



Weather and Climate



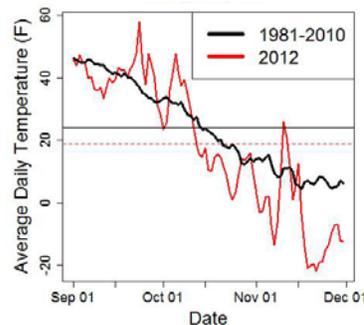
Denali Fall 2012 Weather Summary

What is Normal?

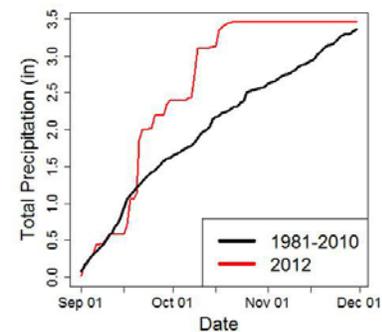
“Normals” are used to place recent climate conditions into historical context. It takes 30 years of continuous weather data at one location to calculate what makes temperatures or precipitation amounts “normal”. The latest normal period is 1981-2010. The McKinley Park weather station at Park Headquarters, 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, fall 2012 started out warmer and wetter than normal. The average temperature for September was 1.1° F warmer than normal and the total precipitation was 2.40 inches, 141% of normal. Repeated early autumn storms pounded Southcentral Alaska in September - some of the high wind and water levels pushed into Interior Alaska. On September 20th a record 0.72 inches of rainfall was recorded at park headquarters. The Nenana River, on the eastern boundary of the park, hit a record stage of 14.9 feet, topping the old record of 14.1 feet from 1990. The temperatures cooled in October with an average monthly temperature of 20.0° F, 2.9° F below the 1981-2010 normal. The total precipitation for the month was 1.05 inches, normal is 0.78 inches. The total snowfall was 10.2 inches for the month, 2.1 inches shy of normal. November was particularly cold and dry. The average temperature for the month was -5.1°F. It was the third coldest November on record behind 1932 (-7.3°F) and 1963 (-5.4°F). The cold weather was persistent, but no cold temperature records were broken at the park. The total snowfall was 9.4 inches for November, 73% of normal (1981-2010).

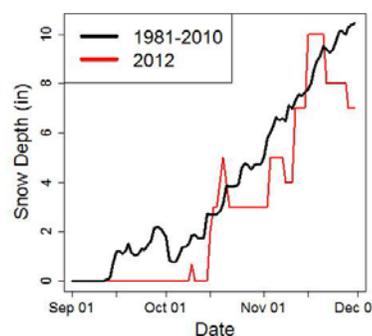
Denali Park HQ – Average Air Temperatures



Denali Park HQ – Cumulative Precipitation



Denali Park HQ – Cumulative Snow Depth



Denali Fall 2012 Weather Summary

Denali Park HQ Weather Records:
 Climate Normal Period 1981 – 2010
 Climate Record Period 1925 – 2012

Temperature

Fall 2012	Average Monthly Temp °F	1981-2010 Normal °F	Departure from Normal °F	Monthly High °F / Date	Monthly Low °F / Date
September	41.5	40.4	+1.1	66 / Sep 23	19 / Sep 30
October	20.0	22.9	-2.9	51 / Oct 5	-11 / Oct 24
November	-5.1	8.9	-14.0	30 / Nov 11	-26 / Nov 17-20

Fall Season Temperature Departure from Normal: -5.3°F

Precipitation

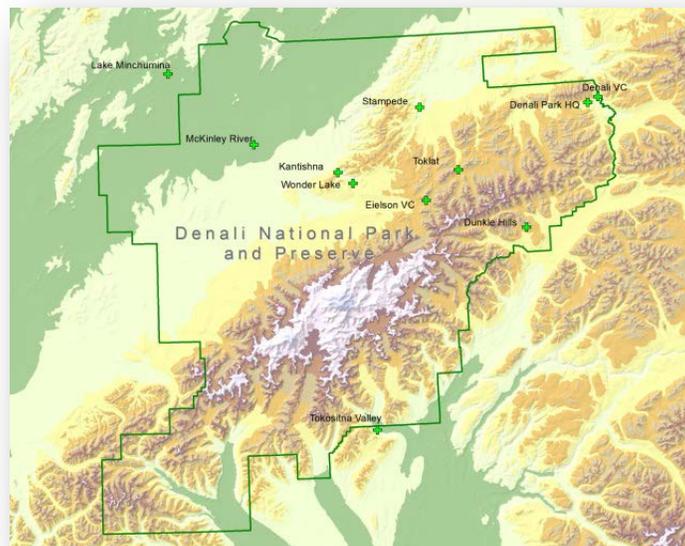
Fall 2012	Total Monthly Precip in.	1981-2010 Normal in.	Departure from Normal in.	Greatest 24 –hr total in. / Date	# Days with >=0.01 in. rain or snow
September	2.40	1.70	0.70	0.72 / Sep 20	19
October	1.05	0.78	0.27	0.36 / Oct 9	11
November	0.50	0.75	-0.25	0.15 / Nov 11, 15	10

Fall Season Departure from Normal: +0.24 inches

Snowfall

Fall 2012	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.
September	0.6	4.7	-4.1	0.6 / Sep 24	0.6	4.8	0
October	10.2	12.3	-2.1	2.8 / Oct 16	10.8	17.1	3
November	9.4	12.9	-3.5	3.4 / Nov 15	20.2	30.0	7

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.



Denali Fall 2012 Weather Summary

Denali Remote Automated Weather Station (RAWS) summaries – Fall 2012:

Site	Elev. Ft.	Average Temp °F			Fall 2012	Extremes °F		Snow Depth In. *	Peak Wind mph	High T – Low T °F **
		Sep	Oct	Nov	Avg Temp °F	High	Low			
Denali VC	1650	42.6	19.3	-10.7	17.1	69	-36	***	31	105
Toklat	2920	38.6	19.3	-1.4	18.8	57	-32	10.3	38	89
Eielson	3653	38.0	24.4	13.3	25.2	57	-21	1	39	78
Wonder Lake	2050	39.2	19.3	-0.1	19.5	66	-23	***	41	89
Stampede	1800	40.2	18.0	-7.7	16.8	66	-36	10.4	15	102
Kantishna	1550	39.9	19.5	-10.5	16.3	66	-31	9.0	***	97
McKinley River	863	39.8	19.9	-5.4	18.1	64	-34	5.5	26	98
Dunkle Hills	2651	37.1	23.2	6.4	22.2	49	-15	m	33	64
Tokositna Valley	850	42.5	28.8	12.7	28.0	57	-10	5.0	***	67

* Snow depth on Nov. 30th; ** Difference between the high and low temperature for the season; ***Snow /wind not measured.

Interesting notes from RAWS stations:

- On the north side of the Alaska Range, the difference between the low temperature and the high temperature for the fall season averaged ~ 94 deg F. The same seasonal difference on the south side of the Alaska Range was ~ 66 deg F. The proximity to the coast moderates temperatures on the south side of the range.
- The highest temperature for the season, 69°F, was recorded at Denali Visitor Center on September 22. The lowest temperature for the season, -36°F, was also recorded here on November 17th & 30th and at Stampede on November 17th.
- There was ~ a 22 degree F difference in the average monthly temperatures for October versus November as the available daylight (and heat) fades fast.



Climate station near Eielson Visitor Center

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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