

The New York Times

Warming in Arctic Raises Fears of a 'Rapid Unraveling' of the Region

By **John Schwartz** and **Henry Fountain**

Dec. 11, 2018

Want climate news in your inbox? Sign up here for **Climate Fwd.**, our email newsletter.

Persistent warming in the Arctic is pushing the region into “uncharted territory” and increasingly affecting the continental United States, scientists said Tuesday.

“We’re seeing this continued increase of warmth pervading across the entire Arctic system,” said Emily Osborne, an official with the National Oceanic and Atmospheric Administration, who presented the agency’s annual assessment of the state of the region, the “Arctic Report Card.”

The Arctic has been warmer over the last five years than at any time since records began in 1900, the report found, and the region is warming at twice the rate as the rest of the planet.

Dr. Osborne, the lead editor of the report and manager of NOAA’s Arctic Research Program, said the Arctic was undergoing its “most unprecedented transition in human history.”

In 2018, “warming air and ocean temperatures continued to drive broad long-term change across the polar region, pushing the Arctic into uncharted territory,” she said at a meeting of the American Geophysical Union in Washington.

The rising air temperatures are having profound effects on sea ice, and on life on land and in the ocean, scientists said. The impacts can be felt far beyond the region, especially since the changing Arctic climate may be influencing extreme weather events around the world.

The new edition of the report does not present a radical break with past installments, but it shows that troublesome trends wrought by climate change are intensifying. Air temperatures in the Arctic in 2018 will be the second-warmest ever recorded, the report said, behind only 2016.

Susan M. Natali, an Arctic scientist at Woods Hole Research Center in Massachusetts who was not involved in the research, said the report was another warning going unheeded. “Every time you see a report, things get worse, and we’re still not taking any action,” she said. “It adds support that these changes are happening, that they are observable.”

The warmer Arctic air causes the jet stream to become “sluggish and unusually wavy,” the researchers said. That has possible connections to extreme weather events elsewhere on the globe, including last winter’s severe storms in the United States and a bitter cold spell in Europe known as the “Beast From the East.”

The jet stream normally acts as a kind of atmospheric spinning lasso that encircles and contains the cold air near the pole; a weaker, wavering jet stream can allow Arctic blasts to travel south in winter and can stall weather systems in the summer, among other effects.

“On the East Coast of the United States where the other part of the wave comes down,” Dr. Osborne said, “you have these Arctic air temperatures that are surging over into the lower latitudes and causing these crazy winter storms.”

The rapid warming in the upper north, known as Arctic amplification, is tied to many factors, including the simple fact that snow and ice reflect a lot of sunlight, while open water, which is darker, absorbs more heat. As sea ice melts, less ice and more open water create a “feedback loop” of more melting that leads to progressively less ice and more open water.

And as Arctic waters become increasingly ice-free, there are commercial and geopolitical implications: New shipping routes may open, and rivalries with other countries, including Russia, are intensifying.

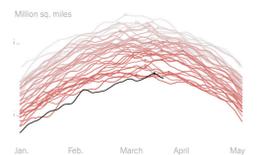
More Reporting on the Arctic

Sea ice is diminishing, quickly.

In the Arctic, the Old Ice Is Disappearing May 14, 2018



Arctic Sea Ice Missed a Record Low This Winter. Barely. March 23, 2018



As Arctic Ice Vanishes, New Shipping Routes Open May 3, 2017



The federal government has issued the report card since 2006. It has continued to do so under the Trump administration, which has approved other scientific reports about global warming and the human greenhouse gas emissions that cause it, despite President Trump’s rejection of climate science.

Over all, “the effects of persistent Arctic warming continue to mount,” the new report said. “Continued warming of the Arctic atmosphere and ocean are driving broad change in the environmental system in predicted and, also, unexpected ways.”

Some of the findings in the research, provided by 81 scientists in 12 countries, included:

- The wintertime maximum extent of sea ice in the region, in March of this year, was the second lowest in 39 years of record keeping.
- Ice that persists year after year, forming thick layers, is disappearing from the Arctic. This is important because the very old ice tends to resist melting; without it, melting accelerates. Old ice made up less than 1 percent of the Arctic ice pack this year, a decline of 95 percent over the last 33 years.
- Donald K. Perovich, a sea-ice expert at Dartmouth College who contributed to the report, said the “big story” for ice this year was in the Bering Sea, off western Alaska, where the extent of sea ice reached a record low for virtually the entire winter. During two weeks in February, normally a time when sea ice grows, the Bering Sea lost an area of ice the size of Idaho, Dr. Perovich said.
- The lack of ice and surge of warmth coincides with rapid expansion of algae species in the Arctic Ocean, associated with harmful blooms that can poison marine life and people who eat the contaminated seafood. The northward shift of the algae “means that the Arctic is now vulnerable to species introductions into local communities and ecosystems that have little to no prior exposure to this phenomenon,” the report said.
- Reindeer and caribou populations have declined 56 percent in the past two decades, dropping to 2.1 million from 4.7 million. Scientists monitoring 22 herds found that two of them were at peak numbers without declines, but five populations had declined more than 90 percent “and show no sign of recovery.”
- Tiny bits of ocean plastic, which can be ingested by marine life, are proliferating at the top of the planet. “Concentrations in the remote Arctic Ocean are higher than all other ocean basins in the world,” the report said. The microplastics are also showing up in Arctic sea ice. Scientists have found samples of cellulose acetate, used in making cigarette filters, and particles of plastics used in bottle caps and packaging material.

“The report card continues to document a rapid unraveling of the Arctic,” said Rafe Pomerance, chairman of Arctic 21, a network of organizations focused on educating policymakers and others on Arctic climate change. “The signals of decline are so powerful and the consequences so great that they demand far more urgency from all governments to reduce emissions.”

The report was issued as delegates from nearly 200 countries were meeting in Poland for the latest round of climate talks stemming from the Paris Agreement, the landmark climate accord that was designed to reduce planet-warming emissions.

Mr. Trump has vowed to withdraw from the agreement. At the talks, the United States joined with Saudi Arabia, Kuwait and Russia in refusing to endorse a major report to the conference on the effects of climate change around the world.

At a news conference Tuesday announcing the findings of the Arctic report, Tim Gallaudet, a retired Navy admiral who is the acting NOAA administrator, was asked if he or any other senior NOAA officials had ever briefed Mr. Trump on climate change or the changes in the Arctic.

“The simple answer is no,” he said.

For more news on climate and the environment, follow @NYTClimate on Twitter.

John Schwartz is part of the climate team. Since joining The Times in 2000, he has covered science, law, technology, the space program and more, and has written for almost every section. @jswatz • Facebook

Henry Fountain covers climate change, with a focus on the innovations that will be needed to overcome it. He is the author of “The Great Quake,” a book about the 1964 Alaskan earthquake. @henryfountain • Facebook

A version of this article appears in print on Dec. 11, 2018, on Page A10 of the New York edition with the headline: Scientists Warn of a 'Rapid Unraveling' of the Arctic

COMMENT OF THE MOMENT

S

Scott L

Illinois | Dec. 11

Times Pick

Oh please! The slight increase in temperature could “possibly” cause more severe weather? We have had “extreme weather” forever. What’s the proof it’s worse?

7 Replies 4 Recommend Share

Flag

[READ 273 COMMENTS](#)