

# Warmer Arctic is the 'new normal'

By Victoria Gill

Science correspondent, BBC News, New Orleans

7 hours ago



Image caption

Sea ice that is more than four years old has largely disappeared in the Arctic

**A warming, rapidly changing Arctic is the "new normal" and shows no signs of returning to the reliably frozen region of the past.**

This is according to the US **National Oceanic and Atmospheric Administration's Arctic Report Card**.

<http://www.arctic.noaa.gov/Report-Card/Report-Card-2017>

Director of the administration's Arctic Researcher Program, Dr Jeremy Mathis, said the region did a great service to the planet - acting as a refrigerator.

"We've now left that refrigerator door open," he added.

Dr Mathis was speaking at the annual American Geophysical Union meeting in New Orleans, where NOAA presented its annual summation of Arctic science.

## **Starving polar bear: The 'face of climate change'?**

This is the 12th report the administration has produced. And although it pointed to "a few anomalies" in a recent pattern of warming in the Arctic region, Dr Mathis said: "We can confirm, it will not stay in its reliably frozen state."

"The thing I took that had the most resonance for me was we're able to use some

really long-term records to put the Arctic change into context - going back more than 1,500 years.

"What's really alarming for me is that we're seeing the Arctic is changing faster than at any rate in recorded history."

The speed of change, Dr Mathis added, was making it very hard for people to adapt. "Villages are being washed away, particularly in the North American Arctic - creating some of the first climate refugees," he said.

"And pace of sea level rise is increasing because the Arctic is warming faster than we anticipated even a decade ago."

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## The 2017 Arctic headlines



### Media caption

Which cities might flood as the ice melts?

Warmer air: Average annual air temperature over land was the second highest after 2016, with a temperature 1.6C above average.

Declining sea ice: The maximum winter sea-ice area, measured each March, was the lowest ever observed. Sea ice is also getting thinner each year.

Warmer ocean: Sea surface temperatures in August 2017 were 4C above the average in the Barents and Chukchi seas. Surface waters of the Chukchi Sea have warmed by more than half a degree C per decade since 1982.

Plankton blooms: Springtime melting and retreating sea ice allows sunlight to reach the upper layers of the ocean, meaning more of these microscopic marine plants can photosynthesise.

Greener tundra: Overall vegetation, including plants getting bigger and leafier

and shrubs and trees taking over. Grassland or tundra, increased across the Arctic in 2015 and 2016, as measured by satellite.

Ups and downs for snow: For the 11th year in the past 12, snow cover in the North American Arctic was below average, with communities experiencing earlier snow melt. The Eurasian part of the Arctic saw above average snow cover extent in 2017 - the first time that has happened since 2005.

Less melt on Greenland Ice Sheet: Melting began early on the Greenland Ice Sheet in 2017, but slowed during a cooler summer, resulting in below-average melting when compared with the previous nine years. Overall, the Greenland Ice Sheet, a major contributor to sea-level rise, continued to lose mass this past year, as it has since 2002 when measurements began.

*Source: 2017 NOAA Arctic Report Card*

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Scientists say it is clear that human-induced climate change is contributing to making the Arctic a warmer and more dynamic place.

"When we look at the darkening of the Arctic," said Dr Mathis, "reflective, icy surfaces are melting to reveal darker surfaces that absorb more of the Sun's energy. "So it probably only took a little bit of human-induced change to start the Arctic down this cascading pathway; a little bit of ice melting led to a little bit of warming, which led to more ice melting, which led to more warming.

"And now we're seeing an acceleration - a runaway effect that may eventually be a catastrophic runaway effect starting to take hold in the Arctic."

Oceanographer and retired US Navy Rear Admiral Timothy Gallaudet, who was appointed by the Trump Administration as acting administrator of NOAA, was asked during the Arctic report presentation about the response of the White House to the findings.

Many scientists viewed President Trump's recent decision to withdraw the US from the Paris Climate Agreement as clear evidence of his scepticism about human-induced climate change.

He said that the White House was "addressing and acknowledging it and factoring it in to their agenda".

Dr Mathis added that information coming from this report was "beyond reproach". "They're facts. Facts weighted in thousands and thousands of scientific measurements that have been validated and peer reviewed by a community of experts working in the area for decades.

"Policy-makers can use those facts as they see fit."

## 2017 Headlines

[Try watching this video on www.youtube.com](https://www.youtube.com)

**Arctic shows no sign of returning to reliably frozen region of recent past decades**

Despite relatively cool summer temperatures, observations in 2017 continue to indicate that the Arctic environmental system has reached a 'new normal', characterized by long-term losses in the extent and thickness of the sea ice cover, the extent and duration of the winter snow cover and the mass of ice in the Greenland Ice Sheet and Arctic glaciers, and warming sea surface and permafrost temperatures.

## Highlights

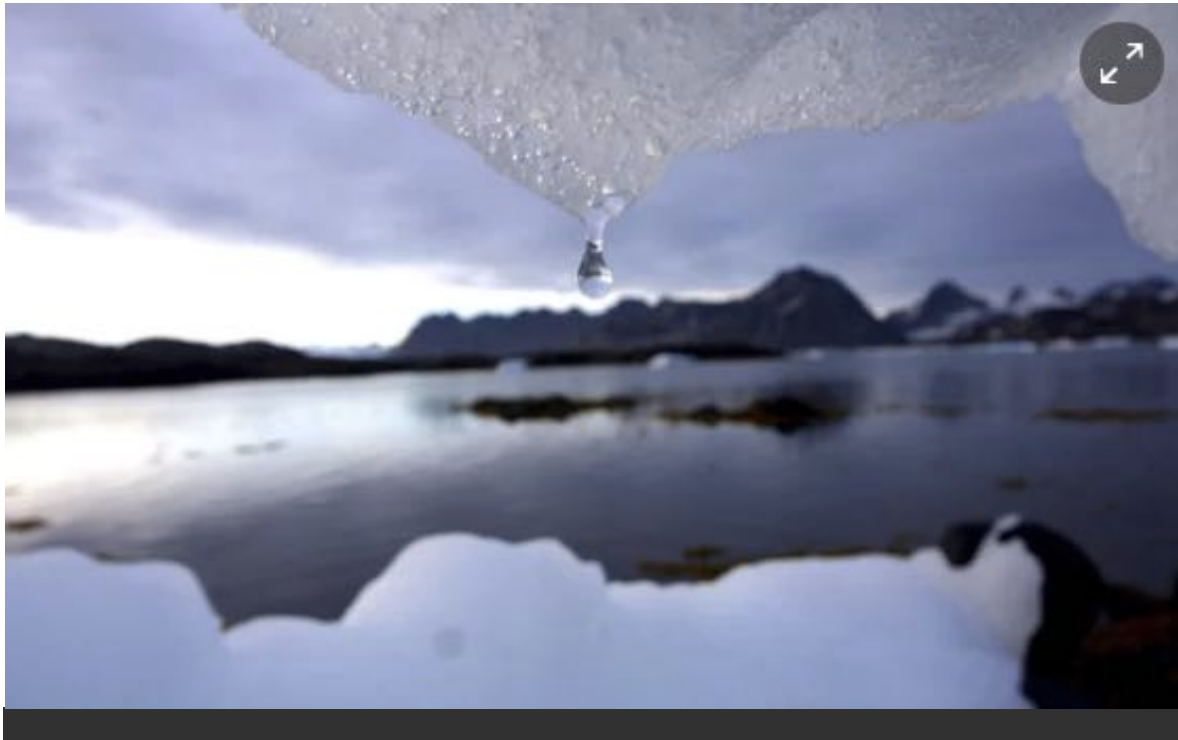
- The average **surface air temperature** for the year ending September 2017 is the 2nd warmest since 1900; however, cooler spring and summer temperatures contributed to a rebound in snow cover in the Eurasian Arctic, slower summer sea ice loss, and below-average melt extent for the Greenland ice sheet.
- The **sea ice cover** continues to be relatively young and thin with older, thicker ice comprising only 21% of the ice cover in 2017 compared to 45% in 1985.
- In August 2017, **sea surface temperatures** in the Barents and Chukchi seas were up to 4° C warmer than average, contributing to a delay in the autumn freeze-up in these regions.
- Pronounced increases in **ocean primary productivity**, at the base of the marine food web, were observed in the Barents and Eurasian Arctic seas from 2003 to 2017.
- Arctic **tundra** is experiencing increased greenness and record permafrost warming.
- Pervasive changes in the environment are influencing **resource management** protocols, including those established for fisheries and wildfires.
- The unprecedented rate and global reach of Arctic change disproportionately affect the **people of northern communities**, further pressing the need to prepare for and adapt to the new Arctic.

# Arctic permafrost thawing faster than ever, US climate study finds

Sea ice also melting at fastest past in 1,500 years, US government

scientists find

‘The Arctic is a very different place than it was even a decade ago’ – author



An iceberg melts in Kulusuk, Greenland, near the Arctic circle. The far northern region is warming twice as fast as the rest of the globe. Photograph: John Mcconnico/AP

### **Associated Press**

Tuesday 12 December 2017 19.04 GMT

Last modified on Tuesday 12 December 2017 22.44 GMT

Permafrost in the Arctic is thawing faster than ever, according to a new US government report that also found [Arctic](#) seawater is warming and sea ice is melting at the fastest pace in 1,500 years.

The annual report released on Tuesday by the National Oceanic and Atmospheric Administration showed slightly less warming in many measurements than a record hot 2016. But scientists remain concerned because the far northern region is warming twice as fast as the rest of the globe and has reached a level of warming that’s unprecedented in modern times.

The Arctic has traditionally been the refrigerator to the planet, but the door of the refrigerator has been left open

### **Jeremy Mathis**

“2017 continued to show us we are on this deepening trend where the Arctic is a very different place than it was even a decade ago,” said Jeremy Mathis, head of NOAA’s

Arctic research program and co-author of the 93-page report.

Findings were discussed at the American Geophysical Union meeting in New Orleans.

“What happens in the Arctic doesn’t stay in the Arctic; it affects the rest of the planet,” said acting NOAA chief Timothy Gallaudet. “The Arctic has huge influence on the world at large.”

Permafrost records show the frozen ground that many buildings, roads and pipelines are built on reached record warm temperatures last year nearing and sometimes exceeding the thawing point. That could make them vulnerable when the ground melts and shifts, the report said. Unlike other readings, permafrost data tend to lag a year.

Preliminary reports from the US and Canada in 2017 showed permafrost temperatures are “again the warmest for all sites” measured in North America, said study co-author Vladimir Romanovsky, a professor at the University of Alaska in Fairbanks.

Arctic sea ice usually shrinks in September and this year it was only the eighth lowest on record for the melting season. But scientists said they were most concerned about what happens in the winter – especially March – when sea ice is supposed to be building to its highest levels.

Arctic winter sea ice maximum levels in 2017 were the smallest they’ve ever been for the season when ice normally grows. It was the third straight year of record low winter sea ice recovery. Records go back to 1979.

About 79% of the Arctic sea ice is thin and only a year old. In 1985, 45% of the sea ice in the Arctic was thick, older ice, said NOAA Arctic scientist Emily Osborne.

New research looking into the Arctic’s past using ice cores, fossils, corals and shells as stand-ins for temperature measurements show that Arctic ocean temperatures are rising and sea ice levels are falling at rates not seen in the 1,500 years. And those dramatic changes coincide with the large increase in carbon dioxide levels in the air, the report said.



'Soul-crushing' video of starving polar bear exposes climate crisis, experts say

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This isn't just a concern for the few people who live north of the Arctic circle. Changes in the Arctic can alter fish supply. And more ice-free Arctic summers can lead to countries competing to exploit new areas for resources. Research also shows changes in Arctic sea ice and temperature can alter the jet stream, which is a major factor in US weather.

This is probably partly responsible for the current unusual weather in the United States that brought destructive wildfires to California and a sharp cold snap to the south and east, according to NOAA scientist James Overland and private meteorologist expert Judah Cohen.

“The Arctic has traditionally been the refrigerator to the planet, but the door of the refrigerator has been left open,” Mathis said.

Outside scientists praised the report card.

“Overall, the new data fit with the long-term trends, showing the clear evidence of warming causing major changes,” in the Arctic, said Pennsylvania State University ice scientist Richard Alley.

## **Polar bear video: Is it really the 'face of climate change'?**

12 December 2017

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CATERS NEWS

Image caption

Campaigners filmed the starving bear searching for food

**It is harrowing footage. An emaciated polar bear searches for food on Baffin Island, north-eastern Canada.**

Exhausted, it drags one leg slowly behind it, eventually trying to eat some discarded seating foam among rubbish humans have left.

Polar bears hunt from the sea ice, which is diminishing every year, and the photography team are certain the unfortunate animal died within days.

**Watch the video here**

"This is what starvation looks like," wrote one of the photographers, Paul Nicklen.

"The muscles atrophy. No energy. It's a slow, painful death."

Mr Nicklen's colleague, Cristina Mittermeier, said: "We cried as we filmed this dying bear. This is the face of climate change."

The clip has gone viral, widely shared as a warning about the dangers of climate change. But is there more to it?

**'Public relations exercise'**



Mr Nicklen and Ms Mittermeier are co-founders of the conservation group Sea Legacy, with a declared mission to "use the power of storytelling to create the change we want to see".

**Canada's National Post newspaper argues:** "These images aren't the work of a scientist, an impartial documentarian or even a concerned bystander. They are part of a very calculated public relations exercise."

This particular animal could also simply have been sick. Biologist Jeff Higdon, writing on Twitter, speculated that it could have some form of aggressive cancer.

"It's not starving because the ice suddenly disappeared and it could no longer hunt seals," he said. "The east Baffin coast is ice free in summer. It's far more likely that it is starving due to health issues." However, he warned that he could not be sure.

**Polar bears travel further on ice**

**Polar bears fail to adapt to warming**

**How plastic is killing our sea creatures**

Polar bears feed intermittently, often going long periods without food and feasting on huge quantities of seal meat and fat when available.

**Leo Ikakhik, who has spent years monitoring polar bears in Canada's Nunavut region, told CBC starving bears were not unheard of.**



Image copyright

GETTY IMAGES

Image caption

Healthy bears - such as this one in Manitoba - weigh about 400kg on average

"I wasn't totally surprised," he told the broadcaster. "These things happen. Everybody probably was shocked to see a really skinny bear, but this is not my first time seeing something like this."

He also speculated that the bear was either ill or suffering from an injury that prevented it from hunting.

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## Why didn't they help?

Despite the controversy, photographer Paul Nicklen made clear from the start that the polar bear's history was unclear.

"We cannot prove that he is in this condition because of a lack of sea ice," he wrote in his original August caption. "But is it a glimpse into the future as ice reaches its lowest extent in recorded history?"

**Speaking to National Geographic, Ms Mittermeier said : "Although I cannot say with certainty that this bear was starving because of climate change, I do know for sure that polar bears rely on a platform of sea ice from which to hunt."**

Both photographers have been criticised for not helping the bear but feeding wild polar bears is illegal in Canada - and even if it was, Mr Nicklen said, "it's not like I walk around with a tranquiliser gun or 400 pounds of seal meat".

**Ms Mittermeier told National Geographic: "Approaching a starving predator, especially when we didn't have a weapon, would have been madness."**

"I am trying not to be hurt or saddened by the many negative comments generated by this story," she added. "Instead, I am focusing on the thousands of positive reactions."

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