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Map skills

How many different climate zones can you name?

Look at the **Climate zones around the world** map which is colour coded into climate zones. Answer the questions on the sheet attached.

Online investigator



Login to www.oddizzi.com and click on *explore the world - weather and climate - climate*

Read through each section to understand the different climate zones and fill in what you have found out on your **Characteristics of climate zones** sheet.

Quiz time

Login to www.oddizzi.com.

Click on **Quiz** at the top of the page. Find the **Weather and climate** quiz. We suggest trying **level 2**.

See how many points you can score!

Putting pen to paper

Login to www.oddizzi.com and click on *explore the world - weather and climate - climate*

Write a persuasive letter to a friend about a climate zone you think they should move to.

What if...

Discuss this made up scenario with your family over breakfast or dinner.

What if...the world's climate got slightly cooler each year?



Pssst...secret facts

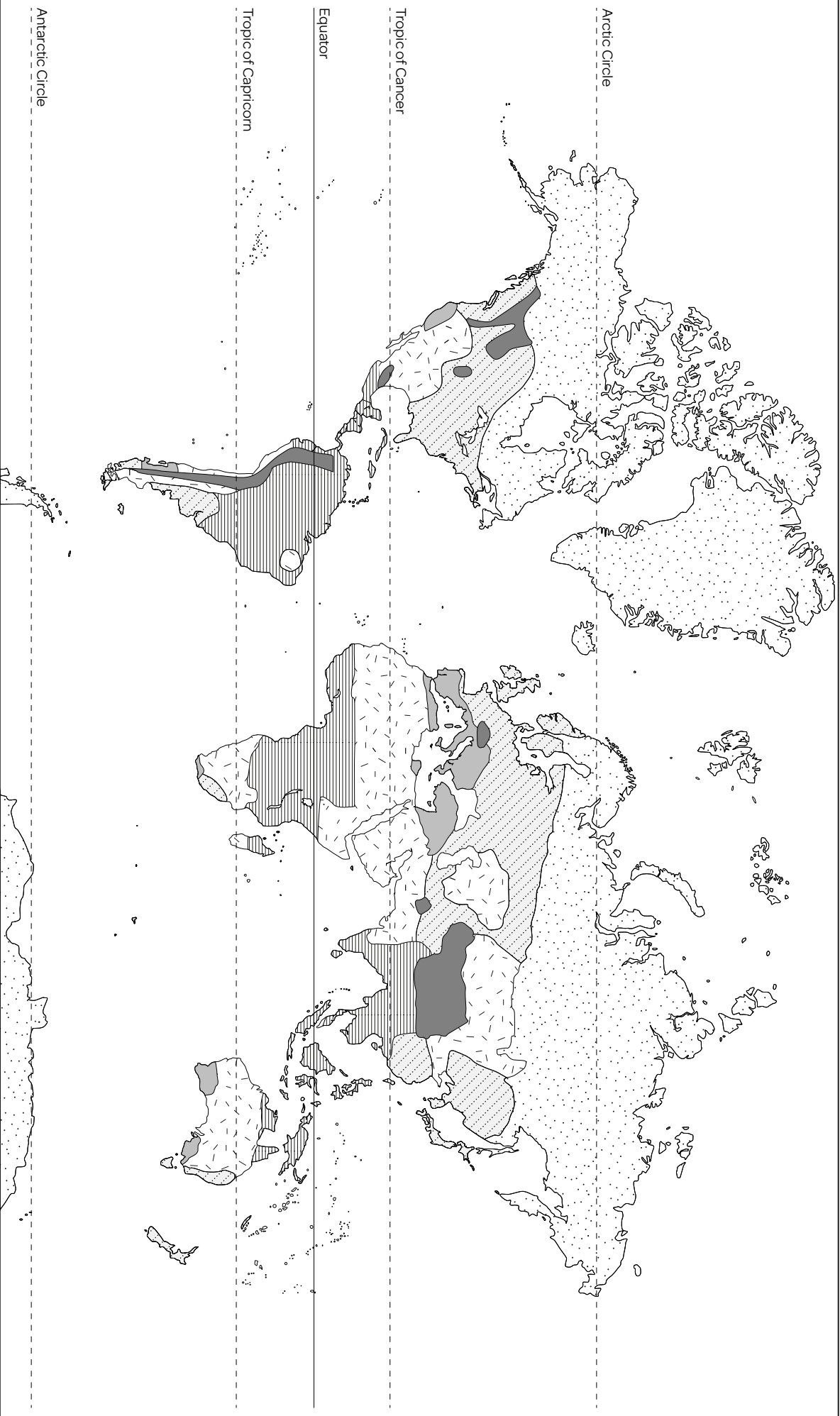
Login to www.oddizzi.com and click on *explore the world - weather and climate - climate*

Click through each of the climate zone pages and see if you can find the **secret facts**. Can you share your new facts with someone you know?

Read it







Read the fact-file **Climate zones**.

Use the text to help you answer the questions to follow.



1. Highlight two key climate zones on your map, by shading the polar and arid areas of the world using coloured pencils. Choose one colour for polar and another for arid regions.
2. Don't forget to shade in the key to match your map!

Key

| | | | | | |
|--|-----------|---|----------|---|---------------|
|  | Polar |  | Arid |  | Mediterranean |
|  | Temperate |  | Tropical |  | Mountains |

Climate zones around the world

continued...



3a. Can you suggest a rule (or two) to describe where the world's polar regions are found?
You could start: 'As a rule, the world's polar regions are found...'

b. Write a rule (or two) about where the world's arid regions are found.

Hints: Include key world features like: Northern Hemisphere, Southern Hemisphere, Equator, Tropic of Cancer, Tropic of Capricorn, Arctic Circle and Antarctic Circle.
Your rules about where different climate regions are found might also include the names of the different continents.

THEN log onto www.oddizzi.com to find out more about polar and arid climates.

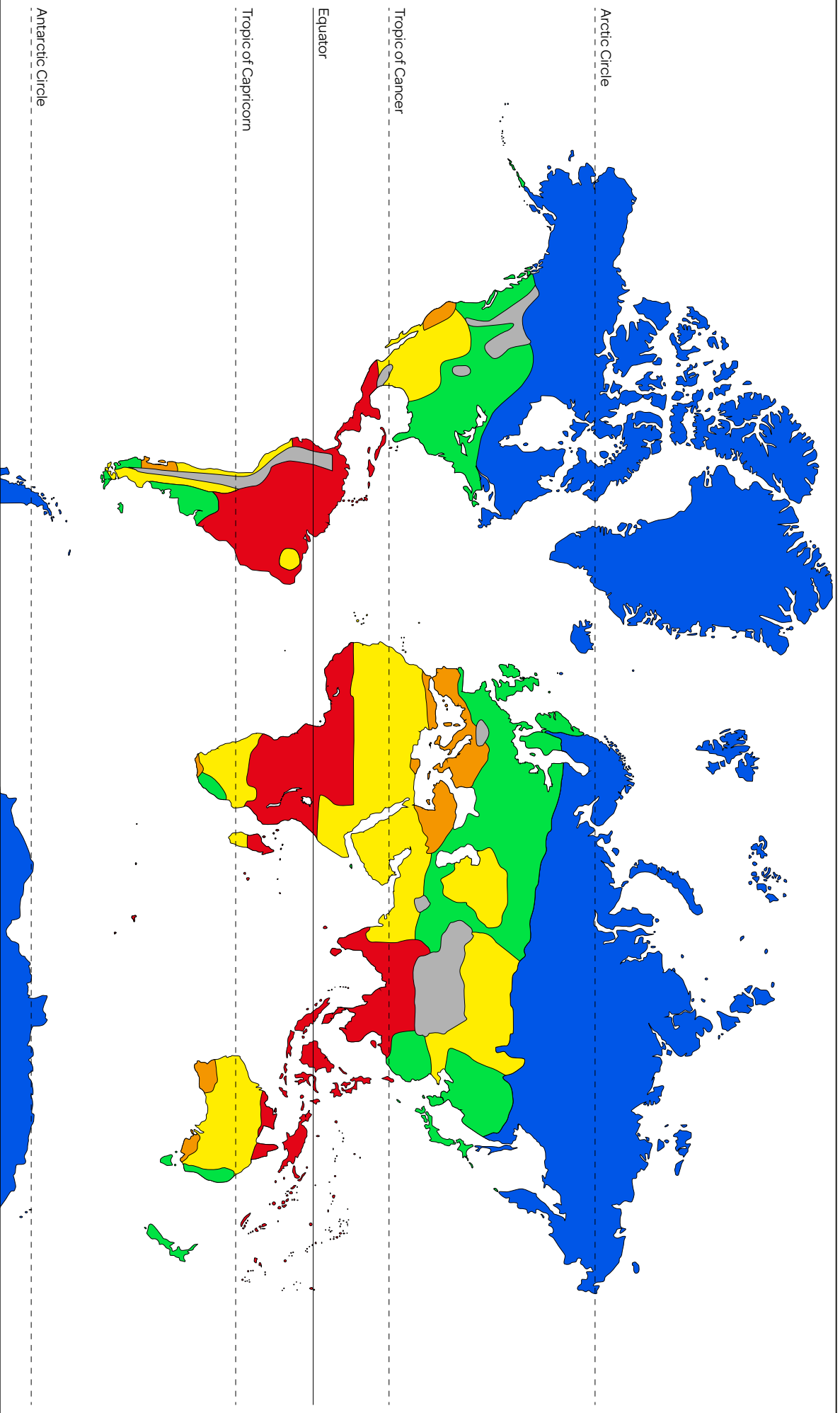
4a. Write your own definition of a polar climate.

b. Write a definition of an arid climate.

Hints: Describe the temperature AND the pattern of rainfall/snowfall or anything else wet!

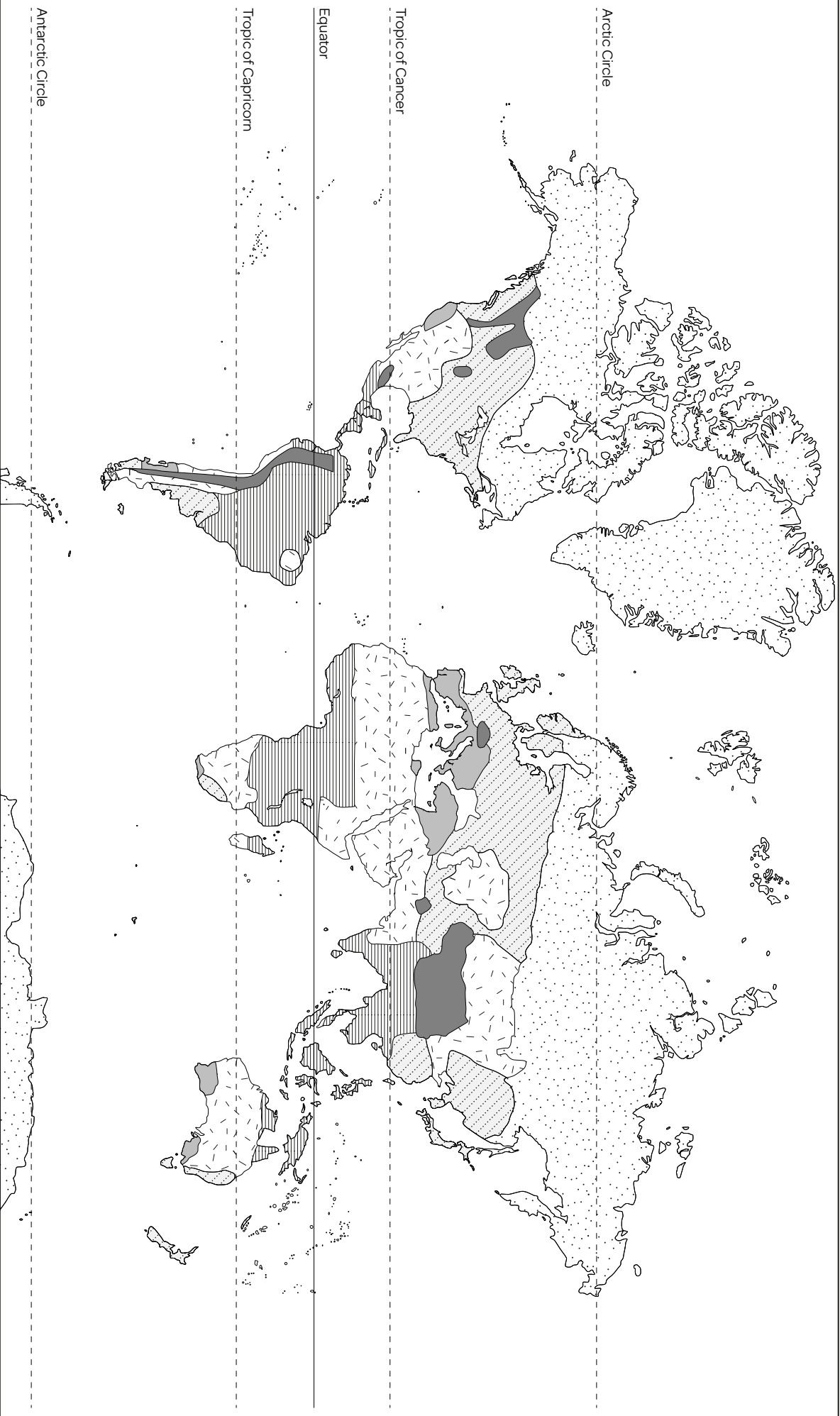
Top tip: The Nuuk and Khartoum pages of the Oddizzi website are very useful for questions 4a and 4b. Go to: Explore the World - Weather & Climate - Climate

Climate zones around the world



Key

| | | | | | |
|---|-----------|---|----------|---|---------------|
|  | Polar |  | Arid |  | Mediterranean |
|  | Temperate |  | Tropical |  | Mountains |



1. Highlight two key climate zones on your map, by shading the polar and arid areas of the world using coloured pencils. Choose one colour for polar and another for arid regions.

Check children have shaded all of the relevant areas of the map, for example, in both the Northern and Southern Hemispheres.

2. Don't forget to shade in the key to match your map!

Colours used on map should match those used to shade the key, e.g. blue for 'polar' on both map and key.

Key

| | | | | | |
|---|-----------|---|----------|---|---------------|
|  | Polar |  | Arid |  | Mediterranean |
|  | Temperate |  | Tropical |  | Mountains |

3a. Can you suggest a rule (or two) to describe where the world's polar regions are found? You could start: 'As a rule, the world's polar regions are found...'

... close to the Poles ... on or close to the Arctic or Antarctic Circle ... far from the Equator

b. Write a rule (or two) about where the world's arid regions are found.

The world's arid regions are found... ... both north and south of the Equator. ... in both the Northern and the Southern Hemispheres.

... close to either the Tropic of Cancer or the Tropic of Capricorn.

... far from the poles. [Note: some children will be aware that Antarctica is arid, a cold desert, therefore you may want to reinforce the fact that on the climate zones map 'Arid' means 'a hot desert or semi-desert'.

Hints: Include key world features like the: Northern Hemisphere, Southern Hemisphere, Equator, Tropic of Cancer, Tropic of Capricorn, Arctic Circle and Antarctic Circle. Your rules about where different climate regions are found might also include the names of the different continents.

THEN log onto www.oddizzi.com to find out more about polar and arid climates.

4a. Write your own definition of a polar climate. Expect some or all of the following (credit use of named places and temperature and precipitation facts):

A place with a polar climate will experience extremely cold, long and snowy winters and cool, short summers.

For example, in Nuuk, the capital of Greenland, the average temperature in July is 7°C (44°F) and the average temperature in January is -8°C (17.6°F). Nuuk receives about 700mm (27 inches) of precipitation every year, but it's mostly snow!

b. Write a definition of an arid climate. Expect some or all of the following (credit use of named places and temperature and precipitation facts):

A place with an arid climate is very hot and dry. If it receives less than 250mm (7.8 inches) of precipitation a year, it is called a desert.






For example in Khartoum, on the southern edge of the Sahara Desert, the average temperature is as high as 30°C (100°F), but can exceed 53°C (127°F). On average, Khartoum receives a total of just 120mm (about 5 inches) of precipitation a year.

Hints: Describe the temperature AND the pattern of rainfall/snowfall or anything else wet!

Top tip: The Nuuk and Khartoum pages of the Oddizzi website are very useful for questions 4a and 4b. Go to: Explore the World - Weather & Climate - Climate

Characteristics of Different Climate Zones

Identify each climate zone using the description and photograph.

| Climate Zone | Description | Photograph |
|--------------|---|---|
| | <p>Very dry: less than 250mm of rain in desert regions</p> <p>Temperatures peak in summer months at 40°C or more!</p> <p>Temperatures can drop 20°C between midday and midnight</p> |  |
| | <p>High temperatures all year round</p> <p>Wet, wet, wet! Rainfall totals 2000mm a year</p> <p>Two seasons: wet and dry (or drier!)</p> |  |
| | <p>Four seasons</p> <p>No extremes of temperature – it's tepid</p> <p>Year-round rainfall: summer may be the wettest season</p> |  |
| | <p>Short winter days, and the midnight sun in summer</p> <p>Sub-zero temperatures for seven months of the year</p> <p>No wetter than the temperate zone, maybe drier</p> |  |
| | <p>Intense sunshine ripens citrus fruits here</p> <p>Take a siesta in summer months to cope with the heat</p> <p>Plentiful winter rain makes up for very dry summer months</p> |  |

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**.

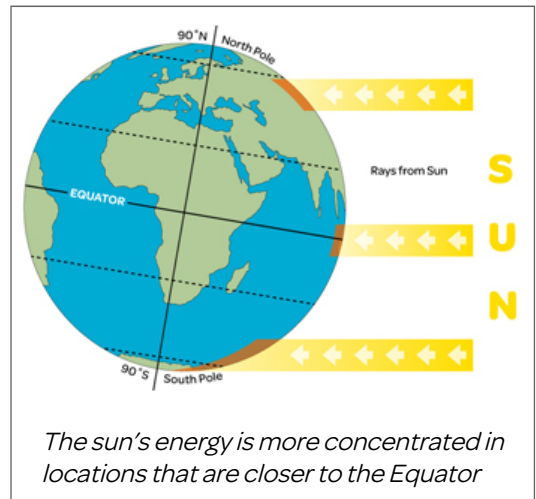
Around the world there are different **climate zones**. The different weather in each zone affects the people, plants and animals that live there. **Tropical, arid, Mediterranean, temperate** and **polar** are all names of different types of climate that occur in certain zones. But why does the weather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

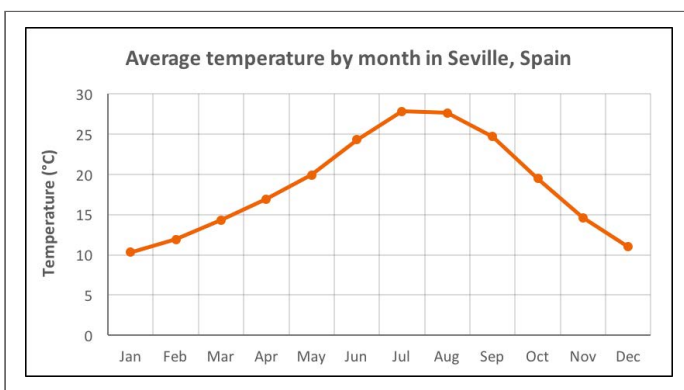


Did you know?

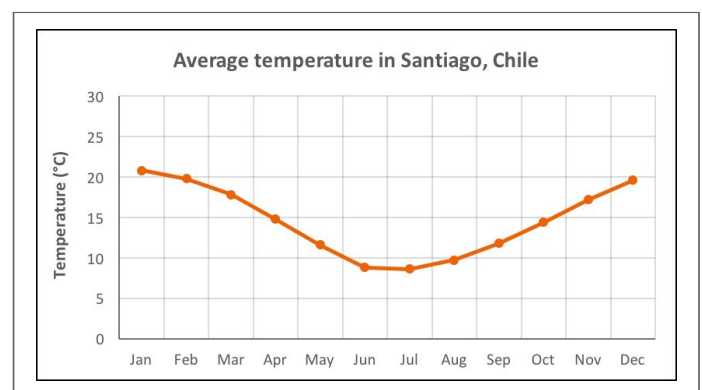
Apart from the Equator, there are other important lines of latitude, called the Arctic and Antarctic Circles and the Tropics of Cancer and Capricorn.

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.



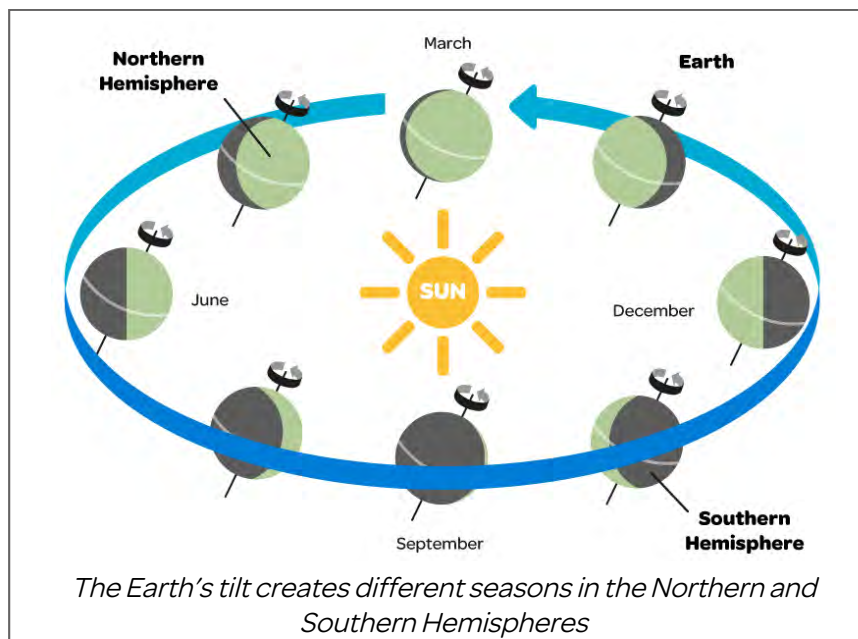
Graph of temperature by month in Seville



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).



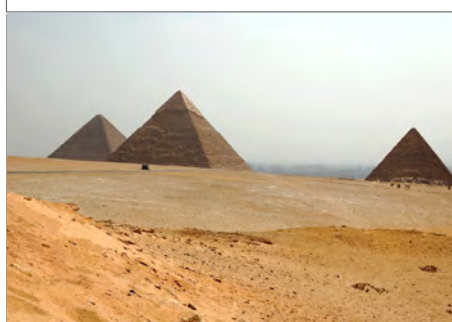
Greenland has a cold, polar climate



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

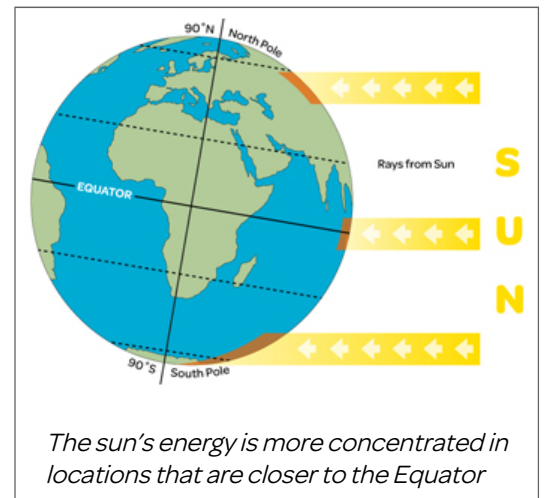
polar

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.

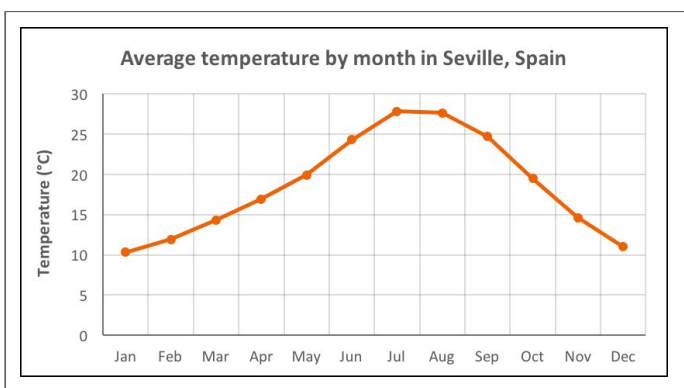
The differences in temperature in different places around the world affect the pattern of rainfall or **precipitation**. Meteorologists are interested in temperature and precipitation: they study how hot or cold it is in a place and how wet.

Did you know?

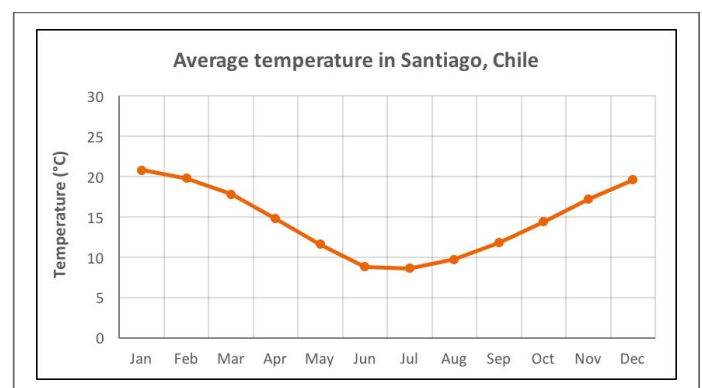
Apart from the Equator, there are other important lines of latitude, called the Arctic and Antarctic Circles and the Tropics of Cancer and Capricorn.

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.



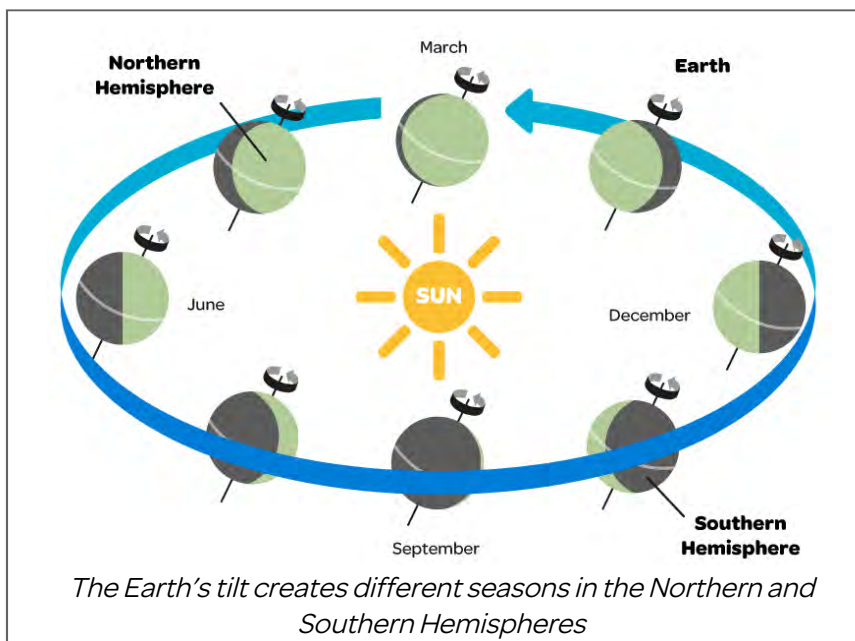
Graph of temperature by month in Seville



Graph of temperature by month in Santiago

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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.



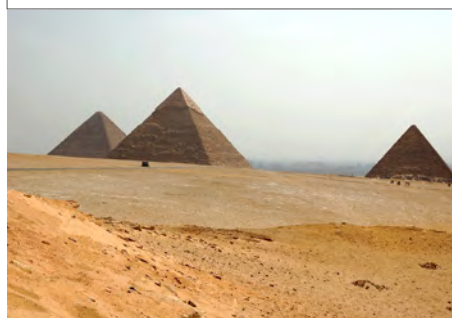
Greenland has a cold, polar climate



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.



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| Statements | True | False |
|---|------|-------|
| 1. Both the North and South Poles have a Mediterranean climate | | ✓ |
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- b. UK you are
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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.

Answers will vary, but are likely to include: Arctic fox, Arctic hare, penguin (various), polar bear, skua, seal (various), whales (various).

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

Weather data, e.g. temperature and rainfall readings, taken over a long period of time, such as 30 years. (The timescale is key to the answer.)

**Observer Odd needs your help!**

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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.

Rain or rainy weather, sleet and snow.

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

A year/365 days.

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

When it is summer in the Northern Hemisphere (in June, July, August, September), it is winter in the Southern Hemisphere and therefore much colder there (and vice versa).

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

The sun's energy is more concentrated the closer you live to the Equator, because the Earth is spherical in shape/the Earth's surface is curved. More concentrated energy received at the Equator means higher temperatures - this also affects the pattern of rainfall.

(Children might also mention the tilt of the Earth's axis and how this affects the timing of the seasons. In addition, they may mention the way in which the temperature falls with greater altitude, although this is not outlined in the guided reading text.)

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

Answers will vary, but may include facts such as:

- January is the hottest month in Santiago, whereas in Seville the hottest month is July.
- January is the coldest month in Seville, but in Santiago the coldest month is July.
- The temperature in Santiago is about twice that of Seville in January - Santiago is about ten degrees warmer than Seville in January.

GO ONLINE:

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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?

Answers will vary, but may include: thermometer (to measure temperature and humidity), rain gauge (for rainfall) or snow gauge, barometer (for pressure), weathercock or weather vane (for wind direction) and an anemometer (to measure wind speed).

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?

As a general rule, the further north or south of the Equator you go, the cooler average temperatures are. (The exceptions to this are hot deserts, the taiga and the world's mountainous regions. For example, hot deserts, where the world's highest temperatures are recorded, are located some distance from the Equator. The taiga biome can be colder than the tundra biome, which lies further north in the Northern Hemisphere.)

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

Because the Earth's axis is tilted, the Northern Hemisphere (one half of the globe) is tipped or tilted away from the sun for part of the year. For example, in December, the energy the Northern Hemisphere receives is not as concentrated/is spread out over a larger area of land. As a result, temperatures are lower at this time. Meanwhile, in the Southern Hemisphere it is warmer, because this half of the Earth's surface is tilted towards the sun.

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

In recent years, temperatures have been warmer than expected. Scientists around the world have shown this. People's activities are creating change/more climate-changing gases. Carbon dioxide/climate-changing greenhouse gases is/are causing warmer temperatures and less predictable weather.

People want to understand how they might be affected in the future.

EXTRA MISSIONS:

1. 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?
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