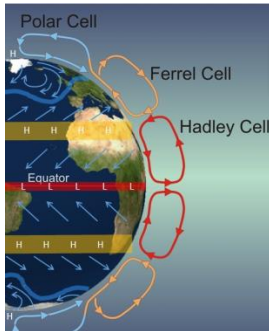


Atmospheric circulation	
<b>Equator</b>	Imaginary line drawn around the centre of the Earth
<b>Latitude</b>	The distance from the equator
<b>Coriolis effect</b>	When air travels in a straight line (North, for example) it actually appears to travel in a curve. This is because the Earth is rotating below it
<b>Jet Stream</b>	A narrow band of fast flowing air in the atmosphere
<b>Polar Cell, Hadley cell and Ferrel Cell</b>	<p>The global movement of air can be broken into roughly 3 cells. The movement of air in these cells is controlled by heating and cooling. Heated air rises and cooled air sinks</p> 
<b>Insolation</b>	Incoming solar radiation – The heat and light we get from the sun

**Greenhouse effect** – Natural process which keeps the Earth warm enough to live on. Greenhouse gases in the atmosphere trap heat

**Enhanced greenhouse effect** – Human activity increases the amount of greenhouse gases in the atmosphere, trapping too much heat and causing global warming

**Greenhouse Gas** – Carbon Dioxide, Methane, Nitrous Oxide

### Evidence of climate change

<b>Ice core</b>	A column of ice cut from a glacier or ice sheet (like Antarctica) – bubbles of air, pollen and volcanic ash trapped can give information
<b>Sediment core</b>	Similar to ice core but in soils, rocks and the sea floor
<b>Dendrochronology</b>	Tree rings – Rings are wider on warmer years
<b>Historical records</b>	Diaries and religious records describe climate conditions

Oceanic Circulation	
Surface Ocean currents are driven by wind blowing across the surface. Deep ocean currents are driven by cool water sinking and warm water rising. This redistributes heat around the ocean just like air currents distribute heat around the air	
<b>Ocean current</b>	A continuous movement of ocean water from one place to another
<b>Gulf Stream</b>	The ocean current that brings warm water from the Caribbean sea to the UK
<b>Thermohaline Circulation</b>	Drives the movement of water. Dense water (cold or salty) sinks, less dense water (warm or not salty) rises

Past Climate Change	
<b>Quaternary period</b>	A time period – From 2.6 million years ago up to today
<b>Interglacial period</b>	When Earth's climate is warmer
<b>Glacial period</b>	When Earth's climate is colder (by about 5 degrees Celsius)
<b>Ice age</b>	A very cold period of time. Happens roughly every 100,000 years

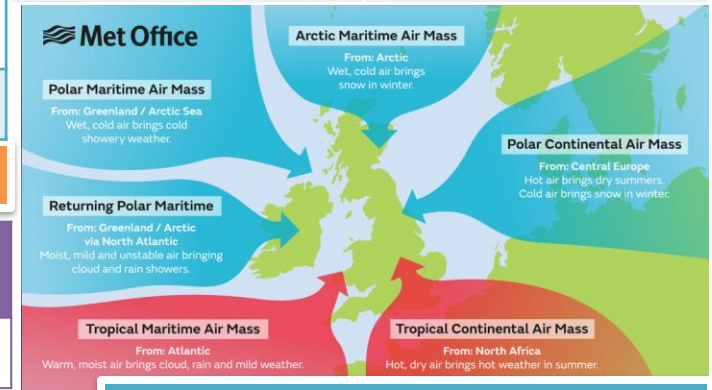
## Weather Hazards and Climate Change

<b>Weather</b>	The state of the atmosphere at a particular place and time for example heat, cloudiness, dryness, sunshine, wind, rain, etc.
<b>Climate</b>	The weather conditions that happen most often in an area over a long period.

### Negative effects climate change

<b>Lower crop yields</b>	Plants don't grow as well in areas that have become too hot or dry. This means less food for people
<b>Sea Level rise</b>	Ice on land melts and the water runs into the sea. Thermal expansion also happens – warm water has a greater volume than cold water so the seas will expand in volume
<b>Groundwater</b>	Fresh water stored under the ground. As the sea level rises salt water infiltration can happen (salt water gets into the fresh water so we can't drink it anymore)
<b>Retreating glaciers</b>	Glaciers melt and get smaller. This is a problem because it can cause flooding and if they shrink too much the people that use them for crops and drinking water won't have enough

Causes of climate change	
<b>Natural</b>	<b>Human</b>
<b>Milankovitch Cycles</b> – Natural changes in the Earth's orbit and position that affect how much radiation we get from the Sun	<b>Industry</b> – Manufacturing products requires energy which is produced by burning fossil fuels – giving out greenhouse gases
<b>Solar Variation</b> – The amount of radiation the Sun produces changes	<b>Transport</b> – Cars and Aeroplanes have engines that burn fossil fuels – giving out greenhouse gases
<b>Volcanism</b> – Volcanic eruptions eject lots of ash and dust that blocks the solar radiation making it colder	<b>Energy</b> – Coal, Oil and Natural gas power plants work by burning fossil fuels – which releases greenhouse gases
<b>Surface Impact</b> – When large objects like asteroids hit the Earth lots of dust is ejected into the atmosphere, blocking the solar radiation and making it colder	<b>Farming</b> – Farm vehicles like tractors burn fossil fuels. Live stock like cows give out methane gas which is a greenhouse gas



### The UK Climate

The UK is between 50° and 60° North of the Equator. The climate is called Temperate	
<b>Maritime Influence</b>	Effect of the Sea. As the UK is surrounded by sea the air has a lot of moisture in it which increases the amount of rain
<b>Prevailing wind</b>	The direction of wind that blows most often
<b>Air masses</b>	A large body of air with the same characteristics of temperature, moisture and pressure
<b>Relief rainfall</b>	When air is forced to cool when it rises over relief features in the landscape such as hills or mountains. As it rises it cools, condenses and forms rain

Formation of Tropical Cyclones	
<b>Low Pressure weather system</b>	An area with lower pressure than nearby. Usually have high winds, and rising air. Air rises when it is warmed
<b>Evaporation</b>	High temperatures turn liquid water into a gas called water vapour
<b>Tropics</b>	Two imaginary lines around the earth at 23.5 degrees north and 23.5 degrees south of the equator
<b>Track</b>	The path a cyclone takes. The direction of travel is driven by the prevailing winds
<b>Frequency</b>	How often something happens
<b>Eye wall</b>	A ring of towering thunderstorms where the most severe weather and highest winds occur.

Why Tropical Cyclones are Hazards	
<b>High Winds</b>	Higher than 119km per hour. This can damage buildings and pull trees out of the ground
<b>Intense rainfall</b>	Large amount of rain in a short amount of time
<b>Storm Surge</b>	Huge waves - Low pressure allows the sea level to rise and the high winds blowing across the sea combine to make huge, powerful waves
<b>Coastal Flooding</b>	Land at the coast gets covered in water – caused by the intense rainfall and storm surges
<b>Landslides</b>	Soil slides down slopes and can crush buildings and block rivers. They are caused by the intense rain making the soil heavy
<b>Saffir Simpson Scale</b>	Rates the strength of a cyclone based on the wind speed
<b>Magnitude</b>	The size or extent of something

Impacts of Tropical Cyclones		
Social	Environmental	Economic
<b>Any effect on peoples lives, quality of life and happiness</b>	<b>Effects on the landscape and wildlife</b>	<b>Effects to do with money and jobs</b>
Deaths, homelessness, lack of communication, panic, power cut off, lack of supplies	Trees damaged, chemical leaks, oil spills, mangroves destroyed	Cost of damages, disruption of trade, aid

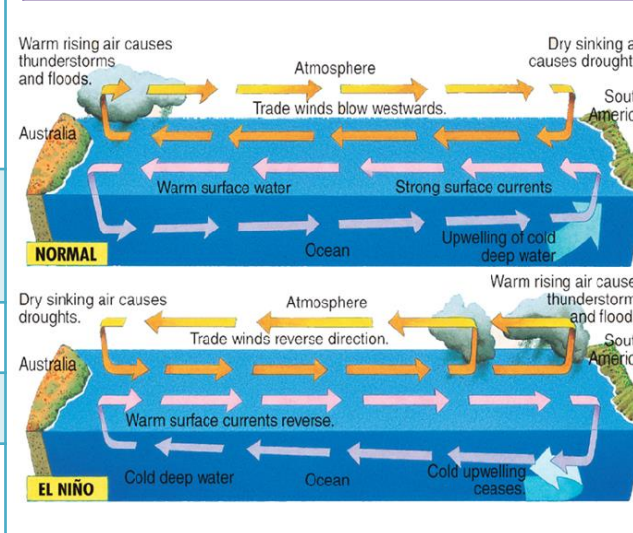
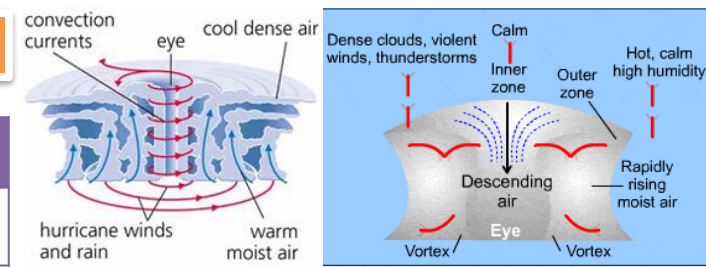
- Things needed for Tropical cyclone to form**
- Warm moist air – 27° or higher
  - Warm time of year
  - Winds need to be coming together (converging) causing the air to rise
  - Above or below the equator so the coriolis effect can cause it to spin

**Causes of drought**

<b>Arid</b>	An area that has little or no rain; too dry or barren to support vegetation
<b>Dam</b>	A wall built on a river. This traps the water and creates a large lake called a reservoir. It stops as much water flowing downstream which can cause drought further down the river
<b>Deforestation</b>	Chopping down trees. Trees absorb water from the ground and release it into the air. This water can then condense to form clouds and fall as rain. If the trees are chopped down this doesn't happen
<b>Agriculture</b>	Farming – Water is taken from an area to use on crops in another area. This can leave the first area without enough water, causing drought
<b>Over Abstraction</b>	Removing too much water from the ground
<b>Transpiration</b>	Evaporation from the leaves of plants
<b>El Nino</b>	A change in the pattern of wind between Australia and South America

**Weather Hazards and Climate Change**

Hydrological Drought	The impacts of low precipitation on a drainage basin
Meteorological Drought	The level of dryness in an area caused by the amount of rain that falls there



**Why Droughts are Hazardous**

<b>Aquifers</b>	Stores of water underground
<b>Subsidence</b>	When water is taken from ground water and aquifers during a drought it changes the structure of the ground causing it to sink
<b>Wildfire</b>	A large uncontrolled fire. When plants get dried out during a drought a fire can start easily by lightning strike or humans leaving BBQs or cigarettes etc.
<b>Vulnerability</b>	How much people in an area might be harmed by a hazard. This can be different for rich and poor areas for example