

The Month In Review

July 2021

National Weather Service
Pendleton, Oregon

Photo: Dry parched landscape due to hot and dry conditions

July 2021, Climate Summary

The weather in July 2021 was rather benign as far as severe weather events go, such as high winds, thunderstorms, hail etc. However, the long duration heat and drought continued, which makes July the 5th month in a row with much below average precipitation. Many places reported a total of only 0.00 inches to trace. There were a couple of non-severe thunderstorm events in July, which produced abundant lightning, which ignited additional wildfires, but these storms, for the most part had very little precipitation. The month also continued to be hot, with temperatures well above normal. For example, at the Pendleton, OR airport there were a total of 5 days with temperatures at or above 100 degrees, and 25 days at or above 90 degrees. Usually, Pendleton only sees temperatures at or above 100 about 3 to 5 times per year, but including June, the number of 100+ degree days, and/or 90+ degree days were 40 days, which is well above normal. Below are some images that showed some conditions for the month. Note, that a campfire ban was in place for most of the month, and the Umatilla NF closed entirely to the public due to high fire danger and fire suppression operations.



A burn ban in effect already in the campgrounds in the Columbia Gorge.



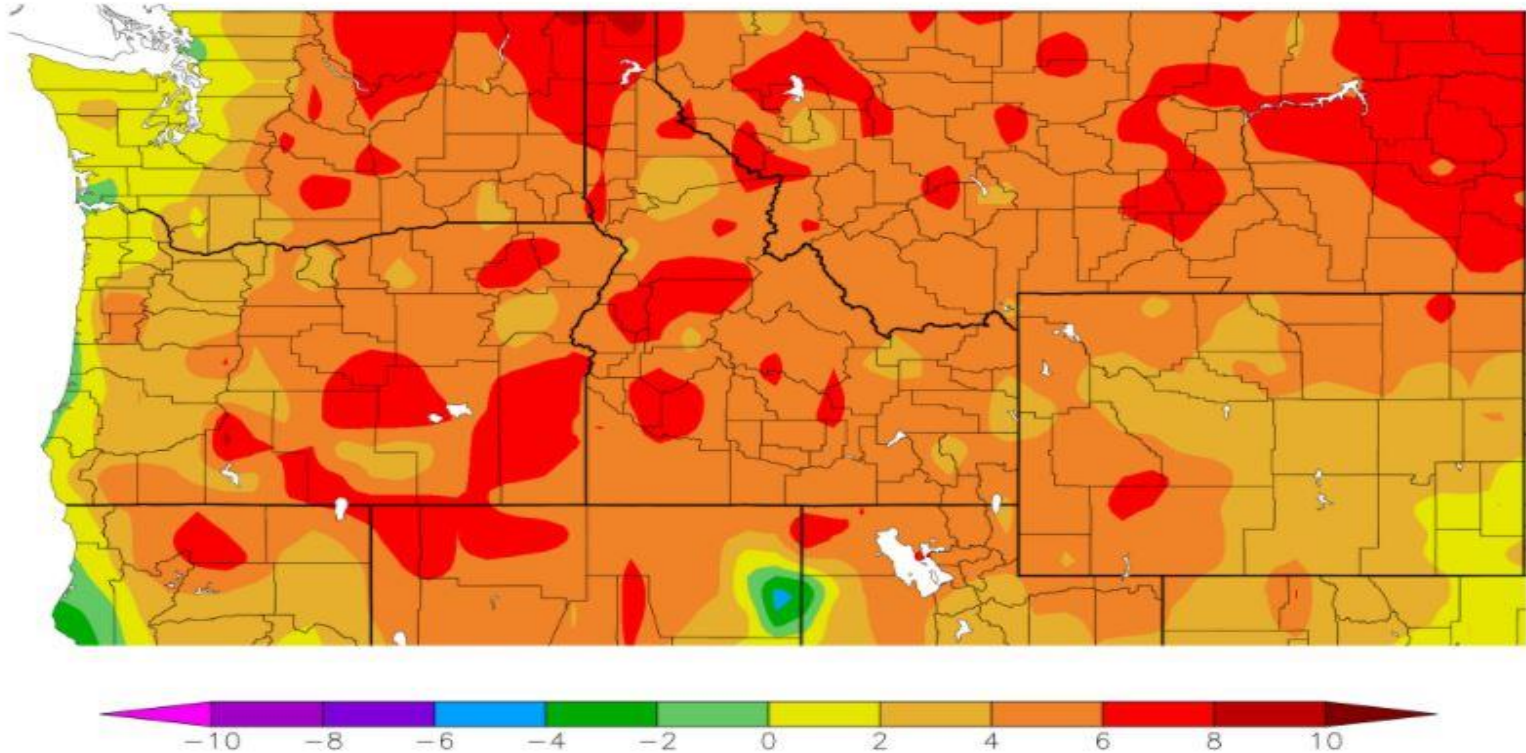
Wildfires out of control early in the fire season.



Elevated convection as shown by this type of Alto Cumulus clouds early in the morning.

July 2021, Departure from Normal of Average Temperatures

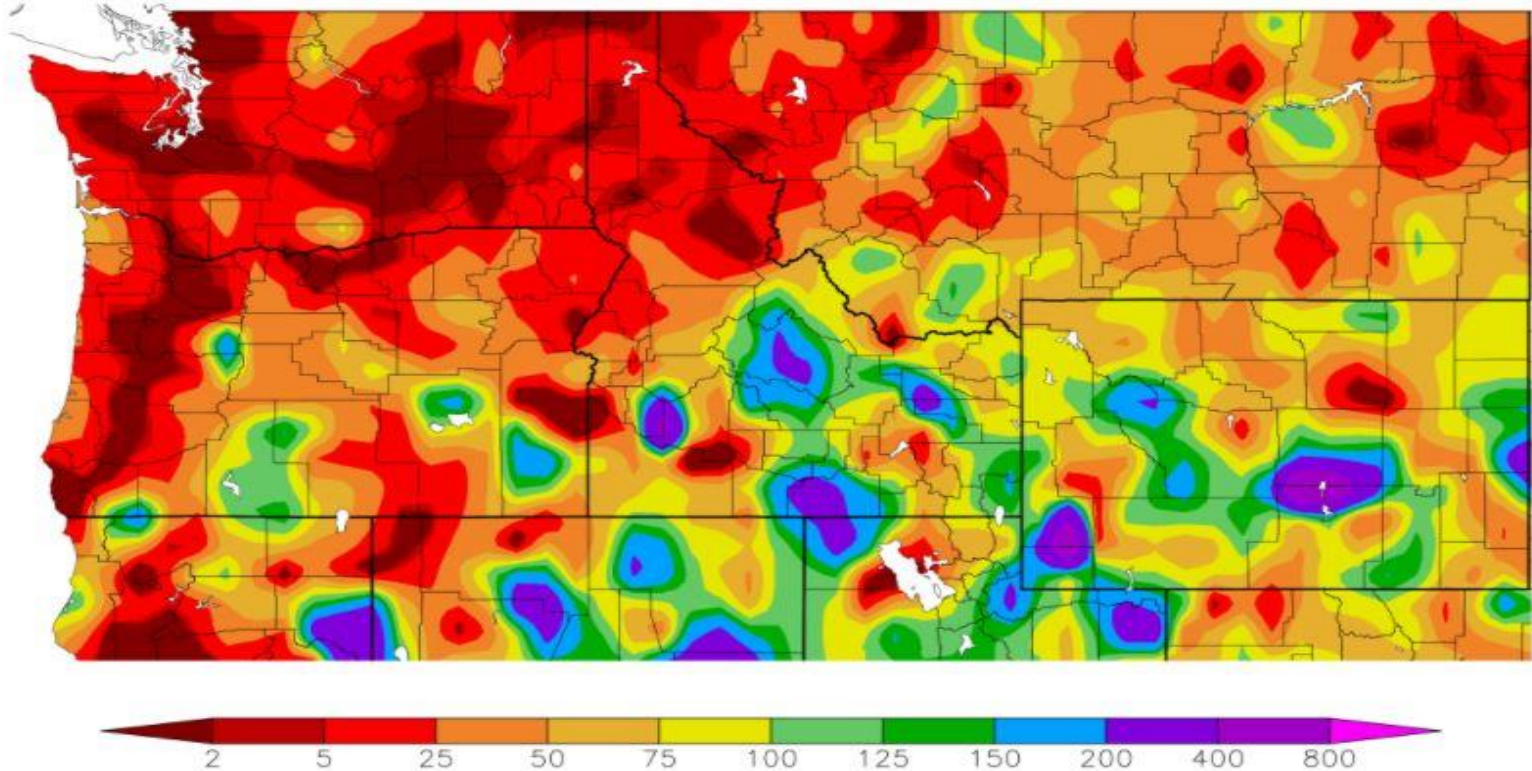
Departure from Normal Temperature (F)
7/1/2021 – 7/31/2021



All of the forecast area (central-northeast Oregon and south central-southeast Washington) had above normal temperatures again on average. The areas that were most above normal were in the Blue Mountains, the John Day Highlands, and the Yakima and Kittitas Valleys. There were not any areas that had below normal temperatures for the month.

July 2021, Percent of Normal of Precipitation

Percent of Normal Precipitation (%)
7/1/2021 – 7/31/2021



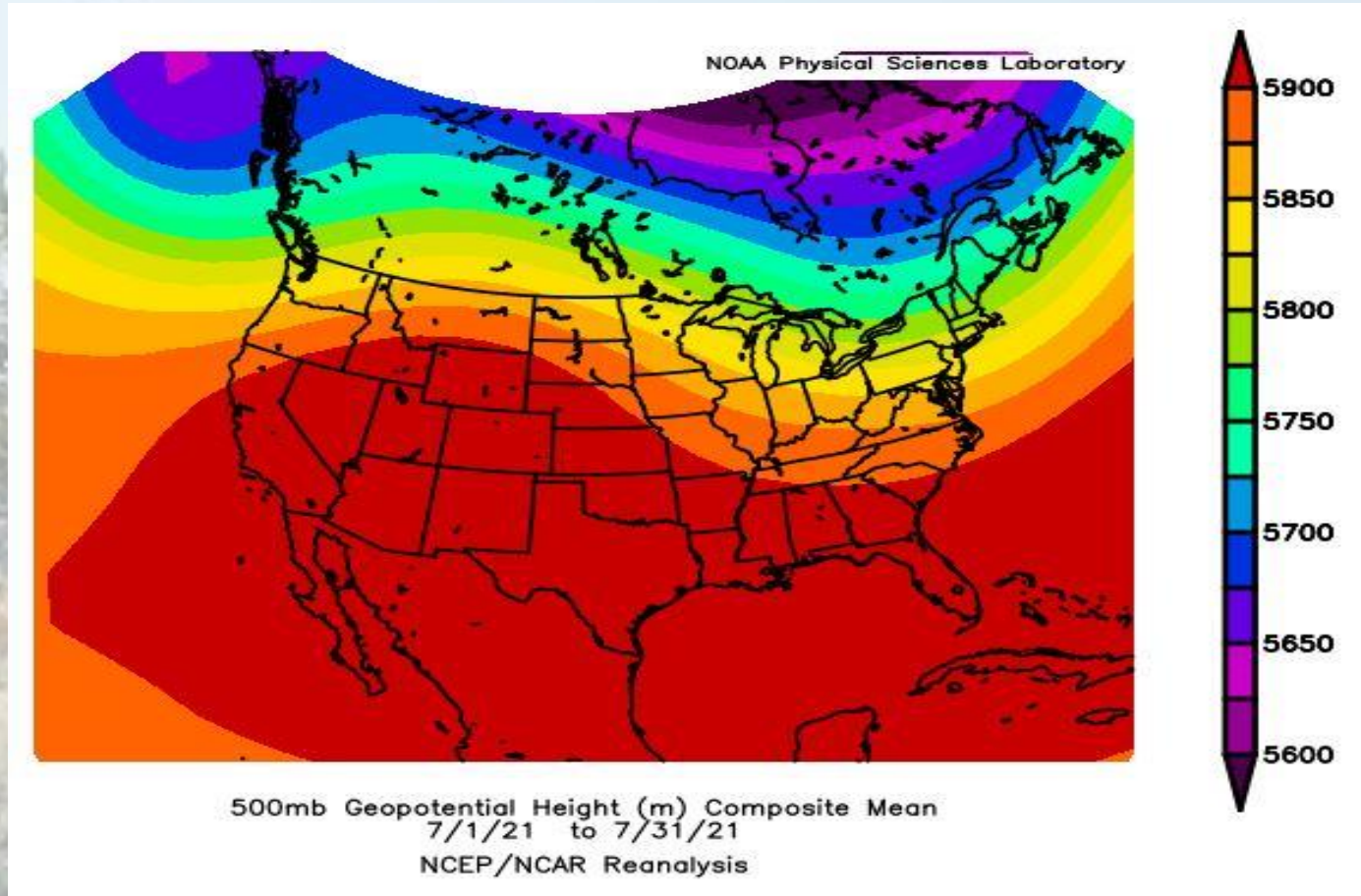
July was another very dry month with the entire forecast area having much less than 100 percent of normal precipitation. The driest areas were on the Washington side of the forecast area with the percent of normal precipitation ranging mostly from only 2 to 25 percent. The Oregon side was drier than normal too, but slightly less so, due to some thunderstorms which produced some light rain.

July 2021, Departures from Normal Averages/Sums for Select Cities

	Max T	Depart	Min T	Depart	Ave T	Depart	PCPN	Depart
Yakima	96.1	8.2	62.7	9.4	79.4	8.8	Trace	-0.22
Kennewick	96.4	6.1	67.4	5.7	81.8	5.8	0.01	-0.21
Walla Walla	93.9	4.7	66.3	5.4	80.1	5.1	0.01	-0.58
The Dalles	93.7	6.2	65.7	5.3	79.7	5.7	Trace	-0.16
Redmond	93.1	7.5	51.5	5.3	72.3	6.4	0.12	-0.41
Pendleton Airport	94.4	6.4	60.7	3.5	77.5	4.9	0.02	-0.30
La Grande Airport	93.5	8.1	56.5	2.7	75.0	5.4	0.19	-0.49
John Day	97.5	9.3	59.8	10.2	78.7	9.8	0.03	-0.57

The table above shows that all stations in the list had well above normal mean maximum, mean minimum, and mean average temperatures for the month. The departure from normal precipitation was also below normal for every station in this list, with the greatest being at Walla Walla, WA, and at John Day, OR. All stations, except for the La Grande, OR Airport and Redmond, OR had precipitation that was less than a tenth of an inch total for the month (two of them only a trace). While July is typically one of the driest and hottest months of the summer season, this year was one of the driest and hottest Julys on record.

July 2021, Average 500 MB Pattern

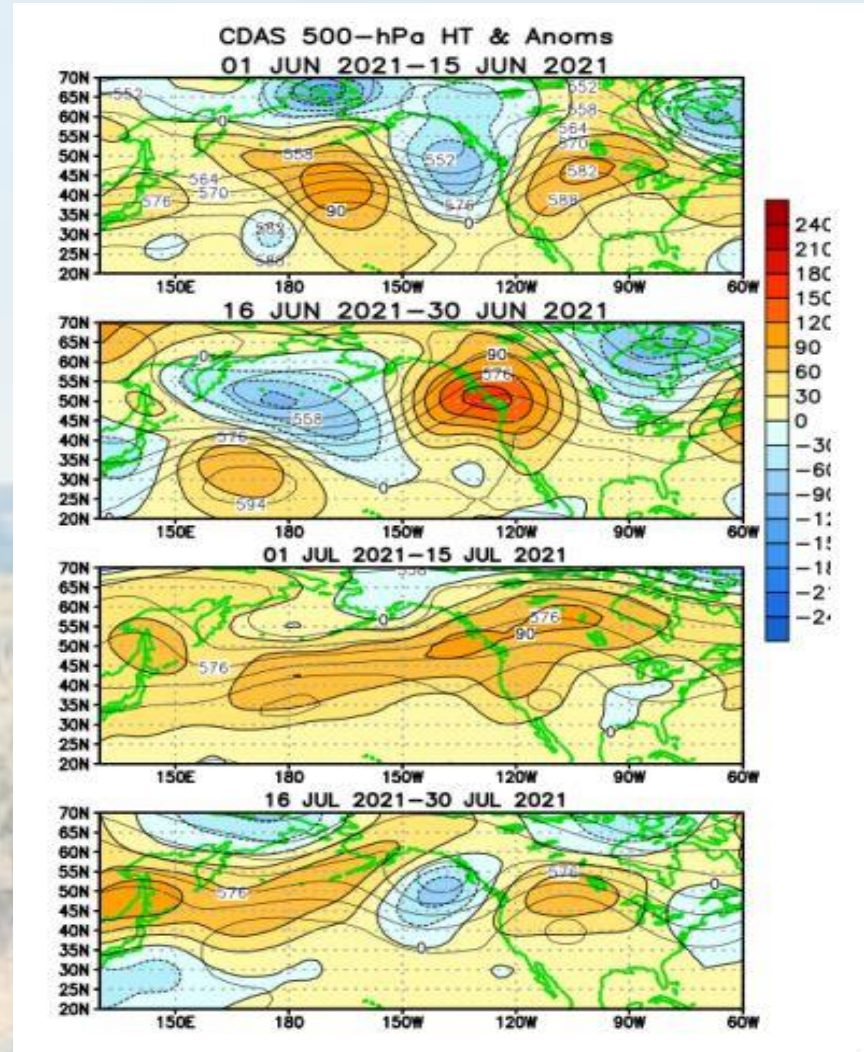


The average 500 MB pattern for July over the Pacific Northwest was a southwest flow pattern. This is one of the reasons why July was such a warm month. A southwest flow in the summer often brings thunderstorms with abundant lightning due to monsoon moisture from the southwest. While we did have some thunderstorms with abundant lightning, these storms produced very little precipitation for the Pacific Northwest region due to the hot and very dry low levels of the atmosphere.

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

These are more detailed semi-monthly average 500 mb pattern plots, which was from the following period: 1st June 2021 through 30th July 2021.

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



Every bi-weekly period shows either a southwest flow or an upper ridge pattern over the Pacific Northwest, which is why that region was hotter than normal, with much above normal temperatures. The ridge patterns also resulted in little rainfall. When there was a southwest flow, there was not much monsoon moisture yet from the southwest for wetting rains with thunderstorms.

Significant Weather Events for July 2021

Significant Weather Events				
Event	Date	Report	Where	Source
There were not any significant weather events this month, such as severe thunderstorms, high winds or large hail etc. that were reported or observed during the month.				

There were no significant weather events during the month (except the continued hot and dry conditions).

Record Weather Event Reports for July 2021

Record Weather Reports					
Event	Date	Where	Previous Record	New Record	Records Began
High Temp	July 1, 2021	Redmond, OR	99 / 2013	99 (tie)	1941
High Temp	July 9, 2021	Redmond, OR	98 / 1985	98 (tie)	1941
High Temp	July 31, 2021	Walla Walla, WA	108 / 1971	109	1930
High Temp	July 31, 2021	Hermiston, OR	110 / 2020	110 (tie)	1906

There were only 4 record weather events during the month, which were all record high temperatures. Despite the hot and dry conditions in July, the previous records were higher than in the normally cooler month of June, making it more difficult for temperatures to reach the record.

July 2021, Observed Monthly Max & Min Temperatures

Location	Highest Maximum	Lowest Minimum
Pendleton, OR	107	46
Redmond, OR	100	39
Pasco, WA	105	53
Yakima, WA	104	47
Walla Walla, WA	109	56
Bend, OR	99	43
Ellensburg, WA	103	54
Hermiston, OR	110	54
John Day, OR	105	48
La Grande, OR	102	41
The Dalles, OR	105	57
Meacham, OR	97	34
MT Adams RS, WA	97	41

Every single station in the list had a maximum temperature at or greater than 100 degrees, except the three highest elevation stations of Bend, OR, Meacham, OR and the Mt. Adams Ranger Station, WA. However, the lowest minimums were not unusual for July since even in the summer, the dry air at night can allow strong radiational cooling after a fresh cold front, such as the cold front that moved across the region on the 21st.

July 2021, Observed Monthly Precipitation and Snowfall/Hail Totals

Location	Total Precipitation (inches)	Total Snow/Hail (inches)
Pendleton, OR	0.02	0.0
Redmond, OR	0.12	M
Pasco, WA	Trace	M
Yakima, WA	Trace	M
Walla Walla, WA	0.01	M
Bend, OR	0.18	0.0
Ellensburg, WA	Trace	M
Hermiston, OR	Trace	M
John Day, OR	0.03	M
La Grande, OR	0.19	M
The Dalles, OR	Trace	M
Meacham, OR	0.04	M
MT Adams RS, WA	0.00	0.0

For the fifth month in a row, precipitation amounts were significantly low, and were well below normal. The lowest precipitation amounts were either 0.00 or a trace of an inch at 6 of the stations listed. Only Redmond, OR, Bend, OR and La Grande, OR had more than a tenth of an inch of rain total for the month. There was obviously no snow during July, however, hail is counted as snow in the summer, and there was also no hail reported.

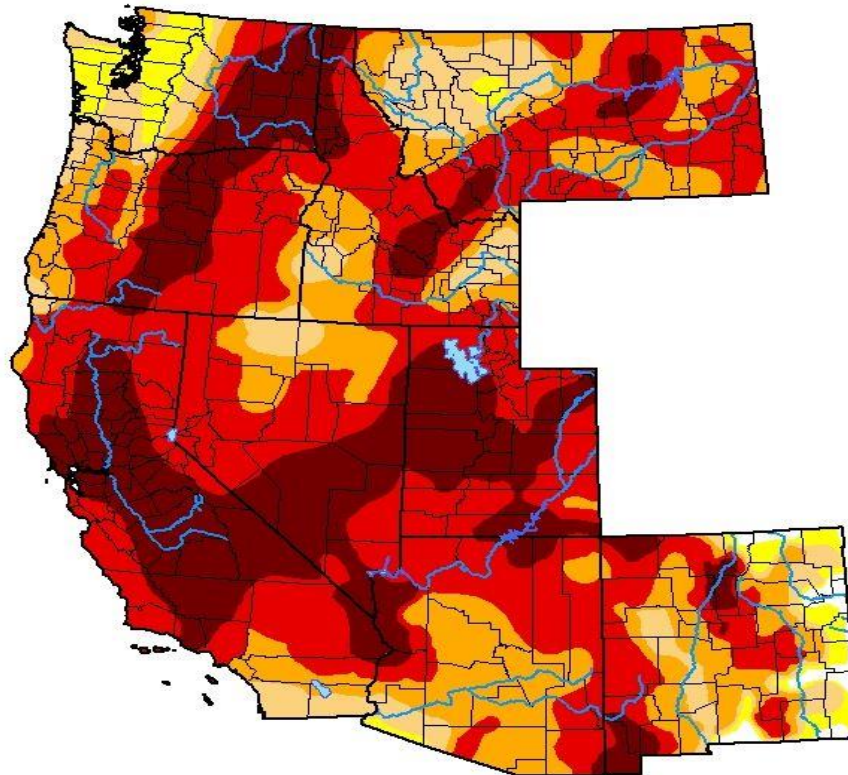
July 2021 - Drought Monitor

U.S. Drought Monitor West

July 27, 2021

(Released Thursday, Jul. 29, 2021)

Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.95	99.05	95.55	86.18	64.60	24.63
Last Week <i>07-20-2021</i>	0.88	99.12	95.25	85.75	65.42	28.03
3 Months Ago <i>04-27-2021</i>	4.18	95.82	83.18	67.13	48.25	23.78
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>07-28-2020</i>	29.34	70.66	54.91	26.71	4.52	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:

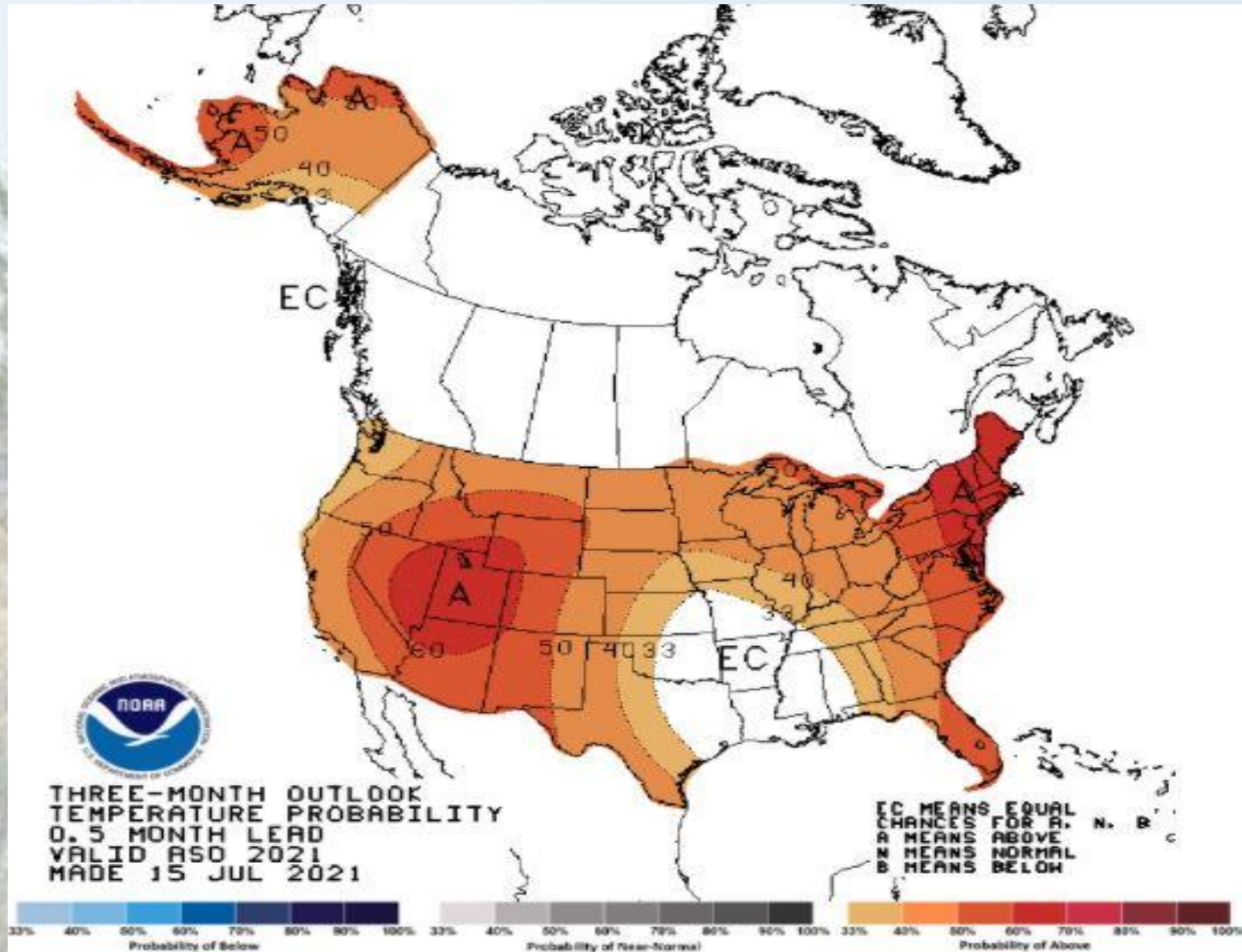
Brad Rippey
U.S. Department of Agriculture



droughtmonitor.unl.edu

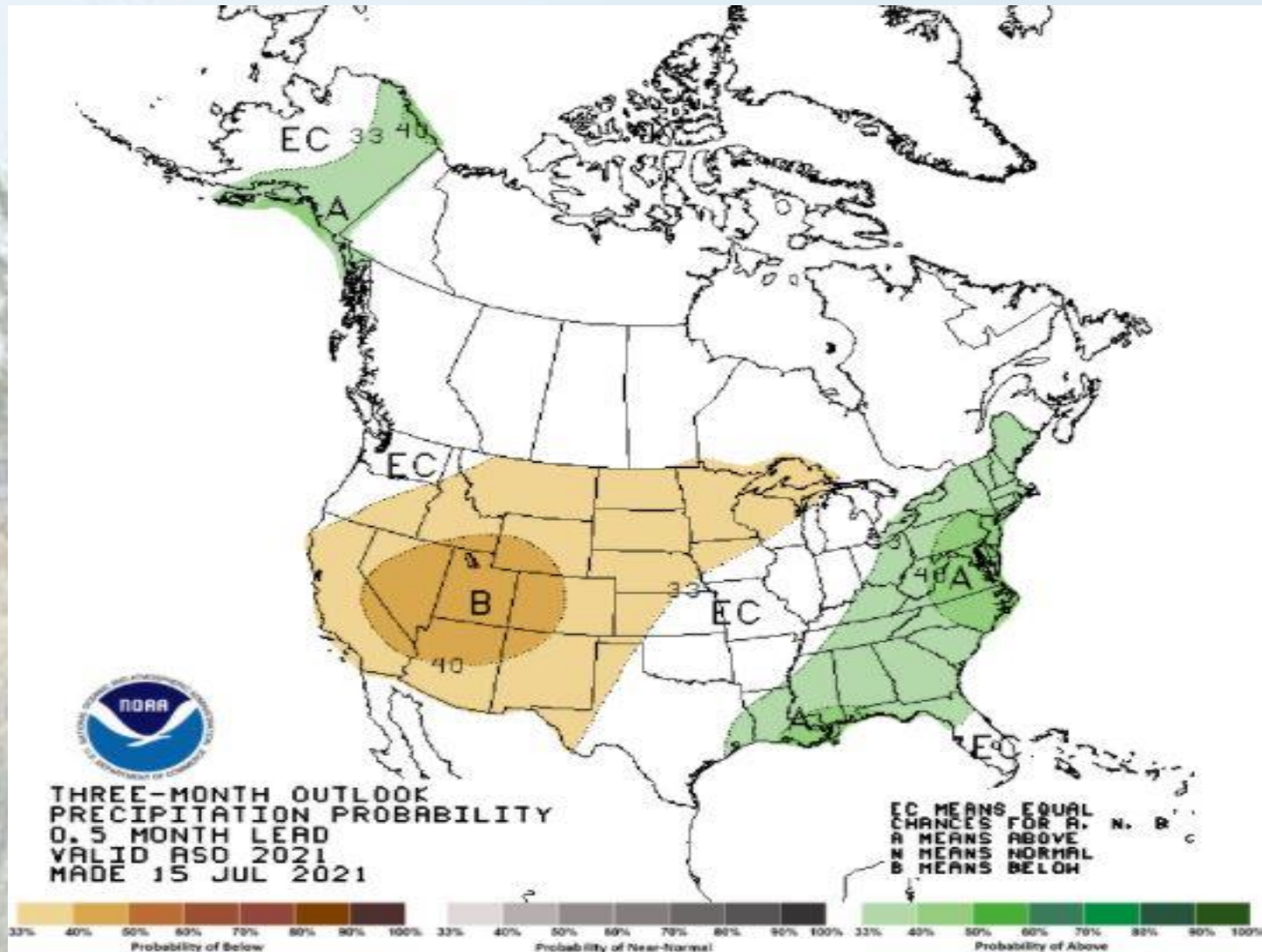
As of July 27th, There was an Exceptional Drought (“D4”) along the and just east of the OR Cascades. The remainder of the forecast area in OR was mostly in an Extreme Drought (“D3”), except for a very small area along the Idaho border. The WA Cascade crest region is now categorized as Abnormally Dry to Moderate Drought (“D0” to “D1”), while areas to the east had mostly Extreme to an Exceptional Drought conditions (“D3” to “D4”).

USA Three Month Temperature Outlook



The temperature outlook for the next 3 months (August - October) is for a greater chance of above normal temperatures.

USA Three Month Precipitation Outlook

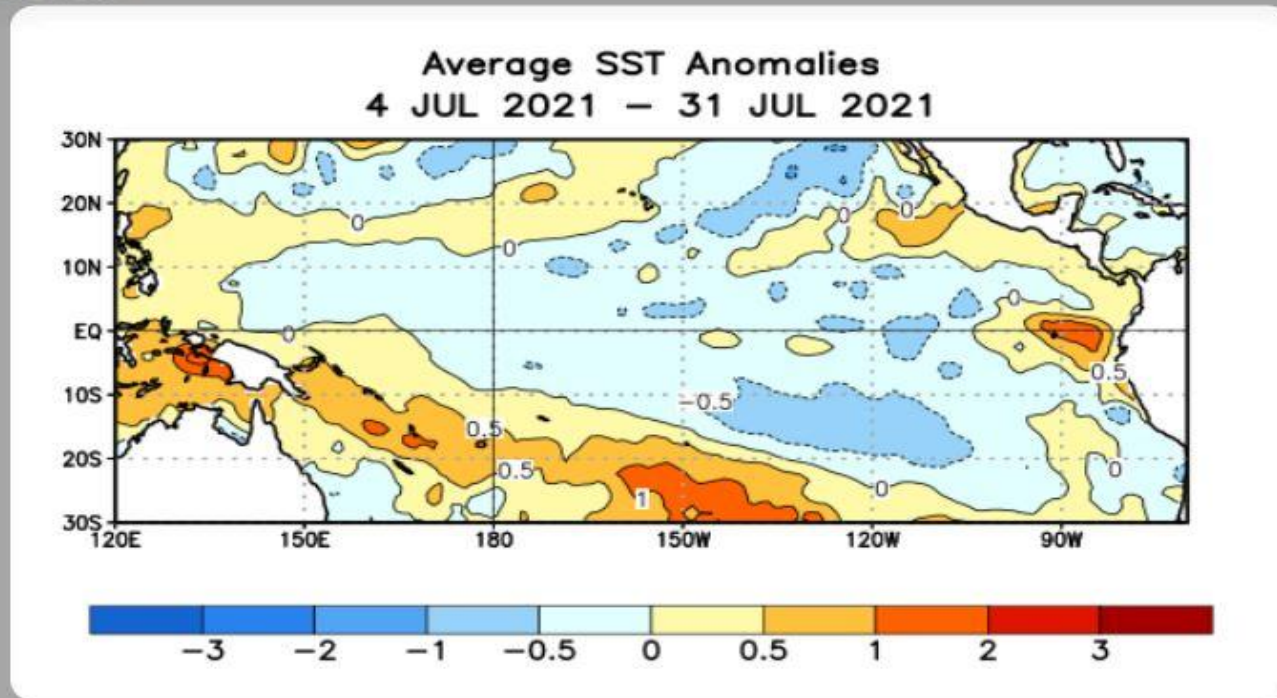


The forecast area is expected to have an equal to, or a greater chance of below normal precipitation for the next three months (August - October).

Sea Surface Temperature (SST) Anomalies for July 2021

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

In the last four weeks, equatorial SSTs were near or below average across most of the equatorial Pacific Ocean, except for above-average SSTs in the far-eastern Pacific Ocean.



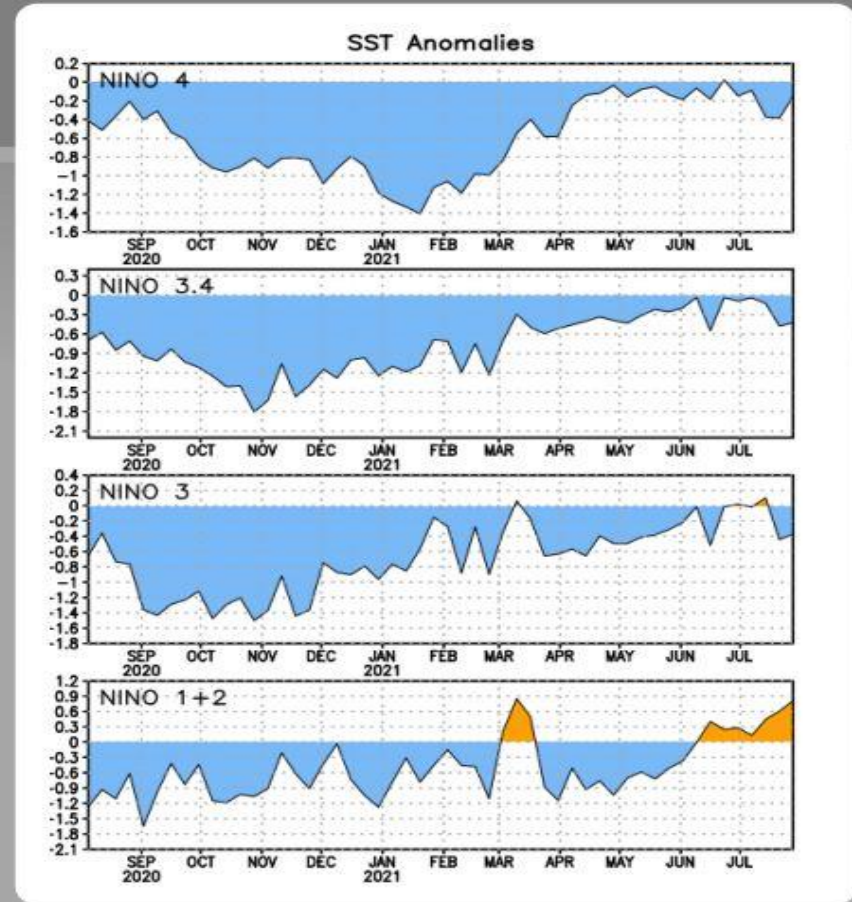
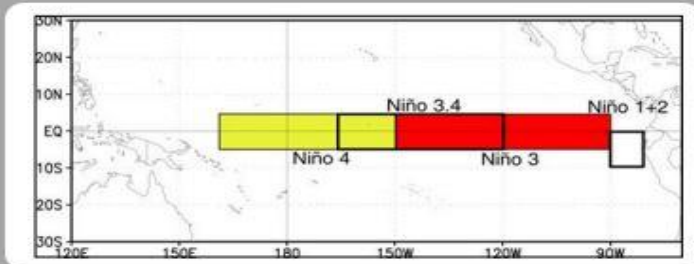
SSTs were near to below average from July 4th to July 31st over most of the eastern tropical Pacific. There were a few areas of warmer than average SST anomalies along, or near the central and south American coasts. These anomalously cooler waters were not as cool as in previous months during the recent La Nina, and they have been slowly warming up.

El Niño/La Niña Regions, Showing SST Anomalies for Each Niño Region

Niño Region SST Departures (°C) Recent Evolution

The latest weekly SST departures are:

Niño 4	-0.1°C
Niño 3.4	-0.4°C
Niño 3	-0.4°C
Niño 1+2	0.8°C



Niño Region “NINO 1 + 2” (far eastern tropical Pacific) had SST’s above normal. The other three regions still had slightly below average SST’s during July. However, Niño Region “NINO 3” (the eastern half of the tropical Pacific) did have a short period of near to slightly warmer than average SST’s during July, because that region includes Niño Region “NINO 1 + 2” in it.

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 through the Northern Hemisphere summer and into the fall (51% chance for the August-October season), with La Niña potentially emerging during the September-November season and lasting through the 2021-22 winter (66% chance during November-January).*

The current ENSO Alert System Status is now: **“La Nina Watch”**, again. ENSO conditions are ENSO-neutral at this time. However, there is a 66% chance that another La Nina will develop again during the period November 2021 – January 2022. Until then, ENSO neutral conditions are expected to persist through September – October 2021, and then gradually transition into another possible ENSO – La Nina event.



Thank You!