

An Introduction to the Poles



MadeClear Summer Teacher Academy

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What do you know about the
polar regions?

Chart Paper, Blue Marker, 5 minutes

Google Earth



Pole to Pole: Physical Features

	Arctic (North)	Antarctic (South)
What is it?	An ocean surrounded by continents	A continent surrounded by ocean
Ice Cap Features	Ice-covered ocean	Ice-covered Landform
Average Depth	8-10 ft	2 miles
Maximum Sea Ice Extent	5.4 million square miles	6 million square miles
Mean Temperature (F)	0 degrees	-60 degrees







Pole to Pole: Flora & Fauna

	Arctic (North)	Antarctic (South)
Don't be fooled!	Polar bears	Penguins
Plants	Tundra Tree/shrub line	No tundra No tree line
Mammals	Terrestrial (musk ox, caribou, reindeer, foxes, hares, wolves, bears)	No Terrestrial
Marine Mammals	Whales, seals, porpoises	Whales, seals, porpoises, penguins

Pole to Pole: Human Impact

	Arctic (North)	Antarctic (South)
Population	Native population	No permanent population
Primitive humans	Native people with long cultural record	No record of primitive humans
Civilizations	Human population 2 million + N 60 degree	No human population (scientific research stations)
Exploration	Prehistoric	James Cook 1773

More: Polar Regions

Antarctica: The Frozen Continent	Physical features	
Antarctic Ecosystem		
The Arctic: The Frozen Sea	Antarctica has mountains and volcanoes	The Arctic is mostly ice covered ocean
Arctic Ecosystem	The Antarctic is a continent surrounded by ocean	The Arctic is an ocean surrounded by continents
	Maximum sea ice extent: 8 million square miles	Maximum sea ice extent: 7 million square miles
	The area is 6 million square miles	The area is 5.4 million square miles
	The annual mean temperature at the South Pole is -60°F	The annual mean temperature at the North Pole is 0°F
	Total coastline: 18,000 miles	Total coastline: 25,000 miles
	Plants and wildlife	
		
	Antarctica has penguins	The Arctic has polar bears
	No tundra or tree lines	The tundra is well developed and marked by a tree shrubline
	No terrestrial mammals	Terrestrial mammals include musk ox, reindeer, caribou, foxes, hares, wolves, lemming, bears, and more
	Marine mammals include whales, porpoises and seals	Marine mammals include whales, porpoises, seals, and amphibious mammals
	Human impact	
		

<http://www.divediscover.whoi.edu/polar/index.html>

The Poles: Seasons

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polar Regions

- The Poles
- Comparing the Poles
- Seasons**
- Weather
- Human Impact

Antarctica: The Frozen Continent

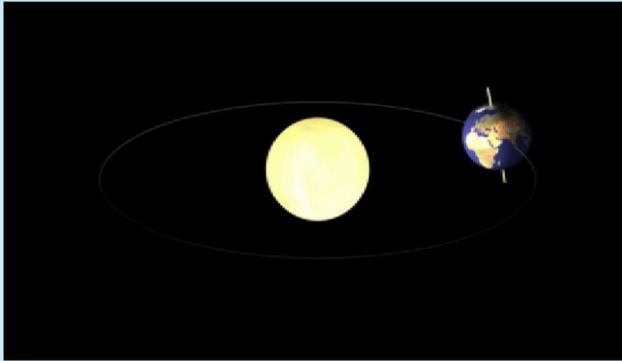
Antarctic Ecosystem

The Arctic: The Frozen Sea

Arctic Ecosystem

The Poles: Seasons

Because of the earth's tilt and orbit around the sun, the poles receive less energy and heat from the sun. This results in only two polar two seasons—summer and winter. In summer at the poles, the sun does not set, and in winter the sun does not rise.



Earth's Tilt

The Earth is slightly tilted—that is what gives us our seasons.

Here's how it works. On one side of its orbit around the sun, the Earth is tilted towards the sun. During this time, the northern hemisphere receives more heat so has higher temperatures—it is summer. Six months later, the Earth is on the other side of its orbit, and the Earth is tilted away from the sun. Now, the northern hemisphere receives less heat so it is colder—it is winter.



<http://www.divediscover.who.edu/polar/seasons.html>

Simulation: Arctic Ice Cap

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NASA Finds Thickest Parts of Arctic Ice Cap Melting Faster 02.29.12



[View 1980 image](#)
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This interactive illustrates how perennial sea ice has declined from 1980 to 2012. The bright white central mass shows the perennial sea ice while the larger light blue area shows the full extent of the winter sea ice including the average annual sea ice during the months of November, December and January. The data shown here were compiled by NASA senior research scientist Josefino Comiso from NASA's Nimbus-7 satellite and the U.S. Department of Defense's Defense Meteorological Satellite Program. Credit: NASA/Goddard Scientific Visualization Studio

<http://www.nasa.gov/topics/earth/features/thick-melt.html>



What story does
ice tell?

Thank You

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