



Office of the Washington State Climatologist

September 2024 Report and Outlook

September 10, 2024

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

August Event Summary

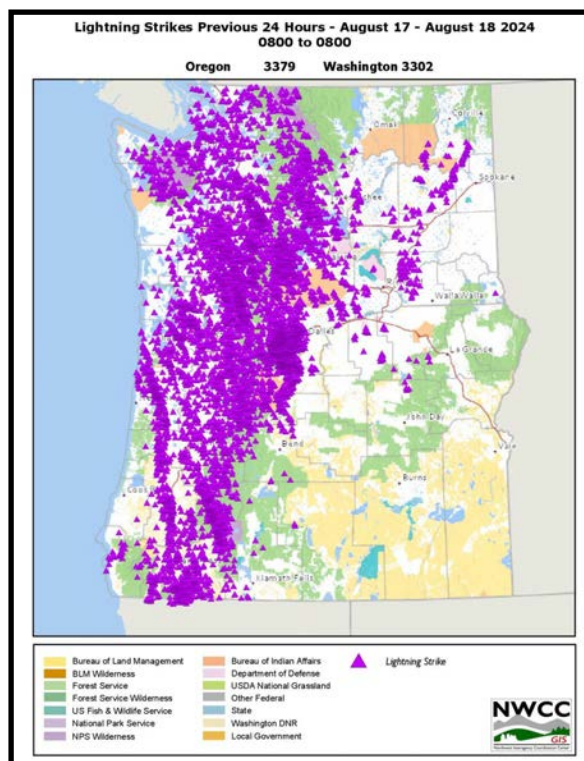
Mean August temperatures were near-normal to slightly above normal across the state. Averaged statewide, August average temperatures ranked as the 34th warmest in the 130-year record. August precipitation was variable and generally above normal across western and central Washington and below normal across eastern Washington. Averaged statewide, August precipitation ranked as the 34th wettest in the 130-year record.

Above normal August precipitation totals were experienced all across western WA with the impressive thunderstorm event that occurred mid-month a contributing factor. The instability of the atmosphere the weekend of August 17th-18th was due to the combined effects of the upper level low off the coast of Washington and Oregon (cold air aloft) and the low level southeasterly winds that led to warm air near the surface. Pacific Northwest residents were treated to a lightning show (Figure 1) and heavy precipitation. Figure 2 shows the precipitation totals measured by

Figure 1 (on the right): Lightning strikes (purple triangle) that occurred in Washington and Oregon from August 17 and 18 at 8 am (24 hour period) (NWCC).

In this Issue

August Event Summary.....	1
Streamflow and Drought Update.....	3
Water Year 2024 Registration.....	4
See More Drought with C-MOR Drought Reporting.....	5
Climate Summary.....	8
Climate Outlook.....	10



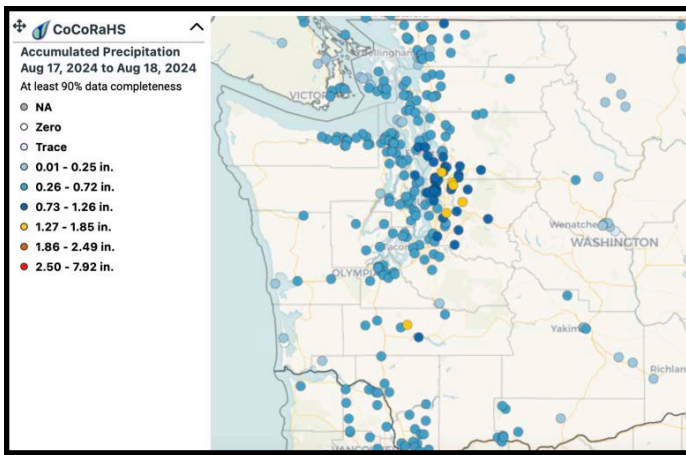


Figure 2: Accumulated precipitation in inches from August 17-18, 2024 from CoCoRaHS volunteer observers.

volunteer observers from August 17th through 18th. The heaviest precipitation fell in the Puget Sound region, between Tacoma and Everett. A daily record maximum precipitation total was set on August 17th for Olympia (0.58"); SeaTac's total (0.47") was the second highest for the calendar day.

Figure 3 shows the daily maximum and minimum temperatures and precipitation for Olympia for August. At the start of the month, maximum temperatures were above normal for Olympia, and much of the rest of the state. For example, Spokane and Wenatchee had above normal high

temperatures in the beginning of the month, and the heat lasted a bit longer. Despite the warmer than normal temperatures at the beginning and end of the month, temperatures were otherwise generally at or below normal for the majority of the state. There was another period of wet conditions due to a strong upper level low which created cooler-than-normal high temperatures for western Washington (August 20th-25th). For example, the high of 60°F at Olympia on August 23rd tied as the 6th coldest August high temperature on record whereas SeaTac's high (59°F) tied as the 5th coldest for any August day.

This August's near-normal temperatures and above normal precipitation allowed significant progress in wildfire containment efforts (prevented further growth of fires) and improved air quality. For more information on the current status of fires visit Northwest Interagency Coordination Center ([NWCC](#)).

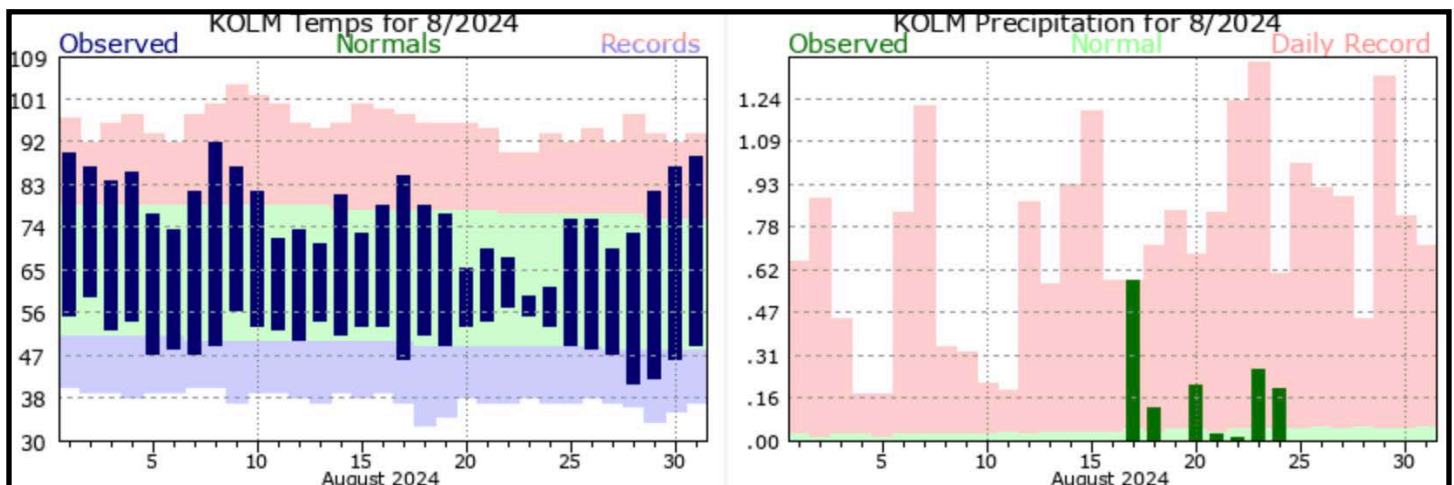


Figure 3: August 2024 daily temperatures (left) and precipitation (right) for Olympia Airport compared to the 1991-2020 normal (green envelope) and previous records (blue and red envelopes; [NWS](#)).

Streamflow and Drought Summary

Average streamflow was bolstered by the mid-August precipitation, particularly in western Washington. Stream gauges along the southern coast and the central Puget Sound regions averaged normal to above normal for August (Figure 4). Below normal August streamflows were common in other parts of the state including the Olympic Mountain region, the southern Puget Sound region, central Washington, and northeastern border of Washington.

The latest U.S. Drought Monitor map (Figure 5) has worsened in central Washington from the last edition of our newsletter and stayed similar or improved in the other parts of Washington. Although most parts of the state received above-normal precipitation totals for the month there are still drought concerns in the state. There is now an area of “extreme drought” (D3) and “severe drought” (D2) in central Washington, where little August precipitation fell and streamflows remained low. Drought conditions have lessened near the northeastern border with more “abnormally dry” (D0) conditions which were previously “moderate drought” (D1) in July. Also, some drought conditions were alleviated in Western Washington, for example, from “abnormally dry” (D0) to no drought and from “moderate drought” (D1) to “abnormally dry” (D0).

The Washington state drought emergency was extended in mid-April for most of the state and is still in effect. More information can be found [here](#).

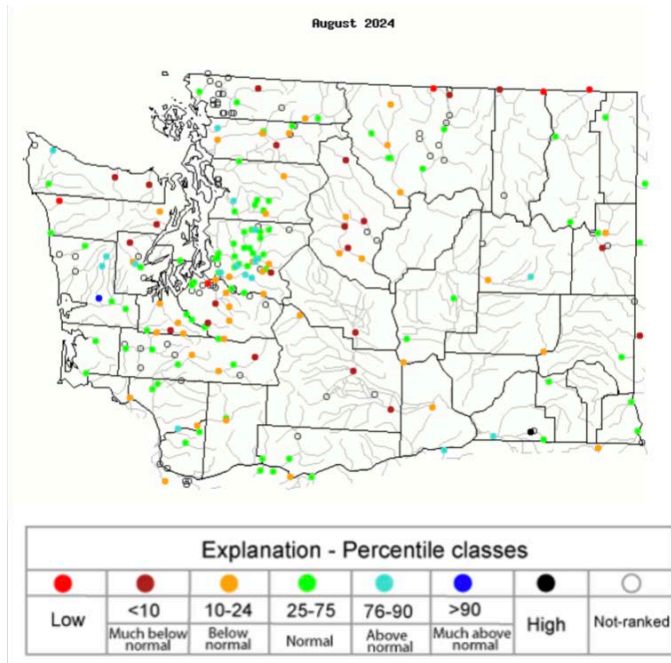


Figure 4: The average August streamflow percentiles (USGS).

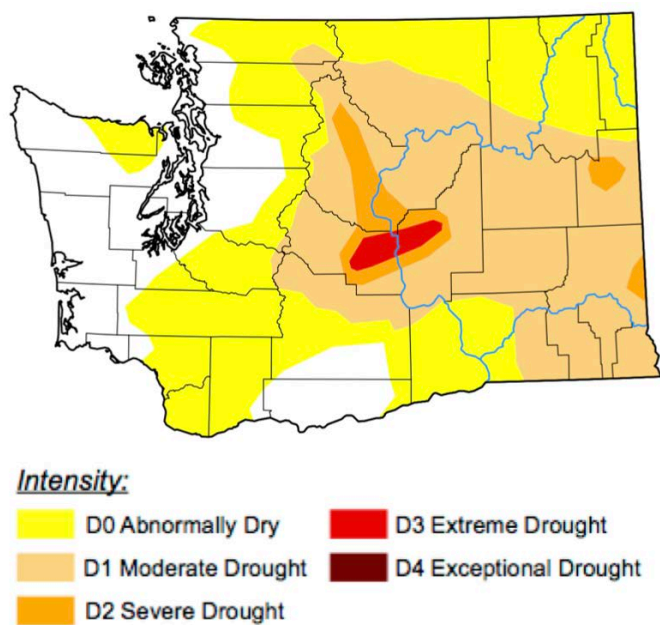


Figure 5: The September 5, 2024 edition of the US Drought Monitor.



Report Your Drought Impacts

Are you experiencing a drought impact? Your on-the-ground observations are critical in helping us understand the broad picture of drought in the state. The National Drought Mitigation Center and partners have developed Condition Monitoring Observer Reports on Drought (CMOR-drought), a short survey that allows the public to enter their observations regarding crops, water supply, fire, etc. We would greatly appreciate your input, and these reports help experts assess drought impacts. More information on these impact reports is provided in the *Climate Matters* below.

Registration Open for the Oregon-Washington Water Year 2024 Recap and 2025 Outlook Meeting

You're invited to participate in the **virtual Oregon-Washington Water Year 2024 Recap and 2025 Outlook Meeting** that will take place on the mornings of Tuesday, October 29, 2024 and Wednesday, October 30, 2024!

There is no cost to attend but you are required to [register](#).

The goal of this meeting is to share and gather information on the climate impacts of the 2024 water year. The warmer than normal winter, lack of Washington snowpack and subsequent drought development, the changing drought conditions in Oregon, and the hot July will be topics of discussion. This meeting will also offer the opportunity to learn from others about mitigation actions that were taken. Group discussion will be part of the meeting in addition to hearing from forecast experts on what to expect for 2025.

A draft agenda will be available shortly at the meeting website.

See More Drought with C-MOR Drought Reporting

Climate Matters Series

Author: Karin Bumbaco

The [Condition Monitoring Observer Reports on Drought \(CMOR-Drought\)](#) is a collaborative effort by the National Drought Mitigation Center (NDMC), USDA Climate Hubs, and NOAA National Integrated Drought Information Systems (NIDIS) to document drought impacts across the nation since 2018. We typically post a link to the survey in the “Drought Update” section of the monthly newsletter. Anyone can fill out the survey at any time during the year. The point is to share observations about the environmental conditions around you -- whether that location is home, work, a road trip, etc. In the survey, you can rate conditions on a scale from severely dry to severely wet. There are five categories in between: moderately dry, abnormally dry, near-normal, abnormally wet, and moderately wet. In the survey, you can list impacts related to agriculture, municipal water supply, hydropower, public health, recreation, industry, forestry, and wildlife. A useful feature of the application is the ability to upload photos, which can go a long way in describing on-the-ground conditions. As the saying goes: a picture is worth 1000 words.

OWSC uses these reports in our drought monitoring efforts in a number of ways. They allow us to have “eyes on the ground” and ensure we are accurately representing impacts across Washington State. For example, if we see several CMOR reports for a particular location, we might look more closely at other meteorological datasets and drought indices for that location, to make sure we understand how drought conditions are evolving there. And we can bring that information back to the state as we help them monitor for drought.

These reports are also used nationally, by the U.S. Drought Monitor authors, to help verify that the right designations are being used. Submitting a CMOR report can help ensure that agencies and others are aware of drought impacts, ultimately bringing benefits to the communities that experience them. Considering Washington State declared drought in mid-April, let’s go over what has been reported so far.

All the reports from the beginning of the year are shown in Figure 6. Two “moderately wet” reports in Snohomish and Skagit counties were reported in May and June, respectively. In July, five reports were made ranging from mildly dry to severely dry: two in Okanogan county, two in Chelan county, and one in King county. Both of the reports from Okanogan county were made on July 21. The first reports severely dry conditions county-wide and poor crop conditions as well as very poor range conditions with less water for irrigation, reduced yields, insect infestations, plant stress, the need for supplemental feeding for livestock, and less water in ponds/creeks. This report included photos of a fire burning through local rangeland with clearly visible wildfire smoke, one of which is reproduced here (Figure 7). The second report from Okanogan county on July 21 focused more on the hot and dry conditions throughout the Methow Valley impacting livestock. This reporter mentions needing to buy hay for supplemental cattle feed, decreased stock weights, and animal stress. This reporter also has concerns about having lighter calves at weaning. A photo of poor pasture conditions is included with the report (Figure 7).

The two Chelan county reports were made on July 19 and 20 and both noted the hot and dry period of the first few weeks of July with temperatures ranging between the mid-90s and mid-100s. Neither included pictures but they both list impacts to nearly every sector including poor crop conditions, poor air quality, increased fire danger, reduced recreation (boating/rafting), needle drop or sparse canopy, dead trees, and warmer water temperatures (impacting fish).

The final July report came in on the 13th from Valley Camp in eastern King county. They report their measurements showed precipitation 30% below normal by mid-July. Both fire and forestry impacts were noted including the campfire ban, smoke from distant fires, and discolored leaves and leaf drop.

Over the span of one week from late August to early September, three more CMOR impacts were reported. Two reports were made in Snohomish county on August 30, one classifying conditions as “near-normal” and the other “mildly wet”, noting the recent precipitation that caused vegetation to green. The last report on September 3 classified Lincoln county as “moderately dry” and mentioned only “fair” crop and pasture conditions with the possibility of reduced yields and the need to transport water for livestock.

The CMOR reports since the start of the calendar year clearly demonstrate how quickly conditions can change and how those changing conditions relate to on-the-ground impacts. We close with a call for more Washington reports! OWSC uses these reports in our drought monitoring efforts for the state and it also helps inform and verify conditions shown in the U.S. Drought Monitor. Washington has relatively few of these reports

compared to other states so we would love to see more participation. Remember that submitting these reports helps bring more attention to drought here, and to your community specifically. Reports of “neutral” or “wet” conditions are equally encouraged, as well as repeat reports from the same location so we can see how conditions change over time. Finally, please include pictures, if you’re able, since that provides a unique perspective. The survey is available [here](#).

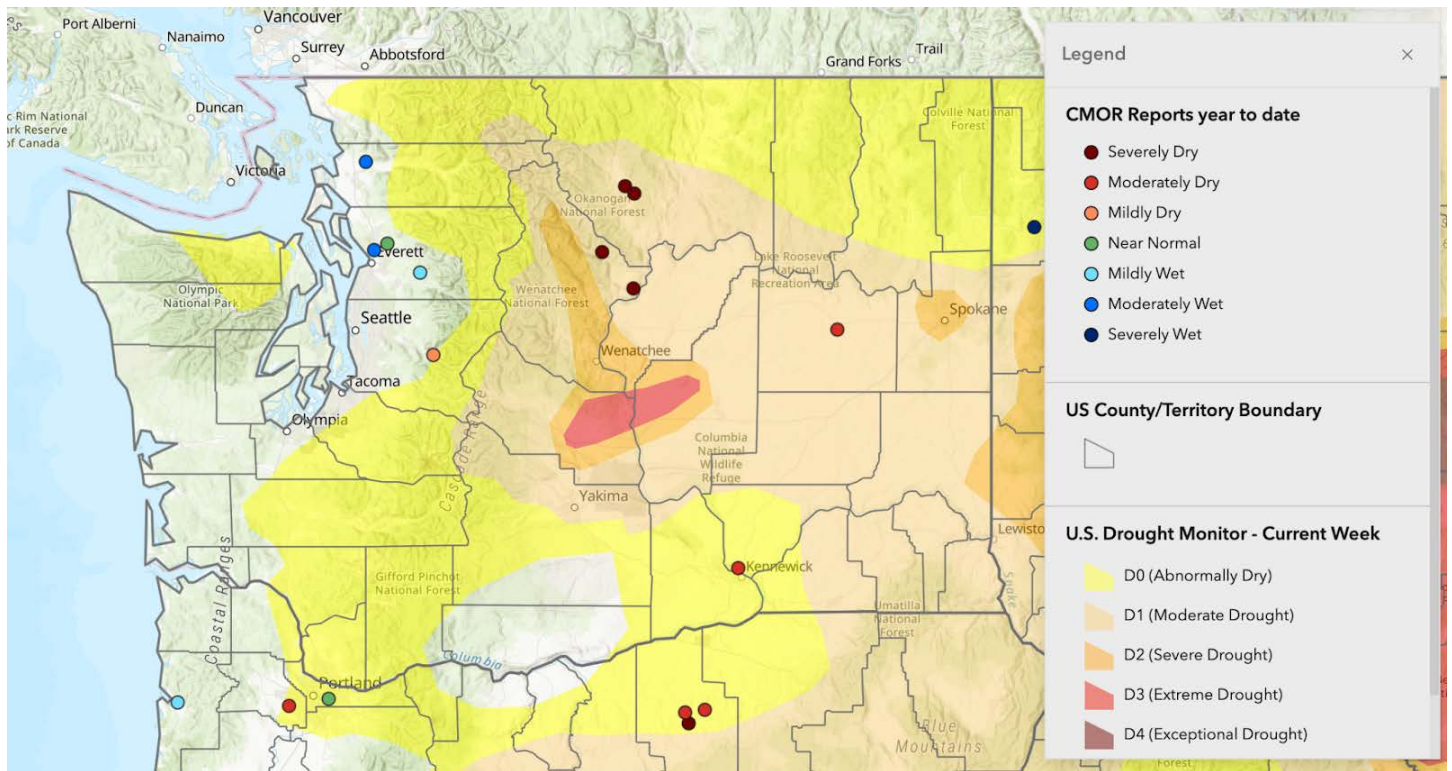


Figure 6: CMOR Interface on September 5, 2024.

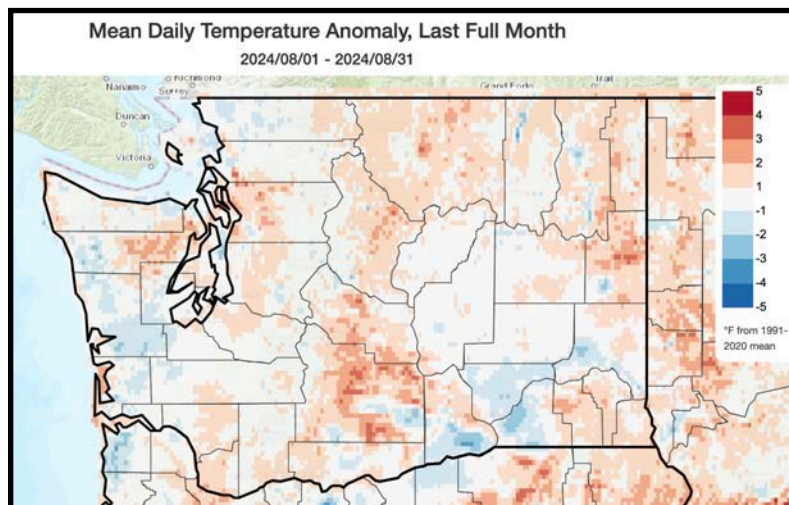


Figure 7: Pictures accompanied two separate Okanogan County reports on July 21, 2024 (CMOR-Drought).

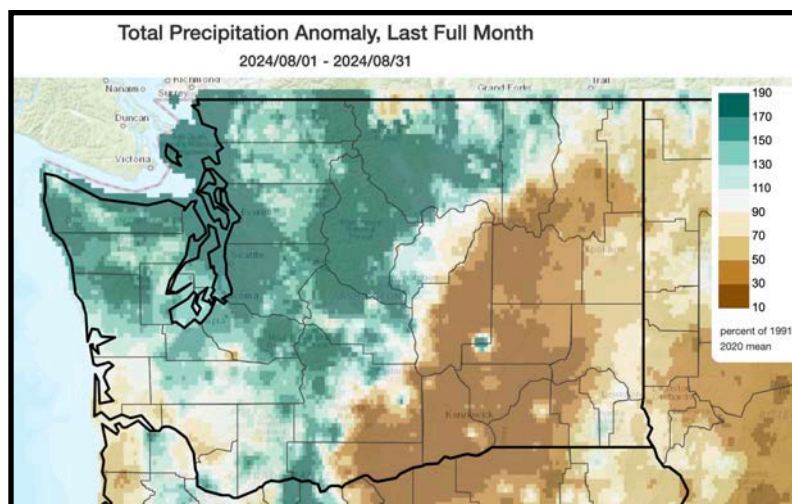
Climate Summary

August average temperatures were generally near-normal but there were areas both of below normal and above normal temperatures. Southeastern and near coastal areas of Washington, for example, had below normal temperatures. There were also some areas of the state that experienced above normal temperatures, such as northeastern Olympic region, eastern slopes of the Cascades (specifically south), northeastern WA, and the eastern WA border. The mean temperature during August 2024 was 1.4°F above normal at Spokane Airport, and many other Table 1 stations had above normal temperatures (e.g., Omak, Pasco, Quillayute, and Hoquiam). On the other hand, a majority of the stations in Table 1 were within 1°F of normal, or near-normal, such as Olympia, SeaTac, Bellingham, Pullman, etc.

Total August precipitation varied across Washington, with a majority of western and northern Washington receiving above normal precipitation. Western Washington and northern Washington precipitation ranged from about 115% and 250% of normal and it was mostly due to the active thunderstorm event that occurred (Table 1). Some notable locations include Seattle WFO and Bellingham with 244% and 231% of their normal August precipitation, respectively. Some areas in eastern Washington were drier than normal receiving only about half of their normal precipitation. For example, Spokane and Pasco Airport received 55% and 52% of their normal August precipitation, respectively.



August temperature (°F) departure from normal relative to the 1991-2020 normal (Climate Toolbox).



August precipitation departure from normal relative to the 1991-2020 normal (Climate Toolbox).

Station	Mean Temperature (°F)			Precipitation (inches)		
	Average	Normal	Departure from Normal	Total	Normal	Percent of Normal
Western Washington						
Olympia	64.8	64.2	0.6	1.38	0.96	144
Seattle WFO	67.4	67.1	0.3	2.44	1.0	244
SeaTac AP	66.7	67.4	-0.7	1.66	0.97	171
Quillayute	62.4	60.0	2.4	4.81	2.64	182
Hoquiam	62.0	61.0	1.0	1.56	1.35	116
Bellingham AP	63.0	63.9	-0.9	2.61	1.13	231
Vancouver AP	70.3	69.4	0.9	0.69	0.52	133
Eastern Washington						
Spokane AP	71.7	70.3	1.4	0.26	0.47	55
Wenatchee	73.9	73.7	0.2	0.39	0.23	170
Omak	73.9	72.8	1.1	0.81	0.27	300
Pullman AP	67.4	66.9	0.5	0.53	0.49	108
Ephrata	73.3	73.7	-0.4	0.01	0.18	6
Pasco AP	74.4	73.2	1.2	0.14	0.27	52
Hanford	76.0	76.5	-0.5	0.11	0.25	44

Table 1: August 2024 climate summaries for locations around Washington with a climate normal baseline of 1991-2020.

Climate Outlook

According to the Climate Prediction Center (CPC), conditions in the equatorial Pacific Ocean remain ENSO-neutral, and a “La Niña Watch” is still in effect. Even with the rate of cooling of the SST being slower than anticipated, the below-average subsurface temperatures and low-level easterly wind anomalies reinforce La Niña development in the coming months. It is expected that in the next several months ENSO neutral conditions will continue, but La Niña is favored to make its appearance during September-November (66% chance) and persist through November-January (74% chance) Northern Hemisphere winter 2024-2025. According to ENSO models, by the September-November period, there’s a 33% chance of neutral conditions and only 1% chance of El Niño.

The CPC September temperature outlook (Figure 8) has equal odds of above-normal, near-normal, or below-normal temperatures for the western half of WA. The odds of above-normal temperatures are higher in the eastern part of the state, ranging between 33% and 50% on the three-tiered scale. For precipitation, there are higher chances of above-normal precipitation in western Washington which ranges between 40 and 50% near the coast, and for the rest of western WA it ranges between 33 and 40%. There are equal chances of below, equal to, or above normal September precipitation for eastern Washington.

The three-month fall (September-October-November; SON) temperature outlook (Figure 9) is showing equal chances of above-normal, normal, and below-normal temperatures mostly statewide. There is a higher chance of above normal temperatures in south eastern WA (between 33

and 40%). The SON precipitation outlook indicates elevated chances of above normal precipitation in western WA region and equal chances near the eastern WA border. The odds are highest for western WA coast and Olympic region, with chances between 40 and 50% on the three-tiered scale.



Figure 8: September outlook for temperature (left) and precipitation (right).

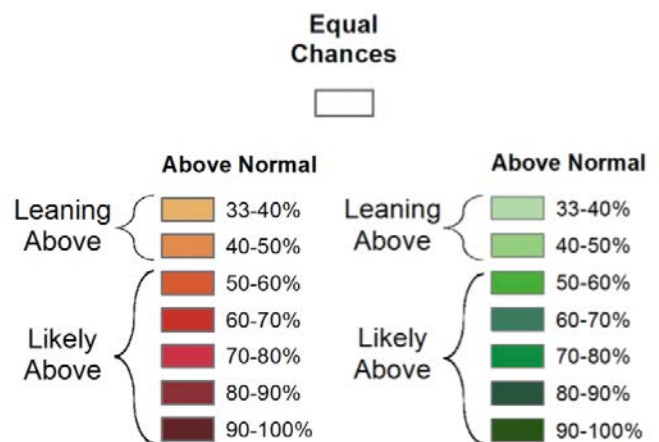


Figure 9: September-October-November outlook for temperature (left) and precipitation (right). (Climate Prediction Center)