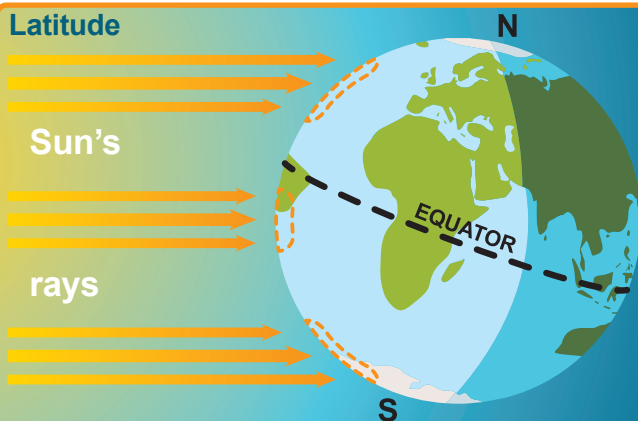


Key word definitions

Weather is the word used to describe the constantly changing conditions of the atmosphere (the air outside). Weather can be different from one day to the next or even during the same day – It can be sunny and warm one day and cold and wet the next.

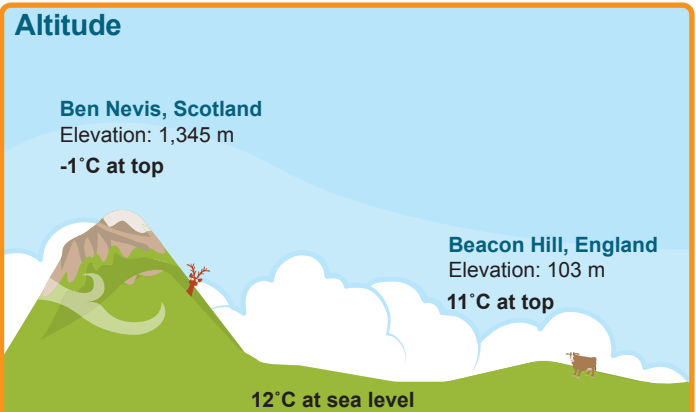
Climate is the word used to describe the average weather conditions of a place over a long period of time, usually many years. This allows us to get a sense of what the weather is usually like in a place.

Latitude



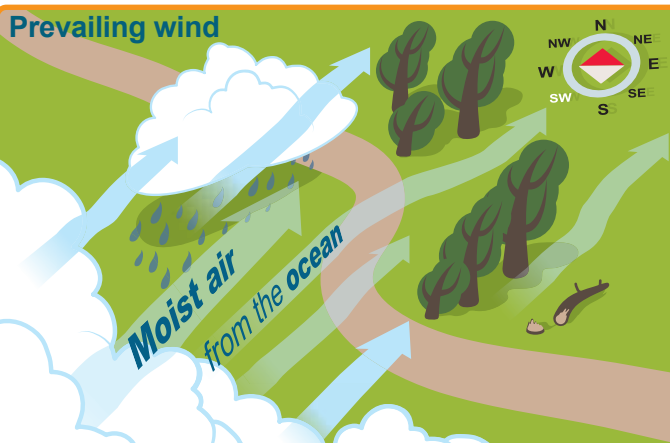
The equator is an imaginary line that runs around the middle of the planet. As you move away from this line, towards the north or south poles, temperatures will decrease. This is because the Earth's surface is curved so that energy from the sun hits the land more directly near the equator and as you move towards the poles the sun is lower in the sky, meaning its energy hits the land from a much lower angle and is therefore weaker.

Altitude



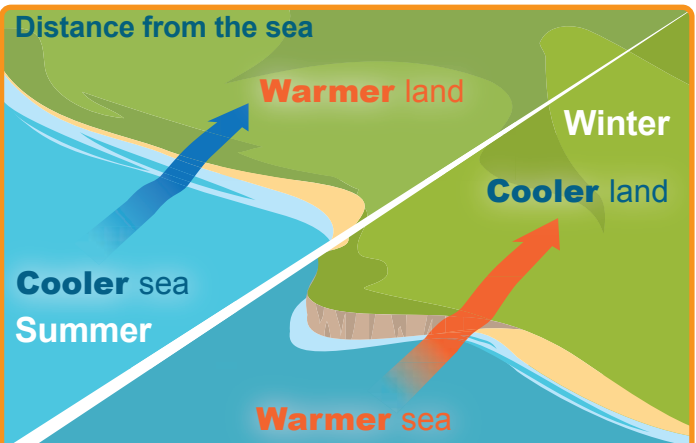
Altitude is the height of a place, above the level of the sea. Normally as you get higher temperatures decrease. On average, temperatures drop around 1°C for every 100 metres in altitude. This is why you often see snow on the tops of mountains.

Prevailing wind



This is the direction from which the wind normally blows in a place. The wind brings different kinds of conditions with it, depending on where it has come from. If a wind has blown over a hot desert it will bring hot and dry conditions, but if it has blown over an ocean, it will bring wet conditions. The prevailing wind in the UK comes from the south west.

Distance from the sea



Water heats up and cools down much more slowly than land. This means that areas near water, such as coastal towns, are normally cooler in summer and warmer in winter than areas further away from the water. Over the year, this means the temperatures of places near water change much less than inland areas, which can have huge differences in their summer and winter temperatures.

Task 1: Below are some statements about bumblebees. Some are about weather and some are about climate. Circle to indicate whether you think each statement is describing weather or climate.

Bumblebees can often be found sheltering under flowers during rain showers.	weather	climate
Bumblebees are not found in areas that are always hot and wet.	weather	climate
The hair on a bumblebee's body helps it to survive in places that are always cold.	weather	climate
On hot and sunny days, bumblebees can be seen using their wings to fan cool air into the entrance of their nests.	weather	climate

Task 2: There are around 250 species of bumblebee in the world. However, bumblebees are not found everywhere and only survive in places with the right climatic conditions.

Figures 1 and 2 (on Resource 3) show two world maps. One map shows average temperatures across the world, and the other shows where bumblebees are found. Look closely at both maps and try to find any patterns or relationships. **(You will need an atlas for this task)**

1. *Using evidence from the maps, describe the relationship between temperature and the number of bumblebees.*

2. *Using a named country, explain how at least one of the factors that affect climate could be creating the temperatures that bumblebees like.*

Task 3: There are 24 species of bumblebee in the UK. Eight of these species are common and can be found throughout the country. Other species, such as the Bilberry bumblebee (*Bombus monticola*), are less common and require more specific conditions to survive.

Figures 1 and 2 (on Resource 4) show two maps of the UK. One is a relief map which shows the height (or altitude) of the land, and the other shows where Bilberry bumblebees have been seen. Look closely at both maps and try to find any patterns or relationships. **(You will need an atlas for this task)**

1. *Using evidence from the maps, describe the relationship between the height of the land and the number of Bilberry bumblebees seen.*

2. *Describe how and explain why conditions would differ in areas of higher land, compared to areas of lower land.*



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Bumblebees can often be found sheltering under flowers during rain showers.	weather	climate
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Figures 1 and 2 (on Resource 3) show two world maps. One map shows average temperatures across the world, and the other shows where bumblebees are found. Look closely at both maps and try to find any patterns or relationships. **(You will need an atlas for this task)**

- Using evidence from the maps, describe the relationship between temperature and the number of bumblebees.** (Highlight the correct options and fill in the blanks)

Answer: Bumblebees are usually found in areas that are **cooler/warmer**. I know this because lots of bumblebees are found in **Australia/Europe** where average temperatures are around _____°C.

- Using a named country, explain how at least one of the factors that affect climate could be creating the temperatures that bumblebees like.** (Highlight the correct options)

Answer: A country such as France is not too close to the equator and not too close to the poles, creating a good temperature for bumblebees. This factor that is affecting the climate is known as **latitude/prevailing wind**.

Task 3: There are 24 species of bumblebee in the UK. Eight of these species are common and can be found throughout the country. Other species, such as the Bilberry bumblebee (*Bombus monticola*), are less common and require more specific conditions to survive.

Figures 1 and 2 (on Resource 4) show two maps of the UK. One is a relief map which shows the height (or altitude) of the land, and the other shows where Bilberry bumblebees have been seen. Look closely at both maps and try to find any patterns or relationships. **(You will need an atlas for this task)**

- Using evidence from the maps, describe the relationship between the height of the land and the number of Bilberry bumblebees seen.** (Highlight the correct options and fill in the blanks)

Answer: Bilberry bumblebees are most commonly found in areas where the land is **higher/lower**. I know this because there are lots of Bilberry bumblebees found in **northern/southern** England where the land is around _____m above sea level.

- Describe how and explain why conditions would differ in areas of higher land, compared to areas of lower land.** (Highlight the correct options)

Answer: Areas of higher land will have **higher/lower** temperatures than areas of lower land. This is because as you move higher, temperature fall/rise by around 1°C every **10/100** metres.



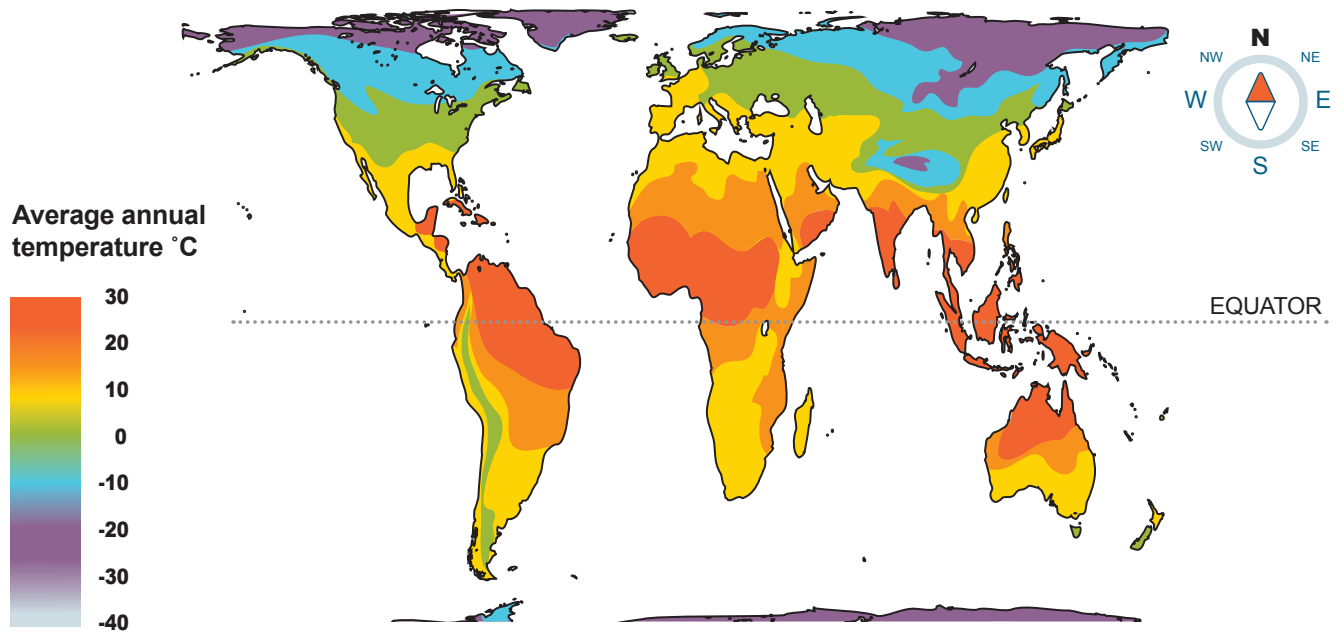


Figure 1: Map of world temperatures

Based on: Robert E. Rohde/Berkley Earth CC-BY-4

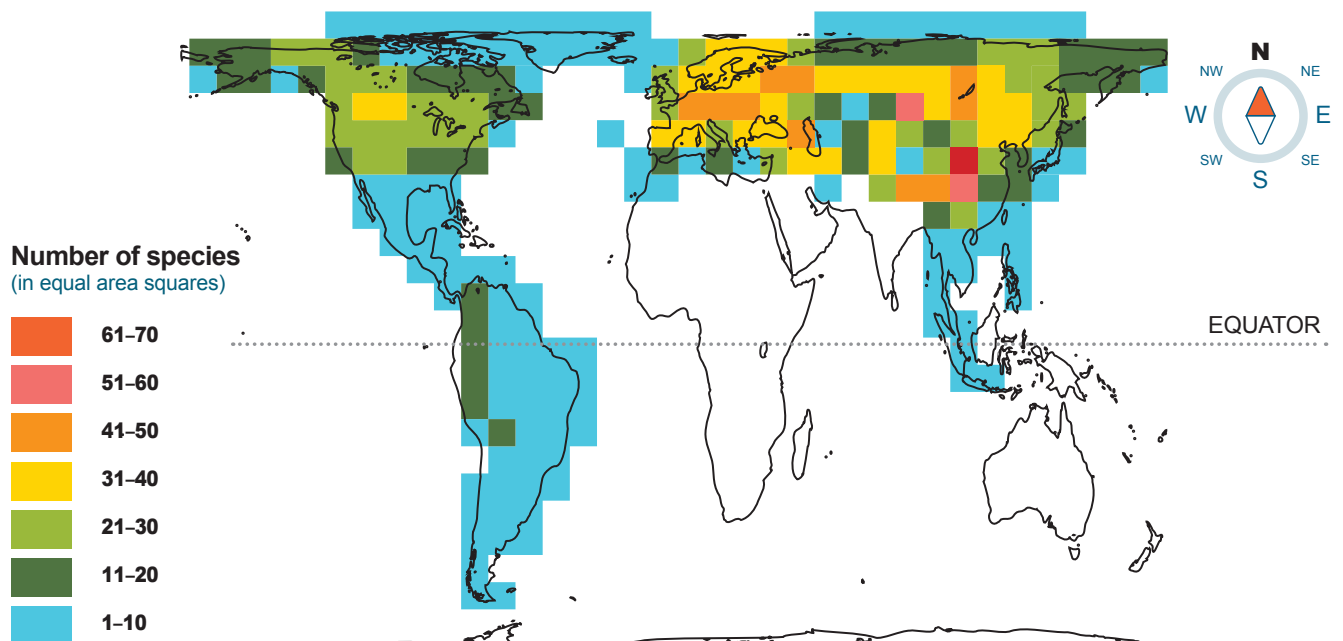


Figure 2: Map of world bumblebee distribution

Based on: Paul Williams/NHM <https://www.nhm.ac.uk/research-curation/research/projects/bombus/introduction.html>



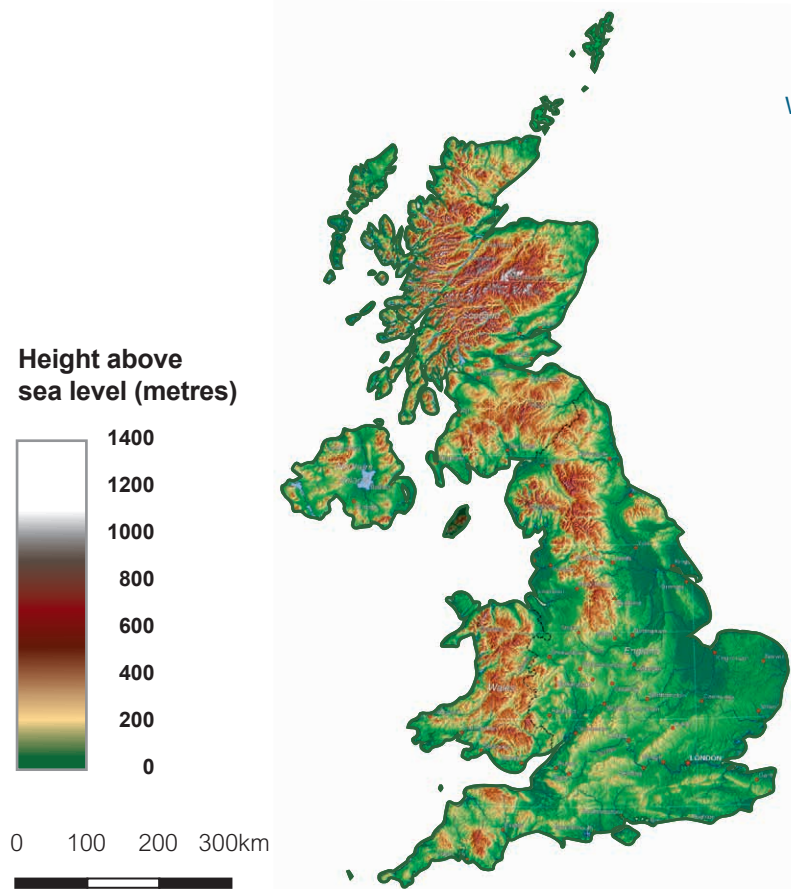


Figure 3: Map of UK relief

"UK Topo en.jpg" by Captain Blood is licensed under CC BY-SA 3.0

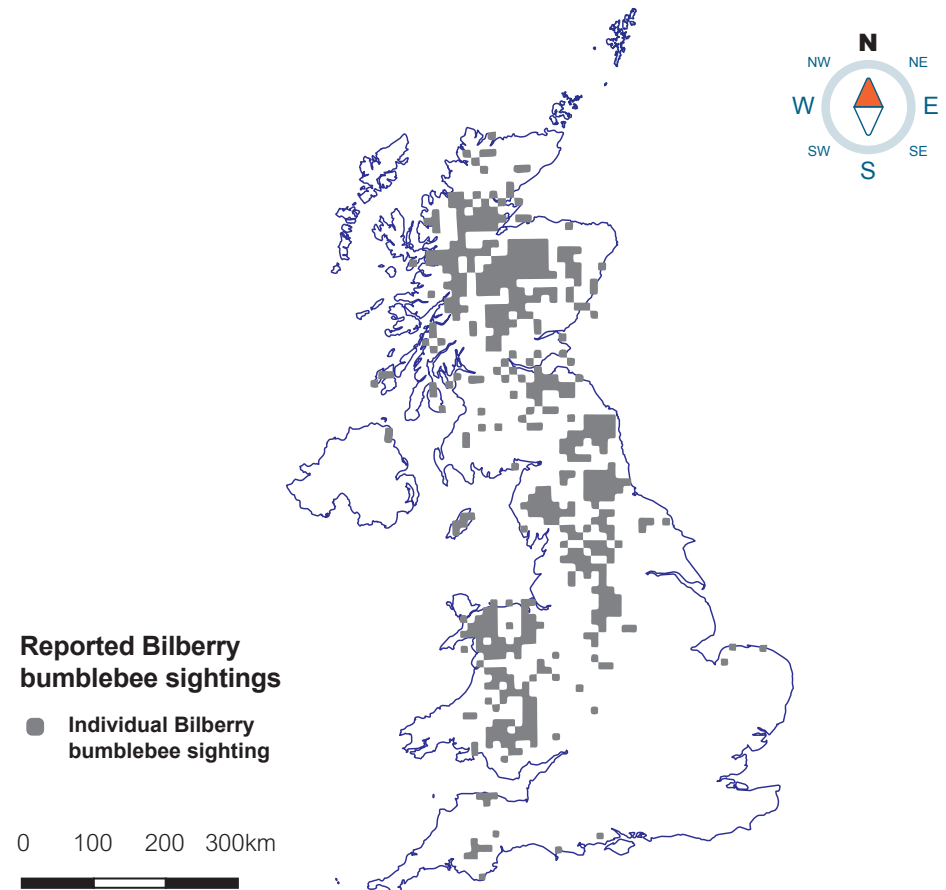


Figure 4: Map of UK Bilberry bumblebee distribution

Record data from National Biodiversity Atlas (CC-BY-NC)

Overview

This lesson explores the differences between weather and climate and the key factors that influence the climate of a place. The use of maps encourages students to utilise map reading and data analysis skills to make links between different sources and apply them in a bumblebee themed context. For tasks 2 and 3, students will need an atlas or access to an online equivalent to fully engage with these tasks.

Task 1

In this task, students are to use the information from the top of the worksheet and the keyword definitions to complete the three questions.

Answers

Bumblebees can often be found sheltering weather climate
 Bumblebees are not found in areas that a weather climate
 The hair on a bumblebee's body helps it weather climate
 On hot and sunny days, bumblebees can weather climate

Answer scaffold (2b)

Task 2 | Answers

1. cooler / Europe / (0–10°C)
2. latitude

Task 3 | Answers

1. higher / northern / (400–800 m)
2. lower / 100 m

Task 2

In this task students are required to study maps showing average global temperatures and global bumblebee distribution and find patterns or relationships between them.

Answers

The answers given below are only examples and student's answers could be very different but still be correct.

1. Generally, bumblebees are not found in the warmest places in the world but are much more common in cooler regions. For example, Africa has very few bumblebees and has average temperatures between 20–30°C but areas in Asia with average temperatures around 0°C have the highest number of bumblebees.
2. Any cooler country could be used as an example. Latitude is the most likely factor to be discussed, as very few bumblebees are found near the equator and numbers increase as you move further away and average temperatures decrease.

Altitude could also be used to attribute lower temperatures to areas that are otherwise warmer, in the Himalayas and Andes regions, for example, where large numbers of bumblebees are found. Other factors could be used, as long as appropriate justification is given.

Task 3

This task requires students to study a relief map of the UK and a map showing the UK distribution of Bilberry bumblebees (*Bombus monticola*), to find any patterns or relationships between them.

Answers

1. Bilberry bumblebees are usually found in places where the land is high. For example, in Wales where the land is between 400–600 metres above sea level, there are lots of Bilberry bumblebees but in the south west of England where the land is between 0–200 metres above sea level there are very few Bilberry bumblebees.
2. Temperatures will be lower in areas where the land is high, compared to areas of low land. This is because as you move higher, temperatures fall. Temperatures normally fall by around 1°C every 100 metres in altitude.

