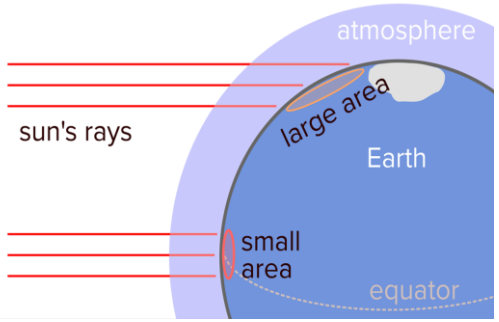
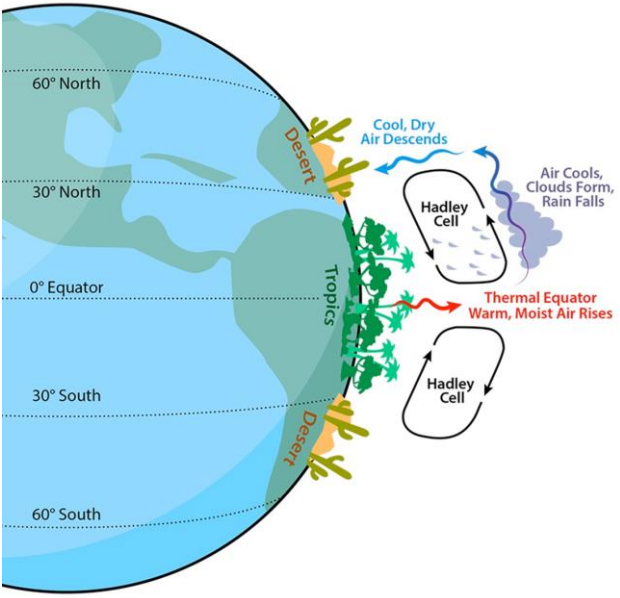
Climate and Climate Change Knowledge Organiser

What factors affect climate?



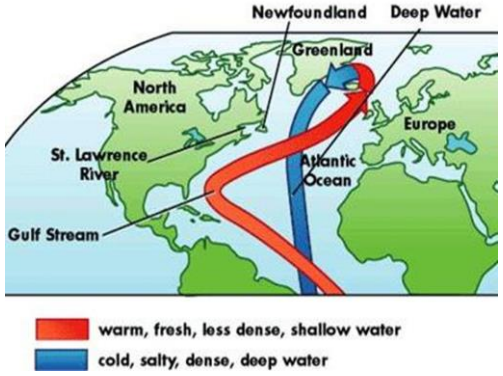
Latitude (distance from the Equator)
Sunlight is more concentrated at the **equator** giving higher temperatures. At the Poles light is spread over a greater area giving colder temperatures



Atmospheric circulation

Warm moist air **rises** at the equator giving clouds and rain that create **rainforests**.

This air spread north and south and **sinks** at 30° latitude giving bands of dry air where dry **deserts** form.



Ocean currents

Warm surface currents move warm water from the equator making climates milder. For example the **Gulf Stream** brings warm water to the UK

Deep ocean Cold ocean currents return the water.

What different Climate types are there?

Polar climate

- Short, cool summers with long hours of daylight.
- Winters are very long and extremely cold with very short hours of daylight.
- Little rainfalls in polar regions.

Animals:
polar bear, elephant seal
Plants:
None

Temperate climate

- Temperate Climates have 4 seasons, with cool summers and mild winters.
- Temperate Climates experience rain throughout the year

Animals:
Fox, squirrel
Plants:
Deciduous trees (Oak, Ash)

Tropical climate

- Temperatures are high throughout the year with the sun directly overhead
- Very little change in temperature (no seasons).
- Rainfall is very heavy and falls throughout the year

Animals:
Orangutan, Toucan, leaf cutter ant
Plants:
Cedar & Mahogany trees, Lianas

Arid (Desert) climate

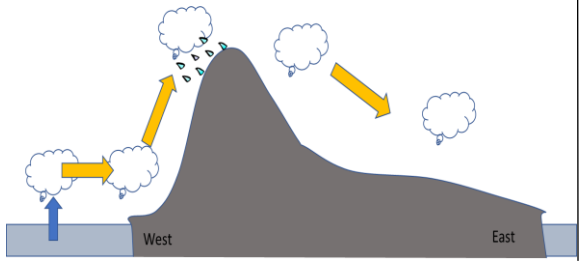
- Temperatures are extremely high all year round
- Cloud free skies mean temperatures fall rapidly at night
- Arid Climates have little or no rain for much of the year

Animals:
Fenix Fox, camel
Plants:
Cactus, eucalytus

Relief

Temperature decreases with altitude – for every 100m of height 1 °c of temperature is lost.

Where moist air is forced to rise by mountains it cools and condenses causing precipitation.
As the air descends again it warms again creating an area of rain shadow.



What were past climates like?

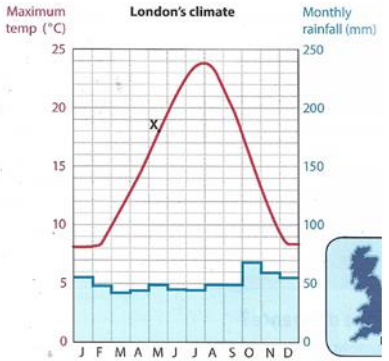
Medieval Warm Period

- Archaeological remains show evidence of **Viking** farm settlements in **Greenland** for over 400 years

Little Ice Age

- Old paintings show 'frost fairs' taking place on the frozen River Thames
- Cold weather and rain led to years of repeated crop failure and a 'Great Famine' where 10-20% of the population starved according to church records
- Farmers had to switch to new crops such a potatoes which could grow in colder conditions

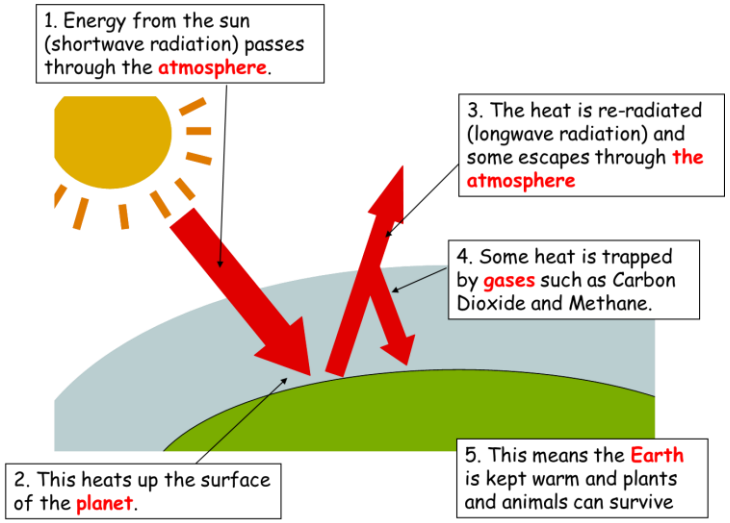
What is a CLIMATE graph?



Weather is the state of the atmosphere at a given time.

Climate is the *average* weather in a place. It tells you what the weather is *usually* like, in any given month.

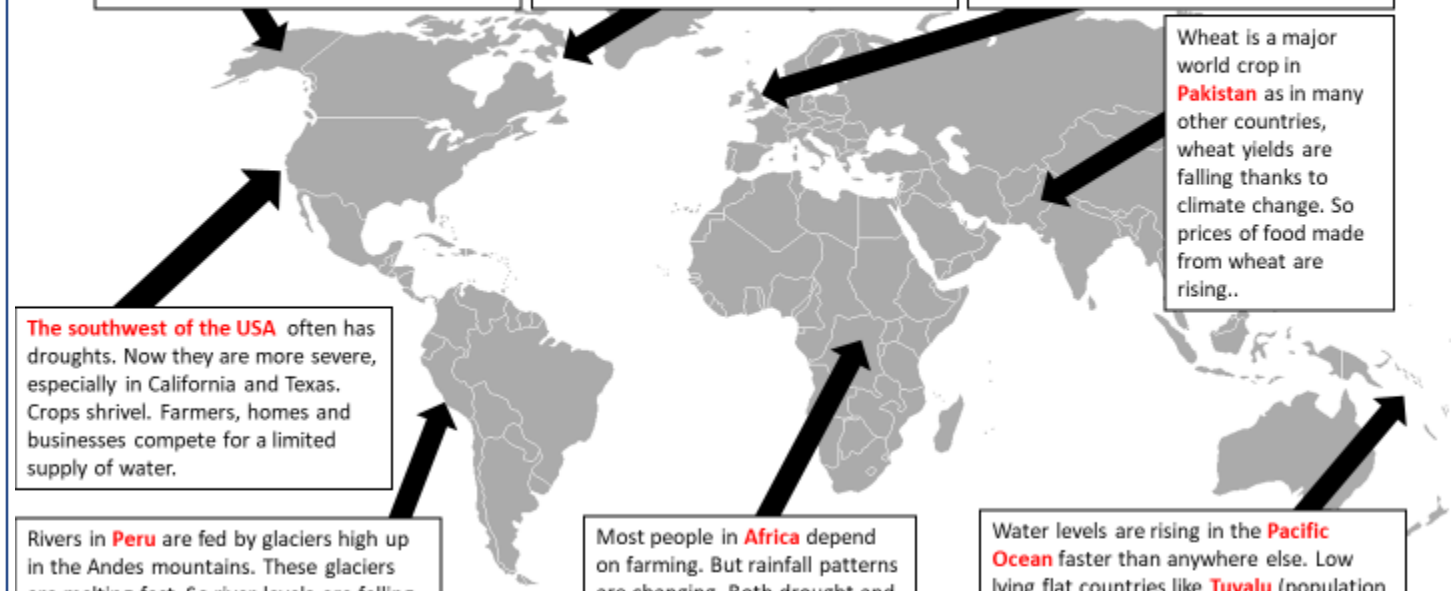
What causes Climate Change?



Climate change:
Human activities which rely on burning **fossil fuels** release more carbon dioxide into the atmosphere. This increases the amount of heat trapped in the atmosphere, raising global temperatures.

Your **Carbon Footprint** is the amount of carbon you personally produce in a year. It is measured in tonnes of carbon dioxide emitted per year.

WHAT ARE THE IMPACTS OF CLIMATE CHANGE AROUND THE WORLD?



In the **Tundra**, soil below the ground is usually frozen solid all year. Its call permafrost. But now it is starting to thaw. So buildings shift and tilt. And methane trapped inside the permafrost escapes into the air.

In the **Arctic Ocean**, more sea ice is melting each year. That's bad news for polar bears who use it as a platform for hunting seals. Less ice means ice means they must swim further for food – or starve.

Changing climates are changing wildlife patterns. For example here in **the UK**, frogspawn is hatching earlier.
And the Brown Argus butterfly is spreading North to places that were once too cold for it.

Wheat is a major world crop in **Pakistan** as in many other countries, wheat yields are falling thanks to climate change. So prices of food made from wheat are rising..

The southwest of the USA often has droughts. Now they are more severe, especially in California and Texas. Crops shrivel. Farmers, homes and businesses compete for a limited supply of water.

Rivers in **Peru** are fed by glaciers high up in the Andes mountains. These glaciers are melting fast. So river levels are falling, and Peru is suffering from water shortages.

Most people in **Africa** depend on farming. But rainfall patterns are changing. Both drought and floods are becoming more common.

Water levels are rising in the **Pacific Ocean** faster than anywhere else. Low lying flat countries like **Tuvalu** (population 11,000) are now flooded very often. The ocean may have covered Tuvalu by 2100.

We can reduce our carbon footprints by:

- Recycling
- Cycling and using public transport
- Using **renewable** energy
- Eating locally produced seasonal food
- Reducing the amount we fly
- Insulating our homes to reduce heat loss