

# A Field Guide to Glacial Ice



**THE ARCTIC INSTITUTE**  
CENTER FOR CIRCUMPOLAR SECURITY STUDIES

# Our Field Guide to Ice

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This field guide is inspired by a virtual discussion within the U.S. Interagency Arctic Research Committee's Collaboration (IARPC) web forum on the misuse and misunderstanding of ice terminology. It is the result of a collaboration between IARPC members, The Arctic Institute, and graphic designer Brittney Larko.

Definitions are derived from the U.S. National Snow & Ice Data Center website, a bibliography is found on the last page of this guide.

For more work by Brittney Larko, please visit <https://www.behance.net/brittneylarko>.

The Arctic ice cover plays an important role in maintaining the Earth's temperature—the shiny white ice reflects light and heat that the ocean would otherwise absorb, keeping the Northern Hemisphere cool.

This guide is intended as educational material for frequently used glacial ice terms. If you would like .jpg versions of any image for education use, please contact Victoria Herrmann at [victoria.herrmann@thearcticinstitute.org](mailto:victoria.herrmann@thearcticinstitute.org).

# What is a Glacier?

- A glacier is a mass of ice originating on land, typically having an area larger than 1/10 of a square kilometer. Most are found in mountain ranges. Today they occupy 10 percent of Earth's total land area.
- Glaciers are created when fallen snow is compressed over many years into large, thickened ice masses. They are thought to be remnants of the last ice age, when ice covered 32 percent of Earth's land and 30 percent of its oceans.
- Glaciers move, or have shown previous movement, from gravity. Changing pressure or stress and sliding at their base cause them to flow slowly.



# Ice Sheets

A continental mass of glacial land ice extending more than 50,000 square kilometers (20,000 square miles).

Only two ice sheets exist in our time, one in Greenland and the other in Antarctica. In past ice ages, ice sheets covered Canada and Scandinavia, leaving only ice caps and mountain glaciers today.

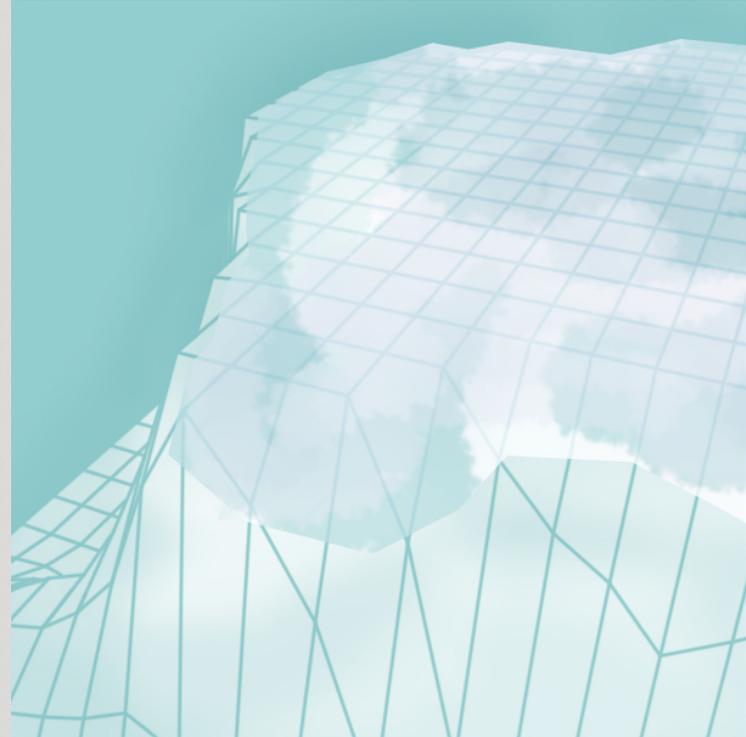


# Ice caps

A dome-shaped ice body with a radial flow, covering the subsurface topography and covering less than 50,000 km. They are usually flat on top and have relatively high elevation.

Ice flows away from its highest point, typically feeding a series of glaciers around the cap's edges.

*\*The term 'Polar ice caps' is used to refer to high-latitude regions covered in ice and are not strictly an ice cap.*



# Ice Shelf

A permanent, thick floating slab of ice that is connected to a landmass. Today, most ice shelves hug the coast of Antarctica, with some in Canada and Greenland.

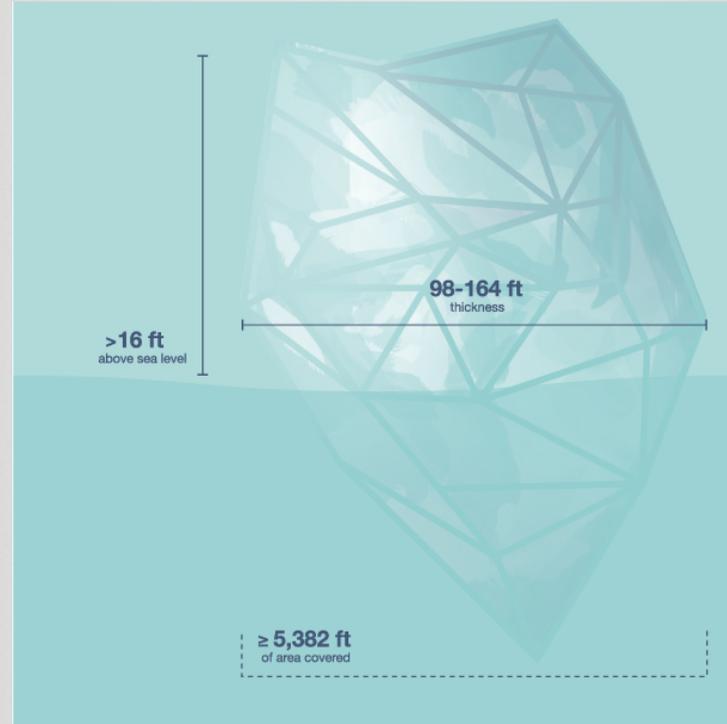
Ice shelves are formed when ice sheets slowly flow into the sea through glaciers or ice streams. In cold waters, the new ice floats on the surface, growing larger as more ice flows and shrinking when icebergs calve off their edges.



# Icebergs

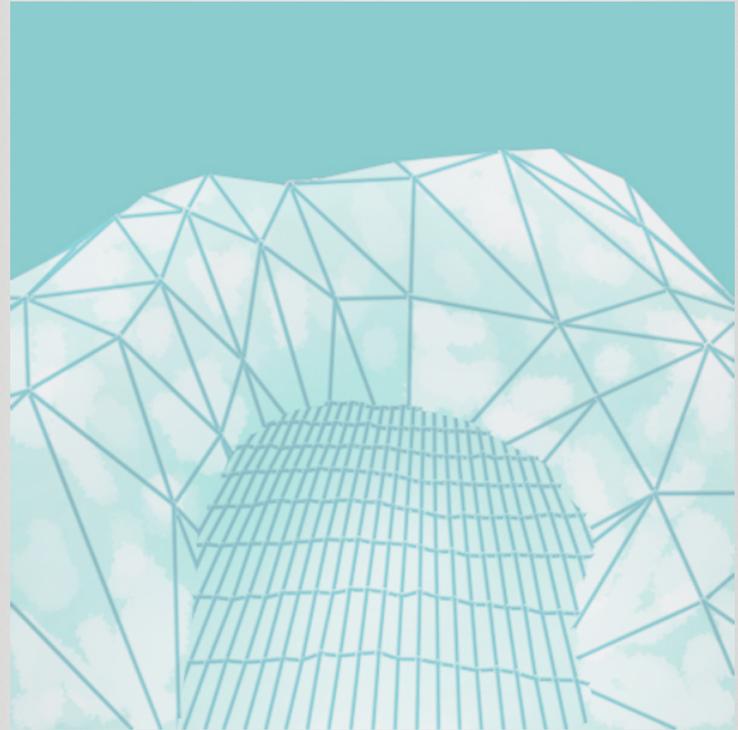
Pieces of ice larger than 5 meters (16 feet) across that formed on land and float into an ocean or lake. They travel with the ocean currents; when they reach warmer waters and air temperatures, they break up and melt.

Icebergs form when chunks of ice calve, or break off, from glaciers, ice shelves, or a larger iceberg.



# Icefield

Expanses of ice usually smaller than 50,000 square kilometers (19,300 square miles) in area. Its flow is influenced by the underlying mountains and topography. Mountains and ridges can jut out above the ice, further influencing its flow.



# Why is Glacial Ice Important?

- Glaciers serve as tourist attractions and as sources for drinking water, for crop irrigation, and for hydroelectric power generation.
- Ice sheets contain important records of our planet's climate history. Today, ice influences the weather and climate patterns of the Earth, including storm systems and frequency further south.
- The impacts of climate change are having a dramatic effect on glacial ice. With warmer air and ocean temperatures, the ice sheet in Greenland is in decline, with spikes in surface melt. Antarctica is witnessing the break-off of large ice shelves and melting. This melting is causing global sea level rise.



# Bibliography

“All About Glaciers.” *National Snow & Ice Data Center.*

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