



Alaska Climate Research Center
Alaska State Climate Center

MONTHLY REPORT



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Alaska’s Statewide Climate Summary for April 2021 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 1981-2010 period. Here, we report on temperature and precipitation conditions in the state, as well as the condition of the Arctic sea ice.

HIGHLIGHTS

Colder April throughout the Interior of the state and **warmer than usual temperatures** along the North Slope, the Aleutians and at St. Paul Island.

Dozens of **new high and low temperature records** broken for the month.

Winter storms brought **significant precipitation** to the Interior of the state, with Fairbanks receiving significantly more snowfall than normal.

Average Arctic sea ice extent for the month **ranked 6th lowest** in the satellite record.

Temperature

Colder than normal temperatures were recorded for almost all first order stations across Alaska during the first part of April. Exceptions were Cold Bay and St. Paul Island, recording mostly continuous warmer than normal temperatures. For the whole month of April, the largest departures from normal include Fairbanks (-6.0 °F), Delta Junction (-5.2 °F) and Gulkana (-3.4 °F), as seen in Figures 1, 2 and Table 1. Warmer than normal temperatures were observed in a few locations with the biggest departures at St. Paul Island (+5.2 °F), Cold Bay (+4.3 °F), and Utqiagvik (+3.5 °F), likely feeling the effects of decreasing sea ice as the spring sea ice extent begins its decline. Near-normal temperatures were found along the Panhandle, Kodiak Island and the West Coast. Multiple new records were set this month, as can be seen in detail in the Appendix. Cold air descended on Alaska early in the month, when multiple low temperature records were broken before transitioning to record highs in some locations, just a week later. In Fairbanks, for example, the maximum temperature on April 9 was 3 °F and just days later, on April 12, was 50 °F. Figure 3 shows daily mean temperature departures for each day in April 2021, for which it is clear that at St. Paul Island, nearly every day this month was warmer than the normal. Among the more notable temperature records: Talkeetna set a new record for maximum daily temperatures on April 18 and 19, exceeding previous records from the 1920s, while, on the same dates, Ketchikan also set new maximum daily temperatures records, beating previous records from the 1930s. Kotzebue set a new lowest maximum daily temperature record previously set in April 7, 1903, as did Ketchikan (April 8, 1916) and King Salmon (April 9, 1918). A new maximum daily temperature record was recorded in Juneau on April 17, 2021 (70 °F), compared with 60 °F set in 1953.

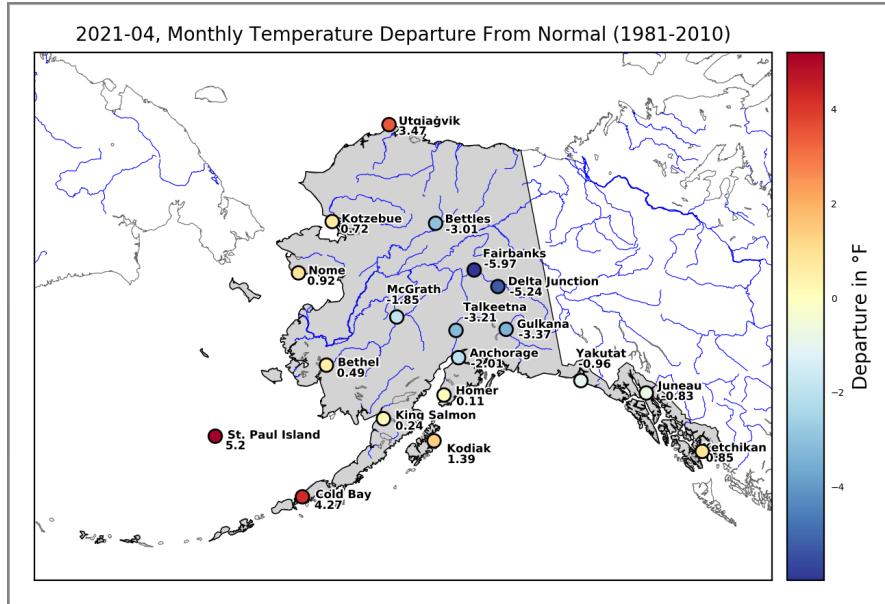


Figure 1. Monthly mean temperature departure from normal, April 2021, for selected stations around the state of Alaska.

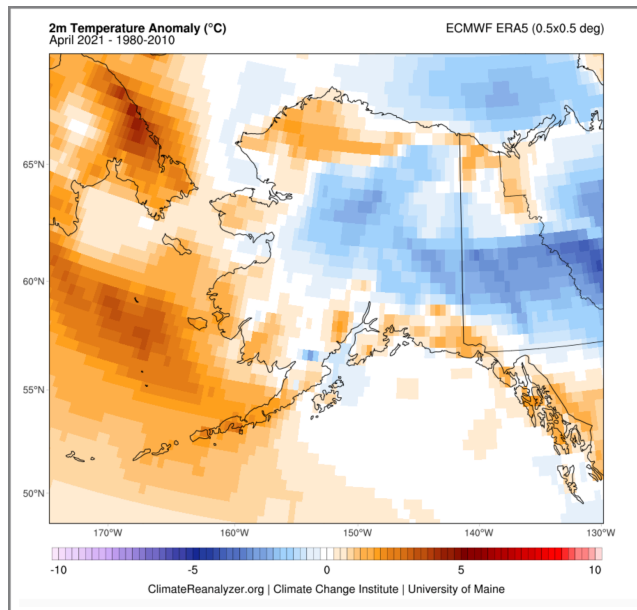


Figure 2. Temperature anomaly for the month of April 2021 relative to the 1981 to 2010 temperature normal as derived from ECMWF ERA5 4th generation reanalysis data (data source: Climate Reanalyzer, Climate Change Institute, University of Maine).

Station	Observed (°F)	Normal (°F)	Departure (°F)
Anchorage	34.8	36.08	-2.0
Bethel	27.4	26.9	0.5
Bettles	20.3	23.3	-3.0
Cold Bay	38.3	34.0	4.3
Delta Junction	26.8	32.2	-5.2
Fairbanks	26.6	32.6	-6.0
Gulkana	28.0	31.9	-3.4
Homer	37.0	37.0	0.1
Juneau	40.0	40.9	-0.8
Ketchikan	43.3	42.5	0.8
King Salmon	34.0	33.7	0.2
Kodiak	39.0	37.6	1.4
Kotzebue	14.0	13.3	0.7
McGrath	27.8	29.7	-1.8
Nome	21.4	20.5	0.9
St. Paul Island	34.3	29.2	5.2
Talkeetna	32.5	35.8	-3.2
Utqiagvik	5.2	1.8	3.5
Yakutat	36.7	37.8	-1.0

Table 1: Mean monthly air temperature, normal (1981-2010) and departure for selected stations throughout the state, April 2021. Color-coded to Figure 1 (yellow-orange-red = warmer than usual; shades of blue = cooler than usual).

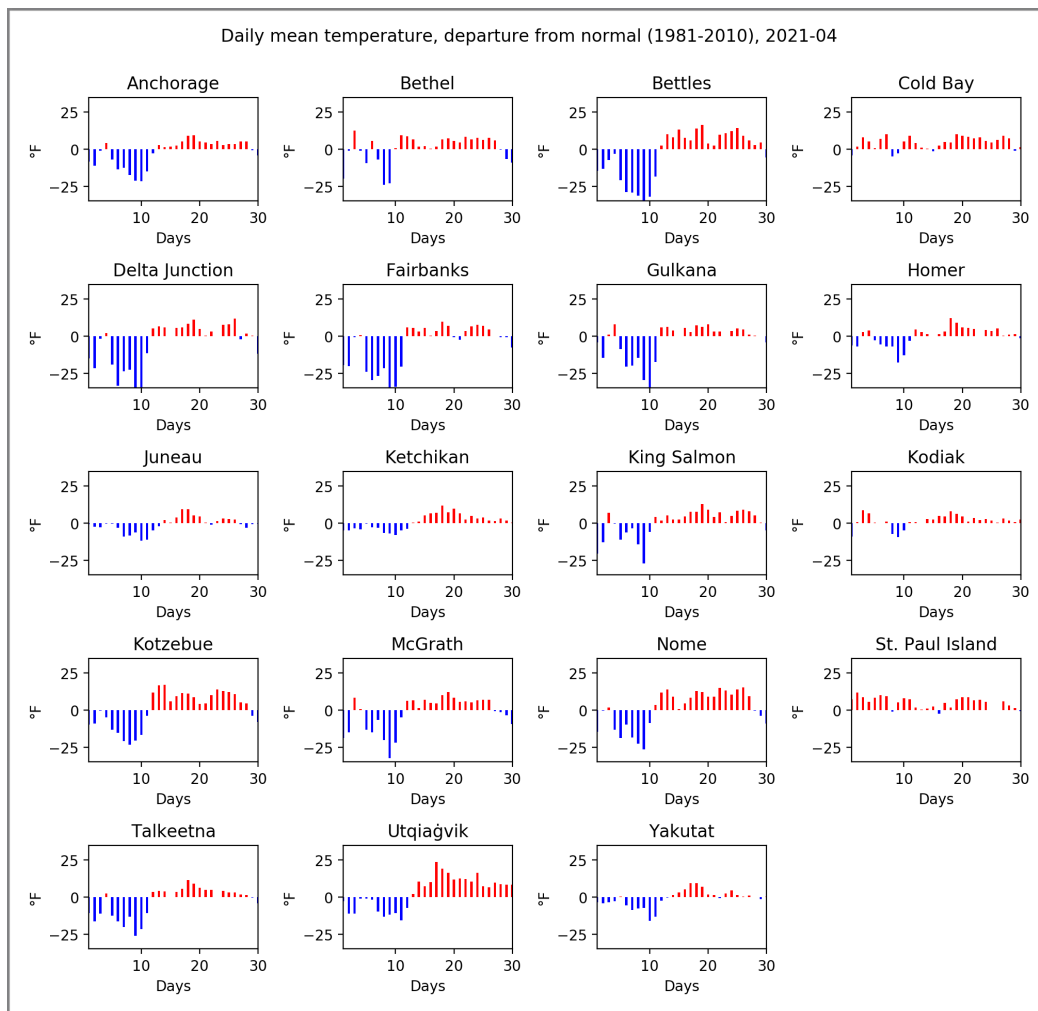


Figure 3. Daily mean temperature departures for each day in April 2021, at the selected stations.

Precipitation

Reporting stations from the West Coast to the East Interior and the Panhandle recorded higher than normal amounts of precipitation for the month due to open waters in the Bering Sea, along with typical La Niña conditions favoring above-normal precipitation. Significant above-normal precipitation was recorded in Fairbanks (397% of normal), Delta Junction (250%), and Gulkana (223%) (Figures 4A, B). A winter storm in early April brought over a foot of snow to Fairbanks in 48 hours, significantly increasing snow depth for the first half of the month and leading to a much wetter than normal April. Lower than normal amounts of precipitation were observed in Anchorage (40%), Homer (65%), McGrath (69%) and Utqiagvik (6%). Where appropriate, precipitation values from nearby SNOTEL sites

were substituted to get a more accurate representation of conditions for the month, including Bethel, Bettles and Delta Junction.

Figure 5 shows the monthly precipitation sums for April 2021 at the selected stations compared to the normal (1981-2010), in inches. Table 3 shows the monthly snowfall, normal, percentage of normal, and snow depth for locations with available National Weather Service snowfall data. While Fairbanks and Juneau reported significantly more precipitation than normal, Anchorage reported much less. Bettles reported near normal snow conditions for the month.

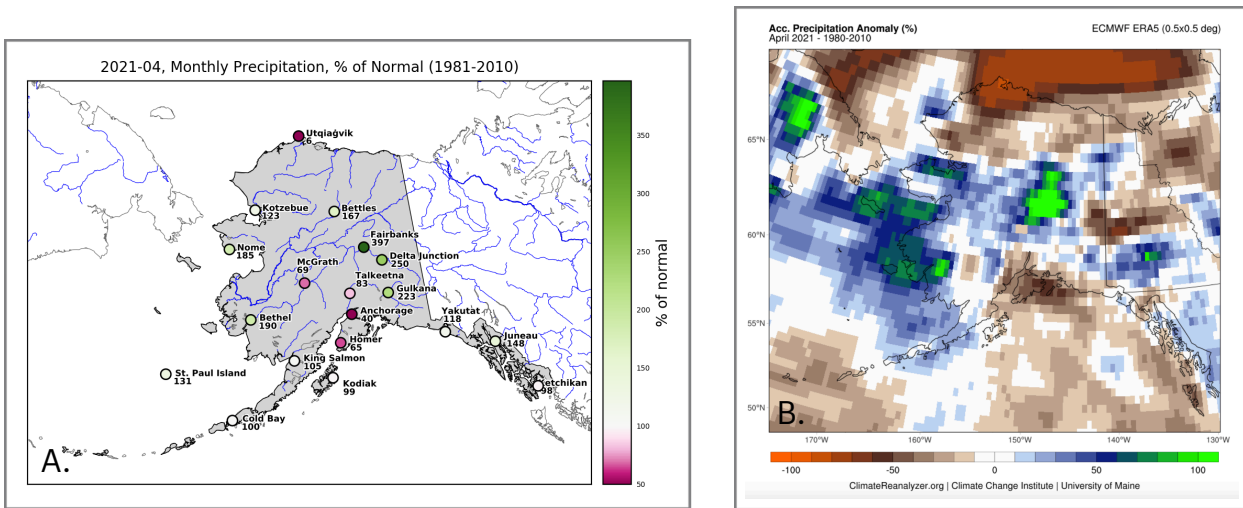


Figure 4. (A) Monthly mean precipitation departure from normal (in percent), April 2021, for selected stations around the state of Alaska. (B) Precipitation anomaly for the month of April 2021 relative to the 1981 to 2010 precipitation normal as derived from ECMWF ERA5 4th generation reanalysis data (data source: Climate Reanalyzer, Climate Change Institute, University of Maine).

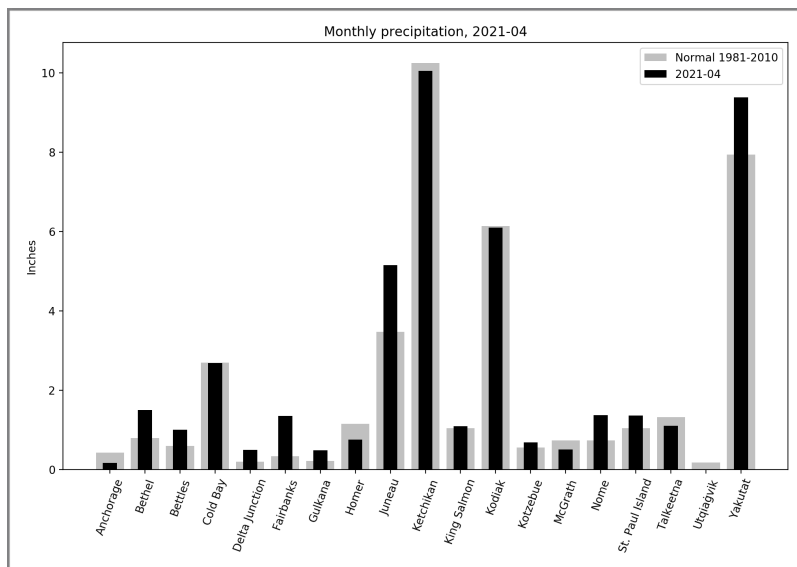


Figure 5. Monthly precipitation sums for April 2021 at the selected stations compared to the normal (1981 - 2010), in inches.

Station	Precipitation (in)	Normal (in)	% of Normal
Anchorage	0.2	0.4	39.5
Bethel	1.5	0.8	189.9
Bettles	1.0	0.6	166.7
Cold Bay	2.7	2.7	99.6
Delta Junction	0.5	0.2	250.0
Fairbanks	1.4	0.3	397.1
Gulkana	0.5	0.2	222.7
Homer	0.8	1.2	65.2
Juneau	5.2	3.5	148.4
Ketchikan	10.0	10.3	98.0
King Salmon	1.1	1.0	104.8
Kodiak	6.1	6.1	99.3
Kotzebue	0.7	0.6	123.2
McGrath	0.5	0.7	68.9
Nome	1.4	0.7	185.1
St. Paul Island	1.4	1.0	130.8
Talkeetna	1.1	1.3	83.3
Utqiagvik	0.0	0.2	5.6
Yakutat	9.4	7.9	118.1

Table 2. Monthly precipitation sum, normal (1981-2010) and departure expressed as a percentage of the normal (1981-2010) for selected stations throughout the state, April 2021. Shades of purple and green correlate with Figure 4A.

Station	Snow (in)	Normal (in)	Deviation (%)	Snow depth (in)
Anchorage	1.9	4.0	47.5	0
Bettles	5.4	6.4	84	12
Fairbanks	16.7	2.9	575.9	trace
Juneau	10.3	1.1	936.4	0

Table 3. Monthly snowfall sum, normal (1981 - 2010), departure expressed as a percentage of the normal, and end-of-month snow depth for the selected stations that measure snowfall, April 2021.

Arctic Sea Ice

From April 1 – 8, 2021, sea ice decreased by a rate of 2.23%; from April 8 – 15, there was a slower decrease rate of 1.38%; from April 15 – 21, a similar decrease rate of 1.42%; and from April 21 – 29, a very small decrease rate of 0.48%. The sea ice extent in the Arctic for the month of April was about 850,000 square kilometers (328,000 square miles) below the 1981-2010 average. Thus, the average extent for the month ranked as 6th lowest, with particularly low sea ice extent in the Barents, Bering and Labrador Seas. The spring decline in sea ice continued at varying rates throughout the month, highlighted by a mid-month pause. While above average air temperatures and low sea level pressure dominated the Atlantic part of the Arctic, near-average conditions were observed throughout the rest of the Arctic. Figure 6 shows the time series for 2021 of daily Arctic sea ice extent, up to April 29, 2021, while Figure 7 shows the sea ice extent for the month, as compared with the median edge (1981 – 2010).

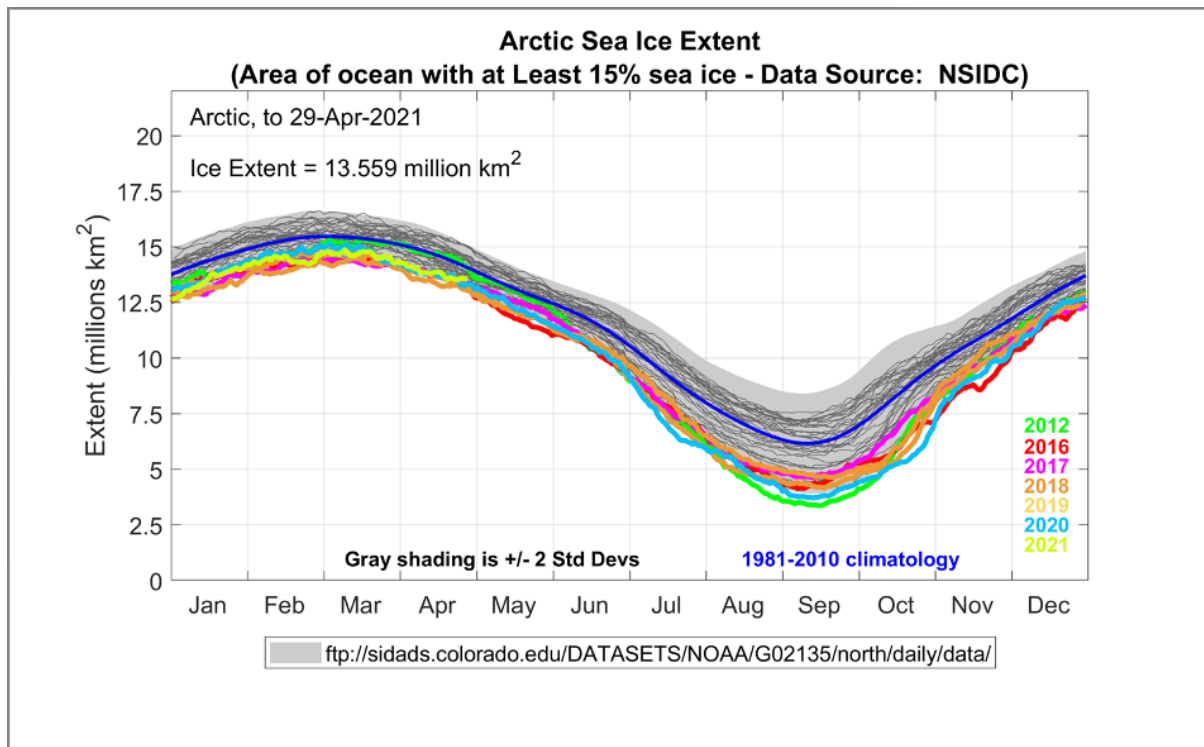


Figure 6. Time series of daily Arctic sea ice extent. This year’s data (lime green) are updated until April 29, 2021. The median sea ice extent for the 1981-2010 reference period is depicted in blue. Specific years are highlighted in colors. Plot Compiled by: Howard J. Diamond, PhD; Climate Science Program Manager at NOAA’s Air Resources Laboratory Data Source: National Snow & Ice Data Center (<https://nsidc.org/>).

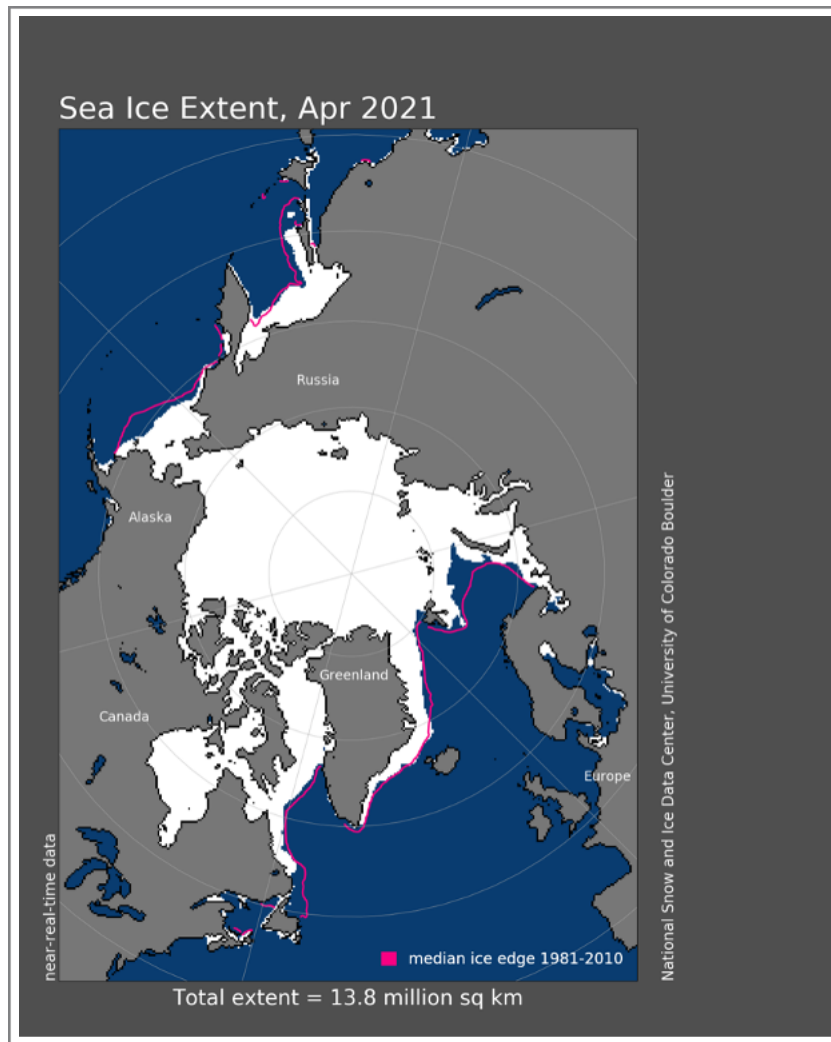


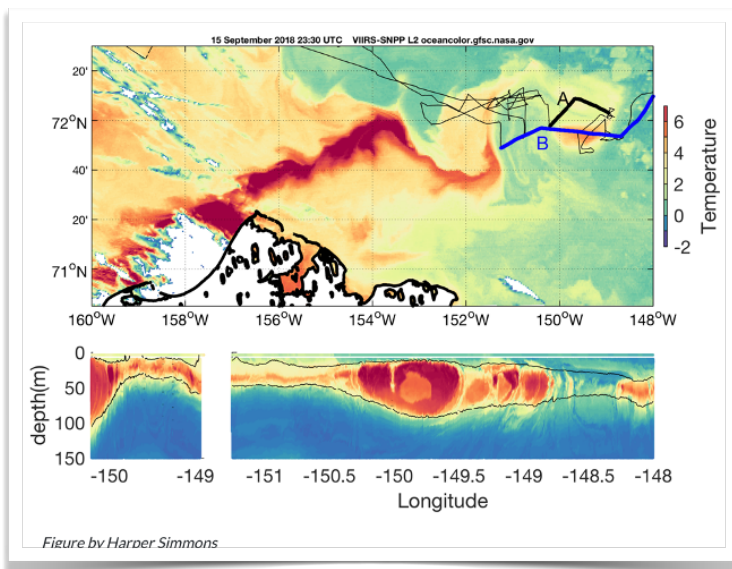
Figure 7. Arctic sea ice extent for April 2021. Image: National Snow and Ice Data Center (nsidc.org).

Newsorthy Information

Denali's Muldrow Glacier Surges

For the first time in 64 years, Denali's longest glacier, the Muldrow, is surging. A glacial surge is a short-lived, cyclical event where ice within a glacier advances suddenly and substantially, sometimes moving at speeds 10 to 100 times faster than normal. This section of glacier is normally easily and safely traversed and is the common northern route up Denali, but may be impossible to cross after the surge, which is to be expected based on reports from climbers after the 1956-57 surge and the abundant recent imagery collected from the current surge. Photo by Chris Palm.

<https://www.nps.gov/articles/dena-muldrow.htm>



Warm Arctic Seawater in the Beaufort Sea

Scientists from the University of Alaska Fairbanks and other institutions used the research vessel Sikuliaq, satellite imagery and an arsenal of scientific equipment to measure smaller-scale physical processes not represented by regional and global ice and climate forecasts. This new study provides the first high-resolution observations of warm, northbound water sliding beneath the surface of the cold Beaufort Sea.

<https://www.nature.com/articles/s41467-021-22505-5>

Kobuk 440 race rerouted due to snow and extreme winds

The Kobuk 440 Sled Dog Race in Northwest Alaska resumed Monday, April 5, 2021, after dangerous weather paused the race on Sunday and organizers rerouted the course. “This feels like the most difficult 440 that we’ve ever had, weather-wise,” said Paul Hansen, president of the race.

<https://www.adn.com/alaska-news/2021/04/06/kobuk-440-rerouted-after-snow-and-extreme-winds-pause-race/>



Nic Petit runs in Shungnak during the 2021 Kobuk 440. (Photo by Whitney McLaren Photography)

Appendix

Table A1: April 2021 daily records of mean daily temperature, i.e. highest/lowest values of mean daily temperature ever recorded on specific days. Records are computed since the beginning of the respective time series. 15 new records for highest mean daily temperatures was set and 17 for lowest mean daily temperature record.

Highest Mean Daily Temperature on Record				
Station	Date	New Record (°F)	Year of Old Record	Old Record (°F)
Anchorage	2021-04-18	47.0	1965	46.0
Anchorage	2021-04-19	47.5	1990	45.5
Cold Bay	2021-04-07	42.5	1990	41.0
Cold Bay	2021-04-19	45.0	1979	44.0

Cold Bay	2021-04-20	44.0	1979	43.5
Homer	2021-04-18	50.0	2015	47.0
Juneau	2021-04-17	50.5	1999	46.5
Juneau	2021-04-18	51.0	2010	49.0
Ketchikan	2021-04-18	54.5	1951	51.0
King Salmon	2021-04-19	48.0	1951	44.5
St. Paul Island	2021-04-20	39.0	1981	38.0
Talkeetna	2021-04-18	48.5	2015	46.0
Talkeetna	2021-04-19	46.5	1999	46.0
Yakutat	2021-04-17	47.5	1930	44.5
Yakutat	2021-04-18	48.0	1990	47.5

Lowest Mean Daily Temperature on Record				
Station	Date	New Record (°F)	Year of Old Record	Old Record (°F)
Anchorage	2021-04-09	13.0	1986	16.0
Anchorage	2021-04-10	13.0	1985	14.5
Bethel	2021-04-08	-1.5	1955	-0.5
Bettles	2021-04-08	-14.0	1986	-11.5
Bettles	2021-04-09	-21.0	1955	-9.0
Bettles	2021-04-10	-13.0	1985	-11.0
Delta Junction	2021-04-06	-7.5	1986	-1.0
Delta Junction	2021-04-10	-8.0	1985	-0.5
Fairbanks	2021-04-05	0.5	1930	1.5
Fairbanks	2021-04-09	-12.0	1986	3.0
Fairbanks	2021-04-10	-5.5	2013	0.5
Gulkana	2021-04-10	-6.0	1986	-3.0
Homer	2021-04-09	17.5	1968	19.0
King Salmon	2021-04-09	4.0	1985	8.5

McGrath	2021-04-09	-7.5	1985	-6.5
Talkeetna	2021-04-09	7.0	1949	11.0
Yakutat	2021-04-10	20.5	1986	22.5

Table A2: April 2021 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. 28 new highest maximum daily temperature records were set and 14 for lowest maximum daily temperature records.

Highest Maximum Daily Temperature on Record				
Station	Date	New Record (°F)	Year of Old Record	Old Record (°F)
Anchorage	2021-04-19	61.0	1965	57.0
Anchorage	2021-04-23	60.0	1956	57.0
Bettles	2021-04-18	53.0	1978	52.0
Bettles	2021-04-19	55.0	1993	52.0
Bettles	2021-04-24	57.0	1994	55.0
Bettles	2021-04-25	60.0	2007	56.0
Cold Bay	2021-04-07	50.0	1987	47.0
Cold Bay	2021-04-19	53.0	2020	49.0
Cold Bay	2021-04-27	55.0	2019	51.0
Delta Junction	2021-04-19	64.0	1993	60.0
Gulkana	2021-04-18	61.0	2020	60.0
Gulkana	2021-04-19	60.0	1999	55.0
Gulkana	2021-04-20	56.0	1951	55.0
Homer	2021-04-19	57.0	2014	54.0
Homer	2021-04-26	59.0	1936	56.0
Juneau	2021-04-16	58.0	2012	57.0
Juneau	2021-04-17	70.0	1953	60.0

Juneau	2021-04-18	68.0	2020	61.0
Juneau	2021-04-19	65.0	1978	62.0
Ketchikan	2021-04-18	72.0	1934	64.0
Ketchikan	2021-04-19	67.0	1934	62.0
McGrath	2021-04-19	61.0	1999	59.0
Talkeetna	2021-04-17	61.0	1965	59.0
Talkeetna	2021-04-18	65.0	1920	58.0
Talkeetna	2021-04-19	64.0	1926	58.0
Yakutat	2021-04-17	67.0	1996	57.0
Yakutat	2021-04-18	64.0	1993	58.0
Yakutat	2021-04-19	60.0	1978	59.0

Lowest Maximum Daily Temperature Record				
Station	Date	New Record (°F)	Year of Old Record	Old Record (°F)
Anchorage	2021-04-09	20.0	2013	24.0
Bettles	2021-04-08	-2.0	1984	7.0
Bettles	2021-04-09	-3.0	1985	1.0
Delta Junction	2021-04-09	-2.0	1986	8.0
Fairbanks	2021-04-09	3.0	2013	13.0
Gulkana	2021-04-09	8.0	1986	11.0
Gulkana	2021-04-10	11.0	1986	18.0
Juneau	2021-04-10	29.0	1968	35.0
Juneau	2021-04-11	36.0	1986	37.0
Ketchikan	2021-04-08	39.0	1916	40.0
King Salmon	2021-04-09	13.0	1918	17.0
Kotzebue	2021-04-07	-8.0	1903	-5.0
Talkeetna	2021-04-09	15.0	2013	22.0
Yakutat	2021-04-10	27.0	1968	33.0

Table A3: April 2021 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. Five new records for highest minimum daily temperatures were set and 12 new records for lowest minimum daily temperature.

Highest Minimum Daily Temperature on Record				
Station	Date	New Record (°F)	Year of Old Record	Old Record (°F)
Bethel	2021-04-22	36.0	2008	35.0
Cold Bay	2021-04-21	41.0	2016	40.0
Cold Bay	2021-04-22	40.0	1958	39.0
St. Paul Island	2021-04-07	36.0	2016	35.0
Utqiagvik	2021-04-17	19.0	1951	18.0

Lowest Minimum Daily Temperature on Record				
Station	Date	New Record (°F)	Year of Old Record	Old Record (°F)
Anchorage	2021-04-08	9.0	1986	10.0
Anchorage	2021-04-09	6.0	1986	7.0
Anchorage	2021-04-10	4.0	1985	7.0
Bettles	2021-04-09	-39.0	1955	-24.0
Bettles	2021-04-10	-35.0	1955	-25.0
Delta Junction	2021-04-06	-30.0	1945	-17.0
Delta Junction	2021-04-10	-27.0	1946	-8.0
Fairbanks	2021-04-06	-24.0	1986	-14.0
Fairbanks	2021-04-09	-27.0	1986	-12.0
Fairbanks	2021-04-10	-29.0	1955	-15.0
King Salmon	2021-04-09	-5.0	1985	-2.0
McGrath	2021-04-09	-22.0	1985	-19.0

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 any errors to webmaster@akclimate.org.