

Alaska Statewide Climate Summary

May 2019

The following report provides an overview of the May 2019 weather. The report is based on preliminary data from selected weather stations throughout the state of Alaska. “Departure from normal” refers to the climatological average over the 1981-2010 period.

Temperature

Warmer than normal temperatures persist. Following the March and April trend, warmer than average temperatures were observed during the month of May 2019. As shown in Figure 1 and Table 1, all the analyzed stations recorded again this month above normal temperatures. While temperature departures are relatively smaller in the Interior and the southern part of Alaska, northern and northwestern coastal areas present the highest deviations. In Utqiagvik and Kotzebue, mean monthly temperature were 6.5 and 11.4 °F warmer than normal, with 27.7 and 43.3 °F respectively. As for the previous months, exceptionally warm temperatures measured in Kotzebue and Utqiagvik are related to the early disappearance of sea ice in the Kotzebue Sound and the reduced sea ice extent in the Beaufort Sea. Ketchikan in the southeastern Panhandle, Bethel in southwest, and Fairbanks and Delta Junction in the Interior follow in the ranking with temperatures respectively 5.2, 5.0, 4.4 and 4.2 °F warmer than normal. Only Talkeetna recorded a departure from normal temperature less than 1 °F.

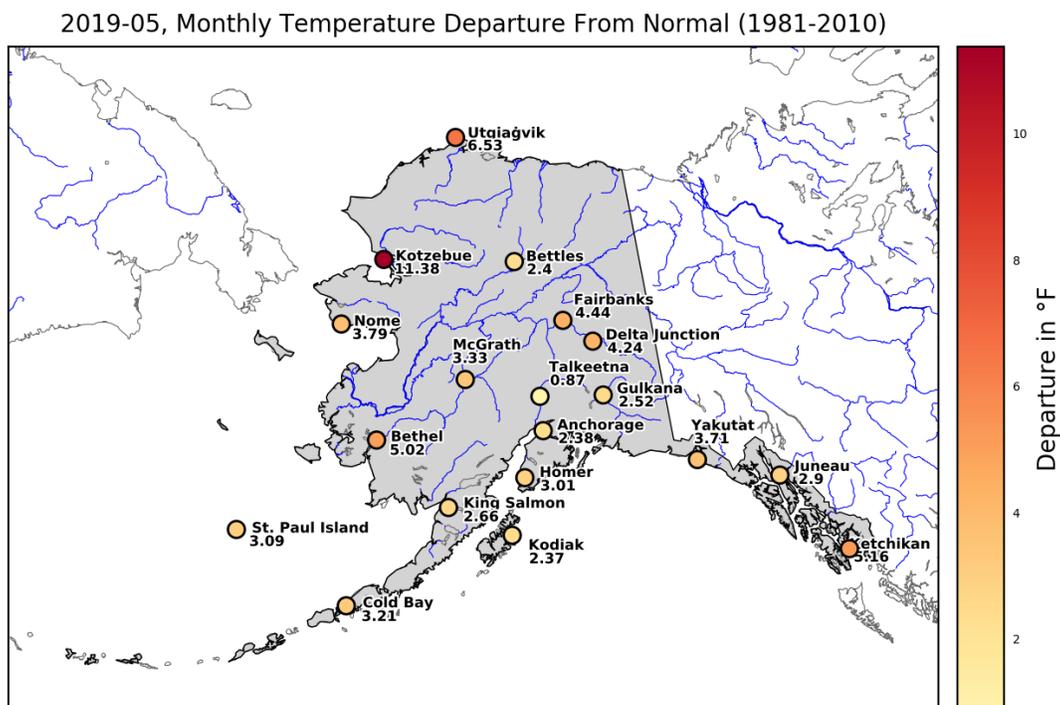


Figure 1: Monthly mean temperature departure from normal, May 2019.

Table 1: Mean monthly air temperature, normal (1981-2010) and departure for selected stations throughout the state, May 2019.

Station	Observed (°F)	Normal (°F)	Departure (°F)
Anchorage	50.2	47.8	2.4
Bethel	46.9	41.9	5.0
Bettles	46.8	44.4	2.4
Cold Bay	43.5	40.3	3.2
Delta Junction	51.8	47.6	4.2
Fairbanks	53.8	49.4	4.4
Gulkana	47.7	45.2	2.5
Homer	47.5	44.5	3.0
Juneau	51.5	48.6	2.9
Ketchikan	53.7	48.6	5.2
King Salmon	46.8	44.1	2.7
Kodiak	46.7	44.3	2.4
Kotzebue	43.3	31.9	11.4
McGrath	50.0	46.7	3.3
Nome	40.6	36.8	3.8
St. Paul Island	39.2	36.2	3.1
Talkeetna	48.6	47.7	0.9
Utqiagvik	27.7	21.1	6.5

For the fourth month in a row, Kotzebue sets a new mean temperature record. With 43.3 °F, May 2019 was 2.7 and 2.9 °F warmer than 2016 and 2015, respectively the second and third warmest years on record. At a mean monthly temperature of 53.7 °F, Ketchikan recorded the second warmest May from 1911. In Bethel and Utqiagvik, this month was the fourth warmest May on record. Fairbanks and Yakutat recorded the fifth warmest mean monthly temperatures on record for May, with 53.8 and 48.3 °F. Multiple stations set new daily temperature records for mean, minimum and maximum temperatures. All values and dates are listed in Table A in the appendix.

Figure 2 shows temperature deviations at all of the selected stations for each day of the month. Most of the stations show consistent positive deviations from normal throughout the entire month. Few stations, such as Talkeetna, Juneau and Gulkana, recorded few isolated days with slightly cooler than normal temperatures. Some stations in the Interior, in particular Fairbanks, Delta Junction and Bettles saw few consecutive days of cooler than normal temperatures at the beginning of the month, and substantially warmer than normal temperatures afterwards. Kotzebue and Utqiagvik recorded continuously warmer than normal temperatures for the entire month.

Daily mean temperature, departure from normal (1981-2010), 2019-05

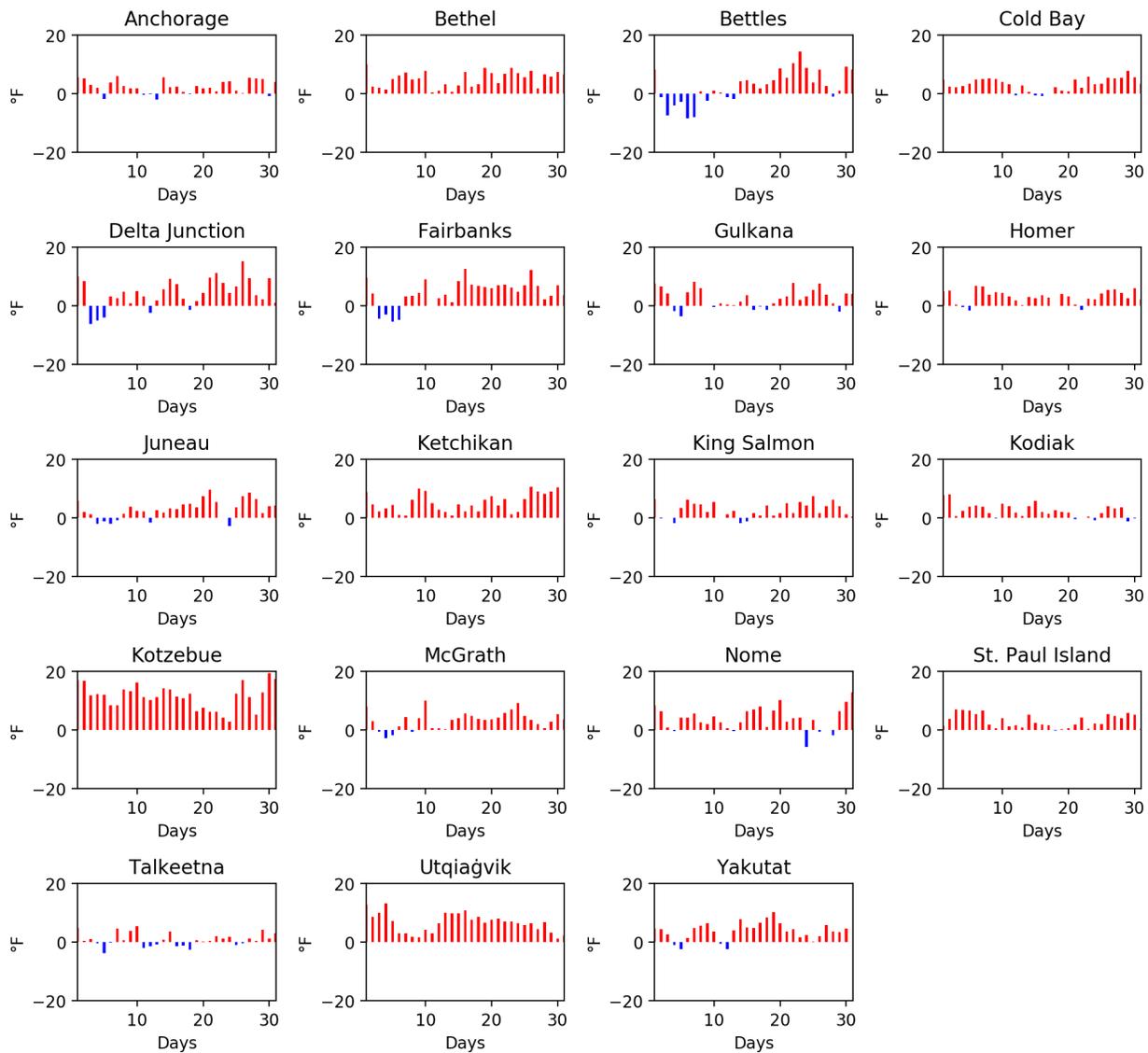


Figure 2: Daily mean temperature departures for each day in May 2019, at the selected stations.

Precipitation

Precipitation does not show a clear spatial pattern for the month of May 2019 (Figure 3, Table 2). Stations located in the Panhandle, such as Ketchikan, Juneau and Yakutat recorded lower than normal precipitation. Conversely, most of the stations of the Interior and South, Southwest part of Alaska, show above normal precipitation with the exception of Bettles and McGrath, where precipitation was slightly lower than normal. Along the west and north coasts, while Nome and Utqiagvik measured higher than normal precipitation, Kotzebue saw relatively drier than normal conditions. However, since average precipitation is quite low in these three stations, departures from normal represent rather small precipitation values in absolute terms (Table 2).

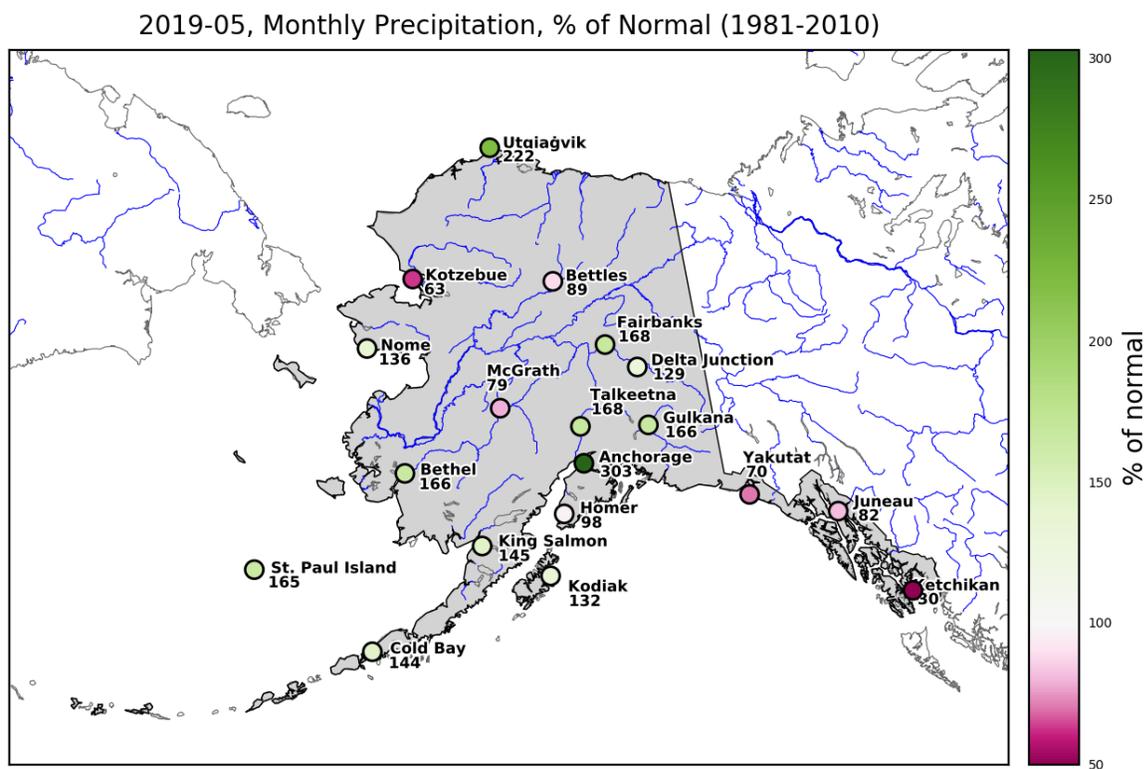


Figure 3: Monthly precipitation sums expressed as percent of normal (1981-2010), May 2019.

Like for the previous month, the largest positive deviation in May 2019 was measured in Anchorage with 303% of normal precipitation. Ketchikan recorded the lowest value of relative precipitation with only 30% of the normal precipitation amount for May. Many stations, such as Cold Bay, Kodiak, King Salmon, St. Paul Island, Bethel, Talkeetna, Gulkana, and Fairbanks saw precipitation roughly 50% more than normal.

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, May 2019.

Station	Precipitation (in)	Normal (in)	% of normal
Anchorage	2.2	0.7	302.8
Bethel	1.9	1.1	165.8
Bettles	0.8	0.9	88.6
Cold Bay	3.8	2.6	144.2
Delta Junction	1.2	0.9	128.9
Fairbanks	1.0	0.6	168.3
Gulkana	1.1	0.6	166.2
Homer	0.8	0.8	97.6
Juneau	2.8	3.4	82.4
Ketchikan	2.5	8.2	30.5
King Salmon	1.8	1.3	144.8
Kodiak	7.4	5.6	131.9
Kotzebue	0.3	0.4	63.4
McGrath	0.9	1.1	78.9
Nome	1.2	0.9	136.0
St. Paul Island	1.9	1.1	165.5
Talkeetna	2.7	1.6	167.9
Utqiagvik	0.4	0.2	222.2
Yakutat	5.7	8.2	70.0

Figure 4 shows the monthly precipitation sums at each station in inches. It can be seen how strongly precipitation varies between stations not only during the past month but also in the climatological mean, due to the diverse climatological conditions that can be found in Alaska. In absolute terms, Ketchikan recorded the largest precipitation reduction, with more than 5 inches less than the normal conditions for the month of May. The Yakutat precipitation gauge recorded 2.5 inches less than average precipitation. Kodiak measured the highest increase in precipitation in absolute terms with 2.2 inches of precipitation more than normal. Anchorage, Cold Bay and Talkeetna follow with 1.5, 1.2 and 1.1 inches of above average precipitation respectively.

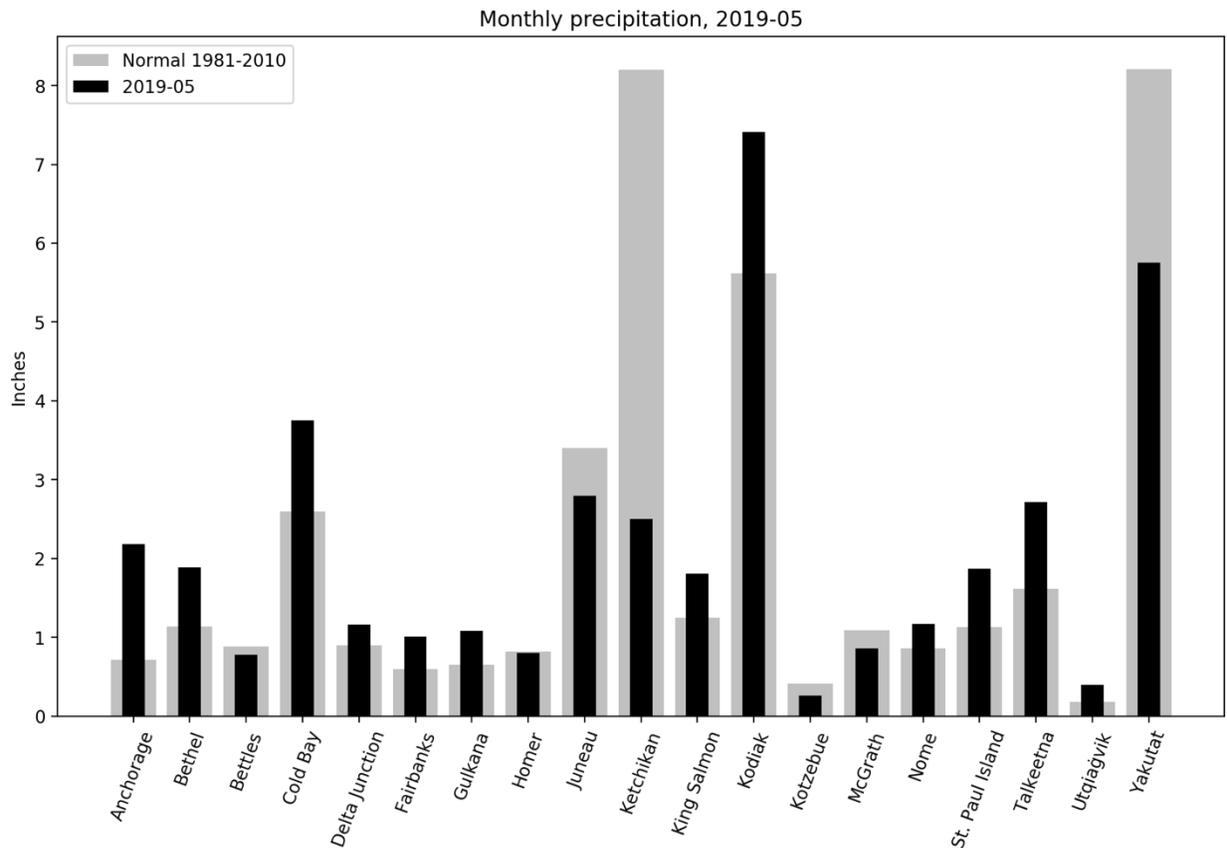


Figure 4: Monthly precipitation sums for May 2019 at the selected stations compared to the normal (1981-2010), in inches.

Below normal precipitation values experienced along the Panhandle during May 2019, intensify and extend the persistent drought conditions observed in Southeast Alaska during last year (Figure 5). The Panhandle is currently experiencing abnormally dry conditions to extreme drought conditions towards the south (source: <https://droughtmonitor.unl.edu>). Most affected areas are Ketchikan, Prince of Wales Island, Wrangell and Metlakatla.

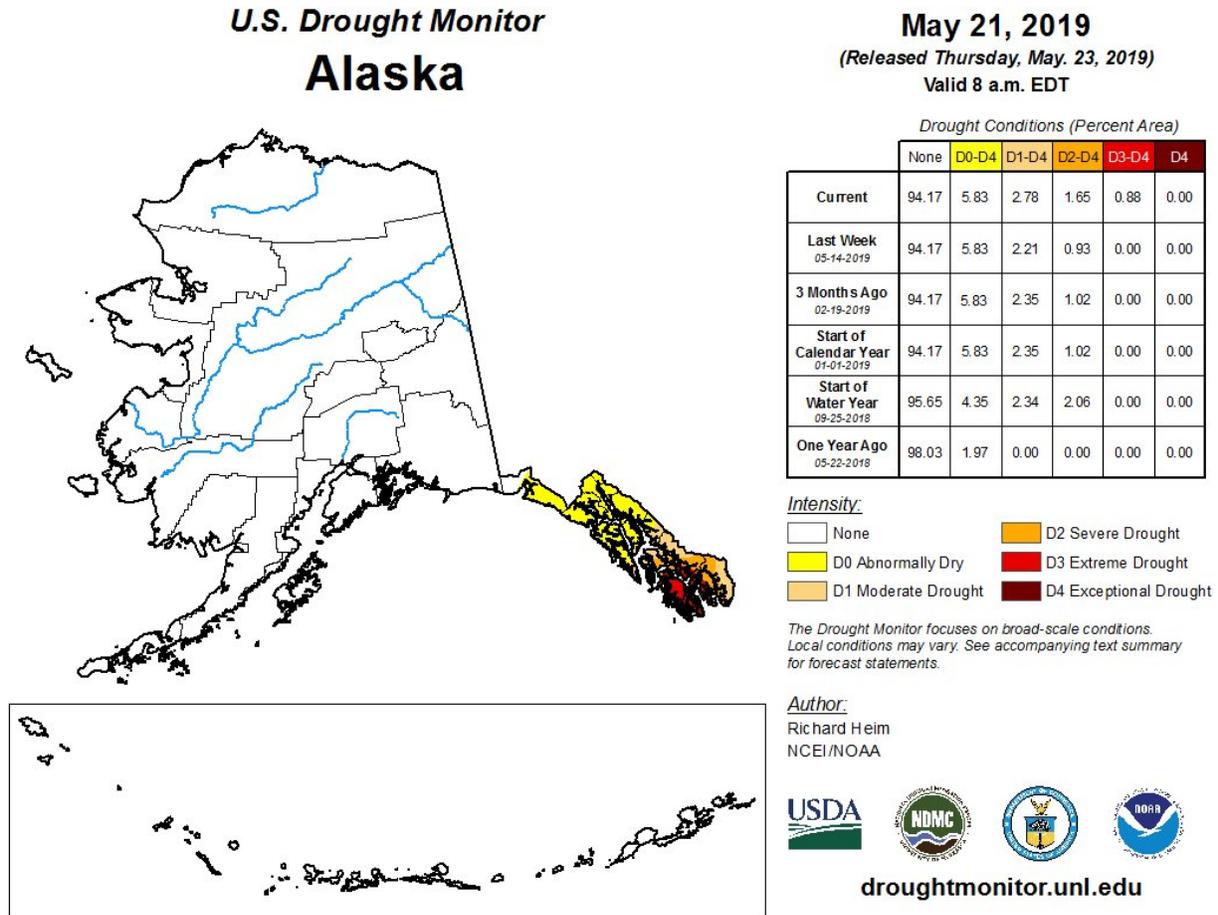


Figure 5: U.S. Drought Monitor map for Alaska, updated on 21 May 2019. Table on the right shows the percent area affected by different categories of drought intensity. Figures and data produced and released by the U.S. Drought Monitor, a partnership between the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration (<https://droughtmonitor.unl.edu>).

Snow

Some snowfall has been still observed in May 2019. However, the snowfall amounts were below normal (Table 3). Generally normal snowfall amounts are quite low for the month of May (Table 3), therefore departures from normal represent very small snowfall values in absolute terms. At Bettles, Cold Bay, Fairbanks, King Salmon, McGrath and St. Paul Island no snowfall was recorded for this month. Kotzebue, Nome and Utqiagvik measured respectively 0.8, 1.8 and 0.2 inches of snowfall, corresponding to 66.7%, 78.3 % and 7.4% of normal snowfall.

Table 3: Monthly snowfall sum, normal (1981-2010) and departure expressed as a percentage of the normal (1981-2010) for the selected stations that measure snowfall, May 2019.

Station	Snowfall (in)	Normal (in)	% of normal
Anchorage	0.0	0.3	0.0
Bettles	0.0	1.3	0.0
Cold Bay	0.0	1.3	0.0
Fairbanks	0.0	0.9	0.0
King Salmon	0.0	0.8	0.0
Kotzebue	0.8	1.2	66.7
McGrath	0.0	0.9	0.0
Nome	1.8	2.3	78.3
St. Paul Island	0.0	1.1	0.0
Utqiagvik	0.2	2.7	7.4

Arctic Sea Ice

Figure 6 shows the time series of daily Arctic sea ice extent updated until May 30, 2019. Figure 7 shows sea ice concentration measured on June 2, 2019. The dramatic reduction in sea ice experienced during last two months, results in sea ice extent well below the median value for the 1981-2010 period (Figure 6, 7). Likewise, very low sea ice concentration, significantly below normal, is recorded in the Bering, Chukchi and Beaufort Sea (Figure 7). In May 2019 sea ice extent has decreased by roughly 10% from 12.79 M km² on May 02 to 11.51 M km² on May 30. Currently sea ice extent is even with the extent of sea ice as observed in 2018 (gold line in Figure 6).

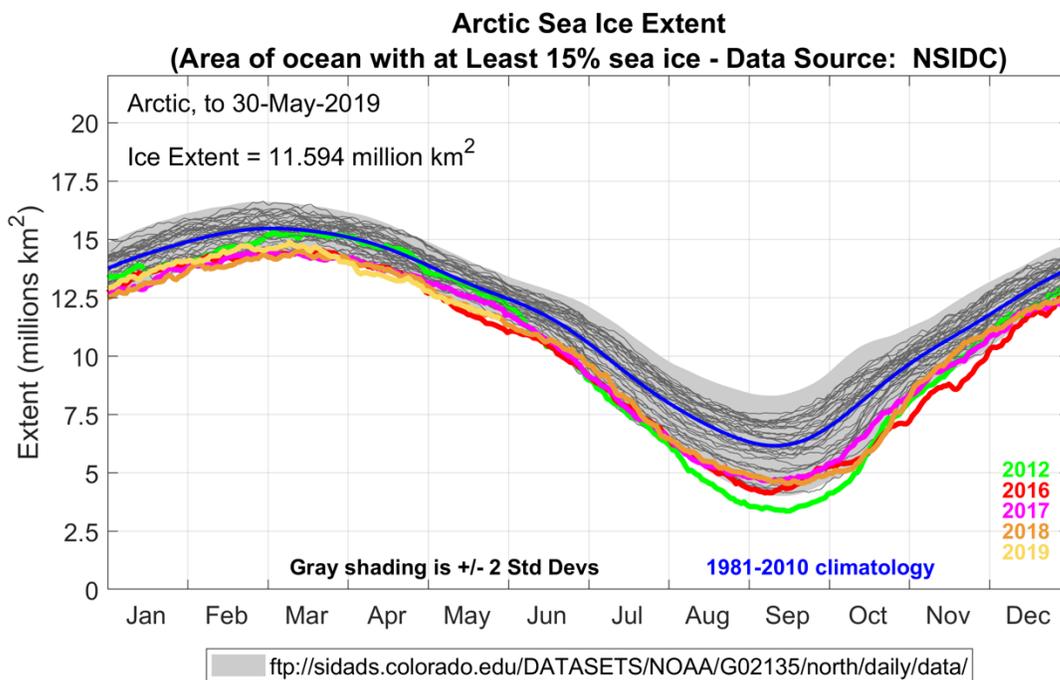


Figure 6: Time series of daily Arctic sea ice extent. This year's data (yellow) are updated until May 30, 2019. The median sea ice extent for the 1981-2010 reference period is depicted in blue. Specific years are highlighted in colors. Plot Compiled by: Howard J. Diamond, PhD; Climate Science Program Manager at NOAA's Air Resources Laboratory Data Source: National Snow & Ice Data Center (NSIDC; <https://nsidc.org/>).

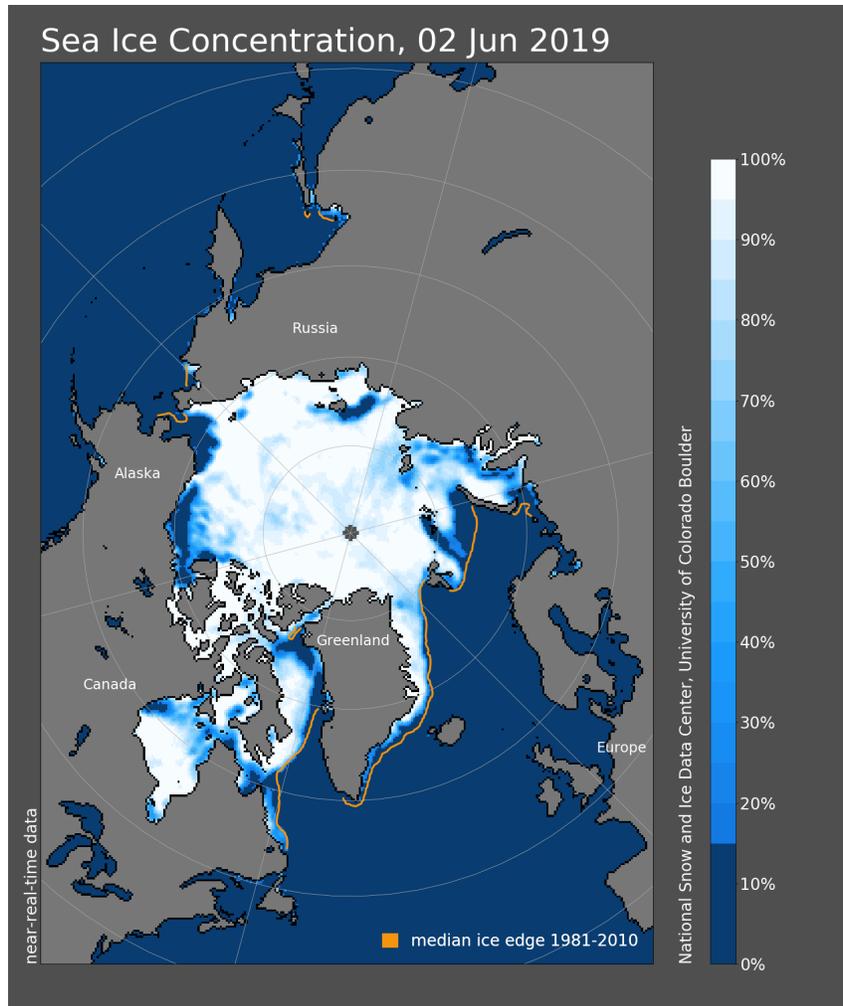


Figure 7: Daily Arctic Sea Ice concentration on June 2, 2019. Median ice edge for the 1981-2010 reference period is depicted in yellow. Very low and equal to zero sea ice concentration are observed in the Bering, Chukchi and Beaufort Sea. Image: NSIDC (nsidc.org)

Newsworthy Events

The wildfire season has started in Alaska and it seems to be getting off to a quick start. Early snowmelt, above normal temperatures, wind and persistent weather conditions are increasing the probability of wildfires across the state. Multiple wildfires, from local to large and very large, have been active during last month. The largest 'Oregon Lakes' wildfire close to Delta Junction, first reported on April 30, is still active. The fire extends currently over 31850 acres. Please check our UAFSmoke webpage at <http://smoke.alaska.edu> for updated fire information. UAFSmoke shows current wildfire status information and up to 72 hours forecast of concentrations of black carbon and particulate matter included in wildfire smoke.

The current drought conditions in Southeast Alaska are the most significant observed in the nearly 20-year history of the drought monitor. However, the National Weather Service in Juneau confirms that during the late 80s into the early 90s there have been significantly drier years where droughts lasted longer. Abnormally dry to extreme drought conditions are impacting local communities, especially due to their reliance on hydroelectric power. Due to low reservoirs level, some communities had to use supplement generators fueled by expensive diesel and implement water restrictions. Because of the drought, damages to trees from insects, especially Salal and Hemlock, are widespread. The damage area has already reached in 2018 the third largest area in almost 50 years of observations and continues to expand.

Very low sea ice extent, associated with the unprecedented warm temperatures experienced in Alaska during last months, is affecting the arctic ecosystem and local communities. A mass die-off of thousands of seabirds in the Bering Sea was linked to lack of nutritional sources, most likely due to declining sea ice and warmer sea surface and atmospheric temperature.

On May 11 at 2:12 am, Utqiagvik, the America's northernmost city saw the sun set for the last time for the next 83 days, until August 02.

This information consists of preliminary 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 web site at <http://akclimate.org>. Please report any errors to webmaster@akclimate.org.

Appendix

Table A: May 2019 daily records of mean daily temperature (avgt) and maximum daily temperature (maxt). Records are computed since the beginning of the respective time series. Only maximum records are set this month.

Maximum Mean Daily Temperature (avgt)				
Station	Date	New Record (°F)	Year of old record	Old record (°F)
Delta Junction	2019-05-26	66.5	1980	65.5
Kotzebue	2019-05-14	45.5	2015	42.5
St. Paul Island	2019-05-05	40.5	1996	40
Maximum Maximum Daily Temperature (maxt)				
Station	Date	New Record (°F)	Year of old record	Old record (°F)
Gulkana	2019-05-01	69	2009	68
Ketchikan	2019-05-26	77	2005	75
Kotzebue	2019-05-14	54	1954	50
St. Paul Island	2019-05-01	46	2015	44
St. Paul Island	2019-05-05	45	1996	43