CLIMATE CHANGE

WHAT IS CLIMATE?

- Climate is the average weather in a place. It tells us what the weather is usually like.
- Climate is worked out by taking weather measurements over a long period of time (usually 30 years) and then calculating the average i.e. of temperature and rainfall.
- Weather is what you get on a day-to-day basis!

WHAT IS CLIMATE CHANGE?

A change in global or regional climate patterns, in particular a change apparent from the mid to late 20th century onwards and attributed largely to the increased levels of atmospheric carbon dioxide produced by the use of fossil fuels!

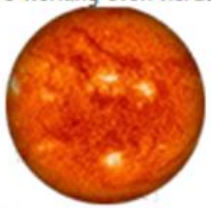
NATURAL CAUSES OF CLIMATE CHANGE

ORBITAL THEORY

- The Earth's orbit is sometimes circular, and sometimes more of an ellipse (oval)
- The Earth's axis tilts. Sometimes it is more upright, and sometimes more on its side.
- The Earth's axis wobbles, like a spinning top about to fall over.

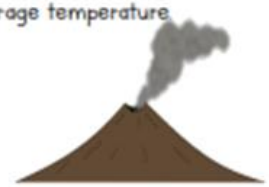
SUNSPOT THEORY

- The Sun's output is not constant. Cycles have been detected that reduce or increase the amount of solar energy.
- Temperatures are greatest when there are plenty of sunspots – because it means other areas of the Sun are working even harder!



THE ERUPTION THEORY

- Volcanic eruptions produce ash and sulphur dioxide gas. This is circulated globally by high level winds.
- The blanket of ash and gas will stop some sunlight reaching the Earth'.
- Instead, the sunlight is reflected off the ash/gas, back into space.
- This cools the planet and lowers the average temperature.



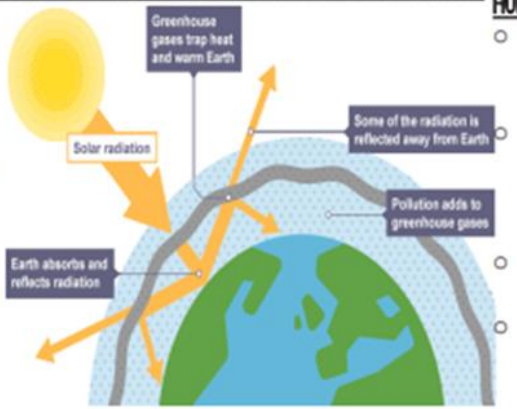
Impacts of Climate Change in the Maldives

- In the Maldives the coral in the reefs are bleaching. This is due to the algae in them disappearing, taking the bright vivid colours away, leaving it white.
- Corals are found where there is salty, shallow, clear water that is over 18 degrees Celsius.
- Corals are considered the 'rainforests of the sea' meaning that they support very high biodiversity.
- Climate change is causing the sea temperature to rise meaning more bleaching events and areas of coral are dying.
- This will have huge impacts on coastal flooding as the coral reefs protect the islands from destructive waves but also will hit tourism on the islands too as many people visit to see the coral reefs.

HUMAN CAUSES OF CLIMATE CHANGE

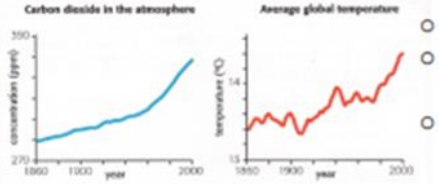
THE GREENHOUSE EFFECCT

- A natural function of the Earth's atmosphere is to keep in some of the heat that is lost from the Earth.
- The atmosphere allows the heat from the Sun (short-wave radiation) to pass through to heat the Earth's surface.
- The Earth's surface then gives off heat (long-wave radiation).
- This heat is trapped by **greenhouse gases** (eg methane, carbon dioxide and nitrous oxide), which radiate the heat back towards Earth.
- This process heats up the Earth.



HUMAN FACTORS INCREASING WARMING

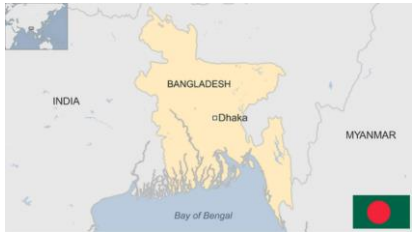
- Burning fossil fuels, eg coal, gas and oil - these release carbon dioxide into the atmosphere.
- Deforestation - trees absorb carbon dioxide during photosynthesis. If they are cut down, there will be higher amounts of carbon dioxide in the atmosphere.
- Dumping waste in landfill - when the waste decomposes it produces methane.
- Agriculture - agricultural practices lead to the release of nitrogen oxides into the atmosphere.



- Carbon dioxide (CO_2) is a greenhouse gas.
- As technology has developed and the population on earth has increased, the amount of CO_2 has increased since 1860.
- Data clearly shows that although temperatures have fluctuated since 1960, the general pattern is that global temperatures have increased as CO_2 levels rise

Impacts of climate change in Bangladesh

- Bangladesh is a low lying country in Asia. To the south is the Indian Ocean and to the North are the Himalayan Mountains.
- As it is low lying it is very vulnerable to sea level rise and coastal flooding is becoming much more frequent making land unusable due to the high salt content of the sea.
- In addition as winters become warmer more ice is melting in the Himalayas making river flooding events more common also.
- This is causing people to become internally displaced in Bangladesh. When people are displaced from their homes in Bangladesh they are affected both economically and socially. They lose their houses and have to re start their lives in another place.




Impacts of climate change in the UK

- We are now seeing weather patterns change in the UK as we have recorded 10 of the hottest summers on record within the last 15 years. Including the hottest temperature ever recorded in July 2022.
- Scientists believe that extreme weather events in the UK will become more common these include increased floods in Winter and Spring and increased droughts and heatwaves in summer.
- As global sea levels continue to rise we are also likely to experience more coastal erosion.
- Impacts of these events could be water shortages due to heatwaves and droughts.
- More insurance claims due to flooding
- Changes to crop yields for farmers as plants can be seriously effected by both too much rain in Spring and not enough rain in summer.
- Although warmer and drier summers is likely to attract more tourists.

My carbon footprint- What can I do to try and reduce it?

Factors that add to a person's carbon footprint include their diet (how far their food has travelled- this is referred to as food miles). Also how much energy they use within their household e.g. to heat their homes. If fossil fuels are being used instead of renewable energy sources they will be adding to their carbon footprint. In addition the transport people use will also add to this, cars emit C02 into the atmosphere.

Food Miles- *Food miles are the distance food is transported from the time of its making until it reaches the consumer.*

Everyone can do something to help reduce global greenhouse emissions the most common being reduce, refuse and recycling of our waste. In addition being more energy conscious making sure we try to reduce our consumption by turning off lights, walking or cycling instead of getting lifts where appropriate and being conscious of the products we buy.

MITIGATING TO CLIMATE CHANGE

Mitigation means to reduce or prevent the effects of something from happening.

Mitigation strategies include:

- **ALTERNATIVE ENERGY** - using alternative energy such as solar, wind or tidal can reduce the use of fossil fuels. This will reduce the amount of carbon dioxide released into the atmosphere.

- **CARBON CAPTURE** - this is the removal of carbon dioxide from waste gases from power stations and then storing it in old oil and gas fields or coal mines underground. This reduces the amount of emissions into the atmosphere.

- **PLANTING TREES** - encouraging **afforestation**, means that there will be more trees to absorb the carbon dioxide in the atmosphere during the process of photosynthesis.

- **INTERNATIONAL AGREEMENTS** - in 2005 the Kyoto Protocol became international law. The countries that signed up to the treaty pledged to reduce their carbon emissions by 5 per cent. However, this ran out in 2012 and its overall impact has been small. The US refused to join and major developing countries like China and India were not required to make any reductions.