

What's the difference between weather and climate?

Climate is 'average weather'. Scientists calculate climate using information about temperature and precipitation (rain, sleet and snow) collected over thirty years or more. This information is collected at **weather stations**.

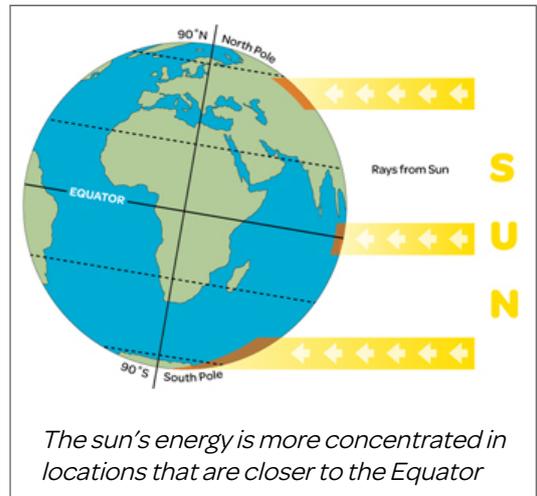
Around the world there are different **climate zones**. The different weather in each zone affects the people, plants and animals that live there. **Tropical, arid, Mediterranean, temperate** and **polar** are all names of different types of climate that occur in certain zones. But why does the weather vary depending on where you live?

Is latitude important?

The **Equator** is an invisible line that divides the world into two halves, or hemispheres. Latitude is the distance you live from the Equator. Latitude is measured in degrees – and you're either north or south of this imaginary line.

Your location on the Earth's surface affects the amount of the sun's energy you receive across the year. In turn, this shapes the climate. The city of London has a latitude of about 51° north. The city of Manaus in Brazil has a latitude of 3° south, meaning that it's much closer to the Equator than London. Manaus is a lot warmer than London all year round, because the sun's energy is more concentrated the closer you live to the Equator. This is because the Earth is a sphere.

The differences between the temperatures in different places around the world affect the pattern of rainfall or **precipitation**.

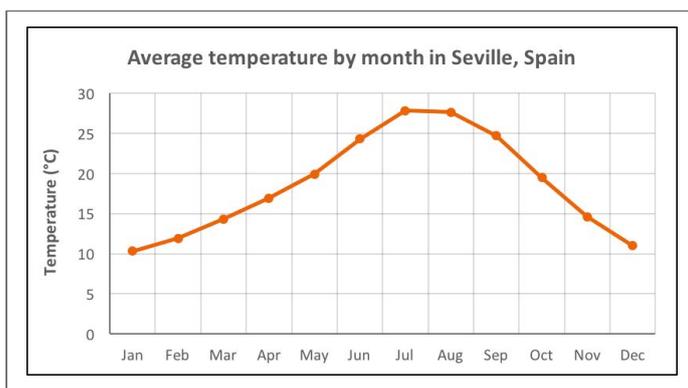


Did you know?

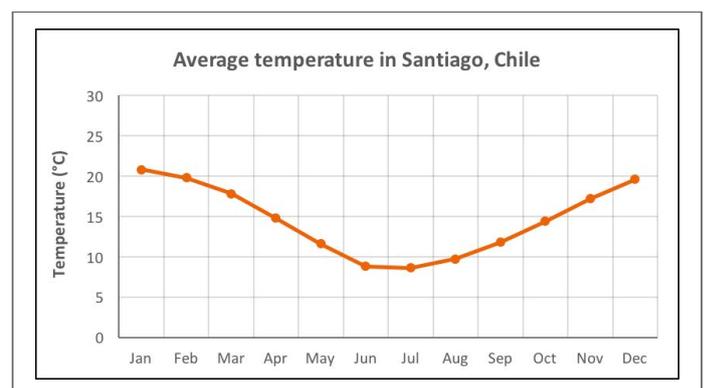
Apart from the Equator, there are other important lines of latitude, called the Arctic and Antarctic Circles and the Tropics of Cancer and Capricorn.

The Northern and Southern Hemispheres

Places in the **Northern** and **Southern Hemispheres** can have a similar climate. For example, there are places in both hemispheres with a Mediterranean climate. But there's one major difference between the climate of Seville, in Spain, and Santiago, in Chile: the timing of the seasons is reversed. In June, when it's summer in Seville, it's winter in Santiago.



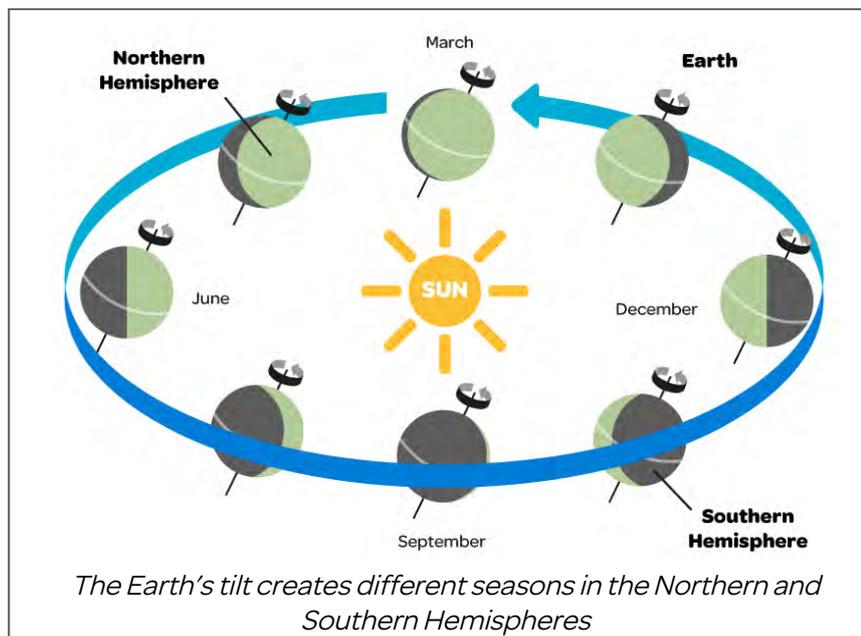
Graph of temperature by month in Seville



Graph of temperature by month in Santiago

The Earth's tilt

You'll remember that the Earth travels around the sun. A full **orbit** takes a year. And as the Earth travels, it spins on its **axis**. But did you know that the Earth spins on an axis that is tilted? It is this **tilt** that means that the Northern and Southern Hemispheres experience seasons at different times of the year.



Is our climate changing?

Climate zones around the world can be mapped – and because people have been watching the weather for a long time, we can predict what it will be like where you live. But people's activities are creating some changes. Climate-changing greenhouse gases are causing warmer temperatures and less predictable weather. Temperatures recorded in 2016 are likely to be the highest seen yet (even higher than the temperatures in 2015).



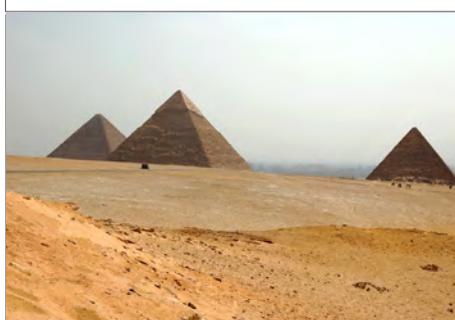
Greenland has a cold, polar climate



The UK has a mild, temperate climate



Seville has a Mediterranean climate



Egypt has a very dry, arid climate

Key Words:

arid

average

axis

climate

Equator

hemisphere

latitude

Mediterranean

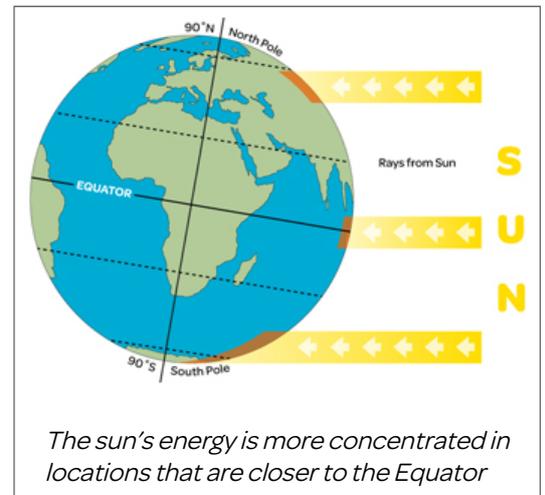
polar

tilt

What's the difference between weather and climate?

Climate is 'average weather'. **Meteorologists** (scientists who study weather) work out what the average is by using information about temperature and precipitation (rain, sleet and snow) collected over thirty years or more. This information is collected by people using scientific instruments at weather stations.

Around the world there are different **climate zones**, where particular weather affects people, plants and animals. **Tropical, arid, Mediterranean, temperate** and **polar** are all names of different types of climate that occur in certain zones. From the sub-zero climate at the poles, to warm and wet weather in the tropics, we'll take you through the what, where, when and why of climate.



Is latitude important?

The **Equator** is an invisible line that divides the world into two halves, or **hemispheres**. **Latitude** is the distance you live from the Equator. Latitude is measured in degrees – and you're either north or south of this imaginary line that wraps around the globe.

Your location on the Earth's surface affects the amount of the sun's energy you receive across the year. In turn, this shapes the climate where you live. For example, the city of London has a latitude of about 51° north, whereas the city of Manaus in Brazil has a latitude of 3° south – Manaus is much closer to the Equator than London. Manaus is a lot warmer than London all year round, because the sun's energy is more concentrated the closer you live to the Equator. This is because of the Earth's spherical shape.

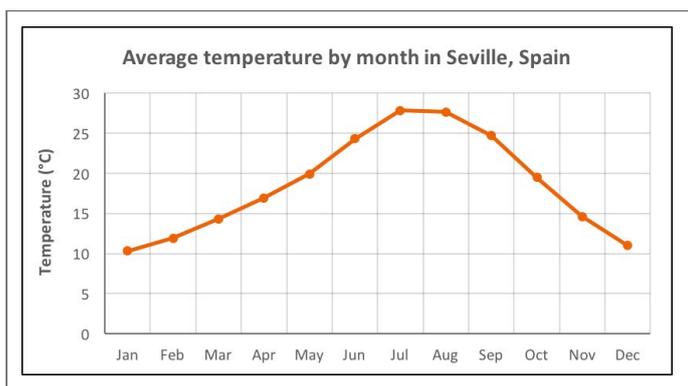
The differences in temperature in different places around the world affect the pattern of rainfall or **precipitation**. Meteorologists are interested in temperature and precipitation: they study how hot or cold it is in a place and how wet.

Did you know?

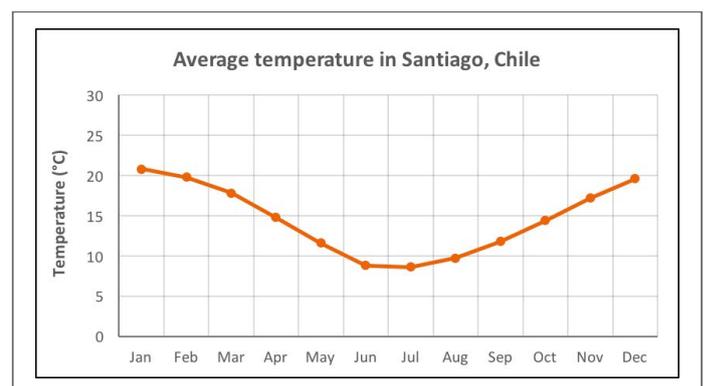
Apart from the Equator, there are other important lines of latitude, called the Arctic and Antarctic Circles and the Tropics of Cancer and Capricorn.

The Northern and Southern Hemispheres

Places in the **Northern** and **Southern Hemispheres** can have a similar climate. For example, there are places in both hemispheres with a Mediterranean climate: Spain's capital, Seville, is in the Northern Hemisphere, while the capital of Chile, Santiago, is in the Southern Hemisphere. They have the same kind of climate, but with one major difference: the timing of the seasons is reversed. What does this mean? In June, when it's summer in Seville, it's winter in Santiago. Take a look at the shape of the graphs that show how temperature changes across the year in these two places.



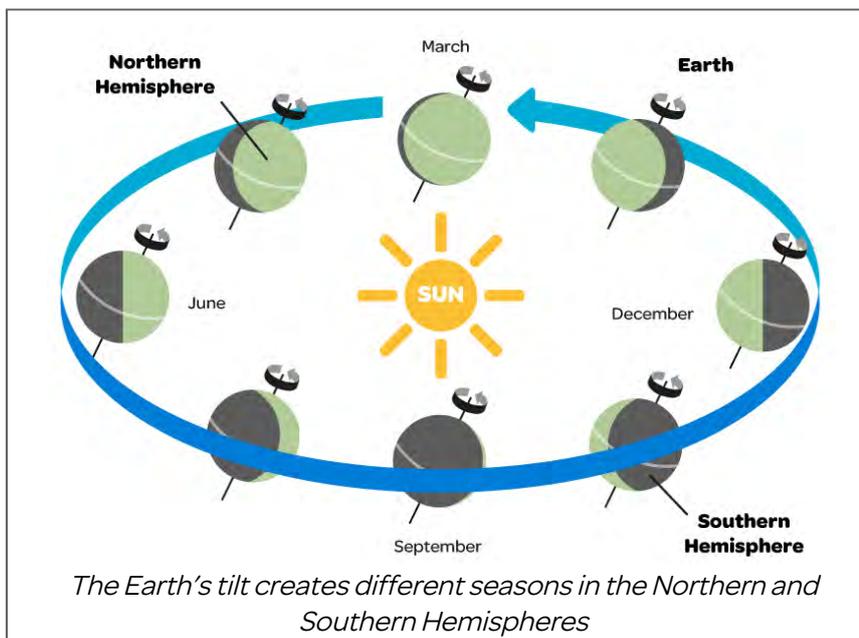
Graph of temperature by month in Seville



Graph of temperature by month in Santiago

The Earth's tilt

You'll remember that the Earth travels around the sun. A full **orbit** takes a year. And as the Earth travels, it spins on its **axis**. But did you know that the Earth spins on an axis that is tilted? It is this **tilt** that means that the Northern and Southern Hemispheres experience seasons at different times of the year.



Is our climate changing?

Because people have been watching the weather, and recording it, for a long time, we can predict what it will be like where you live next month or next year. Climate zones around the world can be mapped. But people's activities, like burning oil, coal and gas to make power, are creating some changes. Climate-changing 'greenhouse gases' released into our atmosphere are causing warmer temperatures and less predictable weather. Scientists around the world say that temperatures recorded in 2016 are likely to be the highest seen yet (they're still doing the number-crunching at the moment). They're expected to be even higher than temperatures in 2015 – previously, the warmest year on record.



Greenland has a cold, polar climate



The UK has a mild, temperate climate



Seville has a Mediterranean climate



Egypt has a very dry, arid climate

Key Words:

arid **average** **axis** **climate** **Equator**

hemisphere **latitude** **Mediterranean** **polar** **tilt**



1. Draw yourself in the circle to become a detective!
2. Answer the questions below to complete your mission.

A. Tick 'true' or 'false' for the statements below.

Statements	True	False
1. Both the North and South Poles have a Mediterranean climate		
2. The Equator divides the Earth into two halves or hemispheres		
3. A zone is an area of land or sea		

B. Circle the correct answer.

4. Climate is...

- a. Ancient weather
- b. Average weather
- c. Extreme weather

5. Latitude means how far north or south of the...

- a. Equator you are
- b. UK you are
- c. tropics you are

6. A city in Brazil with a tropical climate is...

- a. Madrid
- b. Manaus
- c. Montevideo

C. Draw three animals you might find in a region (or regions) with a polar climate.

D. What information do scientists need to be able to describe the climate?


Observer Odd needs your help!

His mission is to write a report on the facts presented in *Climate Zones*.

Answer the questions below in full sentences so that he can use the information in his report.

1. 'Precipitation' is one word used to describe different types of similar weather. (Hint: it's an 'umbrella term'.) Name three of these types of weather.

2. How long does it take for the Earth to complete a full orbit of the sun?

3. What does the following text mean in the paragraph entitled **The Northern and Southern Hemispheres:** 'The timing of the seasons is reversed.'

4. How does location on the Earth's surface affect climate?

5. Describe three differences between the climate in Seville and Santiago.

GO ONLINE:

Find out more about Seville and Santiago. How are they similar and how do they differ, as a result of their Mediterranean climate? Visit: www.oddizzi.com – Explore the World – Weather and Climate – Climate



Inspector Izzi has a new job and needs a hand!

Her task is to write a detailed analysis of the Climate Zones Fact-file. She needs you to help her read 'between the lines' and answer the questions below in full sentences.

6. What sort of scientific instruments might be needed at a weather station?

7. Can you think of a general rule to describe how average temperatures change as you travel from the Equator towards either the North or South Pole?

8. Explain why the seasons are different in the Northern and Southern Hemispheres.

9. Why are people taking a greater interest in our climate in the twenty-first century?

EXTRA MISSIONS:

- Find out about the climate where you live. What is the average temperature for this month? How do temperature readings taken from a thermometer in your school grounds compare with this average? Why might they be different?
- Create a book cover for a new book entitled 'Climate Zones'. Include a title and images. On the back, put a summary of the big ideas you've read about in the text.