Office of the Washington State Climatologist

September 2020 Report and Outlook

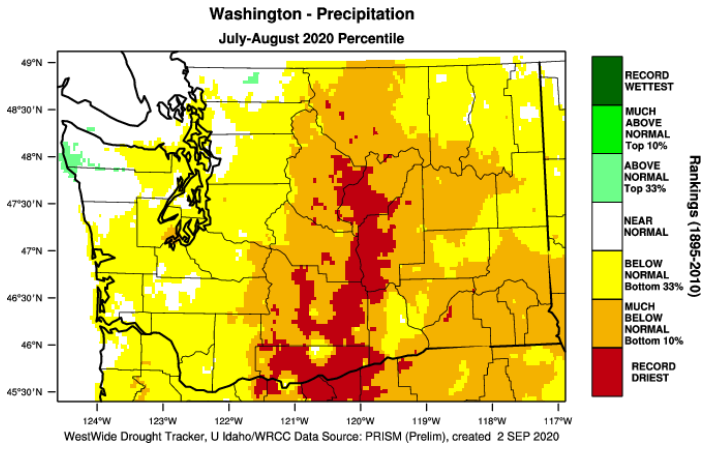
September 3, 2020

http://www.climate.washington.edu/

In this Issue

August Event Summary

Mean August temperatures were mostly above normal statewide with greater warm anomalies in Eastern Washington. While temperatures were above normal, there was only a single heat wave focused around the 16th. Few precipitation events across the state resulted in well-below normal precipitation, aside from the northern Washington Coast, which tapped into an atmospheric river on the 20th. Though August is typically dry, many locations in eastern Washington featured little to no measurable precipitation, especially along the Columbia River. This past month followed the sparse precipitation in July, setting the stage for record-breaking lack of rain between July and August (Figure 1a). A sampling of eastern Washington stations (Table 1) show that Ephrata, Omak, and Wenatchee all broke records for this two-month dry period. Healthier precipitation totals in June resulted in less extreme values for the meteorological summer (June through August) of 2020 (Figure 1b).



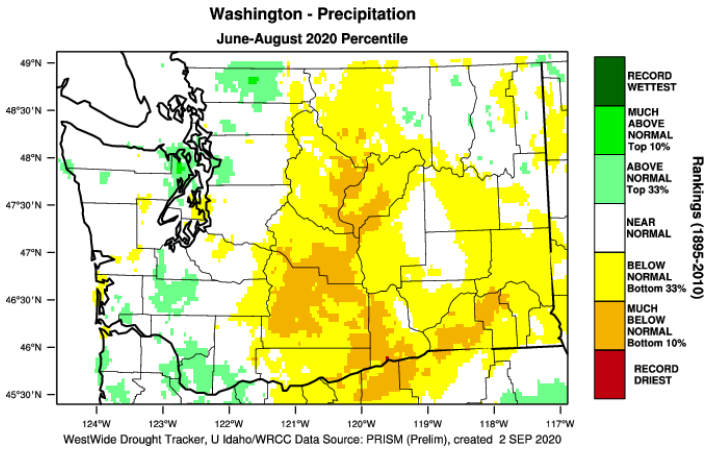


Figure 1a (left) shows the percentile ranking of precipitation for July and August. Figure 1b (right) is the same metric except for the meteorological summer, June through August (from Westwide Drought Tracker).

	July & August Precipitation	Ranking	Previous Record	Previous Record Year(s)
Spokane	0.07″	7	T	2017, 2019
Ephrata	T	1	T	Tied 6 years
Pascco	0.21″	10	T	2018
Pullman	0.29″	13	0.04″	2000
Wenatchee	T	1	T	Tied 4 years
Omak	0.01″	2	T	2017
Winthrop	0.01″	1	0.01″	1967

Table 1: Selection of eastern Washington stations for rankings of combined July and August precipitation.

While the past two months have been astonishingly dry, outbreaks of wildfires have mostly been suppressed even though the environment is conducive to such fires. Bouts of poor air quality did pop up in eastern Washington such as on August 5th, but smoke was largely isolated to areas near fires and quickly cleared up. Unfortunately, a grass and brush fire was ignited on August 31st near Naches in Yakima Co., and is currently forcing local communities to evacuate at the time of writing this newsletter in early September.

August began at the back end of a record-breaking heat wave that rounded out the end of July. Temperatures had tapered off by the 1st, but daily maximums were above normal until the 6th in most of eastern Washington. Cooler temperatures from onshore flow brought a few showers to western Washington with little precipitation falling east of the Cascade Crest. Below normal temperatures lingered until the 14th , even triggering daily low temperature records at Seattle WFO, Ephrata, and Walla Walla between the 13th and 14th. A broadening high-pressure ridge resulted in the arrival of a thermal trough, that whiplashed temperatures to record breaking highs.

While 101 and 100 °F at Spokane and Pullman, broke daily temperature records on the 16th, slightly lower temperatures in the Puget Sound surpassed previous August high temperature records such as Seattle WFO, Tacoma Narrows AP, and Renton Municipal AP at 97, 94, and 98 °F, respectively. The 100 °F recorded at Paine Field in Everett matched its all-time record set on July 29th on 2009. The combination of heat and moisture led to a thunderstorm outbreak, which is explored in more detail under the CoCoRaHS Highlight.

While Seattle and Walla Walla had set record daily low temperature records earlier in the week, by the 18th both stations featured record highest minimum temperatures at 64 and 73 °F, respectively, due to lingering moisture. Moisture continued streaming into Washington, but its southwest to northeast trajectory only brought precipitation to western Washington (Figure 2). The atmospheric river mostly targeted Vancouver Island, all the while clipping the northwest corner of the Olympic Peninsula with 3.29" at Quailyute split between August 20th and the 21st. The remainder of the month was unremarkable with near normal temperatures statewide and the only precipitation occurring in western Washington on the 30th and 31st from a weak onshore flow event.

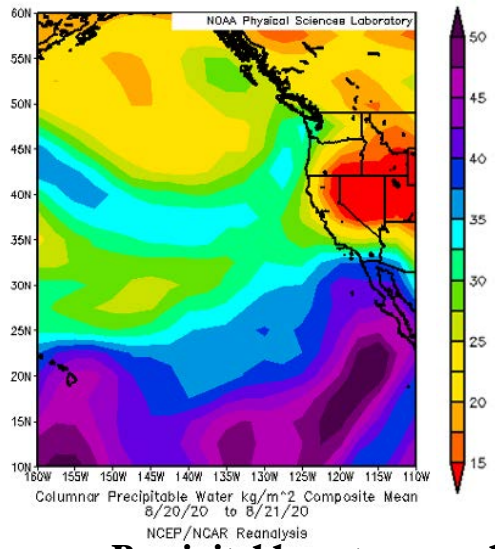


Figure 2: Precipitable water reanalysis between 1000 - 500 hPA (~18,000 feet) from NCEP.

Streamflow and Drought Monitor Update

While Washington state featured a second consecutive month of well below normal precipitation, the drought situation has slightly improved over the summer and is unchanged from last month (Figure 3). How could this be? Regular precipitation found the east slopes of the Cascades and eastern Washington in June, all the while skipping over the Columbia River Basin where D2 "Severe Drought" persists. The present depiction illustrates where the landscape is especially parched during this normally dry time of the year.

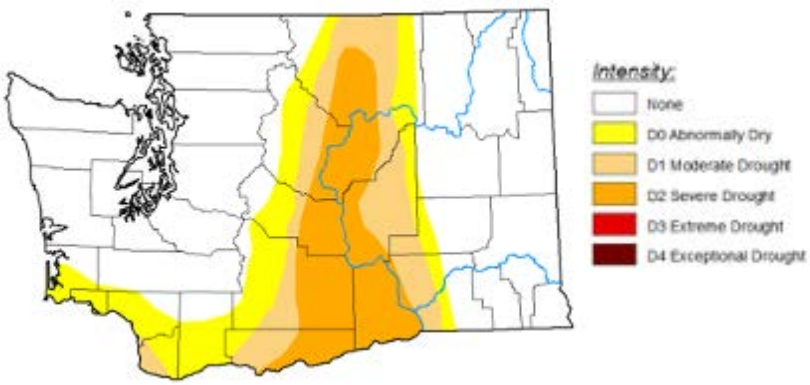


Figure 3: The August 2020 edition of the [U.S. Drought Monitor](#).

Reservoirs heights are healthy in the Yakima basin with capacities ranging between 21 to 73% full (figure 4). While the largest reservoir (Cle Elum Lake) in this region looks to be low at only 24% full, this value is only slightly below normal from rapid outflow during July and August (Fig 5). Streamflows west of the Cascades are largely near normal with few exceptions in the eastern Olympic Peninsula (Fig 6). Corresponding with the area of drought, some stream flows in Chelan, Yakima, and Klickitat Counties are well below normal in the below 10th percentile category.

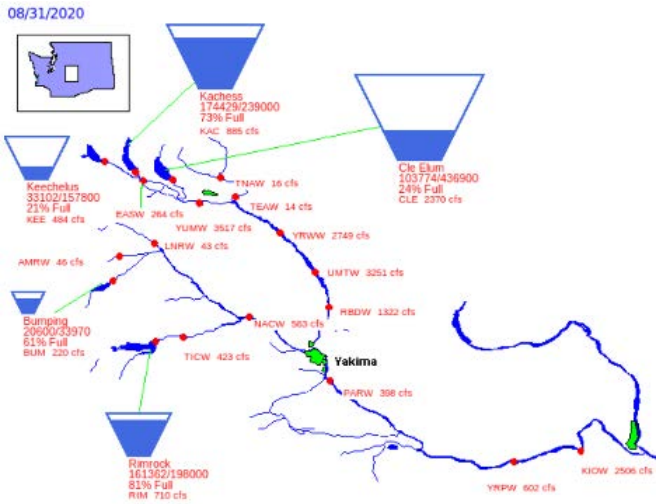


Figure 4: Teacup diagram of reservoirs and streamflows in the Yakima Basin ([from Bureau of Reclamation](#)).

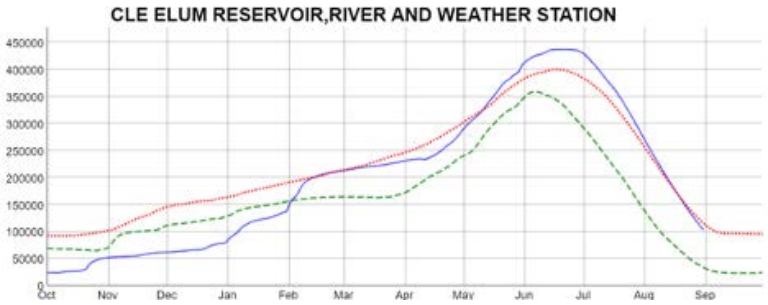


Figure 5: Water year summary of the Cle Elum Reservoir, the largest reservoir in the Yakima basin. Red is the mean storage, blue is current water year 2020, and green is water year 2019 ([from Bureau of Reclamation](#)).

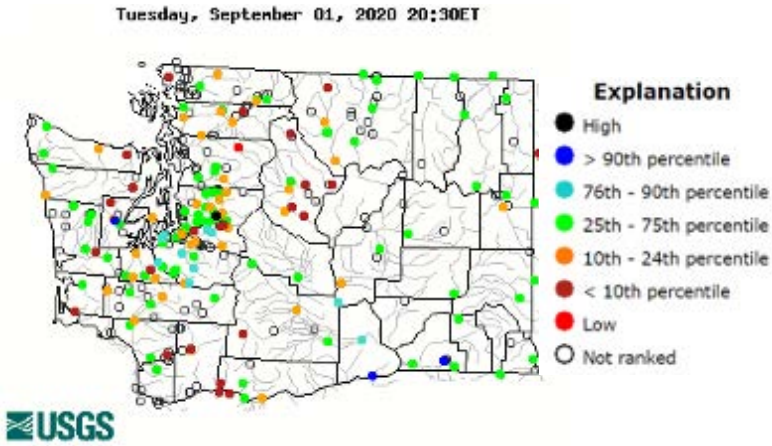


Figure 6: August averaged streamflows for WA (from [USGS](#)).

The CoCoRaHS Corner

Even with continued dry conditions through August, 396 observers submitted precipitation measurements and 212 did so everyday. Not surprisingly, Forks 6.9 WSW recorded the most precipitation in the state at 4.18". Further east, daily precipitation reports of "0"s were not at a premium, and 16 observers recorded no precipitation at all- 14 of which extended their "0" streak from all of July. To top it off, Wenatchee 0.6 N has featured 82 straight daily reports of no precipitation, which spans back to June 12th and is the longest running record in the state. As we've harked about previously, the inclusion of "0"s and condition monitoring reports bring context beyond the numbers and are essential to CoCoRaHS. Better yet, a new mapping tool on the CoCoRaHS website displays condition reports over a basemap of drought ratings. This can be accessed here: https://www.cocorahs.org/Maps/conditionmonitoring/

This month's CoCoRaHS event focuses on August 16th, when intense heat was followed by thunderstorms marking two unfamiliar phenomena for western Washington in a single day. The heat wave emanated from an anomalously strong ridge that built over the western half of the United States (figure 7). The Pacific Northwest was not alone in bearing the heat as Death Valley recorded 130 °F, the highest temperature on Earth in over 100 years. While temperatures reached triple digits in eastern Washington, daily highs in the upper 90s around the Puget Sound broke records for August and tied some all-time highs (Figure 8).

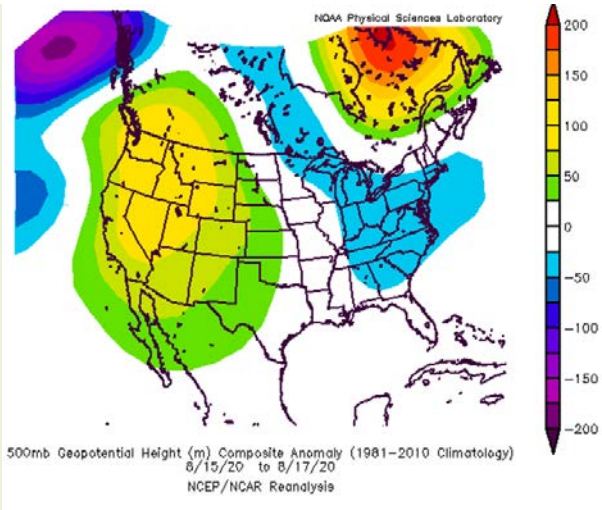


Figure 7: 500 hPa geopotential heights reanalysis from NCEP.

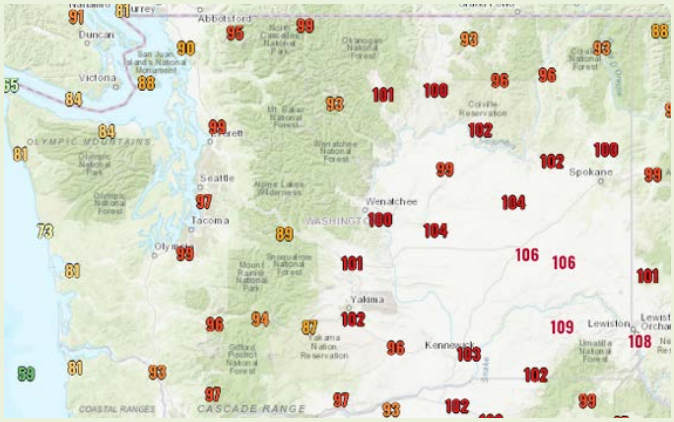


Figure 8: Maximum temperatures on August 16th from NWS.

In the days prior to this heat, a tropical cyclone disintegrated off the coast of Baja California. High pressure over the western United States created southerly winds in the eastern Pacific, and tapped into the extremely moist air produced by the tropical cyclone (Figure 9). Moist air streaming north created static instability and plenty of fuel to produce a dazzling display of thunderstorms over Northern California on the 15th, which initiated fires and little precipitation. On the 16th, the moist air arrived in Washington and combined with the hot surface temperatures to produce lightning and pockets of downpours.

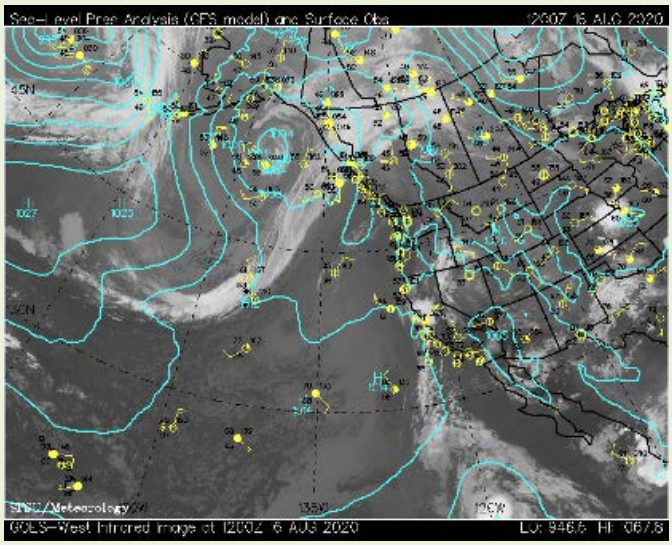


Figure 9: GOES-West 17 infrared satellite imagery of North America with surface pressure model analysis (California Regional Weather Server).

One CoCoRaHS observer, Monroe 2.4 SE, in Snohomish County detailed her experience of drizzle beginning at 8 PM when the air temperature was still above 80 °F. Drizzle quickly turned to an onslaught of rain, which racked up 0.13" in 45 minutes and brought up fears of surface flooding from the impervious, dry soil. But flooding did not occur, and the next day's CoCoRaHS map (Fig. 10) shows that most areas missed out on intense downpours. At least they may have been treated to the lightning show, which brought 107 cloud to ground strikes in Western Washington.

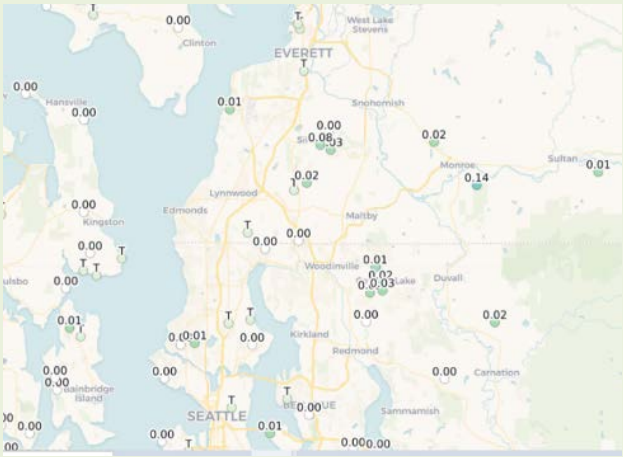


Figure 10: CoCoRaHS precipitation map from August 17th (from CoCoRaHS).

The Diurnal Cycle in Summer Temperatures in Washington State

A message from the State Climatologist

Summer visitors to WA state are sometimes struck by how cool it is during the late night and early morning hours, and how late in the day it stays warm. This can be especially the case during our hottest weather, when peak temperatures often occur at 5 to 6 PM local time. By that time of the day the sun is lower in the sky, of course. Does WA state really experience a different diurnal cycle in temperature than other parts of the US, and if so, what might explain it?

For starters, here we will review the hourly air temperatures reported in Seattle (KSEA) and Spokane (KGEG) during two of the hotter days this past summer, 30 July and 16 August 2020. As shown in Figure 11, during both days at the two locations, the highest temperatures were late in the afternoon, specifically at 5 PM local time in Seattle and from 4 to 6 PM local time in Spokane. It bears noting that these times are daylight savings time, and so subtract an hour for standard time, which is roughly in phase with the sun. In other words, during daylight time, the sun is highest in the sky at around 1 PM. Even so, the

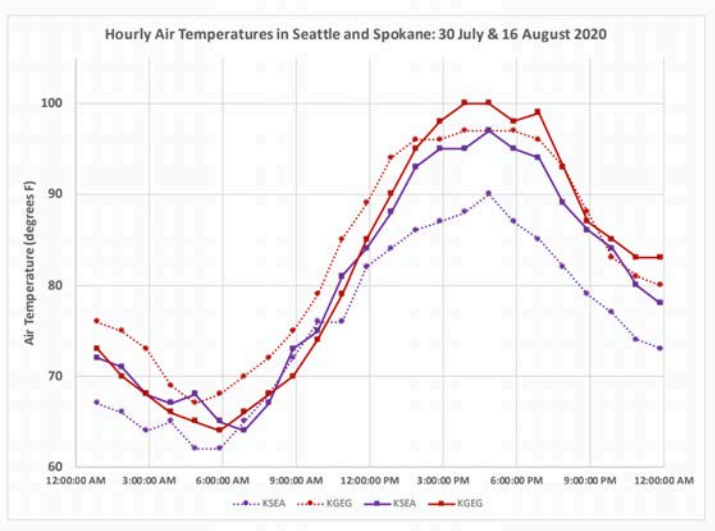


Figure 11: Hourly air temperatures (degrees F) for Seattle (KSEA; purple) and Spokane (KGEG; crimson) during 30 July (dotted lines) and 16 August (solid lines) of 2020. Times are in Pacific Daylight Time (PDT).

temperature traces in Figure 11, which are highly representative of warm summer days in WA, show that temperatures climb for about 4 hours after the solar noon. Of course our warm summer days occur with negligible cloudiness, at least in the afternoon. Hang on to that thought.

For a climatological perspective, we turn to data from the National Diurnal Climatology, available at http://www.microclimates.org/diurnal/index.html, with also a link on our website. Shown here are tables for Seattle (KSEA) and Spokane (KGEG) that list average values of a variety of meteorological parameters for each hour of the day during the month of August. Both Seattle and Spokane have 3 PM local standard time (4 PM local daylight time) as the warmest time of the day on average. The same kind of compilation for Portland, Maine (Table 2b) indicates 12 noon as the warmest time of day, on average. A similar diurnal cycle in temperature during August occurs in Boston, MA (Table 2a) where 12 noon and 1 PM local time are the hours with the warmest average temperatures. The latitudes of those two locations are a few degrees less than that of Seattle and Spokane, but at first blush the reason(s) for this discrepancy may not be obvious.

Perhaps the differences in the diurnal temperature cycles are linked to their counterparts in cloudiness and precipitation, as shown in the tables included here. Seattle (Table 2c) tends to have greater cloudiness in the morning than in the afternoon in August, and for that matter, during all of summer months, but not winter months. Such a transition in cloudiness occurs to a lesser extent and later in the afternoon in Spokane (Table 2d), and for that matter, the amount of heating that occurs there during the early afternoon is less than that in Seattle. A different diurnal cycle in cloudiness is observed in Portland and Boston, and other locations in the eastern US, where there is a tendency for greater cloudiness in the afternoon. They also tend to have greater precipitation in the early and middle afternoon than during the morning. Many of their summer days include the building of cumulus clouds during the middle of the day that develop to the point where they produce rain, which cools things off. To be sure, that does not happen every day but it appears often enough to clip afternoon temperatures in the mean. Stratus and stratocumulus clouds are more common in our neck of the woods, and they more often dissipate, rather than grow, with the daytime heating.

Table 2.(a-d): Hourly averages of various weather parameters during the month of August. The column for Wind Dir. Vector/Speed essentially refers to the steadiness in the wind direction with lower (higher) percentages representing lesser (greater) consistency in the wind direction. The last column (Precip. Rate) refers to the average amount of rain during that hour of the day for the month of August as a whole.

2.a Boston

AUGUST

Time (LST)	Temperature (°F)	Dewpoint (°F)	Wind Speed (mph)	Wind Direction	Wind Dir. Vector/Speed	Cloud Cover Opaque/Total	Precip. Rate (in/hr/mo)
0:00	67.8°	61.0°	9.2	262° | W	50%	46% / 54%	0.17"
1:00	67.1°	60.8°	9.1	265° | W	48%	47% / 53%	0.18"
2:00	66.6°	60.6°	8.9	269° | W	49%	47% / 53%	0.18"
3:00	66.1°	60.5°	8.9	272° | W	46%	46% / 54%	0.09"
4:00	65.9°	60.3°	8.8	274° | W	46%	48% / 58%	0.11"
5:00	66.4°	60.5°	8.9	275° | W	44%	48% / 59%	0.14"
6:00	68.1°	60.5°	9.6	282° | WNW	43%	46% / 57%	0.13"
7:00	70.5°	60.6°	10.1	286° | WNW	37%	43% / 55%	0.11"
8:00	72.6°	60.6°	10.4	284° | WNW	25%	42% / 55%	0.15"
9:00	74.4°	60.7°	10.7	247° | WSW	14%	42% / 56%	0.09"
10:00	75.7°	60.6°	11.8	211° | SSW	12%	44% / 57%	0.08"
11:00	76.5°	60.6°	12.4	175° | S	15%	47% / 59%	0.10"
12:00	77.1°	60.5°	12.9	176° | S	15%	49% / 61%	0.09"
13:00	77.1°	60.5°	13.2	173° | S	18%	50% / 61%	0.15"
14:00	76.8°	60.5°	13.2	173° | S	18%	50% / 62%	0.16"
15:00	76.1°	60.5°	13.0	179° | S	20%	48% / 61%	0.16"
16:00	75.2°	60.7°	12.5	191° | SSW	22%	47% / 60%	0.18"
17:00	73.8°	60.8°	11.6	204° | SSW	26%	45% / 59%	0.13"
18:00	72.2°	60.9°	10.7	211° | SSW	32%	46% / 58%	0.15"
19:00	71.1°	61.0°	10.0	218° | SW	36%	45% / 55%	0.09"
20:00	70.3°	61.2°	9.8	231° | SW	42%	45% / 54%	0.09"
21:00	69.5°	61.1°	9.6	241° | WSW	46%	45% / 54%	0.06"
22:00	68.8°	60.9°	9.3	249° | WSW	48%	45% / 53%	0.10"
23:00	68.2°	60.9°	9.3	258° | WSW	50%	46% / 53%	0.09"

2.b: Portland

AUGUST

Time (LST)	Temperature (°F)	Dewpoint (°F)	Wind Speed (mph)	Wind Direction	Wind Dir. Vector/Speed	Cloud Cover Opaque/Total	Precip. Rate (in/hr/mo)
0:00	61.2°	57.0°	5.2	261° | W	35%	50% / 56%	0.10"
1:00	60.6°	56.7°	5.0	267° | W	36%	49% / 55%	0.11"
2:00	60.1°	56.4°	5.0	272° | W	37%	49% / 55%	0.10"
3:00	59.6°	56.1°	4.9	283° | WNW	33%	50% / 57%	0.06"
4:00	60.2°	56.0°	5.0	278° | W	33%	51% / 60%	0.07"
5:00	61.7°	57.0°	5.3	283° | WNW	29%	51% / 61%	0.08"
6:00	64.1°	58.2°	6.3	286° | WNW	30%	50% / 61%	0.13"
7:00	67.3°	58.8°	7.4	297° | WNW	29%	48% / 59%	0.08"
8:00	70.2°	58.7°	8.1	283° | WNW	20%	46% / 58%	0.07"
9:00	72.6°	58.6°	8.8	246° | WSW	11%	46% / 58%	0.05"
10:00	73.6°	58.5°	9.5	198° | SSW	12%	47% / 59%	0.08"
11:00	74.5°	58.4°	10.4	183° | S	22%	49% / 61%	0.08"
12:00	74.9°	58.4°	11.0	177° | S	31%	49% / 61%	0.10"
13:00	74.5°	58.3°	11.4	179° | S	39%	49% / 61%	0.12"
14:00	74.1°	58.2°	11.3	188° | S	42%	48% / 61%	0.15"
15:00	73.3°	58.2°	11.1	188° | S	45%	47% / 60%	0.16"
16:00	71.5°	58.2°	10.1	190° | S	46%	47% / 60%	0.11"
17:00	69.4°	58.4°	8.8	195° | SSW	47%	48% / 62%	0.07"
18:00	67.1°	58.4°	7.2	201° | SSW	44%	48% / 62%	0.06"
19:00	65.6°	58.3°	6.4	210° | SSW	40%	48% / 60%	0.14"
20:00	64.4°	58.1°	6.0	225° | SW	33%	46% / 57%	0.14"
21:00	63.4°	57.8°	5.8	240° | WSW	31%	46% / 55%	0.08"
22:00	62.5°	57.6°	5.3	251° | WSW	35%	46% / 54%	0.10"
23:00	61.7°	57.3°	5.2	257° | WSW	38%	48% / 55%	0.17"

Tables 2a-2d include average wind speeds and directions for each hour of the day, and the diurnal cycle in the winds may also impact the corresponding air temperatures. This is hypothesized to be particularly the case in Seattle, where there is a clockwise rotation in the winds from the west in the middle of the day off the nearby cool waters of Puget Sound; to a flow more out of the northwest later in the afternoon, and hence a longer fetch over the warmer land. It is not obvious how the diurnal cycles in the winds influence the progression of daytime temperatures at the other 3 locations considered here; the kind of analysis required to sort that out is far beyond the scope of the present piece.

Getting back to the subject of our clouds, perhaps you witnessed them sort of trick visitors from other parts of the country, at least back in the pre-pandemic days when we got so many of them. Many react to seeing clouds in the morning by thinking the afternoon is liable to be a washout, also given Seattle's - if not eastern Washington's - undeserved reputation for rain during summer. But most residents here know better, and try to get outdoors as much as possible during our mostly delightful summer afternoons. After all, it won't be long before the weather of autumn is upon us and we are grateful for Gore-Tex.

Climate Summary

Mean August temperatures were above normal for the majority of Washington state according to the map below from the High Plains Regional Climate Center. Two particularly warm bull's eyes were located in western Okanogan County and centered around Tri-Cities, which caused average August temperatures to be 2.4 and 2.0 °F above normal at Pasco and Hanford, respectively (Table 3). Most of western Washington was slightly above normal, and warmer pockets were seen in the populated lowlands such as Seattle WFO, which was 1.8 °F above normal. A slice of NE Washington saw temperatures cooler than normal where mean nighttime lows were as much as 5 °F below normal in Stevens County.

2.c Seattle

AUGUST

Time (LST)	Temperature (°F)	Dewpoint (°F)	Wind Speed (mph)	Wind Direction	Wind Dir. /Vector/Speed	Cloud Cover Opaque/Total	Precip. Rate (in/hr/mo)
0:00	59.6°	52.4°	6.5	130° | SE	10%	44% / 47%	0.04"
1:00	58.7°	52.3°	6.2	159° | SSE	16%	45% / 49%	0.04"
2:00	58.0°	52.2°	5.7	167° | SSE	22%	48% / 51%	0.04"
3:00	57.3°	52.1°	5.7	171° | S	28%	51% / 55%	0.04"
4:00	56.8°	52.1°	5.6	172° | S	35%	57% / 61%	0.04"
5:00	57.0°	52.3°	5.8	169° | SSE	36%	60% / 65%	0.04"
6:00	58.4°	52.9°	6.3	173° | S	32%	61% / 67%	0.03"
7:00	60.4°	53.3°	6.8	193° | SSW	29%	60% / 66%	0.04"
8:00	62.5°	53.5°	7.2	219° | SW	29%	58% / 64%	0.03"
9:00	64.7°	53.6°	7.6	241° | WSW	40%	55% / 61%	0.02"
10:00	67.0°	53.7°	8.1	251° | WSW	50%	50% / 57%	0.03"
11:00	69.2°	53.6°	8.5	258° | WSW	49%	46% / 53%	0.03"
12:00	71.1°	53.5°	8.9	265° | W	51%	43% / 52%	0.04"
13:00	72.4°	53.2°	9.1	271° | W	49%	42% / 50%	0.04"
14:00	73.1°	52.9°	9.3	275° | W	48%	42% / 50%	0.05"
15:00	73.4°	52.5°	9.2	281° | WNW	50%	42% / 50%	0.05"
16:00	72.7°	52.5°	9.1	286° | WNW	45%	41% / 48%	0.06"
17:00	71.3°	52.5°	8.7	296° | WNW	43%	40% / 48%	0.06"
18:00	68.8°	52.5°	7.9	309° | NW	39%	40% / 48%	0.04"
19:00	66.0°	52.3°	7.4	325° | NW	30%	40% / 46%	0.04"
20:00	64.4°	52.4°	7.6	342° | NNW	24%	39% / 44%	0.03"
21:00	62.9°	52.5°	7.3	350° | N	16%	39% / 43%	0.03"
22:00	61.7°	52.5°	7.2	5° | N	8%	40% / 44%	0.04"
23:00	60.6°	52.5°	7.0	79° | E	5%	43% / 46%	0.03"

2.d Spokane

AUGUST

Time (LST)	Temperature (°F)	Dewpoint (°F)	Wind Speed (mph)	Wind Direction	Wind Dir. /Vector/Speed	Cloud Cover Opaque/Total	Precip. Rate (in/hr/mo)
0:00	60.2°	43.3°	6.9	170° | S	50%	24% / 30%	0.01"
1:00	59.1°	43.5°	7.3	168° | SSE	53%	25% / 31%	0.01"
2:00	58.0°	43.8°	7.6	163° | SSE	54%	25% / 32%	0.01"
3:00	57.0°	44.2°	7.5	157° | SSE	52%	27% / 35%	0.01"
4:00	57.3°	44.7°	7.8	151° | SSE	52%	29% / 38%	0.02"
5:00	58.8°	45.7°	7.9	145° | SE	50%	29% / 40%	0.03"
6:00	61.2°	46.6°	9.1	138° | SE	45%	30% / 40%	0.02"
7:00	64.7°	47.1°	9.3	145° | SE	38%	30% / 41%	0.01"
8:00	68.3°	47.2°	9.3	159° | SSE	33%	30% / 41%	0.03"
9:00	71.7°	47.0°	9.5	183° | S	30%	30% / 41%	0.05"
10:00	74.6°	46.0°	9.5	200° | SSW	29%	31% / 42%	0.02"
11:00	76.9°	44.7°	9.3	224° | SW	36%	33% / 43%	0.03"
12:00	79.0°	43.8°	9.6	224° | SW	42%	34% / 44%	0.04"
13:00	79.8°	42.8°	9.5	229° | SW	46%	34% / 44%	0.03"
14:00	80.4°	42.3°	10.0	234° | SW	45%	33% / 44%	0.01"
15:00	80.7°	42.0°	9.9	234° | SW	43%	32% / 44%	0.01"
16:00	79.1°	41.8°	9.7	240° | WSW	40%	31% / 42%	0.02"
17:00	77.1°	41.8°	9.1	241° | WSW	33%	29% / 41%	0.04"
18:00	73.9°	42.3°	7.4	221° | SW	28%	28% / 40%	0.03"
19:00	70.4°	42.3°	7.0	204° | SSW	43%	27% / 38%	0.02"
20:00	67.5°	42.4°	7.1	211° | SSW	50%	26% / 35%	0.02"
21:00	64.9°	42.4°	6.9	213° | SSW	53%	25% / 32%	0.02"
22:00	63.2°	42.6°	6.8	204° | SSW	49%	24% / 32%	0.02"
23:00	61.5°	42.9°	6.7	186° | S	44%	25% / 32%	0.02"

Most areas of Washington State received below normal August precipitation totals except for the northwest corner of the Olympic Peninsula. While eastern Washington tends to get little precipitation during the summer months, areas in the Columbia River Basin have failed to record any measurable precipitation for July and August. June 15th was the last time that Wenatchee recorded measurable precipitation, but it did manage to detect a trace of rain on five separate occasions last month. While the east slopes of the Cascades and Columbia River Basin have consistently received less than the normal precipitation throughout the summer, this amounts to a deficit ranging between only 0.5 to 1". The wet bull's eye in eastern Washington is from Electric City receiving 0.30" on the 6th when the station normally receives 0.28" in August. Contrasting the paucity of precipitation further inland, the northwest corner of the Olympic Peninsula was hammered by a atmospheric river on August 20th and 21st, which brought a two-day precipitation total of 3.29" to Quailyute. 169% of normal precipitation fell at Quailyute last month, which ranked only high enough to scratch the top 10 rainiest Augusts at 9th and nowhere near the 15.07" that fell in 1991.

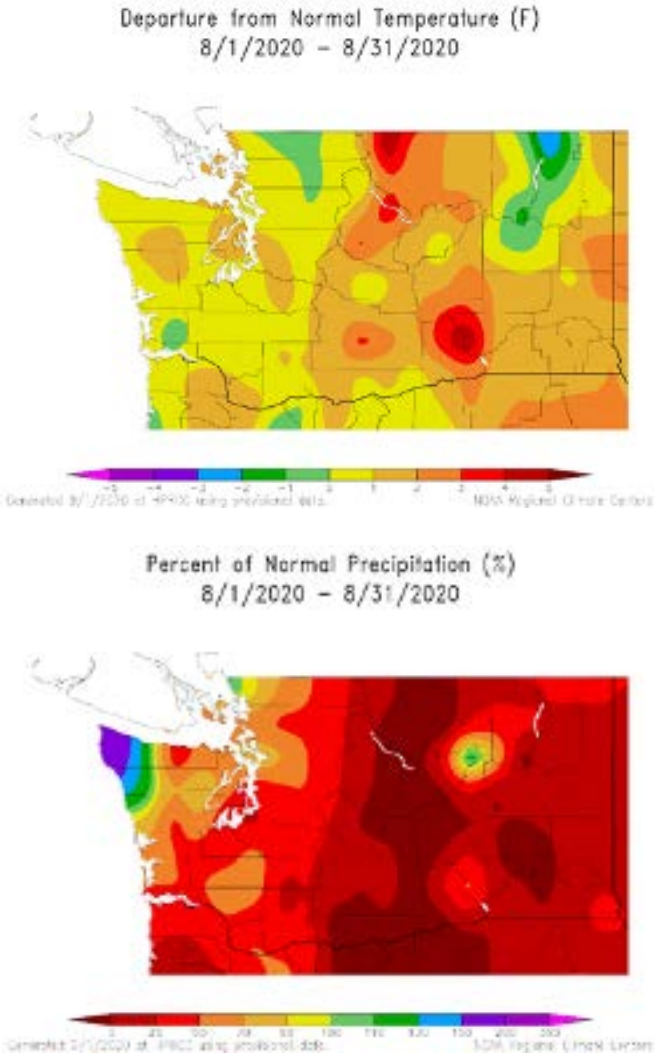


Figure 12: August temperature (°F) departure from normal (top) and precipitation percent of normal (bottom). (High Plains Regional Climate Center; relative to the 1981-2010 normal).

	Mean Temperature (°F)			Precipitation (inches)		
	Avg	Norm	Departure from Normal	Total	Norm	% of Norm
Western Washington						
Olympia	64.9	64.1	0.8	0.37	0.94	39
Seattle WFO	67.9	66.1	1.8	0.31	0.88	35
SeaTac AP	67.2	66.5	0.7	0.58	0.97	60
Quillayute	60.3	59.6	0.7	4.20	2.49	169
Hoquiam	61.6	60.6	1.0	1.01	1.31	77
Bellingham AP	63.8	62.5	1.3	1.28	1.23	104
Vancouver AP	70.4	69.2	1.2	0.32	0.77	42
Eastern Washington						
Spokane AP	71.6	69.3	2.3	0.02	0.59	3
Wenatchee	74.9	73.5	1.4	T	0.20	0
Omak	74.4	72.4	2.0	T	0.49	0
Pullman AP	67.8	65.7	2.1	0.05	0.63	10
Ephrata	73.7	72.9	0.8	T	0.19	0
Pasco AP	75.2	72.8	2.4	0.17	0.27	63
Hanford	77.8	75.8	2.0	0.01	0.18	6

Table 3: August 2020 climate summaries for locations around Washington with a climate normal baseline of 1981-2010. Note that the Vancouver Pearson Airport and Seattle WFO 1981-2010 normals involved using surrounding stations in estimating the normal, as records for these station began in 1998 and 1986, respectively.

Climate Outlook

According to the Climate Prediction Center (CPC), neutral El Niño Southern Oscillation (ENSO) conditions currently remain in the equatorial Pacific, but Niño-3.4 and Niño-3 indices indicate are getting borderline La Niña territory. Sea surface temperatures (SST) are below normal from the international dateline to the coast of South America. In the western Pacific, SSTs have warmed after some temporary cooling during the previous month. Rapid SST cooling off the coast of South America has steadied over the last month, but below SST continue to expand westward across the dateline. While La Niña appears to be developing, the tropical atmosphere remains in a near-neutral state. ENSO forecast models predict a 60% chance of La Niña for the fall decreasing to 55% for winter months. For the late winter months and early spring, models are converging toward slightly above normal Oceanic Niño Index (ONI) indexes.

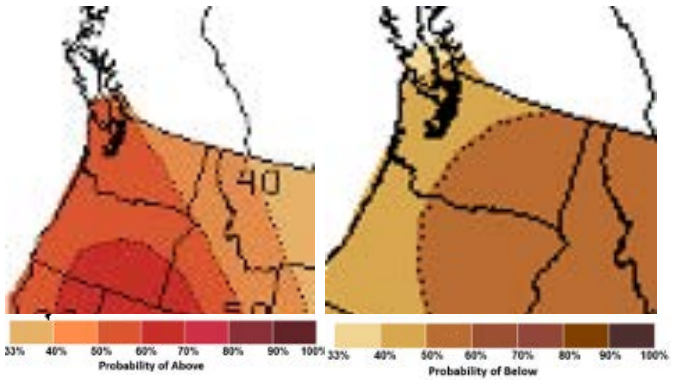


Figure 13: September outlook for temperature (left) and precipitation (right).

According to the Climate Prediction Center (CPC), chances of above normal temperatures are increased statewide with slightly higher chances further south and west. The precipitation outlook has increased chances of below normal precipitation across the state with greater chances further south and east. An excessive heat warning is currently in the 8-14 day forecast, so above normal temperatures and below normal precipitation particularly seem likely for at least the first half of the month.

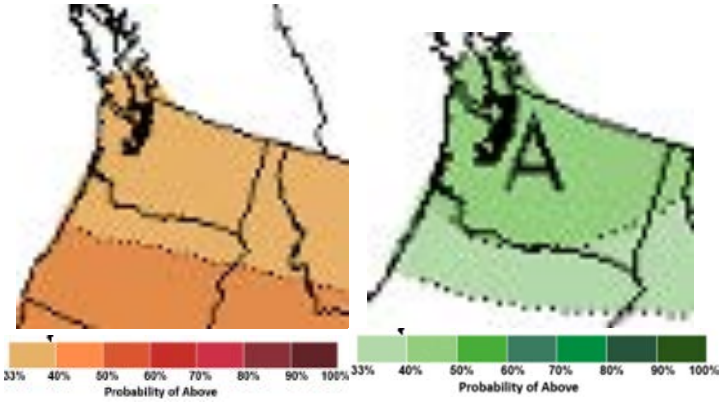


Figure 14: September-October-November outlook for temperature (left) and precipitation (right) ([Climate Prediction Center]).

Similar to the one month outlook, the three-month CPC temperature outlook for September-October-November has increased chances of above normal statewide, though chances are only slightly increased at 30-40%. On the other hand, the 3-month precipitation outlook differs from the September outlook with increased chances of above normal precipitation totals across the state.