## Weather, Climate and Climate Zones

**What is weather and what is climate?**



Fig. 1: Thermometer

Different places around the world have very different weather and climates. Weather is the temperature and precipitation **from day to day**. In contrast climate is the average temperatures and precipitation **over a much longer time** period like 100 years. Temperature is how hot or cold it is and is measured in degrees (°) centigrade or degrees (°) Fahrenheit by a thermometer (fig. 1). Precipitation is the collective word for all the different ways that water can fall from the sky,

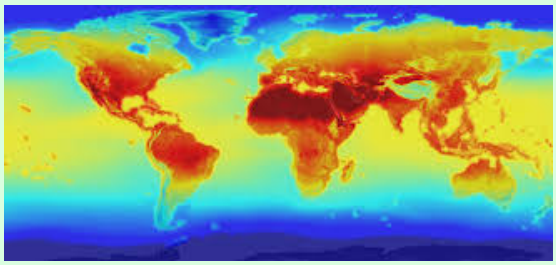


Fig. 2: Rain gauge

Read the text.

Write 10 bullet point facts from what you have read.

LO- to explain how the location's distance from the sun impacts on weather and climate.



https://www.bbc.co.uk/bitesize/clips/zr7hyrd

Watch the video and make notes.

I do

# Latitude

Distance from the Equator

Imaginary lines around the globe





Locations that are further North/South receive less heat energy from the Sun.
The *equator* lies directly underneath the Sun and so countries that fall on the equator receive more solar (heat) energy.

Challenge: How do you think this affects temperature?
Can you create a diagram to show the different temperatures?



I do

## Sunlight and the shape of Earth

The sun's rays are not evenly distributed across the globe. Near the Equator, incoming solar radiation is concentrated over a smaller surface area leading to hotter climates. At higher latitudes, towards the poles, solar radiation is spread over a larger area, leading to cooler climates.

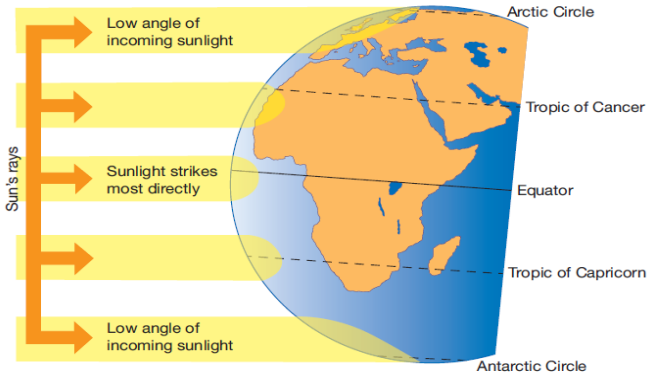



*Figure 1: Climates are hottest near the Equator, where the sun's rays are most concentrated, and coolest towards the poles, where the sun's rays are less concentrated as they are spread over a larger area.*




Draw a diagram in to your books showing the sun's rays on the earth. Include labels. Write sentences to explain what it shows.

Equator

Artic circle

Tropic of capricorn

Tropic of Cancer

Antarctic circle

I do

Now let's explore the climates.

## Climate zones

As climate zones divide the world into areas with similar patterns of average temperature and precipitation, exploring a climate zone map is quite different from a map showing countries or altitude – it creates different boundaries that may seem unfamiliar or difficult to link to known locations (Figure 2).

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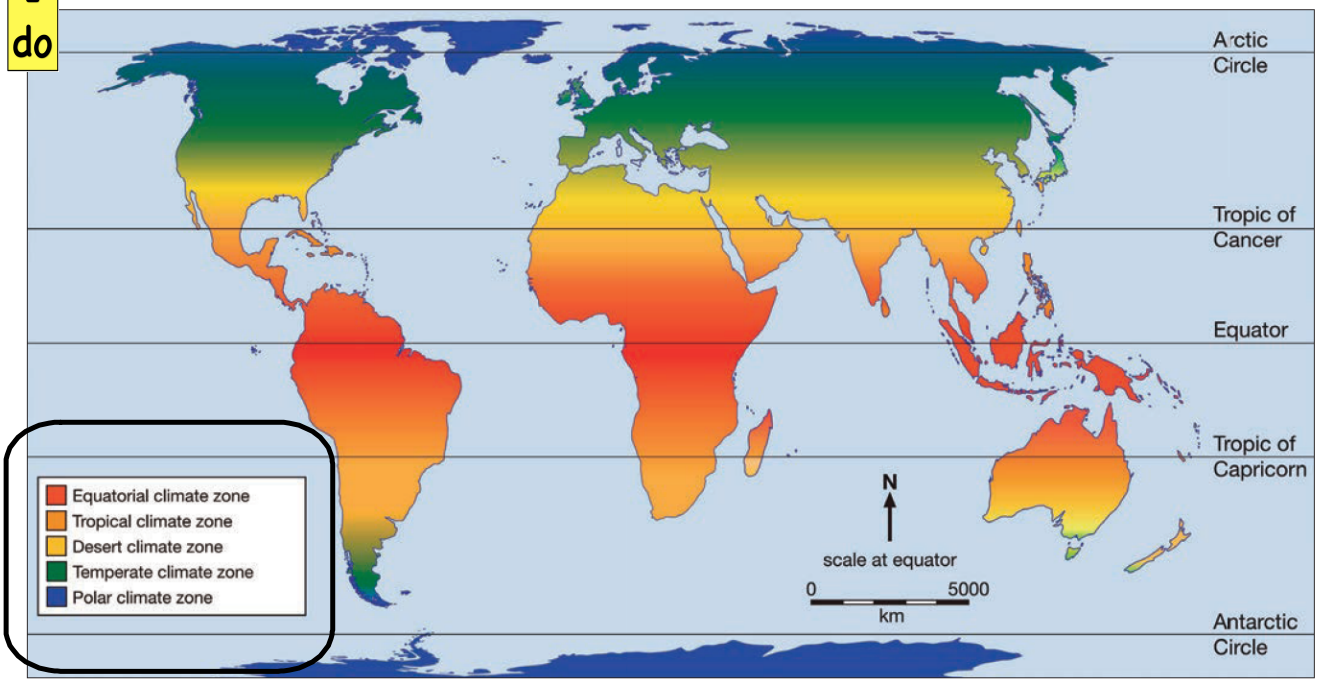



*Figure 2: Areas of the world with similar climates can be mapped as climate zones.*


Greenland
UK
The Alps
New York (USA)
Spain
Egypt
India
Jamaica
Brazil
Equator
Australia

I do

**Equatorial climate**

The sun's heat is most concentrated around the Equator, between the Tropics of Cancer and Capricorn. An equatorial climate is characterised by consistent temperatures (around 25–35°C), heavy rainfall (between 100–200mm/month) and high humidity (the amount of water vapour in the air). All of the world's tropical rainforests are in equatorial climates.



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## Arctic and polar climates

The sun's heat is least concentrated in polar regions, making these the coldest places on Earth. They are also very dry. They have short wet summers, with temperatures from 1–10°C. The Arctic, because of the influence of the warmer Atlantic Ocean, is less cold than Antarctica, where temperatures can drop as low as -80°C.

## Greenland

Average Temperature: - 4.6°C

- Greenland is within the Arctic Circle.
- There are very long winters and very short summers.
- Over 80% of Greenland is covered with snow and ice.
- The temperature is rarely above freezing.
- It is around 10°C in the summer.
- In winter the temperature can drop to around -16°C.





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## Tropical climate

Tropical climate has two very different seasons: hot summers with heavy rainfall (150–200mm/month) and a dry and very hot (temperatures over 30°C) winter. This climate favours the growth of savannah: grassland with scattered trees and shrubs.

### Jamaica

Average Temperature: 25.4°C

- Jamaica has a tropical climate.
- It is hot and warm all year round because it is close to the equator.
- There is little rainfall.
- Hurricanes happen between June and November.





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## Hot desert climate

Deserts are found in areas of near-permanent high pressure that rarely produce rain. Not all deserts are hot – Antarctica is an example of a polar desert. Areas of hot desert are located in the lower latitudes, centred on the Tropics of Cancer and Capricorn. The temperature range is very wide, with high temperatures during the day and very low temperatures at night.

Arid



I do

## Temperate climate

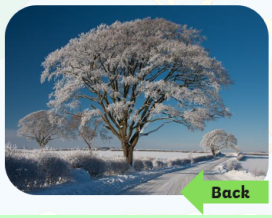
Temperate climate is found in a range of mid-level latitudes with variable temperature and rainfall. These areas have four distinct seasons. Temperatures may fall below freezing in winter

Average Temperature: 9.3°C

## United Kingdom

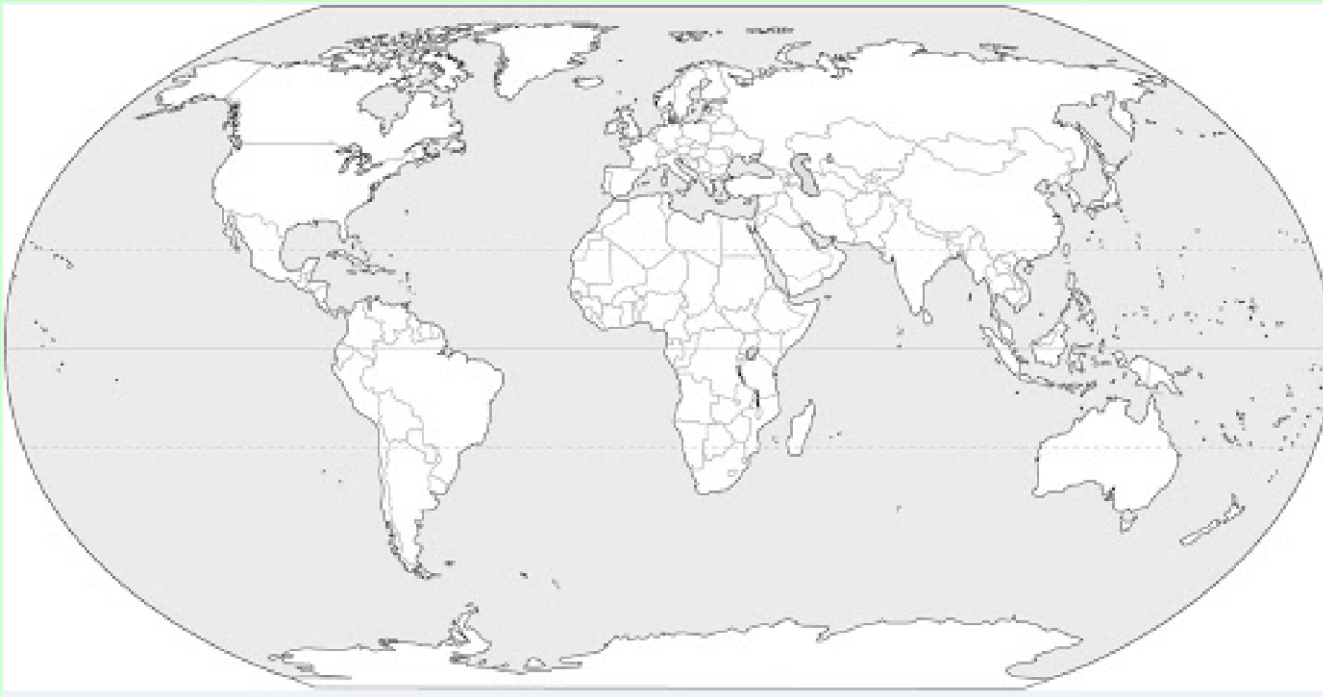
- The UK has warm summers and cool winters. Summers are cooler than others in Europe but winters are milder.
- July and August are the warmest months in the UK.
- January and February are the coldest months.
- The west of the UK is the wettest.
- It rains throughout the year.





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Make a Key

Colour code the map

Write a short paragraph

# Answer


World Climate Zones Map
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North America
Europe
Asia
Africa
South America
Australia
Polar
Temperate
Arid
Tropical
Mediterranean
Mountains