced as money spent repairing property. - Blocked transport hinders emergency services. - Broken gas pipes cause fire. - Broken water pipes lead to a lack of fresh water. |

| Primary - Volcanoes | Secondary - Volcanoes |
|--|--|
| <ul style="list-style-type: none"> - Property and farm land destroyed. - People and animals killed or injured. - Air travel halted due to volcanic ash. - Water supplies contaminated. | <ul style="list-style-type: none"> - Economy slows down. Emergency services struggle to arrive. - Possible flooding if ice melts. Tourism can increase as people come to watch. - Ash breaks down leading to fertile farm land. |

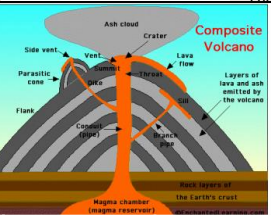
Responses to Tectonic Hazards

| Immediate (short term) | Long-term |
|--|--|
| <ul style="list-style-type: none"> - Issue warnings if possible. - Rescue teams search for survivors. - Treat injured. - Provide food and shelter, food and drink. - Recover bodies. - Extinguish fires. | <ul style="list-style-type: none"> - Repair and re-build properties and infrastructure. - Improve building regulations - Restore utilities. - Resettle locals elsewhere. - Develop opportunities for recovery of economy. |

Comparing the effects

The impacts are of economically worse in the short term in HICs as the cost of damage is often higher.

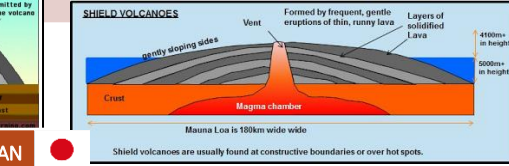
The social, economic and environmental impacts in the short term are usually much worse in LICs.



Key Terms

| | |
|----------------------------|--|
| Conservative plate margins | Tectonic plate margin where two tectonic plates slide past each other |
| Constructive plate margin | Tectonic plate margin where plates move apart |
| Destructive plate margin | Tectonic plate margin where two plates move towards each other |
| Earthquake | A sudden or violent movement within the Earth's crust followed by a series of shocks. |
| Convection currents | Movement of molten rock in the mantle layer |
| Epicentre | The point on the earth's surface directly above the focus. |
| Focus | The point in the earth's crust where the earthquake occurs |
| Lava | Molten magma when it erupts at the surface |
| Magma | Molten rock deep within the earth |
| Pyroclastic flow | Hot avalanche of gas, ash, cinders and rock that rush down the slopes of a volcano after an explosive eruption |
| Shock waves | Seismic waves generated by earthquakes |
| Lahar | Water mixed with volcanic ash |

Richter scale: A scale which measures earthquakes based on scientific recordings of the



Reducing the impact of tectonic hazards

| | HAITI | JAPAN (Sendai) |
|---------------------|---------------------|--------------------|
| Tectonic Setting | Conservative margin | Destructive margin |
| Magnitude | 7 | 9 |
| Life Expectancy | 61 | 82 |
| GDP \$ | \$600 | \$42,000 |
| Deaths | 220,000 | 18,000 |
| Injuries | 300,000 | 6,000 |
| Buildings destroyed | 250,000 | 118,000 |

| Monitoring | Prediction |
|---|--|
| Seismometers measure earth movement. Volcanoes give off gases. | By observing monitoring data, this can allow evacuation before event. |
| Protection | Planning |
| Reinforced buildings and making building foundations that absorb movement. Automatic shut offs for gas and electricity. | Avoid building in at risk areas. Training for emergency services and planned evacuation routes and drills. |

