

# Arctic Report Card 2022: The Arctic is getting rainier and seasons are shifting, with broad disturbances for people, ecosystems and wildlife

Wednesday 14 December 2022, by [DRUCKENMILLER Matthew L.](#), [MOON Twila](#), [THOMAN Rick](#) (Date first published: 13 December 2022).

**The annual report is also a reminder that what happens in the Arctic affects the rest of the world.**

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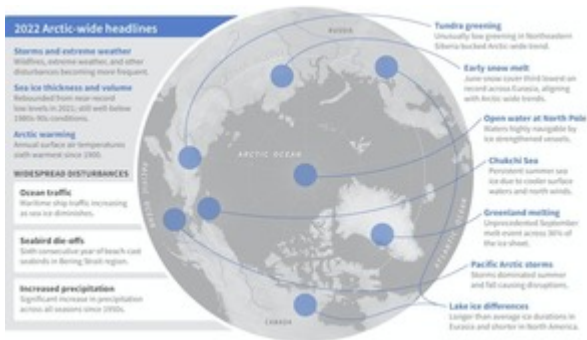
In the Arctic, the freedom to travel, hunt and make day-to-day decisions is profoundly tied to cold and frozen conditions for much of the year. These conditions are rapidly changing as the Arctic warms.

The Arctic is now seeing more rainfall when historically it would be snowing. Sea ice that once protected coastlines from erosion during fall storms is forming later. And thinner river and lake ice is making travel by snowmobile increasingly life-threatening.

Ship traffic in the Arctic is also increasing, bringing new risks to fragile ecosystems, and the Greenland ice sheet is continuing to send freshwater and ice into the ocean, raising global sea level

In the annual [Arctic Report Card](#), released Dec. 13, 2022, we brought together 144 other Arctic scientists from 11 countries to examine the current state of the Arctic system.

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Some of the Arctic headlines of 2022 discussed in the Arctic Report Card. NOAA Climate.gov

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## The Arctic is getting wetter and rainier

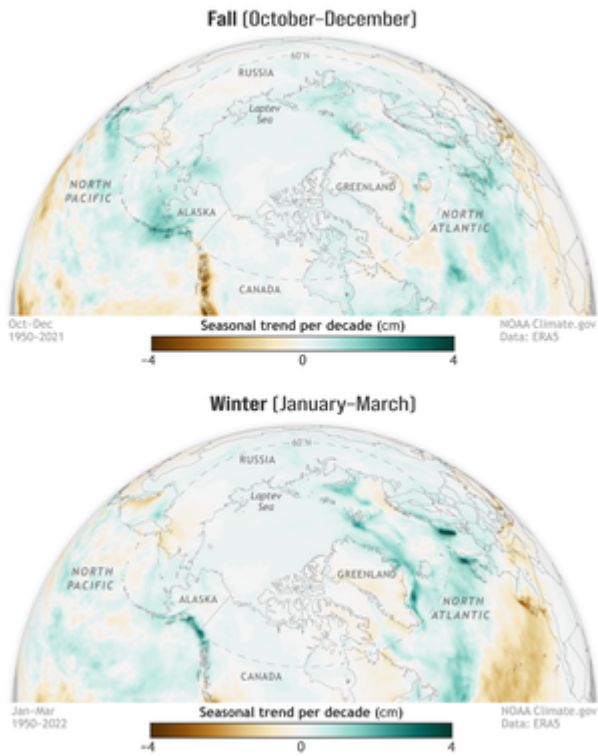
We found that [Arctic precipitation is on the rise across all seasons](#), and these seasons are shifting.

Much of this new precipitation is now falling as rain, sometimes during winter and traditionally frozen times of the year. This disrupts daily life for humans, wildlife and plants.

Roads become dangerously icy more often, and communities face greater risk of river flooding events. For Indigenous reindeer herding communities, winter rain can create an impenetrable ice layer that prevents their reindeer from accessing vegetation beneath the snow.

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Significant increase in Arctic precipitation across all seasons



[NOAA Climate.gov](https://www.noaa.gov)

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Arctic-wide, this shift toward wetter conditions can disrupt the lives of animals and plants that have evolved for dry and cold conditions, potentially altering Arctic peoples' local foods.

When Fairbanks, Alaska, got 1.4 inches of freezing rain in December 2021, the moisture created an ice layer that persisted for months, bringing down trees and disrupting travel, infrastructure and the ability of some Arctic animals to forage for food. The resulting ice layer was largely [responsible for the deaths of a third of a bison herd](#) in interior Alaska.

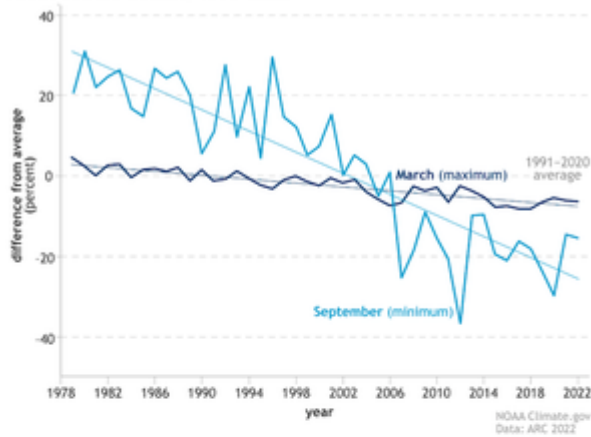
There are multiple reasons for this increase in Arctic precipitation.

As sea ice rapidly declines, more open water is exposed, which feeds increased moisture into the atmosphere. The entire Arctic region has seen a more than [40% loss in summer sea ice extent](#) over the 44-year satellite record.

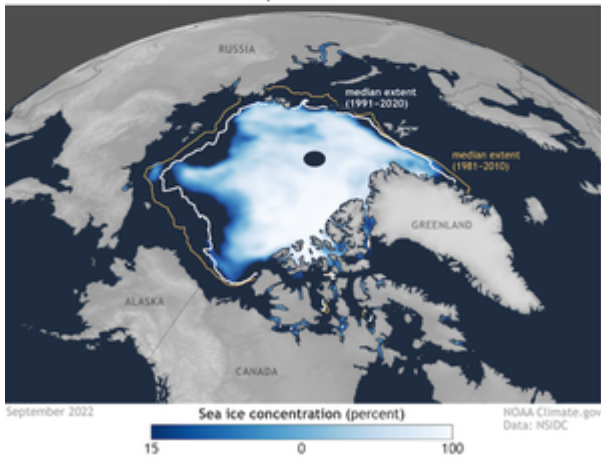
The Arctic atmosphere is also warming [more than twice as fast as the rest of the globe](#), and this warmer air can hold more moisture.

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Arctic sea ice decline, 1979-2022



2022 Arctic sea ice extent in September



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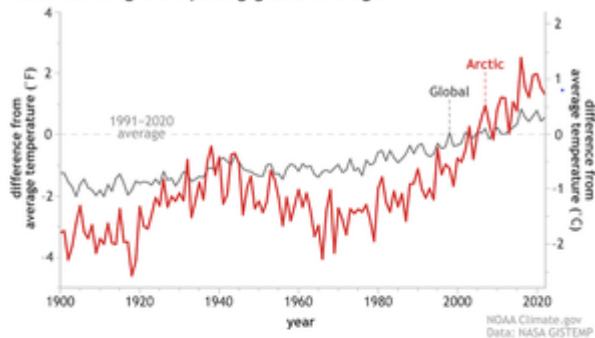
Under the ground, the wetter, rainier Arctic is accelerating the [thaw of permafrost](#), upon which most Arctic communities and infrastructure are built. The result is crumbling buildings, sagging and cracked roads, the emergence of sinkholes and the collapse of community coastlines along rivers and ocean.

Wetter weather also disrupts the building of a reliable winter snowpack and safe, reliable river ice, and often challenges Indigenous communities' efforts to [harvest and secure their food](#).

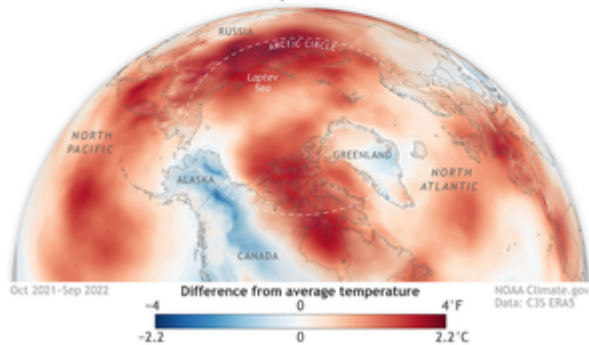
When [Typhoon Merbok](#) hit in September 2022, fueled by unusually warm Pacific water, its hurricane-force winds, 50-foot waves and far-reaching storm surge damaged homes and infrastructure over 1,000 miles of Bering Sea coastline, and disrupted hunting and harvesting at a crucial time.

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### Arctic warming is outpacing global average



### 2022 was Arctic's 6th-warmest year on record



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## Arctic snow season is shrinking

Snow plays critical roles in the Arctic, and the snow season is shrinking.

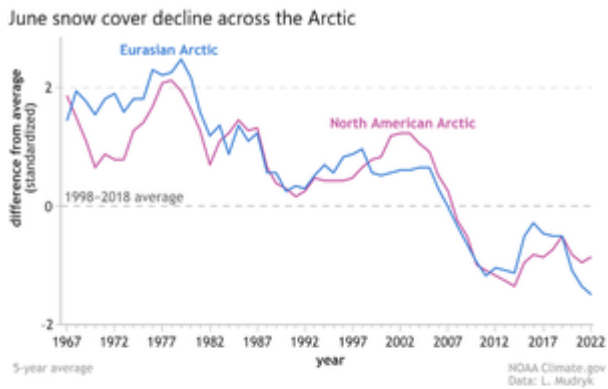
Snow helps to keep the Arctic cool by reflecting incoming solar radiation back to space, rather than allowing it to be absorbed by the darker snow-free ground. Its presence helps [lake ice last longer into spring](#) and helps the land to retain moisture longer into summer, preventing overly dry conditions that are ripe for [devastating wildfires](#).

Snow is also a travel platform for hunters and a habitat for many animals that rely on it for nesting and protection from predators.

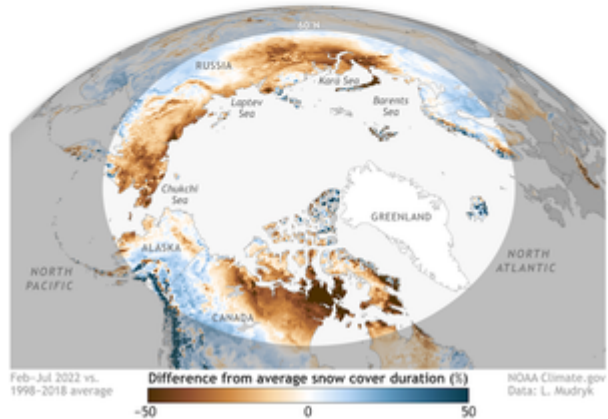
A [shrinking snow season](#) is disrupting these critical functions. For example, the June snow cover extent across the Arctic is declining at a rate of nearly 20% per decade, marking a dramatic shift in how the snow season is defined and experienced across the North.

Even in the depth of winter, warmer temperatures are breaking through. The far northern Alaska town of Utqiagvik hit 40 degrees Fahrenheit (4.4 C) - [8 F above freezing](#) - on Dec. 5, 2022, even though the sun does not breach the horizon from mid-November through mid-January.

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2022 continued trend of shorter Arctic snow seasons



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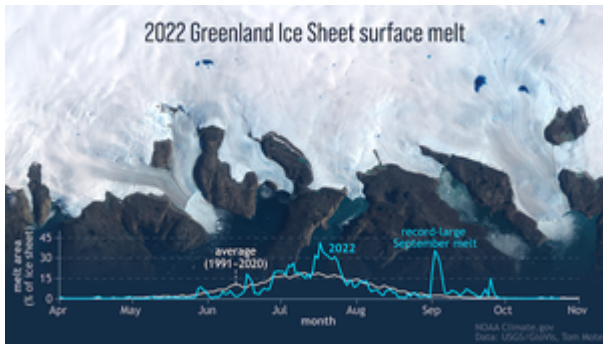
Fatal falls through thin sea, lake and river ice are [on the rise](#) across Alaska, resulting in immediate tragedies as well as adding to the [cumulative human cost of climate change](#) that Arctic Indigenous peoples are now experiencing on a generational scale.

## **Greenland ice melt means global problems**

The impacts of Arctic warming are not limited to the Arctic. In 2022, the [Greenland ice sheet lost ice for the 25<sup>th</sup> consecutive year](#). This adds to rising seas, which escalates the danger coastal communities around the world must plan for to mitigate flooding and storm surge.

In early September 2022, the Greenland ice sheet experienced an [unprecedented late-season melt event across 36% of the ice sheet surface](#). This was followed by another, even later melt event that same month, caused by the remnants of Hurricane Fiona moving up along eastern North America.

International [teams of scientists](#) are dedicated to assessing the scale to which the Greenland ice sheet's ice formation and ice loss are out of balance. They are also increasingly learning about the transformative role that warming ocean waters play.



NOAA Climate.gov

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This year's Arctic Report Card includes [findings from the NASA Oceans Melting Greenland \(OMG\) mission](#) that has confirmed that warming ocean temperatures are increasing ice loss at the edges of the ice sheet.

### **Human-caused change is reshaping the Arctic**

We are living in a new geological age — [the Anthropocene](#) — in which human activity is the dominant influence on our climate and environments.

In the warming Arctic, this requires decision-makers to better anticipate the interplay between a changing climate and human activity. For example, satellite-based ship data since 2009 clearly show that [maritime ship traffic](#) has increased within all Arctic high seas and national exclusive economic zones as the region has warmed.

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### Summer increase in ship traffic, 2009-2018



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For these ecologically sensitive waters, this added ship traffic raises urgent concerns ranging from the future of Arctic trade routes to the introduction of even more human-caused stresses on Arctic peoples, ecosystems and the climate. These concerns are especially pronounced given uncertainties regarding the current geopolitical tensions between Russia and the other Arctic states over its war in Ukraine.

Rapid Arctic warming requires new forms of partnership and information sharing, including [between scientists and Indigenous knowledge-holders](#). Cooperation and building resilience can help to reduce some risks, but global action to rein in greenhouse gas pollution is essential for the entire planet. <http://theconversation.com/republishing-guidelines> —>

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**P.S.**

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