



## Weather & Climate Summary Western Arctic Parklands Winter 2017-2018

### Kotzebue Winter Weather 2017-2018

Winter 2017-2018 was unprecedented in Kotzebue and the surrounding region. Numerous warm storms barreling in from the south led to record low sea ice in the Bering and Chukchi Seas. With an average temperature of 18.0°F, December 2017 demolished the old monthly record of 12.9°F set in 2000. Daily highs were broken on December 12 (34°F), 13 (37°F), 21 (35°F), and 22 (32°F). Remarkably, only one day in the month was colder than normal and overall the temperature anomaly was +15.7°F for December. Precipitation at Kotzebue was 145% of normal for the month with 0.92 inches of liquid water equivalent in 19.7 inches of snow. Fog was recorded on 26 days, freezing rain occurred on 4 days, and winds gusted as high as 70 mph.

The first half of January continued to be much warmer than normal with daily high temperatures well above 0°F. January 19-27 were the first days of winter with well-below average temperatures. The low temperatures of -35°F on the 24th and 25th were the coldest of the month. It was drier than normal in January with only 4.4 inches of snowfall containing 0.26 inches of water. Overall, the month was 4.0°F warmer than normal with less than half of the expected precipitation.

Another series of warm storms the last two weeks of February broke up weak ice in the Bering Sea and Kotzebue Sound, leading to another very warm month. Overall, the average monthly temperature of 12.9°F was 13.7°F warmer than normal and ranked as the 3rd warmest February on record. Precipitation was 170% of normal, the 6th wettest and 9th snowiest on record.

The average winter temperature at Kotzebue was 10.7° F which is 11.1° F warmer than the 1981-2010 normal. The 2017-2018 winter ranks as the 2nd warmest winter on record, after 2000-2001. The total winter precipitation was 2.96

inches, 145% of normal and the 5th wettest on record. (Figures 1 and 2; Table 1, 2, and 3).

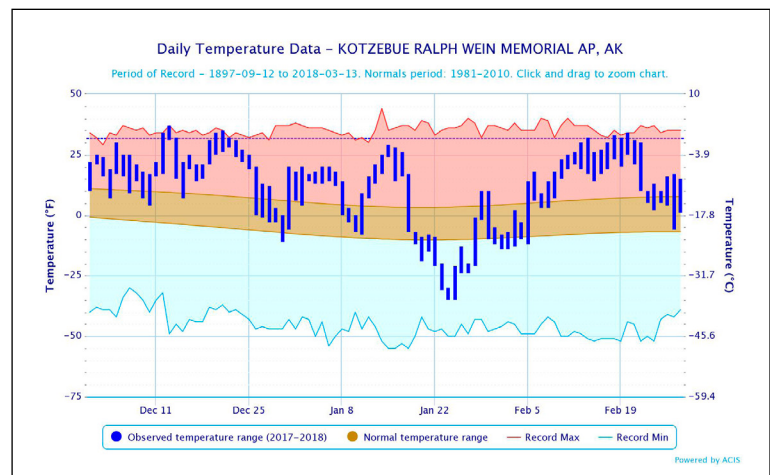


Figure 1. Winter 2017-2018 daily temperatures at Kotzebue showing record maximum (red), record minimum (blue), normal (brown) and observed range (blue bars).

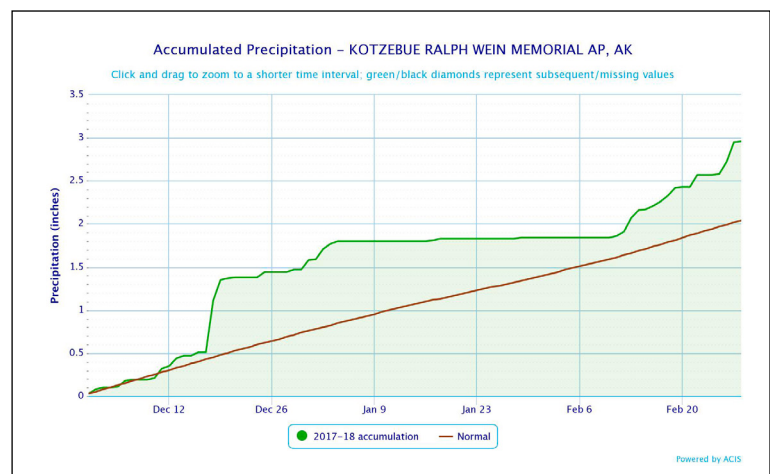


Figure 2. Winter 2017-2018 accumulated precipitation at Kotzebue (green) compared to normal (brown line).

Table 1. Temperature: Winter 2017-2018 average monthly temperatures compared to the 1981-2010 normal.

| Winter 2017-2018 | Average Monthly Temp °F | 1981-2010 Normal °F | Departure from Normal °F | Monthly High °F / Date | Monthly Low °F / Date |
|------------------|-------------------------|---------------------|--------------------------|------------------------|-----------------------|
| December         | 18.0**                  | 2.3                 | +15.7                    | 37* / Dec. 13          | -11 / Dec. 30         |
| January          | 1.2                     | -2.8                | +4.0                     | 29 / Jan. 15           | -35 / Jan. 24 & 25    |
| February         | 12.9                    | -0.8                | +13.7                    | 34* Feb. 20            | -14 / Feb. 1 & 2      |

Winter Season Temperature Departure from Normal: +11.1°F. \*Record daily highs; \*\*Warmest on record.

Table 2. Precipitation: Winter 2017-2018 monthly precipitation totals compared to normal.

| Winter 2017-2018 | Total Monthly Precip. in. | 1981-2010 Normal in. | Departure from Normal in. | Greatest 24 -hr. total in. / Date | # Days with $\geq 0.01$ in. water |
|------------------|---------------------------|----------------------|---------------------------|-----------------------------------|-----------------------------------|
| December         | 1.58                      | 0.76                 | +0.82                     | 0.60 / Dec. 18                    | 19                                |
| January          | 0.26                      | 0.62                 | -0.36                     | 0.12 / Jan. 2                     | 7                                 |
| February         | 1.12                      | 0.66                 | +0.46                     | 0.23 / Feb. 27                    | 15                                |

Winter Season Precipitation Departure from Normal: +0.92 inches (145% of normal).

Table 3. Snowfall: Winter 2017-2018 monthly snowfall totals compared to normal.

| Winter 2017-2018 | Total Monthly Snowfall in. | 1981-2010 Normal in. | Departure from Normal in. | Greatest 24 -hr. snowfall total in. / Date | Cumulative snowfall since 1-July in. |
|------------------|----------------------------|----------------------|---------------------------|--------------------------------------------|--------------------------------------|
| December         | 19.7                       | 11.5                 | +8.2                      | 8.3 / Dec. 18                              | 60.7                                 |
| January          | 4.4                        | 9.1                  | -4.7                      | 1.7 / Jan. 2                               | 65.1                                 |
| February         | 14.3                       | 9.6                  | +4.7                      | 3.9 / Feb. 27                              | 79.4                                 |

## NPS Climate Monitoring Stations

NPS climate stations in the Western Arctic (WEAR) Parklands complement the long-term record from the National Weather Service station in Kotzebue (Figure 3). Twelve NPS stations from Cape Krusenstern to Kobuk Valley to Howard Pass record hourly measurements of air temperature, relative humidity, wind speed/direction, solar radiation, snow depth, and soil temperature.

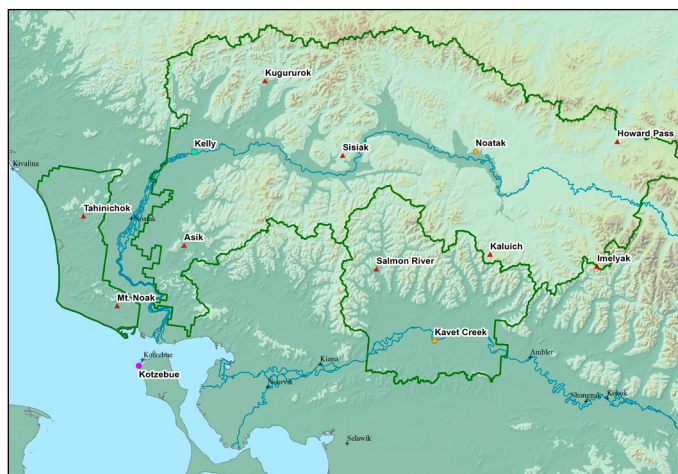


Figure 3. NPS Climate stations in Western Arctic Parklands.

## Record Low Arctic Sea Ice

Arctic sea ice extent was at a record low for most of the winter (Figure 4). Both Pacific and Atlantic sides of the Arctic recorded more open water and lower concentrations of sea ice than usual. The Bering Sea was exceptionally low on ice due

to huge areas of expanding open water in the second half of February. Overall, arctic sea ice extent at the end of February 2018 was 521,000 square miles below the 1981-2010 normal, an area equal in size to 80% of Alaska's land mass.

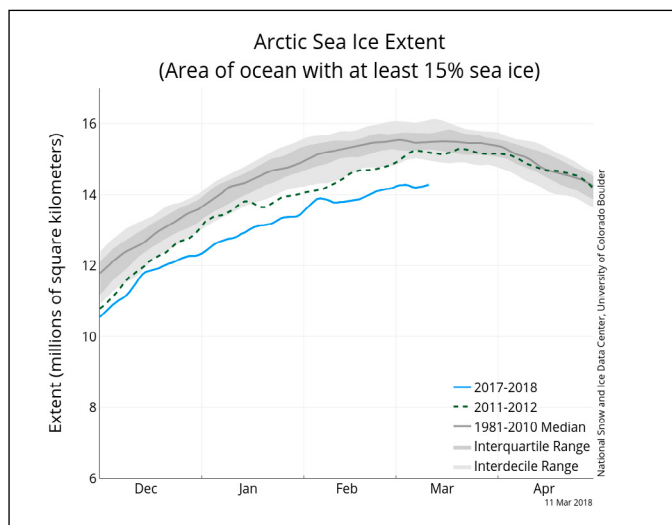


Figure 4. Arctic Sea Ice Extent.

## More Information

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[Current weather in WEAR](#)