

Weather and Climate



Gates of the Arctic Winter 2013-2014 Weather Summary

What is winter?

Climatological winter is defined as December 1 – March 1. In Alaska, December, January and February are typically the three coldest months of the year. In contrast, astronomical winter is defined as the period from the solstice (Dec. 21) to the equinox (Mar. 20).

Bettles Records

Record High Temps:

Dec 7: 35° F
Dec 8: 35° F
Jan 24: 33° F

Record High Daily Precip. Totals:
Dec 6: 0.24 in.
Jan 17: 0.34 in.
Jan 18: 0.33 in.

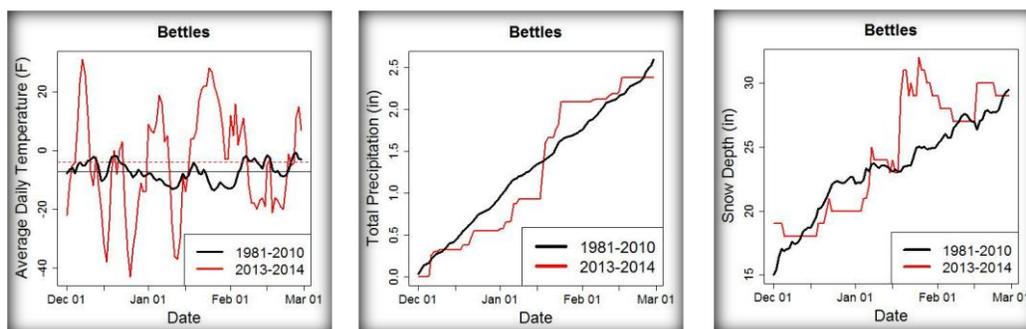
Record Daily Snowfall Totals:
Jan 17: 5.6 in.
Jan 18: 3.7 in.

In Bettles, the average daily temperatures climbed from -23° F on December 1 to +31° F on December 7. The high temperature of 35° F on December 7 broke the record for that date. The December roller coaster continued with temperatures plummeting mid-month to -43° F on December 15. Temperatures remained near or below normal for the rest of December. Precipitation was only 60% of normal for the month. Snow fall was also well below normal for the month with only 5.4 inches compared to a normal snow total of 15.6 inches.

January was warm and wet. Temperatures were above normal 22 out of the 31 days of the month. The normal mean temperature for January is -10° F, but 2014 came in at a sweltering 3.5° F. The high temperature of 33° F on January 24 broke the old record for that date. Thanks to a substantial storm on January 17-18, precipitation for the month was 190% of normal. The storm total was 9.3 inches of snow containing 0.67 inches of water.

February brought near-normal temperatures and below average precipitation. The monthly low was -35° F on February 21 and the maximum temperature almost reached freezing (31° F) on February 27. It stayed cool through the middle of the month when temperatures only got above zero on two days between February 9-21. There was only one significant storm in February with 3.3 inches of snow on February 15-16. Precipitation for the month was only 0.27 inches of water, 32% of normal.

Bettles – Average air temperature, cumulative precipitation, and snow depth 2013 compared to normal (black).



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Bettles Weather

Station Information:

Climate Normal Period 1981 – 2010
Climate Record Period 1944 – 2014

Temperature

Winter 2013-2014	Average Monthly Temp °F	1981-2010 Normal °F	Departure from Normal °F	Monthly High °F / Date	Monthly Low °F / Date
December	-10.2	-5.7	-4.5	35 / Dec 7, 8	-47 / Dec 26
January	3.5	-10.0	+13.5	33 / Jan 24	-47 / Jan 13
February	-5.8	-5.0	-0.8	31 / Feb 27	-35 / Feb 21

Winter Season Temperature Departure from Normal: +2.7°F

Precipitation

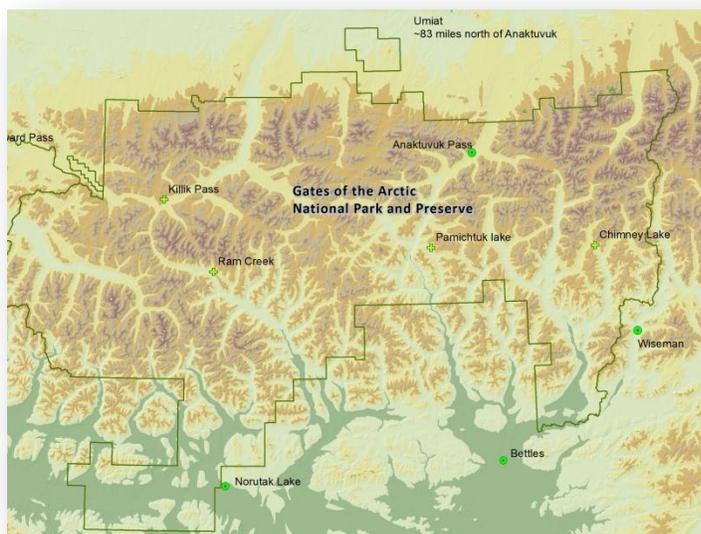
Winter 2013-2014	Total Monthly Precip. in.	1981-2010 Normal in.	Departure from Normal in.	Greatest 24 –hr. total in. / Date	# Days with >=0.01 in. water
December	0.55	0.92	-0.37	0.24 / Dec 6	8
January	1.54	0.81	+0.73	0.34 / Jan 17	13
February	0.27	0.85	-0.58	0.17 / Feb 16	7

Winter Season Departure from Normal: -0.07 inches

Snowfall

Winter 2013-2014	Total Monthly Snowfall in.	1981-2010 Normal in.	Departure from Normal in.	Greatest 24 –hr. snowfall total in. / Date	2013-2014 Cumulative since 1-July in.	Normal Snowfall from July 1 in.
December	5.4	15.6	-10.2	2.0 / Dec 22	63.1	32.6
January	23.0	13.9	+9.1	5.6 / Jan 17	86.1	46.5
February	4.5	14.0	-9.5	0.3 / Feb 16	90.6	60.5

As part of the climate monitoring vital sign, we now have additional NPS climate stations in Gates of the Arctic National Park and Preserve that complement the existing National Weather Service station at Bettles. The new NPS stations will provide critical data on high elevation sites in the Arctic and will help characterize the climate gradients and patterns affecting resources in the park. Data from Anaktuvuk Pass, Coldfoot, and Umiat are also summarized.



Gates of the Arctic Winter 2013-2014 Weather Summary

Gates of the Arctic weather summaries Winter 2013-2014:

Site	Elev. Ft.	Average Temp °F			Winter Avg Temp °F	Extremes °F		Peak Wind mph	High T – Low T °F *
		Dec	Jan	Feb		High	Low		
Umiat	267	-13.2	-12.1	-14.3	-13.2	39	-49	46	87
Coldfoot	1040	-10.8	5.5	-3.1	-8.4	37	-48	**	85
Atigun Pass	4800	-2.1	5.4	-0.9	2.4	42	-35	**	77
Anaktuvuk Pass	2103	-5.1	1.7	M	M	39	-35	29	74
Chimney Lake	3700	3.7	11.9	6.5	7.4	44	-19	51	63
Pamichtuk Lake	3135	4.2	11.0	1.5	5.6	44	-33	67	71
Killik Pass	4355	2.3	10.1	-0.5	4.0	41	-40	43	81
Norutak Lake	800	-13.6	2.4	-7.6	-6.3	34	-42	29	76

Interesting notes from RAWS stations:

- Due to inversions, low elevation sites (Umiat, Coldfoot, Norutak Lake) are 10 to 15° F colder on average compared to higher elevation stations.
- Cold temperatures and high winds scoured the Brooks Range in mid-February. The average wind chill for the six day period February 12-17 was -42° F at Pamichtuk and -53° F at Killik Pass.
- The minimum wind chill recorded from stations in GAAR was -69° F on February 12 at Killik Pass. The hourly mean temperature was -37° F and the average wind speed was 18 mph.
- As part of the Ambler Road review, staff from UAF Water and Environmental Research Center will be conducting snow surveys in GAAR in April 2014 in connection with the Ambler Road project.

* Difference between the high and low temperature for the season; **wind not measured at Atigun Pass or Coldfoot. Ram Creek not transmitting real-time data.



Chimney Lake station, April 2013

Connecting Further

Previous weather summaries and other climate monitoring documents on the [Arctic Network web portal](#)

Access near real-time data from [Western Regional Climate Center](#) and [MesoWest](#)

Check out the Dec-Jan-Feb weather outlook from the [NOAA Climate Prediction Center](#)

Statewide summary of weather highlights in the latest [Alaska Climate Dispatch](#) from the Alaska Center for Climate Assessment and Policy

[Map](#) of projected temperature and precipitation changes for Gates of the Arctic National Park and Preserve.

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Please Note: The summarized data are preliminary and have not undergone final quality control. Therefore, these data are subject to revision.