Central Alaska Network

National Park Service
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Alaska Region
Inventory & Monitoring Program

Denali NP & PRES • Wrangell-St. Elias NP & PRES • Yukon-Charley Rivers N PRES 3rd Quarter 2015

Quarterly Weather & Climate Summary
Yukon-Charley Rivers National Preserve Summer 2015

Eagle Summer Weather

Eagle temperatures cooled off a bit for the summer after a very warm spring. In June, the temperatures were moderate to slightly cooler than normal until the last week of the month when they climbed back into the upper 70s and 80s. The high temperature in June was 88°F and occurred on June 21 and 23. The coldest day of the month was 31°F on July 2. Total rainfall for the month was 1.94 inches; normal is 1.64 inches. There were two days (the 4th and 27th) with >0.4 inches of rain.

July was quite normal, climatologically speaking. The average monthly temperature was just a few tenths of a degree above normal, and the total rainfall for the month was just under the normal 2.43 inches. The high temperature for the month (and for the summer season) was 89°F, which was 2°F cooler than the high temperature recorded in May.

August had near normal temperatures but was wetter than normal. The cumulative rainfall for the summer was close to normal until the middle of August, and then measurable rain was recorded on nearly every day for the rest of the month. The total for the month was 3.93 inches, or 205% of normal. The average monthly temperature of 53.1°F was 0.5°F below the 1981-2010 normal.

Overall, the average summer temperature at Eagle was near normal at 56.9°F, only 0.4°F cooler than the 1981-2010 normal and 0.3°F cooler than the long-term average (1949-2015). A total of 8.21 inches of rain fell during the summer, 2.22 inches more than normal and the 10th wettest summer season on record (see Figures 1 and 2; Table 1, and 2).

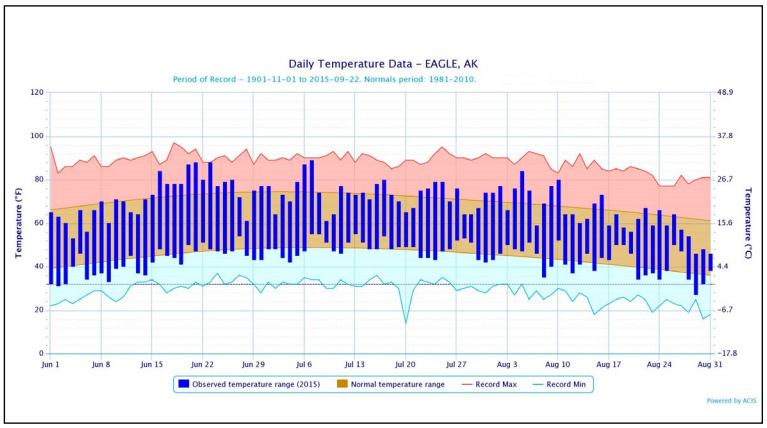

Figure 1. Summer 2015 daily temperatures at Eagle showing **record maximum** (red), **record minimum** (blue), **normal** (brown) and **2015 observed** range (blue bars).

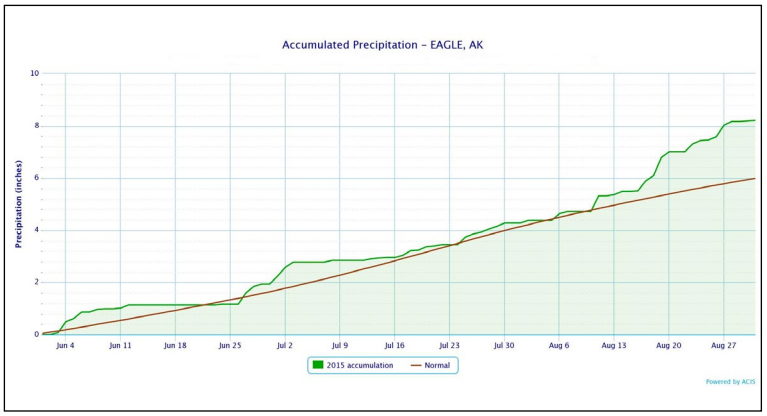

Figure 2. Summer **2015 accumulated precipitation** at Eagle (green) compared to **normal** (brown line).

Table 1. Temperature: Summer 2015 average monthly temperatures compared to the 1981-2010 normal.

Summer 2015	Average Monthly Temp °F	1981-2010 Normal °F	Departure from Normal °F	Monthly High °F / Date	Monthly Low °F / Date
June	56.9	57.9	-1.0	88 / Jun 21, 23	31 / Jun 2
July	60.7	60.4	+0.3	89 / Jul 7	42 / July 4
August	53.1	53.6	-0.5	84 / Aug 5	27 / Aug 29

Summer Season Temperature Departure from Normal: -0.4°F

Table 2. Precipitation: Summer 2015 monthly precipitation totals compared to normal.

Summer 2015	Total Monthly Precip. in.	1981-2010 Normal in.	Departure from Normal in.	Greatest 24 -hr. total in. / Date	# Days with >=0.01 in. water
June	1.94	1.64	+0.30	0.44 / Jun 27	12
July	2.34	2.43	-0.09	0.34 / Jul 2	19
August	3.93	1.92	+2.01	0.70 / Aug 19	19

Summer Season Precipitation Departure from Normal: +2.22 inches (137% of normal)

Climate Monitoring in Yukon-Charley Rivers National Park and Preserve

The NPS climate stations in Yukon-Charley Rivers have been in operation for a decade. The stations complement long-term records available from the National Weather Service station in Eagle. The Upper Charley station is providing critical high elevation data which helps characterize climate gradients and patterns affecting resources in Yukon-Charley Rivers National Preserve.

Table 3 summarizes the summer weather data for NPS sites.

In 2013 we added a phenology camera to the Upper Charley climate station. The camera capture images four times per day and the images are downloaded once a year. The images are used to help quantify the snow season, green-up period, and other basic phenologic information.

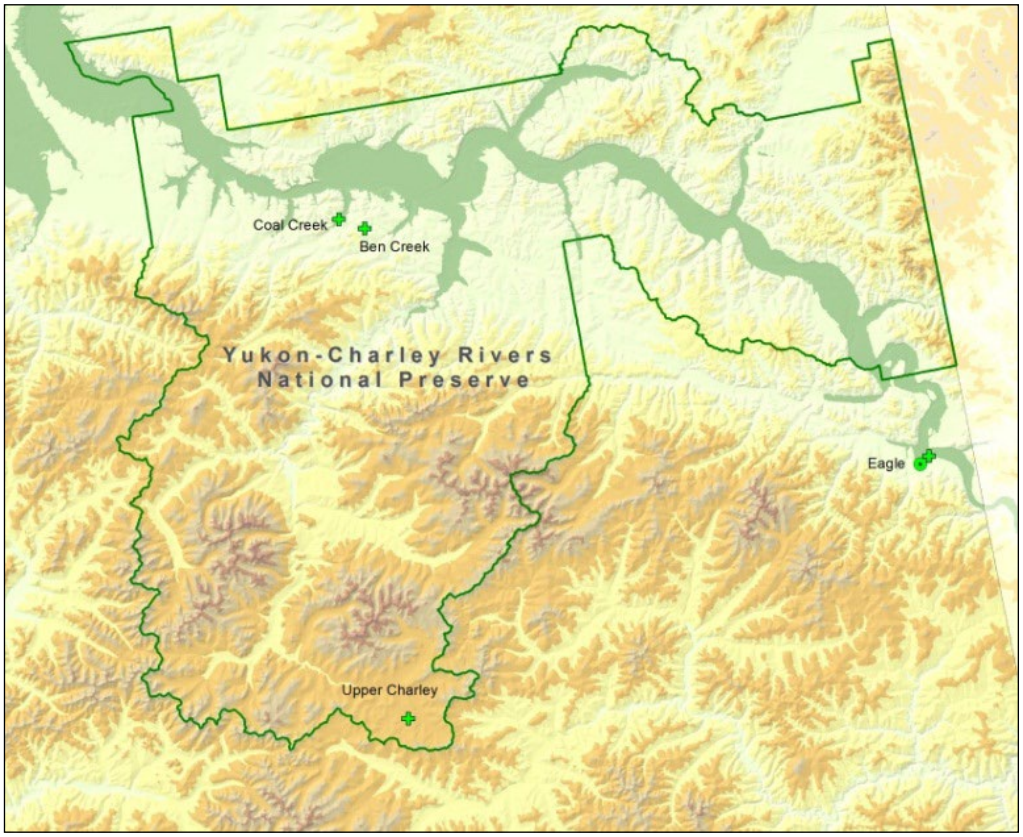

Figure 3. NPS climate stations in Yukon-Charley Rivers National Preserve.

Table 3. Summary of weather statistics from the YUCH climate stations. All data are preliminary and subject to review.

Site	Elev. (ft)	Average Temp °F			Extreme High (°F)	Extreme Low (°F)	Average Temp. Summer Season (°F)	Peak Wind (mph)	Rainfall (inches)			Total Summer Rainfall
		June	July	Aug.					June	July	Aug.	(In.)
Ben Creek	1850	57.7	58.7	50.6	84	30	55.7	25	1.86	2.60	3.82	8.28
Coal Creek	870	56.2	58.2	51.0	86	27	55.1	12	2.58	1.96	3.12	7.66
Upper Charley	3654	49.6	51.2	45.0	76	25	48.6	24	3.29	3.95	2.19*	9.43

Interesting Notes from the YUCH Climate Stations

- * There may have been snow at the Upper Charley site during the last week of August. The temperatures were below freezing, the relative humidity values were high, and there was no liquid precipitation measured.
- The warmest temperature of the year was not recorded during the summer months – the high temperature for 2015 (to date) at all of the sites in the Preserve was recorded on May 23.

Eagle Summer Temperature and Rainfall Trends

The average summer temperature for 2015 was 56.9°F, which is 0.4°F cooler than the 1981-2010 normal (the latest climate normal period). We calculate the average summer temperature by simply taking the average of June, July, and August monthly temperatures. The positive summer temperature trend over the past several decades is nearly significant with a p-value of 0.054. The 10-year moving average shows that the warmest summer seasons occurred in the last decade (Figure 4).

Precipitation amounts in the summer range from 1.96 inches (2005) to 10.09 inches (2010). The average summer rainfall total is 5.99 inches; summer 2015 was 137% of normal with 8.21 inches. There is not a significant trend in summer rainfall totals for Eagle since 1949 (Figure 5).

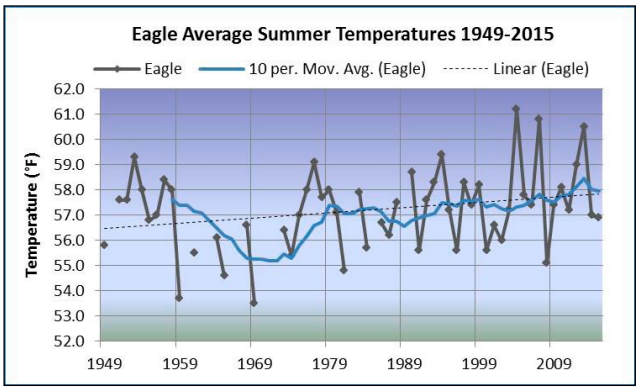

Figure 4. Average summer (June, July, August) temperatures in Eagle since 1949.The green line is a **10-year moving average**. The dotted line is a simple linear regression.

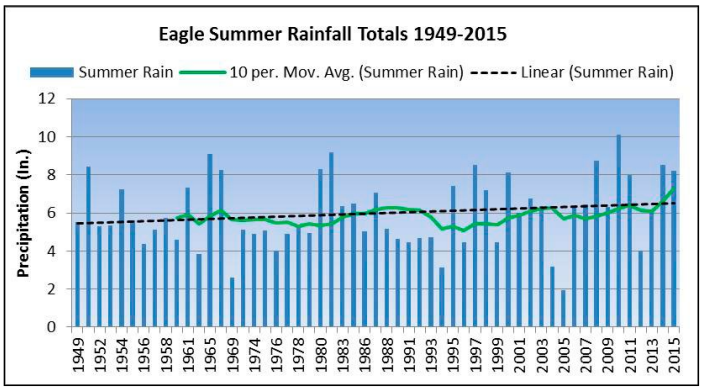

Figure 5. The bars show the summer precipitation totals in Eagle between 1949 and 2015. The green line represents a **10-year moving average** and the dashed line is a simple linear regression.

Connecting Further

- Previous weather summaries and other climate monitoring documents on the Central Alaska Network web portal
- Access near real-time data from Western Regional Climate Center and MesoWest
- Statewide summary of weather highlights in the latest Alaska Climate Dispatch from the Alaska Center for Climate Assessment and Policy
- Maps of projected temperature and precipitation changes for Yukon-Charley Rivers National Preserve

More Information

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