Office of the Washington State Climatologist

June 2024 Report and Outlook

June 10, 2024

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

May Event Summary

Mean May temperatures were below normal across Washington State. Averaged statewide, May tied as the 54th coldest since 1895, with temperatures 1.5°F below the 1991-2020 normal. May precipitation varied depending on location, but drier than normal conditions were more widespread, particularly east of the Cascade Mountain crest. Averaged statewide, May precipitation was on the dry side, tying as the 68th driest in 130 years with 86% of normal precipitation.

Figure 1 shows the May daily maximum and minimum temperatures and total precipitation at SeaTac Airport. Aside from a period of above normal temperatures during the second week of May, temperatures were generally below normal for the whole month. Figure 2 shows this in a different way for Wenatchee; in this graph, daily

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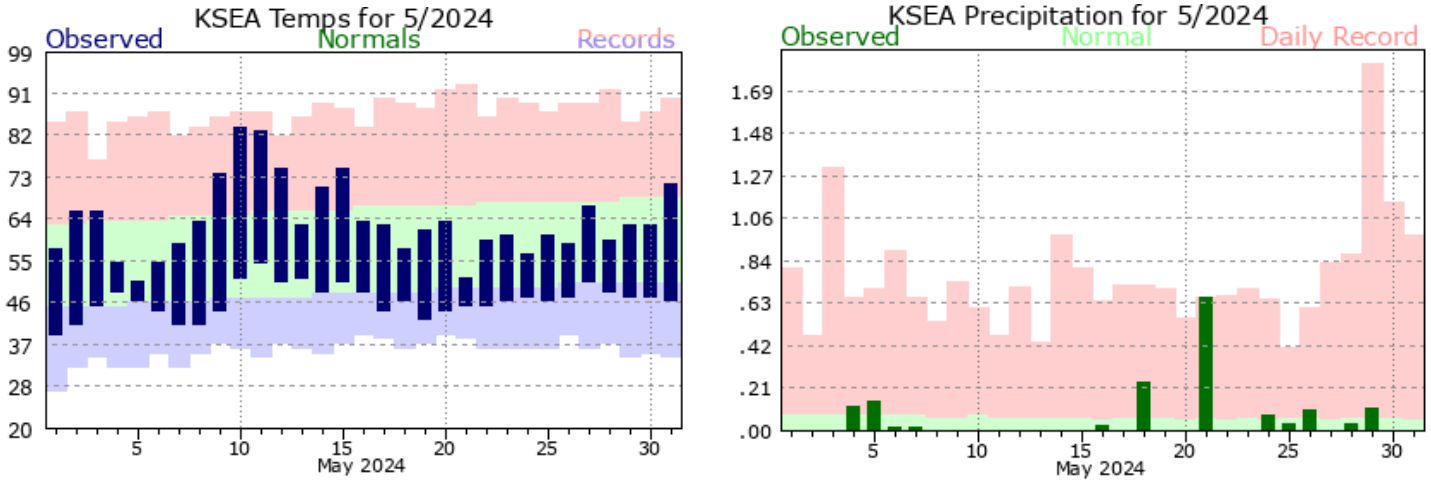


Figure 1: May 2024 daily temperatures (left) and precipitation (right) for SeaTac International Airport compared to the 1991-2020 normal (green envelope) and previous records (blue and red envelopes; NWS).

average temperatures are shown as a difference from normal and were only above normal May 9-16.

Precipitation was generally limited to only a handful of days throughout the month. The 5th was one of those days and both Walla Walla (1.34") and Pasco (0.54") measured record daily rainfalls. A strong ridge of high pressure for early May built into the region on the 8th, and was responsible for the brief period of above normal temperatures. Some daily maximum temperature records were set during this period: Vancouver (90°F) and Olympia Airport (88°F) set records on the 10th and Olympia again set a record on the 11th (88°F).

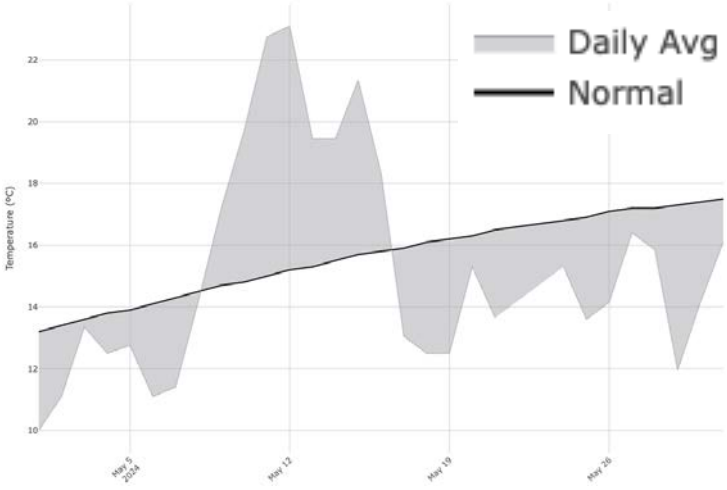


Figure 2: May 2024 daily average temperatures difference (°C) from the 1991-2020 normal for Wenatchee (CPC).

The glimpse of summer-like weather was short-lived, however, as a winter-like storm impacted the state on the 21st and 22nd. Figure 3 shows the 24-hour precipitation totals from CoCoRaHS volunteers on the morning of May 22. Calendar day precipitation records were set on the 21st for Quillayute (1.53"), Hoquiam (1.22"), Bellingham Airport (1.08"), and SeaTac Airport (0.66"). The Memorial Day holiday weekend was cool and drippy west of the Cascade Mountains and warming up east of the crest. For the whole state, Memorial Day (May 27) was pleasant and the closest day to seasonal norms of the weekend.

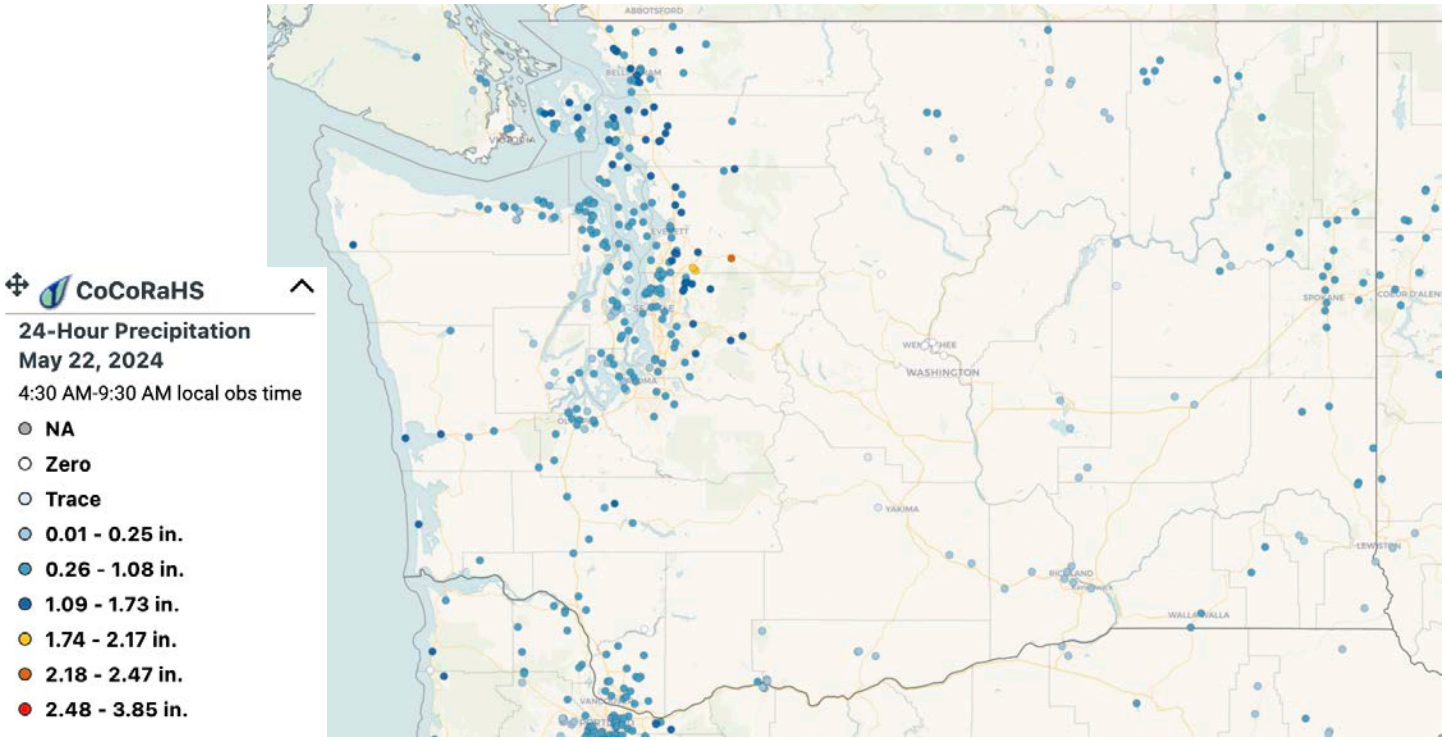


Figure 3: 24-hour precipitation totals (inches) ending on the morning of May 22, 2024 from CoCoRaHS volunteer observers.

Snowpack and Drought Summary

At this point in the season, most of our snowpack has melted out. Figure 4 shows the snow water equivalent (SWE) values at individual SNOTEL stations on June 1. Some of the higher elevation sites have SWE left; Paradise, for example, had 51.2" of water left in the snow on June 1. Aside from the high elevation sites, the west slopes of the northern Cascades and the west slopes of the southern Cascades have SWE remaining.

With much of the state's snowpack already gone, streamflows started to drop in the snowmelt-dominated rivers in May. Figure 5 shows the average May streamflow percentiles with many below the 24th percentile in eastern Washington. Low May streamflows in Pierce and southern King County are likely a response to the lack of May precipitation.

As written about in last month's newsletter, the drought emergency was extended in mid-April for a majority of Washington State. The cooler than normal temperatures the last two weeks of May have helped to delay some of the expected drought impacts, and streamflow is likely to drop further below normal in the coming weeks. The

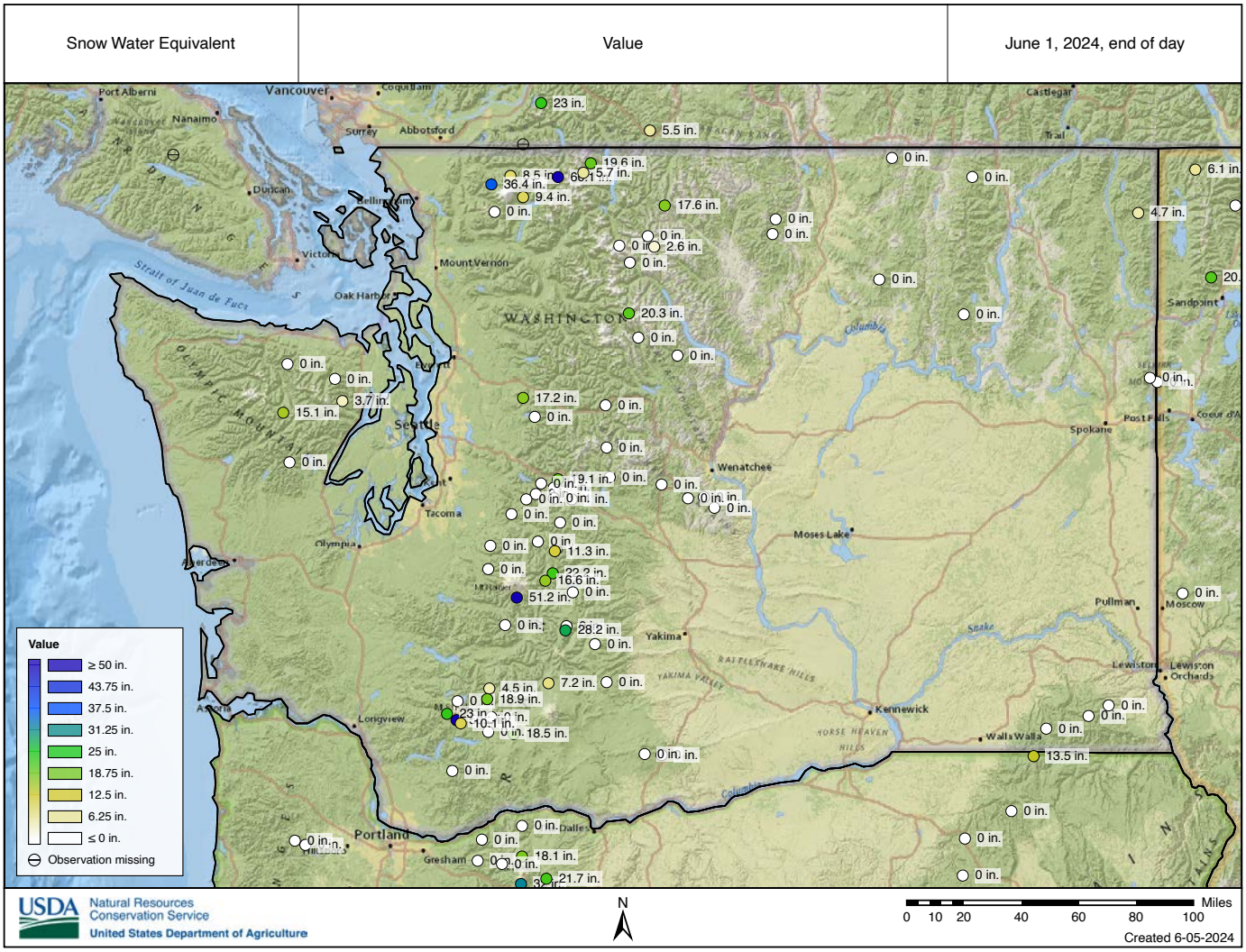


Figure 4: Snow water equivalent (inches) at individual SNOTEL sites on June 1, 2024 (NRCS).

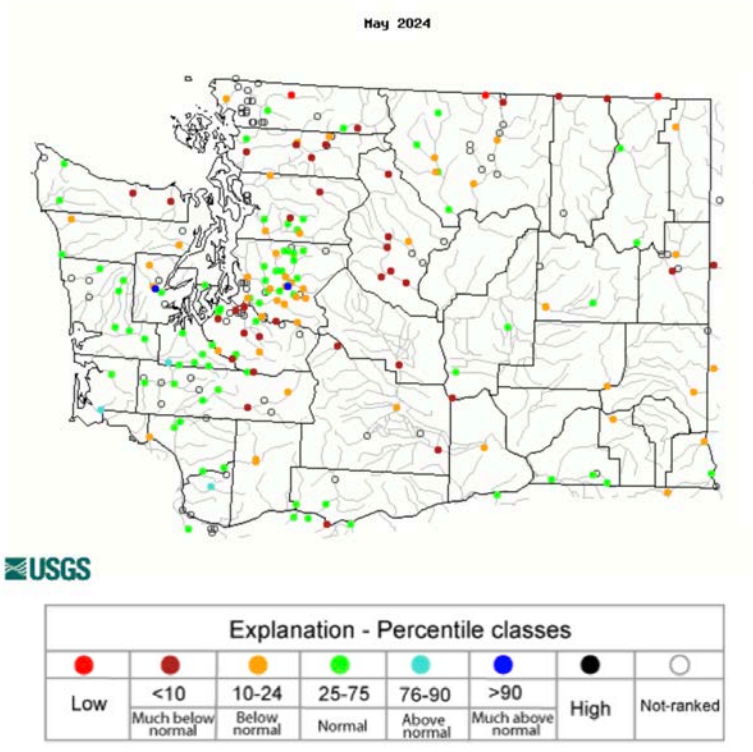


Figure 5: The average May streamflow percentiles (USGS).

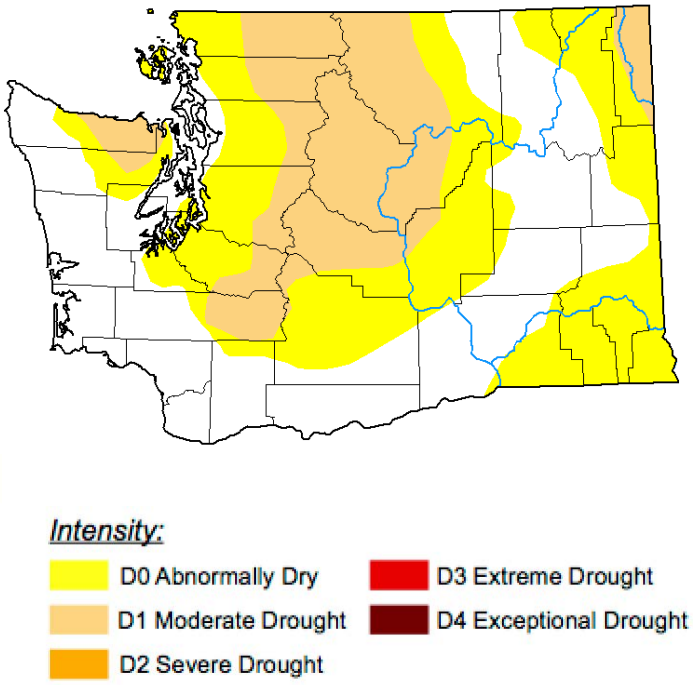


Figure 6: The June 6, 2024 edition of the U.S. Drought Monitor.

Bureau of Reclamation's June 6 forecast was for proratable water rights users in the Yakima basin to expect only 47% of their April-September water allotments. According to the Department of Ecology, they have already received 6 applications for drought emergency funding for specific projects.

The latest edition of the U.S. Drought Monitor (Figure 6) is taking the early June precipitation into account. As a result there have been some improvements with removal of "abnormally dry" along the Washington coast and in southwestern Washington, where precipitation totals were highest with an associated increase in soil moisture. Compared to the Drought Monitor shown in our May newsletter, there was expansion of "abnormally dry" (D0) and "moderate drought" (D1) in central Washington to reflect the lack of spring precipitation.

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 for the U.S. Drought Monitor maps.

OWSC Welcomes Dr. Guillaume Mauger as State Climatologist

Climate Matters Series

Dr. Guillaume Mauger has been named the next Washington State Climatologist. Mauger's appointment began in mid-May.

Mauger succeeds Dr. Nick Bond, who retired from the role in February after nearly 14 years. Karin Bumbaco, deputy state climatologist, served as interim state climatologist from February to May. Bond will stay involved in the Office as Emeritus State Climatologist.

Previously a research scientist at the Climate Impacts Group, Mauger has 15 years of experience working in climate change impacts and adaptation in the Pacific Northwest with a focus on flooding and water availability.

"Mauger's deep knowledge of climate impacts in the Northwest and long history working with decision makers, resource managers and community members makes him an excellent choice for the next State Climatologist," Jason Vogel, interim director of the Climate Impacts Group, says. "We are thrilled he will be stepping into this role and leading the Office to provide even greater support to the citizens and communities of Washington state."

Specializing in Climate Science, Mauger has worked on projects that assess hydrologic changes across a variety of Northwest watersheds, worked to apply climate information in water supply planning and collaborated with floodplain managers to integrate climate change into their work. In addition to his research, he serves as a resource to people who are interested in obtaining and understanding the numerous climate and hydrologic datasets that are now available.

"I am excited to get to work," Mauger says. "Washington State is ahead of the game on climate, and I see a lot of potential for building on that good work."

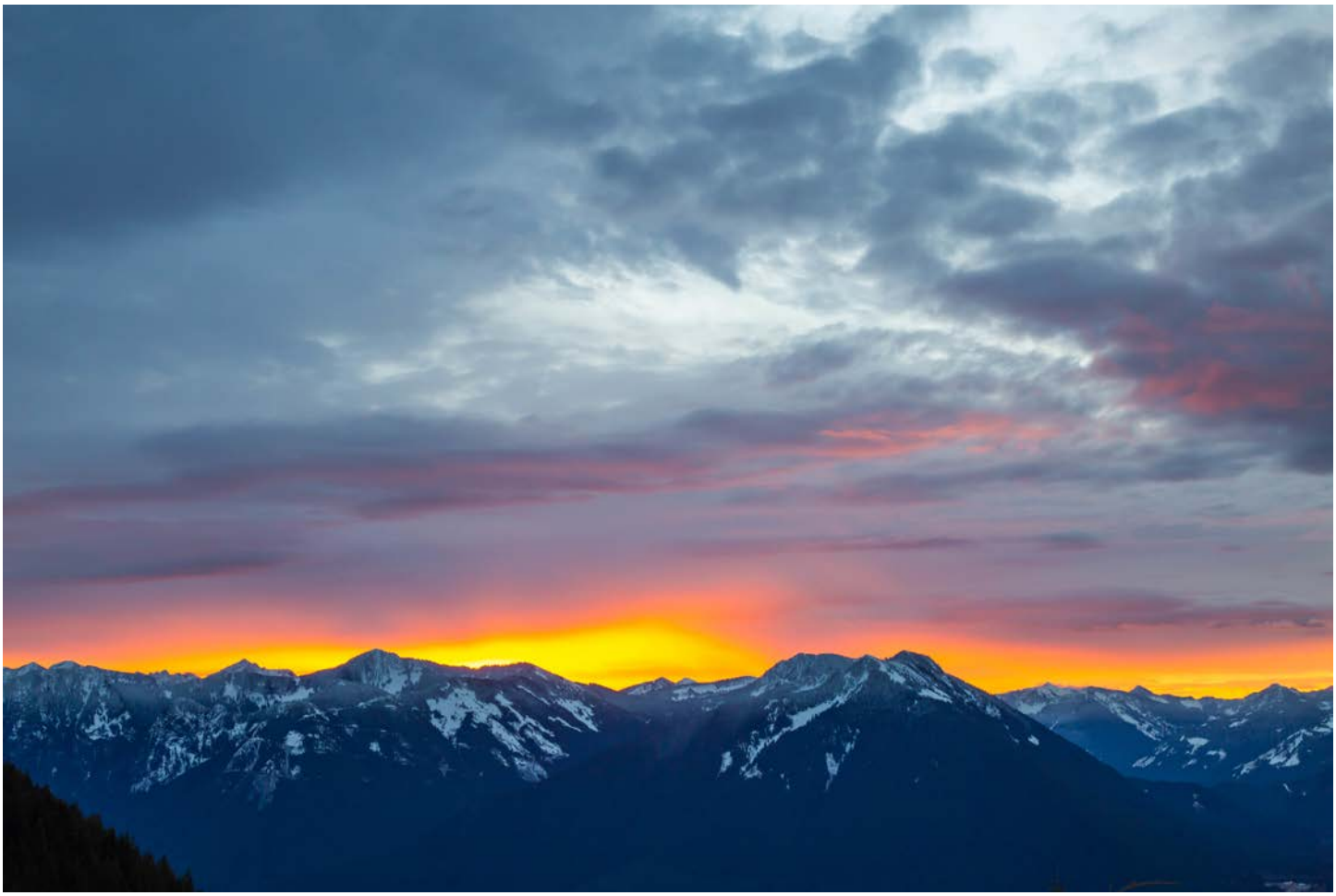
Bringing his wealth of experience in co-produced and applied climate research, Mauger will build on OWSC's valued role as an expert in climate science, as a source of digestible climate information and as a collaborator on climate-related initiatives. One of several near-term initiatives is to reprioritize community engagement for the Office to effectively reach new audiences.

"We are excited to think critically about how we engage across the state," says Karin Bumbaco, deputy state climatologist, who will work closely with Mauger in his new role. "For example, we are exploring ways to train students in climate communication, and are developing a new "Climate Matters" database as a resource for learning about local climate phenomena."

A near-term priority is to ensure the sustainability of the Office, so it can continue to support Washington State with reputable climate data and

interpretation, capacity building and applied climate research.

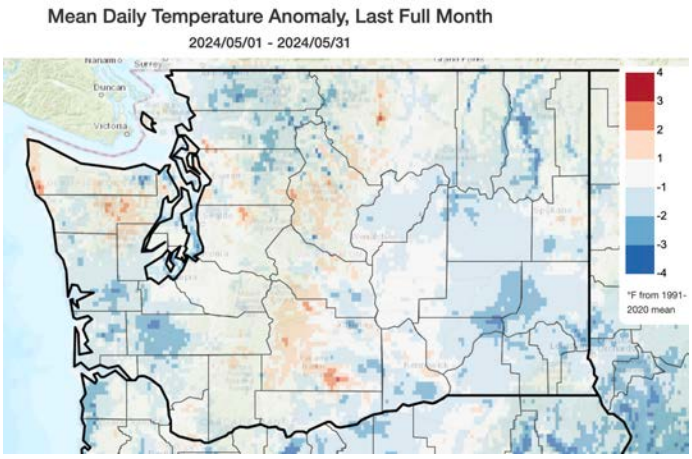
The Office of the Washington State Climatologist will remain a program of the Climate Impacts Group, and the organizations will continue to collaborate on projects and initiatives. Mauger will remain a member of the leadership team for the Climate Impacts Group.



Sunrise over Mt. Si.

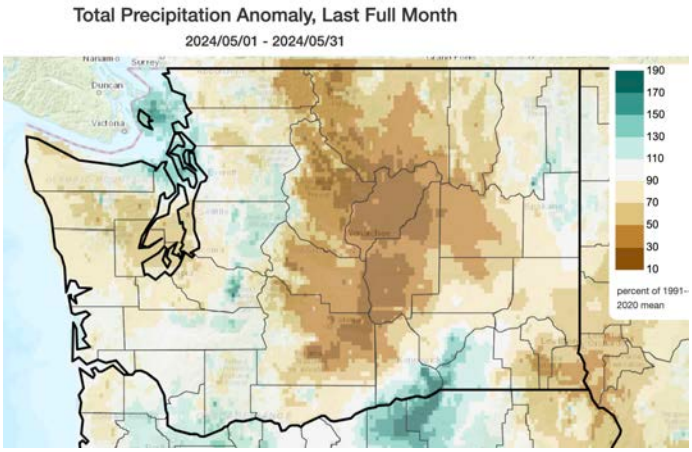
Climate Summary

May average temperature anomalies were below normal for a majority of Washington State. The map to the right shows that most of the cool anomalies were between 1 and 2°F below normal. However, there were a few exceptions: Bellingham and Pullman, for example, were 2.2°F and 2.6°F below normal, respectively (Table 1). There were just a few locations with May average temperatures above normal, and they were limited to the east slopes of the Cascades and Olympics. The Quillayute warm anomaly in Table 1 continues to be viewed with suspicion, as the station has appeared warmer than surrounding stations since November 2023.



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

Similar to April, May precipitation was below normal for a majority of the state. The east slopes of the Cascades into eastern Washington were the driest relative to normal, receiving less than 50% of normal May precipitation. Ephrata, Hanford, and Omak totaled only 19, 21, and 46% of normal precipitation, respectively (Table 1). Compared to the 1979-2015 historical record, the May lack of precipitation in parts of those areas ranks below the 10th percentile. In western Washington, the southern Puget Sound region was the driest relative to normal, with Olympia receiving just 61% of normal May precipitation. Precipitation was near-normal to above normal for most of the rest of western Washington. Hoquiam and Bellingham were wetter spots with 114 and 145% of normal precipitation, respectively (Table 1).



May total precipitation percent of the 1991-2020 normal (Climate Toolbox).

Of the stations listed in Table 1, only Spokane AP reported a trace of snowfall.

Station	Mean Temperature (°F)			Precipitation (inches)		
	Average	Normal	Departure from Normal	Total	Normal	Percent of Normal
Western Washington						
Olympia	53.7	54.5	-0.8	1.38	2.26	61
Seattle WFO	55.8	56.8	-1.0	2.95	2.16	137
SeaTac AP	55.6	57.5	-1.9	1.54	1.88	82
Quillayute	55.3*	51.7	3.6*	5.22	4.25	123
Hoquiam	52.6	53.4	-0.8	3.42	2.99	114
Bellingham AP	53.3	55.5	-2.2	3.24	2.23	145
Vancouver AP	57.6	58.3	-0.7	2.41	2.51	96
Eastern Washington						
Spokane AP	56.9	56.0	0.9	0.83	1.55	54
Wenatchee	59.0	60.1	-1.1	0.42	0.77	55
Omak	57.5	58.8	-1.3	0.55	1.19	46
Pullman AP	51.9	54.5	-2.6	1.13	1.41	80
Ephrata	59.1	60.4	-1.3	0.14	0.75	19
Pasco AP	60.8	61.4	-0.6	0.82	0.71	115
Hanford	61.8	62.9	-1.1	0.13	0.61	21

Table 1: May 2024 climate summaries for locations around Washington with a climate normal baseline of 1991-2020. *Quillayute appears to be artificially warmer than surrounding stations and should be viewed with caution. The National Weather Service has replaced the temperature sensor as of early June.

Climate Outlook

According to the Climate Prediction Center (CPC), El Niño remains in the equatorial Pacific Ocean but is transitioning to neutral conditions. Sea-surface temperature anomalies are now negative throughout the central and eastern equatorial Pacific Ocean. The shift to ENSO-neutral conditions is imminent; ENSO models are indicating an 87% chance of neutral conditions by the May-June-July period. It is likely that La Niña develops during the upcoming summer. By October-December, the chances of La Niña are 85%, and the CPC has issued a "La Niña Watch". The transition to La Niña is not expected to play a large role in our summer weather in Washington.

The CPC June outlook (Figure 7) has higher odds of above normal temperatures statewide. The early June atmospheric rivers have helped tilt the odds toward above normal June precipitation for western Washington. There are equal chances of below, near-normal, or above normal June precipitation for eastern Washington. In other words, there is a 33.3% chance of either of the three outcomes occurring.

The summer (June-July-August; JJA) temperature outlook (Figure 8) has higher odds of above normal temperatures statewide. The odds are highest (between 50 and 60%) in eastern Washington. Summer precipitation is more likely to be below normal statewide. The odds are between 40 and 50% on the three-tiered scale for a majority of the state.

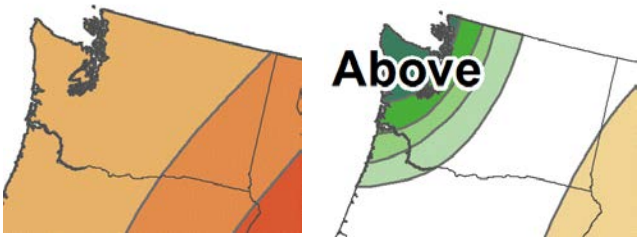


Figure 7: June outlook for temperature (left) and precipitation (right).

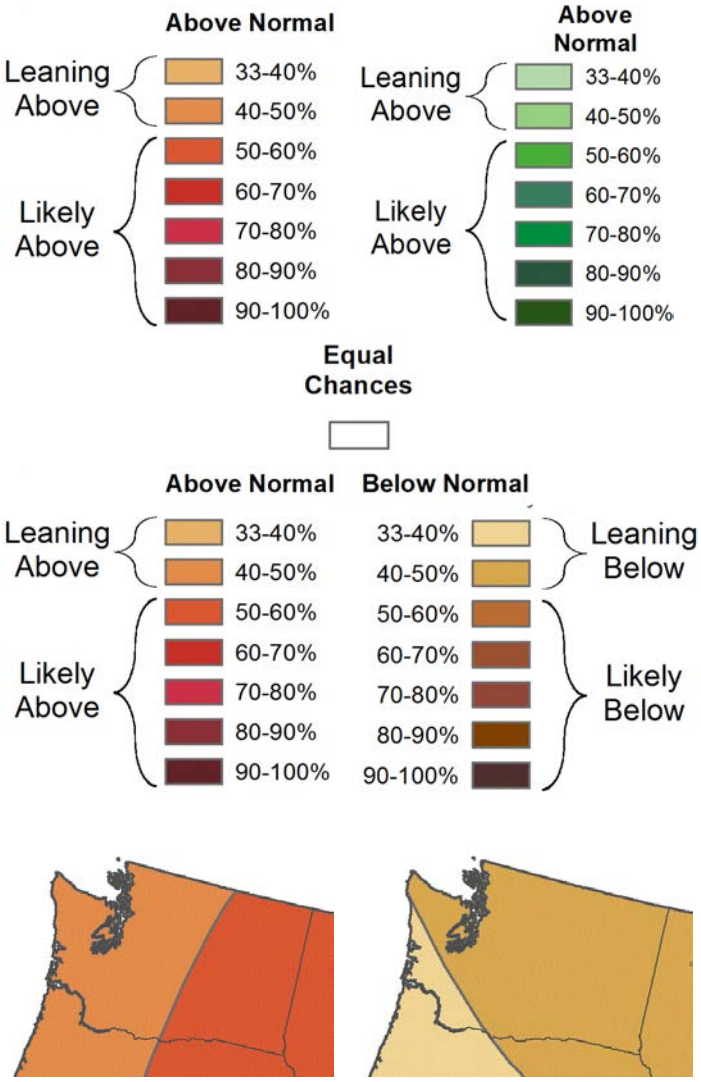


Figure 8: June-July-August outlook for temperature (left) and precipitation (right) (Climate Prediction Center).