Spring Breakup Outlook for Alaska
Valid April 4, 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.

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 early April indicate that ice thickness across the state is generally near to below normal. In the Interior, ice thickness ranges from 57% to 100% 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. As of March 21st measurements along the ice road ranged from 42" at Kalskag decreasing to 30" at Bethel. As of March 28th measurements ranged from 30" at Crooked Creek to 40+" in Aniak.

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, but poses minimal concern for breakup. The Anchor River jam has cleared and poses minimal concern.

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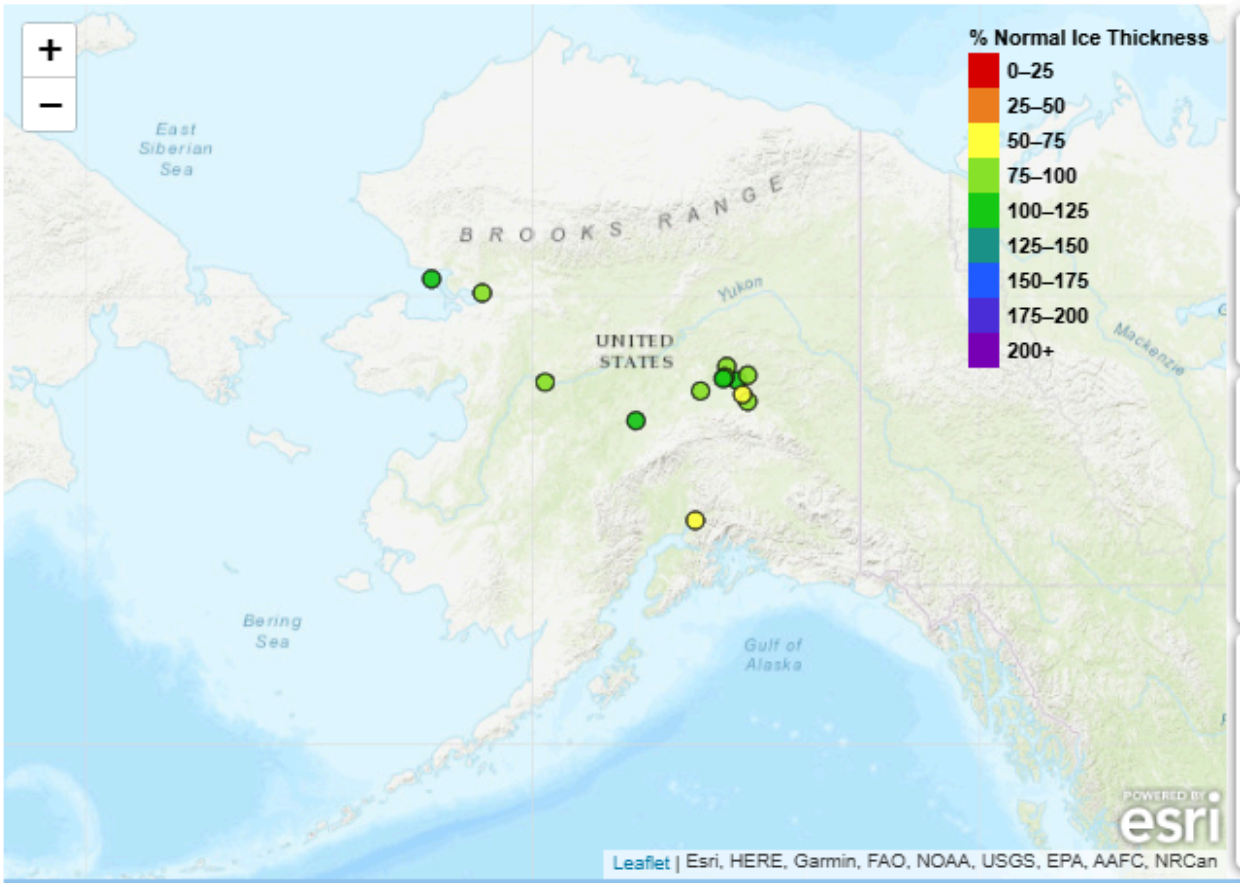
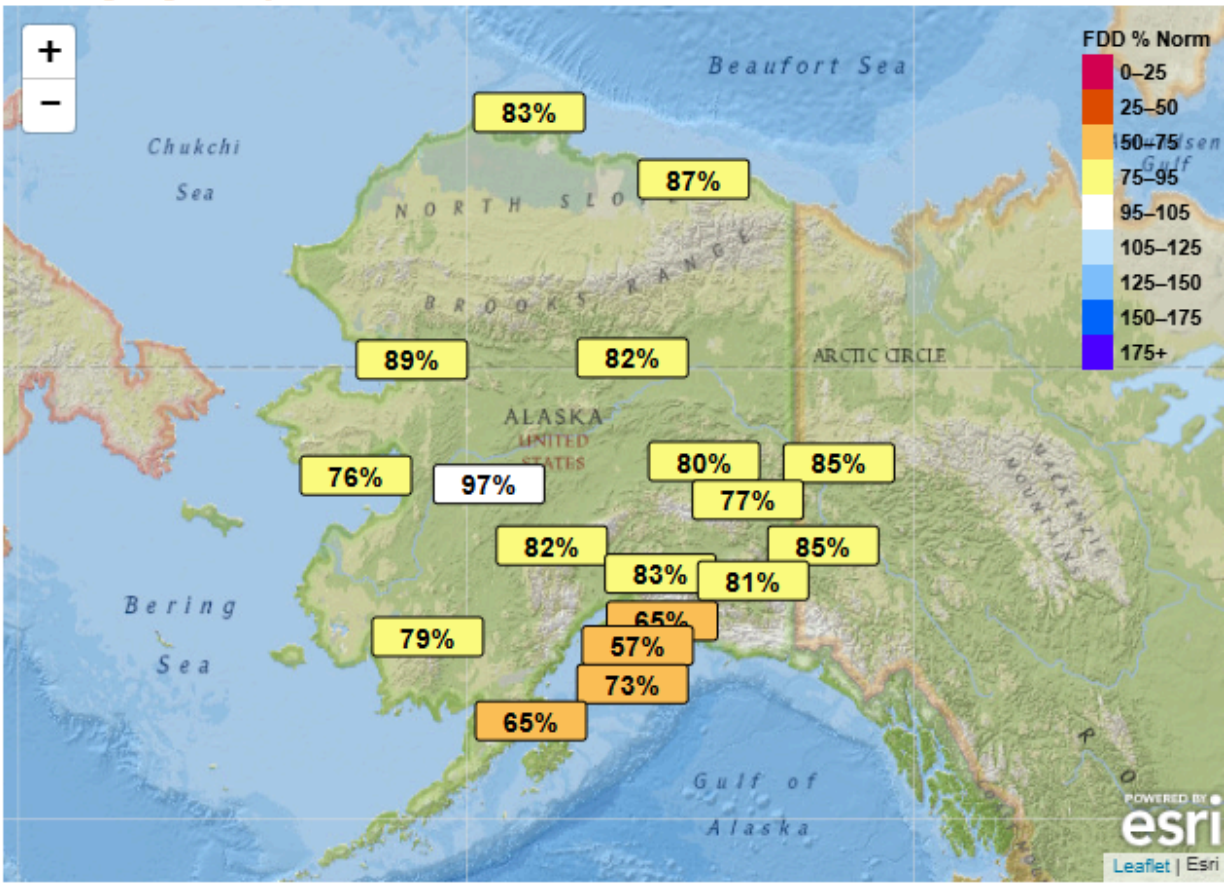
Cumulative freezing degree days (FDD), a common proxy for river ice thickness, are below average across most of Alaska as of early April, reflecting a notably warm winter.

% Average Ice Thickness Map



Link to % Average ice thickness map

Freezing Degree Days - Percent of Normal

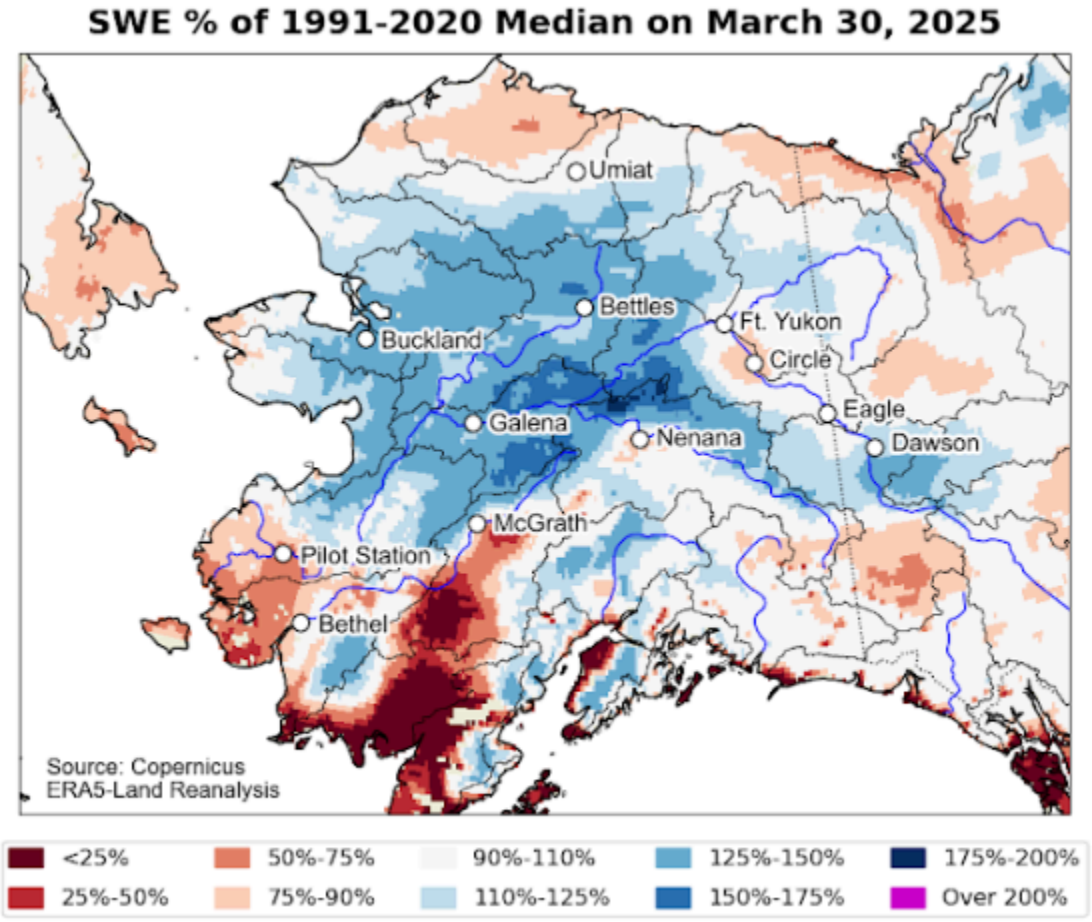


Note: Due to significant missing data, PAKV (Kaltag) may be misrepresented on this map.

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 30th, see below), reveals a highly variable snowpack across Alaska. The April 1st NRCS snowpack analysis is not available yet. 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 average. 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 30.

Farther 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 ranged from 140% to over 200% of normal. Of note, much of the Chena Basin received around 2 inches of liquid equivalent the first two days of April.

Across the Brooks Range, snowpack is consistently above average. Based on snowpack and winter precipitation measurements, estimates place snowpack levels between 120–150% of

normal. Over the North Slope, snowpack is normal to below normal, though the Brooks Range headwaters of rivers draining the North Slope continue to be above average.

As the Yukon River approaches the west coast, snowpack rapidly decreases due to persistently warm winter temperatures. ERA5 reanalysis data for March 30 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 Kuskokwim 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 30, 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) temperature outlook favors below-normal temperatures for the Seward Peninsula and the lower to middle Yukon River basins over the first half of April, with near-normal temperatures expected across the central and eastern interior. This projected temperature pattern could increase the risk of ice jam flooding along portions of the middle Yukon River where above-average snowpack and cooler early spring temperatures may delay the onset of snowmelt. That pattern is not expected to endure; the week 3-4 outlook released today indicates higher likelihood of warmer than normal temperatures for the southern half of the state (south of the Yukon) and near-normal temperatures elsewhere. This could indicate decreased chances for a dynamic breakup in the Kuskokwim Basin.

The next update will be published April 11, 2025.

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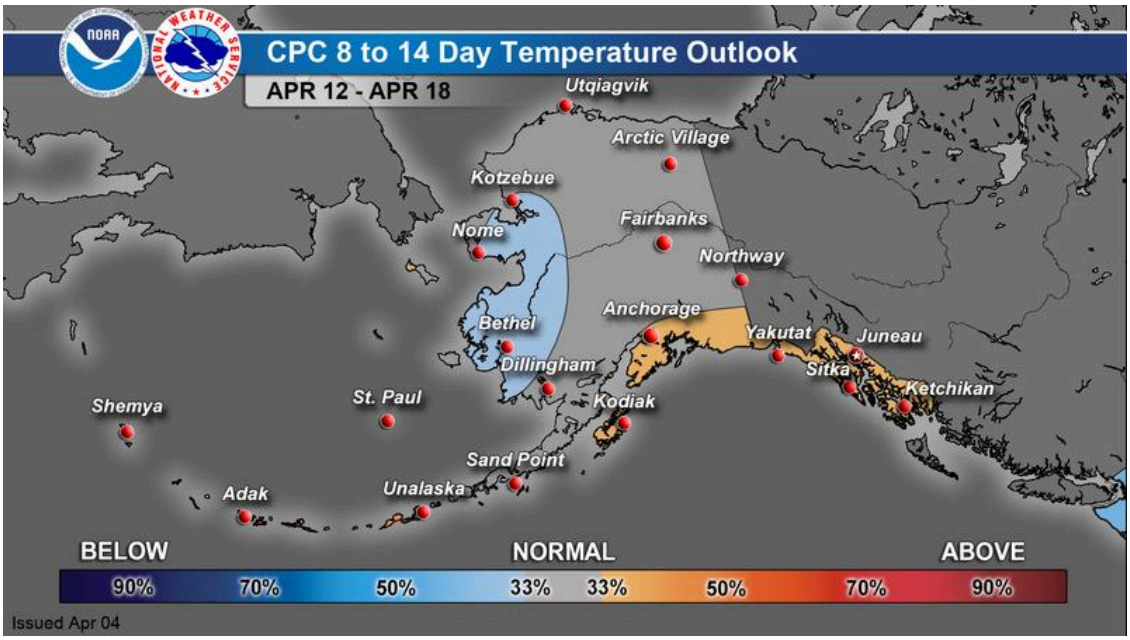

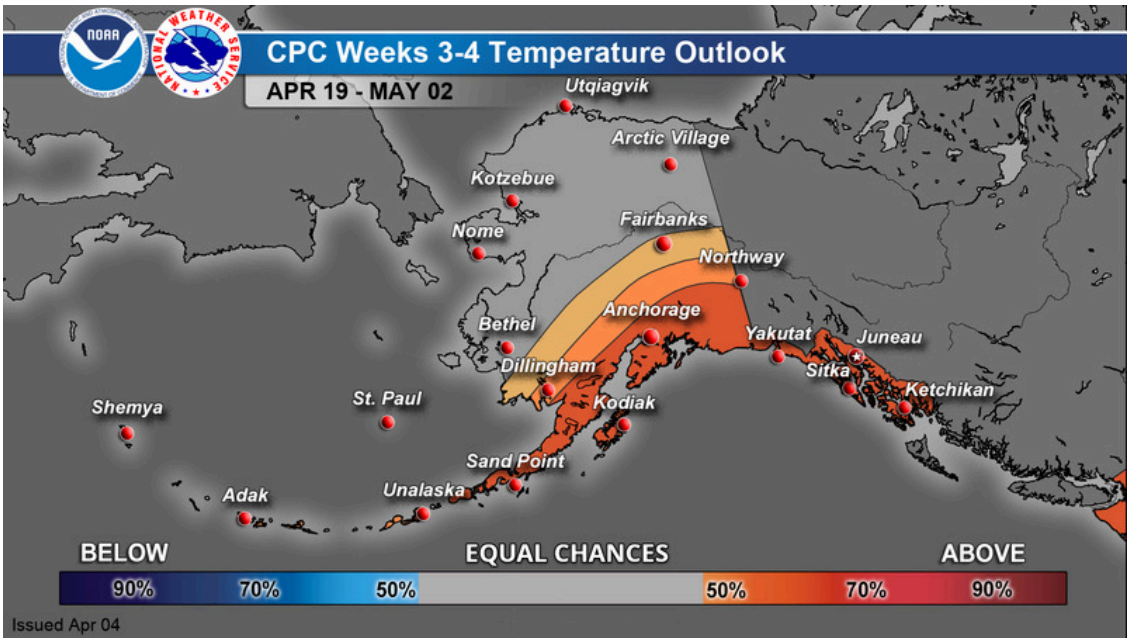

This product is experimental. For more information and to submit comments, please contact:

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