Spring Breakup Outlook for Alaska
Valid March 21, 2025
Alaska-Pacific River Forecast Center
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www.weather.gov/aprfc

EXPERIMENTAL PRODUCT
Spring Breakup Outlook for Alaska

Statewide Flood Potential Overview

The potential for spring ice breakup and snowmelt-induced flooding varies significantly across Alaska. In the Interior, including most of the Yukon, Tanana, and Koyukuk River basins, as well as portions of the North Slope, breakup potential is above average due to higher-than-normal snowpack levels. In contrast, portions of the Lower Yukon and Kuskokwim River basins, along with most of Southcentral Alaska, can expect a below-average breakup potential due to very low snowpack caused by warmer than normal winter temperatures. Due to a mid-winter ice jam and subsequent refreezing of the Kanektok River, the spring breakup flood threat for Quinhagak is elevated. The primary factor influencing the flood risk in Quinhagak will be spring temperatures.

This outlook is based on observed snowpack, ice thickness reports, and seasonal temperature outlooks. The term ‘normal’ is defined as being at or near the climatological value, which is typically defined over a 30-year period of record.

River Ice Observations

River ice observations are available for a limited number of sites in Alaska. Measurements from late February to mid March indicate that ice thickness across the state is generally near to below normal. In the Interior, ice thickness ranges from 67% to 111% of normal, with most sites ranging between 75% and 95% of normal for this time of year. It is noteworthy that the Kuskokwim River Ice Road has been re-established from Bethel to Crooked Creek, indicating that the integrity and strength of the ice has rebounded since the mid-winter warm-up.

Several mid-winter breakups also occurred and resulted in ice jam formation: one on the Kanektok River near Quinhagak and another on the Anchor River near Anchor Point. The Kanektok River ice jam persisted through the winter, re-freezing in place; increasing the potential for enhanced jumble ice during breakup. In contrast, the Anchor River jam has cleared and poses minimal concern.

Cumulative freezing degree days (FDD), a common proxy for river ice thickness, are below average across most of Alaska as of mid March, reflecting a notably warm winter. In contrast, colder conditions prevailed in Southeast Alaska, where FDDs range from 115% to 200% of normal.

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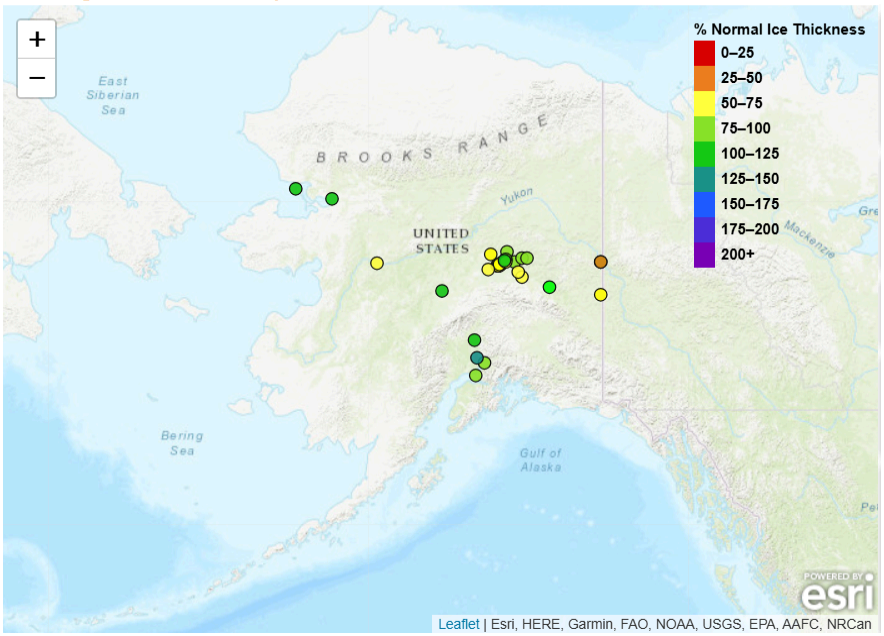
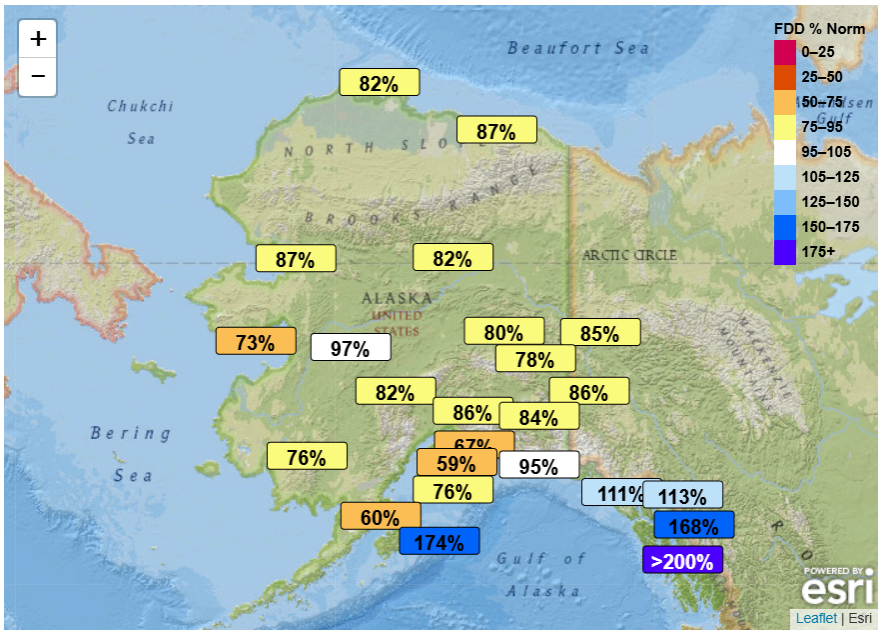
% Average Ice Thickness Map



Link to % Average ice thickness map

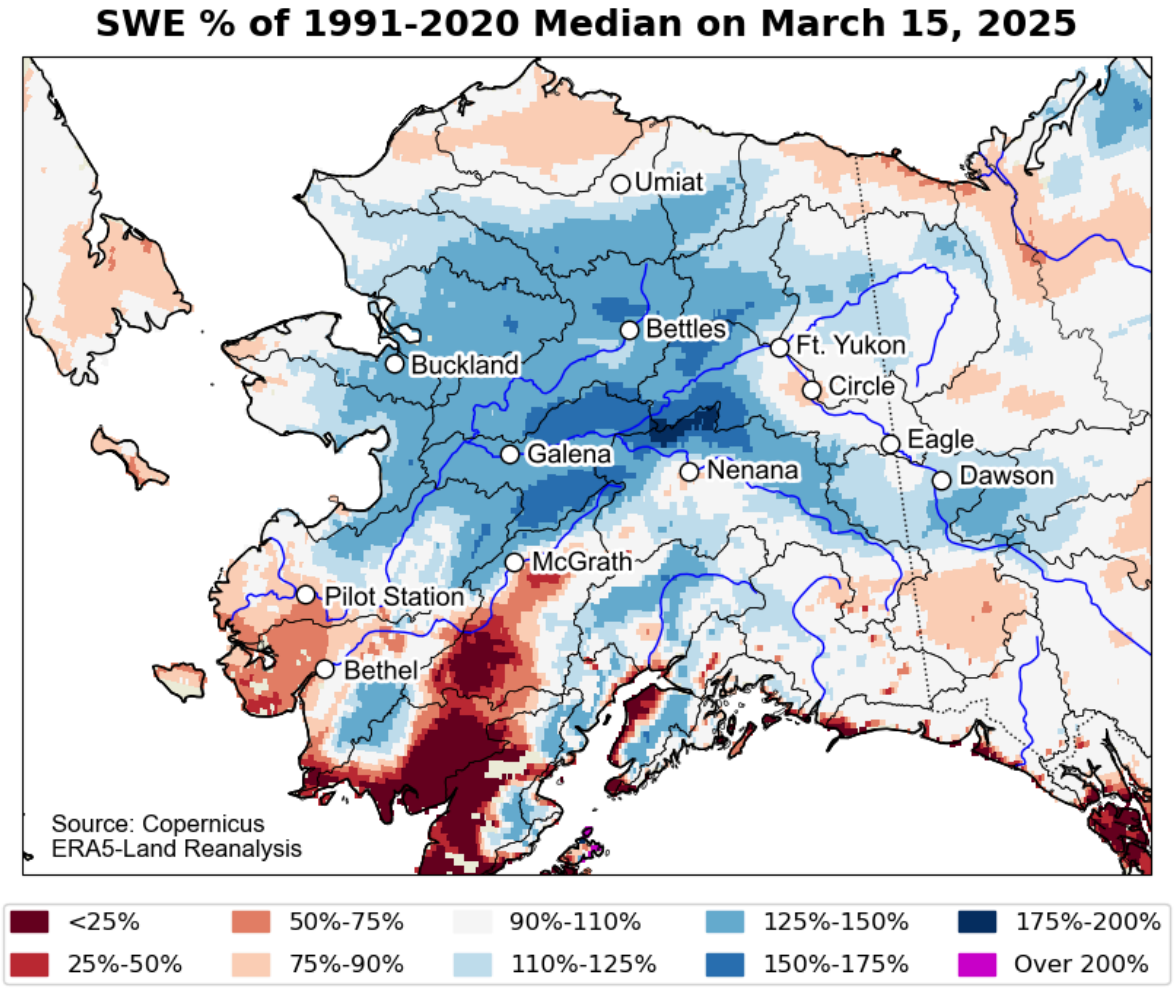
Freezing Degree Days - Percent of Normal



Link to freezing degree day (FDD) map

Snowpack

The March 1st snowpack analysis by the Natural Resources Conservation Service (NRCS), along with ERA5 SWE estimates (updated March 15th, see below), reveals a highly variable snowpack across Alaska. While the Interior and northern regions of the state have an above to well-above average snowpack, areas along the West Coast and lower elevations in Southcentral and Southeast Alaska have a significantly below-average snowpack.



Snowpack across the Yukon River Basin ranges from near to above normal in the headwaters of the Yukon River in the Yukon Territory. On the U.S. side of the Upper Yukon basin snowpack ranges from average to below. Overall, snowpack in this region is higher than last year's below-average conditions. In contrast, the Porcupine River Basin has about half the snowpack of last year's record-setting levels, now sitting near the historical average for March 15.

Further downstream, snowpack remains above normal across the Upper and Middle Yukon, Tanana, and Koyukuk River basins, averaging around 130% of normal. The highest snowpack anomalies in the state are found northeast of Fairbanks, where March 1 snow courses range from 140% to over 200% of normal.

Across the Brooks Range and North Slope, snowpack is consistently above average. Based on snowpack and winter precipitation measurements, estimates place snowpack levels between 120–150% of normal, with the highest anomalies concentrated in the Brooks Range and the headwaters of rivers draining the North Slope.

As the Yukon River approaches the west coast, snowpack rapidly decreases due to persistently warm winter temperatures. ERA5 reanalysis data for March 15th indicates that while snowpack is above average around Galena, it drops to just 25–50% of normal near the mouth of the Yukon. Areas along the Kuskokwim River Basin slightly rebounded during the first half of March; however, snowpack conditions in the Kuskowim River basin are still well below-average, particularly in the lower basin— a stark contrast to last season's well above-average snowpack. For example, snow depths at Aniak and Bethel are only about a third to a quarter of what they were at this time last year, highlighting the significant reduction in snowpack compared to last winter.

In Southcentral Alaska, snowpack is highly dependent on elevation. Above 1,500–2,000 feet, conditions are near normal, whereas at lower elevations remain well below normal. The Copper River Basin is generally near normal for March 15, though lowland areas have below-average snowpack, while higher elevations range from average to above average.

Climate Outlook

Spring temperatures in April and May are the most critical factor in determining the severity of ice breakups. Dynamic breakups, which carry a higher risk of ice jam flooding, typically require cooler-than-normal temperatures in early April, followed by a rapid warm-up to summer-like temperatures in late April or early May.

NOAA's Climate Prediction Center (CPC) forecasts below-normal temperatures across most of Alaska for late March through early April. The recently released April outlook, indicates a higher likelihood of below-normal temperatures for the Seward Peninsula and the mid and lower Yukon River basins. Near-normal temperatures are expected for the rest of the state, including the North Slope, Southwest, eastern Interior, Copper River Basin, and Southcentral.

This projected temperature pattern could increase the risk of ice jam flooding along portions of the Upper and Middle Yukon Rivers, as well as the Tanana River, where above-average snowpack and cooler early spring temperatures may delay the onset of snowmelt.

The next update will be published March 28, 2025.

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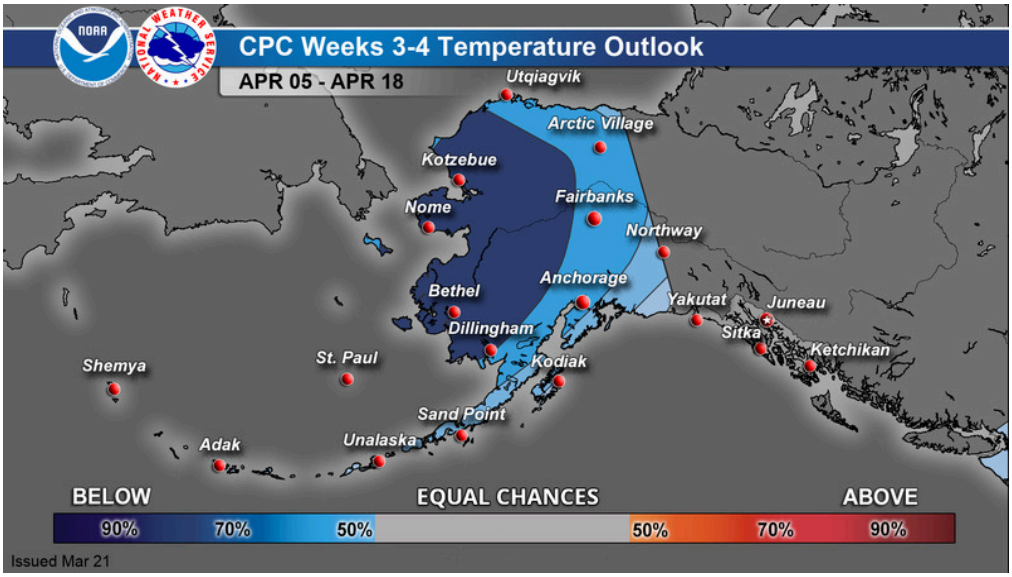

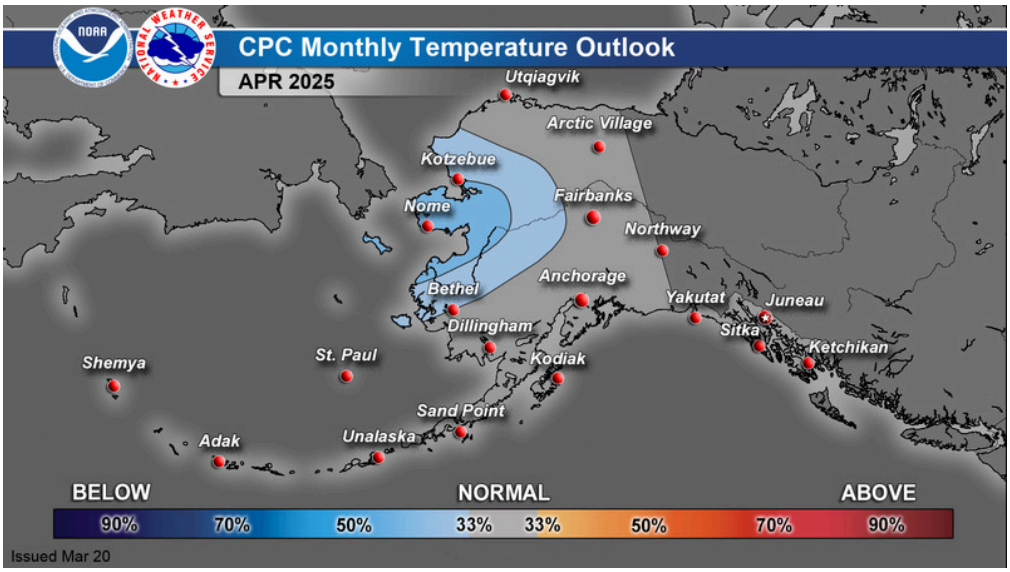

This product is experimental. For more information and to submit comments, please contact:

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