Year 4

Water, Weather Climate

Why does the weather change?

Key Vocabulary

Water cycle: Clouds form when warm, moist air is cooled. When it is cooled, it condenses into tiny water droplets which appear as clouds. Heat from the sun evaporates water, which rises, condenses in the cool air and then falls back down to earth.
Climate: the usual weather conditions of an area.
Temperature: A measure of how hot or cold something is
Precipitation: Water particles that reach the ground including rain, hail and snow.
Evaporation: Evaporation occurs when a liquid changes into a gas or water vapour.
Condensation: Condensation is when a gas cools and changes to a liquid.
Gases: Gases can spread out to completely fill the container or room they are in. They do not have any fixed shape but they do have a mass.
Liquids: Liquids take the shape of their container. They can change shape but do not change the amount of space they take up. They can flow or be poured.
Solids: These are materials that keep their shape unless a force is applied to them. They can be hard, soft or even squashy. Solids take up the same amount of space no matter what has happened to them

Key Questions and Facts

Where is the Earths Water?

Water is a compound of two elements: hydrogen and oxygen. Earth's water is (almost) everywhere: above the Earth in the air and clouds, on the surface of the Earth in rivers, oceans, ice, plants, in living organisms, and inside the Earth in the top few miles of the ground.
Water in different phases moves through the atmosphere (transportation). Liquid water flows across land (runoff), into the ground (infiltration and percolation), and through the ground (groundwater). Groundwater moves into plants (plant uptake) and evaporates from plants into the atmosphere (transpiration).

Why do we have seasons?

As the earth spins on its axis, producing night and day, it also moves about the sun in an elliptical (elongated circle) orbit that requires about 365 1/4 days to complete. The earth's spin axis is tilted with respect to its orbital plane. This is what causes the seasons
The tilt of the earth means the Earth will lean towards the sun (Summer) or lean away from the sun (Winter) 6 months later. In between these spring, summer and Autumn will occur.

Why does it rain?

Clouds are made up of tiny water droplets. When these droplets grow, they eventually become too heavy to stay suspended in the sky and fall to the ground as rain.

Some droplets fall through the cloud and coalesce into raindrops on their way down. As more and more droplets join together they become too heavy and fall from the cloud as rain.

Warm air can hold more moisture than cool air. When the warmer air is cooled and the moisture condenses, it often rains more heavily.

Why does the UK have wild weather?

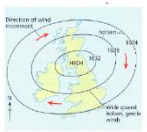
The UK is the meeting point of several different types of weather from different directions so we have very varied weather.

It is all to do with high pressure systems and low pressure systems.
An **anticyclone** is a weather system associated with 'high pressure'.

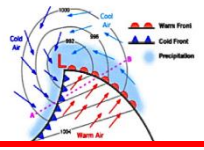
Anticyclones bring different weather to the British Isles depending on whether it is Summer or Winter but is always fine and settled.

When an anticyclone is established over our country it can remain in place for a long period of time and often affects the whole country.

High pressure system



Low pressure system



Why is the world's weather changing?

the main cause of climate change is burning fossil fuels such as oil, gas, and coal. When burnt, fossil fuels release carbon dioxide into the air, causing the planet to heat up.

Some gases in the Earth's atmosphere trap heat and stop it escaping into space. We call these 'greenhouse gases'. These gases act as a warming blanket around the Earth, known as the 'greenhouse effect'.
Since the Industrial Revolution, we've been adding more and more greenhouse gases into the air, trapping even more heat. Instead of keeping Earth at a warm, stable temperature, the greenhouse effect is heating the planet at a much faster rate. We call this the 'enhanced greenhouse effect' and it's the main cause of climate change.

Useful Website:

https://www.bbc.com/weather

https://www.un.org/climatechange?gclid=EAIaIQobChMI59nOzoqJ-wIVgdPtCh3lFQzJEAAYASAAEgLR8_D_BwE

https://www.bbc.co.uk/bitesize/topics/z6p6qp3/articles/z3wpp39

https://www.geographyrealm.com/water-earth/

https://www.internetgeography.net/

https://www.weather.gov/

Condensation: when water vapour is cooled down and turns into water. You can see this when droplets of water form on a window. The water vapour in the air cools when it touches the Condensation cold surface

Hemisphere: A half of the earth, usually divided by the equator into the northern and southern hemisphere.

Fossil fuels: a natural fuel such as coal or gas, formed in the geological past from the remains of living organism.

Deforestation: the action of clearing a wide area of trees.

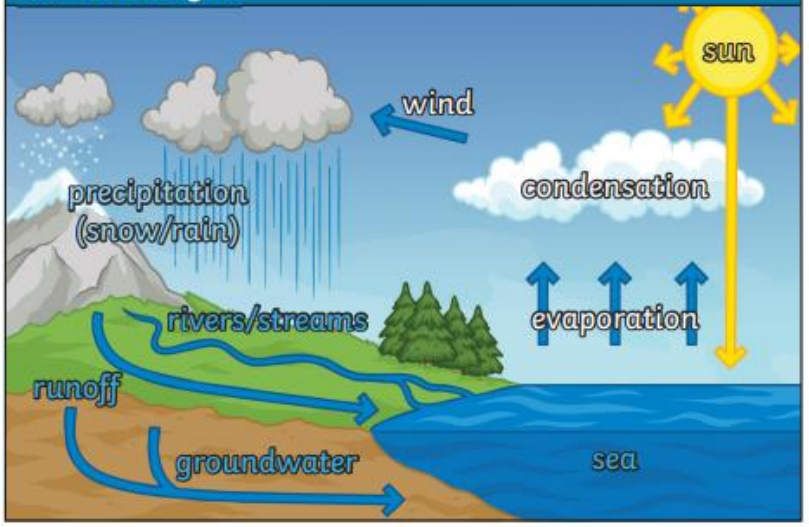
Greenhouse Gas: Greenhouse gases are special types of gas in the atmosphere. They let sunlight through but stop heat from escaping, like a greenhouse, so the Earth warms up.

Flooding

Fluvial	Pluvial	Coastal	Plumbing
			
Lots of rainfall causing rivers to burst their banks.	Heavy rainfall cannot drain away quickly enough.	High tides and storms.	Broken pipes in buildings.

Flooding can be prevented in some areas by building dams and flood barriers. However, blocking a river at one location can cause flooding further up or downstream.

The Water Cycle



Additional information

Key Knowledge

Effects of climate change:


floods


droughts


storms


melting sea ice

Climates

Countries around the world have different **climates**. Countries near the equator have hotter **climates** and the Arctic and Antarctic have much colder **climates**. **Climates** can affect many things, such as which plants can grow. Many animals are specially adapted to the climate they live in.

Different instruments can be used to measure and record the weather.


weather vane


thermometer


rain gauge


barometer

Water

Treating Water

				
Water is stored in reservoirs to allow solids to settle at the bottom.	Chemicals are added to help remove small particles.	Water passes through gravel and carbon to filter out tiny particles.	Chlorine is added to kill off bacteria.	Water is clean and safe to drink.