

Alaska Statewide Climate Summary

November 2013

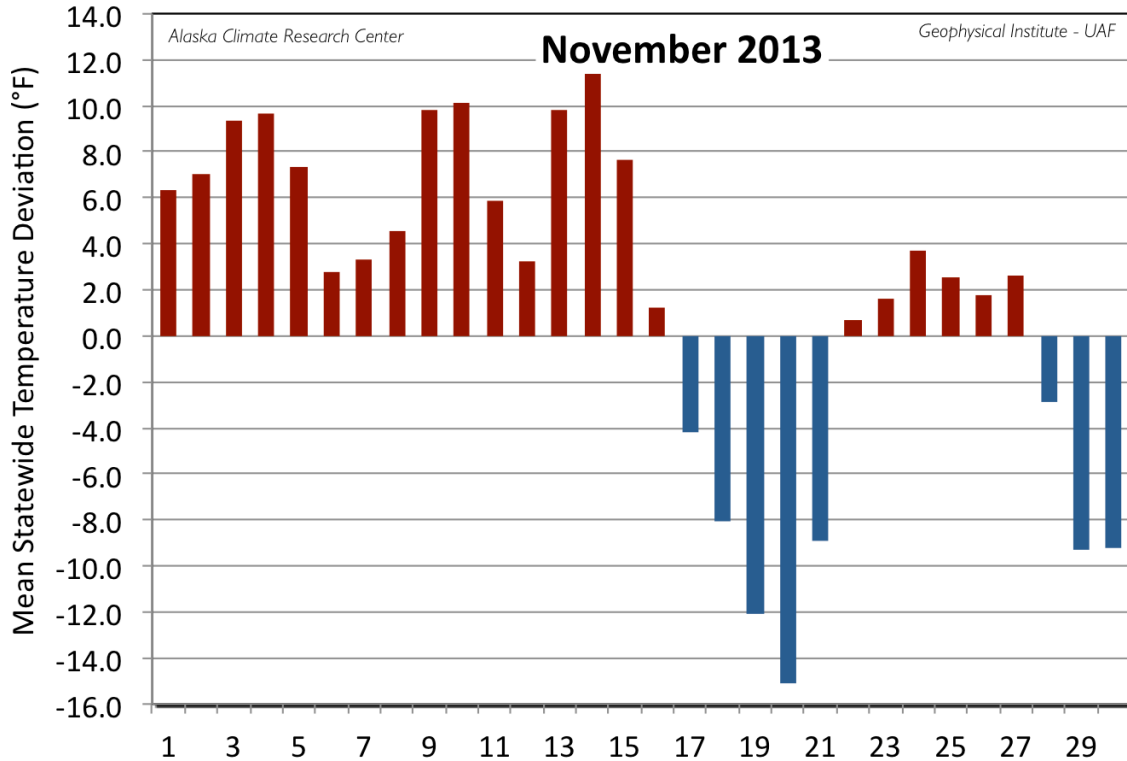
Temperature

October's warm temperatures continued into the first half of November. Colder than normal temperatures set in on the 16th for five days before a near weeklong warm-up occurred. The end of the month then shifted into colder than normal temperatures once again. The monthly mean temperature for all 20 First Order Stations was 21.2°F, a marginal 1.8°F above the normal of 19.6°F. The most extreme deviation for the month occurred on the 20th at -15.1°F. Fourteen of the 20 First Order Stations reported positive deviations, four below normal while Bettles and Gulkana reported no deviation from the normal. Once again, this month, McGrath held the highest positive deviation from normal at 7.6°F over its long-term mean of 5.5°F. Following McGrath with positive deviations exceeding 3°F were: Barrow (6.8°F), Fairbanks (3.5°F), Cold Bay (3.4°F), Bethel (3.1°F). Stations with negative deviations from normal were: Juneau (-3.0°F), Talkeetna (-3.0°), Yakutat (-1.3°F) and Anchorage (-0.3°F).

The warmest temperature reported for the 20 First Order Stations was 59°F at Kodiak on the 14th, a new daily record, and a result of the storm impacting the Southcentral area. The coldest temperature was -42°F at Gulkana on the 20th during the cold snap. Annette, the southernmost station, reported the highest mean temperature for the month at 40.1°F, while Bettles reported the coldest at -1.0°F.

Station	Temperature		
	Observed (°F)	Normal (°F)	Delta (°F)
Anchorage	21.9	22.2	-0.3
Annette	40.1	40.0	0.1
Barrow	7.5	0.7	6.8
Bethel	20.5	17.4	3.1
Bettles	-1.0	-1.0	0.0
Cold Bay	37.9	34.5	3.4

Delta Junction	6.3	6.2	0.1
Fairbanks	6.1	2.6	3.5
Gulkana	5.8	5.8	0.0
Homer	31.6	29.5	2.1
Juneau	30.4	33.4	-3.0
King Salmon	25.1	22.9	2.2
Kodiak	36.1	33.9	2.2
Kotzebue	11.9	9.1	2.8
McGrath	13.1	5.5	7.6
Nome	18.8	16.9	1.9
St. Paul Island	34.7	33.0	1.7
Talkeetna	16.5	19.5	-3.0
Valdez	28.7	28.3	0.4
Yakutat	31.0	32.3	-1.3



Daily mean temperature deviation from the normal temperature for the mean of the 20 first order stations for November 2013.

A number of daily temperature records were set this November, and unsurprisingly, new record highs outnumbered new record lows by four to one. All three new record lows occurred during the cold spell around the 20th. The new high temperature in Fairbanks of 45°F during the storm of the 14th smashed the record of 40°F that had been in place since 1908.

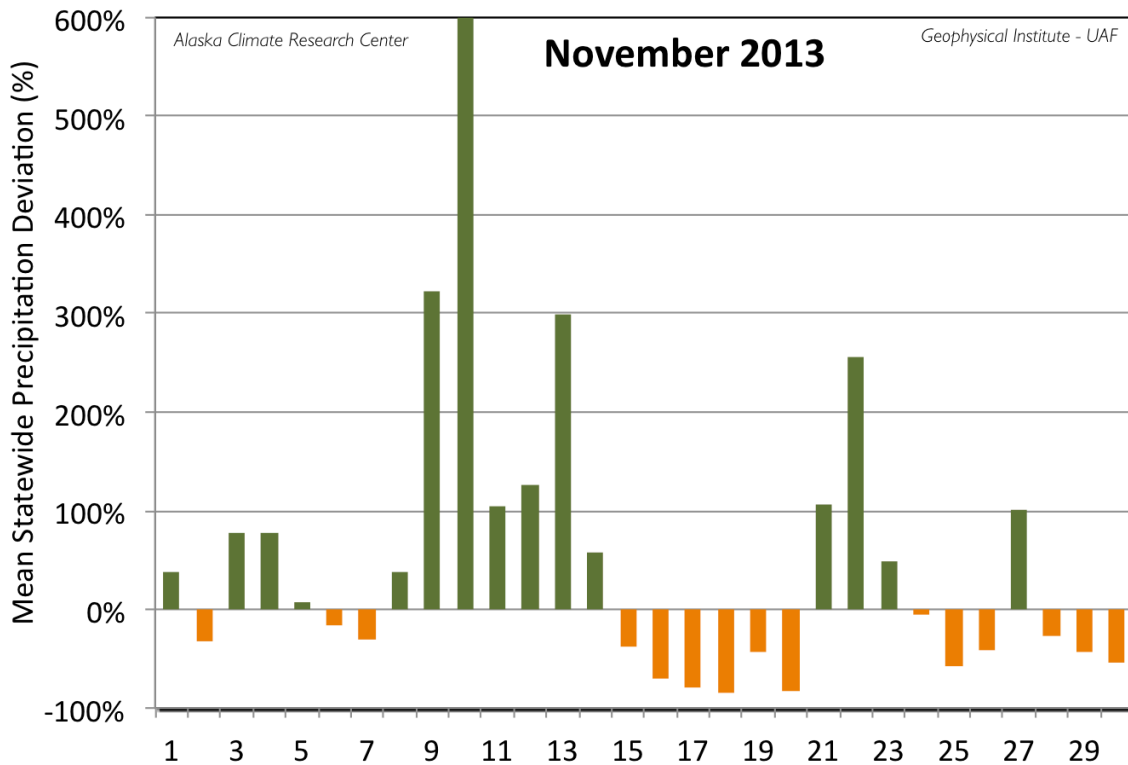
Date	Temperature Records				
	Station	Element	New Record	Old Record	Year of old Record
11/03/13	Cold Bay	High Temperature	52	51	1996
11/05/13	Valdez	High Temperature	46	44	2002
11/06/13	Cold Bay	High Temperature	52	49	1986

11/09/13	Barrow	High Temperature	35	32	1978
11/09/13	Cold Bay	High Temperature	55	50	1979
11/10/13	Kotzebue	High Temperature	38	38	1994
11/13/13	Kodiak	High Temperature	54	48	1986
11/14/13	Cold Bay	High Temperature	56	56	1979
11/14/13	Fairbanks	High Temperature	45	40	1908
11/14/13	Kodiak	High Temperature	59	54	1986
11/15/13	Cold Bay	High Temperature	44	40	1986
11/15/13	Kodiak	High Temperature	50	49	1986
11/19/13	Kodiak	Low Temperature	16	16	2007
11/20/13	Delta Junction	Low Temperature	-38	-37	1993
11/21/13	Valdez	Low Temperature	4	6	1993

Precipitation

Precipitation for November was considerably above normal for the state, at 51% above the expected amount. The greatest daily deviation of 600% occurred on the 10th. Sixteen of the 20 stations reported above normal values, while just four coastal stations reported values below normal; These are, in ascending order, Homer with 51% of the expected value, Kodiak (52%), Yakutat (53%), and Cold Bay (90%). Bettles had the greatest positive deviation from normal, with 2.79", or 207% above the expected amount of 0.91". Following Bettles with deviations at or above 100% were: Fairbanks (160%), and Gulkana (150%) and Barrow (100%).

Station	Precipitation				
	Observed (in)	Normal (in)	Delta (in)	Delta (%)	(%)
Anchorage	1.94	1.16	0.78	67%	167%
Annette	13.40	12.29	1.11	9%	109%
Barrow	0.42	0.21	0.21	100%	200%
Bethel	2.49	1.60	0.89	56%	156%
Bettles	2.79	0.91	1.88	207%	307%
Cold Bay	4.50	4.98	-0.48	-10%	90%
Delta Junction	0.96	0.63	0.33	52%	152%
Fairbanks	1.74	0.67	1.07	160%	260%
Gulkana	1.80	0.72	1.08	150%	250%
Homer	1.43	2.79	-1.36	-49%	51%
Juneau	6.69	5.99	0.70	12%	112%
King Salmon	2.61	1.39	1.22	88%	188%
Kodiak	3.60	6.87	-3.27	-48%	52%
Kotzebue	1.22	0.77	0.45	58%	158%
McGrath	1.42	1.41	0.01	1%	101%
Nome	1.68	1.22	0.46	38%	138%
St. Paul Island	3.69	2.89	0.80	28%	128%
Talkeetna	2.58	1.63	0.95	58%	158%
Valdez	10.57	5.64	4.93	87%	187%
Yakutat	7.68	14.45	-6.77	-47%	53%



Daily mean precipitation deviation from the normal for the 20 first order stations for November 2013.

Snowfall was somewhat above normal (13%) for the 16 stations that report snowfall. This is less than the overall precipitation deviation due higher temperatures causing a higher percentage to fall as rain. As above, Bettles topped the stations with positive deviations at 135% above normal. St Paul came in on the low side with just 33% of the expected snowfall.

Station	Snowfall				
	Observed (in)	Normal (in)	Delta (in)	Delta (%)	(%)
Anchorage	11.2	13.1	-1.9	-15%	85%
Annette	5.7	3.5	2.2	63%	163%

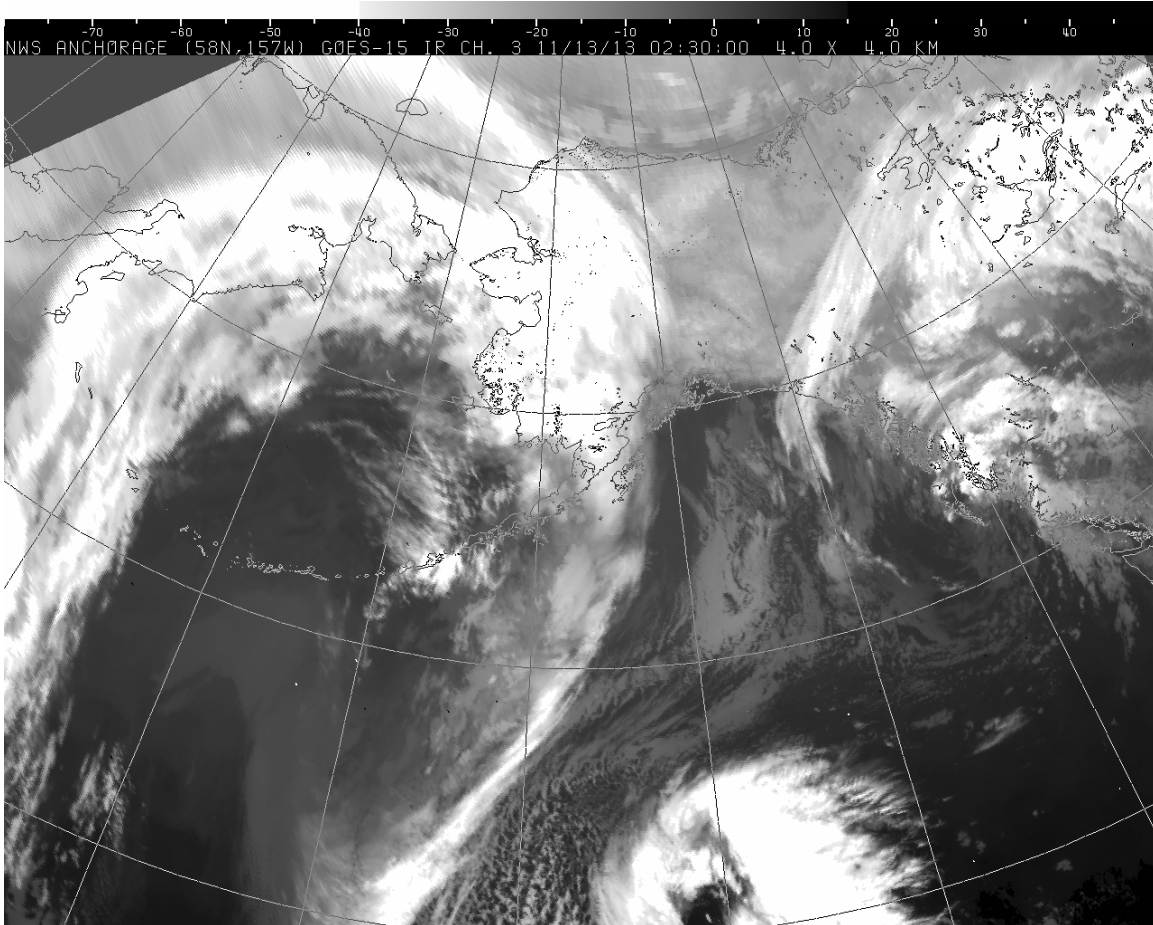
Barrow	7.6	5.7	1.9	33%	133%
Bethel	6.9	12.9	-6.0	-47%	53%
Bettles	37.8	16.1	21.7	135%	235%
Cold Bay	3.6	10.2	-6.6	-65%	35%
Fairbanks	17.6	13.2	4.4	33%	133%
Juneau	18.9	13.1	5.8	44%	144%
King Salmon	11.6	6.9	4.7	68%	168%
Kodiak	7.3	6.4	0.9	14%	114%
Kotzebue	10.8	10.5	0.3	3%	103%
McGrath	11.4	19.3	-7.9	-41%	59%
Nome	13.0	12.1	0.9	7%	107%
St. Paul Island	2.7	8.3	-5.6	-67%	33%
Valdez	80.4	42.8	37.6	88%	188%
Yakutat	9.2	18.2	-9.0	-49%	51%

The maximum precipitation total reported for the 20 First Order Stations was 13.40" at Annette, while Valdez reported the highest daily total of 3.38" on the 22nd. The highest one-day snowfall also occurred at Valdez on the 10th with 24.4", and Valdez went on to report the highest monthly snowfall of 80.4". Unsurprisingly, Valdez also topped the stations for the deepest snowpack of 37" on the 24th.

A fair number of daily record precipitation and snowfall events were set in November, occurring throughout the month, but most were set during the storm events from the 11th to 15th and 22nd to 25th. The record precipitation in Anchorage in the 11th set not only a daily record, but is also the highest daily precipitation for any day in November, breaking the old record of 1.16" from November 18th, 1964. By the end of November, Valdez's 2013 yearly precipitation total was 94.78", breaking the 1981 record of 93.3", and the year is not yet over.

Precipitation Records					
Date	Station	Element	New Record	Old Record	Year of old Record
11/05/13	Annex Creek	Snowfall	6.00	5.00	1971
11/05/13	Juneau	Precipitation	0.84	0.77	1955
11/10/13	Anchorage	Precipitation	1.27	0.77	1981
11/10/13	Delta Junction	Precipitation	0.41	0.31	1994
11/10/13	Valdez	Snowfall	24.40	19.10	1994
11/10/13	Valdez	Precipitation	2.10	1.77	1976
11/11/13	Valdez	Precipitation	2.31	1.67	1979
11/13/13	Fairbanks	Precipitation	0.62	0.53	1950
11/13/13	Kotzebue	Precipitation	0.28	0.19	1993
11/13/13	Nome	Precipitation	0.37	0.34	2000
11/14/13	St. Paul	Precipitation	1.12	0.53	1968
11/21/13	Juneau	Snowfall	10.00	7.20	1958
11/21/13	King Salmon	Precipitation	0.48	0.31	2003
11/21/13	King Salmon	Snowfall	5.10	0.80	1956
11/21/13	Petersburg	Snowfall	11.00	4.00	1960
11/22/13	Valdez	Snowfall	20.40	14.50	1987
11/22/13	Valdez	Precipitation	3.48	1.53	2002
11/23/13	King Salmon	Snowfall	3.60	3.60	1991

11/24/13	Valdez	Snowfall	14.70	10.40	1993
11/27/13	Ketchikan	Precipitation	4.39	3.54	1989



This infrared satellite image from the National Weather Service shows strong storm system affecting the Western and Interior portions of Alaska on November 12th-13th, 2013. The storm generated extensive damage across the region.

Newsworthy Events

November started off with a freezing rain in Fairbanks on the 1st. Then a major storm impacted the western portion of the state on the 5th, moving quickly with high winds, a gust of 81 mph was reported at Adak. Also on the 5th, heavy snow made for slow going over Eagle Summit on the Steese Highway. Fairbanks' first subzero temperature arrived on the 7th, later than the normal of October 26th. Bolio Lake south of Delta Junction saw -31°F that day. On the 9th the first snowfall hit Anchorage, and this is the 6th latest date for Anchorage to have its first measureable snowfall since 1930. The snow turned to freezing rain and generated a number of vehicle accidents. The 10th saw quite a bit of snow in the Interior, with up to 11" in the Fairbanks area. High winds of up to 60 mph made driving on the Dalton Highway difficult. Delays were experienced as road crews worked to clear the road at Atigun pass. Southcentral total snowfall for the storm was higher, with more than three feet in Hatcher Pass (where hikers had to be rescued by helicopter), 24.2" in Valdez (a new record) and 6" in midtown Anchorage. This storm had its greatest effects in parts of coastal western Alaska, with significant damage in villages such as Kotlik and Unalakleet.

The weather event of the month started on the 12th with another storm slamming into western Alaska, pushing floodwaters and high winds into villages along the Norton Sound area. Water and sewer lines above ground, roads and communication towers as well as buildings were among the infrastructure damaged. The storm dropped rain, snow and 'frizzle' (freezing drizzle) in the Interior. What was very unusual is that it was raining at a temperature of 10°F. This was followed by record high temperature and high winds, up to 83 mph, that resulted in many downed trees and widespread power outages across the Fairbanks area. Up to a third of the residents were without power for up to a week, even as additional electrical workers were brought up from Anchorage. Schools in the Fairbanks Borough were closed for three days. Power outages extended throughout the Interior. The Southcentral was not spared the storm's wrath with freezing rain and terrible road conditions. Fairbanks area stores were sold out of generators as residents tried to cope. The impact of the loss of electricity became acute as temperatures plummeted following the storm. Fairbanks saw -33°F on the 21st and -50°F was recorded at Chicken and Tok. The Governor declared disaster declarations for the areas in western Alaska and the Interior with substantial damage from the storm.

While temperatures dropped in the Interior, Southcentral and Southeast endured another storm on the 21st with gale level warnings for coastal areas in Cook Inlet, blizzard warnings for Prince William Sound, and winter storm warnings in Southeast. Girdwood and Seward schools were closed. The resulting road conditions were atrocious and many auto accidents were reported in the Southcentral area. As the storm pushed inland on the 22nd, high winds of over 60 mph and snowdrifts were impacting driving near Delta Junction, Denali National Park, higher elevations of the Steese Highway and portions of the Dalton Highway.

More snow dumped on the Interior on the 27th, with high winds, drifting snow and avalanches all impacting driving on the Dalton Highway. Dropping temperatures (-41°F at Fort Yukon) at the end of the month slowed the roller-coaster spectacle that was the weather of November 2013.

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 August 2011.