

Research News

New research shows an iceless Greenland may be in the future

Island could be ice-free by year 3000, says new estimate



Scientists believe that Greenland may be ice-free by the year 3000.

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New research shows that an iceless Greenland may be in the future. If worldwide greenhouse gas emissions remain on their current trajectory, Greenland may be ice-free by the year 3000. By the end of the century, the island could lose 4.5% of its ice, contributing up to 13 inches of sea level rise.

"How Greenland will look in the future -- in a couple hundred years or in 1,000 years -- whether there will be Greenland, or at least a Greenland similar to today, is up to us," said NSF-supported researcher Andy Aschwanden of the [University of Alaska Fairbanks \(/cgi-bin/good-bye?https://news.uaf.edu/new-research-shows-an-iceless-greenland-may-be-in-our-future/\)](#) Geophysical Institute.

Aschwanden is lead author of a new study published in the June issue of [Science Advances \(/cgi-bin/good-bye?https://advances.sciencemag.org/content/5/6/eaav9396\)](#).

Greenland's ice sheet is huge, spanning more than 660,000 square miles. Today, the ice sheet covers 81% of Greenland and contains 8% of Earth's fresh water.

If greenhouse gas concentrations remain on their current trajectory, melting ice from Greenland alone could contribute as much as 24 feet to global sea level rise by the year 3000, which would place much of San Francisco, Los Angeles, New Orleans and other coastal cities underwater.

However, if greenhouse gas emissions are cut significantly, ice losses would be reduced. Instead, by 3000, Greenland may lose 8% to 25% of its ice and contribute up to 6.5 feet of sea level rise.

"Modeling studies like this show us the future of the Greenland Ice Sheet, which in turn can help us predict and plan for rising sea levels," said Cynthia Suchman, Arctic Natural Sciences Program Director in NSF's [Office of Polar Programs](#) https://www.nsf.gov/awardsearch/showAward?AWD_ID=1603799&HistoricalAwards=false, which funded the research.

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