

Explainer: Ice sheets and glaciers

By Douglas Fox / September 4, 2013

Ice covers nearly all of Antarctica's 14 million square kilometers (5.4 million square miles) of land. In some places, that ice is nearly 4 kilometers (2.5 miles) thick. It formed as snow piled up over many thousands of years. Gradually, the snow compacted into ice. Scientists call this vast, frozen blanket an ice sheet. A second, smaller ice sheet covers much of Greenland.



An ice sheet may look stationary, but it is always moving.

The lower layers are under crushing weight — in some places more than 350 times the pressure of Earth's atmosphere (or 5,000 pounds per square inch). This pressure squishes the hard ice like soft putty. The ice oozes, flowing from the interior of the continent out toward its edges. In some places, this flow is very slow — only a meter or so per year. But scientists have also found fast-flowing corridors where the ice moves hundreds of times that fast. These ice streams — better known as glaciers — can be 40 kilometers wide and hundreds of kilometers long.

Unlike ice sheets, glaciers are widespread on our planet. They are found in mountain ranges around the world, from the Andes in South America and the Himalayas in Asia to the Alps in Europe. Fed by snow that falls on the mountains, glaciers flow down U-shaped valleys. Some will go on to feed rivers that empty into lakes or the sea.

Power Words

Antarctica A continent mostly covered in ice surrounding the South Pole. Ice sheets cover about 98% of this southernmost continent. No country owns Antarctica and no one lives there permanently. Scientists, however, may come for up to a year at a time to study there.

glacier A slow-moving river of ice hundreds or thousands of meters deep. Glaciers are found in mountain valleys and also form as parts of ice sheets.

Greenland A large, mostly ice-covered island located between the Arctic and Atlantic oceans. It is a self-governed part of the Kingdom of Denmark. Greenland covers 2.16 million square kilometers (836,300 square miles) — or about as much land as Texas and New York combined. It is home to about 58,000 people.

ice sheet The broad blanket of ice, most of it kilometers deep, that covers most of Antarctica. A smaller ice sheet also blankets most of Greenland.

