

The Polar Climate Zones



How cold is it in the polar climate?

Polar areas are the coldest of all the major climate zones. The Sun is hardly ever high enough in the sky to cause the plentiful ice to melt, with temperatures rarely rising above freezing (0°C). During the long polar nights temperatures can fall to extremely low values. The coldest natural temperature ever recorded was at Vostock in the Antarctic, which has a polar climate, where an incredible -88°C (-126°F) was measured at a Soviet research station. Even during the warmest months of the year the average temperature does not rise above 10°C . As if this was not enough, there are often hurricane-force winds that cause blizzards. A blizzard is when strong winds pick up snow and blow it through the air.

How much precipitation do polar areas get?

Polar climates tend to be dry. This is because the air is cold and lacks moisture (water), which stops the formation of clouds, and therefore prevents rainfall or snowfall. Some polar regions receive less than 10 inches (250 millimetres) of precipitation each year, and can be as dry as the hot deserts.

Where on the Earth do you find the polar climate zones?

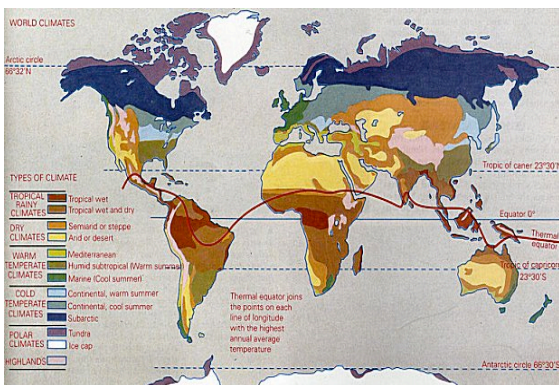


Fig. 2: Map of the globe that shows climate zones

Surely nobody lives in polar areas?

Surprisingly despite the extreme conditions some people have made their homes in polar areas. The traditional inhabitants of the Arctic region are the Eskimos, or Inuit, who have survived by adapting to their harsh environment. Modern technology and clothing has made life somewhat easier for them. In contrast, apart from scientists in lonely research stations, no humans live in Antarctica. The challenge posed by the harsh environment has inspired explorers. One such group of explorers who died in 1912 trying to get to the South Pole was Captain Scott and his companions.

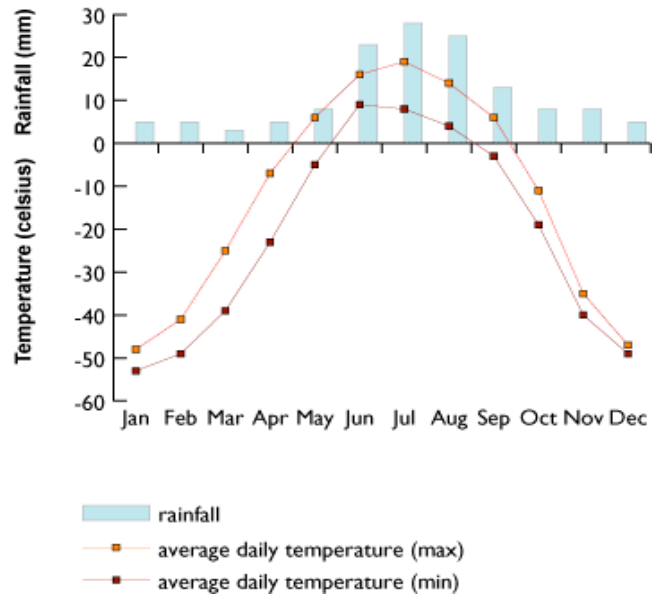


Fig. 1: Climate in an average polar area

The Polar Regions are found near the North Pole and South Pole, between 60° and 90° latitude. The area that surrounds the South Pole is known as Antarctica, while the area that surrounds the North Pole is the Arctic Circle. The Antarctic is a landmass (a continent in its own right) but one that is buried in ice, sometimes miles deep. It is the coldest place on Earth. The Arctic is slightly warmer than Antarctica, but unlike Antarctica it has no land. Instead the Arctic is a sea of ice, most of which never melts. Greenland, North America and Siberia (in Northern Russia) are the nearest concrete land to the Arctic. On the map the polar areas are white or purple.



Fig. 3: An Eskimo

What impact do people have on polar areas?

Although very few people live in the Polar Regions, people still have a huge impact on them. Global warming caused by polluting gases, such as methane from cattle and carbon dioxide from burning fossil fuels like coal, oil and gas is causing the overall average global temperature to rise. The higher temperatures melt glaciers (huge bits of ice), which raises sea levels and thus increases flooding. The melting of ice also destroys the habitat of animals like the polar bear. An animal's habitat is the name for the place where it lives.



Fig. 4: A melting glacier

So do many animals live in the Polar Regions?



Fig. 5: A Caribou

Unsurprisingly not many animals have chosen to make the Polar Regions their home. In Antarctica one animal that does survive is the emperor penguin, which keeps its eggs warm by holding them between its feet and covering them with a flap of fur. In the Arctic the summer brings a brief flourishing of small shrubs and plants, and in comparison to the Antarctic, wildlife is plentiful. Caribou take advantage of the plants that grow in the brief spring and summer. Animals such as polar bears and the beautiful arctic fox also seem to thrive in the conditions, while migrating birds pay visits in summer to feed on the plant life.

What sorts of seasons are there in polar areas?

Polar areas do not have four clear seasons of equal length like we do in Britain. Both the North Pole and the South Pole have long dark winters with no sun at all, and long summers when they are transformed in the 'Land of the Midnight Sun' and the sun never sets! The Polar Regions remain relatively cold all year round, even in summer. However, there are some places in the polar zones where the snow and ice melts during the warmest part of the year. The northern coasts of Canada and Alaska and the southern tip of South America are examples of these places.



Fig. 6: The sun moving through the sky during an Arctic summer

Summary

Polar areas, which are found near the poles, are the coldest places on Earth and receive very little precipitation. The harshness of the environment means few people or animals live in the Polar Regions, although some have managed to survive by adapting. Despite this people all over the world have an impact on these areas because of pollution from their activities.

References and sources

Text

http://www.bbc.co.uk/weather/features/weatherbasics/zones_polar.shtml

http://www.ace.mmu.ac.uk/eae/Climate/Older/Polar_Climate.html

Images

Fig. 1: Climate in an average polar area

http://www.bbc.co.uk/weather/world/city_guides/results.shtml?tt=TT004630

Fig. 2: Map of the globe that shows climate zones

<http://www.meteorologyclimate.com/Climate.htm>

Fig. 3: An Eskimo

<http://invisiblecollege weblog.leidenuniv.nl/2007/03/15/canada-s-inuit-visit-the-hague>

Fig. 4: A melting glacier

http://www.eohandbook.com/eohb2008/casestudy_thaw.html

Fig. 5: A Caribou

<http://www.treehugger.com/files/2009/04/canada-caribou-herds-dying-off-threatened.php>

Fig. 6: The sun moving through the sky during an Arctic summer

<http://www.belchfire.net/index.php?automodule=downloads&showfile=4255>

Date

T: understand a report on polar climates

- 1) What temperature is it when it is freezing?
- 2) Which other type of climate receives less than 250mm of precipitation?
- 3) What does fig. 1 (the graph) tell you?
- 4) Why is the picture of the Caribou particularly useful?
- 5) Why do you think people still fly, drive and eat beef when they know that these things cause pollution?
- 6) How might 'modern technology and clothing' make it easier for Eskimos to survive?
- 7) Why might Eskimos have moved to live in the Arctic despite the harsh weather?
- 8) Why might Captain Scott have survived if he had made his journey today instead of in 1912?
- 9) Why might migrating birds make the effort of flying to the Arctic to eat plants when the plants are only available to eat for a short time?
- 10) Why do you think the world record temperature is given in degrees centigrade (°C) **and** degrees Fahrenheit (°F)?
- 11) Why might it be 'surprising' that desert climates and polar climates can **both** receive less than 250mm of precipitation?
- 12) Why does the writer say 'as if this was not enough', in the context of 'Average temperatures do not rise above 10°C and, **as if this was not enough**, there are often hurricane-force winds that cause blizzards?
- 13) How could you find out the main points of the report by just reading a few lines, not the whole thing?

Date

T: understand a report on polar climates

- 1) 0°C
- 2) Desert
- 3) How much rainfall there is on average and what the average monthly maximum and minimum temperatures.
- 4) Most people wouldn't know what a Caribou is / looks like without the picture
- 5) I think people still fly, drive and eat beef when they know that these things cause pollution because they enjoy those things / they are selfish / they don't know they cause pollution.
- 6) Keep them warm / make transport easier / improve communications etc
- 7) Been forced off the land where they lived before / had particular skills suited to the conditions / no other choice (not 'they liked the cold')
- 8) More chance of being rescued when in trouble / technology making the journey easier (see question 6)
- 9) Lack of predators / coincides with barren time in their usual habitat
- 10) Some people might only understand Fahrenheit / it happened a long time ago when they used Fahrenheit
- 11) Because people think of them being completely opposite
- 12) Because under 10°C all the time is very cold which already makes life hard, then on top of that there are often hurricane-force winds that cause blizzards
- 13) Read the summary