

Alaska Statewide Climate Summary

January 2012

Temperature

Frigid temperatures settled across much of Alaska in January. In contrast to December, which had mostly above normal temperatures, January 2012 was decidedly colder than normal. Negative deviations were sizeable in Interior and Western Alaska, and all 20 of the first order stations in Alaska were seasonally below normal, exhibiting unusually large negative deviations. The most extreme stations, with a deviation larger than 20°F, are, in declining order: Bettles (-25.6°F), Bethel (-23.9°F), King Salmon (-22.9°F) McGrath (-22.1°F), Nome (-21.8°F) and Big Delta (-20.4°F). Only 3 stations in the southeast were closer to normal, while still being below the long-term mean. They are Juneau with -1.4°F, Yakutat with -4.2 and Annette with -4.3°F. The mean of the 20 stations gave a deviation of -14.2°F, indeed a very large value. For more details on the different stations, see the table below. It is interesting to note that November had temperature far below the expected values, while December was much above normal, and for most stations, substantially warmer than November. Now January is, like to November, below normal again. However the January deviations are even more extreme than those observed in either of the previous two months. For more details, see the table below, which presents the mean values, the 30-year Normals (1991-2010), and the deviations from these normals.

Station	Temperature		
	Observed (°F)	Normal (°F)	Delta (°F)
Anchorage	2.5	17.1	-14.6
Annette	32.7	37.0	-4.3
Barrow	-20.6	-13.4	-7.2
Bethel	-17.3	6.6	-23.9
Bettles	-35.6	-10.0	-25.6
Big Delta	-21.4	-1.0	-20.4
Cold Bay	18.2	28.2	-10.0
Fairbanks	-26.9	-7.9	-19.0
Gulkana	-13.5	-2.9	-10.6

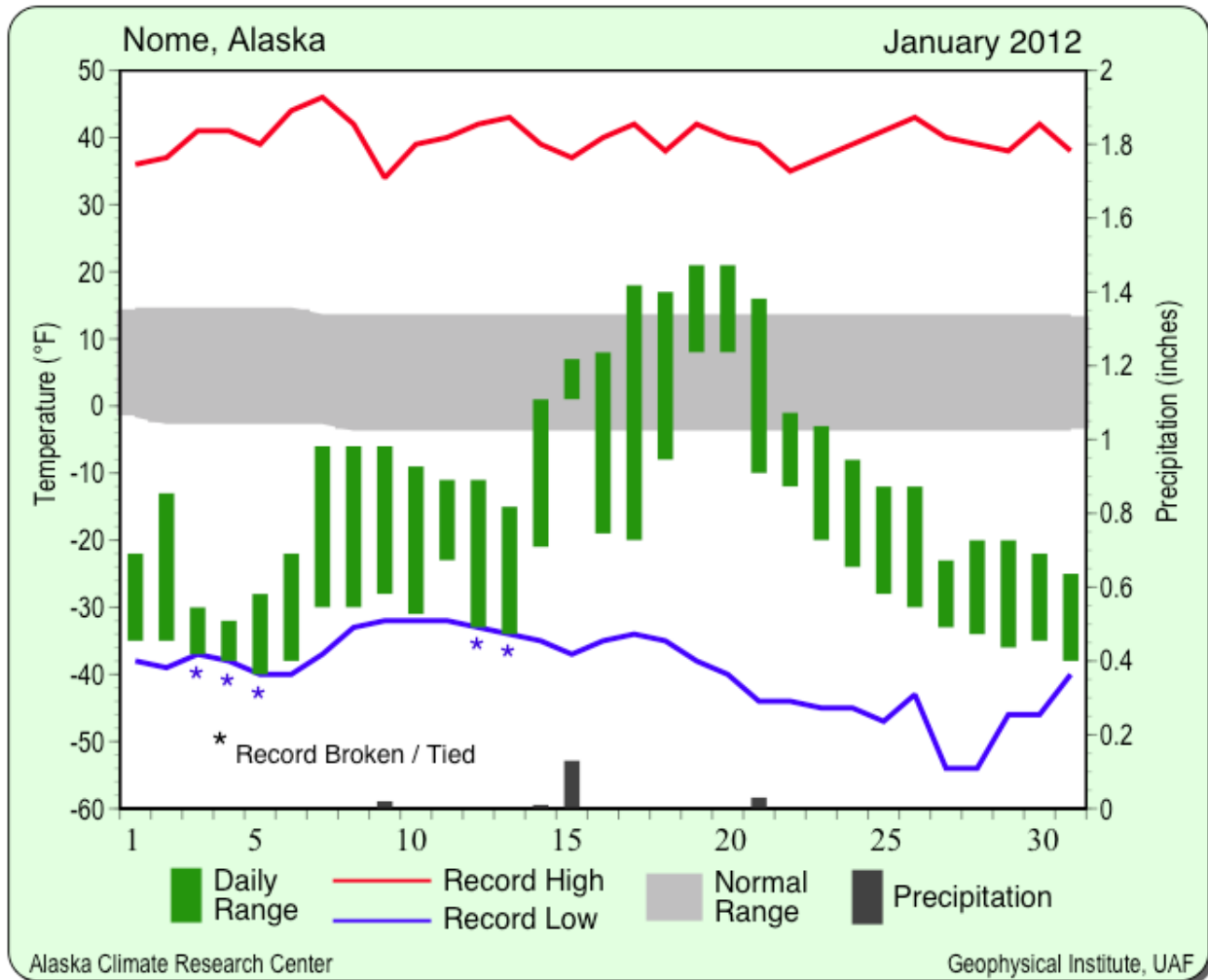
Homer	9.0	24.8	-15.8
Juneau	26.9	28.3	-1.4
King Salmon	-6.7	16.2	-22.9
Kodiak	21.4	30.5	-9.1
Kotzebue	-22.6	-2.8	-19.8
McGrath	-28.6	-6.5	-22.1
Nome	-16.6	5.2	-21.8
St. Paul Island	14.5	25.1	-10.6
Talkeetna	-0.1	14.2	-14.3
Valdez	16.7	23.7	-7.0
Yakutat	23.9	28.1	-4.2

Many new temperature records were set during the month. Only two were new daily maximums, and both of those were for Kodiak (on the 10th and 11th). The rest were record cold values. From both the mean monthly values and from the frequency of the new daily new minima – compared against data that can go back for more than a century – it can be seen that January 2012 was an exceptionally cold month. The magnitude at which the old records were broken is also good indication of this, e.g. the new minimum temperature for Annette on the 19th January was 10°F lower than the previous one from 1972, and the minimum in Bettles on the last day of the month was -61°F, a substantial 8°F lower than the previous value. In the table below, the new daily record temperatures are listed:

Date	Station	Element	New Record	Old Record	Year of old Record
1/2/12	St. Paul	Low Temperature	-1	1	1975
1/3/12	Nome	Low Temperature	-37	-34	1949
1/4/12	Nome	Low Temperature	-38	-34	1917
1/5/12	Nome	Low Temperature	-40	-40	1917
1/7/12	St. Paul	Low Temperature	0	2	2000
1/7/12	Galena	Low Temperature	-54	-52	1997
1/8/12	Bethel	Low Temperature	-32	-32	1952
1/10/12	Kodiak	High Temperature	50	49	1937
1/11/12	Kodiak	High Temperature	45	45	1984
1/12/12	King Salmon	Low Temperature	-35	-29	1951
1/12/12	Nome	Low Temperature	-33	-32	1973
1/13/12	Nome	Low Temperature	-34	-32	1973
1/16/12	Cold Bay	Low Temperature	4	5	1983
1/16/12	Annette	Low Temperature	4	10	1950
1/17/12	Annette	Low Temperature	3	6	1969
1/18/12	Annette	Low Temperature	8	10	1969
1/19/12	Annette	Low Temperature	2	12	1972
1/19/12	Ketchikan	Low Temperature	-2	5	1972
1/23/12	Kodiak	Low Temperature	-5	-5	1947
1/25/12	King Salmon	Low Temperature	-37	-32	2006
1/26/12	King Salmon	Low Temperature	-39	-34	1989
1/26/12	St. Paul	Low Temperature	-4	-4	1989

1/26/12	Kodiak	Low Temperature	-2	-2	1944
1/27/12	Kodiak	Low Temperature	-5	-4	1989
1/27/12	Valdez	Low Temperature	-1	1	2008
1/28/12	Bettles	Low Temperature	-60	-56	1989
1/29/12	Bettles	Low Temperature	-60	-58	1989
1/31/12	Bettles	Low Temperature	-61	-53	1989

Bethel, with a mean monthly temperature of -17.3°F had not only the coldest January on record, but also the coldest month ever recorded. The old record low for January had been -13.3°F set in back in 1934. Bettles had an average monthly temperature of frigid -35.6°F , 1.6°F lower than the previous record from 1971. Three of the last four days of January had a low temperature of -60°F or lower, each setting new daily records. The average monthly temperature for Galena was -32.6°F , compared to the previous record of -31.4°F set in 1971, and on January 29th observed the 3rd lowest temperature (-65°F) ever seen in Galena. Homer also experienced a new record cold January at 9.0°F , outdoing the 1947 record of 9.4°F . For Nome, it was the coldest January on record at an average of -16.6°F , 1.4°F colder than the old record in 1989. It was also the 2nd coldest month recorded, only falling behind February 1990s -17.2°F . Further, the mean January temperatures of Cold Bay $+18.2^{\circ}\text{F}$ tied the old record low from 1956.



Daily temperature ranges and precipitation for Nome for January 2012. Note the five low temperature record events in the first half of the month.

In Tanana it was the second coldest January, and the coldest month in over 100 years, averaging -32.6°F compared with 1906s record of -36.6°F. likewise in Kotzebue it was the second coldest January since 1929, with an average temperature of -22.6°F, 5.1°F warmer than the 1939s coldest January on record.

St. Paul Island, in the Bering Sea, reported a mean temperature of +14.5°F, third coldest January behind 5.4°F from 1919 and with a data set of 99 years. The average temperature in Kodiak was also the third lowest at 21.4°F falling 9.1°F below the normal mean temperature. At an average temperature of 2.5°F, Anchorage had its fourth coldest January, falling 14.6°F below the normal mean, while it was Fairbanks fifth coldest January at -26.9°F and 19°F colder than the normal average.

The unusually cold weather affected many cities, towns, and villages. Schools in Bethel were closed for more than a week, starting on January 9th, due to frozen sewer pipes. Heating fuel ran low in both Noatak and Kobuk as the cold weather and heavy snow delayed planes attempting to land on their airstrips.

Precipitation

Precipitation varied widely. Expressed as percentages, Kotzebue had the lowest amount with only 8% of the mean value with just 0.05" of the expected 0.62". On the other side of the spectrum was Gulkana, recording 350% of the mean value, or 1.61" against the usual total of 0.46". The mean value for the 20 stations was relatively close to normal with a positive deviation of 11%. As with temperature, the precipitation deviations for the different station are given in the table below:

Station	Precipitation			
	Observed (in)	Normal (in)	Delta (in)	Delta (%)
Anchorage	1.31	0.73	0.58	79%
Annette	13.93	10.73	3.20	30%
Barrow	0.20	0.13	0.07	54%
Bethel	0.31	0.78	-0.47	-60%
Bettles	0.56	0.81	-0.25	-31%
Big Delta	0.48	0.31	0.17	55%
Cold Bay	3.62	3.16	0.46	15%
Fairbanks	0.69	0.58	0.11	19%
Gulkana	1.61	0.46	1.15	250%
Homer	2.09	2.63	-0.54	-21%
Juneau	6.43	5.35	1.08	20%
King Salmon	1.12	1.02	0.10	10%
Kodiak	4.72	8.29	-3.57	-43%

Kotzebue	0.05	0.62	-0.57	-92%
McGrath	1.01	1.09	-0.08	-7%
Nome	0.19	0.94	-0.75	-80%
St. Paul Island	2.17	1.58	0.59	37%
Talkeetna	1.14	1.36	-0.22	-16%
Valdez	7.57	6.58	0.99	15%
Yakutat	10.91	13.66	-2.75	-20%

There were fair a number of new daily records both for precipitation and snowfall. However for the month as a whole only Kodiak reported new record with a total snowfall of 48.6", surpassing the old record of 40.4" set in 2004. St. Paul more than doubled the snowfall record for the 3rd with 6.3" of snow. The old record had been 2.9" from 2006. St. Paul did it again on the 29th with 4.8" of snow, doubling the 2000 record of 1.9". Daily records for both for precipitation and snowfall are summarized in Table 4.

Date	Station	Element	New Record	Old Record	Year of old Record
1/1/12	Cold Bay	Snowfall	3.4	2	1972
1/3/12	St. Paul	Snowfall	6.3	2.9	2006
1/4/12	Cold Bay	Snowfall	3.1	1.8	2011
1/5/12	Valdez	Snowfall	19.2	12.6	2003
1/6/12	Valdez	Snowfall	19.3	14.4	1997
1/6/12	Valdez	Precipitation	1.78	1.47	1987
1/6/12	Big Delta	Precipitation	0.18	0.12	1955
1/7/12	Juneau	Precipitation	1.08	1.01	1986
1/7/12	Haines	Precipitation	1.61	1.22	1996

1/8/12	Valdez	Snowfall	15.2	10.5	2001
1/10/12	King Salmon	Precipitation	0.72	0.26	1957
1/10/12	King Salmon	Snowfall	4.2	2.1	1986
1/10/12	McGrath	Snowfall	8.5	4.3	1989
1/10/12	Galena	Precipitation	0.24	0.24	1963
1/10/12	Galena	Snowfall	4	2.4	1963
1/17/12	Kodiak	Snowfall	5.3	4	1976
1/17/12	Kodiak	Snowfall	5.1	4.4	1988
1/29/12	Juneau	Snowfall	6.3	6	1954
1/29/12	St. Paul	Snowfall	4.8	1.9	2000

The heavy snowfall and precipitation caused a variety of incidents across the state. During the early weeks of January, Cordova had more than 18 feet of snowfall, with snowdrifts up to 12" to 14" high, requiring the National Guard to help dig out the town. The heavy snowfall put Valdez on a pace to break their previous snowfall record, ending with 293.8 inches of snow, which is 27.9" less than the average amount for the whole winter season.

This information consists of preliminary climatological data compiled by the Alaska Climate Research Center, Geophysical Institute, University of Alaska Fairbanks. This summary is based on the 20 first order stations in Alaska operated by the National Weather Service. Extreme events of other stations are also mentioned. It should be noted that the new climate normals for the time period of 1981-2010 are applied for the calculations of the deviations, and they can be slightly different from the old normals (1971-2000), which were in use up until end of July 2011.