

The Month In Review

August 2021

National Weather Service
Pendleton, Oregon

Photo: Dry parched landscape with blowing dust due to prolonged hot and dry conditions.

August 2021, Climate Summary

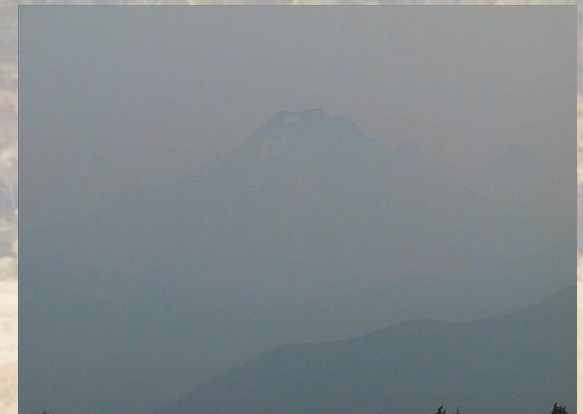
August began hot and dry as a continuation from July through mid month, and then conditions became cooler as Pacific troughs and marine pushes began to cause cooler periods of weather. However, precipitation was still lacking at all locations. The main conditions of concern were large swaths of smoke, both at the surface and aloft, from regional wildfires. This reduced visibility across the Pacific Northwest, which caused obscurations of mountains and otherwise scenic views at most scenic view points. Precipitation was again below normal for every station sampled during the month. Four locations received only a trace of rainfall, with most stations receiving several hundredths to several tenths of an inch. The greatest amount was 0.51 inch at Meacham, OR and 0.44 inch at La Grande, OR. The lowest were at Redmond, The Dalles, and Hermiston, OR and at Ellensburg, WA. There was a 3 day period of thunderstorms from the 2nd to the 5th of the month, which produced mostly hail, with the largest reported hail size of 1.5 inches. All record weather reports were high temperature records, but there were only 7 record highs during the month. Below are some images that were typical for the month.



Thunderstorm clouds in the distance, poking up through the haze and smoke.



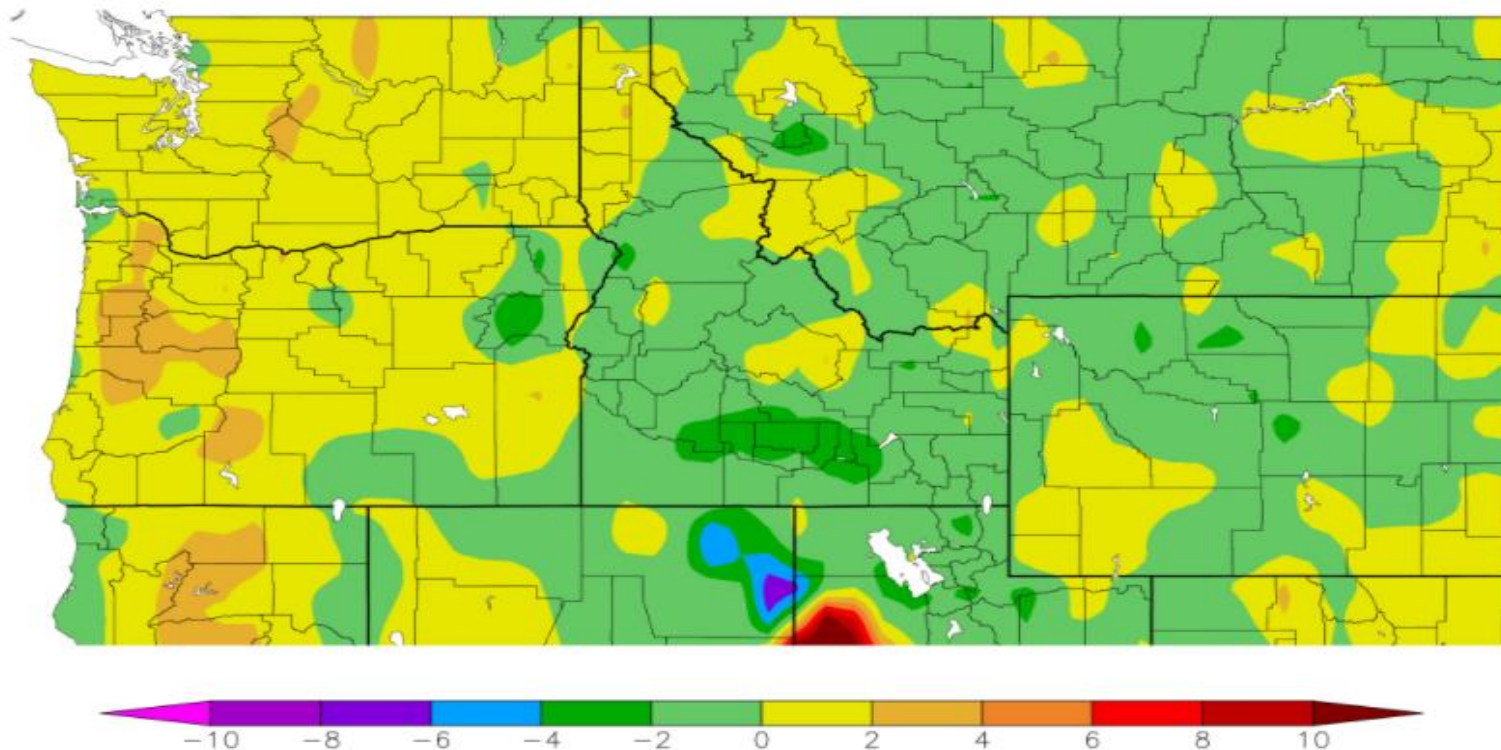
Weak thunderstorm with very little rainfall over Pendleton, OR.



Dense smoke from wildfires obscuring Mt. Bachelor in central Oregon.

August 2021, Departure from Normal of Average Temperatures

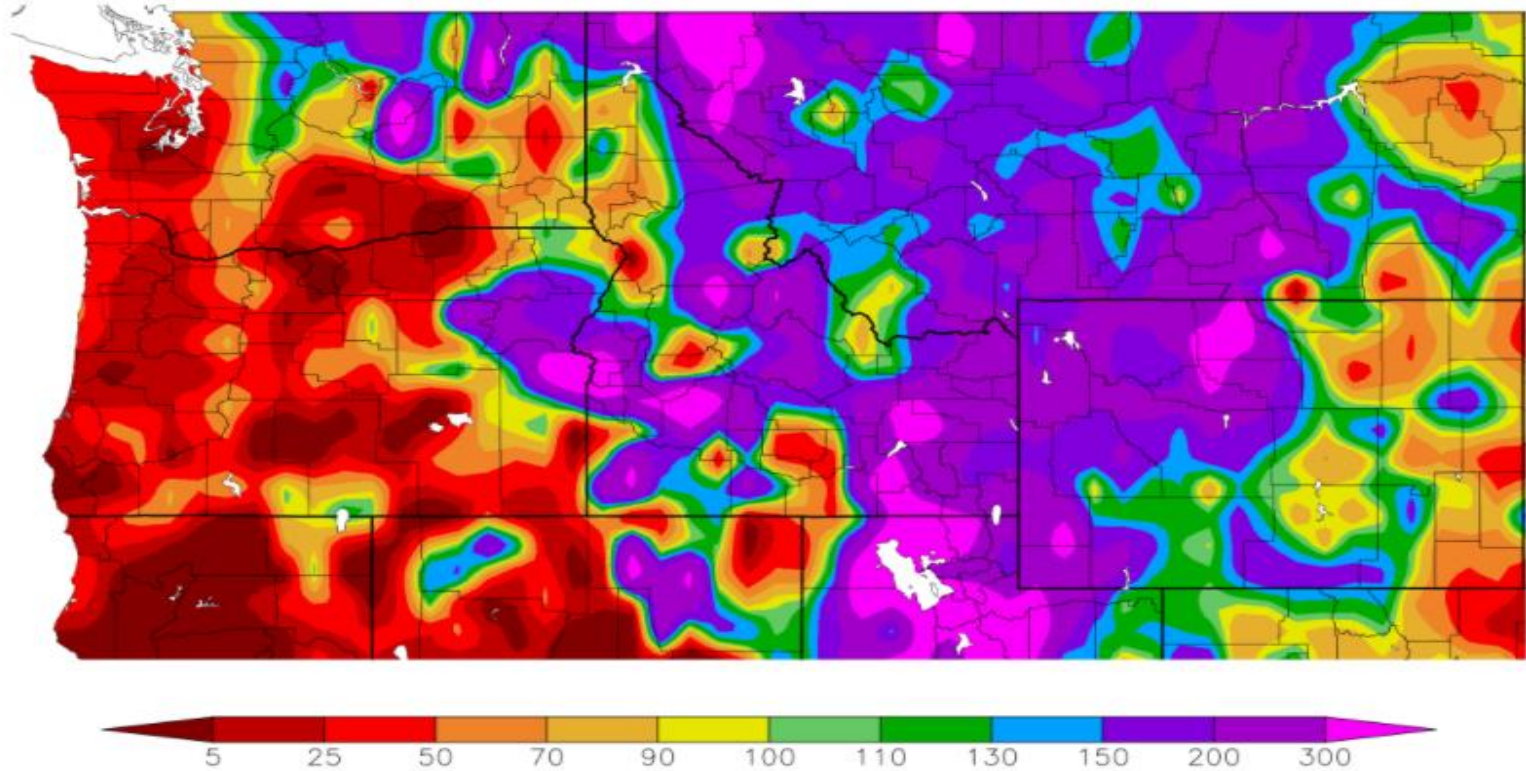
Departure from Normal Temperature (F)
8/1/2021 – 8/31/2021



Most of the forecast area (central-northeast Oregon and south central-southeast Washington) had slightly above normal temperatures on average. The exception was over the Willowa Mountains and the Grande Ronde Valley where there was also the greatest rainfall from thunderstorms, which resulted in more clouds and cooler temperatures.

August 2021, Percent of Normal of Precipitation

Percent of Normal Precipitation (%)
8/1/2021 – 8/31/2021



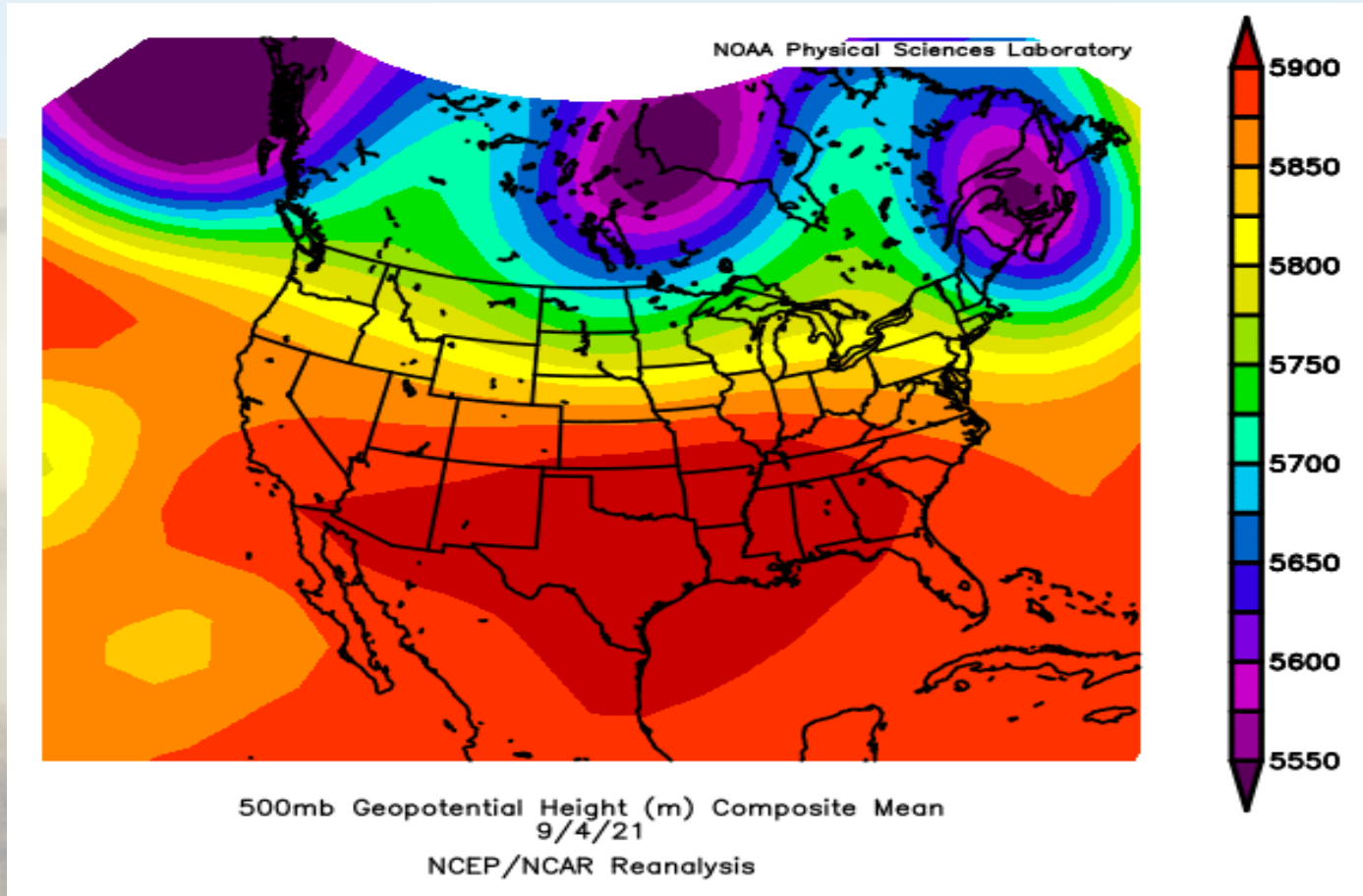
August was another very dry month over most of the forecast area, with mostly 0 to 50 percent of normal rainfall. The exceptions were in the same areas that were cooler than normal (The Wallowa Mountains and the Grande Ronde Valley). The extreme drought conditions continued with numerous wildfires in the Cascades and the valleys/Lower Columbia Basin to the east of the Cascades.

August 2021, Departures from Normal Means/Sums for Select Cities

	Max T	Max T D	Min T	Min T D	Ave T	Ave T D	PCPN	PCPN D
Yakima	88.4	1.6	55.8	4	72.1	2.8	0.03	-0.23
Kennewick	90.2	0.9	63.2	2.4	76.7	1.7	Trace	-0.18
Walla Walla	86.7	-1.4	62.1	1.7	74.4	0.2	0.27	-0.30
The Dalles	90.0	2.7	63.9	4.4	77.0	3.6	Trace	-0.23
Redmond	87.5	2.7	48.5	3.3	68.0	3.0	Trace	-0.50
Pendleton Airport	87.5	0.7	58.7	1.9	73.1	1.3	0.01	-0.37
La Grande Airport	85.4	-0.3	50.7	-1.6	68.0	-1.0	0.44	-0.41
John Day	89.9	1.7	55.9	7.6	72.9	4.7	0.22	-0.42

The table above shows that most stations in the list had above normal mean maximum, mean minimum, and mean average temperatures. The departure from normal of precipitation were all below normal for every station in this list, with the greatest being at Redmond, OR, and the least below normal at Kennewick, WA. The stations which had below normal temperatures on average were at La Grande, OR and at Walla Walla, WA. These stations also had the greatest amount of rainfall during the month. Average max temperatures were mostly in the 80s, except 90.0 and 90.2 at The Dalles, OR and Kennewick, WA respectively.

August 2021, Average 500 MB Pattern

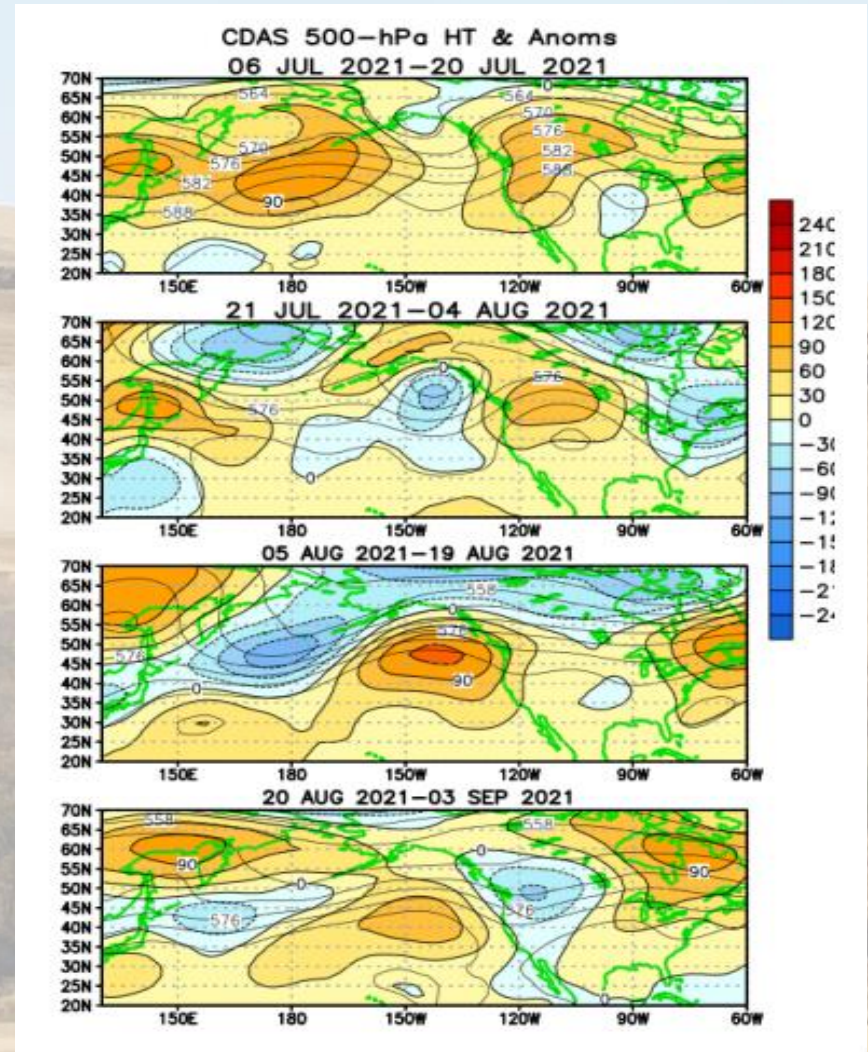


The average 500 MB pattern for August turned out to be a zonal westerly flow over OR and WA. This was likely due to a canceling out effect of mostly upper ridges during the first half of the month, and mostly Pacific troughs during the latter half of the month. This was likely the reason that August was only a little warmer than average compared to June and July, which were much warmer than normal. This westerly zonal flow pattern was the case for most of the country. It's interesting to note the three deep upper lows across Canada.

Two Month, Bi-weekly 500 MB Plots for July and August 2021

These are more detailed semi-monthly average 500 mb pattern plots, which was from the following period: 6th July 2021 through 3rd Sep 2021.

The land boundaries are shown in green. Yellow and orange colors represent areas of high pressure or ridges at 500 mb and the cooler shades of blue color show areas of low pressure or troughs at 500 mb.



The top two maps from July showed mostly either an upper ridge pattern or a southwest flow aloft. The first part of August in the third map image shows an upper ridge off the coast with a zonal to slightly northwest flow over the Pacific Northwest. In the last image, for the latter half of August, the western US was dominated by an overall upper trough pattern, which resulted in cooler conditions.

Significant Weather Events for August 2021

Significant Weather Events				
Event	Date	Report	Where	Source
Hail	August 2, 2021	E 1.00 inch	8 SE Bend, OR	Public
Hail	August 2, 2021	M 1.00 inch	11 S Powell Butte, OR	Trained Spotter
Hail	August 2, 2021	M 1.00 inch	8 SE Bend, OR	Public
Hail	August 3, 2021	E 1.50 inch	1 E La Grande, OR	Public
Hail	August 5, 2021	E 0.50 inch	8 SE Pilot Rock, OR	Trained Spotter
TSTM Wind Dmg	August 5, 2021	100 ft tree snapped in half	10 SE Ukiah, OR	Public
Hail	August 5, 2021	E 0.50 inch	19 E Ukiah, OR	Amateur Radio
Hail	August 5, 2021	E 0.25 inch	Redmond, OR	Public
Non-TSTM Wind Gust	August 30, 2021	M 37 mph	6 NNW Ellensburg, WA	Trained Spotter

The main weather events of significance were thunderstorms that produced large hail at the beginning of the month from the 2nd to the 5th. One of these was a report of wind damage from a thunderstorm rather than hail. At the end of the month, a wind event produced a report of a non-thunderstorm wind gust of 37 mph, which doesn't meet any severe criteria.

Record Weather Event Reports for August 2021

Record Weather Reports					
Event	Date	Where	Previous Record	New Record	Records Began
High Temp	August 3, 2021	Pendleton, OR	104 / 1961	105	1934
High Temp	August 11, 2021	Redmond, OR	101 / 1981	102	1941
High Temp	August 11, 2021	Pasco, WA	106 / 1998	106 (tie)	1942
High Temp	August 12, 2021	Redmond, OR	100 / 1977	101	1941
High Temp	August 15, 2021	Pasco, WA	103 / 1992	104	1942
High Temp	August 15, 2021	Redmond, OR	103 / 2020	103 (tie)	1941
High Temp	August 15, 2021	Yakima, WA	101 / 2008	103	1909

There were 7 record weather events during the month, which were all record high temperatures. Two of these were ties of previous records, at Pasco, WA and at Redmond, OR. All of the records were above 100 degrees, with the highest being 105 at Pendleton, OR, and a tie of 106 at Pasco, WA.

August 2021, Observed Monthly Max & Min Temperatures

Location	Highest Maximum	Lowest Minimum
Pendleton, OR	105	42
Redmond, OR	103	34
Pasco, WA	107	43
Yakima, WA	103	43
Walla Walla, WA	104	48
Bend, OR	98	37
Ellensburg, WA	104	41
Hermiston, OR	106	43
John Day, OR	105	40
La Grande, OR	101	35
The Dalles, OR	110	48
Meacham, OR	96	27
MT Adams RS, WA	99	36

Every station in the list, except for Bend and Meacham, OR, and the Mt Adams Ranger Station, WA (of which had maximum temperatures below 100 degrees) were above 100 degrees. These highest readings were not unusual for August. However at least one of these was a record high (Pendleton, OR). The lowest minimum temperatures were typical of August, usually during the latter half when conditions begin to cool down with the coming of fall.

August 2021, Observed Total Precipitation and Total Snowfall/Hail

Location	Total Precipitation (inches)	Total Snow/Hail (inches)
Pendleton, OR	0.01	0.0
Redmond, OR	Trace	M
Pasco, WA	0.01	M
Yakima, WA	0.03	M
Walla Walla, WA	0.27	M
Bend, OR	0.31	0.0
Ellensburg, WA	Trace	M
Hermiston, OR	Trace	M
John Day, OR	0.22	M
La Grande, OR	0.44	M
The Dalles, OR	Trace	M
Meacham, OR	0.51	M
MT Adams RS, WA	0.03	0.0

For the sixth month in a row, precipitation amounts were low, some significantly low. Most of these were below normal for the month. The lowest precipitation amounts were a trace at 4 stations, while the rest were either a few hundredths of an inch up to several tenths of an inch. Meacham and La Grande, OR had the greatest precipitation amounts, mainly due to thunderstorms at the beginning of the month. All snow/hail reports were 0.0 or missing.

August 2021 - Drought Monitor

U.S. Drought Monitor West

August 31, 2021

(Released Thursday, Sep. 2, 2021)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	1.67	98.33	94.97	83.13	60.51	22.81
Last Week <i>08-24-2021</i>	1.69	98.31	94.95	83.70	60.68	23.51
3 Months Ago <i>06-01-2021</i>	3.99	96.01	87.24	71.98	52.79	26.18
Start of Calendar Year <i>12-29-2020</i>	13.52	86.48	75.49	63.25	45.40	23.76
Start of Water Year <i>09-29-2020</i>	9.96	90.04	73.14	51.29	32.19	2.50
One Year Ago <i>09-01-2020</i>	17.13	82.87	63.68	45.90	16.85	0.00

Intensity:

 None	 D2 Severe Drought
 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought

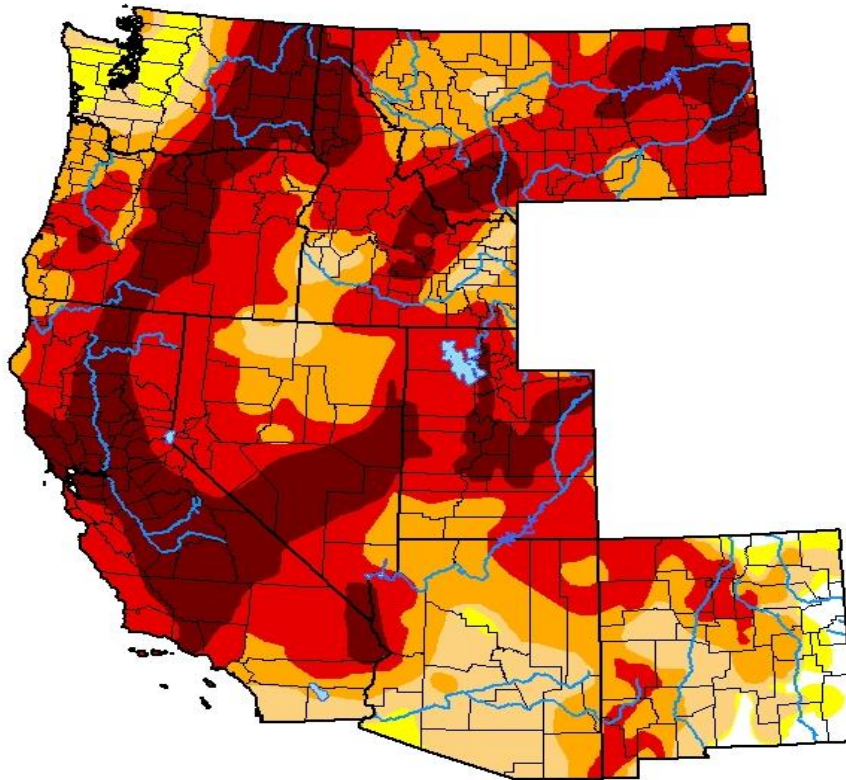
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:

David Simeral
Western Regional Climate Center

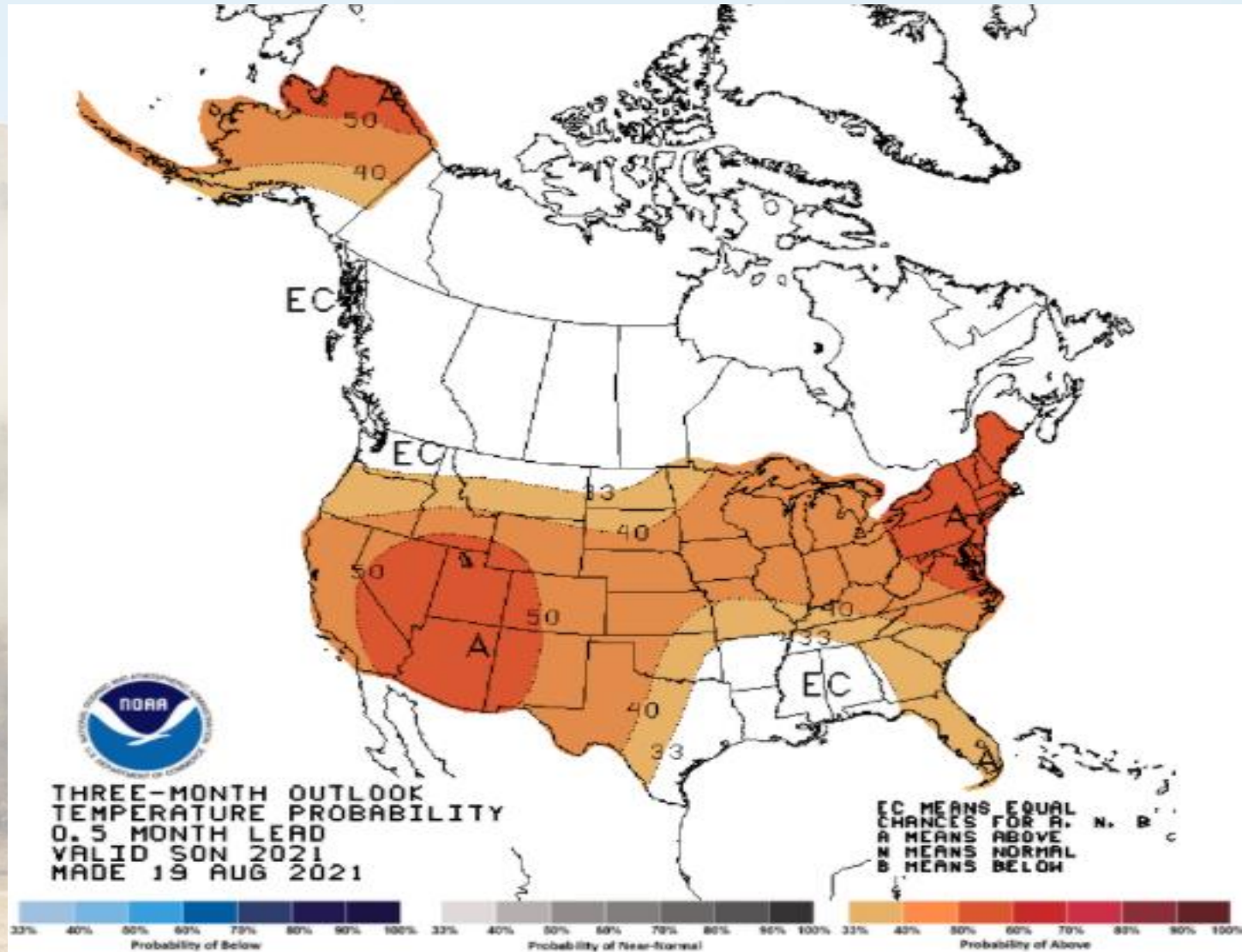


droughtmonitor.unl.edu



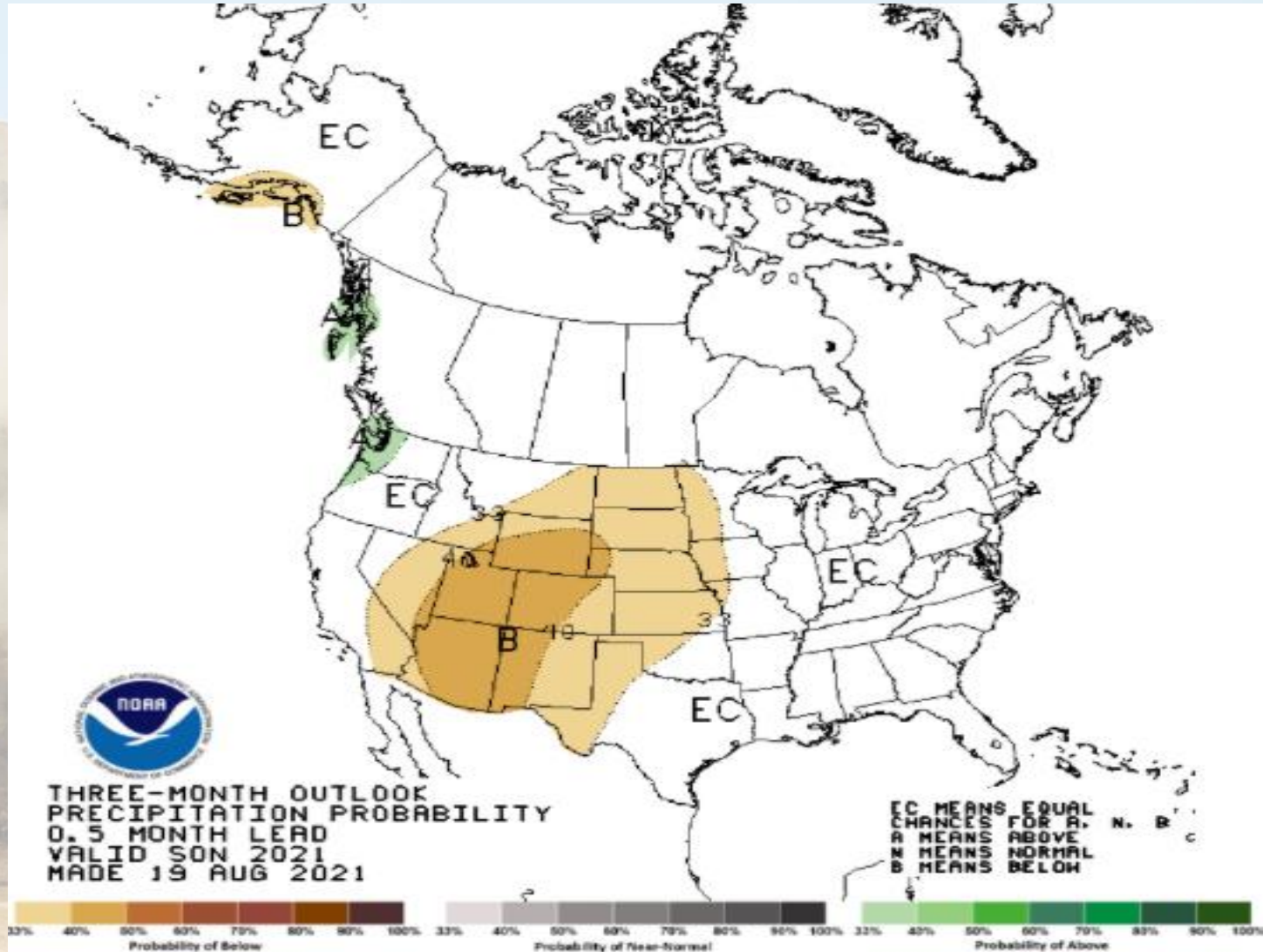
As of August 31st, an exceptional drought existed over the eastern half of WA and all of central and north central OR, mainly just east of the Cascades. These areas had a drought classification of “D4” or “Exceptional Drought” ...the highest level of drought on the scale. The rest of NE OR and SE WA had mostly “Extreme Drought” or “D3” conditions. The least drought conditions were over the central WA Cascades, of the forecast area. These drought conditions have been ongoing since early Spring.

USA Three Month Temperature Outlook



The temperature outlook for the next 3 months (September - November) is for a greater chance near to above normal temperatures.

USA Three Month Precipitation Outlook

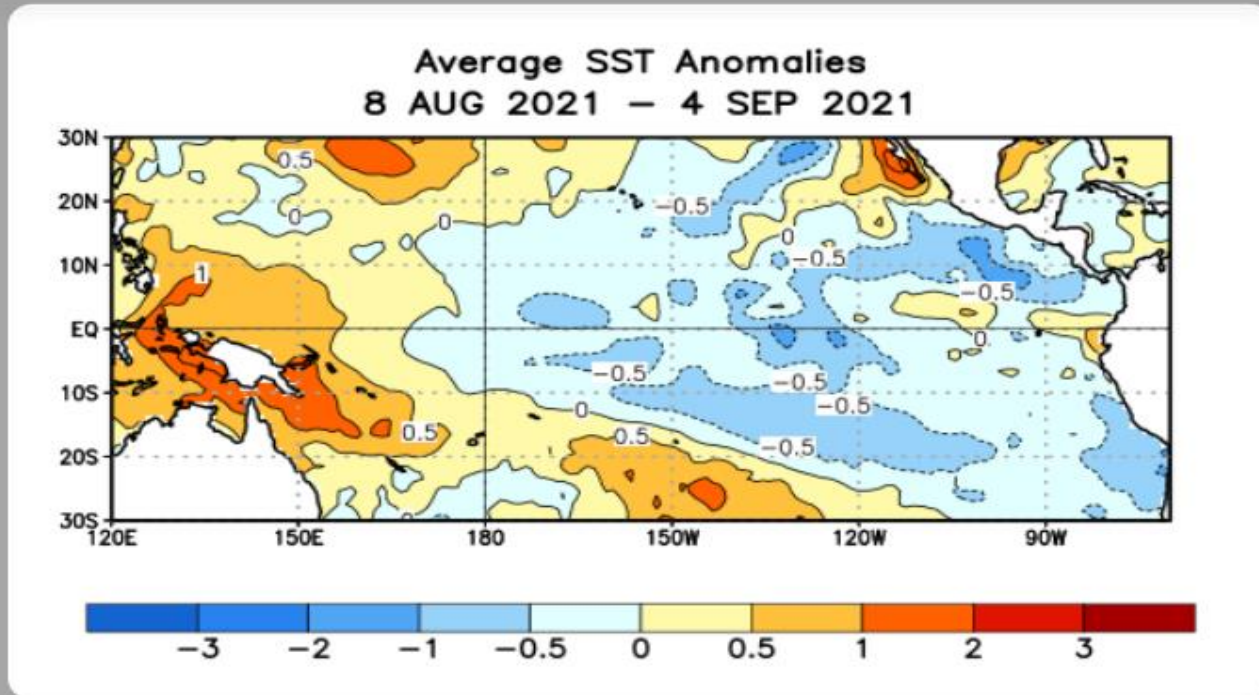


The forecast area is expected to have mainly an equal chance of above or below normal precipitation for the next three months (September - November).

Sea Surface Temperature (SST) Anomalies for August 2021

SST Departures ($^{\circ}\text{C}$) in the Tropical Pacific During the Last Four Weeks

In the last four weeks, equatorial SSTs were near-to-below average across most of the equatorial Pacific Ocean, and were above-average in the western Pacific Ocean.



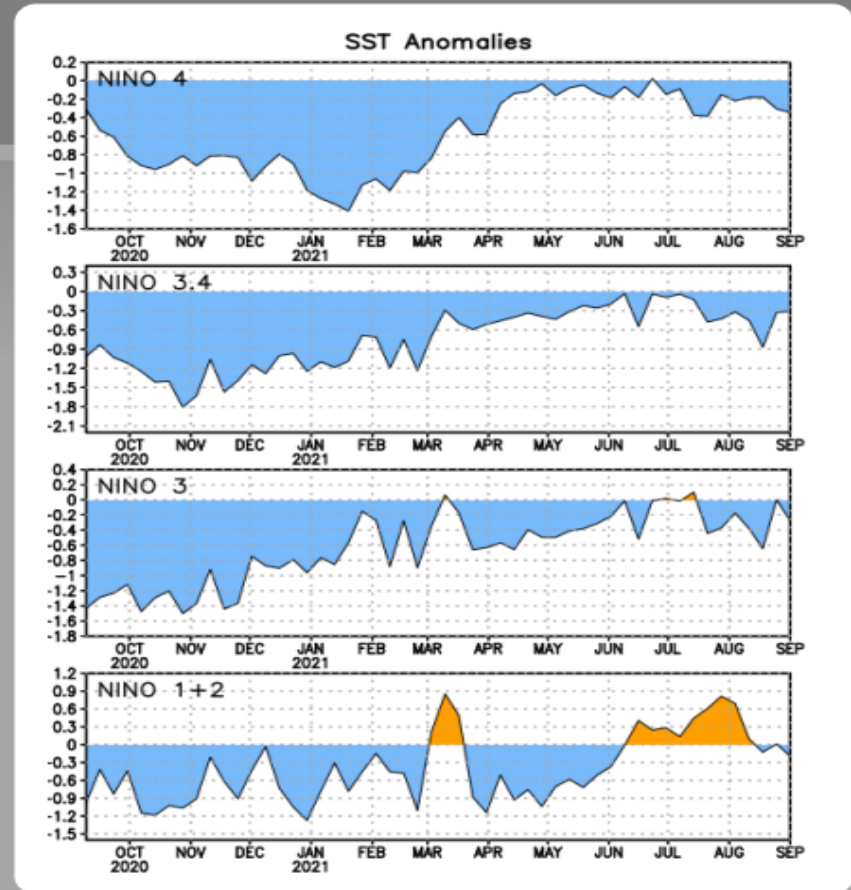
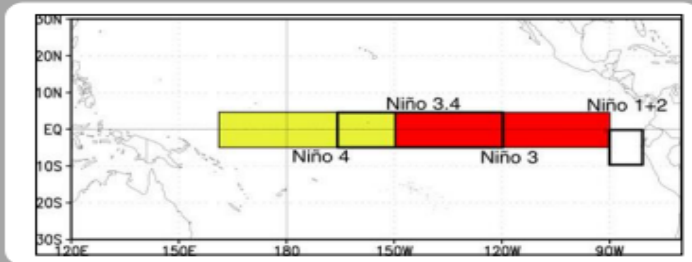
SSTs were near to below average from 8th August through 4th September over most of the eastern tropical Pacific. Like last month, there were a few areas of warmer than average SST anomalies along, or near the central and south American coasts. The SST's have not changed much since last month.

ENSO NINO Regions SST Anomalies for Each Nino Region

Niño Region SST Departures (°C) Recent Evolution

The latest weekly SST departures are:

Niño 4	-0.3°C
Niño 3.4	-0.3°C
Niño 3	-0.3°C
Niño 1+2	-0.2°C



Niño Regions 4, 3.4, and 3 are showing cooling SST's again during the past two months. Niño region "NINO 1 + 2" (far eastern tropical Pacific) had SST's above normal for most of August, like July did. The cooling of the first 3 NINO regions are consistent with the possibility of another La Nina event this coming late fall into winter.

Current ENSO (El Nino Southern Oscillation) Alert System Status

Summary

ENSO Alert System Status: **La Niña Watch**

ENSO-neutral conditions are present.*

Equatorial sea surface temperatures (SSTs) are near-to-below average across most of the Pacific Ocean.

ENSO-neutral is favored for the remainder of summer (~60% chance in the July-September season), with La Niña possibly emerging during the August-October season and lasting through the 2021-22 winter (~70% chance during November-January).*

The current ENSO Alert System Status is again: **“La Nina Watch”**. ENSO conditions are currently ENSO-neutral, and are favored to remain ENSO-neutral through September (a 60% chance). However, there is now a 70% chance that another La Nina will emerge again by October, and continue through the 2021-2022 winter season months of at least November through January.



Thank You!