

The Month In Review

August 2022

**National Weather Service
Pendleton, Oregon**

Photo: Rotating base of a thunderstorm

August 2022, Climate Conditions Summary

The heat wave of late July continued into August, though not as hot during the month as in late July, but with high temperatures in the lower elevations still in the 90s to mid 100s. For example, at the Pendleton Airport, there were only 5 days in which the official high temperature was below 90 degrees. There were a total of 26 days with high temperatures at 90 or above, and 5 days with a high of 100 degrees or higher. The month was also drier than normal for most of the forecast area, except for the Northwest Blue Mountains in southeast WA, and also along portions of the southern border of the forecast area in central OR. These wetter areas were mainly due to rainfall with thunderstorms. Strong to severe thunderstorms occurred on the 2nd, and from the period from the 9th through the 12th of the month. Some of these thunderstorms produced severe winds and severe hail of sizes up to 2.5 inches in diameter. However, most of the month was simply just plain hot and dry. Wildfire activity increased significantly during the month, especially toward the end of the month as the heat and dry conditions continued to create increasingly critical fire conditions. The abundant growth of fine vegetation during the wet spring cured and became critically dry by the end of the month at all elevations. Below are some images of some of the climatic weather conditions that occurred during the month.



Severe hail with thunderstorms in Wallowa County.



Years of drought have caused many trees to die over the NE Oregon mountains.



ACCAS clouds in the morning indicate an unstable atmosphere aloft, which is often a sign of afternoon thunderstorms to develop.

More Images Representing August 2022 Weather/Climate Conditions



Large hail damages a car, and accumulates.



Hot dry evening with some high thin clouds.



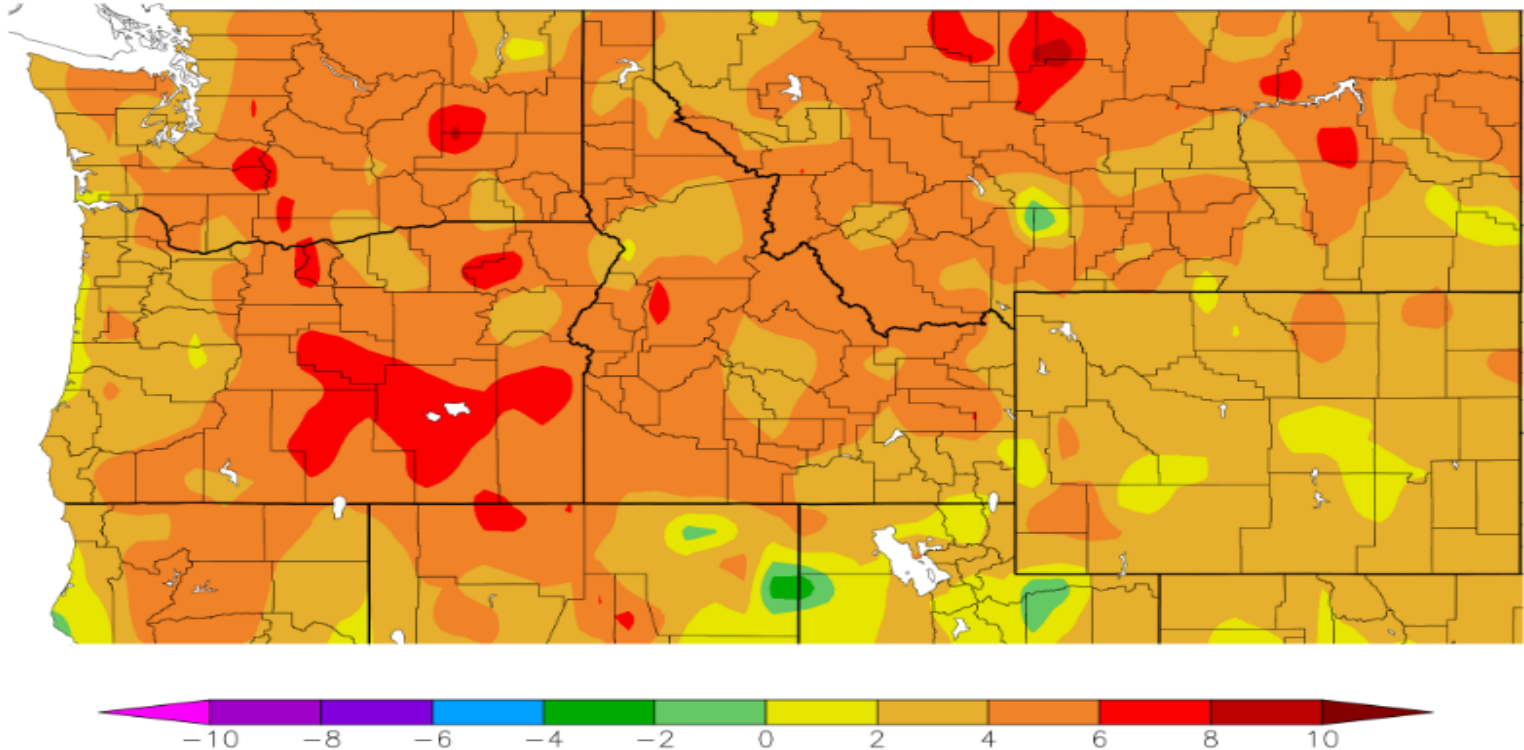
Sudden, but brief, thunderstorm in Pendleton, OR



Thunderstorm winds blew a tree onto a house.

August 2022, Departure from Normal of Average Temperatures

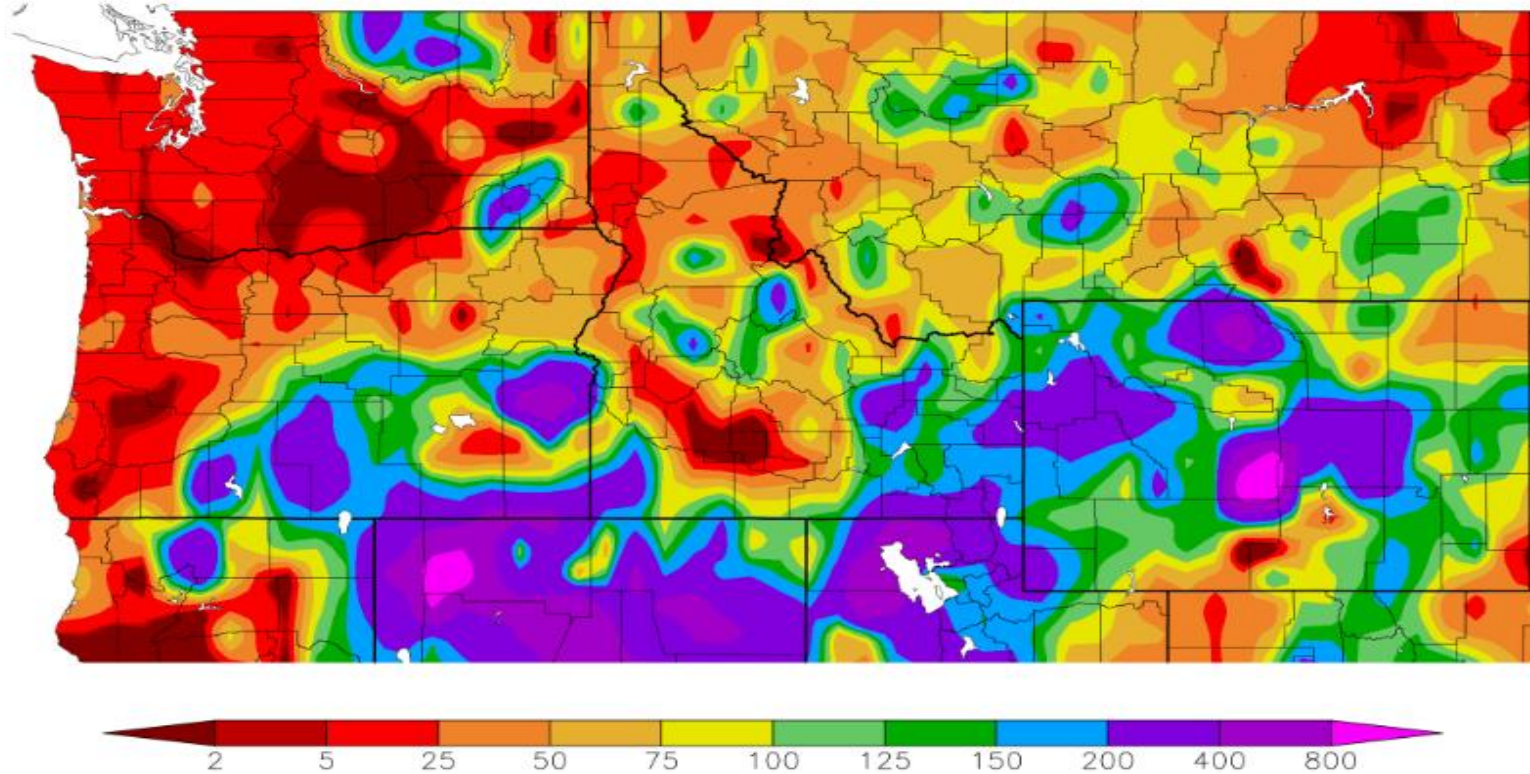
Departure from Normal Temperature (F)
8/1/2022 – 8/31/2022



The departure from normal of the average temperatures were mostly 2 to 8 degrees above normal across the entire Pacific Northwest and the forecast area. The greatest departures from normal were in areas over central OR, small portions of north central OR, an area in the northern Blue mountains, and along the southern WA Cascades. There was a fairly uniform distribution of the departures from normal as well as the observed temperatures during the month.

August 2022, Percent of Normal of Precipitation

Percent of Normal Precipitation (%)
8/1/2022 – 8/31/2022



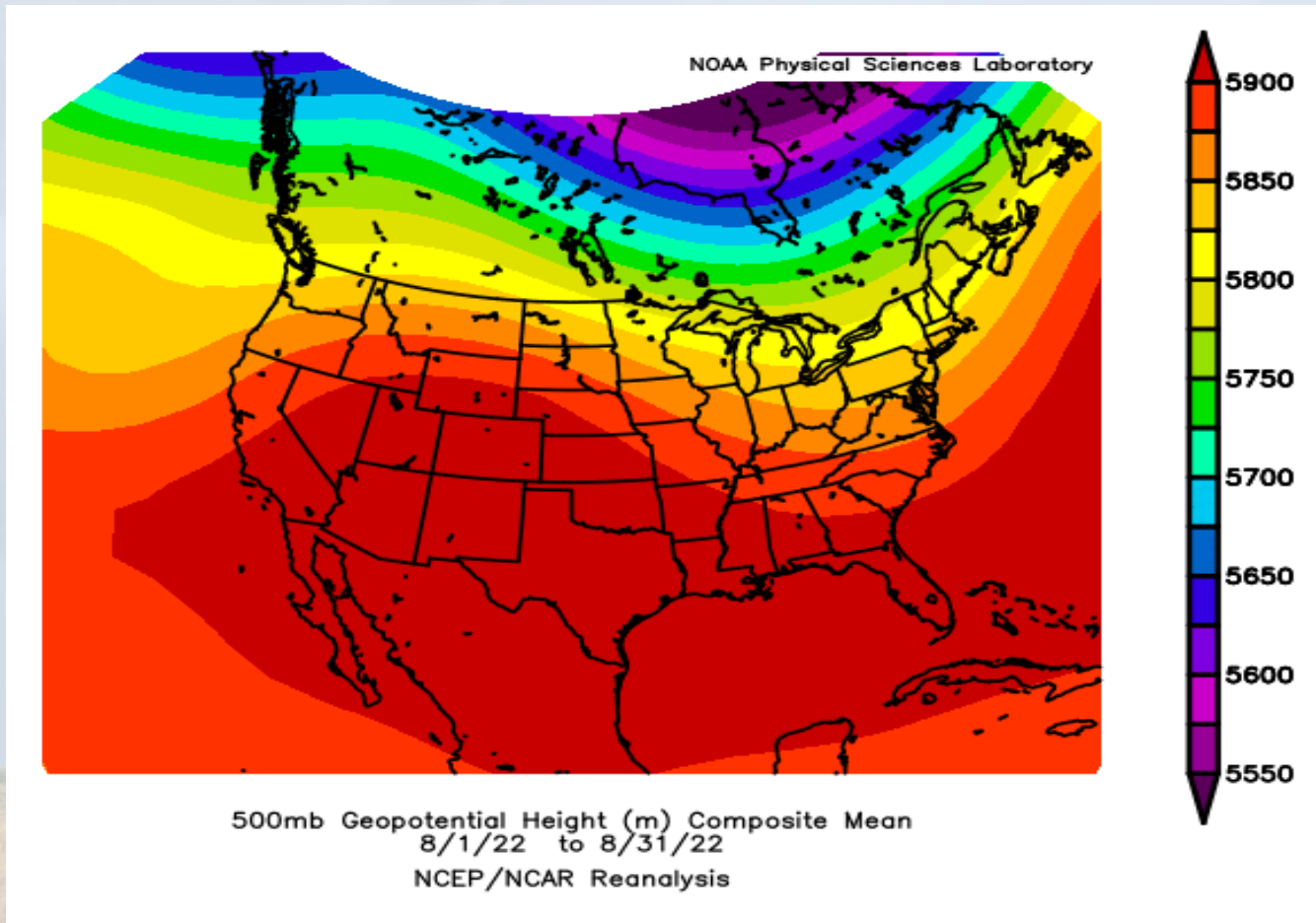
There was a considerable variability of the distribution of precipitation across northeast OR and southeast WA during August 2022. Most of the forecast area had less than 75 percent of normal precipitation. However, there were a few areas with greater than 100 percent of normal precipitation, which includes the Northwest Blue Mountains in southeast WA, and areas along the southern border of the forecast area.

August 2022 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	93.8	7.0	59.3	7.5	76.5	7.2	Trace	-0.26
Kennewick	95.7	6.4	65.6	4.8	80.7	5.7	0.00	-0.18
Walla Walla	92.8	4.7	64.1	3.7	78.5	4.3	0.66	0.09
The Dalles	95.5	8.2	65.7	6.2	80.6	7.2	Trace	-0.23
Redmond	93.0	8.2	52.4	7.2	72.7	7.7	0.05	-0.50
Pendleton Airport	95.1	8.3	61.4	4.6	78.2	6.4	0.04	-0.34
La Grande Airport	93.0	7.3	52.8	0.5	72.9	3.9	0.24	-0.61
John Day	96.4	8.2	59	10.7	77.7	9.5	0.11	-0.53

Every single departure from normal of the average highs, average lows and average means of temperatures were above normal as shown in the table above. The greatest departure of the average highs was +8.3 degrees at the Pendleton, OR Airport. The greatest departure of the average lows was +10.7 degrees at John Day, OR, and the greatest departure of the average means was +9.5 degrees also at John Day, OR. All of the departures from normal of the precipitation totals were below normal, except at Walla Walla, WA, which had a departure of + 0.09 of an inch. The greatest departure from normal of the below normal precipitation totals was at the La Grande Airport with -0.53 inches.

August 2022, Average 500 MB Pattern



The average 500 MB flow pattern for August 2022 over the Pacific Northwest was a southwest flow pattern with an upper ridge axis centered over the Rocky Mountains. This resulted in a warmer and drier than normal month overall. However, the southwest flow also resulted in periods of moist and unstable conditions which resulted in thunderstorms due to moisture and instability being drawn up to the Pacific Northwest from the monsoon regime from the southwest USA.

Significant Weather & Record Weather Events for August 2022

Significant Weather Events				
Event	Date	Report	Where	Source
TSTM Wind DMG	August 2, 2022	6 inch tree branch broke	3 ENE Prineville, OR	Trained Spotter
TSTM Wind GST	August 9, 2022	M 54 mph	WNW Hampton, OR	Mesonet
TSTM Wind DMG	August 9, 2022	trees down, power outage	5 S Three Rivers, OR	Public
TSTM Wind DMG	August 9, 2022	tree fell on home	2 SW Three Rivers, OR	Public
TSTM Wind DMG	August 10, 2022	trees down on home	3 S College Place, OR	NWS Storm Survey
TSTM Wind DMG	August 10, 2022	trees down on home	Milton-Freewater, OR	NWS Storm Survey
Downburst	August 10, 2022	mobil home thrown 30 feet	Milton-Freewater, OR	NWS Storm Survey
Downburst	August 10, 2022	mobil homes structural DMG	2 N Milton-Freewater, OR	NWS Storm Survey
Heavy Rain	August 10, 2022	M 1.07 inches	Dayton, WA	Public
Hail	August 11, 2022	E 1.5 inches	La Grande, OR	Public
Hail	August 11, 2022	E 1.00 inch	2 SSW Wallowa, OR	Trained Spotter
Hail	August 11, 2022	E 1.75 inches	Wallowa, OR	Trained Spotter

Most of the significant weather events were either thunderstorm wind damage or severe hail. There were two downburst wind events and one heavy rain event, both on August 10th.

Record Weather Reports					
Event	Date	Where	Previous Record	New Record	Records Began
High Temp	August 18, 2022	Yakima, WA	103 / 1977	103 (tie)	1909
High Temp	August 18, 2022	Ellensburg, WA	102 / 2012	102 (tie)	1934
High Temp	August 21, 2022	Redmond, OR	96 / 1961	96 (tie)	1941
High Temp	August 25, 2022	Dallesport, WA	102 / 1996	102 (tie)	1929
High Temp	August 30, 2022	Dallesport, WA	103 / 1967	104	1929
High Temp	August 31, 2022	Yakima, WA	97 / 1949	98	1909
High Temp	August 31, 2022	Hermiston, OR	101 / 1967	102	1906
High Temp	August 31, 2022	Ellensburg, WA	95/ 1998	100	1934

Every record weather event during August were record high temperature events. There was an even split of broken record high temperatures and tied record high temperatures.

August 2022, Observed Monthly Max & Min Temperatures

Location	Highest Maximum	Lowest Minimum
Pendleton, OR	106	48
Redmond, OR	101	41
Pasco, WA	106	50
Yakima, WA	103	48
Walla Walla, WA	105	53
Bend, OR	103	46
Ellensburg, WA	103	43
Hermiston, OR	105	49
John Day, OR	105	48
La Grande, OR	103	41
The Dalles, OR	108	55
Meacham, OR	96	34
MT Adams RS, WA	100	41

Every highest maximum temperature in the list were at or above 100 degrees, including the Mt. Adams Ranger Station (a high elevation station). The only highest maximum that was below 100 degrees was at Meacham, OR, with a highest maximum of 96 degrees. Most of the lowest minimums were either in the 40s or 50s, which is not uncommon for August as the nights typically become cooler in August.

August 2022 Observed Total Precipitation and Total Snowfall/Hail

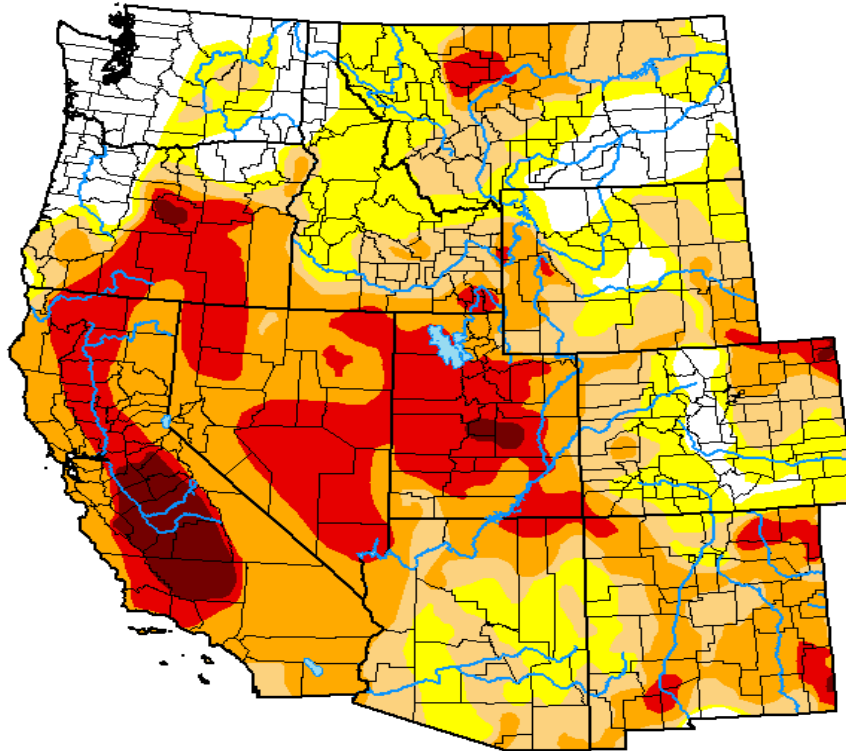
Location	Total Precipitation (inches)	Total Snow/Hail (inches)
Pendleton, OR	0.04	0.0
Redmond, OR	0.05	M
Pasco, WA	T	M
Yakima, WA	T	M
Walla Walla, WA	0.66	M
Bend, OR	0.29	0.0
Ellensburg, WA	T	M
Hermiston, OR	0.04	M
John Day, OR	0.11	M
La Grande, OR	0.24	M
The Dalles, OR	T	M
Meacham, OR	0.64	M
MT Adams RS, WA	T	0.0

Precipitation amounts had a rather large range from a trace to as much as 0.66 inch (Walla Walla, WA). The likely reason for this variability was due to thunderstorms, which can leave abundant rainfall at a location and very little, or none at another. There were 5 locations in the list above that only received a trace amount of rain, including the Mt. Adams Ranger Station. There were no reports of hail or snow at any of the observation points.

August 2022 - Drought Monitor - West

U.S. Drought Monitor West

August 30, 2022
(Released Thursday, Sep. 1, 2022)
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	11.65	88.35	67.89	47.98	19.63	2.66
Last Week <i>08-23-2022</i>	12.87	87.13	68.23	49.38	20.59	2.67
3 Months Ago <i>05-31-2022</i>	6.27	93.73	86.82	68.77	38.00	9.57
Start of Calendar Year <i>01-04-2022</i>	3.68	96.32	89.29	64.90	23.85	3.94
Start of Water Year <i>09-28-2021</i>	2.21	97.79	89.60	75.38	52.46	18.40
One Year Ago <i>08-31-2021</i>	5.74	94.26	89.92	76.11	53.74	19.27

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>

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National Drought Mitigation Center



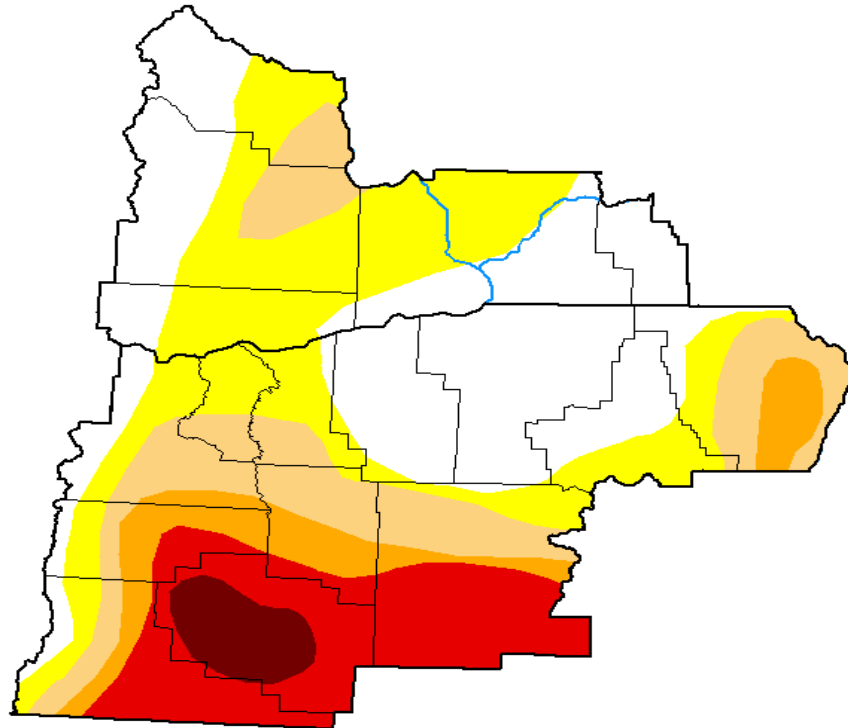
droughtmonitor.unl.edu

Drought conditions remained “none” for most of the Lower Columbia Basin, the Blue Mountains and the Northern Foothills. The northern OR Cascades, the WA Cascades and Wallowa County had drought intensities mostly from D0 (“Abnormally Dry”) to D2 (“Severe” Drought). The greatest drought conditions continued to be over central OR, with drought intensities ranging mostly from D3 (“Extreme” Drought) to D4 (“Exceptional” drought). These conditions have not changed much from July’s observed drought conditions.

August 2022 - Drought Monitor – Forecast Area

U.S. Drought Monitor Pendleton, OR WFO

August 30, 2022
(Released Thursday, Sep. 1, 2022)
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	33.39	66.61	40.48	24.74	17.46	3.17
Last Week <i>08-23-2022</i>	33.50	66.50	40.07	24.74	17.46	3.17
3 Months Ago <i>05-31-2022</i>	22.24	77.76	57.13	39.42	30.34	18.38
Start of Calendar Year <i>01-04-2022</i>	3.10	96.90	95.52	87.37	61.34	21.83
Start of Water Year <i>09-28-2021</i>	0.00	100.00	98.24	93.83	85.03	49.93
One Year Ago <i>08-31-2021</i>	0.00	100.00	98.26	94.07	85.27	49.93

Intensity:

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

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National Drought Mitigation Center



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This slide shows a closer look at the drought conditions for the NWS Forecast Office, Pendleton County Warning Area. As said in the previous slide, drought conditions remained “none” for most of the Lower Columbia Basin, the northern Blue Mountains and Foothills, which are in the “None” category (D0). As can also be seen, Crook County, in central OR has the greatest drought intensity (mostly D3 – D4, or “Extreme” to “Exceptional: drought”). Other areas range from D0 to D2 (“Abnormally Dry” to “Severe” Drought).

USA Three Month Temperature Outlook

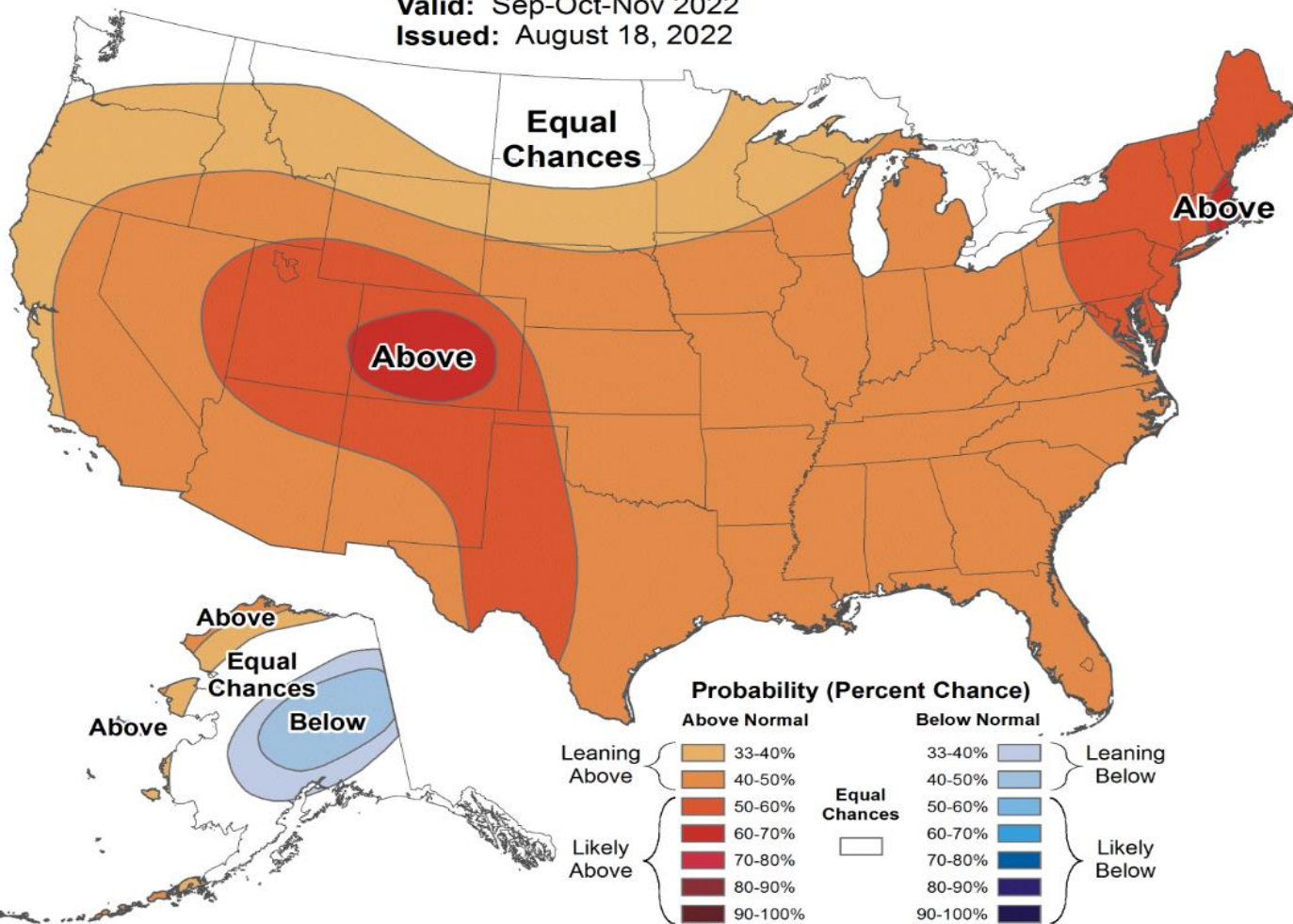


Seasonal Temperature Outlook



Valid: Sep-Oct-Nov 2022

Issued: August 18, 2022



The temperature outlook for the next 3 months (September - November) is for a greater chance of near to above normal temperatures. Again, while this may depart from typical La-Nina conditions over the Pacific Northwest, this forecast is not unusual for a typical eastern OR/WA late summer into autumn.

USA Three Month Precipitation Outlook



Seasonal Precipitation Outlook



Valid: Sep-Oct-Nov 2022

Issued: August 18, 2022

Above

Equal
Chances

Below

Below

Equal
Chances

Above

Equal
Chances

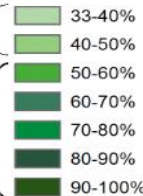
Below

Probability (Percent Chance)

Above Normal

Leaning
Above

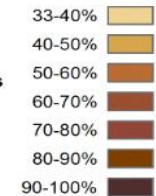
Likely
Above



Below Normal

Leaning
Below

Likely
Below



Equal
Chances

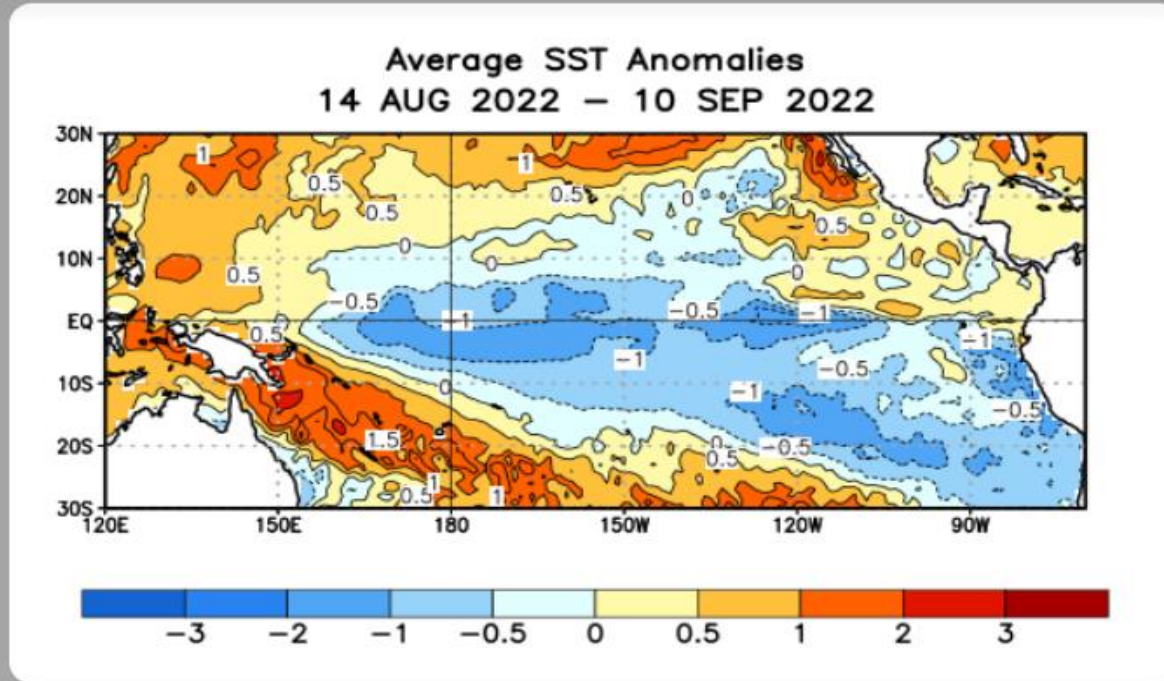


The precipitation outlook for the next 3 months (September – November) is for mostly equal chances of above or below normal precipitation over the Pacific Northwest. This is more consistent with typical La Nina conditions than in previous months, which had greater chances of below normal precipitation.

Sea Surface Temperature (SST) Anomalies for August 2022

SST Departures (°C) in the Tropical Pacific During the Last Four Weeks

In the last four weeks, equatorial SSTs were below average across most of the Pacific Ocean.



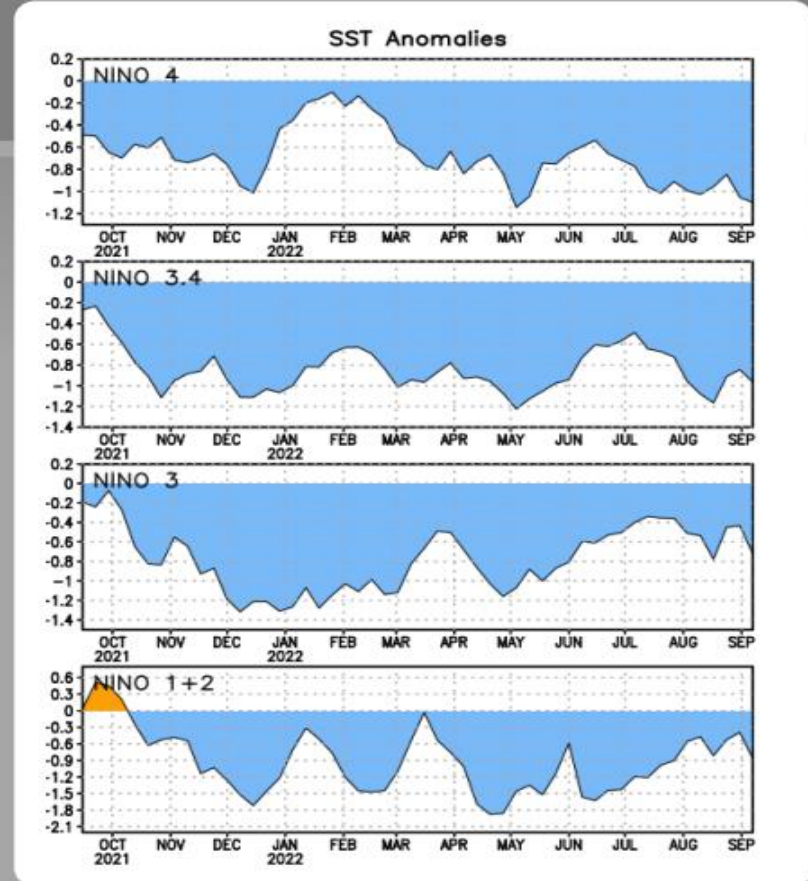
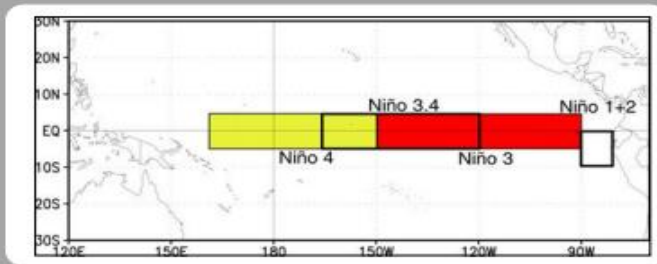
Sea Surface Temperatures (SSTs) were below average across most of the equatorial Pacific Ocean. However, there is a greater area of above normal Sea Surface Temperatures north of the equator off the Central and South American west coasts. While this may be the case, the above image is still representative of an ongoing La Nina event.

ENSO NINO Regions SST Anomalies for Each Nino Region in August 2022

Niño Region SST Departures (°C) Recent Evolution

The latest weekly SST departures are:

Niño 4	-1.1°C
Niño 3.4	-1.0°C
Niño 3	-0.7°C
Niño 1+2	-0.9°C



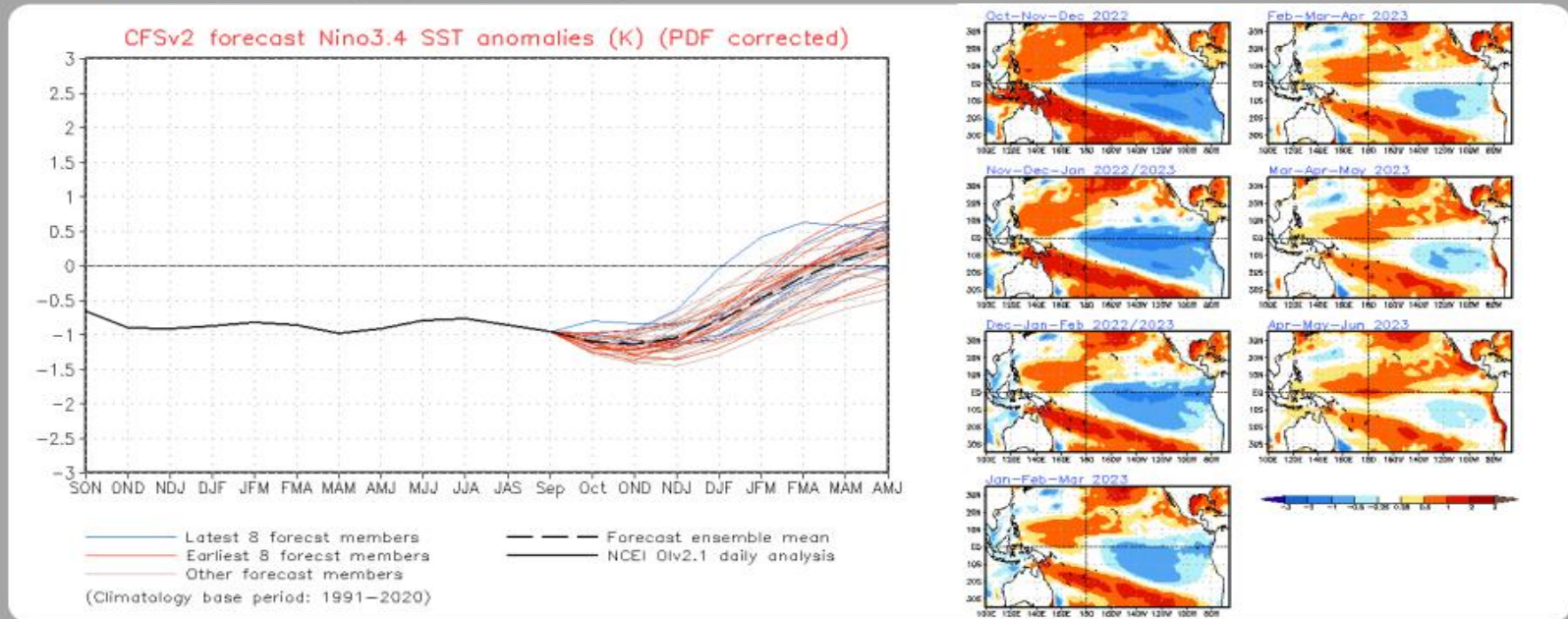
All Niño Regions showed some cooling during the latter half of August into very early September, with the greatest cooling being in Niño Regions 1 + 2, and 3. Niño Regions 3.4 and 4 had only slightly less cooling during that period. During the first half to the middle of August, there was a period of cooling followed by a period of warming. In any case, these are still representative of the current ongoing La Nina event.

Sea Surface Temperature (SST) NCEP CFS.v2 Ensemble Mean Outlook

SST Outlook: NCEP CFS.v2 Forecast (PDF corrected)

Issued: 12 September 2022

The CFS.v2 ensemble mean (black dashed line) indicates La Niña persisting into the Northern Hemisphere winter 2022-23, and then transitioning to ENSO-neutral in January-March 2023.



The SST CFS.v2 ensemble mean outlook shows that SSTs are to remain below normal through the fall and winter of 2022 – 2023, but with a steady warming beginning during the three-month period of November, December and January. This indicates that La Nina will persist into the Northern Hemisphere winter of 2022-2023, with a transition then taking place to ENSO neutral during the three-month period of January, February and March. The images on the right-hand side of the slide show a gradual warming of equatorial sea surface temperatures for each of the three-month periods through the spring of 2023.

Current ENSO (El Niño Southern Oscillation) Alert System Status

Summary

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

La Niña is present.*

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

The tropical Pacific atmosphere is consistent with La Niña.

La Niña is favored to continue through Northern Hemisphere winter 2022-23, with a 91% chance in September-November, decreasing to a 54% chance in January-March 2023.*

The current ENSO Alert System Status is still “**La-Niña Advisory**”. Equatorial sea surface temperatures are below average across most of the Pacific Ocean, which is consistent with La Niña conditions, as is the tropical Pacific atmosphere. La Niña is favored to continue through the Northern Hemisphere winter of 2022 – 2023 (a 91 percent chance) from September – November. Chances are then expected to decrease to a 54 percent chance during the period from January – March 2023, as equatorial Sea Surface Temperatures increase, with ENSO conditions beginning a transition to ENSO neutral.



Thank You!