

Capital Weather Gang

The Greenland ice sheet poured 197 billion tons of water into the North Atlantic in July alone

Ongoing extreme melt event continues, with more than half the ice sheet experiencing melting on July 31.

Melting ice forms a lake on free-floating ice jammed into the Ilulissat Icefjord during unseasonably warm weather on July 30, 2019, near Ilulissat, Greenland. (Sean Gallup/Getty Images)

By [Andrew Freedman](#) and [Jason Samenow](#)

August 1 at 11:10 AM

When one thinks of Greenland, images of an icebound, harsh and forbidding landscape probably come to mind, not a landscape of ice pocked with melt ponds and streams transformed into raging rivers. And almost

certainly not one that features wildfires.

Yet the latter description is exactly what Greenland looks like today, according to imagery shared on social media, scientists on the ground and data from satellites.

An extraordinary melt event that began earlier this week continues on Thursday on the Greenland ice sheet, and there are signs that about 60 percent of the expansive ice cover has seen detectable surface melting, including at higher elevations that only rarely see temperatures climb above freezing.

July 31 was the biggest melt day since at least 2012, with about 60 percent of the ice sheet seeing at least 1 millimeter of melt at the surface, and more than 10 billion tons of ice lost to the ocean from surface melt, according to [data from the Polar Portal](#), a website run by Danish polar research institutions, and the National Snow and Ice Data Center. Thursday could be another significant melt day, before temperatures drop to more seasonable levels.

According to Ruth Mottram, a climate researcher with the Danish Meteorological Institute, the ice sheet sent 197 billion tons of water pouring into the Atlantic Ocean

during July.

This is enough to raise sea levels by 0.5 millimeter, or 0.02 inches, in a one-month time frame, said Martin Stendel, a researcher with the institute.



Ruth Mottram

@ruth_mottram

For those keeping track, this means the [#Greenland #icesheet](#) ends July with a net mass loss of 197 Gigatonnes since the 1st of the month.

[https://
twitter.com/greenlandicesmb
b/status/1156789601182375936](https://twitter.com/greenlandicesmb/status/1156789601182375936)

...

Greenland

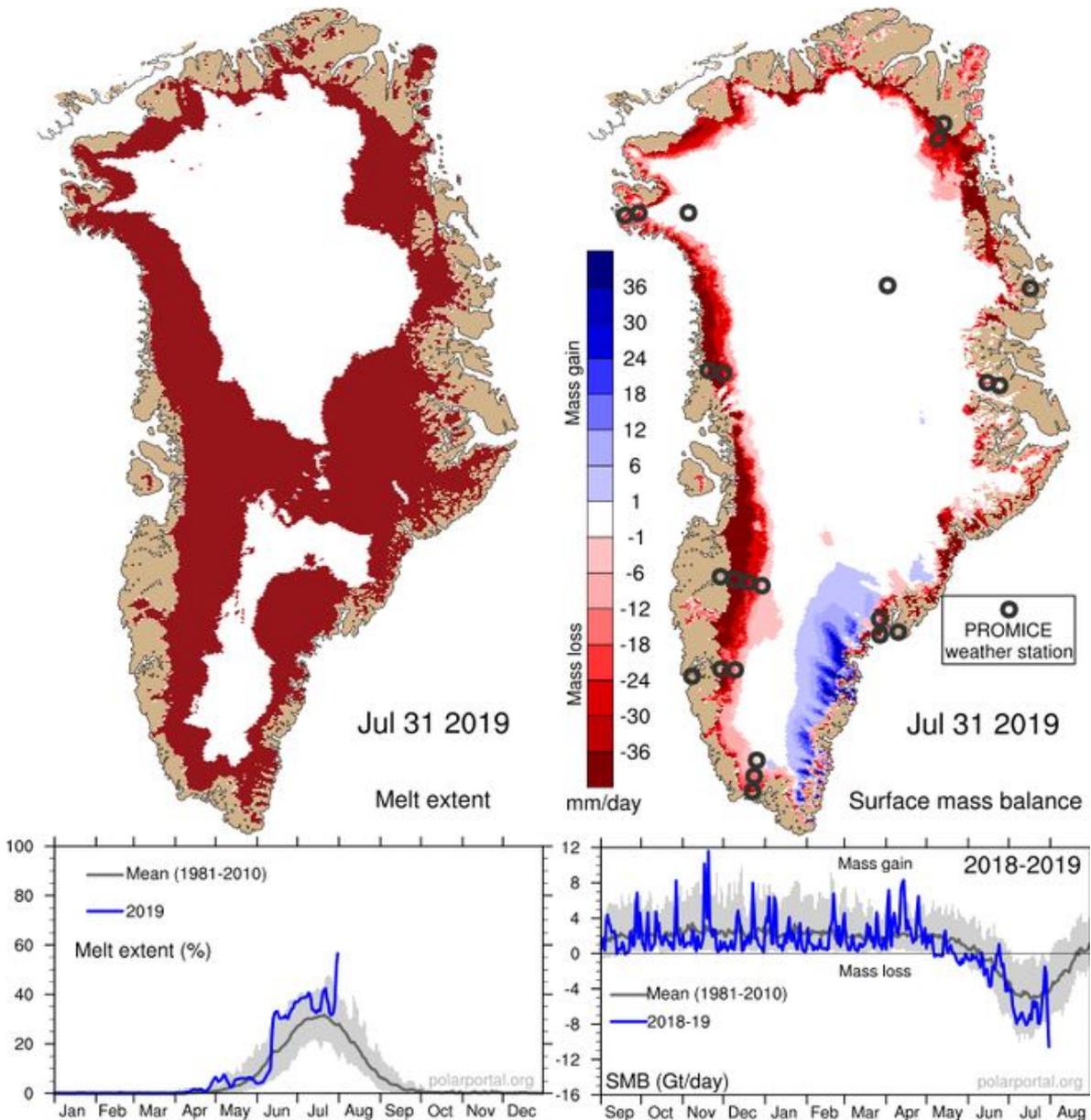
@greenlandicesmb

Ongoing heatwave in [#Greenland](#) - 31st July biggest melt day so far - 56% of the [#icesheet](#) had at least 1mm of melt at surface and more than 10 billion tonnes of ice was lost to the ocean by surface melt alone

Another big melt day expected today

[http://
polarportal.dk/en/greenland/s
urface-conditions/](http://polarportal.dk/en/greenland/surface-conditions/)

...



129

4:57 PM - Aug 1, 2019

[Twitter Ads info and privacy](#)

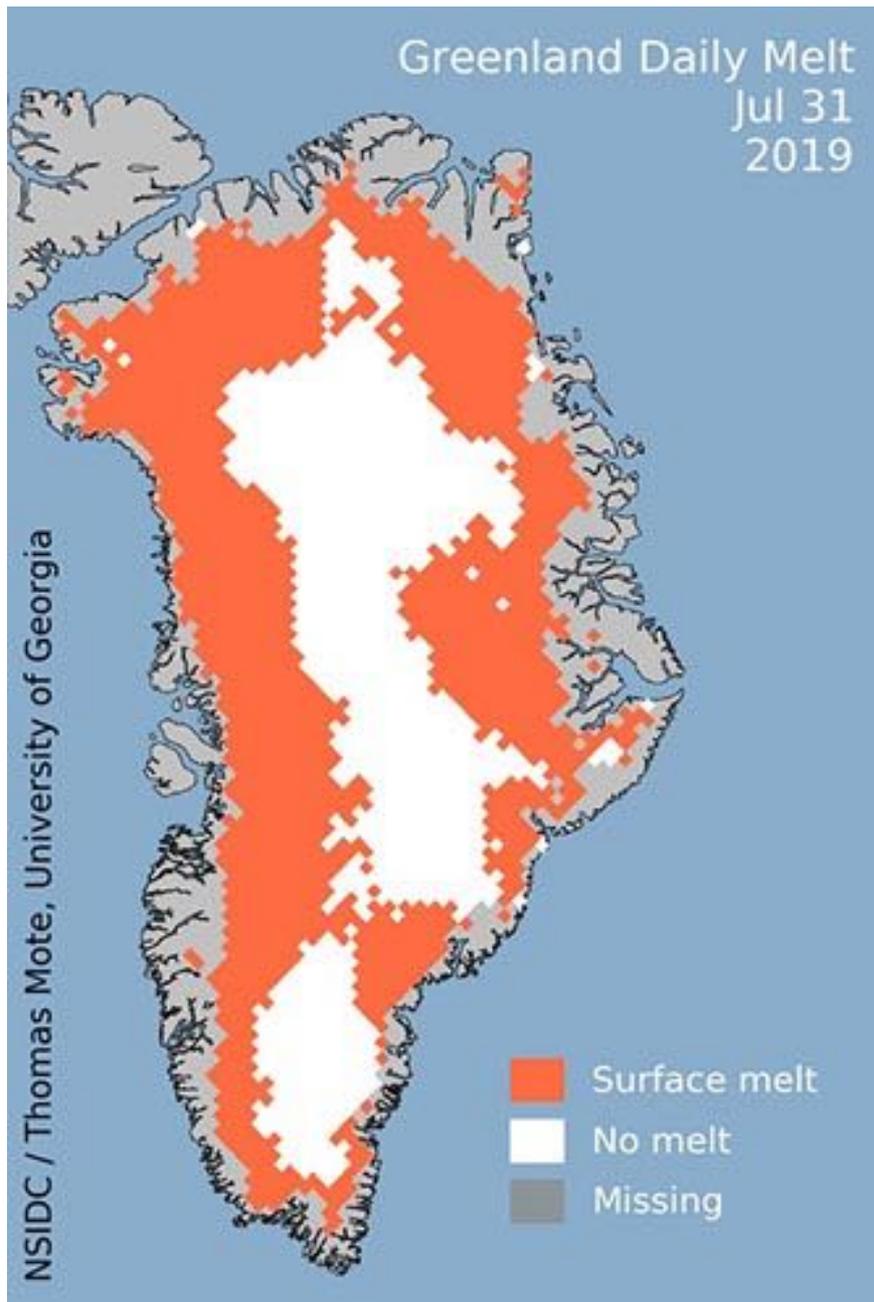
149 people are talking about this

This might seem inconsequential, but every increment of sea-level rise provides a higher launchpad for storms to

more easily flood coastal infrastructure, such as New York's subway system, parts of which flooded during Hurricane Sandy in 2012. Think of a basketball game being played on a court whose floor is gradually rising, making it easier for even shorter players to dunk the ball.

As a result of both surface melting and a lack of snow on the ice sheet this summer, "this is the year Greenland is contributing most to sea-level rise," said Marco Tedesco, a climate scientist at Columbia University.

Thanks to an expansive area of high pressure enveloping all of Greenland — the same weather system that brought extreme heat to Europe last week — temperatures in Greenland have been running up to 15 to 30 degrees above average this week.



(National Snow and Ice Data Center)

At Summit Station, which at 10,551 feet is located at the highest point in Greenland and rarely sees temperatures above freezing, the thermometer exceeded this mark for about 11 hours Tuesday, according to Christopher Shuman, a glaciologist at the University of Maryland-Baltimore County and NASA Goddard Space Flight

Center.

The ongoing melt event is being compared to a record extreme heat and melt episode that occurred in Greenland in 2012. While the extent of surface melt during that event may have exceeded this one so far, Shuman found that Summit Station experienced warmth that was greater “in both magnitude and duration” during the current event. The temperature only remained above freezing about half as long in 2012, and the peak temperature reached 34.02 degrees this year, whereas it only hit 33.73 in 2012. During the 2012 extreme event, however, 97 percent of the ice surface experienced melting.

“Like 2012, this melt event reached the highest elevations of the ice sheet, which is highly unusual,” says Thomas Mote, a professor of geography at the University of Georgia. “Both our satellite observations and the ground-based observations from Summit indicated melt on Tuesday.”

“The event itself was unusual that the warm air mass came from the east, and appears to be a part of the air mass that caused the record-breaking heat wave in

Europe. Most of our extreme melt days on the Greenland ice sheet are associated with warm air masses moving from the west and south. I cannot recall an instance where we saw such extensive melt associated with an air mass coming from Northern Europe,” Mote said.

The heat, along with below-average precipitation in parts of Greenland, has even sparked wildfires along the Greenland’s non-ice-covered western fringes. Satellite images and photos taken from the ground show fires burning in treeless areas, consuming mossy wetlands known as fen that can become vulnerable to fires when they dry out. These fires can burn into peatlands, releasing greenhouse gases buried long ago through decomposition of organic matter.



A wildfire burns in western Greenland on July 31, 2019. (Orla Joelsen via Twitter)

Studies have shown that ice melt periods like the one seen in 2012 typically occur about every 250 years, so the fact that another one is taking place only a few years later could be a sign of how climate change is upping the odds of such events.

According to DMI's Mottram, the short-term, extreme melt event is a sign of climate change's increasing influence on the Arctic.

“So yes it's weather but it shows that in spite of internal variability the background signal of a warming climate is

still “winning,” she said via a Twitter message. She said state-of-the-art climate computer models have been unable to simulate events like this, which hampers scientists’ ability to accurately predict Greenland ice melt and, therefore, future sea-level rise.

Glaciers

Heatwaves amplify near-record levels of ice melt in northern hemisphere

Greenland's ice sheet shrunk more in past month than in average year, experts warn

Jonathan Watts *Global environment editor*

@Jonathanwatts

Fri 2 Aug 2019 07:00 BST



Temperatures in Greenland have been 10C or more above normal this week. Photograph: Lucas Jackson/Reuters

The frozen extremities of the northern hemisphere are melting at a near-record rate as heatwaves buffet the Arctic, forest fires tear through Siberia and glaciers retreat on Greenland fjords and Alpine peaks.

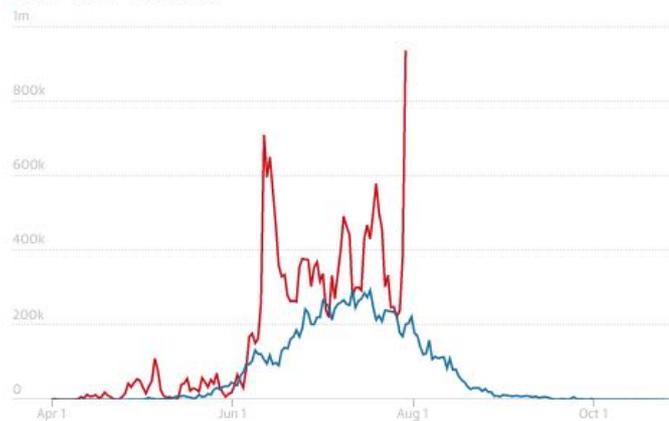
Unusually high temperatures are eating into ice sheets that used to be solid throughout the year, according to glaciologists, who warn this is both an amplifying cause and effect of man-made climate disruption across the globe.

Greenland – which is home to the world's second biggest ice sheet – is likely to have shrunk more in the past month than the average for a whole year between 2002 and now, according to provisional estimates from satellite data. Surface ice declined in July by 197 gigatonnes, equivalent to about 80m Olympic swimming pools, according to Ruth Mottram of the Danish Meteorological Institute. An additional third of that amount is likely to have been lost from glaciers and icebergs.

Greenland's ice is melting much faster this year than the historical average

Surface melt extent (sq km)

■ 2019 ■ 1981 - 2010 median



Guardian graphic | Source: National Snow and Ice Data Center, University of Colorado Boulder

The trend is accelerating. Wednesday was by far the biggest single-day melt-off of the year. "This was one of the highest ever and it is possible today [Thursday] will be even bigger because the heatwave is continuing," said Mottram.

With more than a month of the melt season to go, 2019 is already one of the top 10 years for ice loss in Greenland. The extent is thought unlikely to beat the record in 2012, but Luke Trusel, an assistant professor of geography at Penn State university, said the strength of the melt was greater.

Temperatures have been 10C or more above normal this week. Even at the summit of the ice sheet – which is 3,200 metres above sea level – there were 10 hours at or above freezing temperatures yesterday, which is extremely rare, he said. More broadly, ice core analysis has shown that the runoff is at levels expected only once every century, possibly even every millennium.

"What was highly unusual in the recent past is becoming the new normal. The Arctic is far more sensitive to warming now than even a few decades ago," Trusel said.

The impact on sea level has not yet been calculated, but the high temperatures are likely to accelerate the calving of the giant Petermann glacier, where

at least two huge cracks have been identified in recent years. Giant chunks of ice – each several kilometres in length – are expected to collapse into the ocean in the next few years.

The Russian government has belatedly declared a state of emergency in four Siberian regions and **reportedly sent troops to help extinguish forest fires** that have ripped across an area the size of Belgium.

This follows record-high temperatures in several locations. Last weekend, Norway **registered its joint hottest day ever**. More than 20 areas in the north of the country have recently experienced “tropical nights”, with temperatures above 20C from dusk until dawn.

In the Canadian Arctic, which is warming **two times faster** than the global average, locals have suffered record wildfires, and permafrost is melting decades ahead of predictions. Last month, the far northern community of Alert, Nunavut, registered a record-high of 21C, which a local meteorologist **said it had never been seen that close to the pole**.

European mountains have been affected too. Authorities have warned that the slopes below the Matterhorn’s 4,480-metre peak are increasingly prone to avalanches and landslides because the ice-core is warming. High-altitude lakes of meltwater **have also been reported** in the Mont Blanc mountain range in France.

In Switzerland, the threat to alpine glaciers has been so alarming that more regions are **using giant fleece blankets to try to insulate the ice from the hot air**. Even so, the country’s glaciers lost about 0.8bn tons of snow and ice during the two recent heatwaves, according to glaciologist **Matthias Huss**.

“Absolutely exceptional for a period of only 14 days in total!” **Huss said on Twitter**. “And the summer is not yet over.”