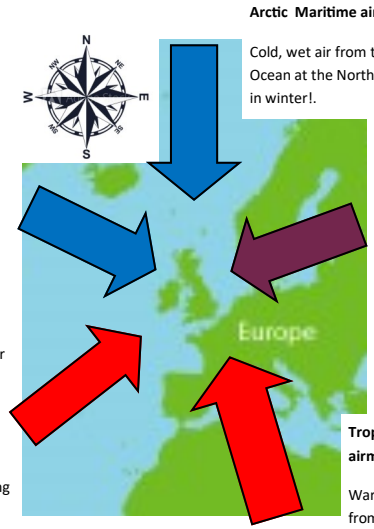
GEOGRAPHY 7.4. Weather & Climate

3. Airmasses affecting UK weather



Arctic Maritime airmass

Cold, wet air from the Arctic Ocean at the North Pole. Snow in winter!.

Polar Maritime airmass

Cool, wet air from the northern North Atlantic.

Polar Continental airmass

Dry air the year round. Cold air in the Spring and Winter months but warm in Summer and Autumn months

Tropical Maritime airmass

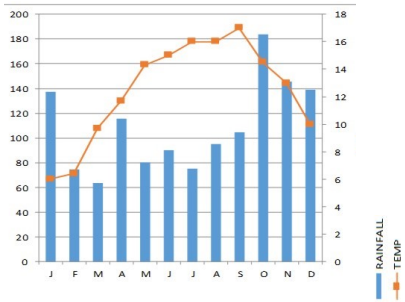
Mild to warm, wet air from the southern North Atlantic.

The most common (prevailing) airmass affecting the UK giving a mild and wet climate the year

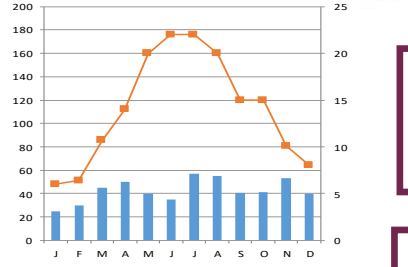
Tropical Continental airmass

Warm to hot, dry air from southern Europe and northern Africa

UK Climate for the North-west

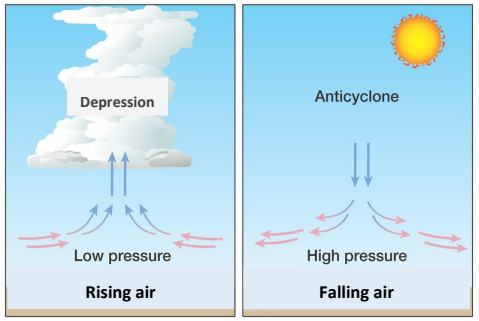


UK Climate for the South-east



5. Depressions—low pressure vs 4. Anticyclones—high pressure

Wind	Windy weather
Sunshine	Very little until after the fronts pass
Cloud cover	Heavy cloud
Precipitation	Rain—often drizzle before getting briefly heavy
Humidity	High humidity as the air id full of moisture
Seasonal difference	Mild days in winter, mild days in summer



Light wind or calm wind conditions	Wind
Lots of sunshine	Sunshine
Low cloud cover—sometimes hazy skies	Cloud cover
Very little—but can produce foggy days	Precipitation
Low humidity—dry air	Humidity
Cold and frosty in winter, very warm in summer	Seasonal difference

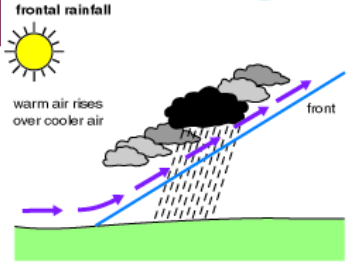
1. and 2. Weather and Climate key terms

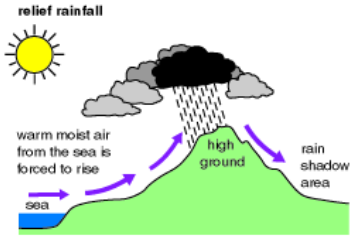
Weather is the short-term change to conditions in the atmosphere. This includes changes in cloud cover, rainfall, precipitation, temperature, humidity, wind direction and wind speed.

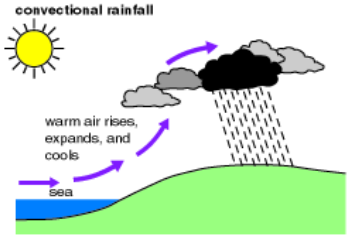
Climate is the long-term average typical weather in a given location. This accounts for changes of season as the averages are gathered over 30 years of typical annual weather

Weather climate airmass atmosphere conditions Tropical Maritime Polar Maritime Tropical Continental Polar Continental Arctic Maritime depressions anticyclones weather fronts cold front warm front synoptic chart isobars precipitation condensation evaporation heatwave temperature seasons latitude altitude density concentration relief rainfall convectional rainfall frontal rainfall humidity geological time glaciation interglacial climate change enhanced greenhouse effect

6. Types of Rainfall







Factors influencing climate zones

7. Latitude

Locations at the equator receive a concentration of energy from the sun on a small surface area all year, so they are permanently hot climate zones.

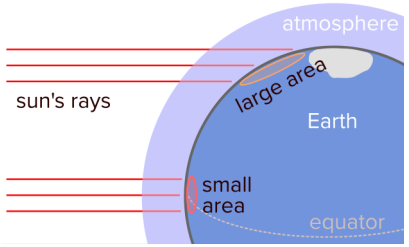
Locations at higher **latitudes** have the same amount of energy spread out over a **larger surface area**, so the climate is colder.

At the North and South Pole, the sun's energy goes straight past and barely warms the surface—even in the brief summer time, so they are permanently cold all year.

8. Altitude

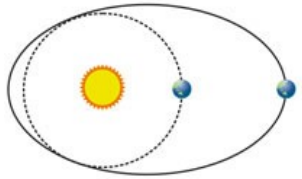
Locations on Earth that are at high **altitudes**—high above sea level—have cold climates; even if they are on the Equator. Air becomes **less dense** the further it is from the surface. As a consequence, the heat cannot be held as the air is 'too thin' to pass the warmth around.

Diagram shows the concentration of sun energy is strong at the equator but weak at higher latitudes



The 'snow line' clearly visible near the top of Mount Kilimanjaro—with the warmer grasslands at lower altitude

9. Past Global Climate



The climate on Earth has been slowly but constantly changing forever. Looking back over geological time (millions or even billions of years), Earth has been both warmer and colder than it is at the present.

Earth is currently in a **warm climate phase** called an **interglacial**. This is because the planet is doing a near circular orbit of the sun (see diagram) so it is **evenly heated throughout a year.** However, when the orbit of Earth around the sun isn't a perfect circle shape—but an **elliptical shape**—with the sun off-centre (see diagram). This means Earth spends more time of a year **further away from the sun** as it completes an orbit. This means Earth's climate **cools and more ice forms** on Earth; these periods in geological time are called **glaciations**. It takes about 100,000 years to go from a circular orbit to an elliptical orbit and back again, so glaciations last for thousands of years! The current warm phase (**interglacial**) started about 11,000 years ago.

In very recent geological time, there is much talk about 'climate change'. This is referring to the action and activities of humankind warming Earth's climate by changing the concentration of some of the gases in the atmosphere that hold heat effectively; this process is called the 'enhanced