



Weather and Climate



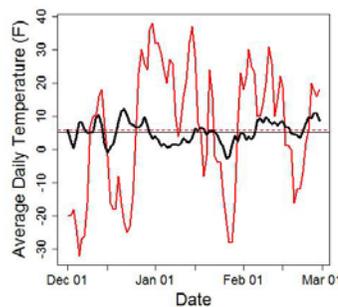
Denali Winter 2012-2013 Weather Summary

What is Normal?

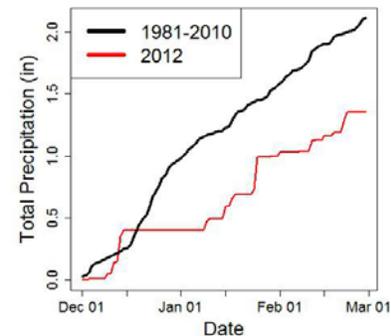
“Normals” are used to place recent climate conditions into historical context. It takes 30 years of continuous weather data at one location to calculate what makes temperatures or precipitation amounts “normal”. The latest normal period is 1981-2010. The McKinley Park weather station at Park Headquarters, in operation since 1925, is one of the few sites in Alaska where normals are calculated. This site provides a valuable long-term record for Denali and is a good index site to use for climate comparisons.

In Denali, December was much colder and dryer than normal. The average temperature for December was 10.0° F colder than normal and the total precipitation was 0.4 inches, 44% of normal. The temperatures warmed in January, typically the coldest month of the year. The average monthly temperature was 9.7° F compared to a 1981-2010 normal of 3.1° F. The total precipitation for the month was about average at 0.60 inches, normal is 0.62 inches. The total snowfall of 7.9 inches for the month was only 51% of normal. February temperatures ranged from -30° F to +37° F and averaged 4.2° F warmer than normal for the month. Precipitation totaled 0.35 inches with 7.1 inches of snowfall. This is 1.3 inches less snowfall than normal for February and 65% of normal precipitation (water equivalent). Total snowfall for the winter season (December – February) was 72% of normal.

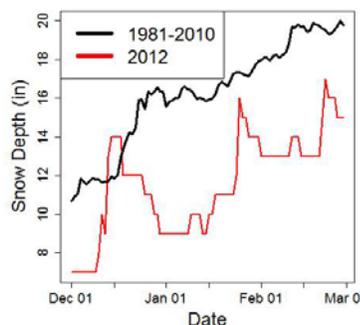
Denali Park HQ – Average Air Temperatures



Denali Park HQ – Cumulative Precipitation



Denali Park HQ – Cumulative Snow Depth



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Denali Park HQ Weather Records:
 Climate Normal Period 1981 – 2010
 Climate Record Period 1925 – 2013

Temperature

Winter 2012 - 2013	Average Monthly Temp °F	1981-2010 Normal °F	Departure from Normal °F	Monthly High °F / Date	Monthly Low °F / Date
December	-3.1	6.9	-10.0	43 / Dec 31	-35 / Dec 5
January	9.7	3.1	+6.6	40 / Jan 15	-36 / Jan 28
February	11.8	7.6	+4.2	37 / Feb 3	-30 / Feb 19

Winter Season Temperature Departure from Normal: 0.8°F

Precipitation

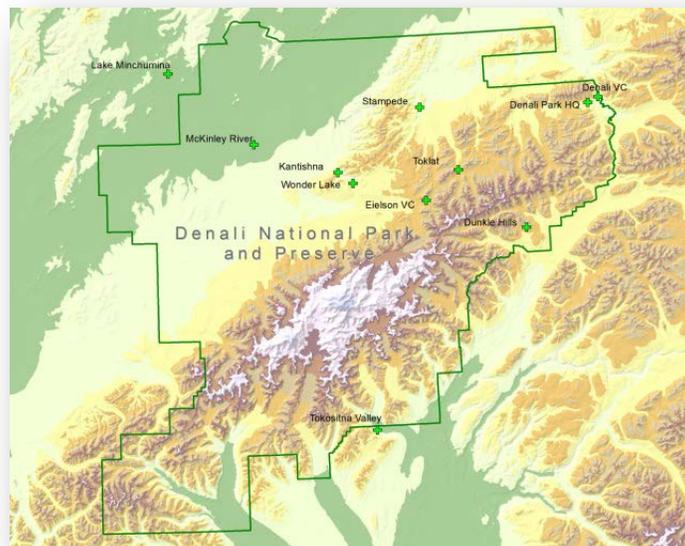
Winter 2012 - 2013	Total Monthly Precip in.	1981-2010 Normal in.	Departure from Normal in.	Greatest 24 -hr total in. / Date	# Days with ≥ 0.01 in. rain or snow
December	0.40	0.92	-0.52	0.20 / Dec 13	6
January	0.60	0.63	-0.03	0.26 / Jan 25	8
February	0.35	0.54	-0.19	0.08 / Feb 11, 21, 22	8

Winter Season Departure from Normal: -0.74 inches

Snowfall

Winter 2012 - 2013	Total Monthly Snowfall in.	1981-2010 Normal in.	Departure from Normal in.	Greatest 24 -hr snowfall total in. / Date	2012 snowfall total from July 1 in.	Normal Snowfall Total from July 1 - in.	Snow Depth End of Month In.
December	7.9	15.4	-7.5	2.6 / Dec 24	28.1	45.4	9
January	9.9	9.0	+0.9	4.5 / Jan 25	38.0	54.4	14
February	7.1	8.4	-1.3	1.8 / Feb 21	45.1	62.8	15

There are additional NPS climate stations in Denali that complement the long-term record available from the National Weather Service station at Park headquarters. 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.



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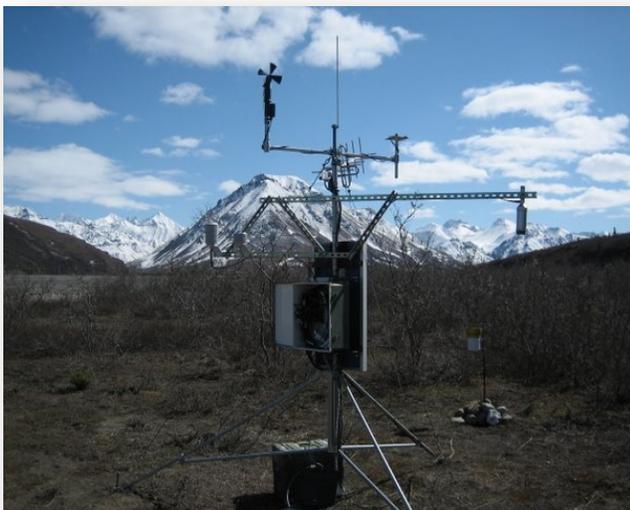
Denali Remote Automated Weather Station (RAWS) summaries – Winter 2012-2013:

Site	Elev. Ft.	Average Temp °F			Winter Avg Temp °F	Extremes °F		Snow Depth In. *	Peak Wind mph	High T – Low T °F **
		Dec	Jan	Feb		High	Low			
Denali VC	1650	-8.7	8.7	9.4	3.1	44	-48	***	28	92
Toklat	2920	1.8	10.1	11.8	7.9	41	-39	10	35	80
Eielson VC	3653	12	17.2	17.7	15.6	41	-25	2.5	37	66
Wonder Lake	2050	-2.9	4.8	3.8	1.9	44	-34	***	49	78
Stampede	1800	-11.3	0.5	-0.8	-3.9	43	-47	21	16	90
Kantishna	1550	-12.7	0.6	-2.6	-4.9	46	-47	40	***	51
McKinley River	863	-16.9	-3.2	-2.6	-7.6	34	-52	18	m	86
Dunkle Hills	2651	5.2	12.8	14.9	11.0	38	-22	16	35	60
Tokositna Valley	850	8.9	18.2	22.7	16.6	40	--23	53	***	35

* Snow depth on Feb 28th; ** Difference between the high and low temperature for the season; ***Snow /wind not measured.

Interesting notes from RAWS stations:

- On the morning of December 31 the high temperature recorded at park headquarters (for the previous 24-hrs) was 43°F, breaking the old record of 41°F from 1941. Temperatures across the park on December 30 reached the low to mid 40s.
- The highest temperature for the winter season, 46°F, was recorded at Kantishna on December 30. The lowest temperature for the season, -52°F, was recorded at McKinley River on January 27th.
- The mean temperatures for January and February for all of the stations were remarkably similar; given the extreme month to month variability over the past several years this is “interesting”.



Climate station near Toklat

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

Connecting Further

New paper published – [The First Decade of the New Century: A Cooling Trend for Most of Alaska](#)

[Central Alaska Network](#) climate monitoring vital sign

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

Check out the 3 month weather outlook from the [NOAA Climate Prediction Center](#)

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

[Map](#) of projected temperature and precipitation changes Denali National Park and Preserve.

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