

THE CHALLENGE OF NATURAL HAZARDS: CLIMATE CHANGE

QUATERNARY PERIOD

2.6 million years ago to the present day.
Overall period of cooling!

Glacials:

Cooler periods – UK covered in ice last 100,000 years).



Interglacials:

Warmer periods (last 10,000 years).



EVIDENCE OF CLIMATE CHANGE

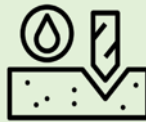
Recent:

- Melting sea ice
- Sea level rise
- Seasonal patterns (e.g. birds migrating, plants flowering)



Historic:

- Tree rings
- Fossil pollen
- Ice cores
- Observing ocean sediment



GREENHOUSE EFFECT

The Sun's infrared heat rays enter the Earth's atmosphere...

Short-wave radiation: Most solar radiation is able to pass through it to warm up the earth's surface.

Long-wave radiation: The heat given off by the earth's surface.

Greenhouse gases form a blanket within the atmosphere that traps long-wave radiation heat.



NATURAL CAUSES

Orbital changes:

- Eccentricity
- Axial tilt
- Precession



Solar output: Sunspots – dark patches on surface...

- Maximum sunspots = give off more heat
- Few sunspots = colder climate

Volcanic activity: Eruptions can block out sun (temporary effect)



HUMAN CAUSES

Greenhouse gases are released into the atmosphere by human activity – have increased since industrialisation...

Carbon dioxide: From burning fossil fuels and deforestation.

Methane: From rotting organic matter, burning biomass, agriculture (cattle farming).

Nitrous oxides: From fertilisers, sewage treatment plants and vehicle exhausts.



MITIGATION STRATEGIES

Reducing or preventing greenhouse gas emissions...

- Alternative energy sources that don't emit CO₂
- Afforestation to create carbon stores
- Transport strategies, e.g. investing in public transport, cycle path networks, park and ride and car share schemes, and EV charging networks



ADAPTATION STRATEGIES

Responding to the impacts of climate change by adjusting how people live or work

- Farming techniques
- Water management
- Flood defences for low-lying areas, e.g. sea walls, tidal barriers, homes on stilts

INTERNATIONAL AGREEMENTS

Paris Accord: Agreement to limit warming to 1.5°C above pre-industrial levels – signed by 195 countries.

