

# The Month In Review

**October 2022**

**National Weather Service  
Pendleton, Oregon**

**Photo: Autumn foliage color in Pendleton, OR**

# October 2022, Climate Conditions Summary

October was dry and much warmer than normal through the 20<sup>th</sup>. For example, at the Pendleton, OR airport, there were 10 days with maximum temperatures of 80 degrees or higher before the 12<sup>th</sup>. However, the warmer than normal and dry conditions persisted through the 20<sup>th</sup>, with active wildfires continuing to burn, and with air quality issues due to smoke. Then, beginning on the 21<sup>st</sup>, there was a major weather pattern change that brought cooler and much wetter conditions. A series of Pacific weather systems began to move across the region beginning on the 21<sup>st</sup>. Moderate to heavy amounts of rain fell over the forecast area with a strong Pacific weather system on the 21<sup>st</sup> and the 22<sup>nd</sup>. For example, the Pendleton, OR airport received a total of 0.85 of an inch of rain during this two-day event. Frequent Pacific weather systems then continued to bring cooler and wetter than normal conditions through the rest of the month. Maximum temperatures were then mostly in the 50s and 60s in the lower elevations, though these were not significantly below normal, or record cold temperatures for October. Maximum temperatures at the Pendleton, OR airport were below 70 degrees each day during the rest of the month, for example. The storm that brought significant rainfall (and high mountain snow to some areas) beginning on the 21<sup>st</sup> was essentially a fire season ending precipitation event. Overall, this past October, through the 20<sup>th</sup>, has been one of the warmest and driest on record. Below, and on the next slide, are images of climatic weather conditions during the month.



Smoke layer over Pendleton, OR due to regional wildfires.



Morning virga hanging down from lingering showers after a heavy rain event.



Beautiful sunrise over NE Oregon, with an orange color due to smoke from wildfires.

# More Images Representing October 2022 Weather/Climate Conditions



**Heavy rain event with low clouds and visibility**



**Mountains hidden in smoke from wildfires**



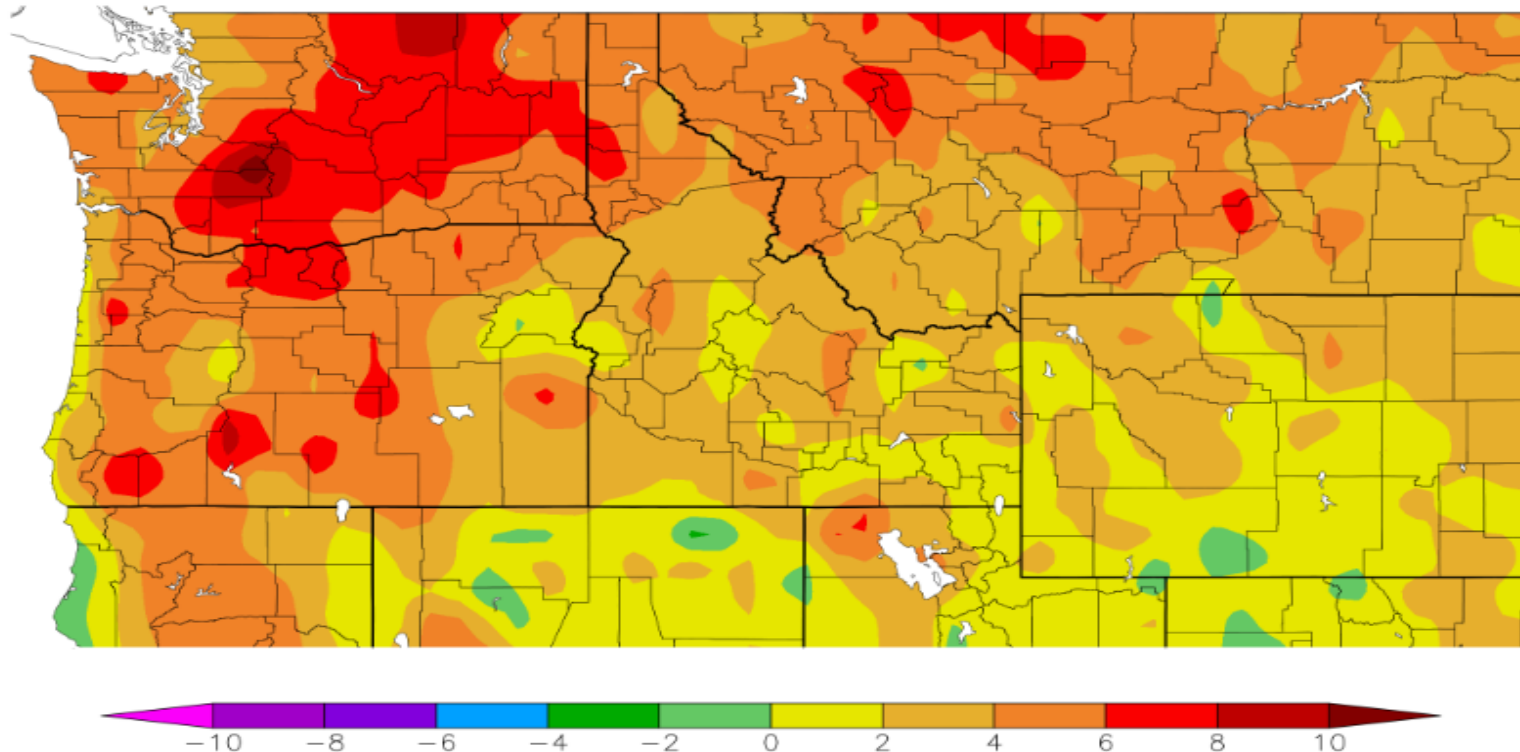
**Beautiful sunrise after a recent heavy rain event**



**Bright autumn foliage color at NWS Pendleton**

# October 2022, Departure from Normal of Average Temperatures

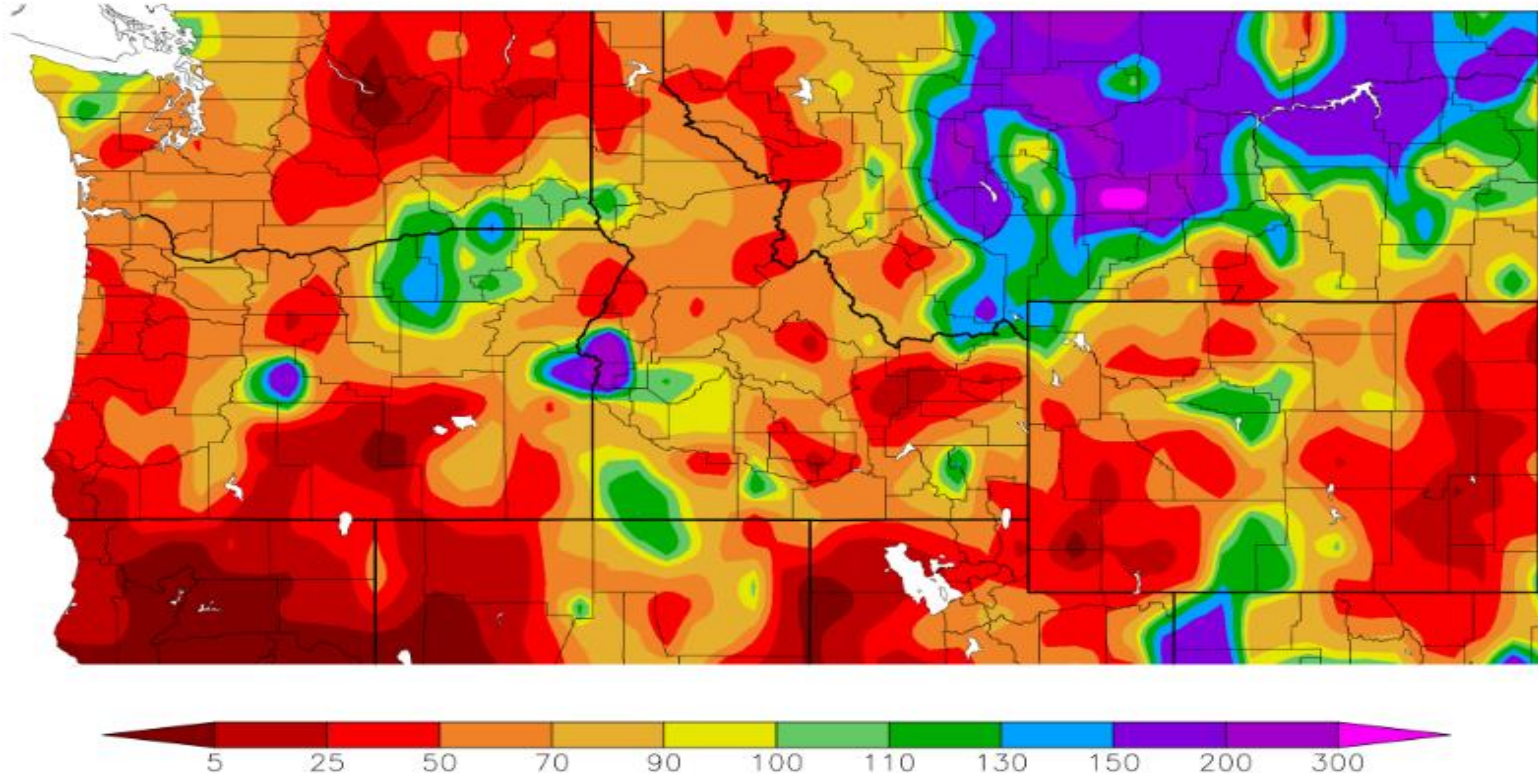
Departure from Normal Temperature (F)  
10/1/2022 – 10/31/2022



The image above shows that the Pacific Northwest had departures from normal temperatures of mostly +4 to +8 degrees. The greatest departures from normal were over the WA Cascades and areas just to the east, as well as over north central OR. There was also a small area over central OR with these warm departures from normal. The lowest departures from normal were mainly over areas east and south of the Blue Mountains of eastern and northeast OR, and a small area over the central OR Cascades.

# October 2022, Percent of Normal of Precipitation

Percent of Normal Precipitation (%)  
10/1/2022 – 10/31/2022



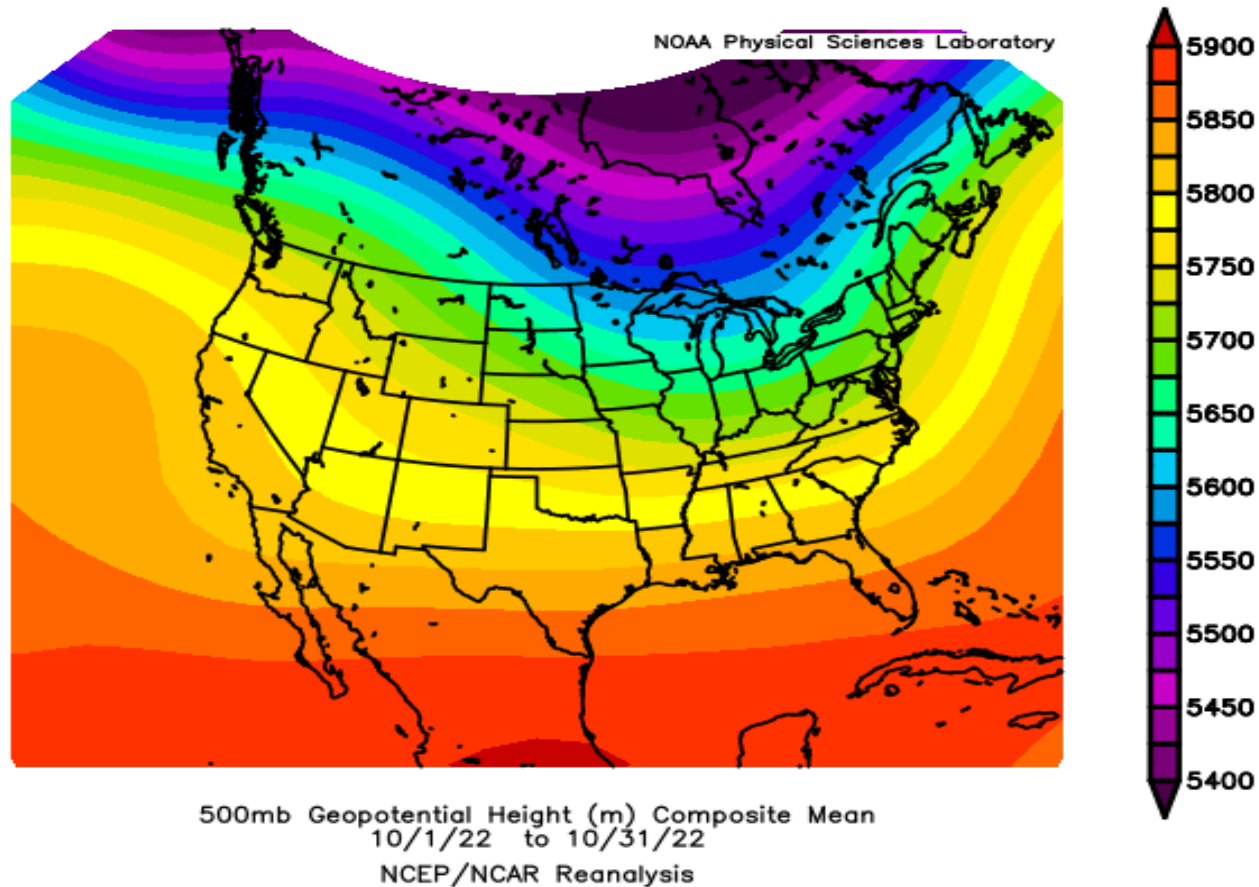
Most of northeast OR and southeast WA had a percent of normal precipitation less than 75 percent, with much greater departures along and just east of the WA Cascades, north central OR, and a small portion of Wallowa County. Areas that had greater than 100 percent of normal precipitation include a substantial portion of Deschutes County, most of the Lower Columbia Basin, and the Blue Mountains and Foothills.

# October 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	72.6	8.7	40.5	6.4	56.6	7.6	0.30	-0.24
Kennewick	72.4	6.6	48.9	6.8	60.6	6.7	0.70	0.10
Walla Walla	68.7	5.2	47.6	4.5	58.2	4.9	1.85	0.17
The Dalles	76.4	10.7	47.1	4.8	61.8	7.8	0.75	-0.24
Redmond	72.6	9.1	34.2	2.9	53.4	6.0	0.13	-0.52
Pendleton Airport	71.9	8.2	45.4	5.3	58.7	6.8	1.04	0.03
La Grande Airport	67.0	4.7	33.4	-1.8	50.2	1.5	1.49	0.20
John Day	72.9	7.5	43.4	10.0	58.1	8.7	0.66	-0.33

Every single station listed in the table above had warmer than normal (greater than zero departures) mean max temperatures, mean min temperatures (except for the La Grande Airport), and the mean average temperatures. The La Grande Airport had a departure of -1.8 degrees from normal (colder than normal). There was an even split on the departures of the precipitation totals. The greatest departures from normal for each variable are highlighted with a bold black box around it. The Dalles was the warmest for the mean max temperatures, while John day was the warmest for both mean minimums and mean averages. Redmond, OR had the greatest departure from normal of precipitation, with -0.52 of an inch.

# October 2022, Average 500 MB Pattern

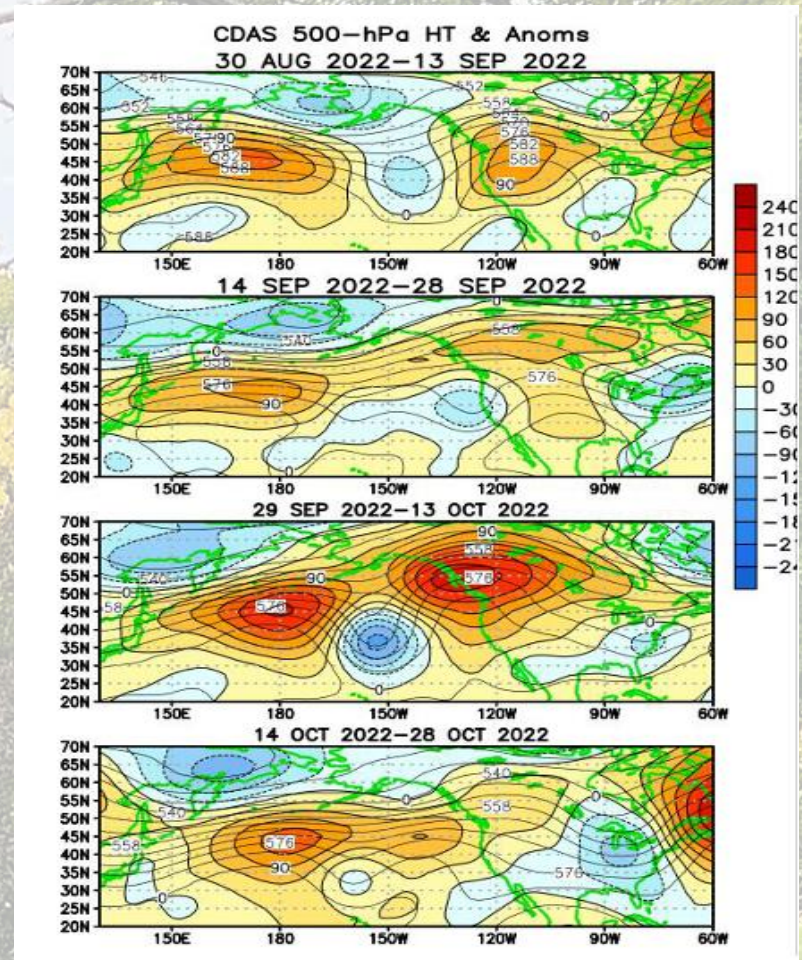


The average 500 MB flow pattern during October, over the Pacific Northwest, was a northwest flow aloft, which was opposite from September, which had a southwest flow aloft. A northwest flow pattern aloft is typically dry with the absence of Pacific Weather Systems. Despite the northwest trajectory of the 500 MB pattern, October turned out to be mostly warmer than normal for stations sampled. On the other hand, the last 10 days of the month were cooler and wetter than normal, owing to a pattern change which led to frequent and colder Pacific weather systems.

# Two Month, Average Bi-weekly 500 MB Plots for September & October 2022

These are more detailed bi-weekly average 500 mb pattern plots, which was sampled from the following period: 31<sup>st</sup> of August through the 28<sup>th</sup> of October. The area of focus is the Pacific Northwest (OR & WA)

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 systems or troughs at 500 mb.



During the first half of September there was a high pressure ridge, which was likely the cause of the early September heat wave. Then an upper low formed off the coast of CA with a southwest flow aloft during mid to late September. This low was rather weak, so it had some, but not a lot of impact on conditions, as September remained mostly warmer and drier than normal. A strong high pressure ridge then formed during the first half of October, resulting in an extended period of warmer and drier than normal conditions. This was followed by a more zonal westerly flow during the latter half of October, resulting in more frequent Pacific storms with significant cooling, likely caused by cooler Pacific air with more clouds and precipitation.



# Significant Weather & Record Weather Events for October 2022

Significant Weather Events				
Event	Date	Report	Where	Source
Snow	October 26, 2022	M 3.5 inches	5 NNW La Pine, OR	Trained Spotter

Record Weather Reports						
Event	Date	Where	Previous Record	New Record	Records Began	
High Temperature	October 3, 2022	Hermiston, OR	85 / 1952	86	1906	
High Temperature	October 3, 2022	Ellensburg, WA	83 / 2020	84	1934	
High Temperature	October 3, 2022	Dallesport, WA	90 / 1958	90 (Tie)	1929	
High Temperature	October 4, 2022	Dallesport, WA	88 / 1980	89	1929	
High Temperature	October 6, 2022	Dallesport, WA	90 / 1974	90 (Tie)	1929	
High Temperature	October 8, 2022	Dallesport, WA	87 / 1988	88	1929	
High Temperature	October 9, 2022	Ellensburg, WA	81 / 1945	81 (Tie)	1934	
High Temperature	October 9, 2022	Dallesport, WA	86 / 1996	87	1929	
High Temperature	October 10, 2022	Ellensburg, WA	82 / 1945	82 (Tie)	1934	
High Temperature	October 10, 2022	Pasco, WA	86 / 2015	87	1934	
High Temperature	October 10, 2022	Yakima, WA	81 / 1988	83	1909	
High Temperature	October 10, 2022	Dallesport, WA	84 / 1988	88	1929	
High Temperature	October 12, 2022	Ellensburg, WA	78 / 1945	78 (Tie)	1934	
High Temperature	October 12, 2022	Dallesport, WA	83 / 1979	83 (Tie)	1929	
High Temperature	October 13, 2022	Ellensburg, WA	77 / 2004	79	1934	
High Temperature	October 13, 2022	Dallesport, WA	82 / 1976	83	1929	
High Temperature	October 14, 2022	Dallesport, WA	81 / 2004	82	1929	
High Temperature	October 15, 2022	Ellensburg, WA	76 / 1945	78	1934	
High Temperature	October 15, 2022	Yakima, WA	78 / 1991	80	1909	
High Temperature	October 16, 2022	Dallesport, WA	80 / 1963	80 (Tie)	1929	
High Temperature	October 16, 2022	Yakima, WA	79 / 1963	79 (Tie)	1909	
High Temperature	October 16, 2022	Ellensburg, WA	76 / 2015	78	1934	
High Temperature	October 17, 2022	Ellensburg, WA	76 / 2015	76 (Tie)	1934	
High Temperature	October 17, 2022	Yakima, WA	77 / 1952	77 (Tie)	1909	
High Temperature	October 18, 2022	Ellensburg, WA	76 / 1940	76 (Tie)	1934	
High Temperature	October 18, 2022	Dallesport, WA	77 / 1978	80	1929	
High Temperature	October 18, 2022	Ellensburg, WA	76 / 1940	76 (Tie)	1934	
High Temperature	October 19, 2022	Dallesport, WA	76 / 1981	79	1929	
Maximum Rainfall	October 22, 2022	Walla Walla, WA	0.74 / 1983	0.85	1949	

# October 2022, Observed Monthly Max & Min Temperatures

Location	Highest Maximum	Lowest Minimum
Pendleton, OR	86	38
Redmond, OR	88	23
Pasco, WA	87	36
Yakima, WA	85	29
Walla Walla, WA	82	40
Bend, OR	85	31
Ellensburg, WA	84	32
Hermiston, OR	86	36
John Day, OR	90	33
La Grande, OR	81	26
The Dalles, OR	90	40
Meacham, OR	80	25
MT Adams RS, WA	81	31

All the highest maximum temperatures were 80 degrees or higher, with the warmest at John Day, OR & The Dalles, OR (both reaching 90 deg), with the least at Meacham, OR (80 deg). The lowest minimums were mostly in the 30s, with a few 20s, and two stations at 40 degrees. Both the highest maximums and lowest minimums were mostly warmer than normal.

# October 2022 Observed Total Precipitation and Total Snowfall/Hail

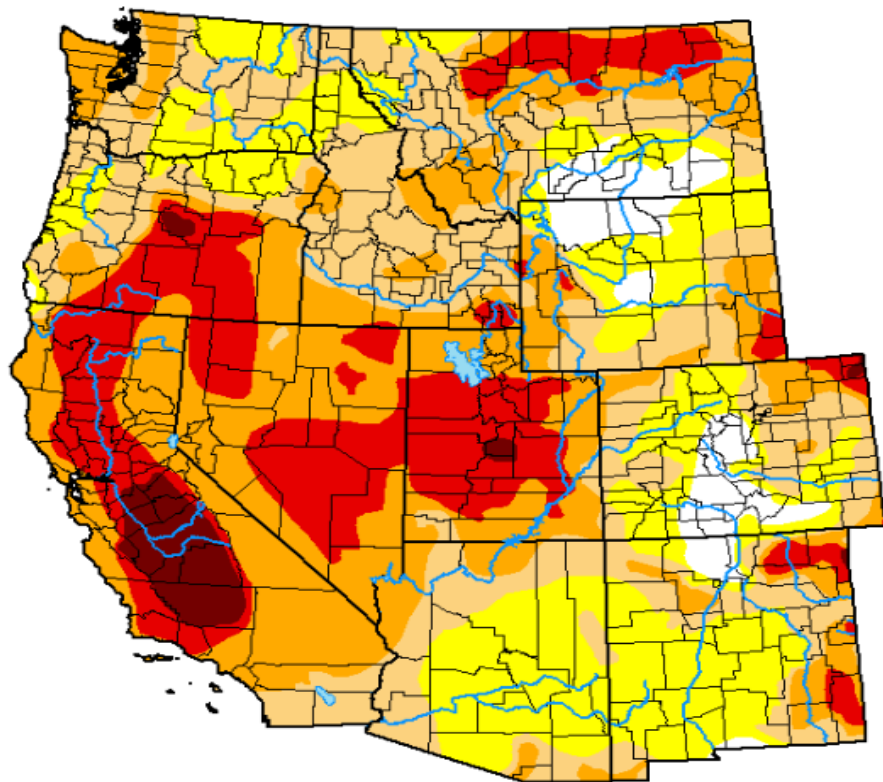
Location	Total Precipitation (inches)	Total Snow/Hail (inches)
Pendleton, OR	1.04	0.0
Redmond, OR	0.13	M
Pasco, WA	0.74	M
Yakima, WA	0.30	M
Walla Walla, WA	1.85	M
Bend, OR	3.75	0.0
Ellensburg, WA	0.21	M
Hermiston, OR	1.20	M
John Day, OR	0.66	M
La Grande, OR	1.49	M
The Dalles, OR	0.75	M
Meacham, OR	2.52	M
MT Adams RS, WA	1.96	0.0

Precipitation amounts ranged from a least of 0.13 of an inch at Redmond, OR to a greatest amount of 3.75 inches at Bend, OR. However, most precipitation amounts were from a half inch to an inch and a half. These values were mostly representative for October. Of the three stations which reports snow or hail, there were not any stations that reported hail or snow, which is typical for October (too soon for snow, and hail being unusual).

# October 2022 - Drought Monitor – Western USA

## U.S. Drought Monitor West

**October 25, 2022**  
(Released Thursday, Oct. 27, 2022)  
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	4.56	95.44	73.49	47.80	19.55	2.53
<b>Last Week</b> 10-19-2022	5.02	94.98	73.03	47.38	19.38	2.62
<b>3 Months Ago</b> 07-26-2022	16.72	83.28	72.69	55.74	29.12	6.51
<b>Start of Calendar Year</b> 01-04-2022	3.68	96.32	89.29	64.90	23.85	3.94
<b>Start of Water Year</b> 09-27-2022	3.89	96.11	73.90	47.71	19.37	2.63
<b>One Year Ago</b> 10-26-2021	2.16	97.84	90.73	74.61	47.11	15.31

Intensity:



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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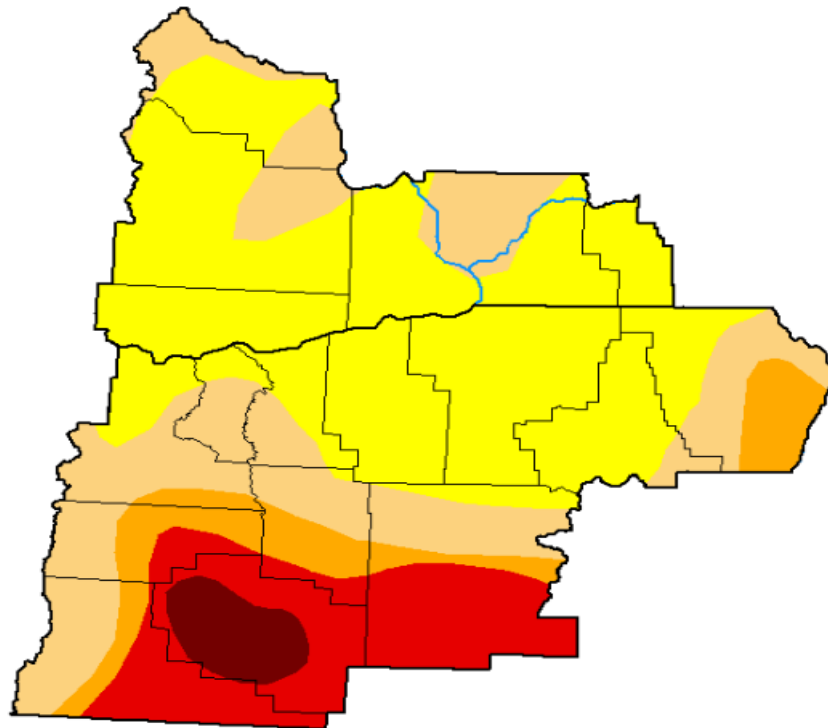
[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

There was not much change in drought conditions from September. Most of NE Oregon and SE Washington had drought conditions ranging from D0 to D1 (“Abnormally Dry” to “Moderate Drought”). However, most of central OR, east of the Cascades, to the southern half of the John Day Highlands had drought conditions ranging from D3 to D4 (“Extreme Drought” to “Exceptional Drought”). There were not any areas with drought conditions being in the “None” category since August due to the unusually hot and dry summer.

# October 2022 - Drought Monitor – Pendleton Forecast Area

## U.S. Drought Monitor Pendleton, OR WFO

**October 25, 2022**  
(Released Thursday, Oct. 27, 2022)  
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	0.00	100.00	51.51	25.59	17.46	3.17
<b>Last Week</b> 10-18-2022	0.00	100.00	51.51	25.59	17.46	3.17
<b>3 Months Ago</b> 07-26-2022	36.21	63.79	41.68	27.83	22.24	4.01
<b>Start of Calendar Year</b> 01-04-2022	3.10	96.90	95.52	87.37	61.34	21.83
<b>Start of Water Year</b> 09-27-2022	0.00	100.00	46.03	24.98	17.46	3.17
<b>One Year Ago</b> 10-26-2021	1.14	98.86	97.22	93.83	85.12	49.93

Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme 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:

Adam Hartman  
NOAA/NWS/NCEP/CPC



[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

Drought conditions over most of the forecast area ranged from the D0 to D1 category (“Abnormally Dry” to “Moderate Drought”). However, much of the south central and southeast portions of the forecast area, as well as SE Wallowa County, had drought conditions ranging from of D2 (“Severe Drought”) to D3 and D4 (“Extreme” to “Exceptional Drought”) conditions. The areas with the worse drought conditions were in SE Deschutes County, Crook County and the southern half of Grant County.

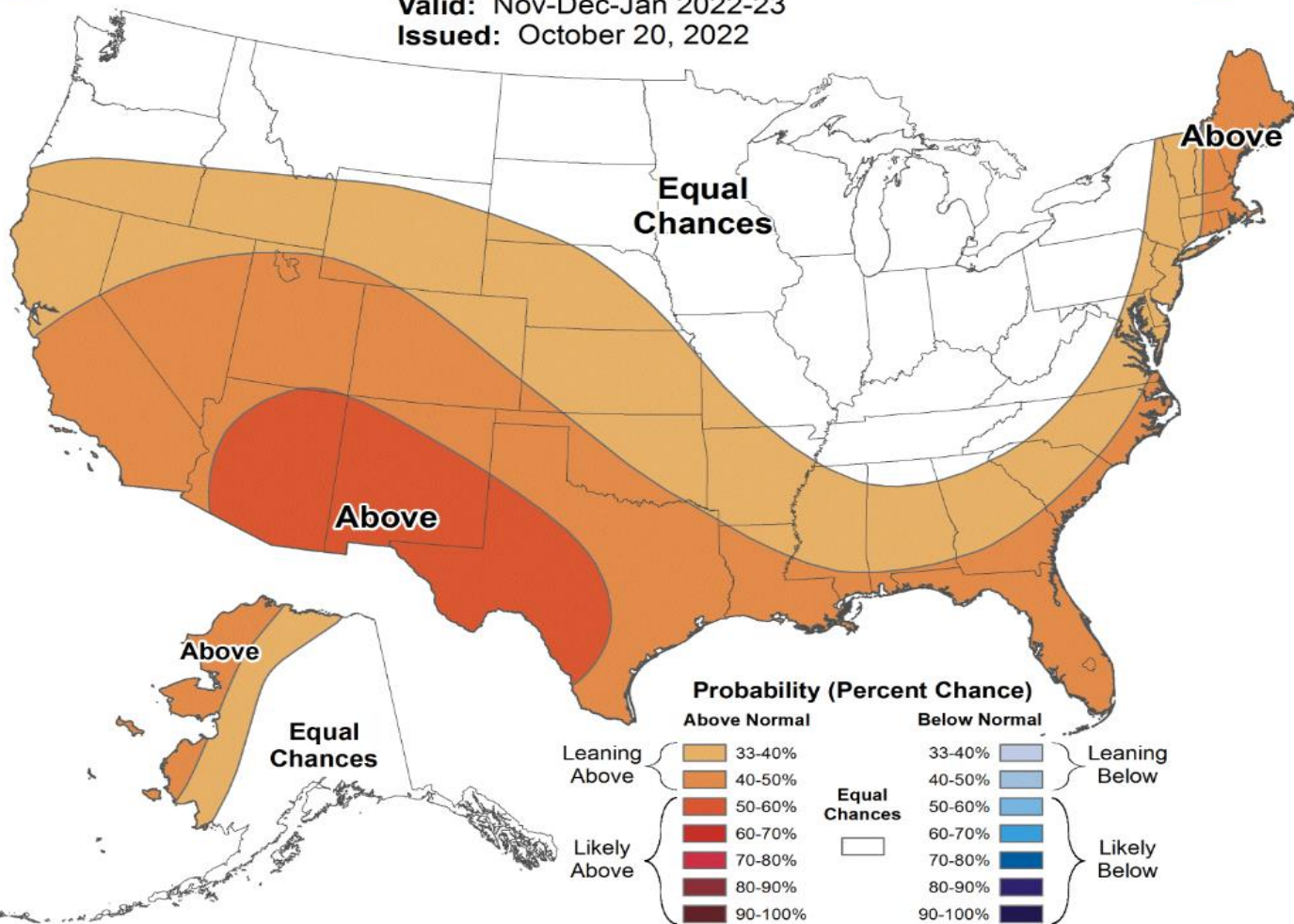
# USA Three Month Temperature Outlook



## Seasonal Temperature Outlook



Valid: Nov-Dec-Jan 2022-23  
Issued: October 20, 2022



The temperature outlook for the 3-month period of November – January is for a greater chance of equal chances of above or below normal temperatures. While this may depart from typical La-Nina conditions over the Pacific Northwest, this forecast is still not too unusual for the Pacific Northwest.

# USA Three Month Precipitation Outlook

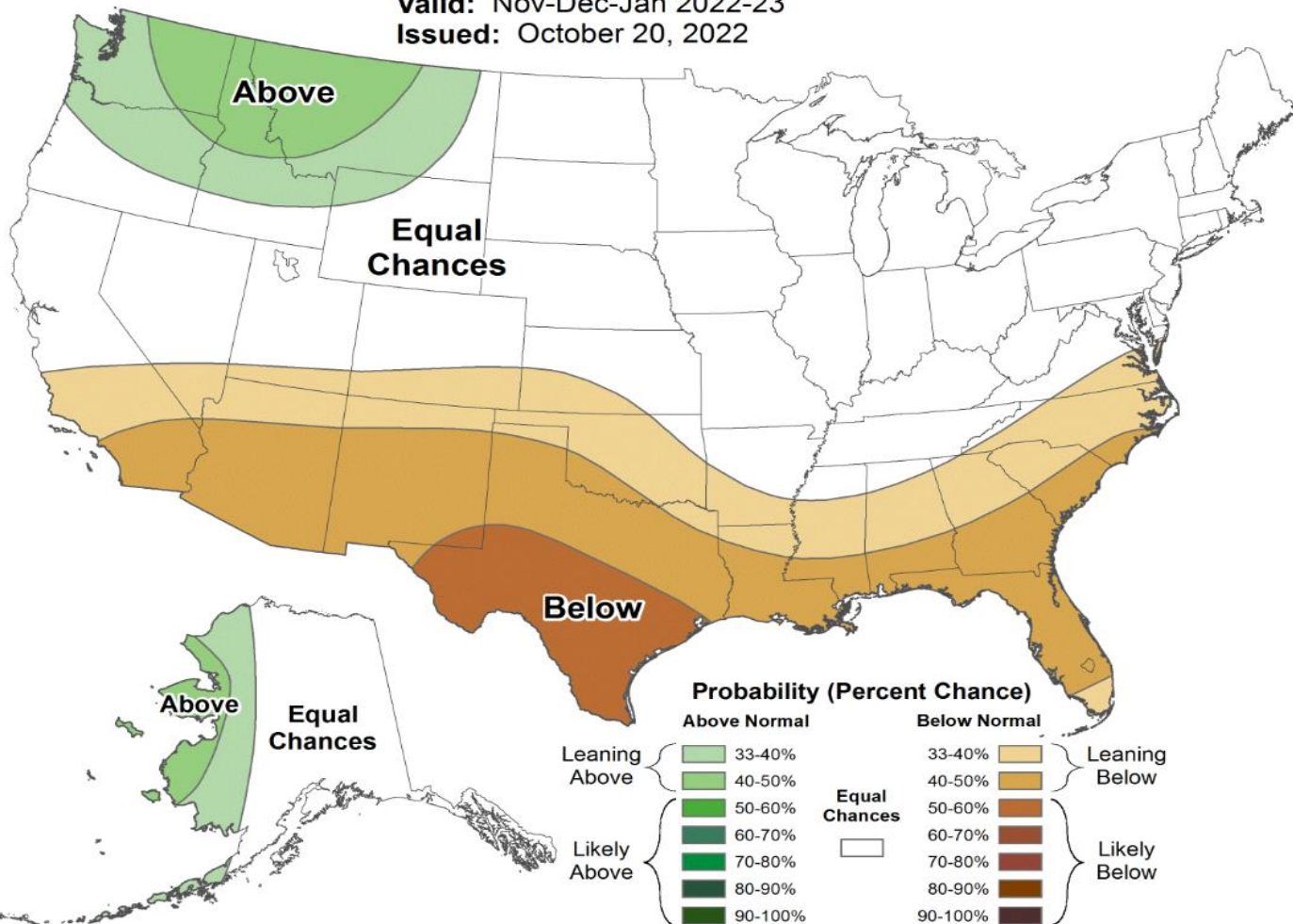


## Seasonal Precipitation Outlook



Valid: Nov-Dec-Jan 2022-23

Issued: October 20, 2022

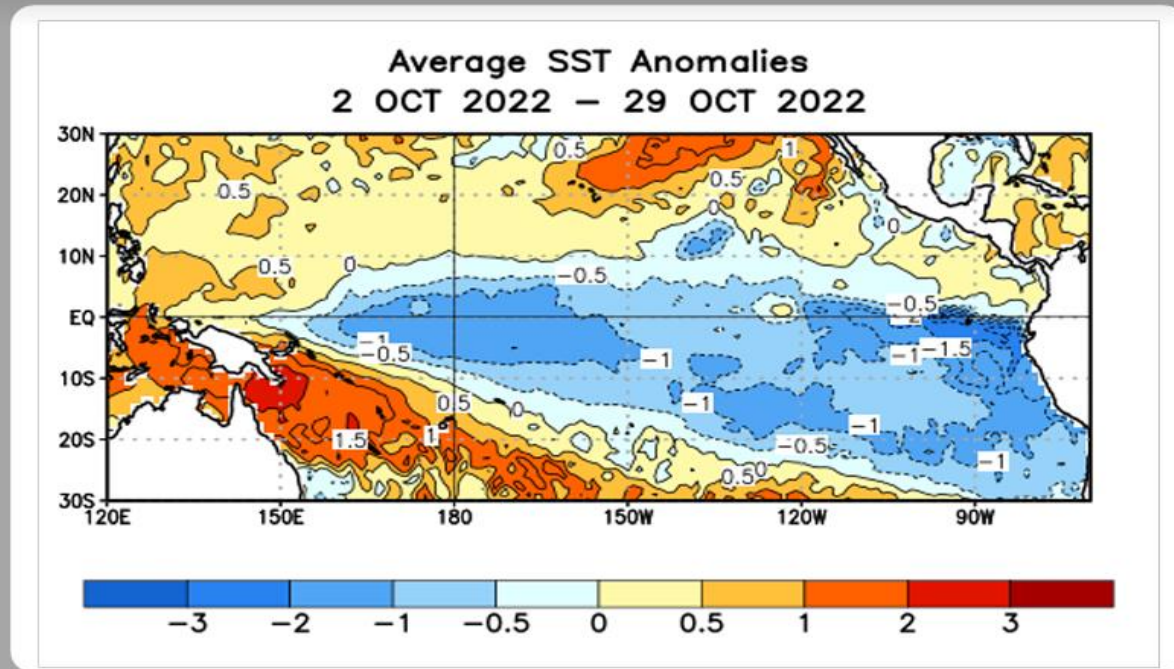


The precipitation outlook for the 3-month period of November – January is for a greater chance of above normal precipitation over most of the Pacific Northwest. This is more consistent with La-Nina conditions in the Pacific Northwest for late fall into winter.

# Sea Surface Temperature (SST) Anomalies for October 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 still below average across most of the equatorial Pacific Ocean. However, there were areas of above normal Sea Surface Temperatures, north of the equator, along and off the coasts of Mexico southward to the extreme northwest South American coast. However, the above image is still representative of La Nina conditions since most of the Pacific Ocean equatorial SSTs are still below average.

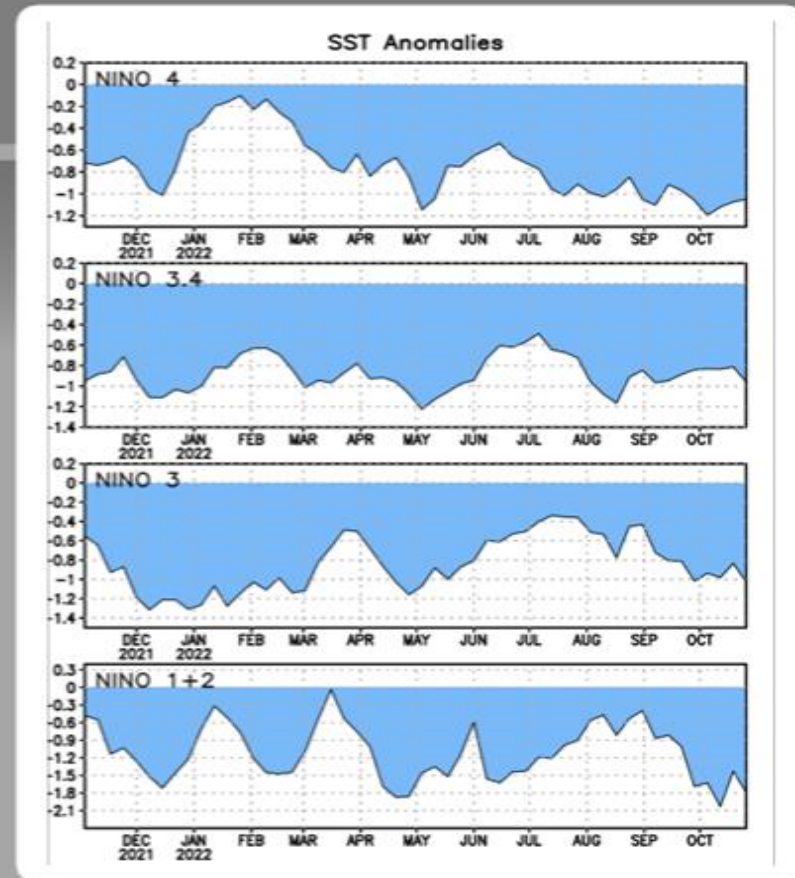
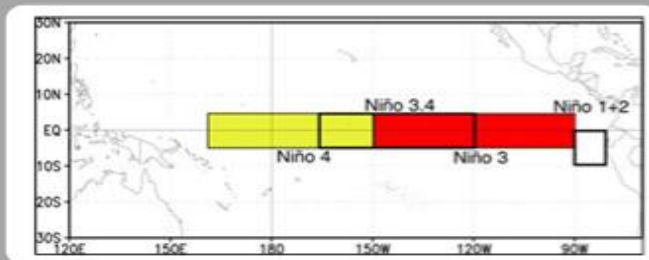


# ENSO NINO Regions SST Anomalies for Each Nino Region in October 2022

## 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	-1.0°C
Niño 1+2	-1.8°C



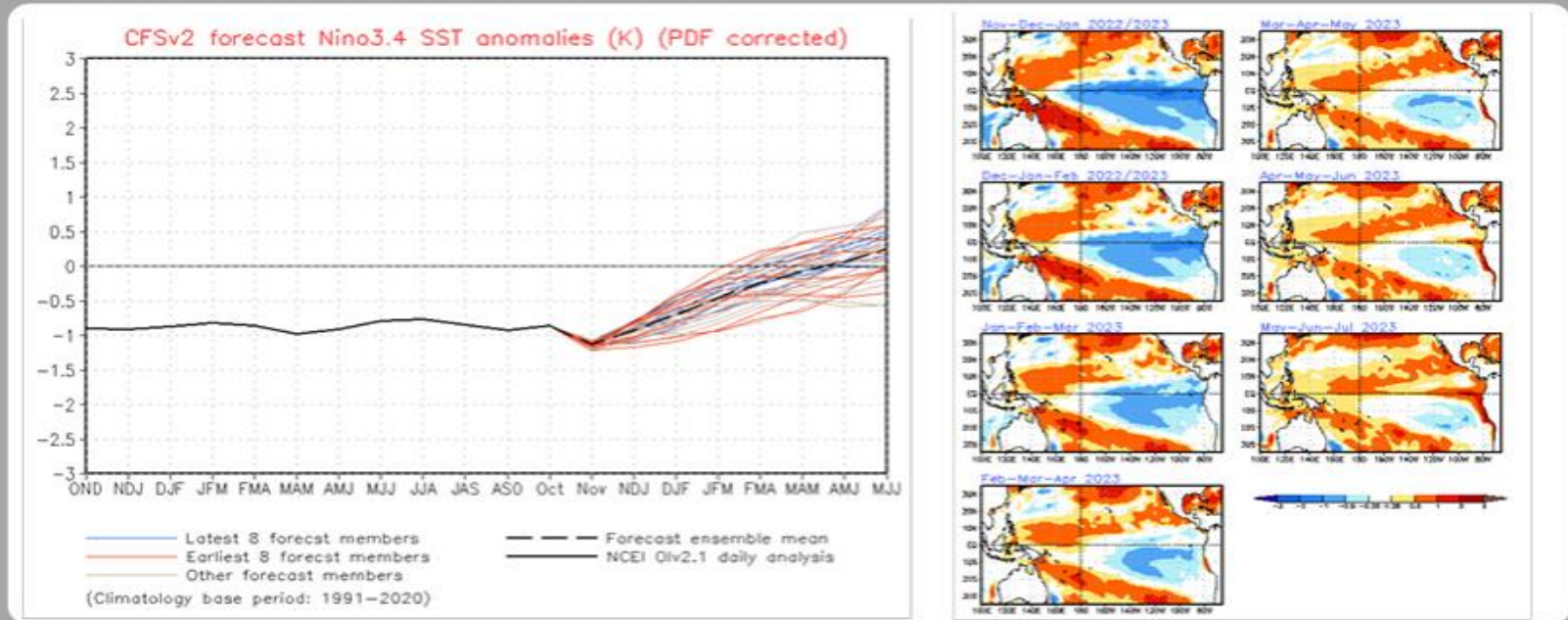
All Niño Regions had nearly steady SST anomalies during October (on average), with all of them having below normal SSTs. All Niño Regions still had well below normal Sea Surface Temperatures (SSTs). This is consistent with the ongoing La Niña event for the third year in a row. The coolest Niño Regions were Niño Regions 1+2, and 4. Niño Regions 3 and 3.4 were just slightly warmer than the other two Niño Regions.

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

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

Issued: 31 October 2022

The CFS.v2 ensemble mean (black dashed line) indicates La Niña is likely to persist into Northern Hemisphere winter 2022-23, and then transition to ENSO-neutral around January-March 2023.



The SST CFS.v2 forecast ensemble mean shows that La Niña conditions are likely to persist into the Northern Hemisphere winter 2022-2023, and then transition to ENSO-neutral conditions by around January – March 2023. Both the black dashed line (the ensemble mean) and the small SST images to the right all show a gradual warming trend of SSTs through the winter into spring of 2023. This indicates that La Niña conditions are expected to weaken gradually from November – June. After that, the ensemble mean shows SST's rising above the zero line from spring to early summer, resulting in ENSO neutral.

# 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.

There is a 75% chance of La Niña during the Northern Hemisphere winter (December-February) 2022-23, with a 54% chance for ENSO-neutral in February-April 2023.\*

The current ENSO Alert System Status is still **“La-Niña Advisory”**. Equatorial sea surface temperatures are still below average across most of the Pacific Ocean, which is consistent with La Niña, as is the tropical Pacific atmosphere. La Niña is favored to continue through the Northern Hemisphere winter of 2022 – 2023 (75 percent chance) in December – February, with a 54 percent chance for a transition to ENSO-neutral in February – April 2023, as equatorial Sea Surface Temperatures continue to increase.



Thank You!