



Earth Gauge

A National Environmental Education Foundation Program

The Real North Pole

Toys and elves, reindeer and caribou, penguins and polar bears...What is the North Pole really like? Amid the images portrayed on holiday advertisements and greeting cards at this time of year, Earth Gauge sheds some light on the science behind the real North Pole and breaks down some of the common myths associated with Earth's Polar Regions.

Location, Location, Location

There are actually two North Poles on Earth: the geographic Pole and the magnetic Pole. They are not in the same location. The geographic Pole is at a fixed location 90 degrees latitude north of the equator, at the top of Earth's axis. The magnetic Pole moves; it is the point at which Earth's magnetic field is exactly 90 degrees perpendicular to Earth's surface (currently located over Northern Canada, 1,000 miles south of the geographic Pole!). The magnetic Pole is the North that magnetic compasses are drawn to. The same is true for the South Pole. For the purposes of this fact sheet, "North Pole" will refer to the geographic North Pole.

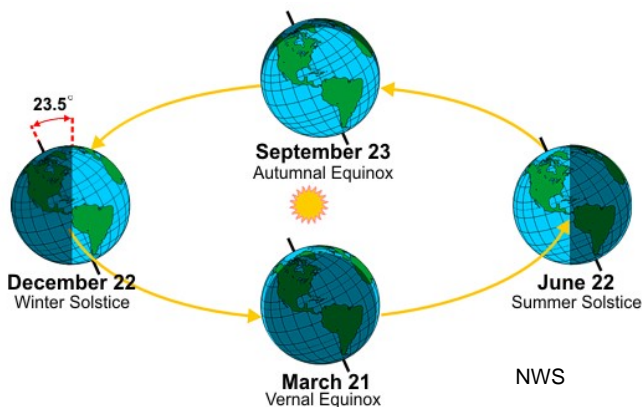


The geographic North Pole.
Courtesy of NOAA.

The North Pole lies in the Arctic – the region of the globe above 66.5 degrees North latitude. While the geographic South Pole (90 degrees South, at the bottom of Earth's axis) is located on the ice-covered continent of Antarctica, the North Pole lies on an ice-covered ocean surrounded by continents. The Arctic Ocean, bordered by Alaska, Canada, Greenland and Russia, is about 2.5 miles deep directly below the North Pole and covered in a layer of sea ice that is about six to nine feet thick.

A Tale of Two Seasons

All points on Earth receive six months of sunlight and six months of darkness each year. But, whereas the mid-latitudes have daily light-and-dark cycles, the North and South Pole receive six months of darkness or light at a time. Because the Earth is tilted at an angle of 23.5 degrees, sunlight is unequally distributed at the Poles as Earth orbits the Sun (the 66.5 degree angle of the Arctic Circle is 23.5 degrees less than 90 degrees). On the autumnal equinox – the first day of fall – in late September, the sun sets at the North Pole and does not rise again until the vernal equinox in the end of March. Thus, the North and South Poles experience two six-month seasons per year: summer and winter.



Seasons occur opposite each other in the Northern and Southern Hemispheres. When it is winter at the North Pole (September to March), it is summer at the South Pole. On the winter solstice (December 21 or 22) the North Pole is pointed the farthest away from the Sun. In the United States, the Sun is at its lowest angle in the sky on this day, and there is less daylight than on any other day of the year.

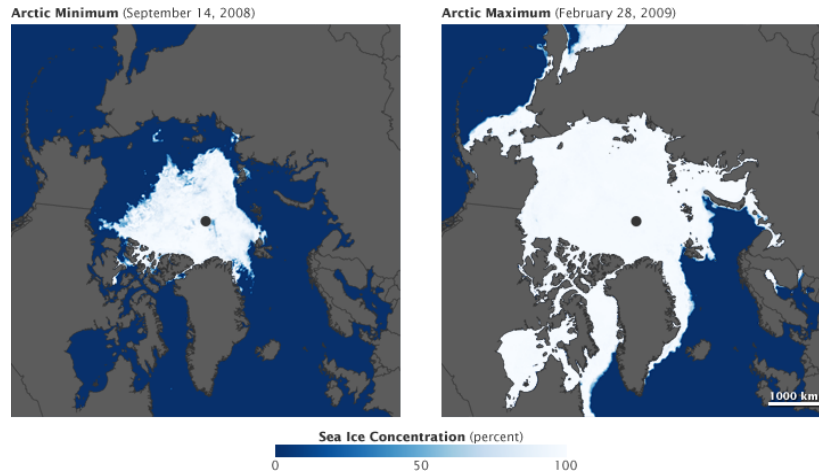
The extreme seasons experienced by the Arctic region lead to dramatic changes in the extent and thickness of sea ice (frozen ocean water that floats on the surface) throughout the year. The amount of sea ice covering the Arctic Ocean more than doubles in Northern Hemisphere winter.

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It's Snow Joke: The North Pole Is a Desert

The Pole is a snowy place – if you were standing on the sea ice there, the only thing you would see for miles is snow-covered sea ice. However, it is ecologically considered a cold or polar desert. Though it is difficult to monitor the weather directly at the Pole, nearby areas in the Arctic Basin receive less than 10 inches of liquid-equivalent precipitation per year (as compared to Denver and Boston, which receive about 15 and 40 inches per year, respectively). Some of the snow there blows in from other locations. Most of the snow does not melt because of the cold temperatures.

In mid-winter at the North Pole, temperatures can be 15 to 45 degrees below zero Fahrenheit compared to an average of 32 degrees Fahrenheit in summer. During winter, the only light that occurs at the Pole comes from stars, the moon and the Aurora Borealis, also known as Northern Lights.



Webcam image of the North Pole, April 2002.
NOAA.

Polar Bears or Penguins?

It is a myth that polar bears and penguins share the same habitat. In fact, they have never met unless, perhaps, in zoos and aquariums. Penguins live in the Antarctic (near the South Pole) and polar bears live in the Arctic (near the North Pole). There are 17 species of penguins that live in various parts of the Southern Hemisphere – in places such as South Africa, Chile and Antarctica. There is only one species of polar bear in the world and it lives in the Arctic.

Because polar bears and Antarctic penguins are both adapted to life on the ice, they have several things in common. They are insulated with a layer of fat under their skin, which keeps them warm in frigid waters. They are also covered in a thick layer of fur or feathers, and have black-and-white coloring that allows them to camouflage into their surroundings. They are also both great swimmers, spending much of their time on the edge of the sea ice.



Susanne Miller, U.S. FWS

Among their differences is food. A polar bear's favorite meal is seal, whereas a penguin's favorite meal is fish. Penguins are birds and polar bears are mammals. An adult male polar bear can stand up to 10 feet tall, while an adult Emperor penguin – the largest of the penguins – stands four feet tall. Perhaps one of their biggest differences is personality: seeing a penguin in its natural habitat might be a treat for a tourist, but it would be quite frightful to be standing on the sea ice with a hungry polar bear!

While no wildlife is found directly at the North Pole, many birds, mammals and fish live in the Arctic Ocean and along surrounding coasts. Besides polar bears, the Arctic is inhabited by caribou, walrus, seals and musk ox, in addition to many migratory birds that spend the summer there. There are even people living in small, modern cities such as Barrow, Alaska that lie within the Arctic Circle, and several indigenous tribes that live in Arctic villages.

The First Explorers

Decades before Santa established his village at the North Pole, humans were exploring the Arctic Ocean and trying to get to the Pole. After several attempts, Robert Peary and Matthew Henson became the first humans to reach the Pole in April, 1909. In modern times, scientists and explorers have reached the North Pole using a combination of ice breaker vessels, airplanes, helicopters and even submarines to perform important scientific studies and learn more about the region.

For a current satellite view of the North Pole, visit: <http://www.fourmilab.ch/cgi-bin/Earth>.
For real-time weather data, visit http://www.arctic.noaa.gov/np2003/gallery_np_weatherdata.html.

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