

Life at the Top of the World

by John Bechtel



Part of the United States lies above the Arctic Circle, but except for some folks in Alaska, the Arctic Circle probably seems more like a concept than a place where real people live, work, raise families, and yes, nurture dreams. Some of us may even be hard pressed to find the Arctic Circle on a globe. We'll give you a hint: it is at the top of the world and looks a little like the diagram on this page. This is a map of the entire circumpolar region. If it looks strange it is because we usually don't look at a globe from the top, but from the side.

With this map as a guide, would you like to take a short quiz to test what you know about this part of the world? (*No one needs to know how you did.*) Please mark each of the following statements either true or false.

~ ARCTIC QUIZ ~

1. Most of the area above the Arctic Circle is a barren, frozen wasteland that supports little life other than a few hardy indigenous tribes, polar bears, and penguins.

2. There is a global political race to the Arctic Circle to claim oil rights to the land beneath the ice cap.
3. The ice in some parts of the High Arctic is over a mile thick.
4. Environmentalists are extremely concerned about reduced snowfall in the Arctic region.
5. If you got lost in the Arctic without a supply of drinking water, you could melt some fresh new ice for this purpose.
6. There is so much ice near the North Pole because large icebergs blow in from Greenland.
7. The Arctic Circle and the North Pole, each respectively, have one specific scientific and exact location.
8. The biggest challenge for Nordic nations above the Arctic Circle is getting basic health care and education to the indigenous peoples on their remote reservations.
9. Glaciers are especially big icebergs.
10. In the very far north of the Nordic nations, dog sleds and reindeer sleds are still the most reliable form of transportation.

So as not to tease our readers, we will tell you right now that all of the above statements are false, and we invite you to keep reading to find out why. You may find the explanations more intriguing than even the answers.

The Land

The Arctic is mostly about the water, not the land. There is no land beneath



The Land—Spitsbergen, Norway, in August: The largest and only permanently populated island of the Svalbard archipelago in northern Norway.

the North Pole. The vast majority of the area north of the Arctic Circle is water, the Arctic Ocean, approximately 5.4 million square miles of it, and in winter most of that ocean is under ice. Unlike the Antarctic, which has a whole continent of bedrock under its ice and is surrounded by oceans, the Arctic is an ocean almost locked in on all sides by land, covered by ice, and precipitation is rare. There is not much snow. The Arctic Ocean is between 2.5 and 3.5 miles deep, and it has active volcanoes submerged under some parts of it, with some of their peaks only a half mile below the surface of the ice.

Both the Arctic and the North Pole are moving targets. Some scientists define the Arctic as the area north of the tree line, where the landscape is frozen and dotted with scrub brush and lichens. Others define the Arctic as any locations in high latitudes where the average daily summer temperature does not rise above 10 degrees Celsius (50 degrees Fahrenheit). Technically, the Arctic Circle is an imaginary line that circles the globe at 66° 32" North.

There is the geographic North Pole,

which is somewhere on shifting ice floating in water about three miles deep. All lines of longitude end at the geographic North Pole, and no matter which way you face, you are looking south. Because the earth has a slight wobble as it turns on its axis (now there's something to keep you awake at night) the geographic North Pole also



The Ice—Icebreakers require three traits most normal ships lack: a strengthened hull, an ice-clearing shape, and the power to push through sea ice.

wobbles about a bit, about 30 feet over 7 years to be exact.

The magnetic North Pole is where all compasses point, about 500 miles from the geographic North Pole. If you inform your small children of these facts, they may have concerns about the timely arrival of Santa's gifts in a few weeks, particularly if he's using GPS.

The Ice

As an ocean, the Arctic is salt water, not suitable for drinking. Sea ice is frozen ocean water. It forms, grows, and melts in the ocean. Glaciers on the other hand, are land ice, formed from fresh water and snow. Icebergs are chunks of glaciers that break off and fall into the ocean. Lake ice is different from sea ice. Lake ice forms into smooth sheets of ice. Sea ice sometimes develops into a phantasmagoria of dream-like shapes and forms because of the turbulence of the ocean water beneath it. Between that and the aurora borealis, no wonder the far north is renowned for its mythical characters and stories.

When salt water freezes, an interesting thing happens. As it freezes



MS Nordsyssel, the Governor's vessel, docked at Ny-Ålesund.

PHOTO: HANNES GROBE



PHOTO: POLARTRAVEL.NET

it rejects its salt content. The remaining water that has not frozen, is burdened with extra salinity and becomes heavier. The ice stays on top and the heavy water sinks to the bottom, creating what is known as North Atlantic Deep Water. It takes much longer for a whole ocean to freeze over than it does for surface ice to form.

So if you were desperate for drinking water, you would be well advised to melt down some multiyear (old) ice because it will have lost its salinity and be safe. New ice would be salty.

About half of the northern ice cap melts each spring and summer, and is thinnest usually in September. In the summer the reduced ice cap is between six and nine feet thick. Locked in and sheltered as it is by land, Arctic ice is not as mobile as Antarctic ice which can

blow out to sea. As Arctic ice melts it breaks apart into ice floes, big chunks of ice that bump and grind into each other, and often pile up against each other into massive ridges. Many of these ridges survive the summer and get still thicker, 12-15 feet on average, and some up to 65 feet. It is estimated that 28% of all Arctic ice is this ridge, or multiyear ice.

As the dark winter recedes, bright sea ice reflects 80% of sunlight back into space. As the ice melts and is replaced with dark water, the ocean absorbs 90% of the sunlight. With each cycle of spring and summer melting, the Arctic Ocean loses some of its reflective surface and its dark waters start to absorb more of the sun's heat and its temperature rises. Scientists get concerned, not so much by changes in weather, which are often temporary, but when there is a net loss of Arctic ice over many cycles and many years. Thinner new ice results in a less stable ocean surface which can result in violent storms, even cyclones (tornados over water) that even fracture multi-year ice sheets, and fractured sheets melt faster. Scientists measure by satellite the overall area of polar ice, and they attempt to measure overall volume, or thickness of the ice, which is a little trickier. It is believed that the continued loss of Arctic ice will result in more erratic and unpredictable extreme

weather events, sometimes far from the Arctic itself.

The Climate

The Arctic region is by no means the coldest place on earth. Antarctica is, and there are places in Russia, Canada, Alaska, and the Great Plains states and provinces in the U.S. and Canada that have colder temperatures than the Arctic does, and the states near the Great Lakes in the U.S. get more snow from the moisture off the lakes. The gulf stream from the southern hemisphere warms many of the northern European countries, bestowing a temperate instead of brutal climate.

Climate change brings opportunities as well as challenges. The idea of shorter shipping routes across the top of the world, through the Northwest Passage from the Beaufort Sea in the west and the Canadian archipelago to Baffin Bay in the east, rather than the arduous trek down to the Panama Canal or the Suez Canal is intriguing and would represent a huge savings. However, further melting could cause more multiyear ice to drift into the Northwest Passage and possibly make it even more impassable.

There has been even more activity developing the Northeast Passage between Europe and Asia. An ice-free Arctic could shorten distances between the North Atlantic and East Asia by about 40%.

It is no wonder there has been renewed interest by all the world's rich nations in the next generation of icebreaker ships to clear paths through the ice.

The People

The Arctic comprises about 8% of the earth's surface, or about four times the size of the U.S., but it has only 4 million inhabitants. About 10% of this total are indigenous and are further divided into over 40 ethnic groups.

Indigenous peoples have coexisted peacefully in the far north for thousands of years, and in modern times these tribes have been encouraged to maintain their cultural traditions even as they fully assimilated into European nation states and society. Many of these groups are organized politically and have made progress in securing rights to land and natural resources. They are hardy and accustomed to change and adaptation. There are no reservations.

Because of technology, there is generally little difference between life in villages in the far north and others in the south of Nordic countries. There is infrastructure, there is modern healthcare, there are even universities and high tech research facilities, and of course, social media. Reindeer are raised as a food source, and occasionally for entertainment, but transportation is modern and

snowmobiles are ubiquitous. There is a commitment to peaceful coexistence of technology and tradition, and to the preservation of natural resources and activities, including hunting, fishing, and of course the polar bears. Sorry, penguins are to be found in Antarctica and polar bears are only to be found in the Arctic.

Resources and Trade

The second question of our quiz was false for two reasons. First, there is no land beneath the ice cap, only an ocean of water and ice. Secondly, according to Ms. Else Berit Eikeland, Norway's Senior Arctic Official, there is no race to resources. The petroleum resources in the Arctic are mainly in areas that are under national jurisdiction and subject to existing national legislation or where jurisdiction will be clarified in due time.

The Arctic Council is the only circumpolar forum for political cooperation at the government level. The indigenous people of the Arctic have not been ignored or sidelined, but given their rightful place as permanent participants. China, India, Italy, Japan, Republic of Korea and Singapore have all been added as observers and important shipping nations.

"Arctic Circle" articles will continue in future to keep you informed of events in this rapidly-changing part of the world.



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