SMITH'S WOOD ACADEMY

Home learning activities

Subject
Geography
Year Group
10
Unit of work / Knowledge organiser
A recap on Climate Change
Activities
Task 1: Complete ALL GCSEpods being set for you Task 2: Discuss the difference between adaptation and mitigations (3 marks) Task 3: Evlauate the evidence that we have for long-term climate change (inc. ice cores and tree rings – see GCSEpod for help) (6 marks) Task 4: Describe the natural causes of climate change (4 marks) Task 5: Describe the human causes of climate change (4 marks) Task 6: 'Natura has the most influence on climate change' To what extent do you agree with this statement? (9 marks) Task 7: Explain the different effect of climate change (4 marks) Task 8: Evaluate how we can mitigate against climate change (6 marks) Task 9: Discuss how we need to adapt to climate change (4 marks) Task 10: Explain why we must manage our water supplies going forward (4 marks)
Where do you complete the work?
On paper or on the computer
What to do if you finish the work? (Extension activity)
Create case study notes on the following case studies: - Thar Desert - Malaysia Rainforest - Nepal 2015 earthquake - Chile 2010 earthquake - River Tees Once you have finished, log on to swa_geography_ on Instagram and complete the daily tasks posted there.
These websites might help:
BBC bitesize GCSEpod
If you are struggling with your work or if you have finished..
Please email your classroom teacher directly using the email list found in the Home Learning section of the website.

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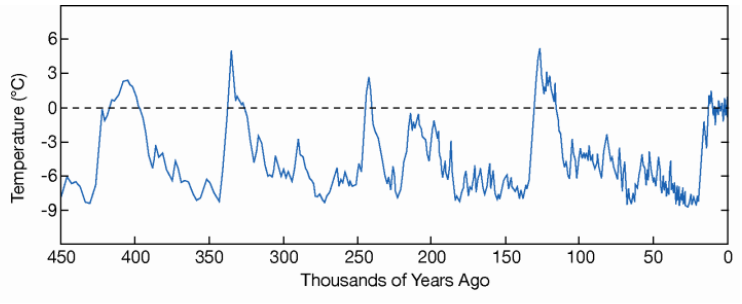
Keywords.

- **Adaptation** - Actions taken to adjust to natural events such as climate change, to reduce potential damage, limit the impacts, take advantage of opportunities, or cope with the consequences.
- **Climate change** - A long-term change in the earth's climate, especially a change due to an increase in the average atmospheric temperature.
- **Mitigation** - Action taken to reduce or eliminate the long-term risk to human life and property from natural hazards, such as building earthquake-proof buildings or making international agreements about carbon reduction targets.
- **Orbital changes** - Changes in the pathway of the Earth around the Sun.
- **Quaternary period** - The period of geological time from about 2.6 million years ago to the present. It is characterised by the appearance and development of humans and includes the Pleistocene and Holocene Epochs.

Evidence for Climate Change.

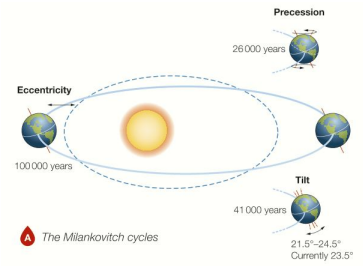
We need to consider the evidence for climate change from the beginning of the Quaternary period to the present day. The graph shows average global temperatures. Temperatures have fluctuated during this time. It shows glacial periods (lows) and peaks. Today's average temperature is higher than almost all of the Quaternary period



Causes of Climate Change.

There are natural and human causes of climate change.

Natural Causes.

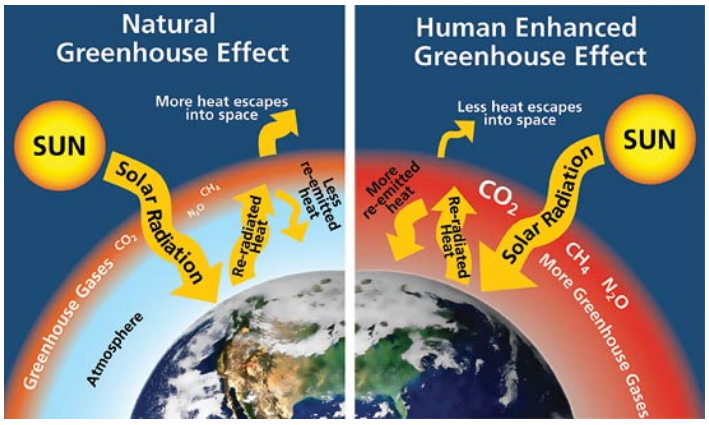


Solar Activity – Sunspots are dark patches that appear on the surface of the sun. The more sunspots the greater the suns energy (warmer) The number of sunspots increase and decrease over a 11 year period.

Volcanic Activity - Big volcanic eruptions can change the Earth's climate. Small eruptions have no effect - the eruption needs to be very large and explosive. Volcanic eruptions produce ash and sulphur dioxide gas. If the eruption is big enough, the sulphur and gas is spread around the world. This creates a blanket of sulphur and ash around the world. This blanket of ash and gas will stop solar energy (sunlight) reaching the Earth. Instead it bounces off the sulphur and gas and is reflected back into space. This cools the planet and lowers the average temperature.

Human Causes.

Greenhouse Effect – The atmosphere allows most of the heat from the sun to pass through it to warm up the earth's surface. However, when the earth gives off heat some gases such as CO2 and methane are able to absorb it. The greenhouse effect keeps the Earth warm. In recent years, the amounts of greenhouse gases in the atmosphere have increased, it is an increased effectiveness of the greenhouse effect, the **enhanced greenhouse effect**. Human activities appear to be affecting the atmosphere.



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Effects of Climate Change.

Environmental Effects:

- Shrinking glaciers and ice sheets. Melting ice on land for example in Greenland has returned water to the sea which has resulted in sea level rise.
- Sea ice is shrinking, leading to the loss of polar habitats.
-Rising sea levels which puts low lying and coastal areas at risk of flooding.
- Species are declining due to warming, for example, coral reefs are suffering from bleaching due to increasing sea water temperatures.
- Precipitation patterns are changing.
- The distribution and quantity of some species could change and biodiversity could decrease.

Human Effects:

- Deaths due to heat have increased, deaths due to cold have decreased.
- Some areas could become so hot and dry that they're difficult or impossible to inhabit.
- Low lying coastal areas could be lost to the sea or flood so often that they also become impossible to inhabit. This could lead to migration and overcrowding in other areas.
- Some areas are struggling to supply enough water for their residents due to problems with water availability.
- Political tensions, especially where rivers cross borders.
- Climate Change is affecting farming in different ways around the world:
    - Globally, some crops have suffered from climate change e.g. maize crops have got smaller due to warming.
    - High latitude countries are finding that crops benefit from warmer conditions.
- Low crop yields could lead to increased malnutrition , ill heath and death.
- Climate change means the weather is getting more extreme.

Managing Climate Change – Mitigation.

Alternative Energy Sources.

Alternative energy will often be referred to as renewable energy sources. These are sources of energy that can quickly replenish themselves and can be used again and again. There are 7 key types of renewable energy and these are; solar, wind, tidal, geothermal, HEP, biomass and nuclear.

Carbon Capture.

Scientists are developing ways to capture carbon dioxide from power plants and factories and safely store it underground so that it can't go into the atmosphere.

Replanting Trees.

Forests play an important role in climate change. The destruction of forests contributes to the problem through the release of CO_2. But the planting of new forests can help mitigate against climate change by removing CO_2 from the atmosphere. Combined with the sun's energy, the captured carbon is converted into trunks, branches, roots and leaves via the process of photosynthesis. It is stored in the trees until being returned back into the atmosphere, through the natural process.

International Agreements.

The main international agreement that helps to mitigate climate change is the Kyoto Protocol, this was created in 1997 and was set up in Japan. However it was not enforced until 2005, where 192 parties (countries) signed up to it. The aim is for countries to reduce their greenhouse gas concentrations in the atmosphere to a level that would prevent dangerous harm to our climate. It puts developed countries in the frame to reduce emissions more on the basis that they are historically responsible for the current levels of greenhouses gases found in our atmosphere. It allows countries a limit on how many emissions they can emit and offers opportunities for countries to buy carbon from countries that are below their target, in a hope of keeping emissions low.

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Managing Climate Change – Adaptation.

Changing in Agriculture.

Changing rainfall patterns and higher temperatures can affect how crops grow.

- We might need to plant new crop types suitable to the new climate of an area (e.g. growing grapes in southern England).
- Technology can be used to create new crops that are more resistant to extreme weather.
- Shade trees to protect seedlings from strong sunlight.

Coping with Rising Sea Levels.

Sea levels are predicted to rise by up to 82cm by 2100, so people need to be prepared for flooding.

- Flood barriers can be built, e.g. the Thames Barrier
- In areas that can't afford defences like Bangladesh, people build their homes on top of embankments or build raised flood shelters instead.

Managing Water Supply.

Unreliable rainfall and periods of water shortage require careful management, so people need to use water resources more efficiently.

- Water meters can be installed in people's homes to discourage them from using a lot of water.
- Rainwater can be collected and waste water can be recycled to make more water available.

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