



Alaska Climate Research Center
The Alaska State Climate Center



STATEWIDE CLIMATE SUMMARY FEBRUARY 2025

View of Denali from Fairbanks during a clear February morning.
Photo: Carl Schmitt

IN THIS ISSUE

	Monthly
Highlights.....	pg. 2
Significant Weather Events and Synoptics.....	pg. 3
Statewide Temperatures.....	pg. 4
Precipitation and snow	pg. 7
Arctic Sea Ice.....	pg. 12
Newsworthy Information.....	pg. 14



Alaska’s Statewide Climate Summary for February 2025 provides an overview of weather for the month based on data from selected weather stations throughout the state. “Departure from normal” refers to the climatological average over the 1991-2020 normal period. Here, we report on temperature, precipitation and drought conditions in the state, as well as the condition of the Arctic sea ice.

HIGHLIGHTS

**Very dry month in much of Alaska:
Driest February on record in Anchorage;
‘Abnormally dry’ conditions on the Panhandle;
Very little snow across southern AK**

**Warm in the west, cooler in eastern Alaska due to persistent
weather pattern early in the month**

Record low Arctic sea ice extent

Significant Weather Events and Synoptics

February was unusually dry in most of Alaska. After a very wet January with “Pineapple Express” atmospheric rivers and lots of heavy precipitation, the exceptionally dry weather this month made for quite the contrast, especially in South-Central Alaska. Anchorage had their driest February on record with only 6% of normal monthly precipitation. This comes on the heels of more than double the normal amount of precipitation in January.

At the synoptic scale, February started out with an Omega-type blocking pattern. Pronounced upper level lows over Siberia and western Canada flanked a ridge of high pressure over Alaska, forming the shape of the uppercase version of the Greek letter Omega (Ω , Fig. 1, upper panel). This type of pattern characteristically remains in place over a longer period of time and persisted over Alaska until about February 12.

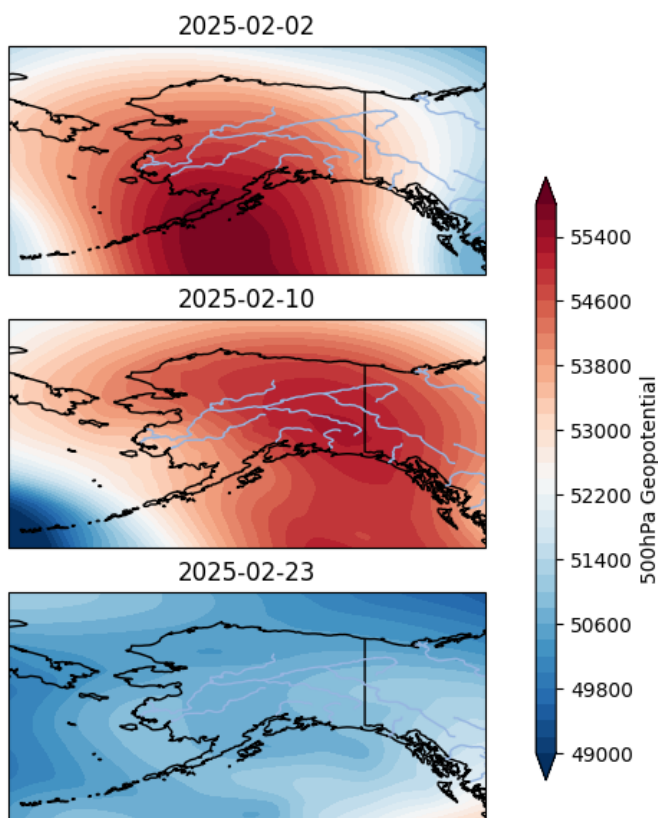


Figure 1. Geopotential height at 500hPa on Feb. 2, 10, and 23. A pronounced high pressure ridge remained in place for the first 10 days of the month. Data: ERA5 reanalysis

On the western flank of the Omega, i.e., upstream of the ridge, the upper level flow was from southerly directions due to the counterclockwise rotation of the low over Siberia. This allowed relatively warm air to move south to north and western Alaska saw above average temperatures during this period. The western coastal regions had some very windy, unsettled conditions. Meanwhile on the downstream (eastern) side of the Omega, cold, Arctic air flowed south. South-central and southeast Alaska had persistently cooler than average temperatures for the first 10-12 days of February with otherwise mostly calm and often sunny weather.

The Omega block began weakening just before mid-month, allowing low pressure to move into the Gulf of Alaska. This brought an end to the prolonged phase of

cool, calm weather in the southeast. Precipitation moved in and temperatures rose to warmer than normal levels. Elsewhere in the state, the change in the upper level pattern also brought changing weather, though the flip from cool to warmer was not as pronounced. In the southwestern coastal areas, temperatures trended downwards but remained at moderately above average levels with low pressure in the Bering Sea. The northwest saw a short cold spell as Arctic air briefly moved in around mid-month.

The month ended with a series of Gulf of Alaska storms that brought repeated rounds of snowfall to the southeast and at least a few flurries to the snow-starved southcentral AK. However, the late February precipitation did not make much of a dent in the very dry monthly precipitation statistics. The Panhandle and parts of the southwest are in “abnormally dry” conditions as of late February ([US drought monitor](#)).

Temperature

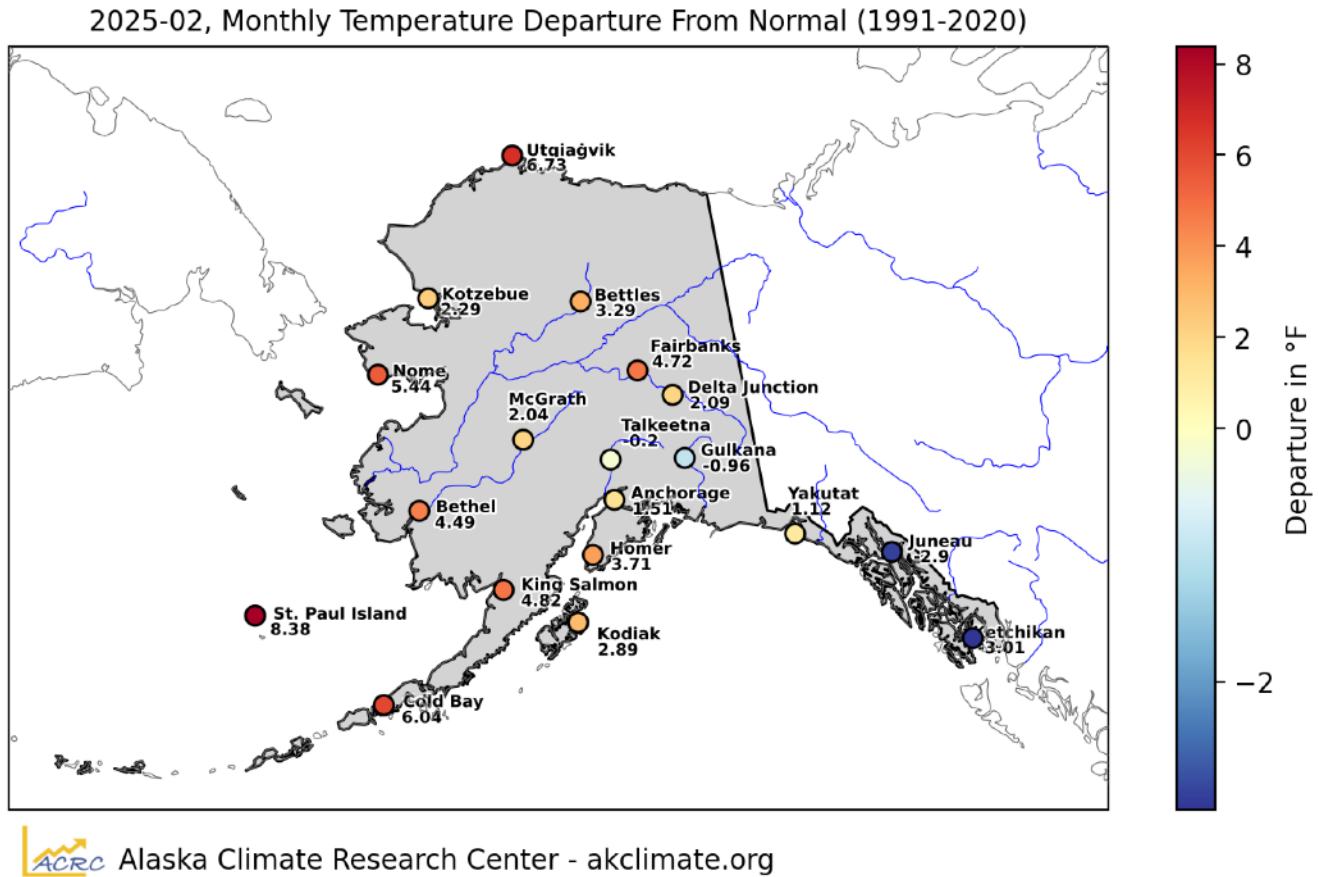


Figure 2. Monthly mean temperature departure from normal (°F), February 2025, at the selected First Order stations in Alaska.

In southeast Alaska, the cool first half of February made for below average monthly mean temperatures despite warmer conditions later in the month. Ketchikan and Juneau both had monthly deviations from normal around -3°F. Gulkana and Talkeetna were also slightly below normal (Fig. 2, Table 1). All of the other selected First Order stations had a warmer than average February compared to the 1991-2020 climatology. Stations on the west coast and in northern Alaska were warmest, relatively speaking: St Paul Island topped the list this month with +8.4°F above normal, followed by Utqiagvik (+6.7°F), Cold Bay (+6.0°F), and Nome (+5.4°F).

The daily temperature anomalies (Fig. 3) reflect the influence of the Omega block and the pattern change mid-month as discussed above. The shift from persistently cooler than normal temperatures to warmer weather is particularly pronounced for the stations on the Panhandle and in southcentral (e.g., Yakutat, Juneau, Ketchikan, Anchorage in Fig. 3). St. Paul Island and Cold Bay had continuous warmer than normal conditions this month, although temperatures were trending downwards during the last week of February. Utqiagvik and Nome had a very warm episode early in the month followed by several temperature swings and generally near normal conditions during the second half of the month.

The tables in the Appendix list all daily temperature records set in February at the selected stations. Records were set mainly in the southwest during the first half of the month. Cold Bay had three consecutive days of new daily records for average and minimum temperatures from Feb. 8 to Feb 10. St. Paul Island also had six days of records for daily average temperatures between Feb. 1 and Feb. 11.

Station	Observed (°F)	Normal (°F)	Departure (°F)
Anchorage	22.8	21.3	1.5
Bethel	17.8	13.3	4.5
Bettles	-0.1	-3.4	3.3
Cold Bay	36.3	30.3	6.0
Delta Junction	9.4	7.4	2.1
Fairbanks	4.9	0.2	4.7

Station	Observed (°F)	Normal (°F)	Departure (°F)
Gulkana	4.6	5.6	-1.0
Homer	32.0	28.3	3.7
Juneau	27.2	30.1	-2.9
Ketchikan	33.2	36.2	-3.0
King Salmon	26.9	22.1	4.8
Kodiak	35.2	32.3	2.9
Kotzebue	3.7	1.4	2.3
McGrath	6.6	4.6	2.0
Nome	14.5	9.0	5.4
St. Paul Island	33.7	25.3	8.4
Talkeetna	18.6	18.8	-0.2
Utqiagvik	-5.2	-11.9	6.7
Yakutat	31.8	30.6	1.1

Table 1. Mean monthly air temperature, normal (1991-2020) and departure for selected stations throughout the state, February 2025. Color-coded to match Figure 2.

Daily mean temperature, departure from normal (1991-2020), 2025-02

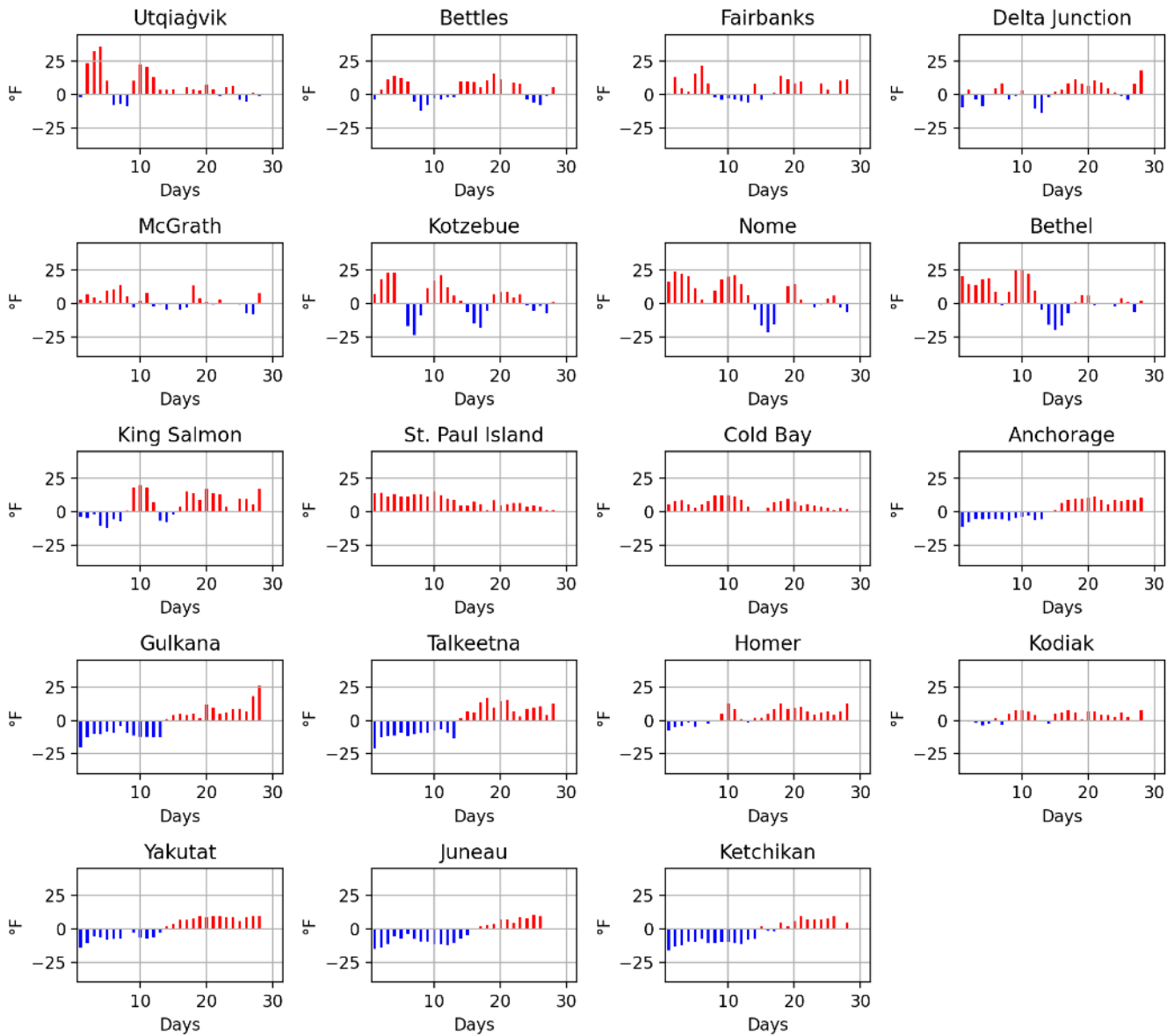


Figure 3. Daily mean temperature departures for each day in February 2025 at the selected stations.

Precipitation and snow

February was an exceedingly dry month in most of Alaska (Fig. 4, Fig. 5, Tab. 2). Only five of the 19 selected first order stations had normal or slightly above average precipitation. Kodiak was the wettest station in relative terms with 142% of normal. Delta Junction, Cold Bay and Nome were also slightly wetter than normal. Utqiagvik had an exactly “normal” month in terms of precipitation and in relation to the 1991-2020 average. All other

stations had a dry month with several very low values below 20% of normal. Anchorage and Talkeetna were driest in relative terms with only 6% of normal. Anchorage had its driest February on record with only 0.05 inches of monthly precipitation. The previous record for driest February was set in 1958 (0.07 inches). At the Anchorage airport station, measurable precipitation was recorded on only two days, February 16 and 27. Measurable snowfall occurred only on February 27. Some minimal flurries around mid-month are counted as “trace precipitation”, which means there was a small amount of precipitation (snow in this case) but not enough to be accurately measured. February 2025 is tied with 2003 for the lowest monthly snowfall sum in Anchorage since the start of the time series in 1953.

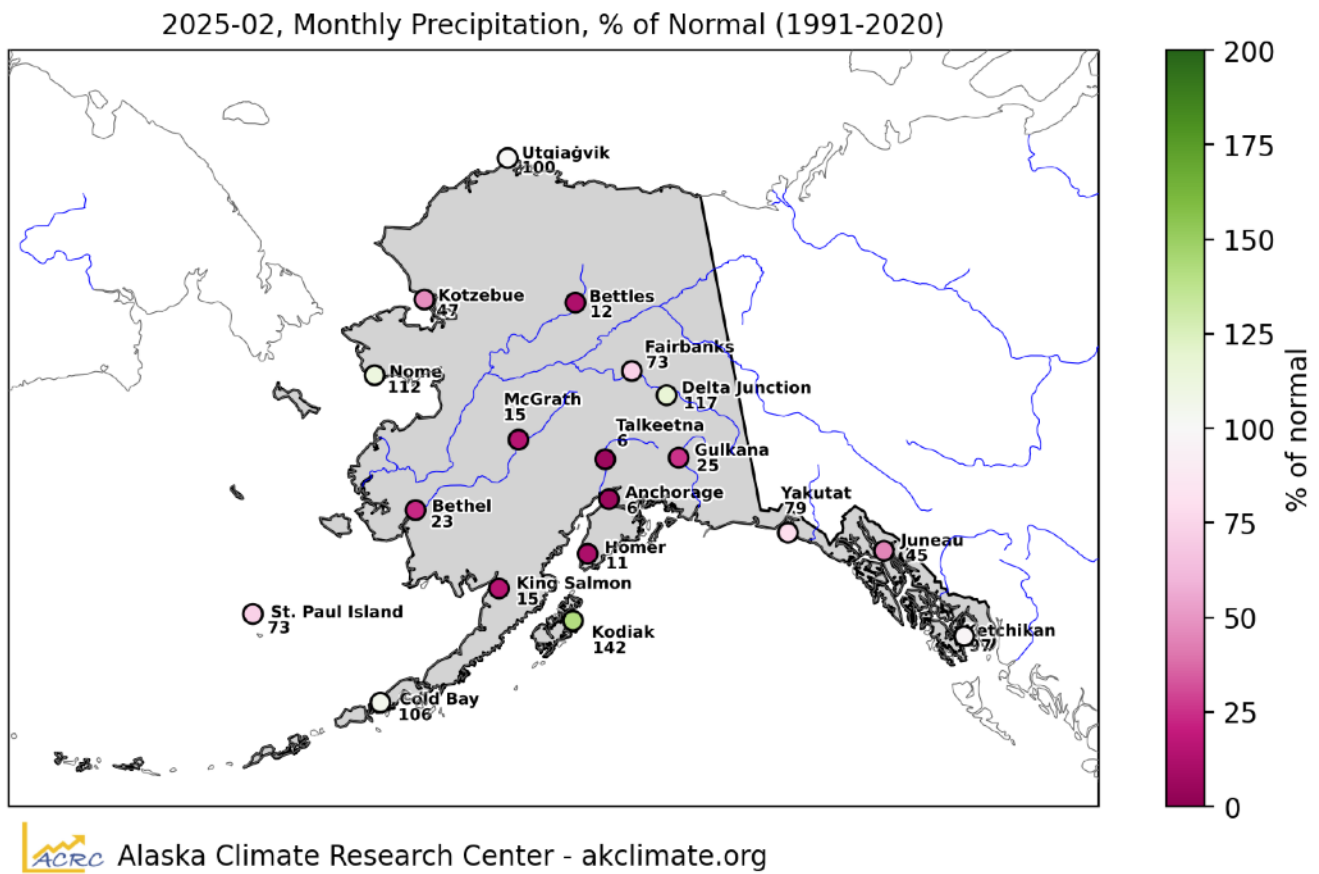


Figure 4. Monthly precipitation in percentage of normal (°F, 1991-2020 reference period), February 2025, at the selected First Order stations in Alaska.

Following the extremely dry February and warmth and rain in January, snow depths in and around Anchorage remain at low to non-existent levels. There is currently no measurable

snow depth at the airport station. In the over 70-year times series, zero or trace snow depth on February 28 was recorded in only four other years.

At the other three First Order stations with long term snow records, Fairbanks, Juneau, and Bettles, the month was also far below average in terms of snowfall. Fairbanks did “best” with 63% of normal and snow depth is still a fair bit above average here (Fig. 6). In Bettles, the snowfall record has substantial data gaps this month so we cannot compute reliable statistics. Snow depth has declined slightly throughout February but still sits at over 30 inches. Juneau started the month with 4 inches of snow at the airport station.

However, the snow pack melted and the ground was bare again by the end of the month. Monthly snowfall was far below average in Juneau with 0.1 inches. For comparison, the 1991-2020 snowfall normal for Juneau is 16.7 inches.

Based on spatially distributed model data, snow depth is particularly low and near zero in parts of the Bristol Bay region (Fig. 7). Current snow water equivalent values are far below normal for the time of year in southcentral and southeast Alaska as per the [NRCS Alaska Snow Survey](#).

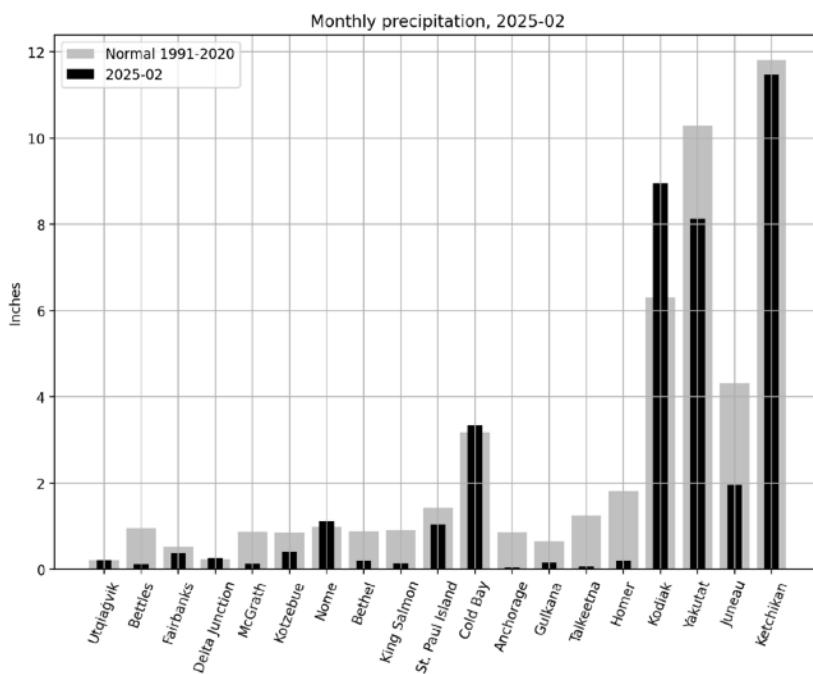


Figure 5. Monthly precipitation sum (black bars) compared to the 1991-2020 normal (grey bars) at the First Order stations.

Station	Precipitation (in)	Normal (in)	% of Normal
Anchorage	0.0	0.9	5.8
Bethel	0.2	0.9	22.7
Bettles	0.1	1.0	12.5

Station	Precipitation (in)	Normal (in)	% of Normal
Cold Bay	3.4	3.2	105.7
Delta Junction	0.3	0.2	117.4
Fairbanks	0.4	0.5	73.1
Gulkana	0.2	0.7	24.6
Homer	0.2	1.8	11.0
Juneau	2.0	4.3	45.5
Ketchikan	11.5	11.8	97.2
King Salmon	0.1	0.9	15.4
Kodiak	9.0	6.3	141.8
Kotzebue	0.4	0.8	47.1
McGrath	0.1	0.9	14.9
Nome	1.1	1.0	112.1
St. Paul Island	1.0	1.4	72.7
Talkeetna	0.1	1.2	5.6
Utqiagvik	0.2	0.2	100.0
Yakutat	8.1	10.3	79.0

Table 2. Monthly precipitation sum, normal (1991-2020) and departure expressed as a percentage of the normal (1991-2020) for selected stations throughout the state, February 2025. Colors match the color scale in Figure 4.

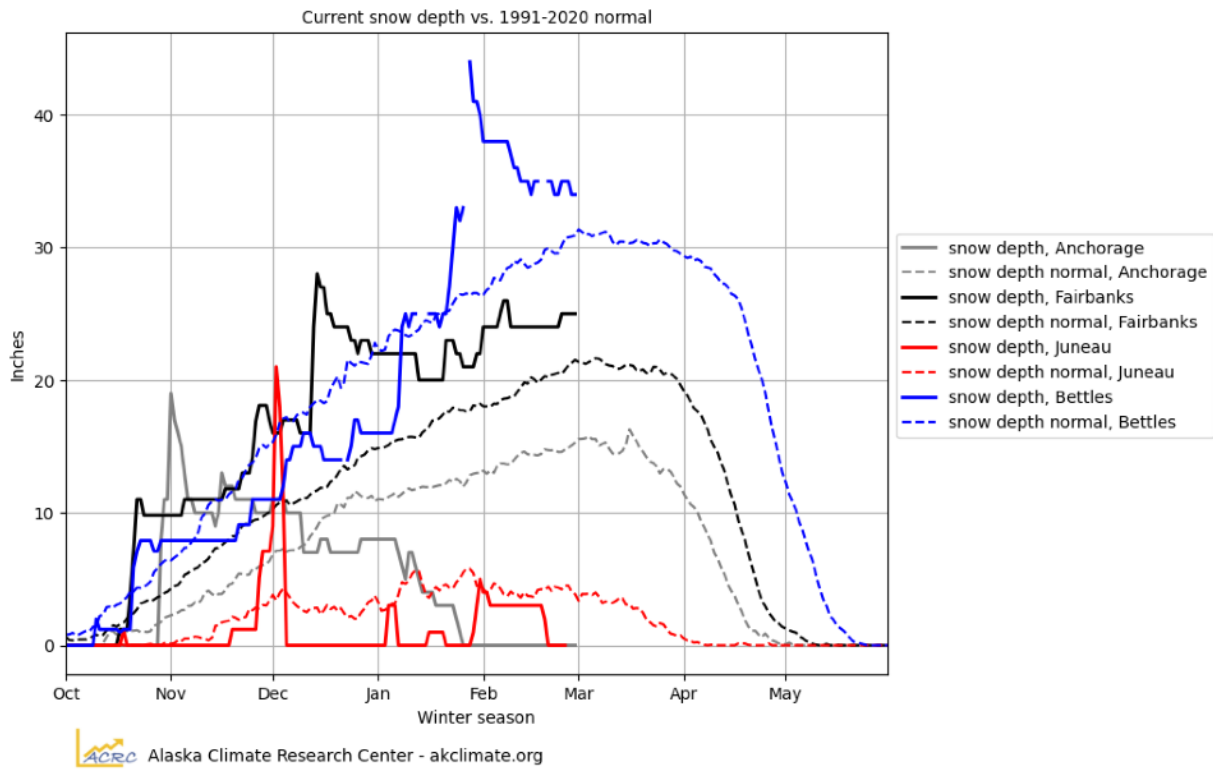


Figure 6. Current snow depth at the four first order stations with long term records compared to the climatological normal.

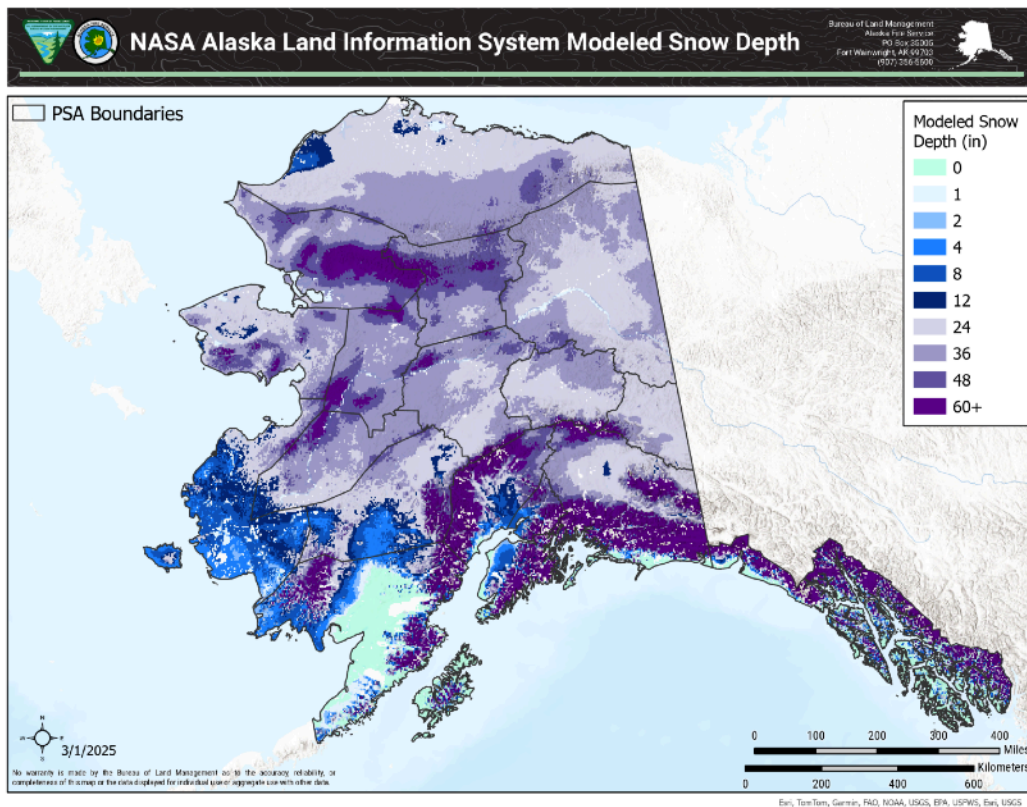


Figure 7. Modelled snow depth for March 1, 2025. Graphic BLM Alaska Fire Service. Data: [NASA](https://www.nasa.gov).

Arctic Sea Ice

Arctic sea ice is at record low levels in late February after hovering at or near the record low for the time of year throughout much of the month. Reliable data start in 1979 with the beginning of the satellite time series. Weekly change rates of sea ice extent began with unusual decreases of about 0.3% to 0.4% early in the month, followed by small increase rates of 1.6 to 2.0% per week and another slight loss of 0.6% during the last week of February. Total sea ice extent as of February 27 is 13.815 M km² compared to 13.454 M km² on January 30.

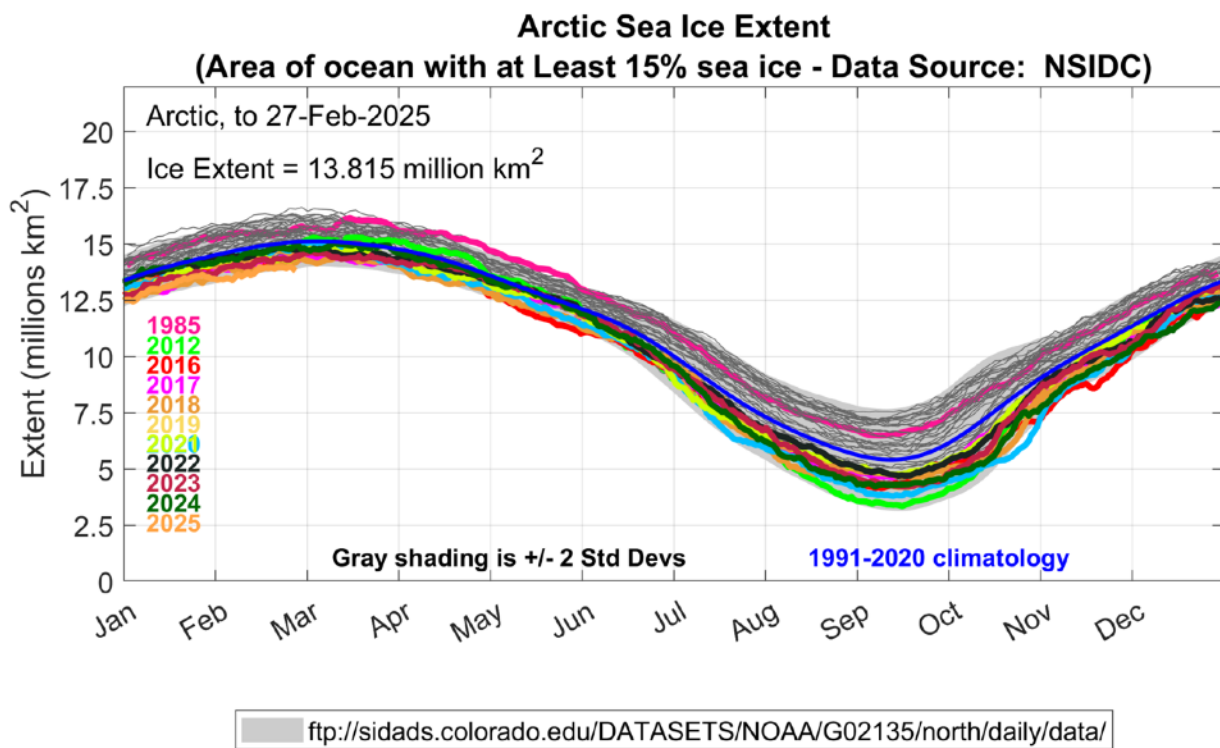


Figure 8. Time series of daily Arctic sea ice extent. This year's data (dark red) are updated until February 27, 2025. The median sea ice extent for the 1991-2020 reference period is depicted in blue. Specific years are highlighted in colors. Plot Compiled by: Howard J. Diamond, PhD; Climate Science Program Manager at NOAA's Air Resources Laboratory Data Source: National Snow & Ice Data Center (nsidc.org/)

Fig. 8 shows the current Arctic sea ice extent compared to climatology and previous notable years. Figures 9 A and B show Arctic sea ice extent and concentration on February 27, respectively.

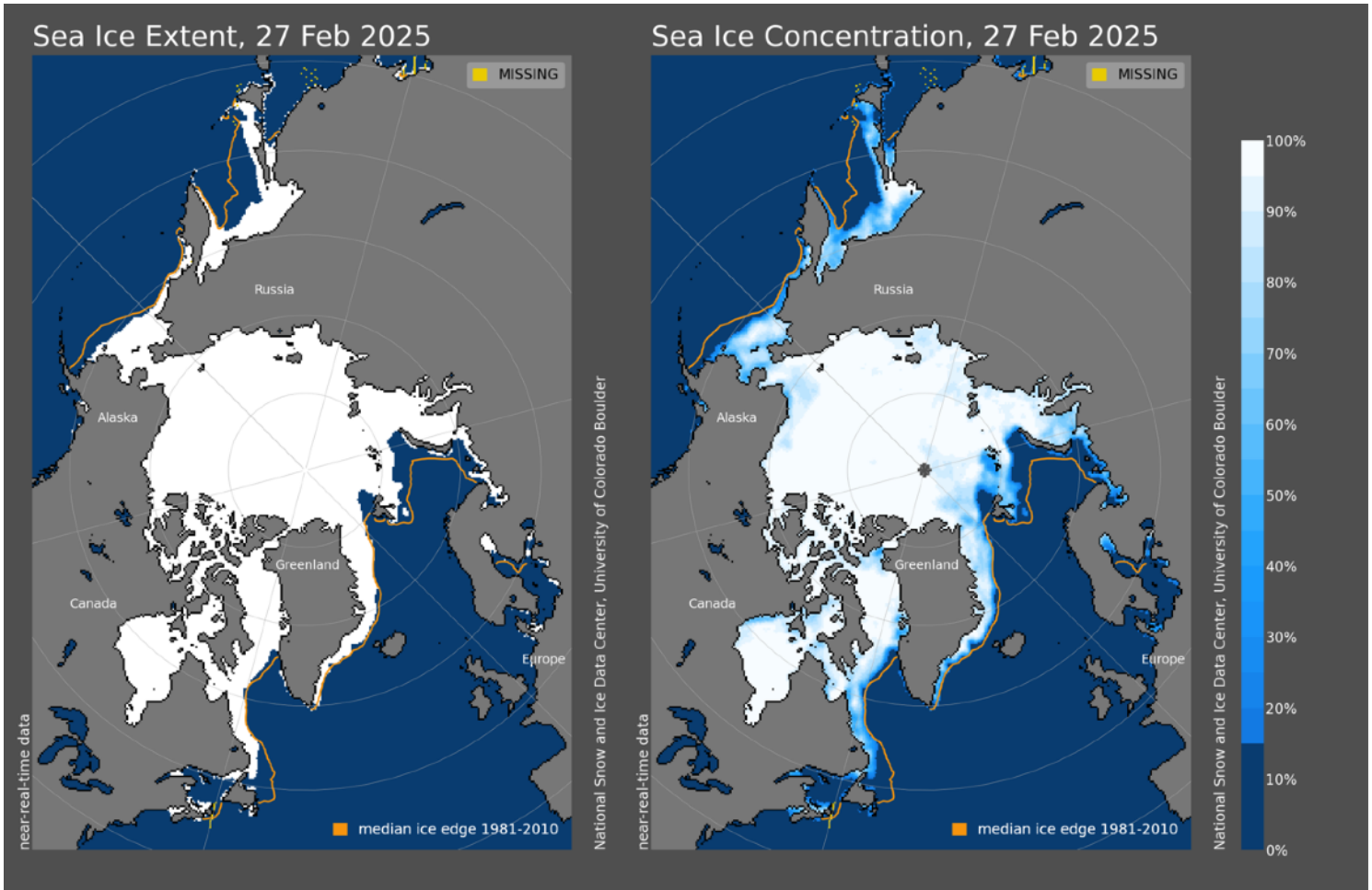


Figure 9. A (left) Arctic sea ice extent and B (right) concentrations as of February 27, 2025 compared to the average from 1981-2010 (Data and images: NSIDC)

Newsorthy Information

Iditarod start moved to Fairbanks due to lack of snow

The [Iditarod race had to adjust its route](#) due to poor, mostly snow-free trail conditions on a particularly challenging roughly 20 mile stretch of track in the Farewell Burn area near the Nikolai checkpoint. Concerns from mushers and organizers led to the decision to start in Fairbanks rather than Willow this year. The Fairbanks start was chosen for similar reasons in 2003, 2015, and 2017. After the ceremonial start in Anchorage on March 1, the actual start will take place on March 3. From Fairbanks, mushers will head west towards the usual finish line in Nome. The adjustment of the Iditarod route received widespread coverage in Alaskan media (e.g., [Alaska Public Media](#)). It was also picked up by [the Associated Press](#) and subsequently spread widely in national and Canadian media.

Suspension of Kotzebue radiosonde launches

The NWS put out [a statement](#) on February 27 announcing the immediate suspension of radiosonde observations in Kotzebue, citing a lack of staffing. Upper air observations from high latitudes are generally rare and concerns have been raised about the impacts of the suspension on weather forecasting and environmental monitoring in Alaska. The suspension comes in the wake of large budget and personnel cuts across federal agencies ([ADN report](#)).

Fatal crash of Bering Air plane

A Bering Air Cessna carrying 10 people crashed over Norton Sound on February 6 ([CNN article](#)). There were no survivors. Investigations are ongoing, but at this time it seems likely that adverse weather conditions played a role in the crash. The tragedy unfolded while the airplane was in a holding pattern off shore over the Norton Sound awaiting the Nome airport to be cleaned from snow. The weather surface analysis map close to the time of the accident shows an occluded front at the southern edge of the Norton Sound, and the variable winds indicate challenging conditions over the sound. The figure below shows the surface analysis map.

[WPC Surface Archive Page](#)

Surface analysis 00Z Fri Feb 7 2025

Calendar

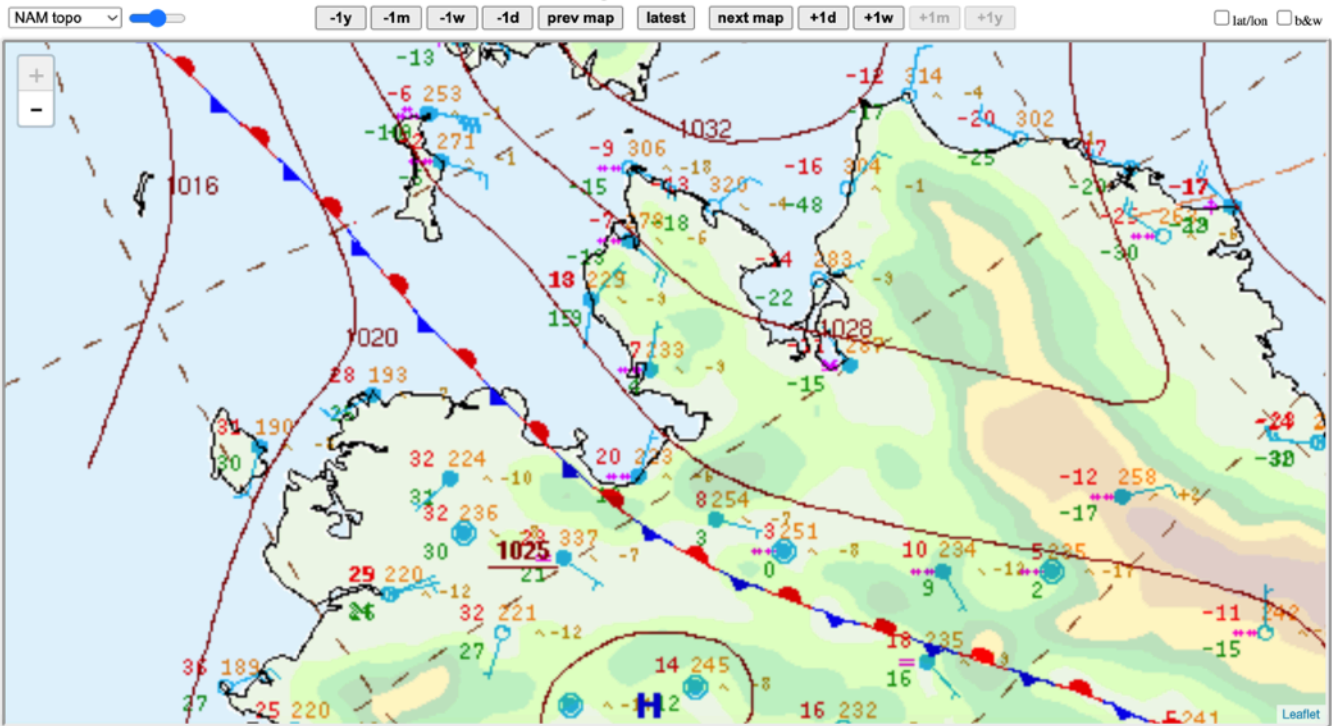


Figure 10. Surface analysis map over Norton Sound close to the time of the fatal crash of Bering Air Flight 445. The map shows an occluded front and variable wind conditions near the site of the accident.

Appendix

Highest Average Daily Temperature Record				
Station	Date	New Record (°F)	Year of Old Record	Old Record (°F)
Bethel	2025-02-10	37.5	2018	36.5
Cold Bay	2025-02-08	42.5	2003	40.0
Cold Bay	2025-02-09	42.5	1959	39.5
Cold Bay	2025-02-10	42.5	2018	40.5
King Salmon	2025-02-10	42.5	1986	42.0
St. Paul Island	2025-02-01	39.0	2019	38.5

St. Paul Island	2025-02-02	39.5	2019	38.0
St. Paul Island	2025-02-04	38.5	1989	37.5
St. Paul Island	2025-02-08	38.5	2018	37.5
St. Paul Island	2025-02-10	40.5	1923	37.0
St. Paul Island	2025-02-11	38.0	2019	37.0

Table A1: February 2025 daily records of maximum daily temperature, i.e. highest/lowest values of maximum daily temperature ever recorded on specific days. Records are computed since the beginning of the respective time series. 11 new highest daily temperature records were set.

Highest Maximum Daily Temperature Record				
Station	Date	New Record (°F)	Year of Old Record	Old Record (°F)
Cold Bay	2025-02-08	44.0	2003	42.0
Cold Bay	2025-02-10	45.0	2001	44.0
Cold Bay	2025-02-12	43.0	1968	42.0
St. Paul Island	2025-02-08	41.0	1916	40.0
St. Paul Island	2025-02-10	42.0	1994	41.0
Yakutat	2025-02-22	50.0	1947	46.0

Table A2: February 2025 daily records of maximum daily temperature, i.e. highest/lowest values of maximum daily temperature ever recorded on specific days. Records are computed since the beginning of the respective time series. Six new highest and no new lowest maximum daily temperature records were set.

Highest Minimum Daily Temperature Record				
Station	Date	New Record (°F)	Year of Old Record	Old Record (°F)
Bethel	2025-02-10	35.0	1929	34.0

Cold Bay	2025-02-08	41.0	2003	38.0
Cold Bay	2025-02-09	40.0	1959	36.0
Cold Bay	2025-02-10	40.0	1997	37.0
Cold Bay	2025-02-11	39.0	1995	37.0
King Salmon	2025-02-09	39.0	1933	38.0
St. Paul Island	2025-02-01	38.0	1927	36.0
St. Paul Island	2025-02-02	38.0	1978	36.0
St. Paul Island	2025-02-04	37.0	1989	36.0
St. Paul Island	2025-02-06	36.0	1959	35.0
St. Paul Island	2025-02-10	39.0	1923	35.0
St. Paul Island	2025-02-11	36.0	1923	35.0
Talkeetna	2025-02-18	34.0	1947	33.0
Yakutat	2025-02-28	39.0	1938	38.0

Table A3: February 2025 daily records of minimum daily temperature, i.e. highest/lowest values of minimum daily temperature ever recorded on specific days. Records are computed since the beginning of the respective time series. 14 new highest and no new lowest minimum daily temperature records were set.

ALASKA CLIMATE RESEARCH CENTER

This information consists of climatological data compiled by the Alaska Climate Research Center, Geophysical Institute, University of Alaska Fairbanks. For more information on weather and climatology, visit the center website at <http://akclimate.org>. Please report any comments, ideas or errors to uaf-climate@alaska.edu.