

# *Alaska Statewide Climate Summary*

November 2015

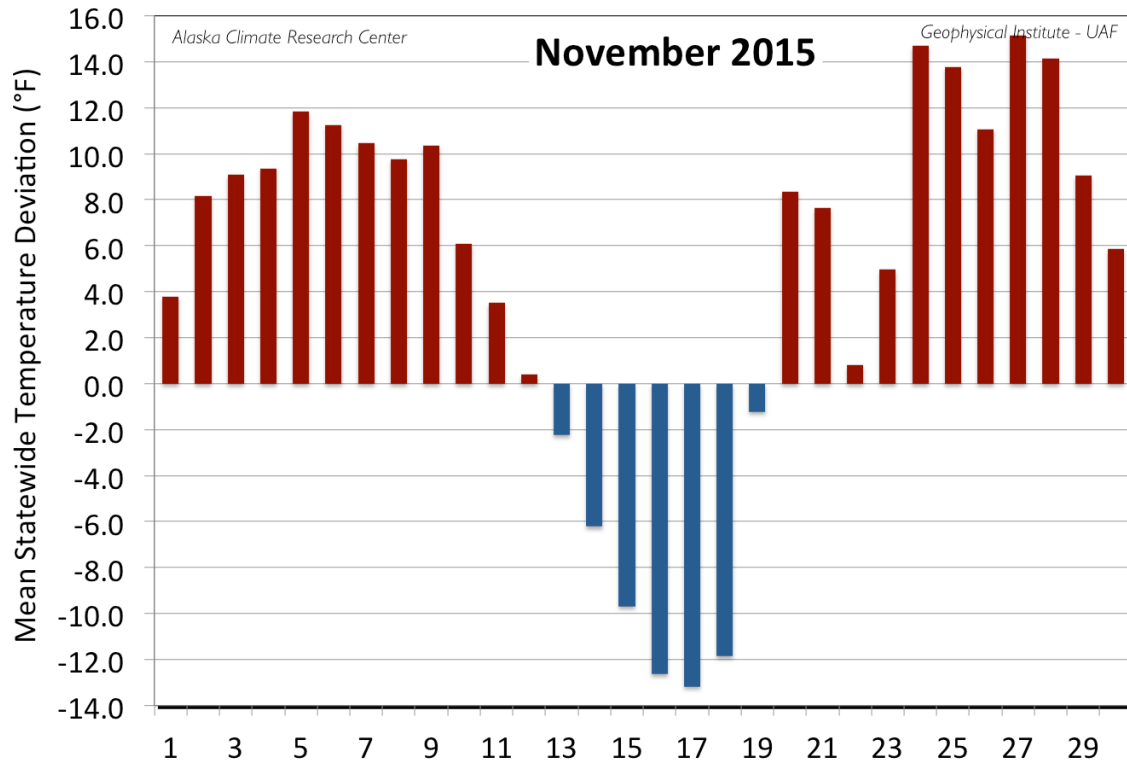
## Temperature

Like October, temperatures were decidedly above normal this November both across the state and throughout much of the month. The monthly mean temperature of all First Order Stations was 23.6°F, 4.4°F above the normal of 19.2°F. This is 2.6°F below the November 2014 mean of 26.2°F. Monthly mean temperatures were above normal for all 19 First Order Stations. Calculating the mean daily temperatures of the First Order Stations (see Figure), only one week of the month (13<sup>th</sup> – 19<sup>th</sup>) was below the 30-year normal. The peak warm deviation, an extreme 15.2°F, occurred on the 27<sup>th</sup>, while the coldest deviation of -13.2°F occurred on the 17<sup>th</sup>. McGrath held the greatest positive deviation from normal with an extreme value of 10.5°F above its long-term mean of 5.5°F. Stations following McGrath with deviations exceeding 7.0°F were Gulkana (7.6°F), King Salmon (7.4°F), and Bethel (7.1°F).

Station	Temperature		
	Observed (°F)	Normal (°F)	Delta (°F)
Anchorage	23.8	22.2	1.6
Annette	41.1	40.0	1.1
Barrow	2.9	0.7	2.2
Bethel	24.5	17.4	7.1
Bettles	7.4	-1.0	8.4
Cold Bay	34.7	34.5	0.2
Delta Junction	11.8	6.2	5.6
Fairbanks	9.1	2.6	6.5
Gulkana	13.4	5.8	7.6

Homer	<b>32.3</b>	<b>29.5</b>	<b>2.8</b>
Juneau	<b>36.1</b>	<b>33.4</b>	<b>2.7</b>
King Salmon	<b>30.3</b>	<b>22.9</b>	<b>7.4</b>
Kodiak	<b>36.3</b>	<b>33.9</b>	<b>2.4</b>
Kotzebue	<b>14.8</b>	<b>9.1</b>	<b>5.7</b>
McGrath	<b>16.0</b>	<b>5.5</b>	<b>10.5</b>
Nome	<b>21.5</b>	<b>16.9</b>	<b>4.6</b>
St. Paul Island	<b>35.8</b>	<b>33.0</b>	<b>2.8</b>
Talkeetna	<b>22.7</b>	<b>19.5</b>	<b>3.2</b>
Yakutat	<b>34.7</b>	<b>32.3</b>	<b>2.4</b>

The highest temperature of the First Order Stations was 53°F reported at Annette on the 1<sup>st</sup> and 4<sup>th</sup> of the month. Annette also held the spot for the highest mean temperature for the month at 41.1°F. The lowest temperature was -33°F at Bettles on the 18<sup>th</sup>, while Barrow reported the lowest November mean temperature at 2.9°F.



*Daily mean temperature deviation from the normal temperature for the mean of the first order stations for November 2015.*

There were a limited number of temperature record events in November: all were tied records with no new records set, and all but two were high events. The tied low in Anchorage is the first low record event for Anchorage since May 20, 2013. Kotzebue also tied it's high record on the 2<sup>nd</sup>, with 37°F that had been set way back in 1928.

Date	Temperature Records				
	Station	Element	New Record	Old Record	Year of old Record
11/01/15	St. Paul	High Temperature	46	46	1991
11/02/15	Kotzebue	High Temperature	37	37	1928
11/02/15	St. Paul	High Temperature	46	46	1993

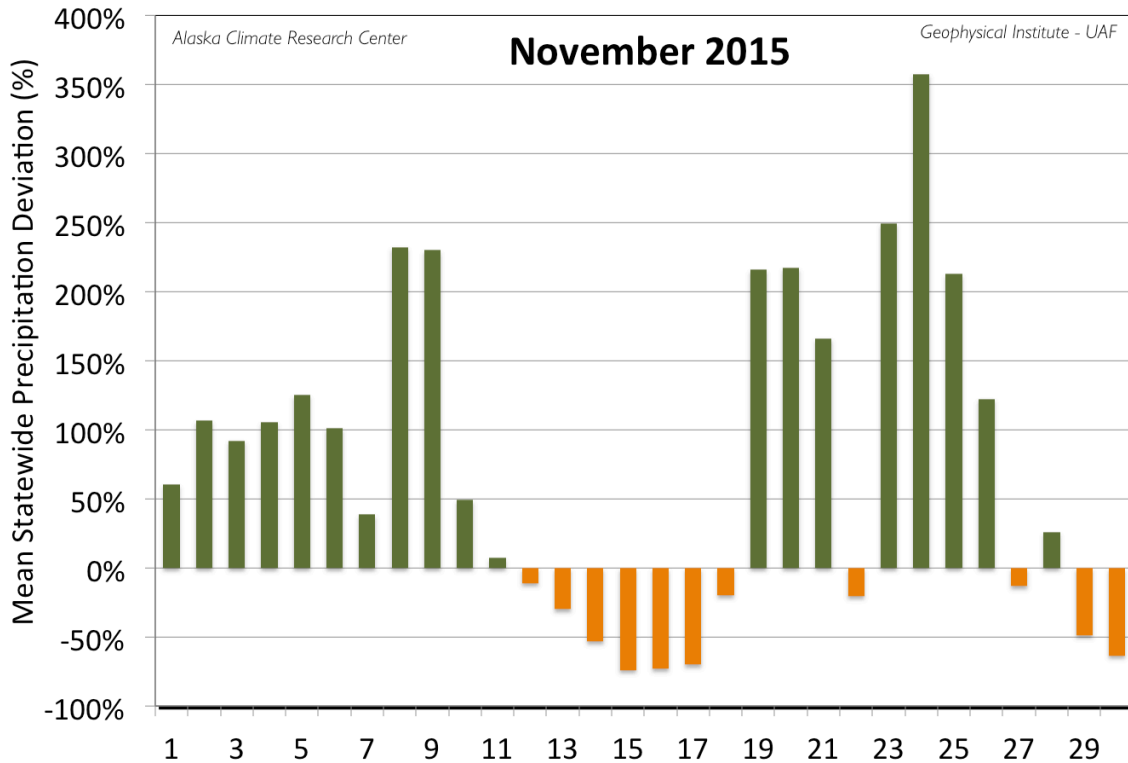
11/18/15	Anchorage	Low Temperature	-8	-8	1974
11/18/15	Kotzebue	Low Temperature	-23	-23	1930
11/20/15	Kodiak	High Temperature	48	48	2003
11/21/15	Juneau	High Temperature	48	48	2005
11/22/15	St. Paul	High Temperature	43	43	2003
11/24/15	Anchorage	High Temperature	45	45	2002
11/25/15	Anchorage	High Temperature	45	45	1956

## Precipitation

November was significantly wetter than normal, with the overall precipitation calculated as 74% above normal; this calculation was based on the mean of the deviations in percentage of the First Order Stations. Sixteen of the First Order Stations and 19 days of the month reported above normal values. There were no days during the month without any measureable precipitation at all of the 19 First Order Stations. It was also much wetter than November 2014, which had a precipitation total 18% below normal. The greatest daily deviation of 358% occurred on the 24<sup>th</sup>, driven by a strong Bering Sea storm impacting the Western, Southcentral and Interior areas of the state. On a monthly basis, King Salmon had the greatest positive deviation from normal, with a total of 4.84", or 248% above the expected amount of 1.39". The other stations with precipitation totals greater than 150% above normal were McGrath (194%), Bettles (170%), Fairbanks (166%), and Talkeetna (165%). Like last month, the leading station with a lower than normal precipitation amount was Delta Junction with just 57% of normal.

Station	Precipitation				
	Observed (in)	Normal (in)	Delta (in)	Delta (%)	(%)
Anchorage	<b>1.69</b>	<b>1.16</b>	<b>0.53</b>	<b>46%</b>	<b>146%</b>
Annette	<b>10.33</b>	<b>12.29</b>	<b>-1.96</b>	<b>-16%</b>	<b>84%</b>
Barrow	<b>0.26</b>	<b>0.21</b>	<b>0.05</b>	<b>24%</b>	<b>124%</b>
Bethel	<b>1.97</b>	<b>1.60</b>	<b>0.37</b>	<b>23%</b>	<b>123%</b>

Bettles	2.46	0.91	1.55	170%	270%
Cold Bay	4.87	4.98	-0.11	-2%	98%
Delta Junction	0.36	0.63	-0.27	-43%	57%
Fairbanks	1.78	0.67	1.11	166%	266%
Gulkana	1.78	0.72	1.06	147%	247%
Homer	3.28	2.79	0.49	18%	118%
Juneau	12.02	5.99	6.03	101%	201%
King Salmon	4.84	1.39	3.45	248%	348%
Kodiak	6.93	6.87	0.06	1%	101%
Kotzebue	1.32	0.77	0.55	71%	171%
McGrath	4.14	1.41	2.73	194%	294%
Nome	1.95	1.22	0.73	60%	160%
St. Paul Island	3.64	2.89	0.75	26%	126%
Talkeetna	4.32	1.63	2.69	165%	265%
Yakutat	16.23	14.45	1.78	12%	112%



*Daily mean precipitation deviation from the normal for the first order stations for November 2015.*

The maximum monthly precipitation total reported for a First Order Station was 16.23" at Yakutat, and Yakutat also reported the highest daily total of 2.09" on the 20<sup>th</sup>, a new record for that specific day. Bettles reported the highest total snowfall at 50.6", a new monthly record. McGrath reported the highest one-day snowfall at 10.8" on the 23<sup>rd</sup>. McGrath also reported the highest snow depth at 30".

There were a normal number of daily precipitation records this November, scattered across the state and throughout the month. It was the third wettest November for McGrath. It was also the fifth wettest November for Fairbanks and Gulkana. Juneau remains on track to set a new annual precipitation record. From January to end of November Juneau has received 82.54" of precipitation, soundly beating the old record for the time period of 75.83" from 1991. The normal precipitation for that time period is 56.43".

## Precipitation Records

Date	Station	Element	New Record	Old Record	Year of old Record
11/02/15	Bettles	Precipitation	0.26	0.20	1967
11/02/15	Fairbanks	Precipitation	0.22	0.16	1935
11/04/15	Bethel	Precipitation	0.41	0.33	1993
11/08/15	Nome	Precipitation	0.92	0.42	2000
11/09/15	Delta Junction	Precipitation	0.15	0.09	1987
11/10/15	Ketchikan	Precipitation	2.11	1.80	1934
11/19/15	King Salmon	Precipitation	0.57	0.45	1957
11/23/15	McGrath	Precipitation	1.47	0.62	2010
11/24/15	King Salmon	Precipitation	1.37	0.30	1929

### Snowfall

Snowfall was unsurprisingly heavy, with ten of the 15 First Order Stations that measure snowfall reporting above normal amounts. Based on the mean of the deviations from all 15 stations, the overall deviation from the normals was 27% above the expected amount. Annette reported the lowest amount at 0.9", just 26% of its normal. Bettles had the highest deviation at 314% of its expected amount with a total of 50.6".

Station	Snowfall				
	Observed (in)	Normal (in)	Delta (in)	Delta (%)	(%)
Anchorage	13.8	13.1	0.7	5%	105%
Annette	0.9	3.5	-2.6	-74%	26%
Barrow	3.7	5.7	-2.0	-35%	65%

Bethel	9.4	12.9	-3.5	-27%	73%
Bettles	50.6	16.1	34.5	214%	314%
Cold Bay	5.3	10.2	-4.9	-48%	52%
Fairbanks	25.4	13.2	12.2	92%	192%
Juneau	16.6	13.1	3.5	27%	127%
King Salmon	12.7	6.9	5.8	84%	184%
Kodiak	1.0	6.4	-5.4	-84%	16%
Kotzebue	13.7	10.5	3.2	30%	130%
McGrath	44.3	19.3	25.0	130%	230%
Nome	15.6	12.1	3.5	29%	129%
St. Paul Island	12.0	8.3	3.7	45%	145%
Yakutat	22.7	18.2	4.5	25%	125%

This was the snowiest November on record for Bettles with 9.0" above the old 1967 record. 2015 is also the snowiest season from September to November for Bettles with a total of 71.8", shattering the 1979 record of 59.3". Normal Bettles snowfall for this time frame is just 30.0". It was the second snowiest November for McGrath, behind the record of 53.6" from 1994. Mean snow depth for November was about normal when aggregated across the 15 stations.

Date	Snowfall Records				
	Station	Element	New Record	Old Record	Year of old Record
11/02/15	Bettles	Snowfall	3.8	2.0	1967
11/02/15	Fairbanks	Snowfall	2.8	2.5	1939
11/09/15	King Salmon	Snowfall	3.4	3.1	2005

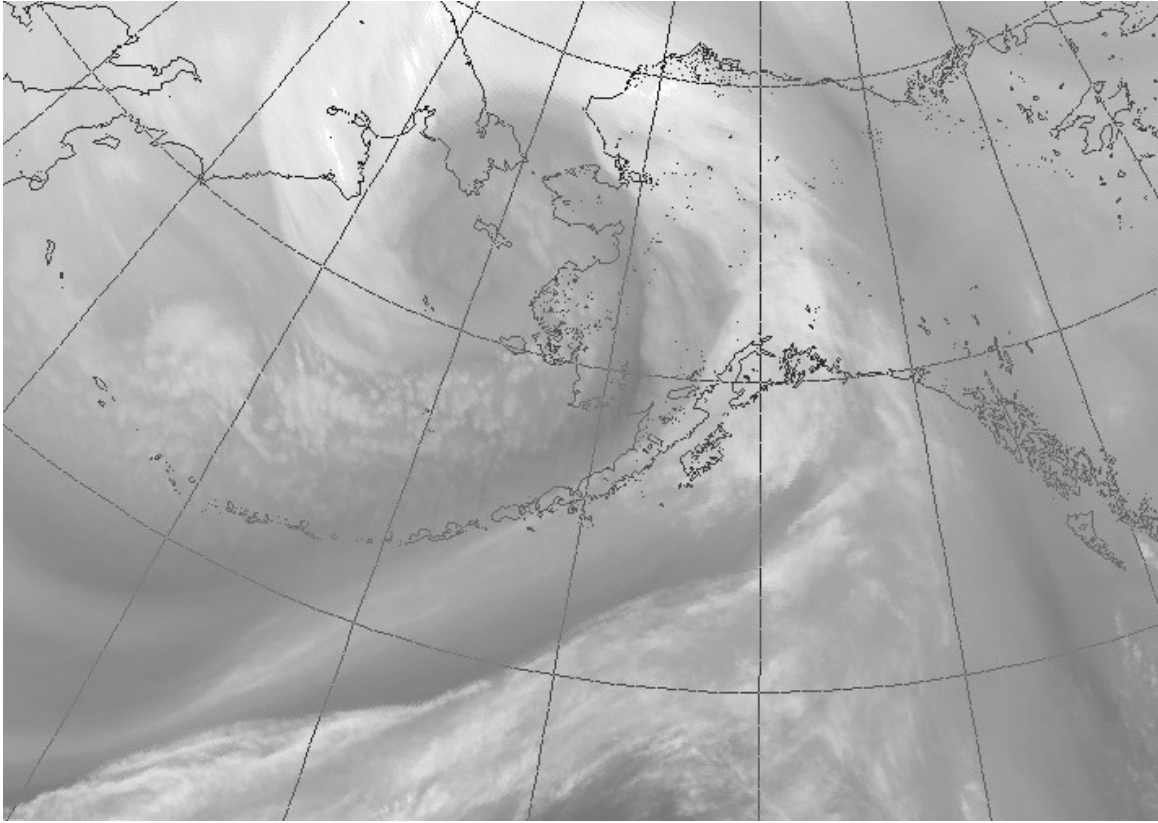


11/10/15	Cold Bay	Snowfall	1.5	1.3	2007
11/12/15	St. Paul	Snowfall	2.2	1.3	1968
11/18/15	Juneau	Snowfall	10.0	9.4	1966
11/19/15	McGrath	Snowfall	7.3	5.6	1962
11/19/15	McGrath	Snowfall	7.3	5.6	1962
11/23/15	McGrath	Snowfall	10.8	6.6	2003
11/24/15	Bettles	Snowfall	4.7	3.6	1970
11/24/15	King Salmon	Snowfall	3.4	2.0	2004

### Newsorthy Events

November started out with winter weather and gale warnings and watches extending from the Bering Strait to the Canadian border as a storm barreled out of the Bering Sea. High winds, freezing spray, and coastal flooding warnings were also issued. Snowfall in the Anchorage area left roads a mess helping cause numerous vehicle crashes on the 2<sup>nd</sup>. Commuters were warned of more snow and problems the next day. High wind warnings were issued for the Aleutians Islands and gusts up to 75 mph were measured at Adak. Warnings and watches continued into the 3<sup>rd</sup>. Snowfalls up 7" were forecasted for portions of the Interior on the 4<sup>th</sup>.

Storm warnings switched to the Southeast on the 5<sup>th</sup> for gales with winds up to 45 mph. Up to 7" of snow was expected at White Pass along the Klondike Highway. Coastal flooding watches returned the Bering Strait area on the 6<sup>th</sup>, while a travel advisory was issued for Fairbanks for slick roads as the temperatures hovered around the freezing point. The Southcentral area was warned of another round of snow/mixed rain also on the 6<sup>th</sup>. Arctic coastal waters saw heavy freezing spray, gale warnings and coastal flooding on the 7<sup>th</sup>. Heavy snow was forecasted for Southcentral with accumulation up to a foot, low visibility and difficult travel on both the 7<sup>th</sup> and 8<sup>th</sup>. High winds also impeded travel along the Parks Highway with gusts up to 70 mph. Also on the 8<sup>th</sup> the storm pushed in the central Interior with blowing snow along the Elliott Highway, while the storm and coastal flooding warnings continued for areas along the western coasts and Seward Peninsula. Anchorage area schools were closed on the 8<sup>th</sup> in response to the icy roads. Schools were also closed in Unalaska on the 8<sup>th</sup>, while property damage was reported in the area due to hurricane force winds, with a gust up to 93 mph measured at Akutan.



*This water vapor satellite image from the National Weather Service for the 8<sup>th</sup> of November shows the well-developed low-pressure weather pattern the storm warnings across much of Alaska.*

Heavy snow, up to 8", was again forecasted for the Klondike Highway on the 10<sup>th</sup>, while heavy rain and high winds were forecasted for the Southeast coastal areas and seas in the Gulf of Alaska up to 40 ft. on the 10<sup>th</sup> and 11<sup>th</sup> from multiple storms. Hyder received up to 10" of snow on the 10<sup>th</sup>. Boat owners were asked to check their boats in Juneau Harbor after the storms. Heavy snow was reported west of Fairbanks on the 11<sup>th</sup> with Keystone Ridge reporting 6.5". The winter weather in Southcentral resulted in more than a dozen avalanches in Hatcher Pass. A wind gust of 71 mph was reported at Valdez on the 12<sup>th</sup>.

Fairbanks saw the temperatures drop to -20°F on the 14<sup>th</sup>. Anchorage hit a high of just 6°F on the 16<sup>th</sup>: the first time the high has been that low since December 25, 2013, and the cold snap continued into the next day for Southcentral. Heavy snow hit the northern Panhandle on the 16<sup>th</sup> with 20" at the Haines Customs Stations, and then on the 17<sup>th</sup> Yakutat totaled over 10", Elfin Cove measured 9.0" while Juneau totaled 10.0" on the 18<sup>th</sup>: this is the highest one day snowfall in Juneau since the 13.9" from November 23, 2011. The annual winter closure of Montana Creek Road near Juneau started on the 17<sup>th</sup>.

Another series of winter storms resulted in storm warnings and watches for gale force winds, freezing spray and blizzard conditions from the western coastal areas to the eastern Interior on the 18<sup>th</sup> and 19<sup>th</sup> with snow accumulation up to 10" anticipated in some areas. Similar warnings were issued for the northern Panhandle and Southcentral areas, with possible mixed snow and rain for areas around Anchorage. Thompson Pass was expected to receive up to 20". Some schools were closed in Susitna Valley on the 20<sup>th</sup> after up to 18" snow fell. High winds were experienced along the Parks, Richardson Highways through the passes, and along the Alaska Highway up to the Canadian boarder on the 21<sup>st</sup>, while avalanche warnings were issued for Hatcher Pass due to the new snow.

Also on the 19<sup>th</sup> heavy rain was forecast for the Northern Panhandle with blizzard warnings for the Klondike Highway with accumulation up to 14". The rain prompted concern for the result of the rain on the deep snowpack that had just formed and residents were asked to remove snow to allow for proper drainage along streets in communities in the northern Panhandle. Boat owners were requested to check on their boats and motorists were warned of icy roads. The Klondike Highway was closed due to an avalanche on the 20<sup>th</sup>.

The storm warnings for the west coast and interior areas to the Canadian border continued on the 22<sup>nd</sup>, 23<sup>rd</sup> and 24<sup>th</sup> for blizzard conditions and coastal flood watches. Snowfalls totaling up to 8" and wind gusts up to 55 mph were expected. Freezing rain and forced most schools closed in Mat-Su Borough on the 24<sup>th</sup> and there were reports of a number of vehicle accidents. Hatcher Pass Road was closed due to an avalanche. Whiteout driving conditions closed the Richardson and Steese Highways, while wrecks blocked the Parks Highway on the 25<sup>th</sup> and motorists were warned against travel on the Parks Highway due to driving conditions until the 26<sup>th</sup>. In addition, a winter advisory predicted an additional 3" to 5" of snow along portions of the Parks Highway on the 25<sup>th</sup> and 26<sup>th</sup>. Chulitna measured 12" while areas near Fairbanks as well as Harding Lake totaled 7". Chulitna received another 10" the next day for a total of 83" on the ground. The rain in Anchorage resulted in warnings of ponding water on roadways and that streams were approaching bankfull. More heavy rain was forecasted for the Panhandle from the 25<sup>th</sup> to 29<sup>th</sup> with totals up to 6" predicted, and 10" possible.

The generally warm temperatures resulted in warning against travel along the Kuskokwim River due to thinning of the ice. Avalanche control was performed along the Parks Highway between miles 216 and 220 on the 27<sup>th</sup>. The month ended with advisories for snow along the Haines Highway, with up to 7" expected.

*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](mailto: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.*