

# Changes to Glaciers and Land Ice

## Glaciers

This data describes how glaciers around the world have changed over time.

## Background

**Claim:** Warmer temperatures cause glaciers and ice sheets to lose more water to melting than is added from new snow.

A glacier is a large mass of snow and ice that has built up over many years. In the United States, glaciers can be found in the Rocky Mountains, the Sierra Nevadas, the Cascades, and throughout Alaska. A glacier flows like a river, only much more slowly. In the mountains, glaciers get new snow added to them, which slowly turns into ice. A glacier loses ice because the ice melts and breaks off. When the melting and breaking off of ice is balanced by new snow added, the amount of water in the glacier stays about the same. When a glacier melts, it adds water to the oceans. When a lot of ice melts, this can cause sea levels to rise. The same kinds of changes occur on a much larger scale with the giant ice sheets that cover Greenland and Antarctica.

In many areas, glaciers provide communities with a source of drinking water as ice melts and flows into streams and then lakes.

## About the Data

This data is from long-term data collected at glaciers around the world. Scientists collect measurements to determine how much ice is in a glacier. A negative amount means that a glacier has lost ice. A positive amount means the glacier has gained ice. The graph shows 40 glaciers around the world. These glaciers have been measured consistently since the 1970s. Some have been measured since the 1940s. Data from these glaciers have been averaged together to show changes over time.

### Sources:

Reading adapted from Environmental Protection Agency Climate Change Indicators:  
<https://www.epa.gov/climate-indicators/climate-change-indicators-glaciers>

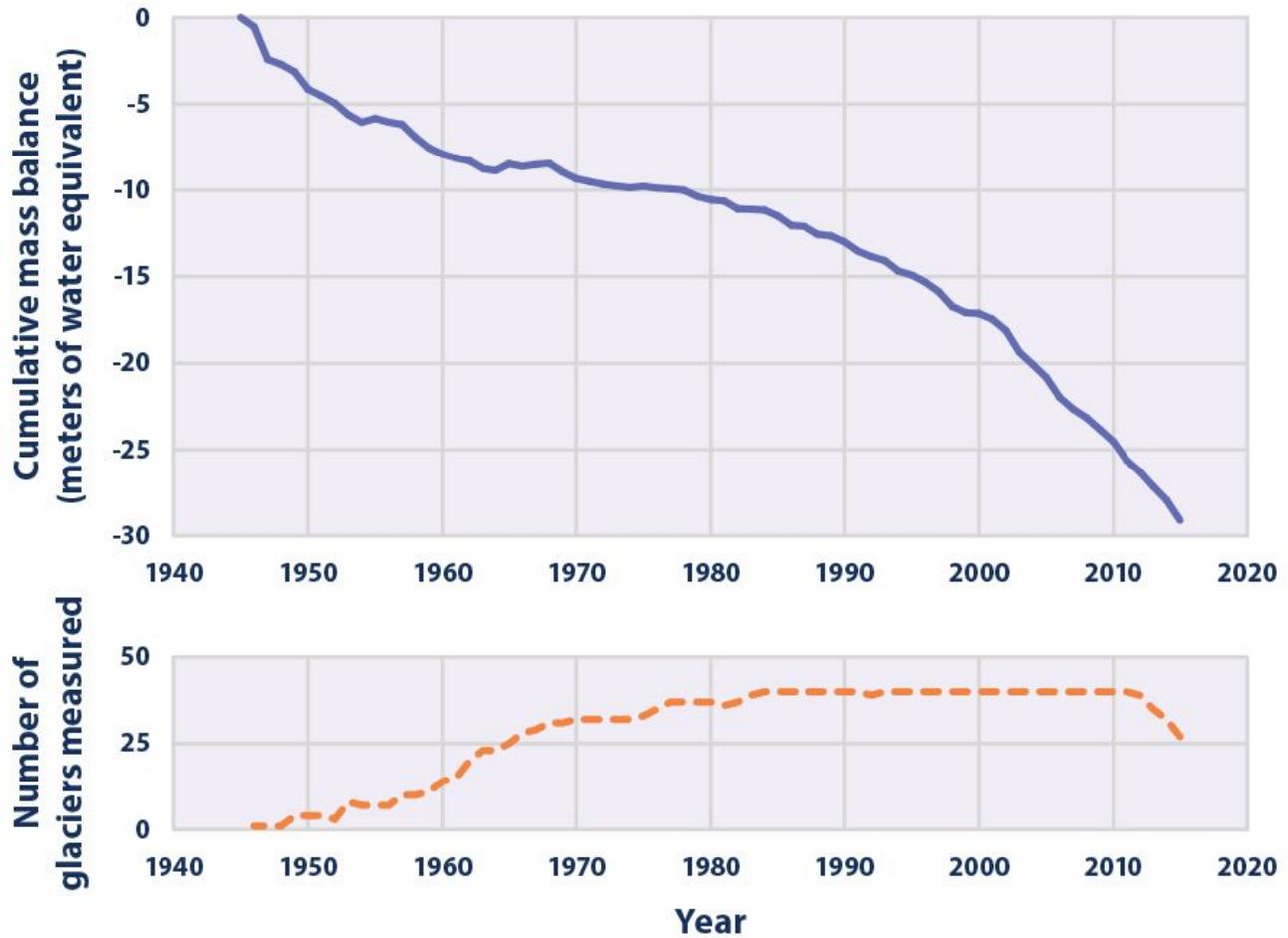
This information is provided by scientists and researchers at the Environmental Protection Agency and the U.S. Geological Survey. Both are United States government departments. Worldwide data is gathered by World Glacier Monitoring Service, a group of scientists from countries around the world.

Photographs of McCall Glacier, Alaska, 1958 and 2003



Sources:  
- Post, A. 1958. McCall Glacier. Glacier photograph collection. Boulder, Colorado: National Snow and Ice Data Center/World Data Center for Glaciology. <http://nsidc.org/data/g00472.html>.  
- Nolan, M. 2003. McCall Glacier. Glacier photograph collection. Boulder, Colorado: National Snow and Ice Data Center/World Data Center for Glaciology. <http://nsidc.org/data/g00472.html>.  
For more information, visit U.S. EPA's "Climate Change Indicators in the United States" at [www.epa.gov/climate-indicators](http://www.epa.gov/climate-indicators).

## Average Cumulative Mass Balance of "Reference" Glaciers Worldwide, 1945–2015



Data source: WGMS (World Glacier Monitoring Service). 2016 update to data originally published in: WGMS. 2015. Global glacier change bulletin no. 1 (2012–2013). Zemp, M., I. Gärtner-Roer, S.U. Nussbaumer, F. Hüsler, H. Machguth, N. Mölg, F. Paul, and M. Hoelzle (eds.). ICSU (WDS)/IUGG (IACS)/UNEP/UNESCO/WMO. Zurich, Switzerland: World Glacier Monitoring Service. [http://wgms.ch/downloads/WGMS\\_GGCB\\_01.pdf](http://wgms.ch/downloads/WGMS_GGCB_01.pdf).

For more information, visit U.S. EPA's "Climate Change Indicators in the United States" at [www.epa.gov/climate-indicators](http://www.epa.gov/climate-indicators).