

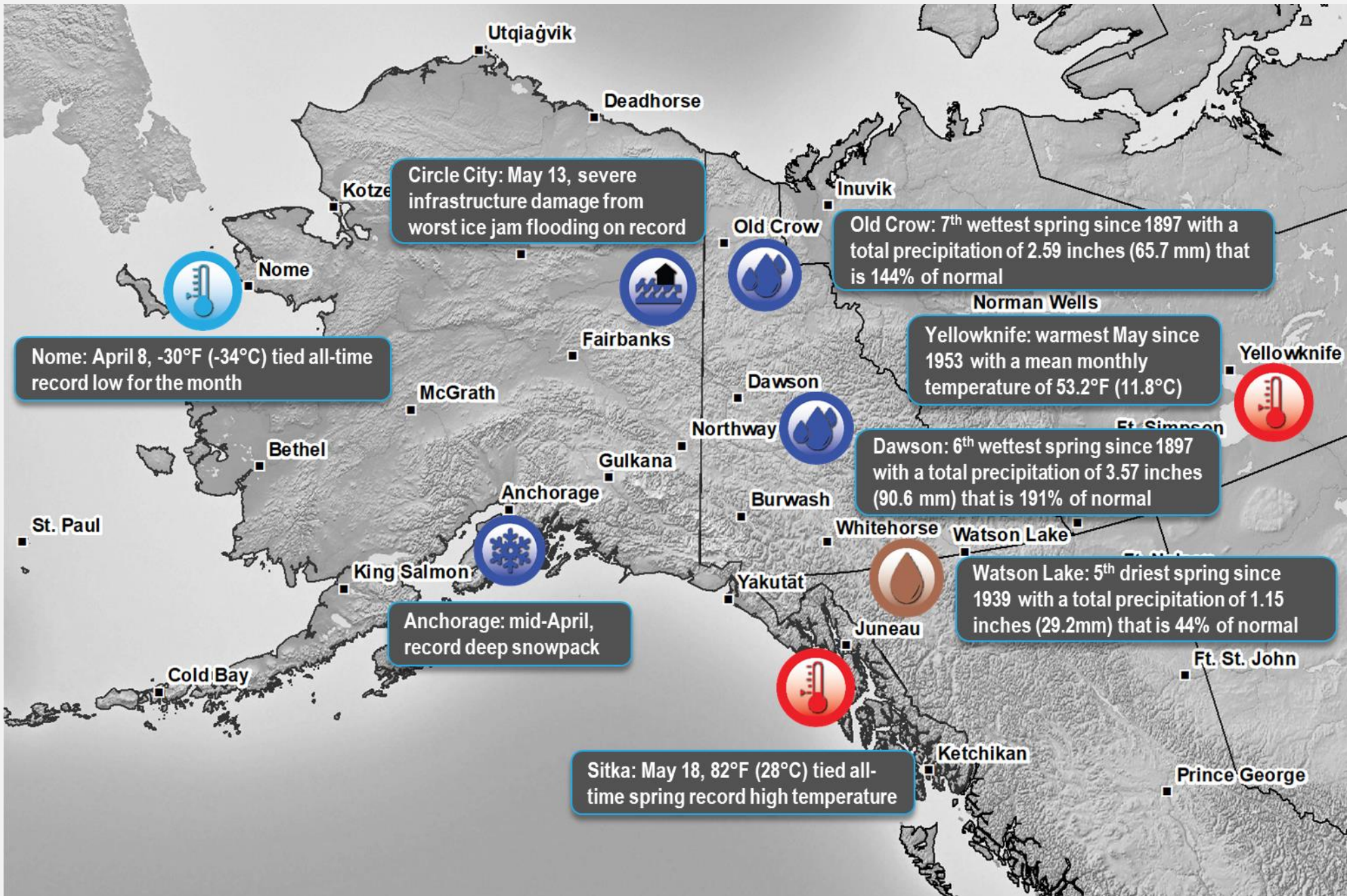
# ALASKA and NORTHWESTERN CANADA

Weather and Climate Highlights and Impacts, March 2023 to May 2023  
Climate Outlook, July 2023 to September 2023

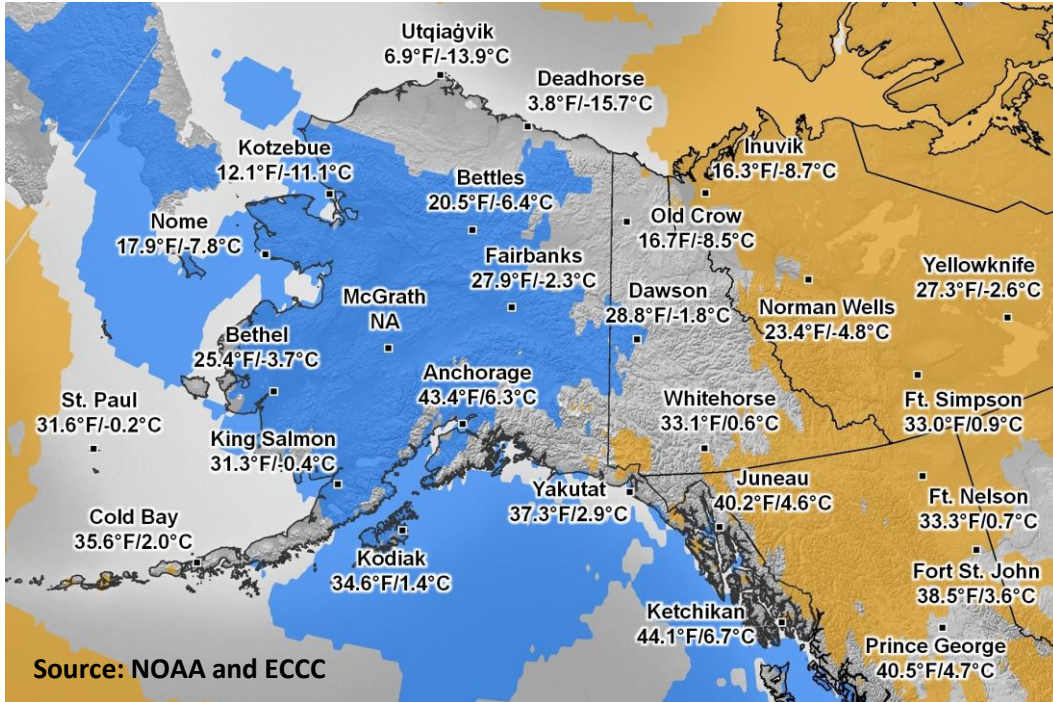


Environment and  
Climate Change Canada

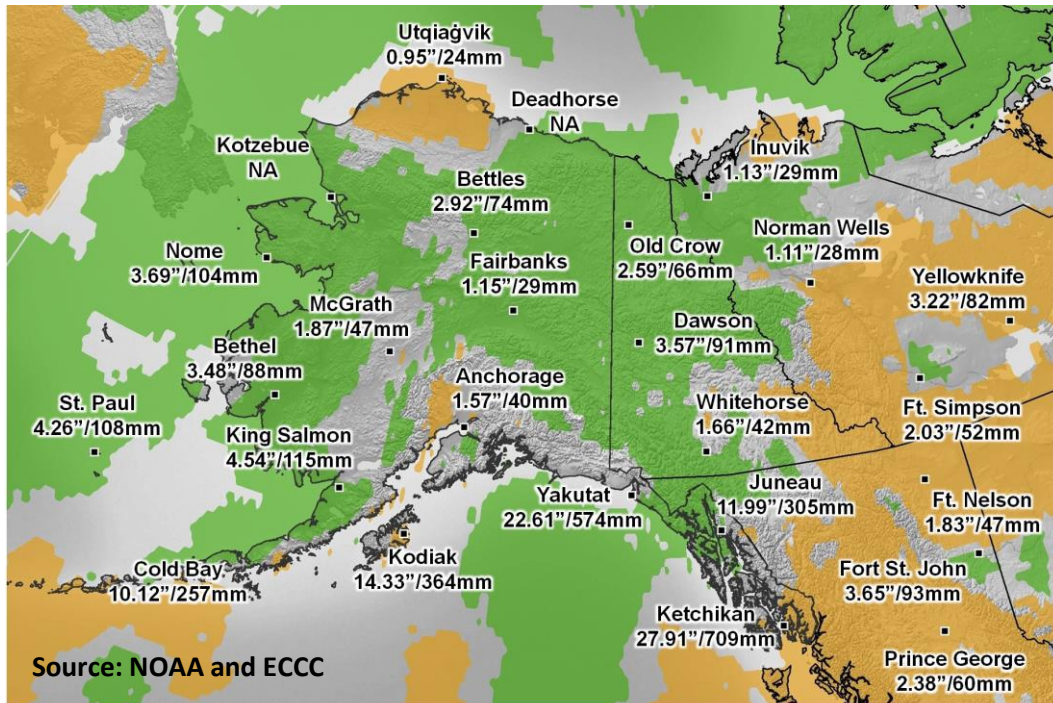
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March to May 2023 Temp Averages (°F/°C) & Anomalies - **Below** / **Above** / Normal



March to May 2023 Precipitation Totals (inches/mm) & Anomalies - **Dry** / **Wet** / Normal



Yukon, Klondike Ice Jams



Buildings flooded up to the roof at Forty Mile  
Photo credit: Government of Yukon

A thick snowpack, a delayed snowmelt, and warm weather in early May resulted in major ice jam floods near Rock Creek on the Tr'ondëk (Klondike River) as well as at Forty Mile on the Tágà Shāw (Yukon River). Intense rain during the preceding (2022) fall also played a role, causing both rivers to freeze-up relatively dynamically, which resulted in a very resistant ice cover.

After breakup, warm weather in central Yukon and wet conditions between Mayo and Dawson generated extreme runoff rates. An estimated flow of 1000 m<sup>3</sup>/s was reached in the Tr'ondëk (Klondike River), which corresponds to a 200-year open water event. Rock Creek was flooded for a second time in May.

The situation on the Tr'ondëk (Klondike River) above Bonanza Creek was the worst open-water flooding on record since records began at this station in 1968. May 2023 was notable in terms of ice jams and the flooding was severe upstream.

Credit: Benoit Turcotte (Yukon University), Anthony Bier (Yukon Government, Water Resources)

## Cold April in Alaska



Sea smoke rising from a lead in the sea ice offshore of Nome on April 10, 2023  
Photo credit: Diana Haecker, Nome Nugget

April was much colder than normal across most of mainland Alaska, but across parts of western Alaska, temperatures were near historically low levels. In most of western Alaska this was the coldest April since 1985, but at Tanana, in the central Interior, this was the coldest April since 1924. The lowest reported temperature in April was  $-39^{\circ}\text{F}$  ( $-39.4^{\circ}\text{C}$ ) at Selawik in Northwest Arctic Borough. At Nome, the temperature fell to  $-30^{\circ}\text{F}$  ( $-34.4^{\circ}\text{C}$ ) on April 8, which equaled the lowest temperature in April in the past 116 years, and is the first monthly low temperature record to be set or tied at Nome since September 1992.

The low temperatures and lack of south winds resulted in expansion of Bering Sea ice during the month of April. For only the third time in the past 45 years, sea ice extent in the Bering was higher at the end of April than at the beginning. The persistent low temperatures greatly slowed down snow melt and contributed to the severe break-up flooding in May. A separate push of Arctic air during the last weekend of April brought some of the lowest temperatures late in the season. At Fairbanks, the average wind on April 23 of 20.9 mph (33.6 km/h) was the highest April daily wind speed in 72 years of airport observations.

## Breakup 2023: Most destructive flooding Alaska has seen in many years



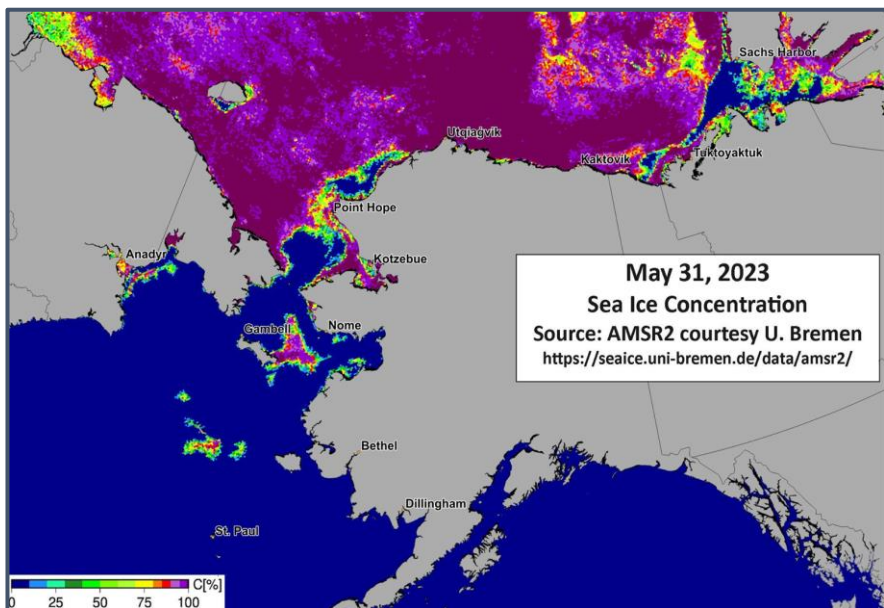
Flooding in Crooked Creek, Alaska, May 2023  
Photo credit: Kyle Van Peurse, National Weather Service (NWS)

This year's breakup ranked as having the most devastating impacts in a decade. Record or near record flooding occurred in Circle City, on the Tágà Shāw (Yukon River), and in Crooked Creek on the Kuskokwim River. Less severe flooding impacted Fortymile, Eagle, Fort Yukon, Stevens Village, Tanana, Kobuk, Galena, Red Devil, Sleetmute, Kalskag, Buckland, Shungnak, Napaimute, Kwethluk, Aniak, Emmonak, Russian Mission, Nunam Iqua, and Alakanak.

After breakup, Glennallen saw significant snow melt flooding. The proximate cause of the breakup flooding was strong, intact ice sheets resulting from a prolonged, cool spring. Snow was 150% above normal or more in much of the Interior and the prolonged cool temperatures prevented low elevation snow from melting before the ice started to lift and move.

Conditions were similar during the 2013 flooding that devastated Galena and parts of Eagle. The Governor of Alaska issued a disaster declaration for the 2023 spring floods.

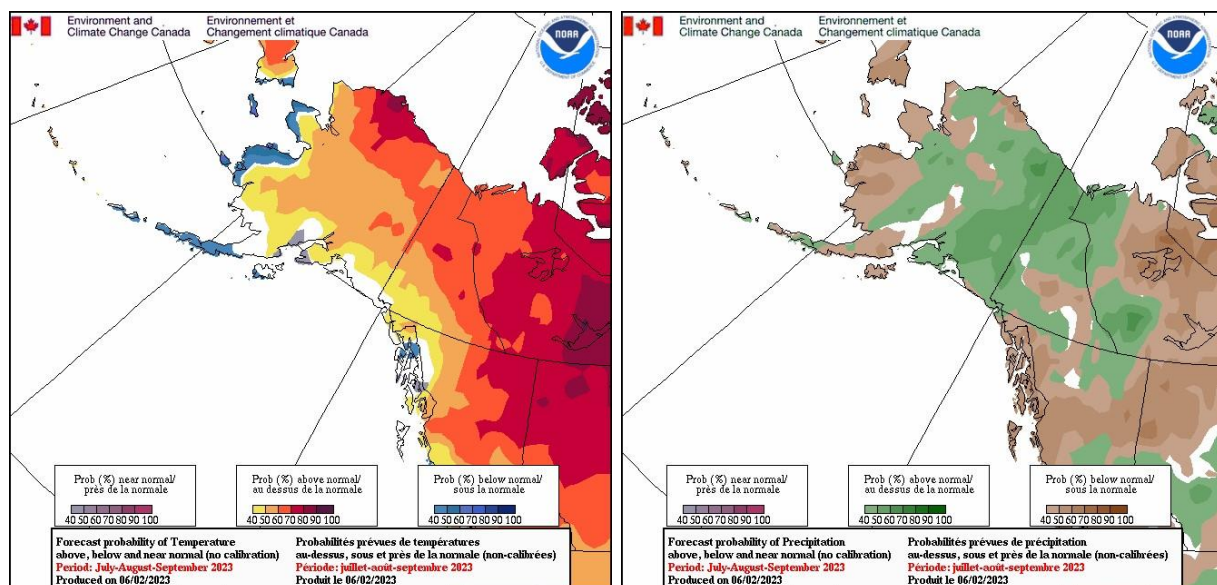
# Sea Ice Concentration Conditions 31 May 2023 in the Bering, Chukchi, and Beaufort Seas



There were several notable sea ice features in the Beaufort Sea this spring. Sea ice conditions in the northern Beaufort Sea were a mixture of old and first-year ice, with old ice remaining predominant. At around 73 degrees north and 75 nautical miles off the coast of Banks Island, the leading edge of the old ice pack was both further north and west than normal. Predominant southeasterly winds early this spring led to the offshore movement of ice and subsequent formation of open water areas and younger ice formation in the southeastern section, along the west coast of Banks Island and in the western section of McClure Strait. By the end of May, general ice movement of the main ice pack switched southeastwards towards Banks Island and into western McClure Strait, but open areas remained along the coast outside of the consolidated ice edge in the southeast and south of Banks Island. Given this mixture of ice conditions, the ice breakup rate in the Beaufort Sea was normal this spring.

Spring sea ice conditions in the Chukchi were unusual, as frequent bouts of west winds kept leads between Point Hope and Utqiagvik smaller than usual and intermittently closed. Bering Sea ice extent was below normal in March, but ice thickness was higher than some recent years in the northern Bering. The very cold April and lack of storms allowed ice to increase before the final seasonal melt began in early April. At the end of May, Bering Sea ice extent was close to conditions in 2021. Chukchi Sea ice extent was the highest since 2012.

## Temperature Outlook: July to Sept 2023    Precipitation Outlook: July to Sept 2023



A combined Canada - USA weather forecast model is used to provide a temperature and a precipitation outlook for July to September 2023.

The temperature outlook map shows that all of Alaska and Canada, except for coastal west and southern Alaska and northwest British Columbia, has a 40% to 90% chance of above average temperature (yellow, orange and red colors), with the highest probabilities found on the Alaska north slope. The Aleutian Islands and coastal western Alaska has a 40-60% chance of below normal temperatures.

The precipitation outlook map shows a complex pattern of below and above normal precipitation. Central and eastern Alaska, most of the Yukon and northwestern Northwest Territories will have a 40-70% chance of above normal precipitation. But south-central Yukon, northwest BC and western Alaska will have a 40-70% chance of below normal precipitation.

Content and graphics prepared by NOAA's National Weather Service and National Center for Environmental Information; the Alaska Center for Climate Assessment and Policy at the University of Alaska; and Environment and Climate Change Canada, as well as our regional partners: Alaska Climate Research Center, Alaska Climate Science Center, National Snow and Ice Data Center, and Scenarios Network for Alaska + Arctic Planning.

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