

## Restless Earth

- Formation of the earth – inner core, mantle, asthenosphere, 2 types of crust – continental (granite) and oceanic (basalt).
- 4 types of plate boundaries (destructive, constructive, conservative and collision) and the features found along each plate boundary (EQ, Vol or both).
- Formation of Tsunami's (Japan 2011).
- Differences between Strato or composite (**Pinatubo**) and Shield volcanoes (**Hawaii**).
- Comparing impacts of Earthquakes on people and property in developed and developing countries - **Christchurch, New Zealand 2011 vs. Haiti, 2010**.
- How does the level of development and preparedness influence the impact of an earthquake?
- Explain the effects that volcanic hazards can have on people and the economy **Montserrat 1997** (main eruption).
- Detection, preparation and response in relation to volcanic and earthquake hazards - **Disaster management Cycle. Montserrat 1997 (onwards), Haiti 2010 (responses) and Christchurch, NZ.**

### Exam Questions

- Describe **two** differences between oceanic and continental crusts. **(4)**
- Explain why some earthquakes are more hazardous than others. **(4)**
- Explain how building design can help to reduce the impact of earthquakes. **(4)**
- For a **named volcanic event**, compare the primary and secondary impacts. **(6)**
- Describe **one** way people can prepare for volcanic eruptions before they happen. **(2)**
- Examine why the characteristics of volcanoes vary. **(6)**

## Changing Climates

- Previous glacial and interglacial periods – **Medieval Warm period, Little Ice Age**.
- Natural causes of Climate Change - **Milankovitch cycles** (orbit, tilt, wobble), **Volcanic activity, Sunspot activity**.
- **Little Ice Age** – impacts on people, agriculture and the economy. Erik the Red – the impact of Viking migrations in Greenland.
- Impacts on Megafauna (man vs. climate causing the extinction?)
- What is the **UK climate** currently like – temp and precipitation and variations across the UK.
- The different weather that different air masses (**tropical maritime, tropical continental, polar continental, arctic maritime, polar maritime**) mean for the UK.
- The **jet stream** and what this can mean for future predictions for the precipitation and temp.
- Impacts of Enhanced Greenhouse effect.
- Impacts of changing climate for **UK** (SEE) - Inc rising sea levels.
- Impacts of changing climate for **Egypt** (SEE)
- Also can link to impacts of sea level rise in **Maldives** and desertification / water stress in **Water World** topic.

### Exam Questions

- Explain how human activity is leading to climate change. **(4)**
- Explain how the future climate of the UK is likely to be affected by global climate change. **(6)**
- Explain how natural events can cause climate change **(4)**
- For a named **developing** country, explain how climate change might affect its economy. **(6)**
- Describe **one** possible **economic** impact of climate change in a named developing country. **(2)**
- Describe **one** challenge the UK is likely to face as a result of climate change. **(2)**
- Using an example of **past** climate change, describe its impacts. **(3)**

## Battle for the Biosphere

- Locate the 4 biomes (Rainforest, Desert, Savannah and Mountain) and explain the 4 factors that influence their location – Latitude (global) and Altitude, Aspect and Continentality (local).
- Links between the 4 spheres (biosphere, hydrosphere, atmosphere and lithosphere)
- Goods and services in the **Amazon Rainforest** and why these are important and their value.
- Role of players involved in the rainforest goods and services
- Direct and indirect impacts of deforestation.
- CBA for using the rainforest.
- Arguments for and against rainforest able to be used in a sustainable way - **Small scale conservation in Costa Rica** (forestry, tourism and farming), **Biosphere reserves, CITES, and National Parks in England and Wales**

### Exam Questions

- Explain how climate controls the distribution of biomes such as tropical rainforests. **(4)**
- Explain the role of human activity in the destruction of tropical rainforest. **(6)**
- Explain how climate change can lead to degradation of the biosphere. **(4)**
- Using examples, explain how management measures can help to conserve the biosphere. **(6)**
- Describe the biosphere's role in:
  1. maintaining soil health
  2. regulating the composition of the atmosphere **(4)**
- Describe the range of climatic conditions associated with tropical rainforests. **(2)**

## Water World

- Hydrological cycle – examples of stores and transfers (e.g. precipitation, transpiration, infiltration etc.).
- How changes to the hydrological cycle can have impacts on other parts of the closed system.
- Desertification in the Sahel** – Water stress and scarcity.
- Australia** - Causes and impacts (SEE) of drought. Plus links to El Nino.
- Citarum River, Indonesia or Mexico City**- causes of pollution and over abstraction of the aquifer.
- Colorado River** - Issues surrounding the dams, aqueducts and over abstraction of water. Plus conflict between players.
- Aral Sea** - Diversion of water causing shrinking of the lakes and then the restoration.
- 3 Gorges Dam, China HEP**- Evaluate the dam (CBA and SEE).
- Rainwater Harvesting, Kenya** - Evaluate the costs and benefit of this appropriate / intermediate technology. Role of NGO's in providing the leapfrogged technology.

### Exam Questions

- Using examples, describe how human activity can reduce water supplies. **(4)**
- Examine how intermediate technology can contribute to the management of water resources in the developing world. **(6)**
- Describe **two** ways in which human activities can affect water **quality**. **(4)**
- Describe how water is transferred from the oceans to the atmosphere and back again. **(4)**
- Using examples, examine the costs and benefits of large-scale water management schemes. **(6)**

## Coastal Change and Conflict

- Factors that affect the coastline such as geology, wave type, erosion and weathering.
- Features found along hard and soft rock coastlines.
- Types of erosion: hydraulic action, abrasion, attrition, corrosion.
- Types of sub-aerial weathering: saturated soil, rainwater runoff, chemical weathering and mechanical weathering
- Rotational slumping.
- Concordant / discordant coastlines and the features found along each.
- How waves are formed (inc fetch).
- Types of waves – constructive vs destructive, how they are formed and difference between the two.
- Coastal features formed by erosion - Headlands and Bays (**Sandown Bay**), Caves, Arches, Stacks and Stumps (**Freshwater Bay, The Needles**), Cliffs and Wave cut platforms (**Culver headland / Whitecliff bay**).
- Coastal features formed by deposition / transportation - Longshore drift and groyne (**Sandown Bay**), Spits (**Hurst Castle Spit, Calshot Spit**), bars, Salt marshes (**Newtown Salt marsh**) and tombolos.
- Coastal management – need to CBA each (SEE).
- Hard engineering – groyne (**Sandown, Cowes**), sea walls (**Ventnor, Cowes**), gabions (**base of Compton steps and Steephill Cove**), rip rap (**Ventnor, Cowes**), breakwater (**Cowes / East Cowes**).
- Soft engineering - beach nourishment (**Sandown / Shanklin, Ryde / Appley**), sand dune rebuilding (Studland Bay in Dorset or The Duver at St Helens).
- Conflict along the Military Road (due to mass erosion)
- Role of different players and CBA for different options

### Exam Questions

- Explain why some waves erode more than others. **(2)**
- For a named coastline, examine why there are conflicting views about how coastal erosion should be managed. **(8)**
- Describe how a wave-cut platform is formed. **(2)**
- Outline **one** economic consequence of coastal erosion **(2)**
- Examine the differences between concordant and discordant coasts. **(8)**

## Oceans on the edge

- Location of Coral reefs - Where and why?
- Threats to Coral reefs - Natural factors and human factors.
- Causes of dead zones and impacts on marine ecosystems.
- Role of climate change on marine ecosystems.
- Human impacts on coral reefs - **Philippines (dynamite, poison, stones) with Fish farms in Philippines as a possible solution.**
- Threats faced by North Sea** – Overfishing, By catch, Technology (e.g. improved boats), Quotas / competition.
- St Lucia, SMMA** - Use of an MPA to protect a local coral reef area, role of players and possible conflict
- Global strategies to improve marine health - **MARPOL** – oil spillage and waste from boats, **IWC** – Banning Whaling, **MPA** – Marine Protection Area. Need to CBA or ☹ and ☺ each one.

### Exam Questions

- Explain how bleaching may lead to a decline in marine species. **(2)**
- Using named examples, explain how humans can have both positive and negative impacts on marine eco-systems. **(8)**
- Outline the process of eutrophication. **(2)**.
- For a named marine ecosystem, examine why it is under increasing pressure. **(8)**
- Outline **one** possible reason why some marine eco-systems are more threatened than others **(2)**.
- Examine how **local** actions can help protect marine eco-systems **(8)**
- Outline how **one global** action helps protect marine eco-systems **(2)**.