



Quarterly Weather & Climate Summary Denali National Park & Preserve Winter 2015

NPS photo by Ken Hill

Denali Winter Weather

In Denali, December was warm and dry. The average monthly temperature of 16.2°F was 9.3°F warmer than normal and the ninth warmest December in 88 years. Daily high temperatures >32°F were recorded on December 16-18 and 29-31. The snowfall for the month was 6.8", which is 44% of normal. The snow water equivalent was 0.29", which is 0.63" less than normal.

January was warm and snowy. The average monthly temperature was 2.1°F above normal at 5.2°F. The high temperature of 49°F recorded on January 9 was a new daily record, beating out Jan 9, 1985 by 5°F. On January 15 it was 44°F; another daily record. There were five consecutive days in mid-January where the maximum daily temperature was above freezing. 14.8 inches of snow fell during the month, almost 6 inches more than normal. Most of the snow fell between January 22 and 24.

February was warm and dry. The month started out colder than normal and then temperatures climbed to near record highs during the third week. The average monthly temperature was 9.8°F, which is 2.2°F above the 1981-2010 normal. There was very little snow accumulation during the month. Only 0.9 inches was recorded, which is 11% of what normally falls during February.

All in all, the winter was warmer and drier than normal – the average winter temperature was 10.4°F, which is 4.5°F warmer than normal. Precipitation was 54% of normal with a total of 1.12 inches. There was 11 inches of snow on the ground at the end of February. Normal is 19 inches. (Figures 1 and 2; Tables 1, 2, and 3).

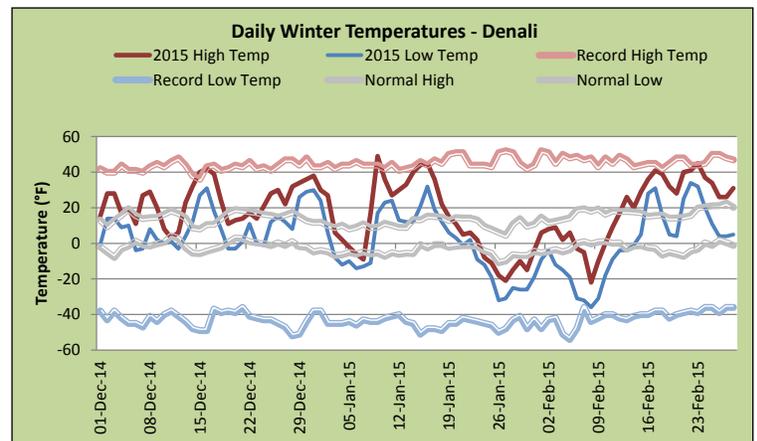


Figure 1. Winter 2015 temperatures at park headquarters showing 2015 daily maximum/minimum, 1981-2010 normals, and record max/min.

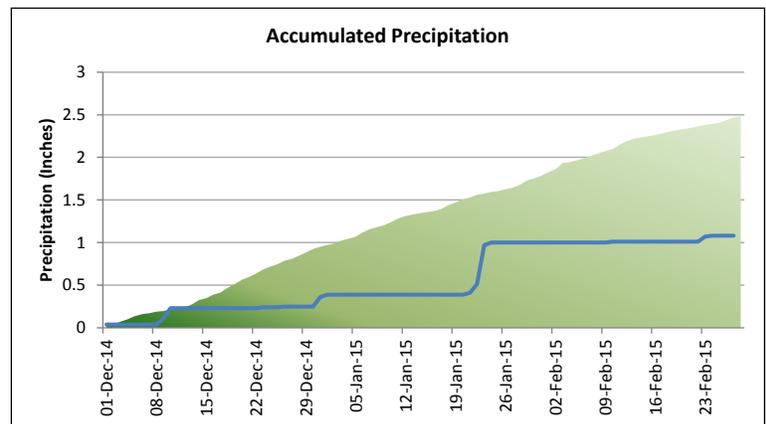


Figure 2. Winter 2015 accumulated precipitation at Denali (blue line) compared to normal.

Table 1. Temperature: Winter 2015 average monthly temperatures compared to the 1981-2010 normal.

Winter 2014-2015	Average Monthly Temp °F	1981-2010 Normal °F	Departure from Normal °F	Monthly High °F / Date	Monthly Low °F / Date
December	16.2	6.9	+9.3	42 / Dec 16	-4 / Dec 6
January	5.2	3.1	+2.1	49 / Jan 9	-32 / Jan 26
February	9.8	7.6	+2.2	45 / Feb 23	-36 / Feb 8

Winter Season Temperature Departure from Normal: +4.5°F

Table 2. Precipitation: Winter 2015 monthly precipitation totals compared to normal.

Winter 2014-2015	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	0.29	0.92	-0.63	0.12 / Dec 11	6
January	0.75	0.63	+0.12	0.46 / Jan. 24	6
February	0.08	0.54	-0.46	0.06 / Feb 24	3

Winter Season Departure from Normal: -0.97 inches (54% of normal)

Table 3. Snowfall: Winter 2015 monthly snowfall totals compared to normal.

Winter 2014-2015	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	6.8	15.4	-8.6	3.0 / Dec 11	18.4
January	14.8	9	+5.8	8.2 / Jan 24	33.2
February	0.9	8.4	-7.5	0.3 / Feb 24	34.1

Climate Monitoring in Denali

There are additional NPS climate stations in Denali that complement the long-term record available from the National Weather Service station at Park headquarters (Figure 3). These additional sites provide critical data on a park-wide scale that help characterize the climate gradients

and patterns affecting resources in Denali National Park and Preserve. This past summer, University of Alaska researchers installed a weather station near 14,000' on Denali. Winter statistics from these sites are summarized in Table 4

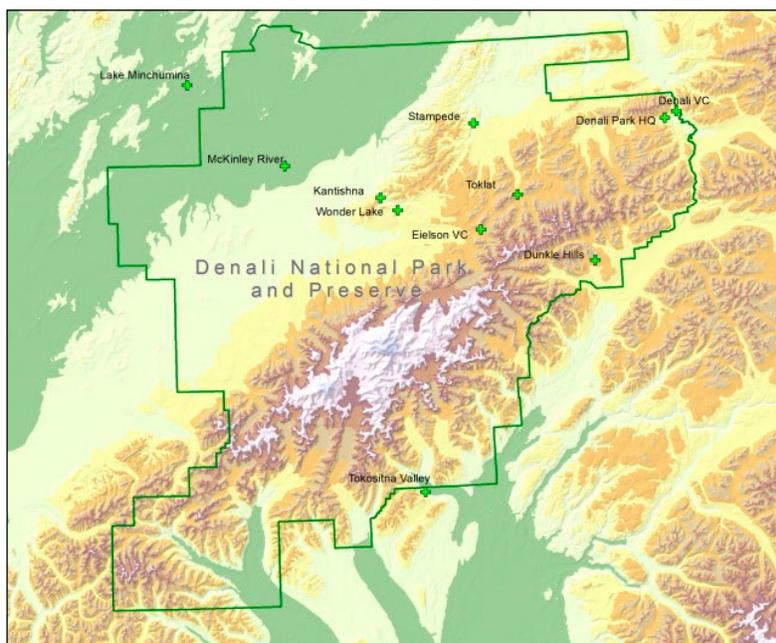


Figure 3. Locations of climate stations in Denali.

Table 4. Summary of weather statistics from the Denali climate stations. All data are preliminary and subject to review.

Site	Elev. (ft)	Average Temp °F			Extreme High (°F)	Extreme Low (°F)	Peak Wind (mph)	Snow Depth Feb. 28 (inches)	Average Temp. Winter Season (°F)
		Dec.	Jan.	Feb.					
Denali VC	1650	13.6	-1.2	7.3	48	-47	32	—	6.6
Toklat	2920	17.9	9	12.2	48	-38	37	4	13
Eielson VC	3653	26.8	19.9	23.7	50	-21	37	7	23.5
Wonder Lake	2050	10.6	2.2	11.3	42	-30	47	—	8
Stampede	1800	7	-4.1	6.8	49	-47	12	17	3.2
Wigand	1741	11.4	1.4	8.6	47	-34	43	8	7.1
Kantishna	1550	7.5	-5	3.3	46	-43	—	24	1.9
Dunkle Hills	2651	19.1	10.2	11.2	39	-29	32	18	13.5
Ruth Glacier	3301	26.1	23.7	23.5	41	-6	39	9	24.4
Tokositna Valley	850	25.6	16.8	20.4	41	-26	—	29	20.9
14k Denali	14,000	-19.5	-11	-8.3	10.8	-34.1	85	—	-10.3

Interesting Notes from RAWs Stations

- The coldest instrumented location for this past winter was Kantishna, followed by Stampede. The warmest location was the Ruth Glacier site in the Tokosha Mountains, followed by Eielson Visitor Center on the north side of the range.
- The average winter temperature at 14,000' on Denali

is only 12.2°F colder than at Kantishna. The high temperatures on the mountain never get quite as high as the lower elevation sites, but the minimum temperatures are not nearly as cold as the valley bottom sites.

- The peak wind gust for the season from the 14,000 ft. station was 85 mph on February 28.

Denali Winter Temperature Trend

The average winter temperature for 2014 was 10.4°F, which is 4.5°F warmer than the 1981-2010 normal (the latest climate normal period) and 6.2°F degrees warmer than the long-term average (1926-2014). We calculate the average winter temperature by simply taking the average of December, January, and February monthly temperatures. The range in winter temperatures over the 88 year period of record is between -8.0°F (1933) and 17.3°F (2001). The overall trend is positive, but the temperature increase is non-linear, with multi-decadal variations (Figure 4).

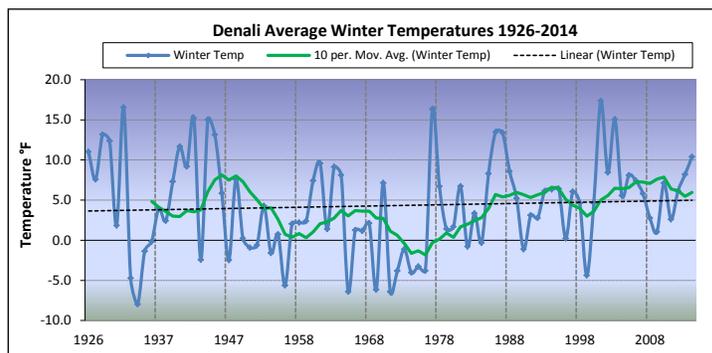


Figure 4. Average winter temperatures (December, January, February) at Denali Park Headquarters over the past 88 years. The green line shows a 10-year moving average. The dotted line shows a simple linear regression

Connecting Further

- Previous weather summaries and other climate monitoring documents on the [Central Alaska Network web portal](#)
- Access near real-time data from [Western Regional Climate Center](#) and [MesoWest](#)
- [Maps](#) of projected temperature and precipitation changes for Denali National Park and Preserve

More Information

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