Spring Breakup Outlook for Alaska
Valid March 13, 2025
Alaska-Pacific River Forecast Center
Next Product Issuance: March 21, 2025
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. There have been no reports of mid-winter breakups or the associated formation of anomalously thick ice.

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 early 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 falling between 75% and 95% of normal for this time of year.

Cumulative freezing degree days (FDD), a common proxy for river ice thickness, are below average across most of Alaska as of early 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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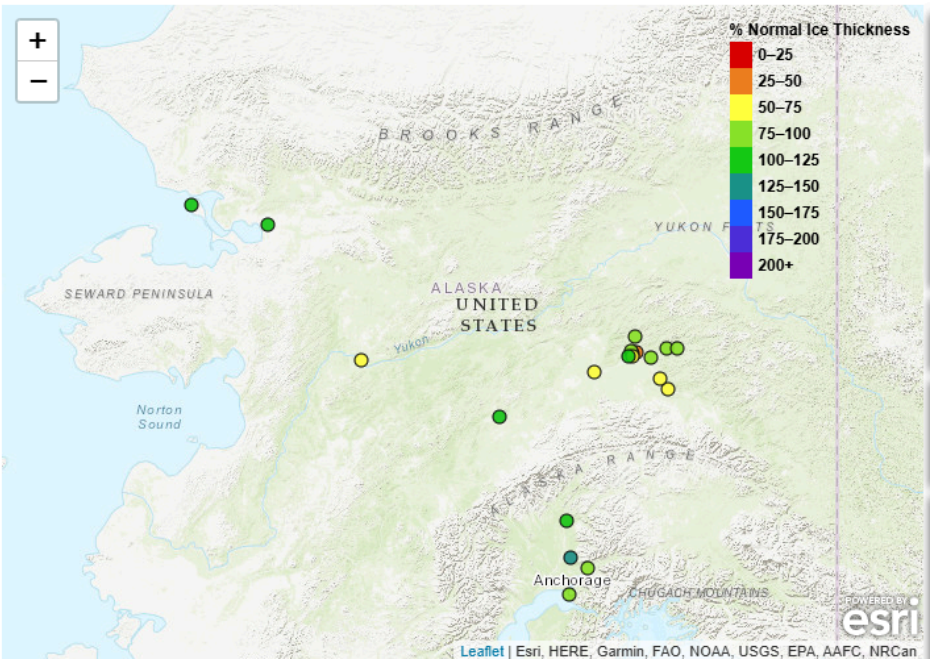
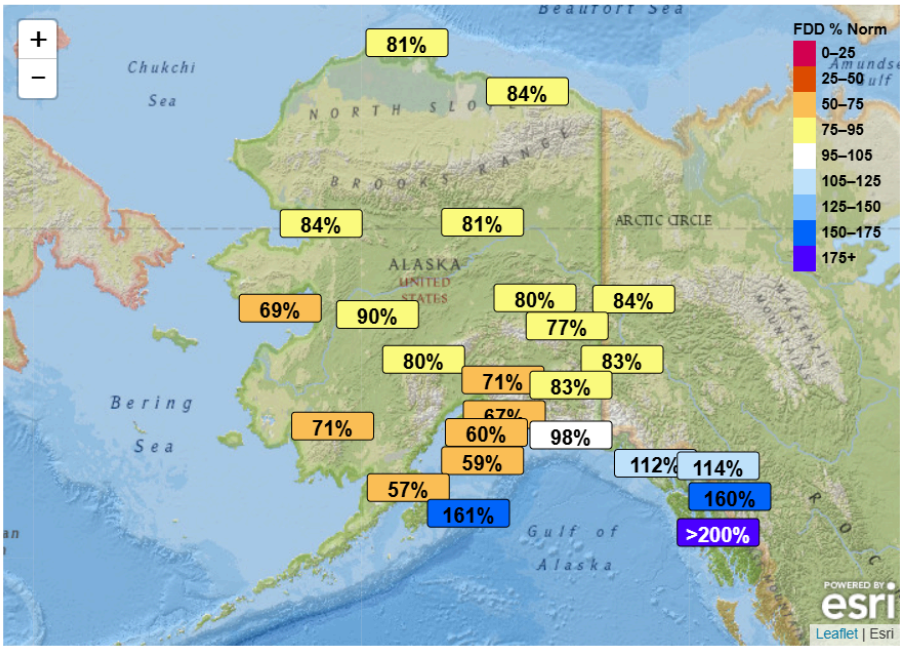
% Average Ice Thickness Map



Link to % Average ice thickness map

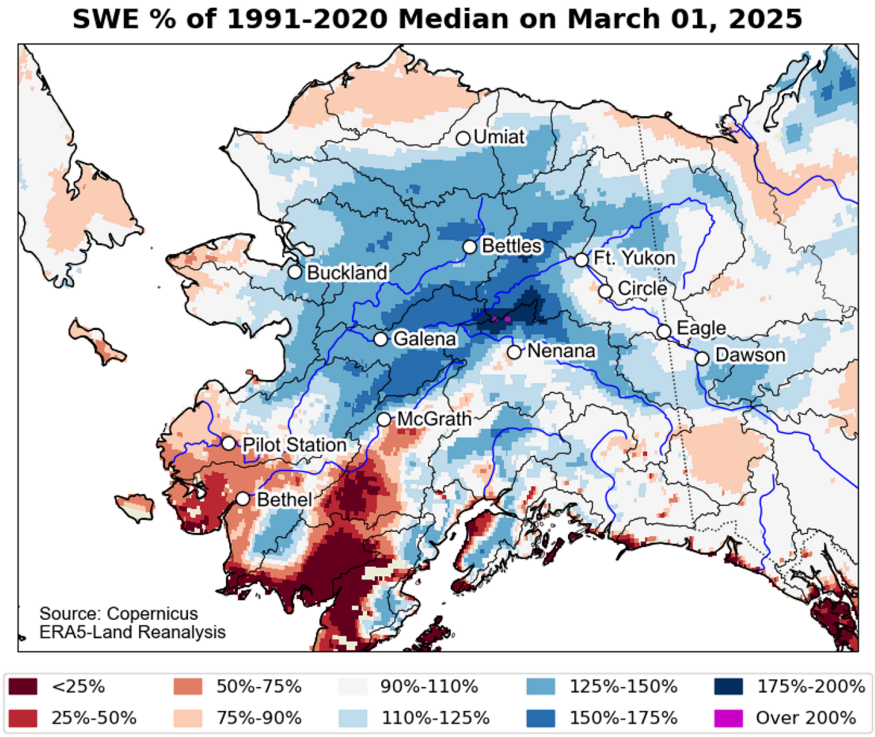
Freezing Degree Days - Percent of Normal



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 (see graphic 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, with some locations already experiencing melt-out.



Snowpack across the Yukon River Basin transitions from near normal in the headwaters of the Yukon River in the Yukon Territory to above average on the U.S. side of the Upper Yukon. 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 1.

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 in the Chena Basin north 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 1 indicates that while snowpack is above average around Galena, it drops to just 25–50% of normal near the mouth of the Yukon. Similarly, the Kuskokwim River Basin is experiencing well below-average snowpack conditions, 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, much of the snowpack has already melted out. The Copper River Basin is generally near normal for March 1, 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.

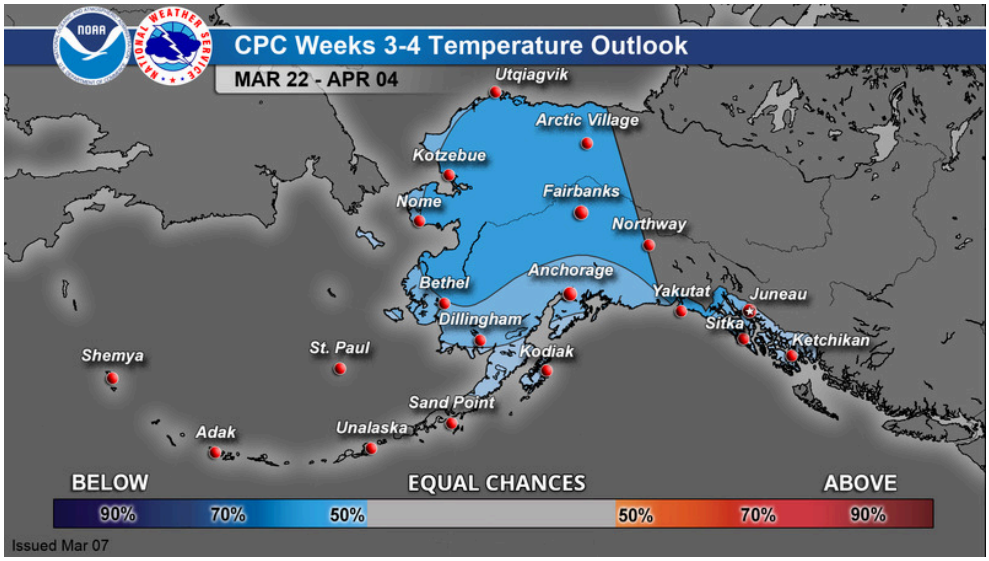
According to NOAA's Climate Prediction Center (CPC), the outlook for late March through early April favors below-normal temperatures across nearly the entire state. However, the three-month outlook (March–May), released in late February, shows an increasing likelihood of above-average temperatures across the North Slope and West Coast, while a slight chance of below-normal temperatures for Southcentral and the Eastern Interior, including the Upper Yukon Basin.

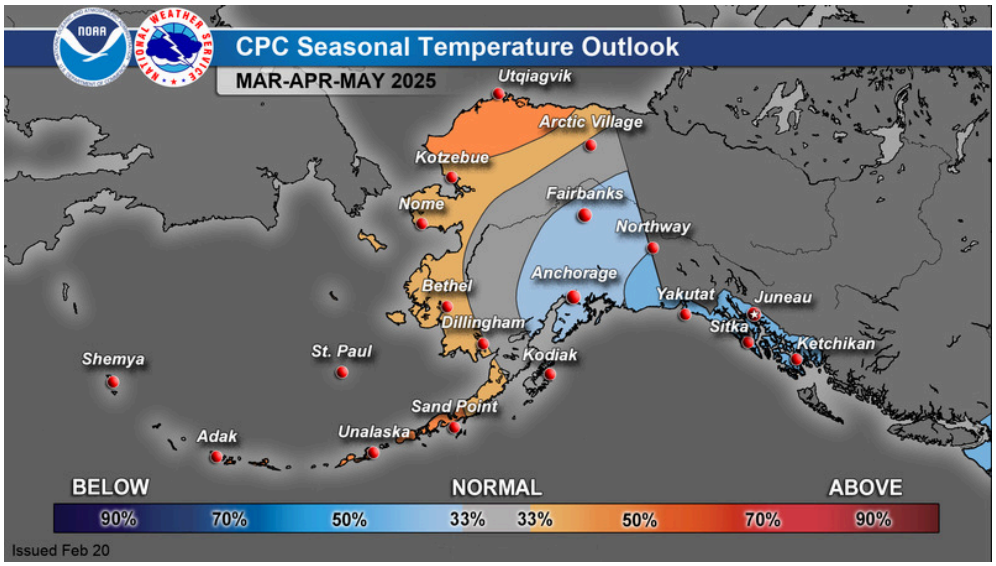
This projected temperature pattern could increase the risk of ice jam flooding along portions of the Upper and Middle Yukon Rivers, as well as the Tanana River, where above-average snowpack and cooler early spring temperatures may delay melt. In contrast, warmer-than-normal temperatures along the West Coast would likely lead to a more gradual, thermal breakup along the Lower Yukon and Kuskokwim Rivers, greatly reducing the risk of ice jam flooding in those areas this spring.

More recent climate guidance from March suggests a potential trend toward above-average temperatures in April across much of the state, which could further decrease the ice jam flood risk. A warmer-than-expected April would likely lead to a more prolonged and steady melt,

reducing the likelihood of an abrupt breakup and severe ice jams. If this warming trend continues, it could mitigate the ice jam risk even in areas with high snowpack, such as the Upper/Middle Yukon and Tanana River basins.

The next update will be published March 21, 2025.





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

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