C/W

Weather and Climate

24/04/2020

What determines the Climate of Places?

L.O: To understand what factors can affect the climate of a place.
To be able to locate different climate zones on a map.

Use this PowerPoint to help you complete all of the tasks in your worksheet called "Weather and Climate Worksheet Phase 3"

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What determines the Climate of Places?

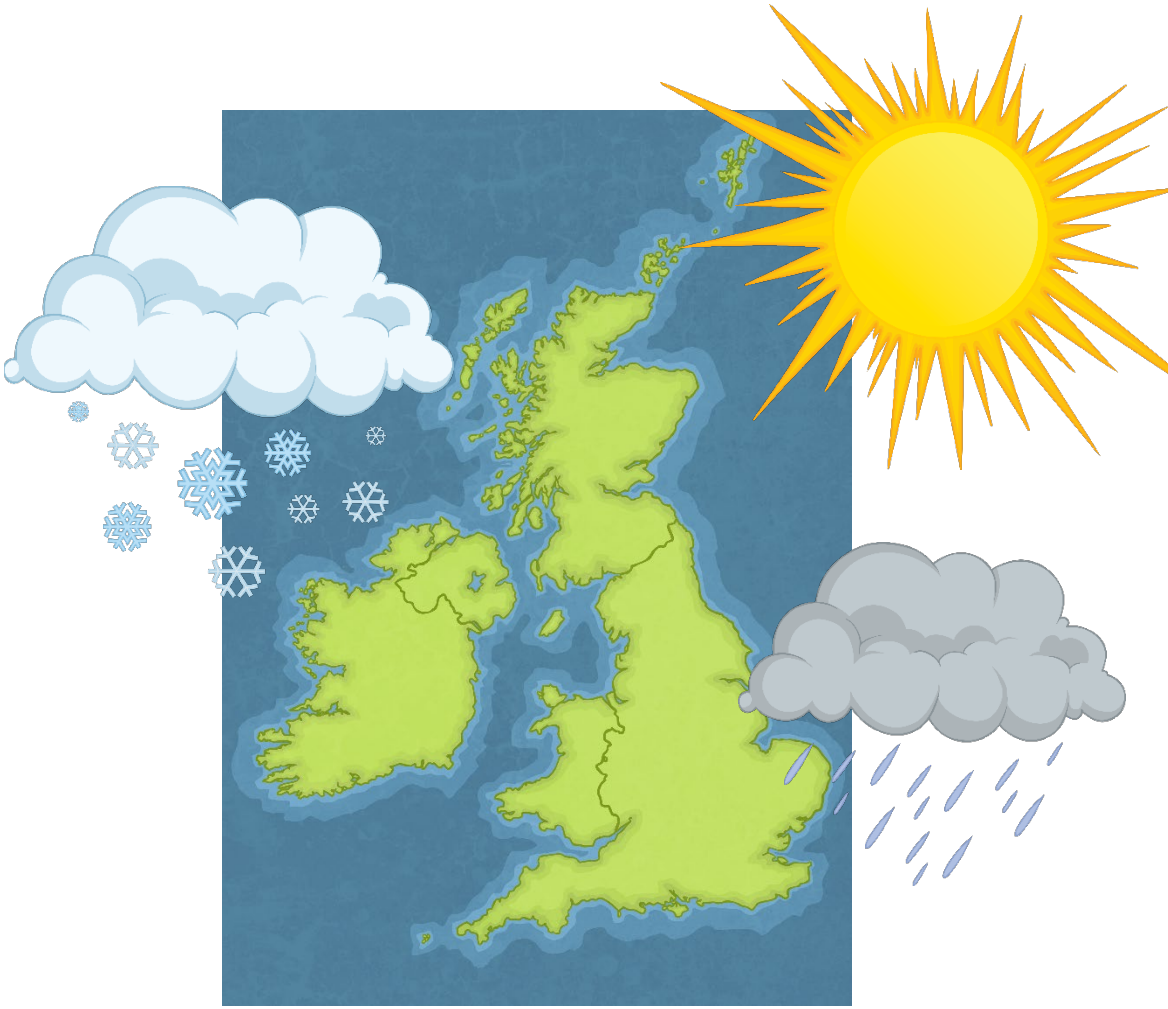
Task 1: Starter

Different places around the world have different climates!

On your worksheet name one place that is...

- hotter
- colder
- drier
- wetter

... than the UK!



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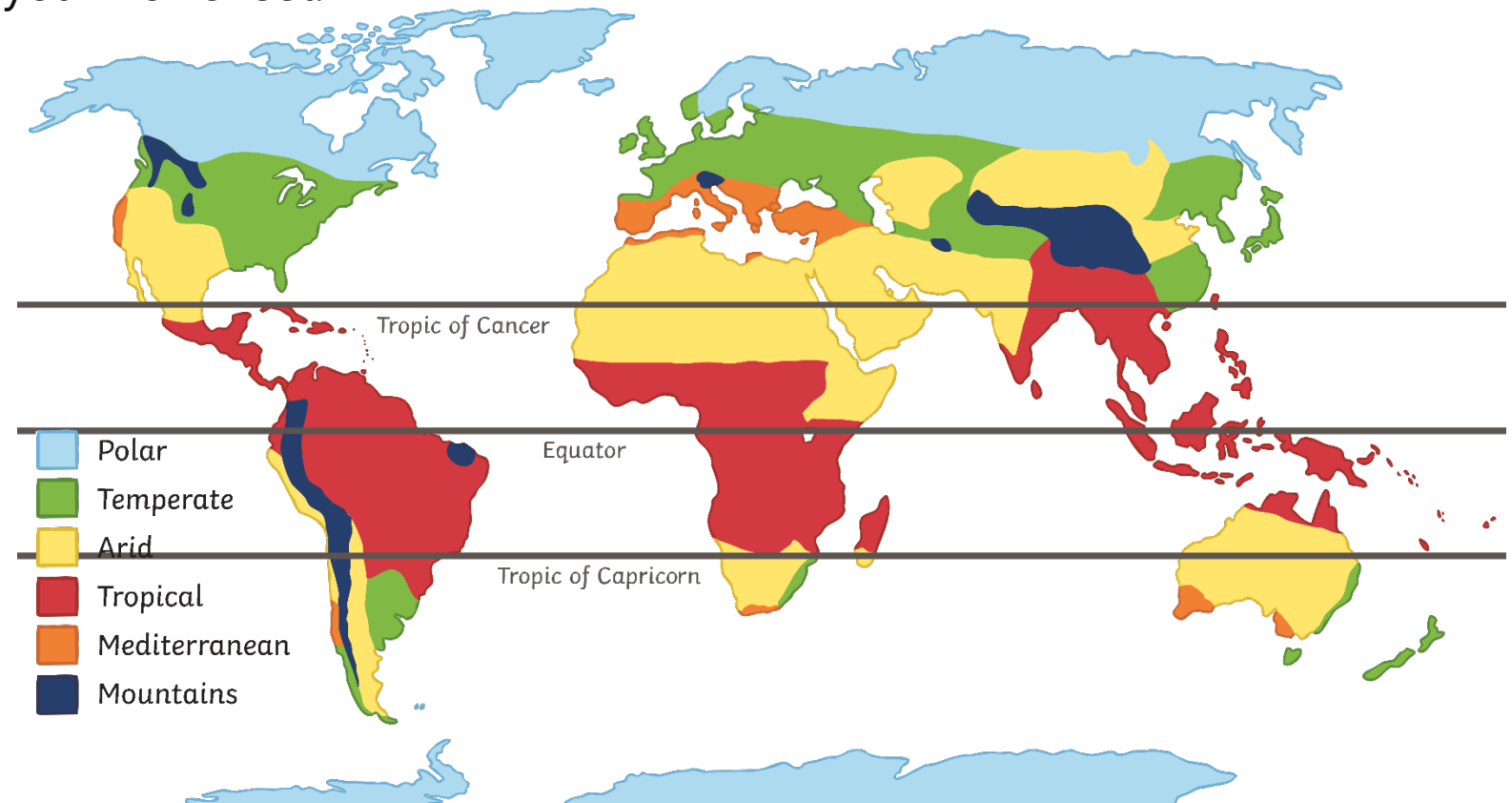
What determines the Climate of Places?

Task 2: World Climate Zones

This is a map of the main world climate zones. A climate zone is an area that has its own climate. Climate zones also have their own type of vegetation and wildlife too! Which climate zone is the UK in? Answer the questions on your worksheet.



What determines the Climate of Places?

Task 3: Match the definition!

Use the information on slides 5- 10 match the world climate zones to the correct descriptions on your worksheet.

Polar Climate Zone

How would you describe a polar climate?

Polar climates have temperatures which are usually below freezing and can reach -60°C in winter. Polar areas are usually covered by snow and ice throughout the year.

Temperate Climate Zone

How would you describe a temperate climate?

Temperate climates vary greatly at different times of year, with four distinct seasons.

Mediterranean Climate Zone

How would you describe a Mediterranean climate?

Mediterranean climates have long, warm, dry summers and wet winters.

Arid Climate Zone

How would you describe an arid climate?

Arid climates lack natural water sources, with little rainfall. They are very dry and hot.

Tropical Climate Zone

How would you describe a tropical climate?

Tropical Climates have high temperature rainfall and humidity all year. Some areas may have a wet and dry season.

Mountain Climate Zone

How would you describe a mountain climate?

Mountains have a different climate to their surrounding areas. The temperature on mountains becomes colder the higher the altitude gets. They also tend to have much wetter climates than the surrounding land.

What determines the Climate of Places?

Task 4: What factors determine the climate of Places?

Watch the video at:
https://www.bbc.co.uk/bitesize/articles/z79yvk7
and use the next slides complete task 4 on your worksheet.

Why Do Places Have Different Climates?

There are five main factors which affect why places have a different climate:

1. the effect of latitude;
2. the effect of altitude;
3. ocean currents;
4. prevailing wind direction;
5. distance from the sea.

Additionally, the BBC video mentions the role of Vegetation.

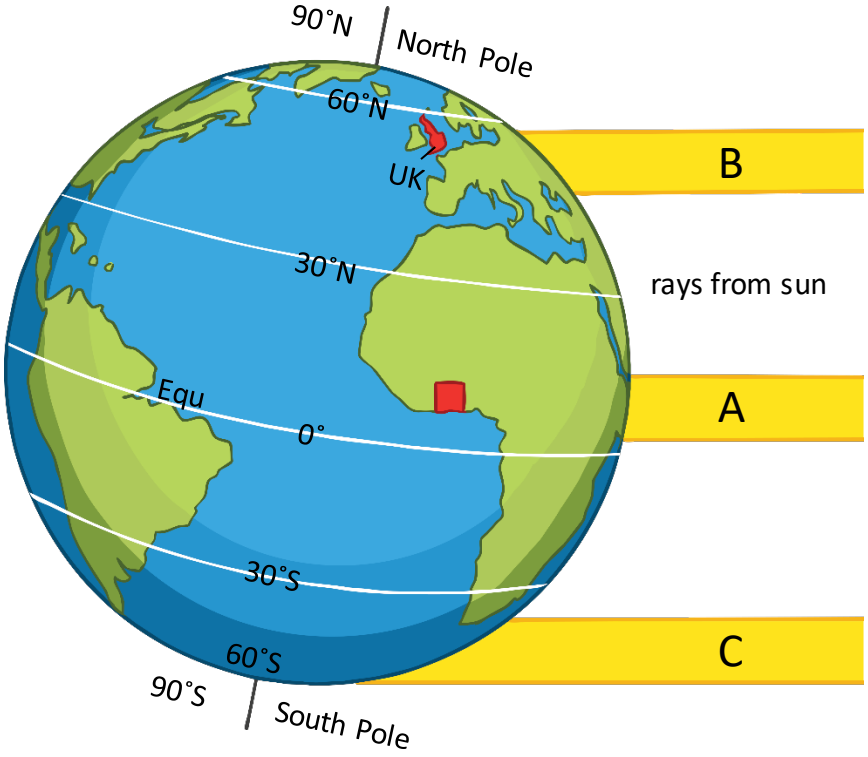
Why Do Places Have Different Climates?

1. the effect of latitude;

Latitude means how far a place is from the equator.

Latitude is the main factor which affects climate.

Places on or near the equator have higher temperatures. Places that are further away from the equator are cooler.

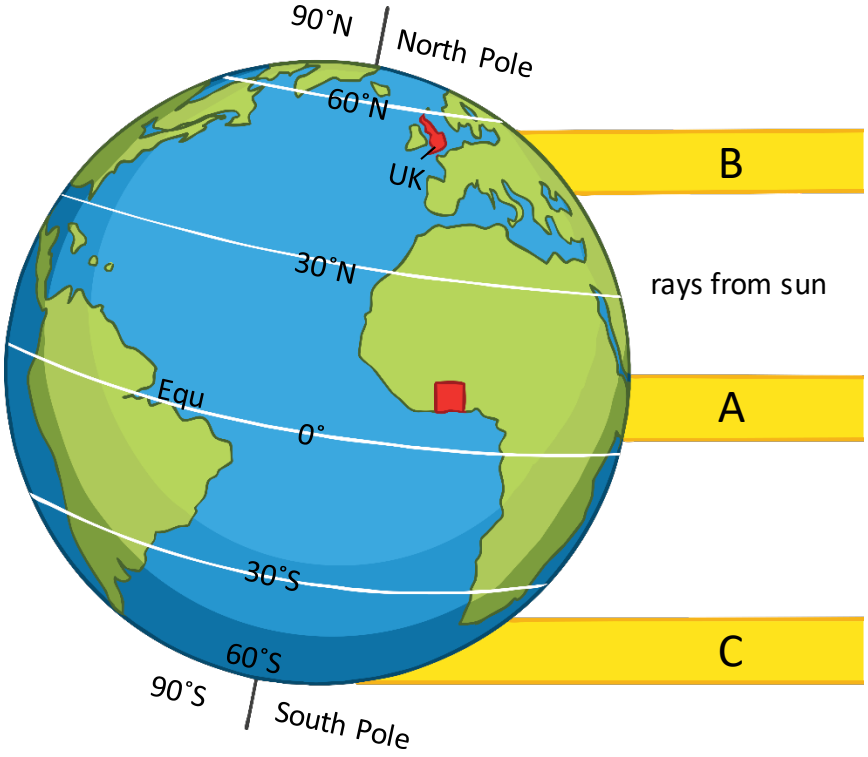


Why Do Places Have Different Climates?

1. The Earth is a globe and this affects how different areas are heated by the Sun's rays.

2. At the equator, the Sun's rays heat a smaller area so it is warmer.

3. In polar areas, the Sun's rays give the same amount of heat but as the Earth is curved, they have to heat a larger area. This means that these areas will be cooler.



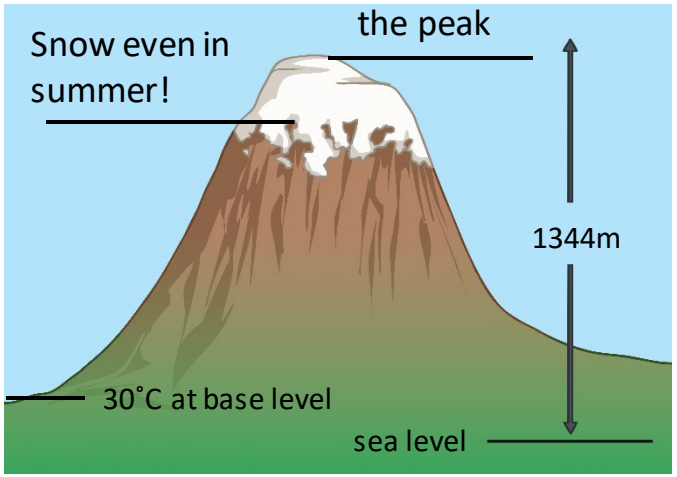
Why Do Places Have Different Climates?

2. Height above sea level (altitude)

Altitude means how high land is above sea level.

Temperature falls by about 1°C for every 100 metres. This means that the higher above sea level a place is, the cooler it is!

This is why mountain areas have their own climate. Very high mountains often have snow on them, even in summer!



Ben Nevis – Scotland's highest mountain

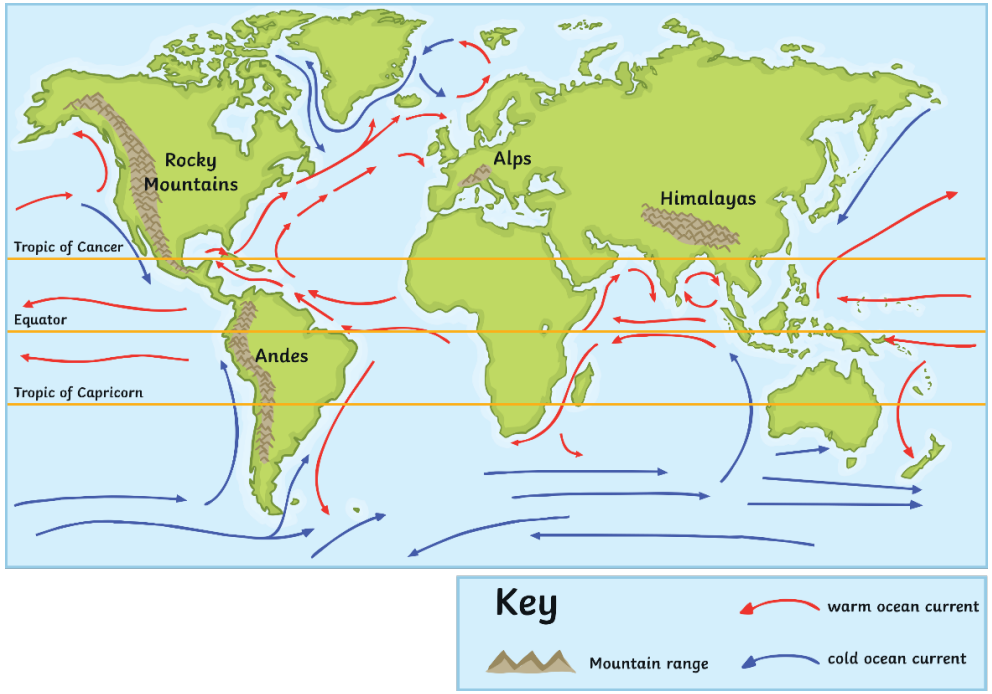
Mount Kilimanjaro, Tanzania

Why Do Places Have Different Climates?

3. Ocean currents

Ocean currents are movements of warm or cold water around the oceans. Ocean currents can raise or lower the temperatures of coastal areas.

On your worksheet you name an area which is affected by a warm ocean current…
and one that is affected by a cold ocean current?



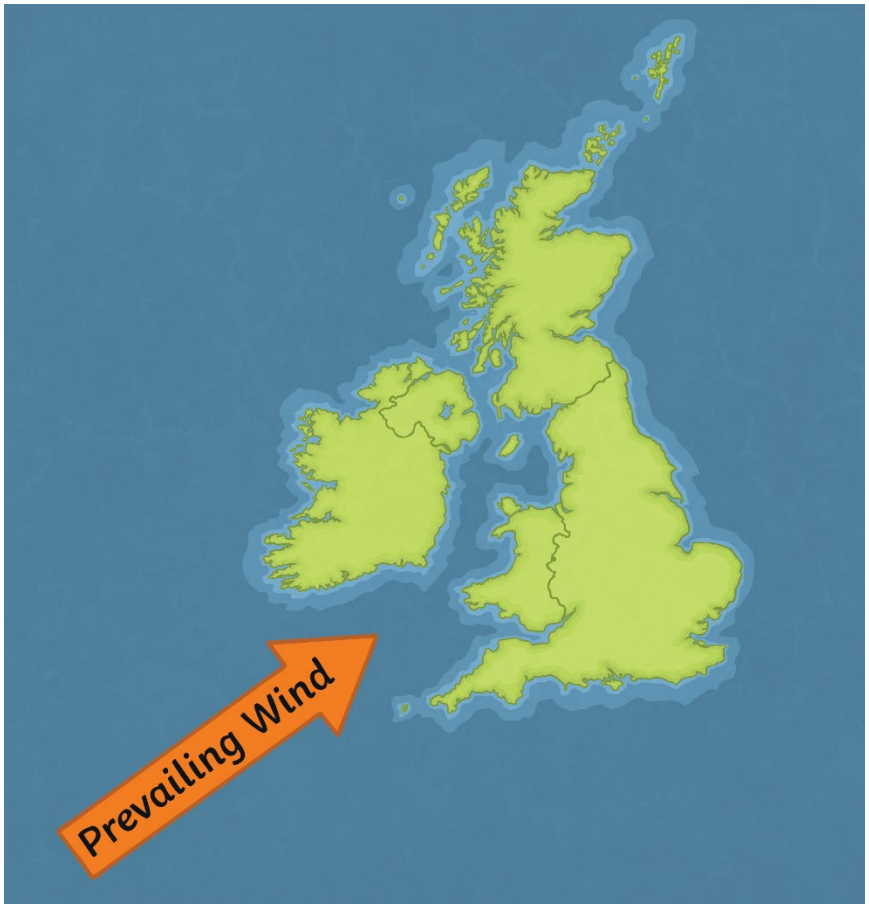
Why Do Places Have Different Climates?

4. Prevailing wind direction

A prevailing wind is the direction the wind blows from most of the time.

Prevailing winds can bring warm or cool air to an area, depending on where they have come from.

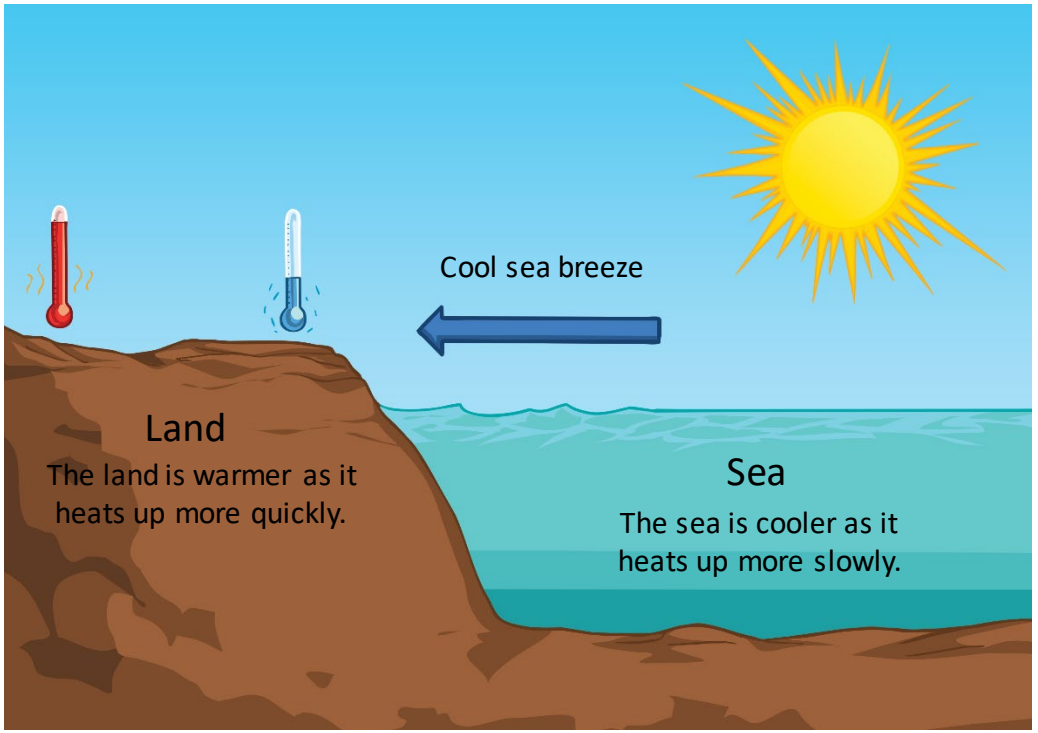
In the UK, the prevailing wind direction is from the south-west (the Atlantic Ocean), so it brings warmer, moist air or rain!

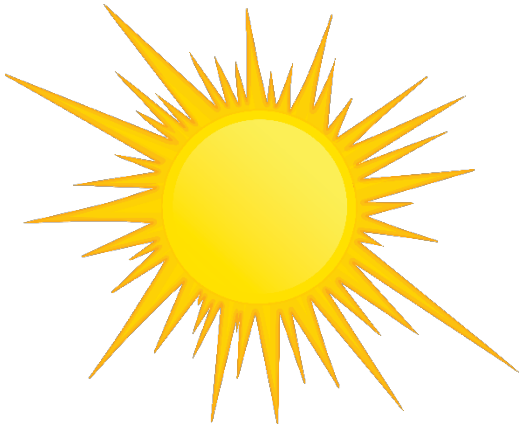


Why Do Places Have Different Climates?

5. Distance from the sea

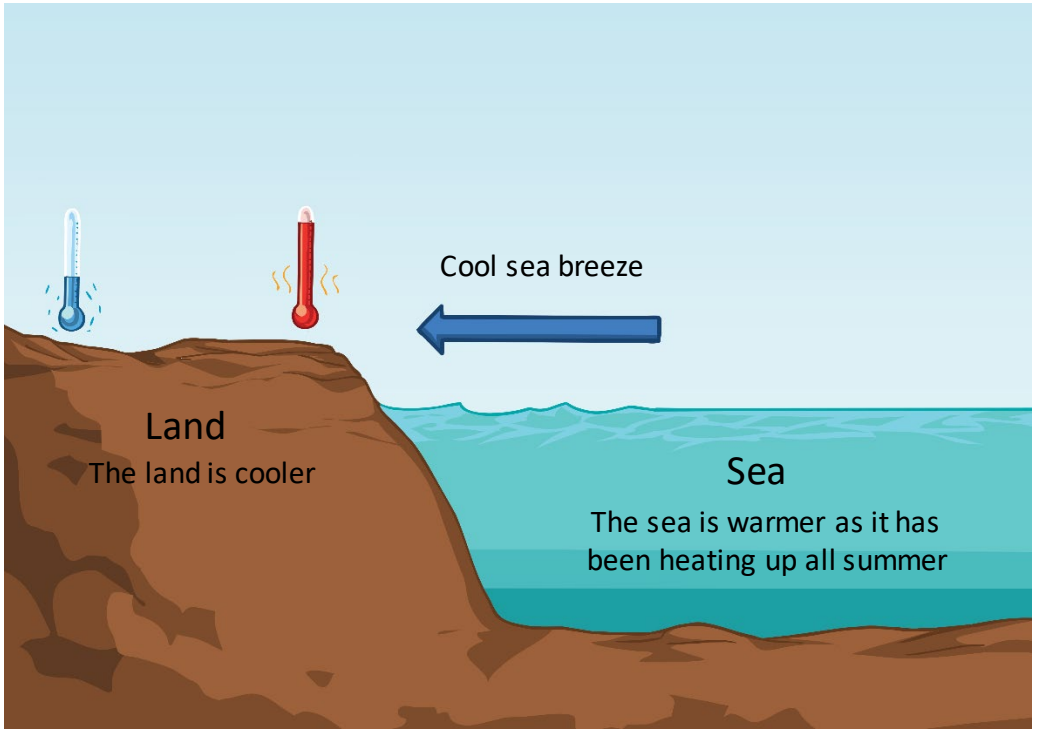
In summer, the sea is cooler than the land. This means that areas on the coast are kept slightly cooler than inland areas by the cool sea breeze.





Why Do Places Have Different Climates?

In winter, the sea is warmer than the land. This means that areas on the coast are kept slightly warmer than inland areas.

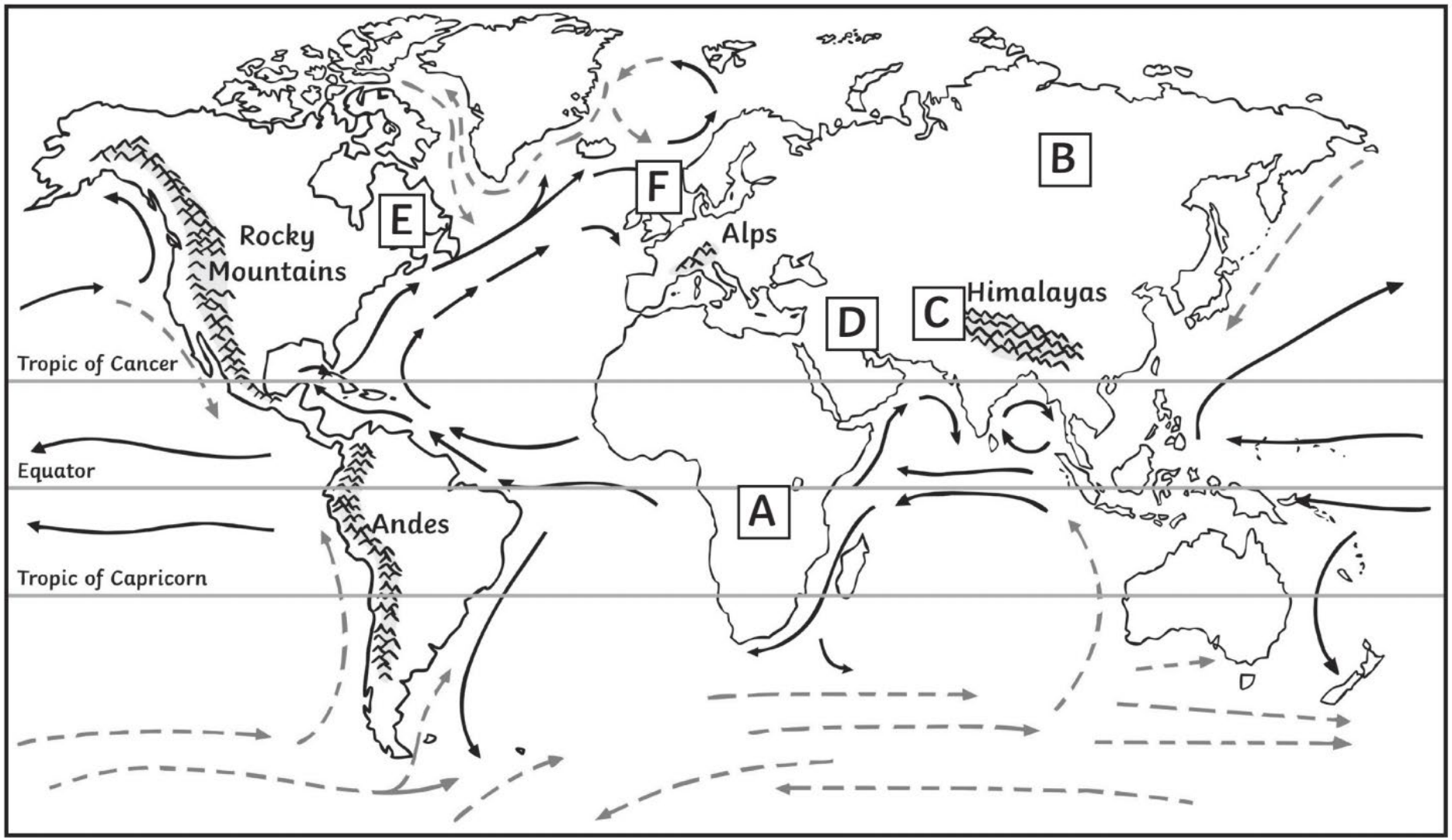


Task 5- True or False

How well do you understand the factors which affect climate? Are these statements true or false? Answer on your worksheet.

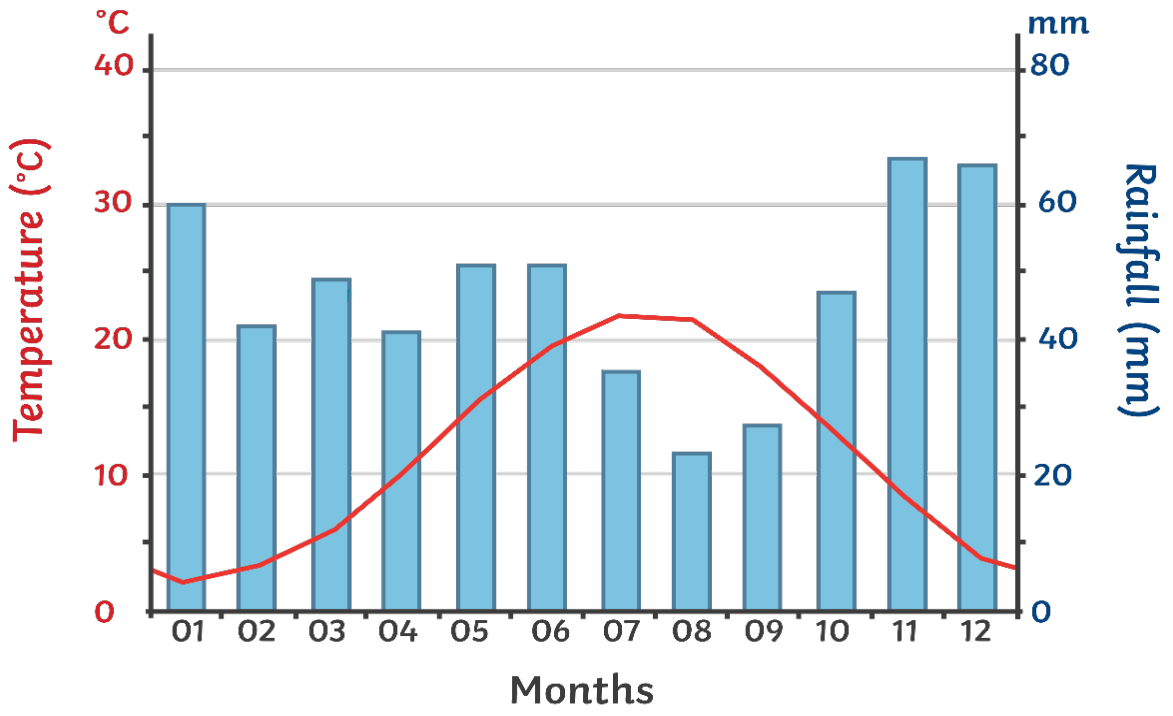
1. Temperature increases with altitude.
2. Warm ocean currents can lower the temperatures of coastal areas.
3. Places at the equator are hotter because the equator is closer to the Sun.
4. The sea is cooler in summer than in winter.
5. Places at the coast are cooler in summer than places further inland.
6. A prevailing wind that has come from polar areas will bring warm temperatures.

Use this map, to answer the questions for task 6.



Task 7: UK CLIMATE GRAPH

This is a climate graph. The bars represent rainfall, and the line graph represents temperature.
It shows average temperature on the left and average rainfall on the right.
The Months are represented as numbers. January is 01.



bar graph = rainfall

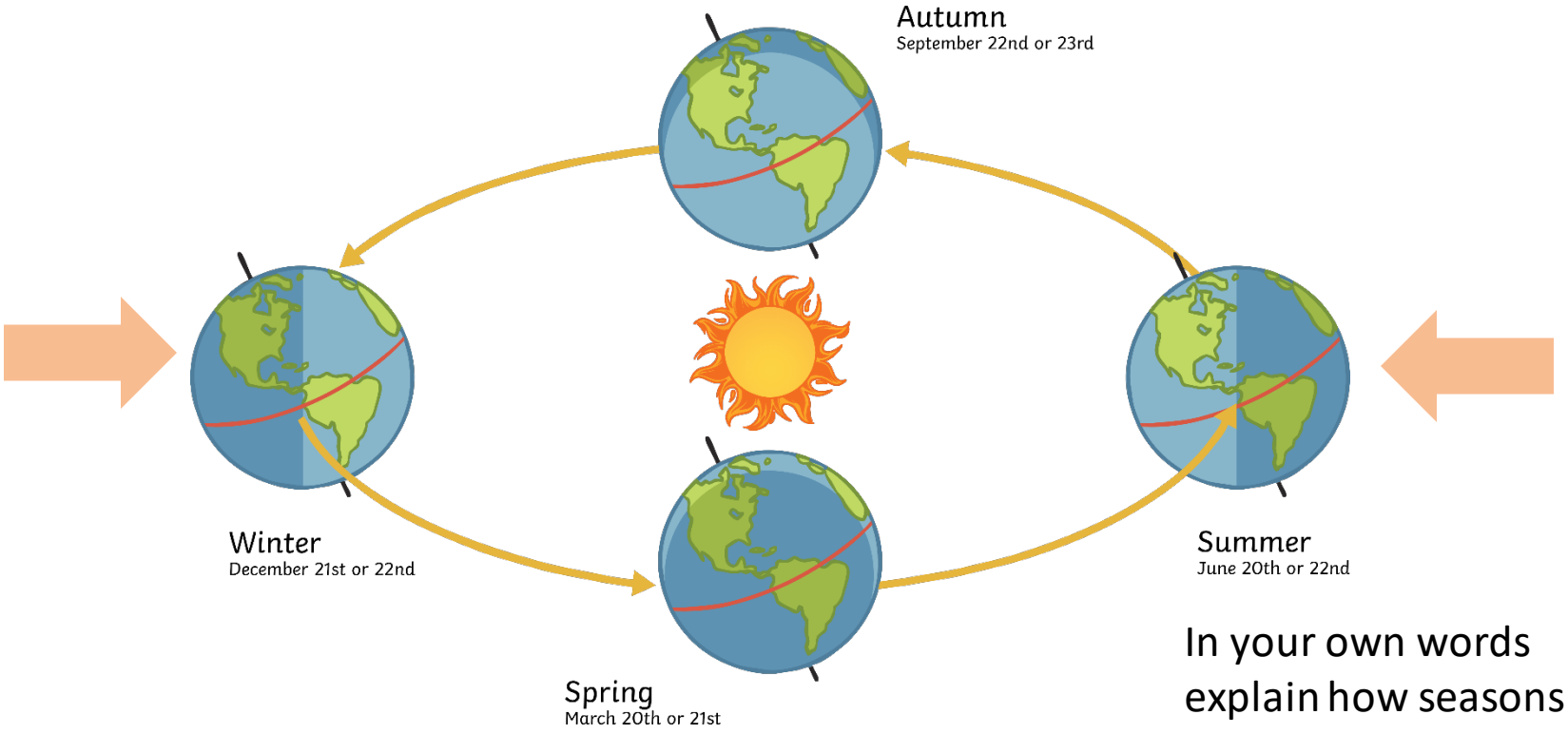
line graph = temperature

On your worksheets write four statements about the climate.

Task 8: How Do Seasons Affect the UK Climate?

In winter, the northern hemisphere is tilted away from the sun so temperatures are lower.

In summer, the northern hemisphere is tilted towards the sun. Temperatures are higher as the northern hemisphere receives more solar radiation.



In your own words explain how seasons affect the UK Climate on your worksheet.

What determines the Climate of Places?

Task 9: UK Climate

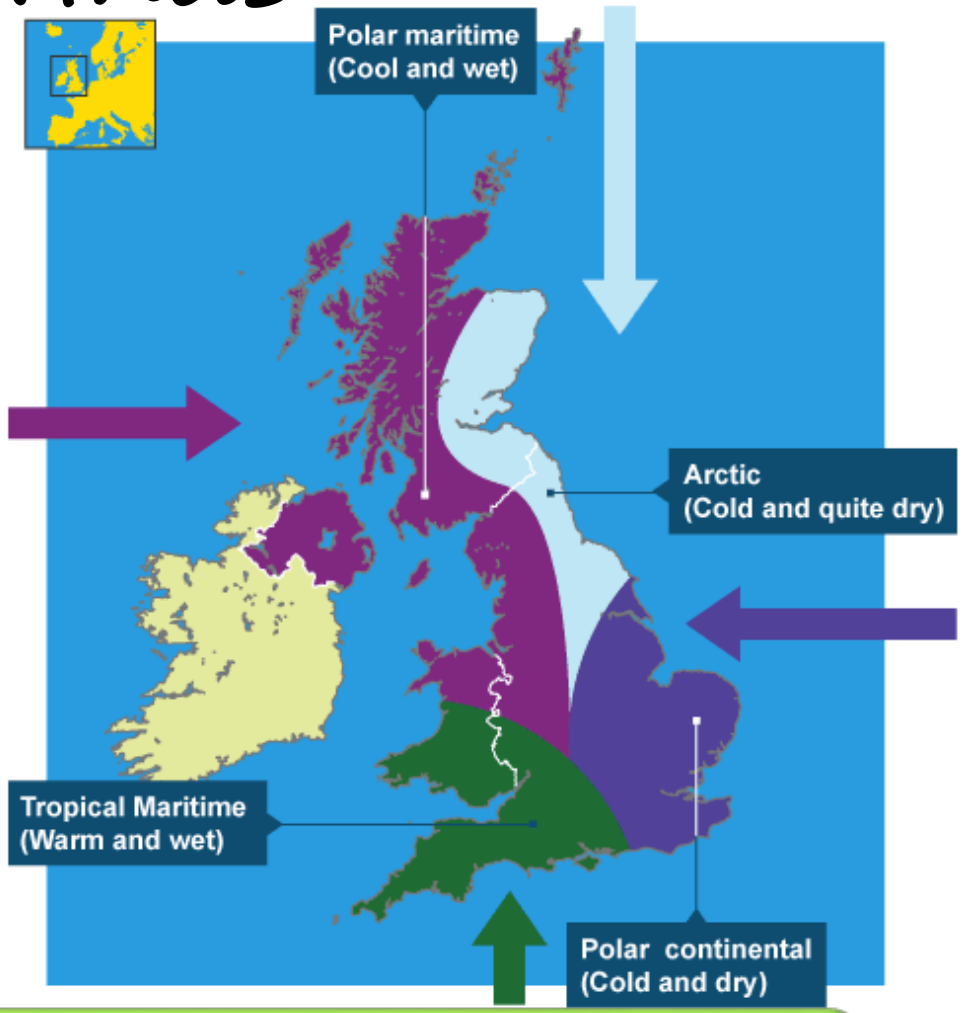
As we learnt earlier, the UK has a "Temperate Climate". This means the UK that it has mild temperatures and rainfall all year.

Use the information on the following slides to complete the table in your worksheet for task 7.

Prevailing Winds

Prevailing winds are the dominant (main) wind direction in an area.

The UK receives four different types of prevailing wind: Polar Maritime, bringing cool, wet air to the West. Artic winds bring cold dry air to the North. Tropical maritime winds bring warmer, wet air to the South. The South East receives cold and dry Polar Continental winds.

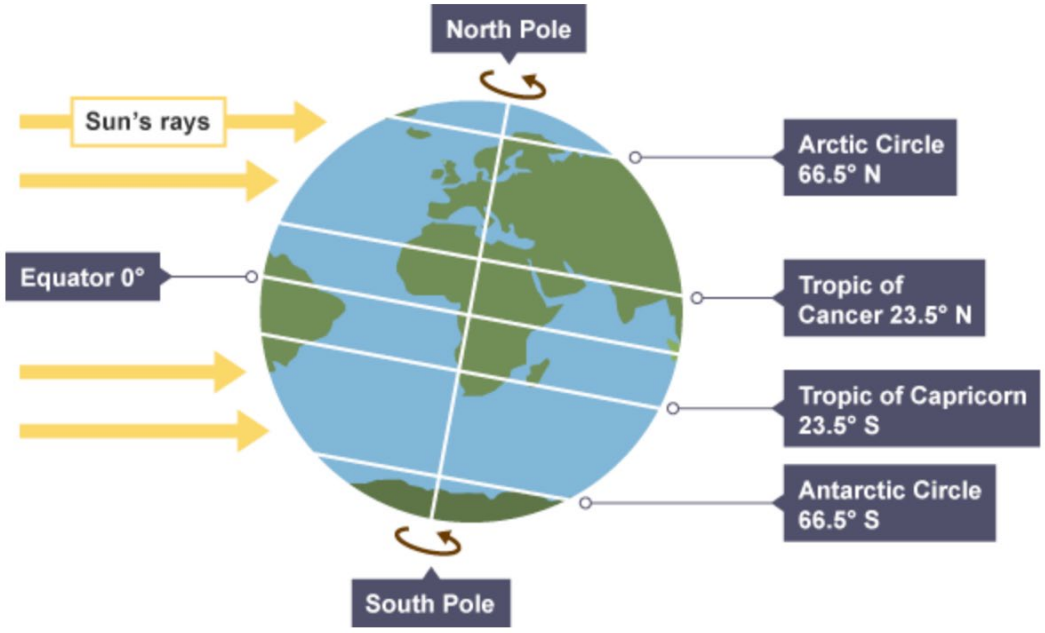


Challenge: Name a place in the UK that be would effected by Polar Continental Winds and Artic Winds.

Latitude

Distance from the Equator

Imaginary lines around the globe



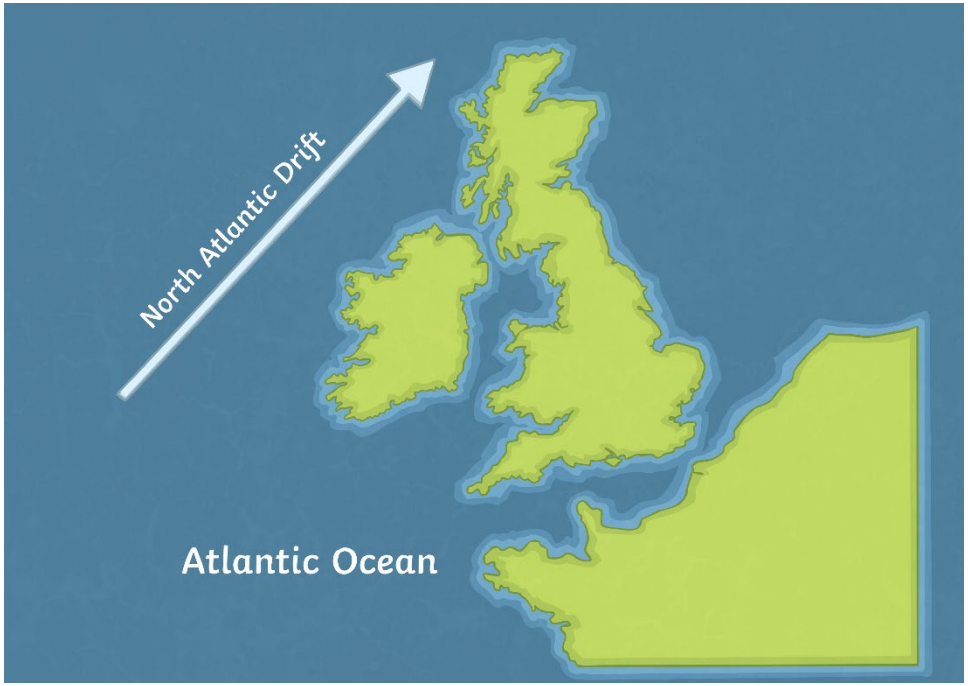
Locations that are further North/South receive less heat energy from the Sun.

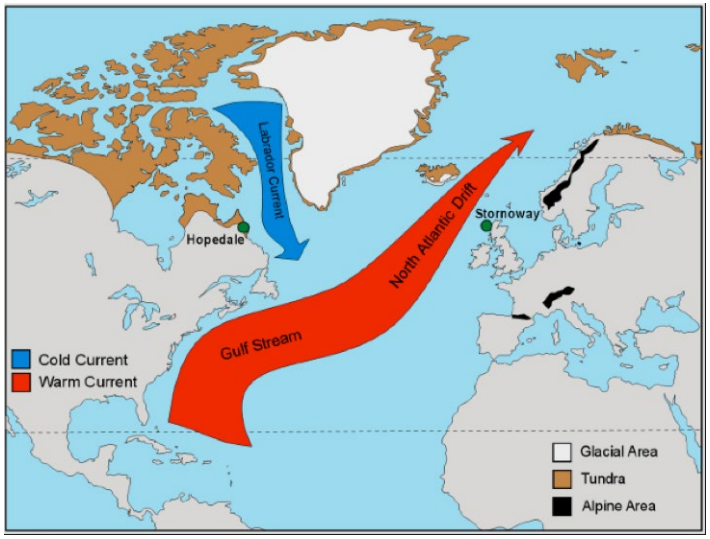
In Summer, London is 4-5 degrees warmer than Edinburgh because London is closer to the equator.

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

Ocean Currents- North Atlantic Drift

The North Atlantic Drift is a warm ocean current that brings warmer water to the west coast of the UK. This raises the air temperature in this area by several degrees.





Without the North Atlantic Drift, winters in the UK could be more than 5°C cooler! The average temperature for London in December would be 2°C !

Challenge: Which areas of the UK are more likely to be effected by the North Atlantic drift.

Altitude

Height above sea level (metres)

Temperatures decrease with *altitude*. There is approximately a 1°C drop in temperature for every increase of 100 m in height.

Buxton, in the Peak District sits at 314 metres above sea level. The average high temperature for Buxton in July is 19 degrees. London sits at 11m above sea level and the average July high temperature is 23 degrees.

Challenge: Find the average temp in July and the altitude for one other place in the UK and compare with London and Buxton.

Distance from the Sea

Coastal areas are most affected by the sea. The sea takes longer to heat up and cool down than land. So in the winter the sea keeps coastal areas warm and in summer, it cools them down.

Challenge: What areas might be affected by Distance from Sea? Which areas might be kept warmer in winter?

Why Do Places Have Different Climates? answers

1. Temperature increases with altitude. ✗
2. Warm ocean currents can lower the temperatures of coastal areas. ✗
3. Places at the equator are hotter because the equator is closer to the Sun. ✗
4. The sea is cooler in summer than in winter. ✓
5. Places at the coast are cooler in summer than places further inland. ✓
6. A prevailing wind that has come from polar areas will bring warm temperatures. ✗