



Geography

Key Knowledge

Year 11

Key Context

Climate Change

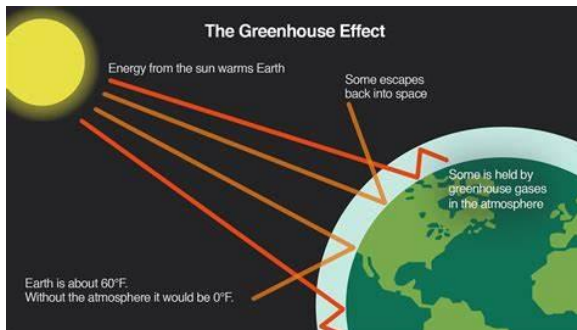
Key Vocabulary



Consequences of climate change

Consequences of Climate Change – EXTREME WEATHER.

1. 2012 was the warmest on record in the United States. The summer heat was associated with one of the most severe droughts on record.
2. In September 2012 the Arctic sea ice reached a new record of 3.4 million square kilometres. Climate change was found to be primarily responsible, due equally to the thinning sea ice and warm atmospheric conditions.
3. The heavy rainfall in eastern Australia at the end of summer 2012 across eastern Australia led to swollen rivers and widespread flooding that swamped agricultural land, caused loss of life, and forced tens of thousands of people to evacuate their homes.
4. Australia has also experienced drought in the east of the Island, associated with El Nino.
5. The year 2000 floods in the UK, which the UK occurred during the wettest autumn in England and Wales since records began in 1766.
6. 2010 in Western Russia saw the hottest summer since 1500.
7. 2010 – Pakistan – record high rainfall



Natural causes of climate change Solar output (sunspots):

A sunspot is dark patch on the sun that appears from time to time. Lots of sunspots = warmer Very few sunspots = cooler Every 11 years the number of sunspots changes from very few to lots to very few again. • E.g. 1645 – 1715: very few sunspots. During this time, earth experienced a very cold period known as the 'Little Ice Age'. Paintings show that the Thames completely froze over.

Volcanic Activity: Violent volcanic eruptions blast lots of ash, gases (e.g. sulphur dioxide) and liquids into the atmosphere. Major volcanic eruptions lead to a brief period of global cooling. This is because the ash, gases and liquids can block out the sun's rays, reducing the temperature. • e.g. Krakatoa 1883 eruption = world temperatures fell by 1.2°C for a year. • e.g. Pinatubo 1991 eruption = world temperatures fell by 0.5°C for a year.

Orbital Change: changes in how the earth moves around the sun. Orbital change affects how close the earth is to the sun. When the earth is very close to the sun, it is warmer. When the earth is further away from the sun, it is cooler. a) Eccentricity: how the earth orbits the sun. Every 100,000 years the orbit changes from circular to elliptical (egg-shaped). b) Axial tilt: the angle of the earth changes every 41,000 years between 22.5° to 24.5°. c) Precession: the natural wobble of the earth around its axis. Wobble cycles take 26,000 years.

Human causes of climate change The green house effect: A) Greenhouse gases create blanket around earth. B) Sunlight travels to earth as shortwave radiation. C) Sunlight bounces off the earth's surface as longwave radiation. The long-wave radiation bounce off the greenhouse gases and travel back to earth. They are trapped in the earth's atmosphere = earth heats up. The enhanced greenhouse effect is when, due to human actions, there are extra greenhouse gases in the atmosphere which trap more heat = global warming. •

CLIMATE CHANGE IS A CHANGE IN THE EARTH'S CLIMATE. There is a lot of evidence that shows climate change has been occurring during the Quaternary Period (covers from 2.6 million years ago to today).

Thermometer recordings show that average global temperatures have risen by 0.74°C during the last 100 years and by 0.5°C since 1980.

Photographs show over the past 20 years the Arctic ice has thinned to almost half of its thickness and permanent ice cover is reducing at a rate of 9% every 10 years.

Paintings show that the River Thames was frozen over in 1677. People are shown ice skating over the frozen river

Ice cores are used to examine past global temperatures. When fresh snow falls, each layer contains sediments and molecules (e.g. oxygen) that can be used to calculate the temperature in the year that layer fell.

MEDIEVAL WARM PERIOD Lasted from about 950 AD to 1250. Time of warm climate in the North Atlantic Region □ Temps were the same of higher than recent temps but **ON AVERAGE** it was cooler than now. **NOW** – the ocean temperatures are the warmest they have been since 1850.

LITTLE ICE AGE Lasted from 1300 to 1870. Period of time when parts of Europe and North America had much colder winters than today. Coldest periods were in 15th and 17th Centuries. River Thames frequently froze over.

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