

# *Alaska Statewide Climate Summary*

July 2016

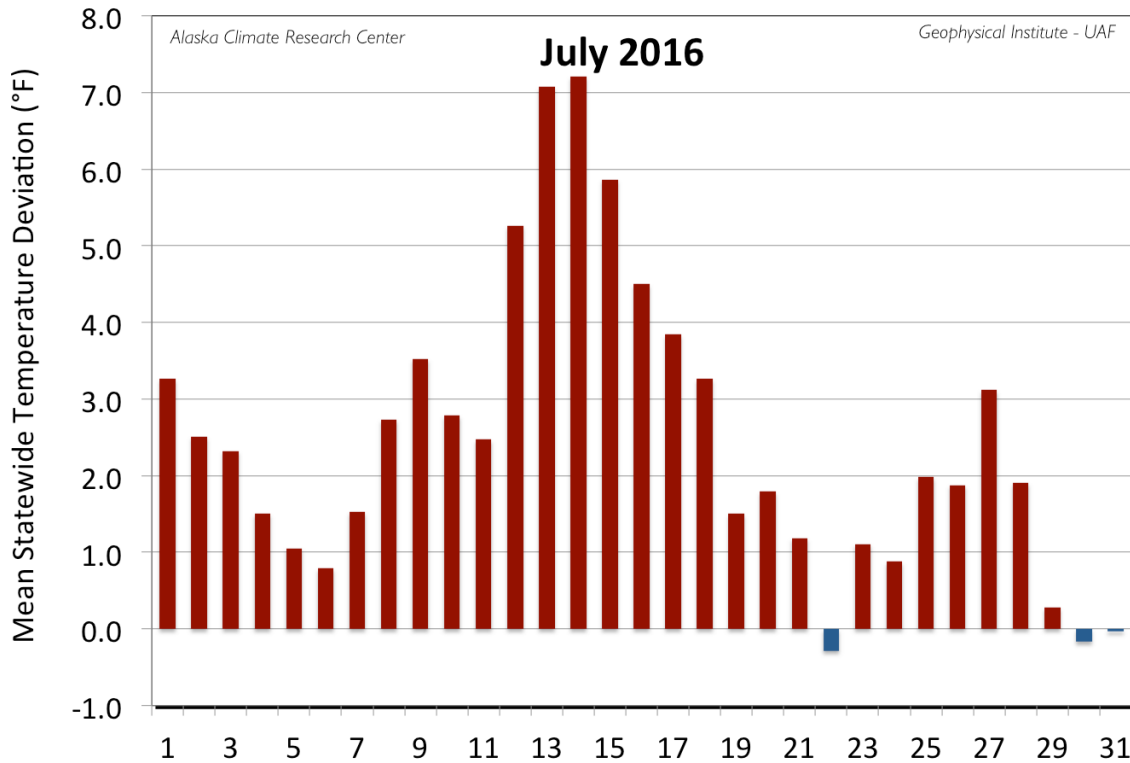
## Temperature

July 2016 marks the tenth month in a row with temperatures above normal. The monthly mean temperature of all First Order Stations was 58.2°F, 2.7°F above the normal of 55.5°F. This is 1.4°F above the July 2015 mean of 56.8°F. Monthly mean temperatures (see table) were above normal for 18 of the 19 First Order Stations. Calculating the mean daily temperatures of the First Order Stations, 29 days of the month were above the 30-year normal (see Figure). The peak positive deviation for the month occurred on the 17<sup>th</sup> at 7.2°F, while the greatest negative deviation was just -0.3°F on the 22<sup>nd</sup>. On a monthly basis, Nome was the only station with a negative deviation of -0.4°F from the long-term mean of 52.2°F. Kodiak had the greatest positive deviation of 5.4°F above its normal of 54.5°F. The only other station with a deviation greater than 4.0°F was St. Paul Island with 4.9°F.

Station	Temperature		
	Observed (°F)	Normal (°F)	Delta (°F)
Anchorage	62.7	58.8	3.9
Annette	61.4	58.6	2.8
Barrow	43.7	40.9	2.8
Bethel	59.2	56.1	3.1
Bettles	60.6	59.7	0.9
Cold Bay	54.6	50.9	3.7
Delta Junction	60.7	60.2	0.5
Fairbanks	63.4	62.5	0.9
Gulkana	60.6	57.6	3.0

Homer	<b>57.9</b>	<b>54.6</b>	<b>3.3</b>
Juneau	<b>59.7</b>	<b>56.9</b>	<b>2.8</b>
King Salmon	<b>59.1</b>	<b>55.5</b>	<b>3.6</b>
Kodiak	<b>59.9</b>	<b>54.5</b>	<b>5.4</b>
Kotzebue	<b>56.8</b>	<b>54.6</b>	<b>2.2</b>
McGrath	<b>61.1</b>	<b>60.0</b>	<b>1.1</b>
Nome	<b>51.8</b>	<b>52.2</b>	<b>-0.4</b>
St. Paul Island	<b>52.1</b>	<b>47.2</b>	<b>4.9</b>
Talkeetna	<b>62.3</b>	<b>60.1</b>	<b>2.2</b>
Yakutat	<b>57.4</b>	<b>54.3</b>	<b>3.1</b>

The highest daily maximum temperature of the First Order Stations for July was 88°F reported at Fairbanks on the 13<sup>th</sup> and 14<sup>th</sup>. Fairbanks also held the spot for the highest mean temperature for the month at 63.4°F. The lowest temperature of 30°F was observed at Barrow on the 20<sup>th</sup>, and Barrow also reported the lowest July mean monthly temperature with a value of 43.7°F.



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

There were a fair number of daily temperature record events and all were high events, either broken or tied. Many of the events occurred at mid month during the warm spell. Anchorage had three events in a row, while St Paul Island had a total of four. Deadhorse reported on the 13<sup>th</sup> a high of 85°F, while Kuparuk hit 86°F the next day, both the highest temperatures on record for each station. Both stations are located on the North Slope.

Date	Temperature Records				
	Station	Element	New Record	Old Record	Year of old Record
07/01/16	Cold Bay	Low Temperature	37	38	1971
07/08/16	Skagway	High Temperature	86	83	1965
07/11/16	King Salmon	Low Temperature	38	40	1973

07/13/16	Bethel	High Temperature	85	84	1956
07/13/16	Fairbanks	High Temperature	88	88	2009
07/14/16	Bettles	High Temperature	88	86	1999
07/14/16	Homer	High Temperature	90	69	2003
07/14/16	McGrath	High Temperature	85	85	1960
07/15/16	St. Paul	High Temperature	62	62	1960
07/16/16	King Salmon	High Temperature	76	76	1962
07/17/16	Anchorage	High Temperature	76	76	2002
07/17/16	Kodiak	High Temperature	78	75	1979
07/17/16	St. Paul	High Temperature	59	58	2005
07/18/16	Anchorage	High Temperature	79	79	1989
07/18/16	Juneau	High Temperature	82	82	1947
07/18/16	Kodiak	High Temperature	77	77	1977
07/19/16	Anchorage	High Temperature	79	77	1986
07/19/16	Craig	High Temperature	77	73	2003
07/19/16	Kenai	High Temperature	76	75	1966
07/19/16	Kodiak	High Temperature	78	77	1987
07/20/16	Bettles	High Temperature	80	77	1955
07/20/16	Kodiak	High Temperature	80	77	1955
07/25/16	St. Paul	High Temperature	59	59	2013
07/27/16	St. Paul	High Temperature	60	58	2005

It was the warmest July on record for Anchorage with 62.7°F, 0.2°F above the old 1977 record. This also makes July 2016 the warmest single month on record for Anchorage. The same applies for Kenai with a value of 59.0°F, topping the old record of 58.8°F from 2004. It was also the warmest July on record for Homer with 57.9°F (old record 57.8°F from 2005), Dutch Harbor with 55.8°F (old record 55.5°F from 1949) and Sitka with 59.6°F (old record 58.7°F from 1993).

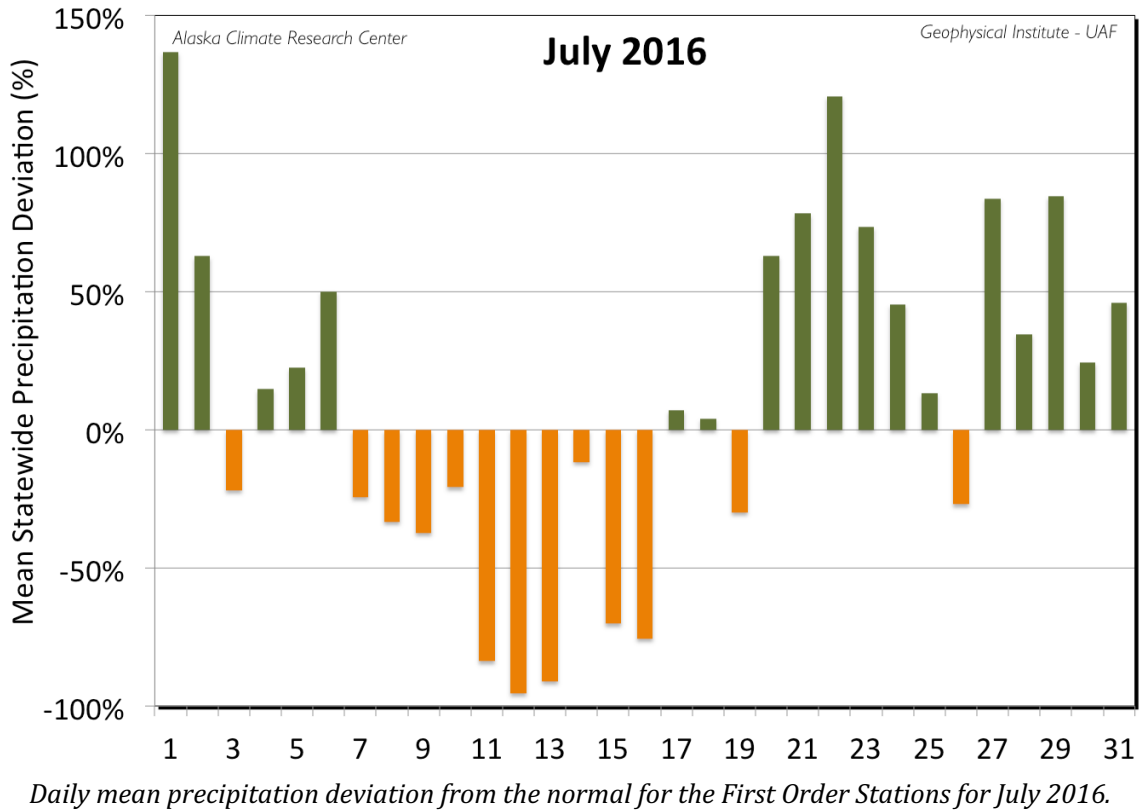
July was the second warmest for St. Paul with 0.4°F below the 2005 record of 52.5°F. Cold Bay was 1.2°F below the record set two years before with 55.8°F. The mean of 59.9°F at Kodiak was 0.4°F below the record from 1936. Yakutat's 57.4°F was second to the 1930 record of 58.9°F. It was the third warmest July on record for King Salmon and Bethel, while it was the fourth warmest for Juneau.

## Precipitation

July's precipitation was higher than expected, with the overall precipitation calculated as 13% above normal (same deviation as June 2016); this calculation was based on the mean of the deviations in percentage of the First Order Stations. Ten of the First Order Stations and 18 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. This is wetter than July 2015, which reported a positive deviation of 7%. The greatest daily deviation of 137% occurred on the 1<sup>st</sup>. Like last month, the leading station with a greater than normal monthly precipitation amount was Fairbanks with 130% above normal. St. Paul Island was the relatively driest station at just 42% of normal precipitation observed. This is the fourth wettest July on record for Fairbanks, while it was the 5<sup>th</sup> driest July in St. Paul Island. It was the second wettest June-July period on record for Fairbanks at 8.26", second to the record of 9.34" from 2014. Eielson Visitors Center in Denali National Park received a total of 16.5" of rain in July.

Station	Precipitation				
	Observed (in)	Normal (in)	Delta (in)	Delta (%)	(%)
Anchorage	<b>2.48</b>	<b>1.83</b>	<b>0.65</b>	<b>36%</b>	<b>136%</b>
Annette	<b>3.76</b>	<b>4.65</b>	<b>-0.89</b>	<b>-19%</b>	<b>81%</b>
Barrow	<b>0.79</b>	<b>0.98</b>	<b>-0.19</b>	<b>-19%</b>	<b>81%</b>
Bethel	<b>2.99</b>	<b>2.36</b>	<b>0.63</b>	<b>27%</b>	<b>127%</b>
Bettles	<b>2.28</b>	<b>2.36</b>	<b>-0.08</b>	<b>-3%</b>	<b>97%</b>

Cold Bay	<b>2.02</b>	<b>2.48</b>	<b>-0.46</b>	<b>-19%</b>	<b>81%</b>
Delta Junction	<b>3.45</b>	<b>2.68</b>	<b>0.77</b>	<b>29%</b>	<b>129%</b>
Fairbanks	<b>4.97</b>	<b>2.16</b>	<b>2.81</b>	<b>130%</b>	<b>230%</b>
Gulkana	<b>1.85</b>	<b>1.81</b>	<b>0.04</b>	<b>2%</b>	<b>102%</b>
Homer	<b>1.56</b>	<b>1.55</b>	<b>0.01</b>	<b>1%</b>	<b>101%</b>
Juneau	<b>4.28</b>	<b>4.60</b>	<b>-0.32</b>	<b>-7%</b>	<b>93%</b>
King Salmon	<b>3.52</b>	<b>2.30</b>	<b>1.22</b>	<b>53%</b>	<b>153%</b>
Kodiak	<b>2.46</b>	<b>4.93</b>	<b>-2.47</b>	<b>-50%</b>	<b>50%</b>
Kotzebue	<b>1.44</b>	<b>1.45</b>	<b>-0.01</b>	<b>-1%</b>	<b>99%</b>
McGrath	<b>4.20</b>	<b>2.38</b>	<b>1.82</b>	<b>76%</b>	<b>176%</b>
Nome	<b>3.82</b>	<b>2.11</b>	<b>1.71</b>	<b>81%</b>	<b>181%</b>
St. Paul Island	<b>0.78</b>	<b>1.85</b>	<b>-1.07</b>	<b>-58%</b>	<b>42%</b>
Talkeetna	<b>2.46</b>	<b>3.39</b>	<b>-0.93</b>	<b>-27%</b>	<b>73%</b>
Yakutat	<b>8.55</b>	<b>7.88</b>	<b>0.67</b>	<b>9%</b>	<b>109%</b>



July's highest monthly precipitation total reported for a First Order Station was 8.55" at Yakutat, and Yakutat also reported the highest daily total of 2.46" on the 23<sup>rd</sup>.

The table below lists the limited number of daily precipitation records set in July.

Date	Precipitation Records				
	Station	Element	New Record	Old Record	Year of old Record
07/20/16	McGrath	Precipitation	0.36	0.29	1981
07/28/16	Skagway Power	Precipitation	0.72	0.40	2015
07/29/16	Nome	Precipitation	1.43	1.21	1991

07/30/16	Bethel	Precipitation	0.68	0.58	2001
07/31/16	Fairbanks	Precipitation	0.77	0.64	1934

## News-worthy Events

July 1<sup>st</sup> saw heavy rain across the Southcentral area with Eagle River reporting 0.92" and the Palmer Airport reporting 0.87". The Mendenhall Lake near Juneau reported an all-time high water level (from 49 years) at 11.99', topping the 2014 record of 11.85'. The wet weather generated a mud slide on the Parks Highway at mile 260 near Healy on the 3<sup>rd</sup>. The next day flood advisories were issued for the Denali Region due to rain of up to 2" in the area observed during the previous weekend. On the 5<sup>th</sup> 1.78" of rain was reported at Robertson River near Tanacross in just 2 1/2 hours, while a flood advisory was issued for the Kuskokwim River at Nikolai. The continuing heavy rains in the Alaska Range resulted in a mud slide on the Denali Park Highway on the night of the 15<sup>th</sup>, closing the road till it could be cleared the next day. The accumulated wet weather for the summer resulted in delay of the planned opening of the new Tanana Road until October.

The Alatna Complex of fires was the heaviest staffed fire for the first part of the month at 165 personnel as the fires threatened Native Allotments and cabins in the Allekaket area. At the end of the month the total area burned in the complex was over 108,000 acres. On the 14<sup>th</sup> there were over 25,000 lightning strikes, and more than 40 wildfires were started. The next day there were more than 25,000 lightning strikes once again, and another 40 wildfires were started. Rains that accompanied the storms put many of the fires out.

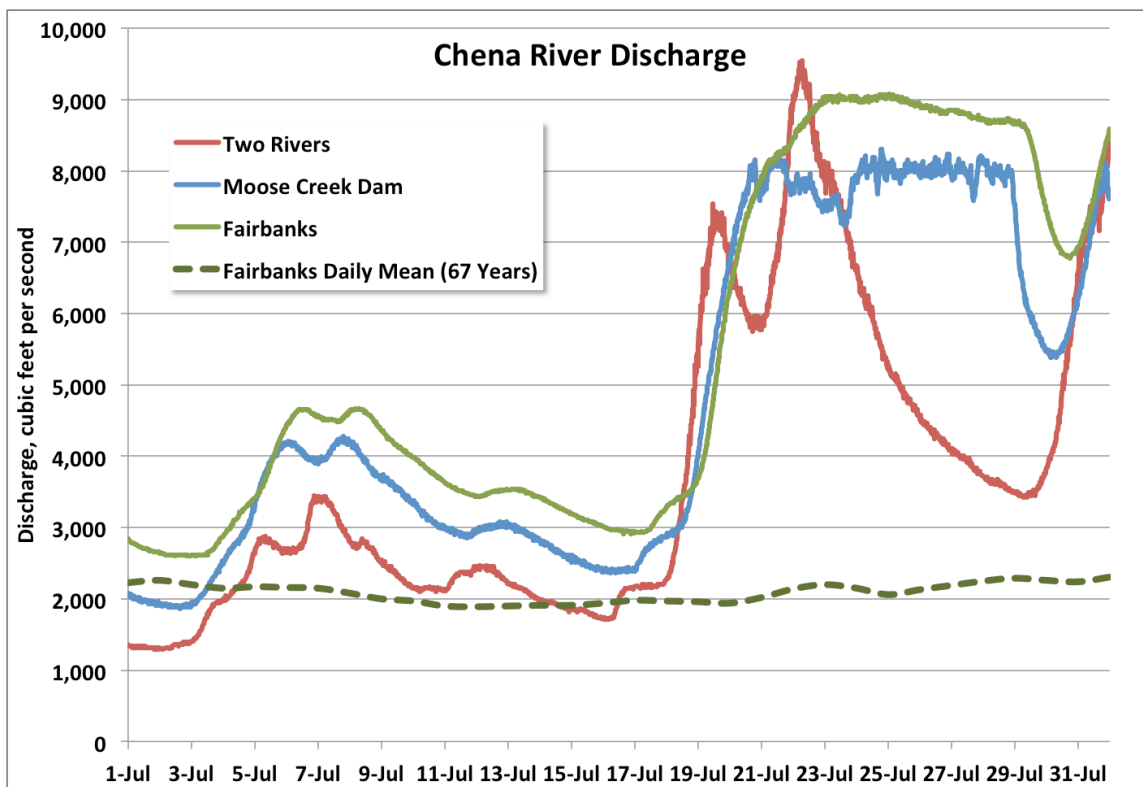
The Cutoff Fire near Tok started on the 13<sup>th</sup> and threatened the Tok Cutoff. The next day, a second fire in the area, the Tok River fire started and also threatened the Tok Cutoff. This fire was fought with over 130 personnel assigned. It was listed as contained on the 27<sup>th</sup>, and crews were detached. The fire ended the month at about 700 acres. The Mid-Salcha Fire started on the 14<sup>th</sup> and threatened a number of cabins in the area and was three miles from the Trans Alaska Pipeline. The fire was fought from the air with both planes and helicopters and it reached about 1,000 acres before the wet weather helped to contain the fire at 90% on the 23<sup>rd</sup>.

The human caused McHugh Creek fire started on the 16<sup>th</sup> south of Anchorage along the Seward Highway. It had grown to about 25 acres the next day. The fire was heavily fought over the next ten days and was reported to be 100% contained on the 25<sup>th</sup>, assisted by rains that moved into the area on the 21<sup>st</sup>. While residents of nearby subdivisions were warned to prepare for possible evacuations, no evacuations orders were needed. The total area burned came in at over 700 acres. Even after containment was reached,



firefighters were still working on mop up operations and strengthening firebreaks. Most of the fighting was from the air due to the extreme slopes along the Seward Highway. At times smoke from the fire was reported in Anchorage, and the Seward Highway as well as trails in the area were closed. Total estimate cost to fight the fire was over 6 million dollars.

As heavy rains to the retuned Interior for the second half of the month, numerous flood watches and advisories were issued for areas of the Interior, especially for the Chena River Basin, for which flood advisories started on the 17<sup>th</sup> when up to 2" of rain fell in the area, and continued nearly continuously till the end of July. The Moose Creek Dam started regulating the flow of the Chena River on the evening of the 20<sup>th</sup>. The dam ceased flood control operations on then morning of the 29<sup>th</sup>, but then restarted operations on the 31<sup>st</sup> as another surge of water moved down the Chena River (see Figure). The Chena continued to flood low-lying areas around Fairbanks with flood advisories still in effect for rivers and small streams east and north of Fairbanks at the end of the month. The Fairbank's annual Rubber Duckie Race was postponed from its usual Golden Days Saturday of the 20<sup>th</sup> to the 27<sup>th</sup>, and then postponed again till August due to the continued high waters on the Chena River.



*Discharge rates for the Chena River at three locations for July 2016, and the mean discharge at Fairbanks for July is presented. The effect of the activation of the Moose Creek Dam on July 20<sup>th</sup> can be seen in the flow of the Chena River at the dam, as well as downstream at Fairbanks.*

On the 30<sup>th</sup> strong rainfall caused a mudslide, which closed the Denali Park Road at mile 67. The slide was 100 feet wide and up to ten feet deep and caused damage to the roadway. This closure trapped more than 100 tourists in the park. Lake Minchumina was reported at its highest level in more than 40 years.

At the start of the month there had been about 100 lightning caused wildfires that had burned about 125,000 acres. By the end of the month those totals had grown to 228 fires and 470,000 acres.

*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.*