

ALASKA and NORTHWESTERN CANADA

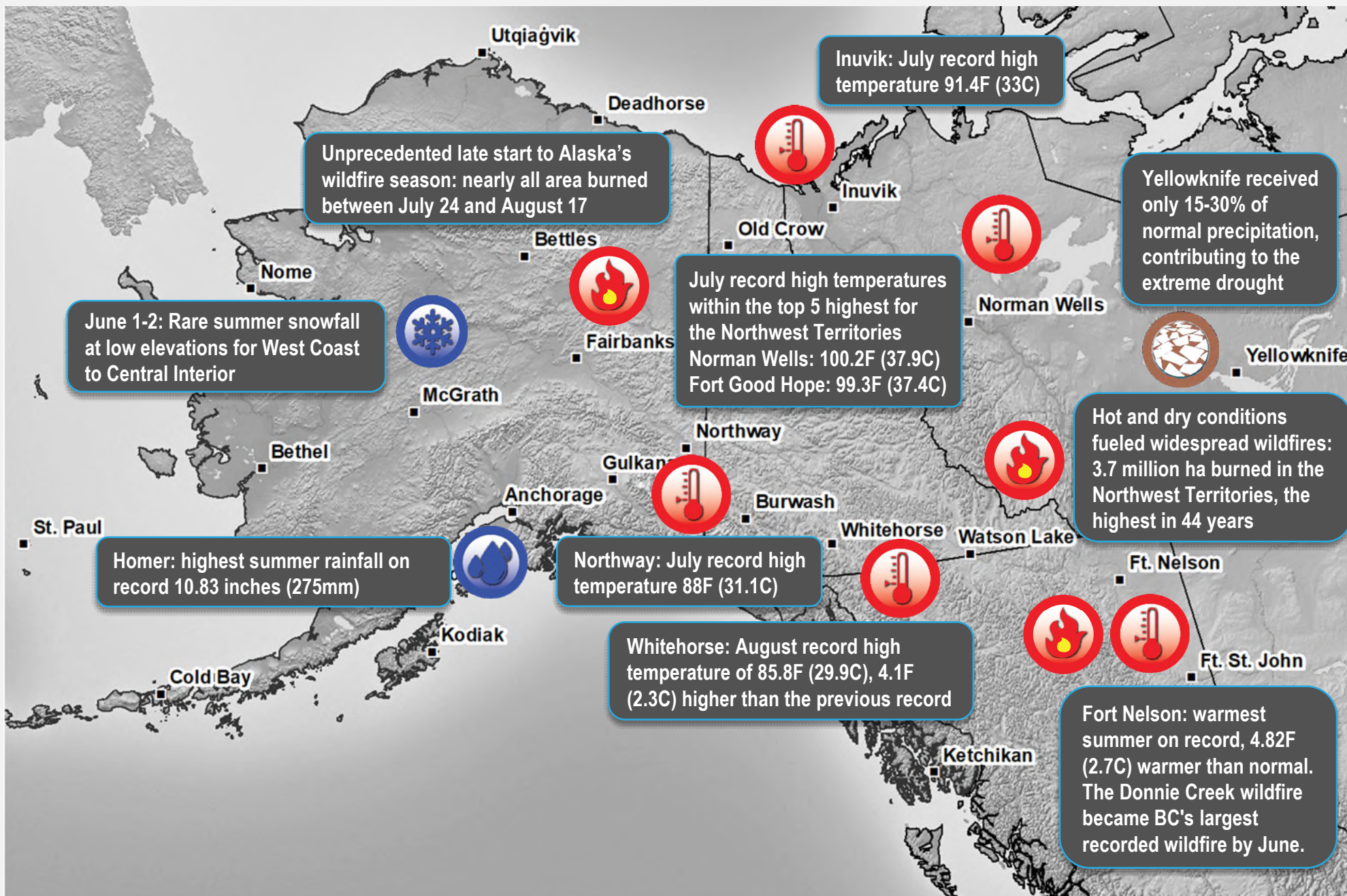
Weather and Climate Highlights and Impacts, June 2023 to August 2023

Climate Outlook, October 2023 to December 2023

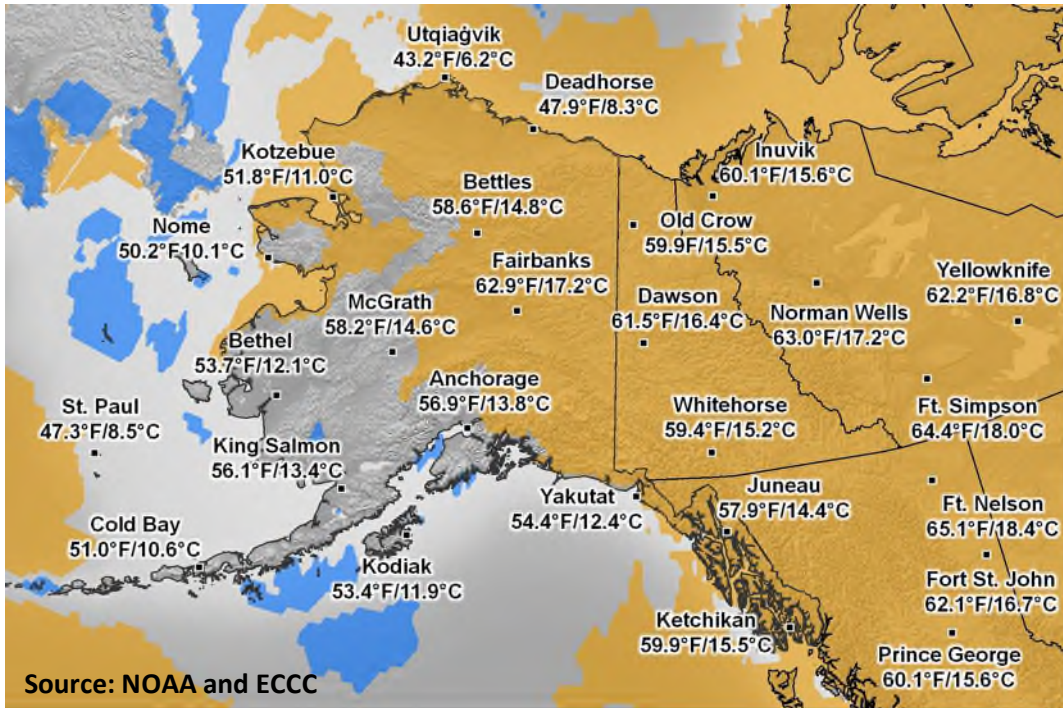


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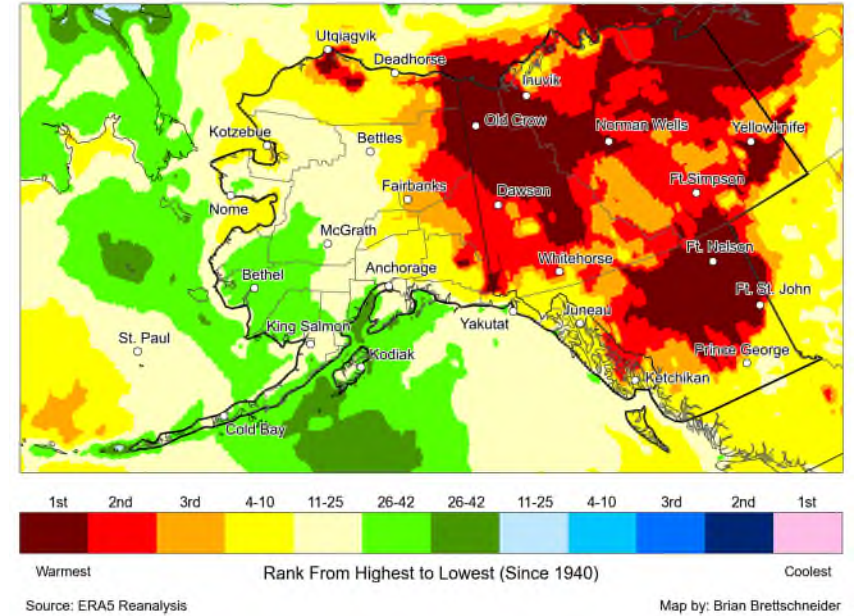


June to August 2023 Temp Averages (°F/°C) & Anomalies **Below** / **Above** / **Normal**

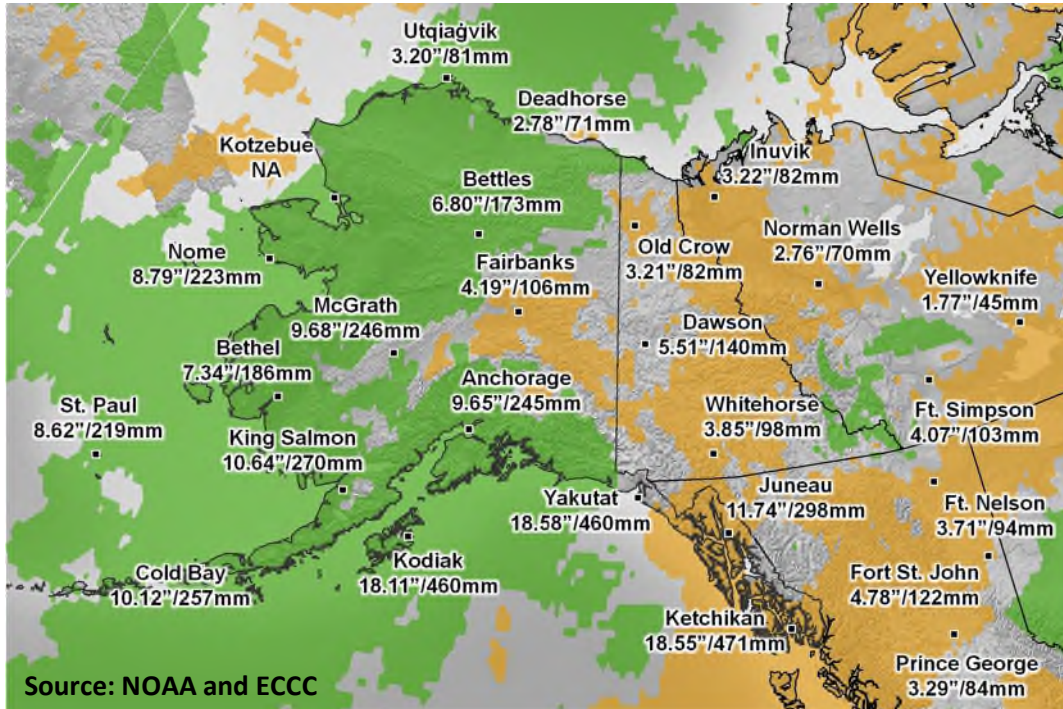


Record Warmth in Northwest Canada

Temperature Ranking for Jun-Aug 2023



June to August Precipitation Totals (inches/mm) & Anomalies - **Dry** / **Wet** / **Normal**



Summer was exceptionally warm across much of northwest Canada and portions of northern and eastern Alaska. For some areas, this was the warmest summer on record, as measured by the daily average temperature for the June through August period. The entire region was near normal in June, however, during July and August, all of northwest Canada, along with northern and eastern Alaska, were much above normal, with record breaking temperatures seen in July. Moreover, regions near Whitehorse, Faro, Dawson, and Old Crow all saw their hottest July since records began.

An unusually stable summer jet stream pattern contributed to the heat: high pressure aloft over northwest Canada and low pressure over the southeast Bering Sea and the northwest Gulf of Alaska. This is the same reason parts of Southwest Alaska had a cool and wet summer. Between July 7 and 9, there were unprecedented hot days when temperatures exceeded 35°C at lower elevations in parts of the Northwest Territories and the Yukon, while reaching above 32°C in parts of eastern Alaska. Meanwhile, early August still saw record breaking heat in parts of northwest Canada and central Alaska.

Wildfires, Smoke, and Evacuation in the Northwest Territories



Smoke blanketing far northern Northwest Territories into the Mackenzie Delta.
Photo credit: Eighty-One Images

Hot and dry conditions across western Northwest Territories created ideal conditions for wildfires, with numerous fires starting in July and August across the region. By the end of August, 3.7 million hectares had burned across the Northwest Territories, the highest in the last 44 years. Ongoing wildfires in the region prompted evacuations in various communities. In mid-August, nearby wildfires threatened Yellowknife and two nearby First Nations, forcing the evacuation of over 20,000 residents. This situation initiated the largest airlift operation in the Northwest Territories' history, with the following day the lift growing three times larger. With the nearest evacuation shelter 1,100 km (680 miles) away, residents had long trips to make and crowded the airport and highway leading out of Yellowknife.

Wildfire smoke resulted in widespread poor air quality, impacting all northern regions for extended periods. Many locations, including Hay River, Norman Wells, and Fort Good Hope, exceeded their previous records for the highest number of smoke hours during the season. In late June and early July, high-level smoke from Canadian fires occasionally drifted across Southeast Alaska and the eastern mainland. Subsequently, a delayed start to wildfires in Alaska's central Interior in late July and early August resulted in denser, low-level smoke. While the wildfires in the Northwest Territories captured the most attention over the summer season, wildfire challenges were also present in other regions such as the Yukon, and eastern Alaska.

Unprecedented Glacier Lake Outburst Flood in Juneau

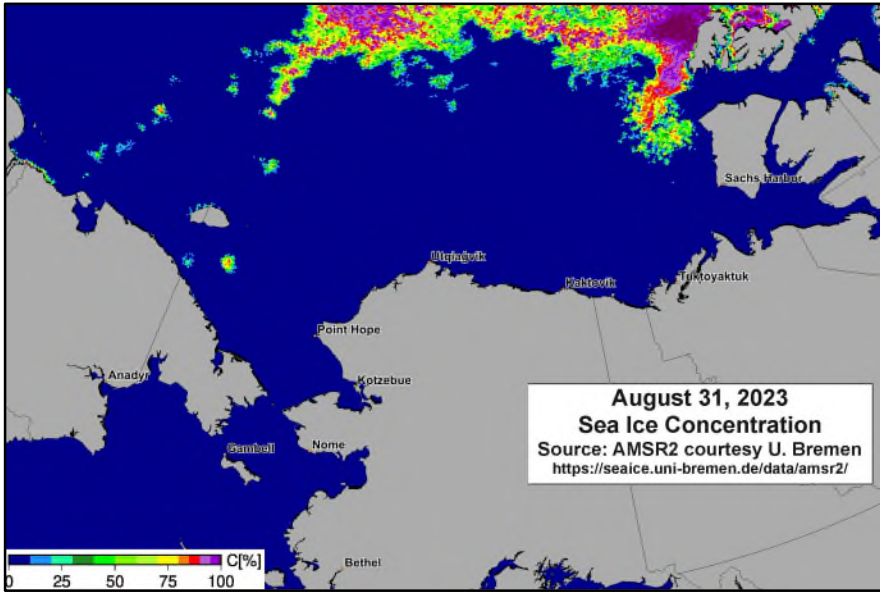


A Juneau house collapses into the Mendenhall River after erosion undercuts bank.
Photo credit: Sam Nolan

Early August brought record flooding to Alaska's capital, Juneau, as a result of an unprecedented release by the Suicide Basin's glacier dammed lake (GDL) which destroyed and damaged multiple homes. The outbursts from the lake in this side basin of the Mendenhall Glacier only began in 2011, after significant recession of the glacier. Water accumulates in the Suicide Basin to the point it lifts the glacier and then flows under it and into the Mendenhall Lake and River. Regional scientists from the National Weather Service, US Geological Survey, and University of Alaska Southeast believe that the basin may not have fully drained in the past because either ice or sediment obstructed the outlet. This year, however, that obstruction was either removed, or stored water in some other part of the glacier contributed to the outburst.

As the water released from the glacier, Mendenhall Lake rose, cresting at a record of 14.97 ft, almost 3 feet higher than the previous record of 11.99 ft in 2016. The record river discharge led to bank erosion that undercut several homes and flooded others. Access to one neighborhood was cutoff and a campground was evacuated. Less than a month later, the GDL released again, but without significant impacts. Now the areas downstream of the glacier are considered to be at higher risk as this system continues to evolve.

Sea Ice Concentration Conditions 31 Aug 2023 in the Bering, Chukchi and Beaufort Seas



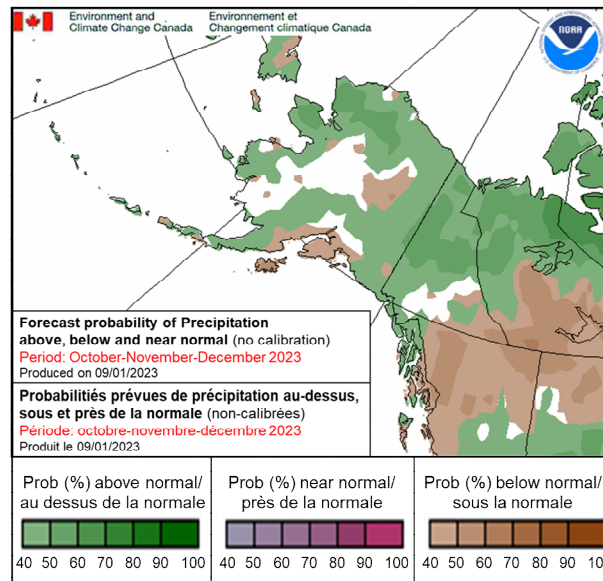
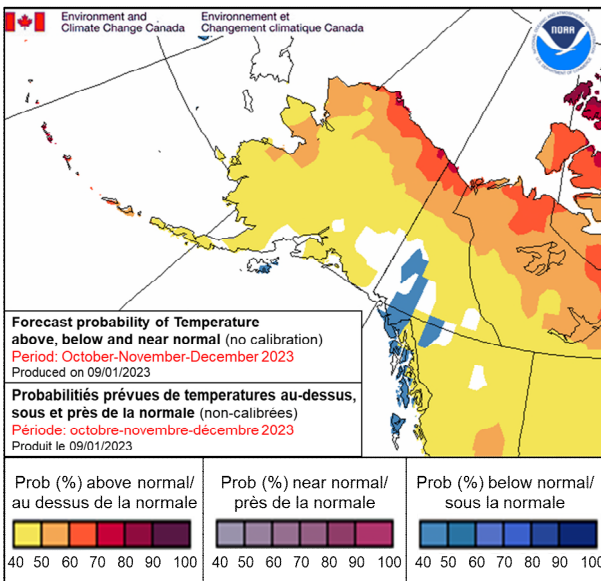
Across much of the region, sea ice melted earlier than normal this year, with a few minor exceptions: Bering Sea ice was largely melted by the third week of June, the Chukchi Sea near Alaska by the end of June, and the larger Chukchi saw a dramatic decline in ice mid-July. The southeastern Beaufort also had an early melt in June, with a few pockets of persistent ice around Utqiagvik until late July and low concentrations between the northwest Alaskan coast and Wrangel Island, Russia, though most of August.

Warmer than normal temperatures in July contributed to the earlier than normal ice melt in the Beaufort and much of the Chukchi. The continuation of warm temperatures in August continued the melting of ice in the region. By the end of August, large areas of the Beaufort and Chukchi had lower than normal ice concentrations. For most of the Beaufort Sea, it was the 5th lowest ice concentration since 1968.

In the Alaskan portion of the Beaufort Sea, thicker ice offshore of Prudhoe Bay gouged the sea floor and severed a fiber optic cable on June 10. This caused a months-long serious disruption to internet connectivity in much of northern and western Alaska.

Temperature Outlook: Oct to Dec 2023

Precipitation Outlook: Oct to Dec 2023



Above normal temperatures are likely to continue for much of the region, with the highest probabilities along the northern coast bordering the Beaufort and Chukchi Seas, and south of the coast into the Northwest Territories. The Alaskan panhandle, neighboring British Columbia, and southwestern Yukon have a slight probability of below normal temperatures, as does Kodiak Island.

The precipitation forecast for the region is complex, with probabilities of both above and below normal precipitation across the region. Dry conditions will persist through northern British Columbia and into southern Northwest Territories, with moderate probabilities of above normal precipitation amounts in the Yukon and northern Northwest Territories. The Alaskan North Slope and locations along the Chukchi and the northern Bering Sea also have moderate probabilities of above normal precipitation, with a pocket of below normal amounts in the southcentral region around Anchorage.

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