



Bering Land Bridge N Pres. • Cape Krusenstern NM
Gates of the Arctic NP & Pres. • Kobuk Valley NP • Noatak N Pres.

Spring 2023

Weather & Climate Summary Western Arctic Parklands Spring 2023

Akillik River Headwaters, May 21, 2023, Kobuk Valley NP. NPS/Ken Hill.

Kotzebue Spring Weather Summary 2023

Weather observations have been recorded at Kotzebue since 1897. Kotzebue is a good index site to use for climate comparisons in the Western Arctic parks. We'll look at spring conditions in respect to the latest climate normal period, 1991-2020, and highlight data from a few of the Arctic Inventory and Monitoring Network (ARCN) climate sites for the spring season.

Overall, spring was cooler and wetter than normal. Weather highlights for the season include a very snowy (and rainy) March and a cold April (colder than March). The average temperature for the 2023 spring season was 12.1°F, which is 4.9°F below the 1991-2020 normal. Based on National Weather Service data at the Kotzebue airport, it was the 2nd wettest spring season with a total of 2.96 inches of rain and melted snow (Table 1 and 2, Figures 1 and 2).

March

It was a warm and snowy March. The average monthly temperature was +2.4°F warmer than normal. A record high daily temperature of 34°F was recorded on March 7. Temperatures were well above normal during a series of early March storms that brought heat and moisture directly from the tropics to the Arctic. The total precipitation (melted snow and rain) was 2.02 inches, well above the normal 0.52 inches. March is usually the second driest month of the year in Kotzebue behind May. See the March Blizzard section for more details.

April

April was just the opposite; temperatures were much colder, and the precipitation was below normal for the month. It was the coldest April since 2012 with a monthly average

temperature 13.3°F colder than normal. It was especially cold between April 7 and 11 where the daily temperatures averaged 28°F colder than normal. New record low temperatures were noted on April 7th, 10th, and 11th. The monthly precipitation total was 73% of normal.

May

Temperatures remained cooler than normal through May. The average temperature for the month was 29.5°F, 4°F below normal. May precipitation totaled 0.53 inches, which is ~125% of normal.

Table 1. Kotzebue spring 2023 average monthly temperatures compared to the 1991-2020 normal.

Spring 2023	Average Monthly Temp (°F)	1991-2020 Normal (°F)	Departure from Normal (°F)
March	3.9	1.5	+2.4
April	3.0	16.3	-13.3
May	29.5	33.1	-3.6

Spring Temperature Departure from normal: -4.9°F

Table 2. Kotzebue spring 2023 monthly precipitation totals compared to normal

Spring 2023	Total Monthly Precip. (in.)	1991-2020 Normal (in.)	Departure from Normal (in.)
March	2.02	0.52	+1.50
April	0.41	0.56	-0.15
May	0.53	0.44	+0.09

Spring Precipitation Departure from normal: +1.44 in. (195% of normal).

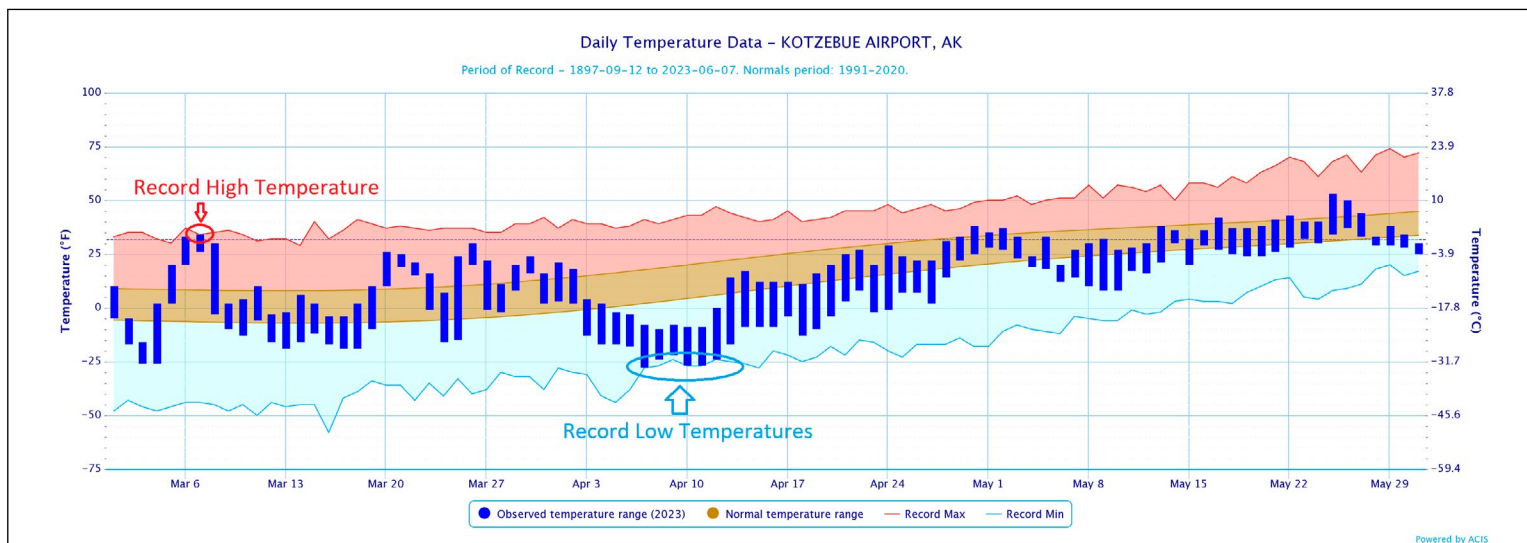


Figure 1. Spring 2023 daily temperatures showing record maximum (red), record minimum (blue), normal (brown) and observed range (blue bars). Data from: <http://xmacis.rcc-acis.org/>.

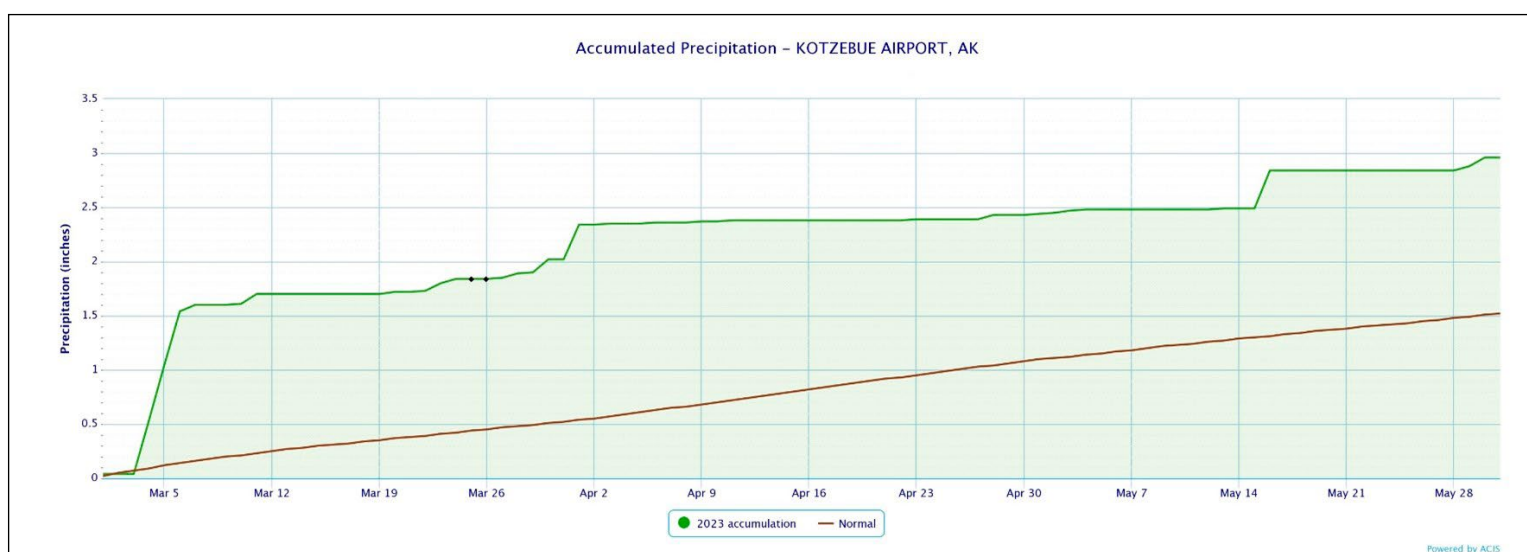


Figure 2. Spring 2023 accumulated precipitation (green) compared to normal (brown line). Data from: <http://xmacis.rcc-acis.org/>.

March Blizzards

Back-to-back blizzards pummeled northwest Alaska in early March. These were warm, wet storms that brought considerable snow and rain (Fig 3). The total precipitation (melted snow and rain) between March 4 -7 was 1.56 inches, with more than 0.50 inches falling on both March 3rd and 4th. These are wet winter days, considering that the normal monthly total is 0.52 inches. The daily maximum temperatures at Kotzebue were above freezing on March 6 and 7. High winds, with gusts above 70 mph created massive snow drifts in town. An emergency disaster declaration was issued for the region. Read more about the March storm in the [Alaska and Arctic Climate Newsletter](#).

Storms in March 2023 produced a total of 2.02 inches of precipitation (rain and melted snow). This is the third highest March precipitation total in the past century. More significantly, this is the fourth March since 2018 to have more than double the average precipitation in March. An overall decrease in Arctic sea ice extent and warmer ocean waters are likely contributing factors.

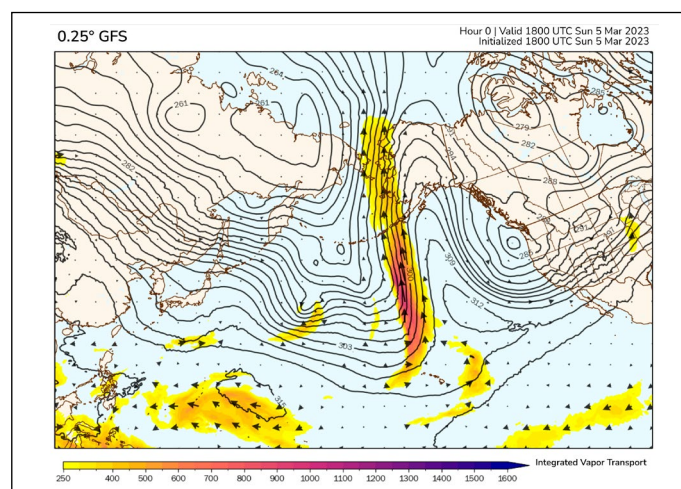


Figure 3. This graphic shows the plume of moisture that hit western Alaska on March 5 causing blizzard conditions in Kotzebue. The reds and yellows indicate copious amounts of water being transported by wind from the warm tropics straight north to Alaska. Graphic from <https://alaskaclimate.substack.com/>.

Cold April Statewide

Temperatures were below normal across all of Alaska in April with the coldest temperature departures along the west coast and the northern Interior (Figure 4). The robust snowpack in the northern parks lingered with cooler temperatures persisting into late spring.

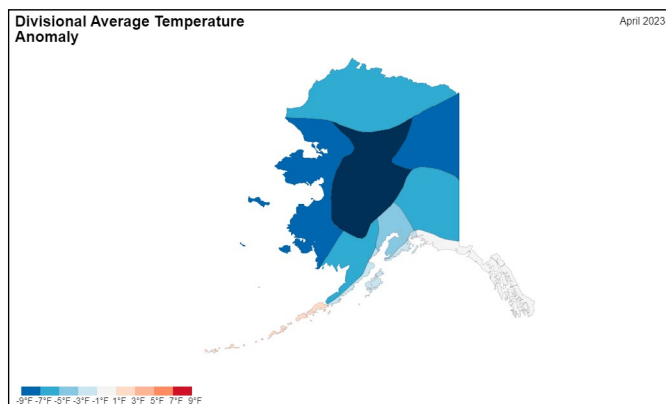


Figure 4. Alaska temperature anomalies for April 2023. All of the climate divisions in the state, except the Aleutians, were colder than the 1991-2020 normal. Graphic from: NOAA Climate at a Glance.

Arctic Inventory and Monitoring Network Climate Stations

We monitor and record weather data in the Western Arctic Parklands to help understand daily, monthly, and seasonal weather patterns and shifting climate averages (Figure 5). We track the weather extremes that cause disturbance such as drought, floods, heat waves, cold snaps, and high winds. The data are collected and analyzed along with other park ‘vital signs’ to provide a holistic view of how these high latitude park lands are changing. Here are a few spring highlights from the Kelly Snotel and Mt. Noak sites:



Figure 5. Arctic Inventory and Monitoring Network climate stations in WEAR.

Kelly Snotel

The snow telemetry or ‘Snotel’ site at the Kelly Ranger Station in Noatak measures snow, melted snow, and rain 365 days a year. With more than a decade of data we are learning more about the timing and amount of snow cover, summer rainfall,

and annual precipitation amounts for this site. Peak snow for the 2022-2023 season occurred on March 29 with 47 inches of snow on the ground, the highest on record for the site so far (Figure 6). As of June 1, a total of 11.2 inches of precipitation had fallen at the site since the start of the water year on October 1. Only 2014 had more cumulative precipitation by June 1.

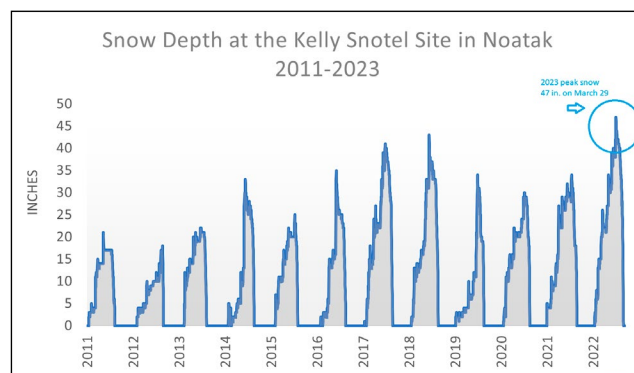


Figure 6. Daily snow depth at the Kelly Snotel site in Noatak National Preserve, 2012-2023. The 2022 – 2023 season had the deepest snowpack to date. We use the water year (October-September) to calculate annual precipitation to capture the entire winter season.

Mt. Noak

The average monthly temperature at the Mt. Noak climate station in Cape Krusenstern was 8.5°F in April, the coldest April so far and almost seven degrees cooler than the 12-year average (Figure 7). La Niña persisted for three years, which is unusual, and brought a reprieve of cooler temperatures to Alaska. That has come to an end. El Niño conditions have developed with warmer-than-average tropical sea surface temperatures. El Niño is forecast to continue into winter and these conditions typically favor warmer than average temperatures in western Alaska.

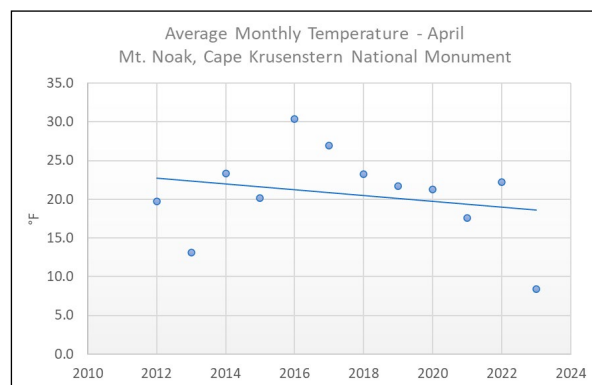


Figure 7. Average April temperatures at the Mt. Noak climate station in Cape Krusenstern National Monument 2012-2023.

More Information

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[Latest weather conditions in the Western Arctic Parklands](#)

Data disclaimer: Please note that the near-real time data used to generate these reports is subject to change. QA/QC data from the NPS CAKN climate stations are available at [NPS Data Store](#)