

Alaska Statewide Climate Summary

December 2016

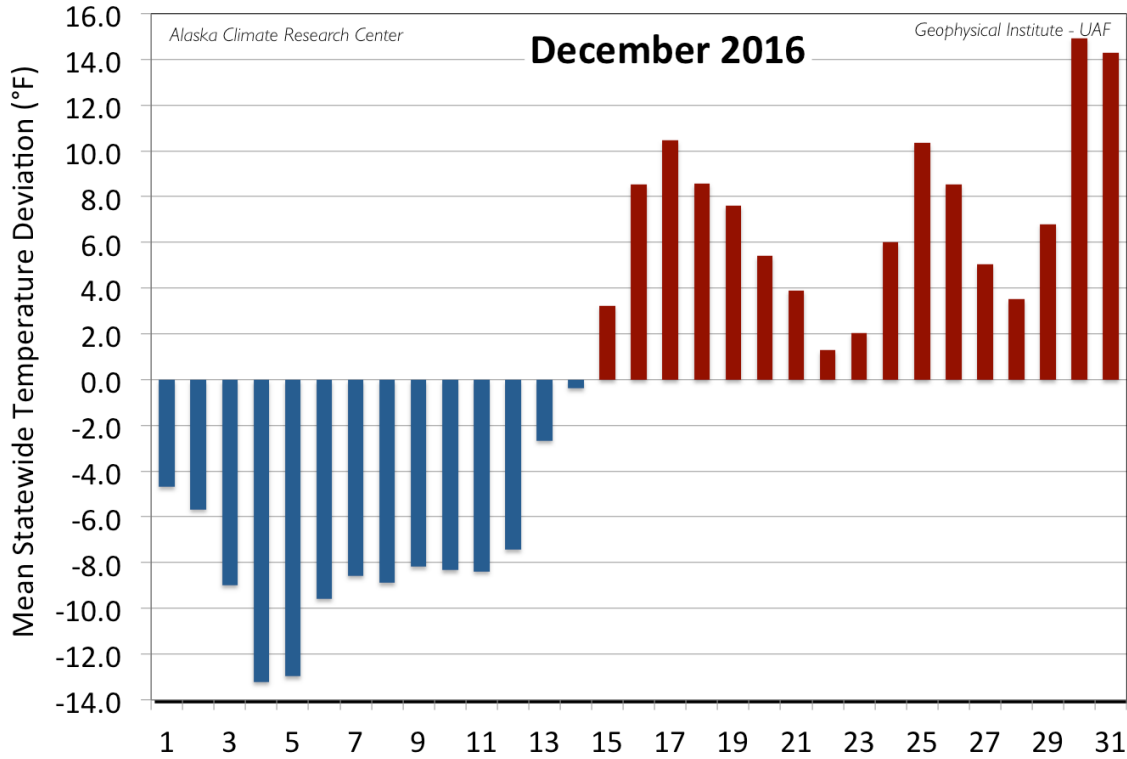
Temperature

December 2016 just barely continued the trend of above normal mean monthly statewide temperatures with a cumulative fifteen months in a row. The monthly mean temperature of all First Order Stations was 14.4°F, just 0.1°F above the normal of 14.3°F. This is 1.3°F below the December 2015 mean of 15.7°F. Calculating the mean daily temperatures of the First Order Stations, 17 days of the month were above the 30-year normal, with 14 days below normal. The below normal temperatures started the month, and above normal temperatures dominated the end of the month, with the transition occurring between the 14th and 15th (see Figure). The peak positive deviation for the month occurred on the 30th at 14.9°F during the strong storm that impacted much of Alaska at the end of the month. The greatest negative deviation occurred on the 4th with -13.2°F. Monthly mean temperatures (see table) were above normal for nine of the 19 First Order Stations. As was the case in both October and November, Barrow held the spot with the greatest positive deviation in December with 7.9°F above its normal of 0.1°F. St. Paul had the next greatest positive deviation with 5.1°F. The station with the greatest negative deviation was Gulkana with -5.3°F. Two other stations had greater than -4.0°F deviations: Fairbanks with -4.3°F and Juneau with -4.2°F.

Station	Temperature		
	Observed (°F)	Normal (°F)	Delta (°F)
Anchorage	16.0	19.0	-3.0
Annette	33.3	37.1	-3.8
Barrow	0.1	-7.8	7.9
Bethel	13.5	10.4	3.1
Bettles	-6.7	-5.7	-1.0
Cold Bay	33.1	31.1	2.0
Delta Junction	0.5	2.1	-1.6
Fairbanks	-8.4	-4.1	-4.3

Gulkana	-4.9	0.4	-5.3
Homer	26.1	27.1	-1.0
Juneau	25.7	29.9	-4.2
King Salmon	18.8	18.6	0.2
Kodiak	31.5	31.2	0.3
Kotzebue	6.6	2.3	4.3
McGrath	-0.5	-3.2	2.7
Nome	13.0	9.5	3.5
St. Paul Island	34.0	28.9	5.1
Talkeetna	12.7	16.0	-3.3
Yakutat	28.3	29.6	-1.3

The highest daily maximum temperature of the First Order Stations for December was 50°F reported at Cold Bay on the 29th. St. Paul Island held the spot for the highest mean temperature for the month at 34.0°F. The lowest temperature of -38°F was observed at Bettles on the 2nd and 3rd while Fairbanks reported the lowest December mean monthly temperature with a value of -8.4°F.



Daily mean temperature deviation from the normal temperature for the mean of the First Order Stations for December 2016.

There were only a limited number of new daily temperature record events in December, and all were new highs. St. Paul Island set five new daily records during the month. In addition, St. Paul Island also had three tied high daily records (not shown.)

Date	Temperature Records				
	Station	Element	New Record	Old Record	Year of old Record
12/13/16	St. Paul	High Temperature	44	40	2015
12/14/16	St. Paul	High Temperature	42	41	1984
12/15/16	St. Paul	High Temperature	43	41	1995
12/29/16	St. Paul	High Temperature	43	41	1973

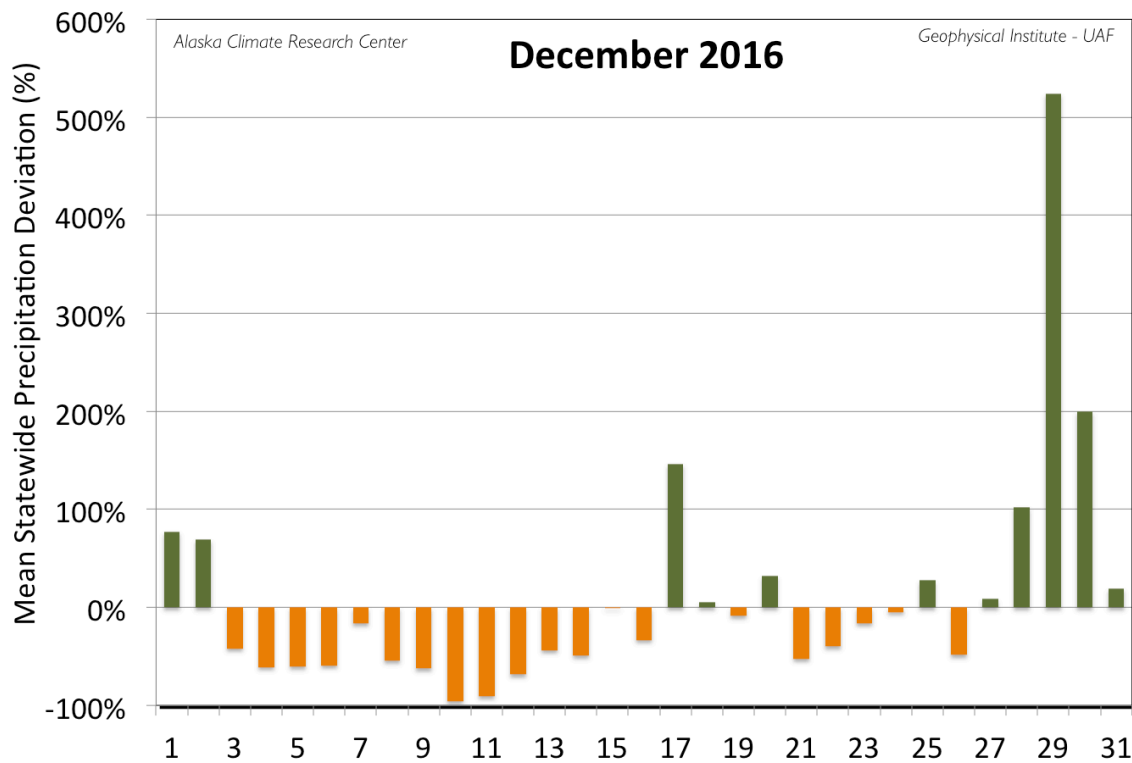
12/31/16	King Salmon	High Temperature	46	45	1984
12/31/16	Kotzebue	High Temperature	37	35	2014
12/31/16	St. Paul	High Temperature	43	40	1987

Precipitation

Reversing the trend from October and November, December's precipitation was above normal, with the overall precipitation calculated as 10% above the average; this calculation was based on the mean of the deviations in percentage of the First Order Stations. Eight of the First Order Stations and eight days of the month reported above normal values. This is quite a bit wetter than December 2015, which reported a negative precipitation deviation of 19% below normal. The greatest daily precipitation amount occurred on the 29th when a significant storm impacted much of the state. The leading station with a greater than normal monthly precipitation amount was Fairbanks with 1.96", or 206% above normal. The relatively driest station was Kodiak with just 47% of normal.

Station	Precipitation				
	Observed (in)	Normal (in)	Delta (in)	Delta (%)	(%)
Anchorage	1.47	1.11	0.36	32%	132%
Annette	6.30	10.72	-4.42	-41%	59%
Barrow	0.28	0.14	0.14	100%	200%
Bethel	0.76	1.12	-0.36	-32%	68%
Bettles	1.48	0.92	0.56	61%	161%
Cold Bay	5.67	4.46	1.21	27%	127%
Delta Junction	0.27	0.38	-0.11	-29%	71%
Fairbanks	1.96	0.64	1.32	206%	306%

Gulkana	0.87	0.78	0.09	12%	112%
Homer	2.14	3.08	-0.94	-31%	69%
Juneau	6.73	5.84	0.89	15%	115%
King Salmon	1.09	1.23	-0.14	-11%	89%
Kodiak	4.11	8.73	-4.62	-53%	47%
Kotzebue	0.74	0.76	-0.02	-3%	97%
McGrath	0.97	1.29	-0.32	-25%	75%
Nome	1.07	1.08	-0.01	-1%	99%
St. Paul Island	3.60	2.25	1.35	60%	160%
Talkeetna	1.16	1.93	-0.77	-40%	60%
Yakutat	8.29	16.28	-7.99	-49%	51%



Daily mean precipitation deviation from the normal for the First Order Stations for December 2016.

December's highest monthly precipitation total reported for a First Order Station was 8.29" at Yakutat, and Yakutat also reported the highest daily total of 1.50" on the 17th. There were a limited number of precipitation records as noted in the table below.

Date	Precipitation Records				
	Station	Element	New Record	Old Record	Year of old Record
12/01/16	Anchorage	Precipitation	0.46	0.40	1974
12/29/16	Fairbanks	Precipitation	0.75	0.46	1955
12/29/16	Kotzebue	Precipitation	0.39	0.31	2004
12/30/16	Fairbanks	Precipitation	0.24	0.19	1951

Snowfall

December was the first month this winter with above average snowfall across the State, but just barely. Based on the mean of the deviations from all 15 stations, the overall deviation from the normals was 2% above the expected amount. This is greater than the snowfall deviation from December 2015, which had a 10% deficit. Eight of the 15 First Order Stations that measure snowfall reported above normal snowfalls. Fairbanks had the greatest positive deviation at 172% above its expected amount with a total of 32.9". Fairbanks also reported the highest total monthly snowfall at 32.9" as well as the highest one-day snowfall at 10.4" on the 16th, a new daily record, breaking the 1955 record of 5.5". The total snowfall of 13.9" at Fairbanks on the 29th and 30th was the largest two day snowfall for Fairbanks since February 20th and 21st of 2011. The greatest snow depth was 23" and was reported at Fairbanks on the 30th. There were a limited number of snowfall records as noted in the table below. Snowpack continued to be low, with around half of normal.

Station	Snowfall

	Observed (in)	Normal (in)	Delta (in)	Delta (%)	(%)
Anchorage	16.9	16.7	0.2	1%	101%
Annette	5.8	8.1	-2.3	-28%	72%
Barrow	4.0	3.5	0.5	14%	114%
Bethel	7.5	11.4	-3.9	-34%	66%
Bettles	25.2	15.6	9.6	62%	162%
Cold Bay	15.1	12.6	2.5	20%	120%
Fairbanks	32.9	12.1	20.8	172%	272%
Juneau	16.8	15.6	1.2	8%	108%
King Salmon	5.5	9.5	-4.0	-42%	58%
Kodiak	3.6	13.8	-10.2	-74%	26%
Kotzebue	14.1	11.5	2.6	23%	123%
McGrath	13.5	20.2	-6.7	-33%	67%
Nome	16.0	14.5	1.5	10%	110%
St. Paul Island	4.5	12.1	-7.6	-63%	37%
Yakutat	22.3	23.2	-0.9	-4%	96%

Date	Snowfall Records				
	Station	Element	New Record	Old Record	Year of old Record
12/01/16	Anchorage	Snowfall	7.7	6.0	1974

12/09/16	Cold Bay	Snowfall	5.4	2.1	1993
12/29/16	Bettles	Snowfall	7.5	6.8	1982
12/29/16	Fairbanks	Snowfall	10.4	5.5	1955
12/29/16	McGrath	Snowfall	6.2	5.0	1994
12/30/16	Fairbanks	Snowfall	3.5	2.4	1951

News-worthy Events

On December 1st, the Parks Highway near milepost 163 was closed due to poor visibility. Total snowfall on the 1st at Black Rapids Lodge was 2'. The storm on the 2nd in the Southeast area brought winds up to 90 mph at Cape Decision, 58 mph at Annette, and 53 mph at Ketchikan and Klawock. Kodiak reported winds up to 83 mph on the 2nd. Also on the 2nd, King Salmon hit a low temperature of -20°F, the first time it was that cold for King Salmon in almost two years. A winter weather advisory was issued for the Central Interior on the 2nd as well, and the snowfall totals in the Fairbanks area topped 7" in the hills by the 3rd. The next day Sitka reported 6" of snowfall, while high winds continued across the Panhandle.

A cold spell settled in across much of the state on the 5th, with multi-year lows reached at a number of locations in the Southcentral area. Soldotna (-17°F), Kenai (-14°F) and Palmer (-12°F) had their coldest temperatures in nearly three years. For the Interior areas, -43°F was reported at Atigun Pass, -40°F at Bettles and -36°F at Fairbanks. The cold continued the next day with -50°F reported at Chalkyitsik and -48°F at Fort Yukon. Then on the 7th, Chalkyitsik reported a low of -51°F, and -52°F the next day. Temperatures stayed about the same until the 9th, and then started to abate after the 10th. In Southeast the cold was paired with high winds and snow, with winter weather advisories issued for much of the Panhandle for high winds and snowfall. The Haines Highway reported -18°F on the 6th, and -9°F was reported at Juneau. The wind chill in the White Pass was below -30°F. The snowfall total for Pelican for the 7th (16.0") and 8th (15.7") was 31.7", the greatest two-day snowfall on record for this location. A total of 17.8" was reported at Mud Bay and 11" at downtown Juneau. Gust up to 60 mph were reported in the Juneau area.

The cold persisted in the Southeast, and the high of 5°F in Mendenhall Valley at Juneau on the 12th was the coldest high since January 7th, 2009, almost eight years. All the snow in the area allowed the Eaglecrest to begin normal winter hours on the 12th. Avalanche abatement occurred along the Thane Road at Juneau on the 14th. The next day the Juneau Airport had had at least 6" of snowpack for a week, the longest streak for this much snow on the ground, and the low of 8°F at the airport on the 15th gave eight days in a row with single digit temperatures, the first time for that length in a decade.

Snowfall totals in the Fairbanks area on the 17th went up to 6" north of town. A strong winter storm hit Western Alaska on the 17th, with gusts up to 60 mph on the St. Lawrence Island. A buoy (46072) located south of the Aleutian Islands reported a wave height of 56' on the 18th, then stopped reporting. Two Alaska Airlines planes reported being struck by lightning on the 20th from the storm in the Gulf of Alaska. Heavy snow along the back of Turnagain Arm and in Turnagain Pass on Christmas Eve and day resulted in avalanche warnings being issued. A rare winter wildfire burning in the duff was reported near the Delta Junction School on the 29th.

The month and year ended with a severe storm impacting much of Western, Southcentral and Interior Alaska starting on the 29th. Hazardous driving conditions were reported along parts of the Parks, Elliot and Dalton Highways on the 29th. The next day, hazardous driving conditions were reported along parts of the Steese, Elliot and Dalton Highways, and the Steese Highway was closed from milepost 101 to 114 on the 31st.

Some notable peak winds on the 30th and 31st were: Savoonga (80 mph) Cape Romanzof (76 mph), Circle Hot Springs (54 mph), Fairbanks (52 mph), Arctic Village (43 mph), Kilik Pass (53 mph), Ella Creek (79 mph), Buckland (53 mph), Barrow (55 mph), Kavik river (61 mph), St. Michael (58 mph), Barter Island (59 mph), Eagle Creek (70 mph), Wonder Lake (57 mph), Blair Lake (59 mph) Shishmaref (51 mph), Anderson (51 mph) and Kotzebue (48 mph).

Minor flooding was reported at Golovin and Shaktoolik, while water covered the Gamble runway. Hatcher and Turnagain Passes each reported 7" of snow. The high winds in the Fairbanks area resulted in up to 4,000 people losing power. Road crews worked around the clock in the Interior to clear roads of the record snowfall, more than 14". Fairbanks area Park and Recreation facilities closed early on the 30th. Savoonga experienced damages to a number of buildings, up to 30, including some lost roofs, and applied for disaster aid to cope with the storm damage.

This information consists of preliminary climatological data compiled by the Alaska Climate Research Center, Geophysical Institute, University of Alaska Fairbanks. For more information on weather and climatology, contact the center at 907-474-7885 or visit the center web site at <http://akclimate.org>. Please report any errors to webmaster@akclimate.org. This summary is based on the 19 First Order Stations in Alaska operated by the National Weather Service. Extreme events of other stations are also mentioned.