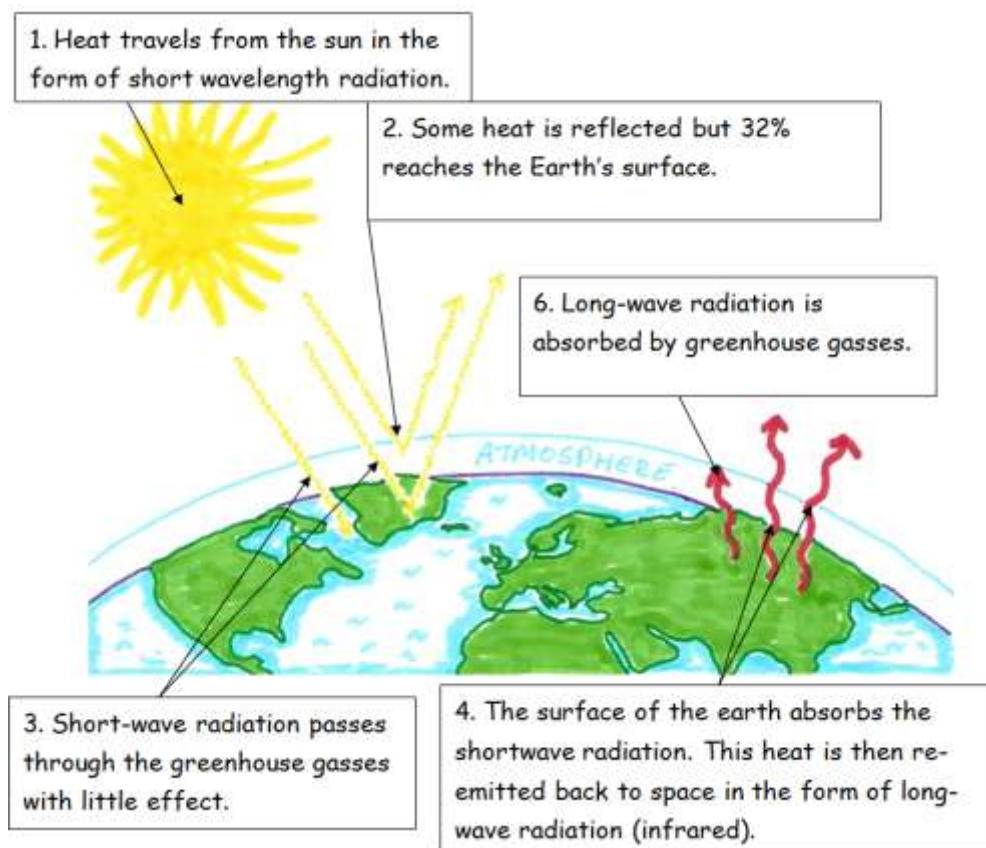


## What are the causes and evidence for climate change?

What is the greenhouse effect and how have people's actions affected this process?

The greenhouse effect is the **natural** process that keeps the earth warm. Greenhouse gasses trap heat warming up the Earth - without it the Earth would be around 32°C colder. Most scientist belief that we are making the greenhouse effect stronger by increasing concentrations of the different greenhouse gasses:

- **CO<sub>2</sub>** - concentrations are increased by burning **fossil fuels** such as oil, gas and coal. This is made worse by **deforestation** as trees would act as a carbon bank.
- **Methane** - concentrations are increased by **farming** - especially animal production and rice growing. Methane also comes from rotting **rubbish**.

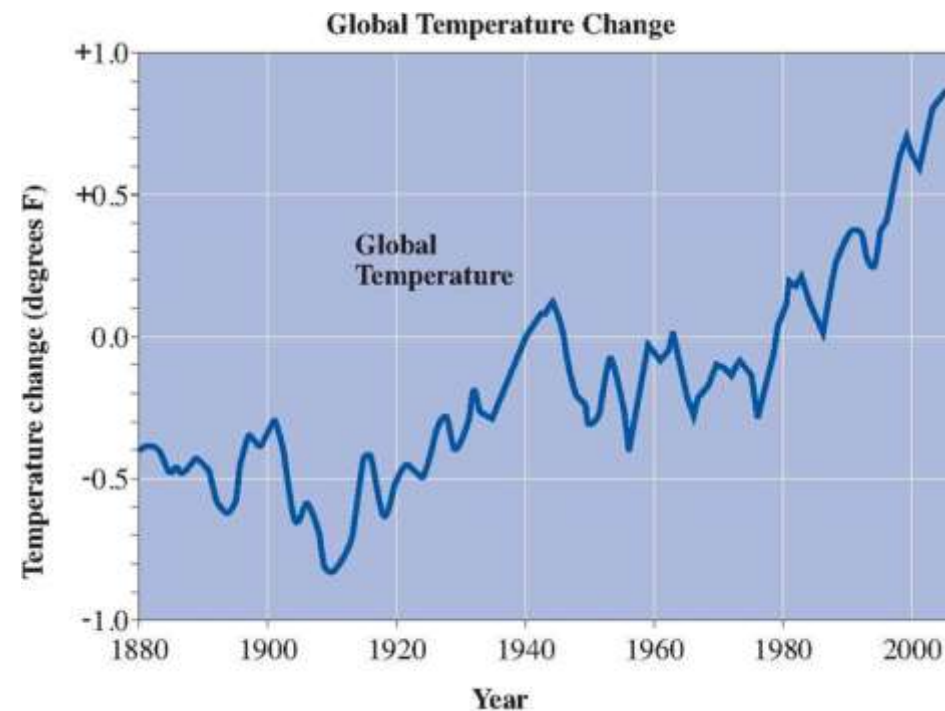


You must make sure that you can draw a simple sketch to show how the greenhouse effect works or be able to annotate one that has been drawn for you. Practice writing an explanation by putting annotations 1-6 into a paragraph in your own words.

How conclusive is the range of evidence for climate change?

Most scientists would say that the evidence is **very** conclusive. The evidence includes:

- **Ice cores from the Antarctic**- these give us records going back over 400,000 years of **temperature** and **composition** of the air.
- **Direct measurements** - scientists have been measuring the climate now for over 300 years in some place.
- **Sediment analysis** - looking in lakes and bogs scientist can use things like pollen or beetle remains to work out temperatures in the past.
- **Glacier retreat** - ice is melting in both mountain and Polar Regions.
- **Species change** new species are being recorded in areas which used to be too cold for them.



Using this evidence scientists have reconstructed past temperatures such as the one above from the 2010 exam - practice describing it - remember to use **quantification** from both axes.

## What are the alternative futures?

What would the possible effects of climate change be in **MEDCs** and **LEDCs**?

Some things will be the same in both **MEDC's** and **LEDC's** but the effects will probably be worse in **LEDC's** because they have less money to deal with them.

## Negative Effects

- Increased storms and flooding
- Sea level change
- Droughts and water shortage
- Harvest failures and food shortages
- Spread of crop diseases
- Spread of insect borne diseases such as malaria
- Soil erosion and landslides.

## Positive Effects

- New tourism opportunities
- New farming opportunities.

UK (MEDC)	Uganda (LEDC)
Coastal Flooding	Droughts and water shortages
River Flooding - storms	Harvest failure and hunger
Summer water shortages	Soil erosion & landslides
Better weather for tourism	Spread of Malaria
Grow crops such as grapes	More river flooding

How can technology be used and people's lifestyles changed to reduce the impact of climate change?

## Technology can help in a lot of ways:

- Alternative energy sources such as wind, solar and tidal can be used to make electricity instead of thermal power stations burning fossil fuels.
- Better more efficient public transport such as Cardiff's bendy buses.
- More fuel efficient cars.
- Use of biodiesel or bioethanol in cars or hydrogen fuel cells.
- Waste such as food can have methane captured to be used instead of fossil fuels in power generation.
- More efficient buildings - insulation - triple glazing.

## Lifestyles can be changed

- Eating less meat or going vegetarian.
- Not having pets - a small dog has the same carbon footprint as a 4x4 car.
- Using more public transport
- Walking or cycling
- Take less flights (holiday at home)
- Don't put appliances on standby
- Turn off lights and other appliances if not being used.