



The Month In Review

October 2023

National Weather Service,
Pendleton, Oregon

First snowfall over the northern Blue Mountains on October 25th. Photo by: Johnny Blagg & Clay Widener

October 2023 Climate Conditions Summary

October was another rather benign weather-wise. There were not any significant weather events again during this month that warranted any Local Storm Reports (LSRs). There were a few rain events which brought significant amounts of rain over some areas. For example, the Pendleton Airport had precipitation amounts of 0.32 of an inch on the 2nd and 3rd. There was another rain event on the 10th and 11th with 0.21 of an inch reported, and a more significant rain event on the 24th - 27th, with a total of 0.68 of an inch of rain. The greatest rainfall amounts occurred at Walla Walla, WA, the La Grande, OR CoOp station, Meacham, OR, and the Mount Adams Ranger Station, WA, in which there was greater than an inch of total rainfall reported during the month. The first snow event occurred in the Cascades and the eastern and northeast mountains on the 24th and 25th. There were Winter Weather Advisories for the WA and OR Cascades, however, snow amounts were too light in both the Cascades and in the eastern and northeast mountains to warrant any LSRs being issued.

The first significant cold snap with widespread hard freezes occurred at the end of the month from the 27th through the 30th. The lowest temperatures reported were at Redmond, OR and Meacham, OR, with both stations reporting a low of 11 degrees. Many other stations had lows of below 20 degrees. However, October had an overall average of near to slightly above normal temperatures by a few degrees owing to warm temperatures during the first half of the month.

Below and on the next slide are images of weather and climate conditions during the month.



Afternoon convection south of Pendleton, OR



Significant rainfall event over Pendleton, OR



First snowfall in the northern Blue Mountains

More Images Representing October 2023 Weather/Climate Conditions



First hard freeze and widespread frost at the end of the month



First significant snowfall over the northeast OR mountains



One of our first dense fog episodes over northeast Oregon



Dramatic sunrise under a chaotic sky over Pendleton, OR

Significant Weather Events - Local Storm Reports for October 2023

Significant Weather Events					
Date	Location	State	Event Type	Magnitude	Source

There were not any significant weather events or reports during the entire month of October.

Record Weather Events for October 2023

Record Weather Reports					
Event	Date	Where	Previous Record	New Record	Records Began
Max Rainfall	October 16, 2023	Dallesport, WA (DLS)	0.11 inch / 2016	0.11 inch (tie)	1948
High Temp	October 18, 2023	Redmond, OR	82 deg / 1977	86 deg	1941
High Temp	October 19, 2023	Yakima, WA	75 deg / 2015	76 deg	1909
High Temp	October 19, 2023	Walla Walla, WA	76 deg / 1992	76 deg (tie)	1949
High Temp	October 19, 2023	Redmond, OR	83 deg / 1974	85 deg	1941
High Temp	October 19, 2023	Hermiston, OR	77 deg / 1973	79 deg	1906
High Temp	October 19, 2023	Ellensburg, WA	76 deg / 1940	76 deg (tie)	1934
High Temp	October 20, 2023	Yakima, WA	77 deg / 2003	77 deg (tie)	1909
High Temp	October 20, 2023	Ellensburg, WA	74 deg / 2013	79	1934

There were 9 record weather events during October. These records were all record high temperatures, except for one, which was a record maximum rainfall, at Dallesport, WA, with a record of +0.11 of an inch. The record highs ranged from 76 degrees at 3 locations (Yakima, WA, Walla Walla, WA, and Ellensburg, WA) to 86 degrees at Redmond, OR.

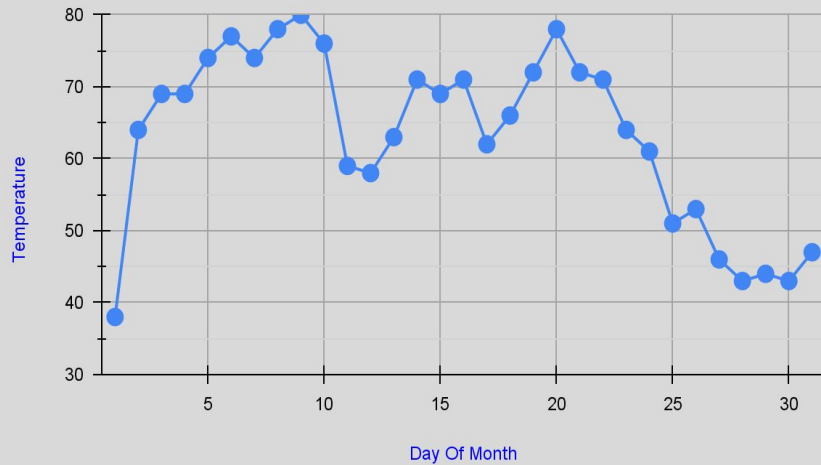
October 2023: Observed Monthly Maximum & Minimum Temperatures

Location <small>Source: ASOS, or otherwise stated</small>	Highest Maximum	Lowest Minimum
Pendleton, OR	84	23
Redmond, OR	86	11
Pasco, WA	82	20
Yakima, WA	81	17
Walla Walla, WA	81	26
Bend, OR CoOp	81	12
Ellensburg, WA	81	18
Hermiston, OR	83	21
John Day, OR CoOp	81	13
La Grande, OR CoOp	81	18
Dallesport, WA	84	24
Meacham, OR	78	11
MT Adams R.S., WA	78	18

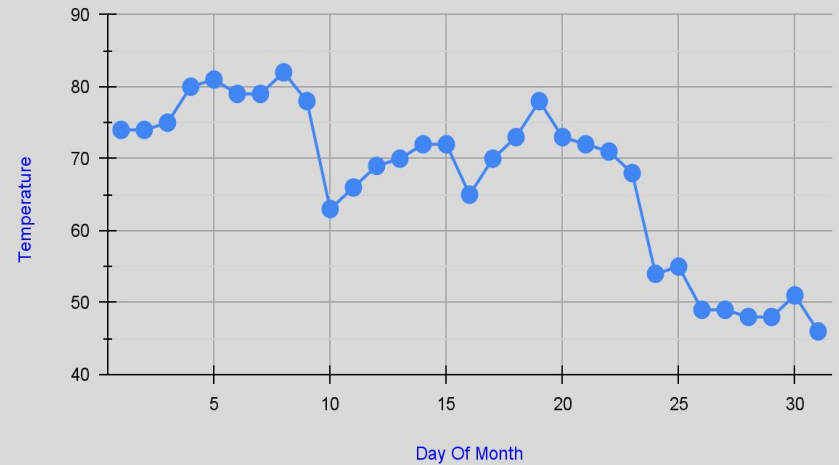
All of the maximum highest temperatures were above 80 degrees, except for Meacham, OR and the Mt. Adams Ranger Station, which both stations had a maximum highest temperature of 78 degrees. Redmond, OR had the highest maximum temperature in the list with 86 degrees. All of the lowest minimum temperatures were in teens to the mid 20s. Meacham, OR, and Redmond, OR both had the lowest minimum temperatures with a tie of 11 degrees. The warmest was at Walla Walla, WA with a lowest minimum of 26 degrees.

October 2023 - Daily Maximum Temperatures For Select Cities

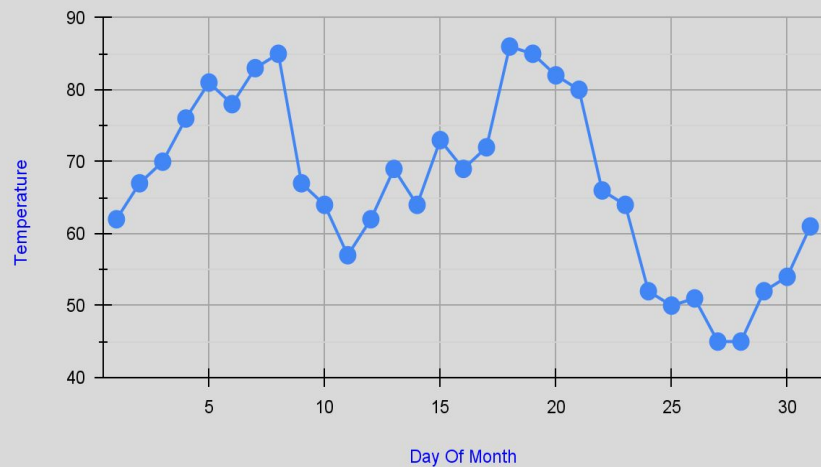
Pendleton, OR - October 2023 Daily Maximum Temperatures



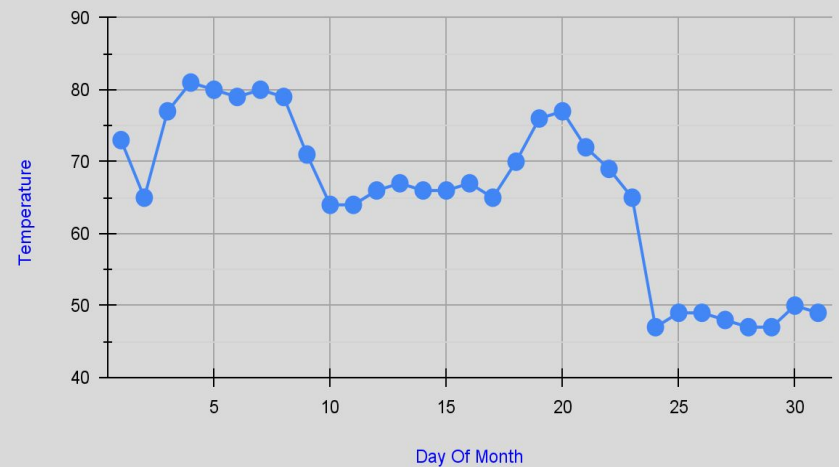
Pasco, WA - October 2023 Daily Maximum Temperatures



Redmond, OR - October 2023 Daily Maximum Temperatures



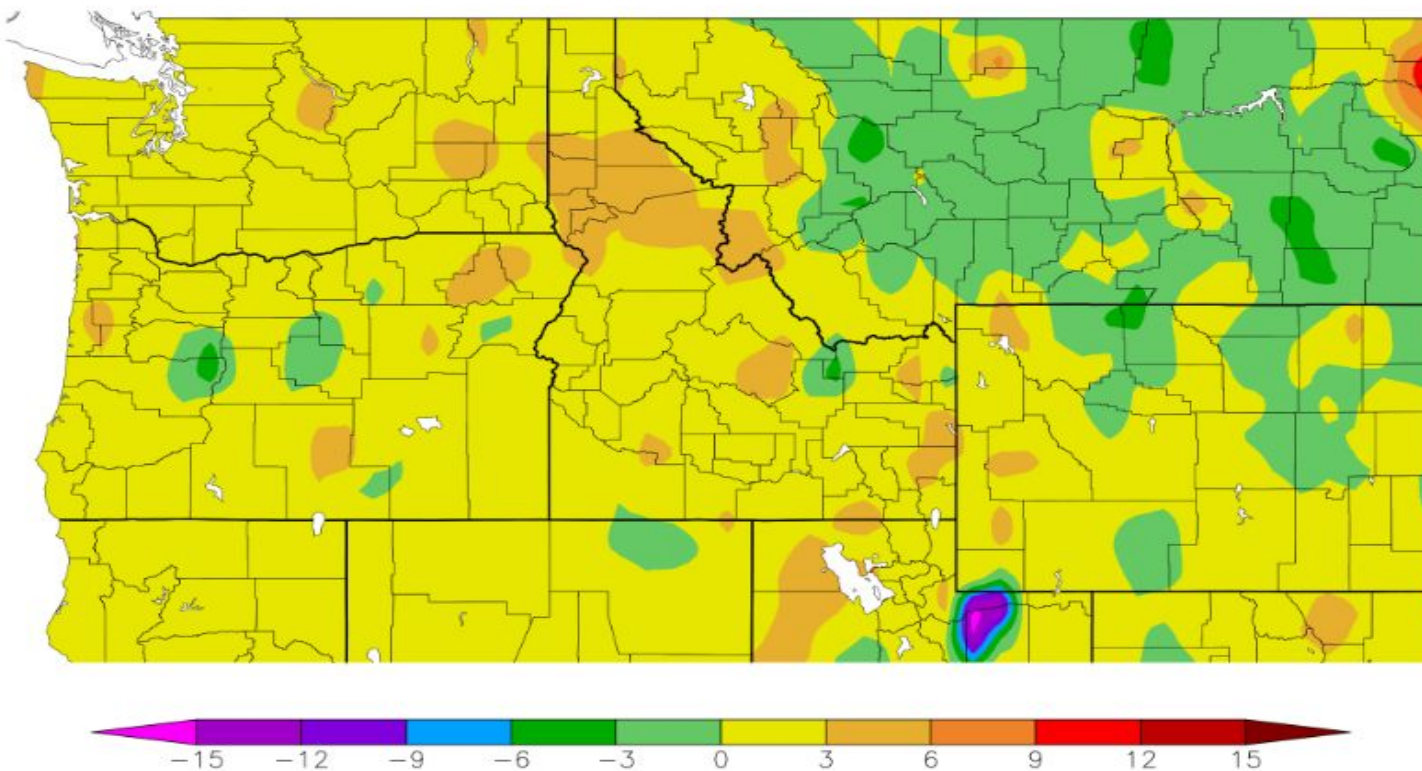
Yakima, WA - October 2023 Daily Maximum Temperatures



The graphs above show that the month had more amplitude in the temperature trends. This was due to increased active weather in October, being a transition month, with frequent weather systems.

October 2023: Departure from Normal of Average Temperatures

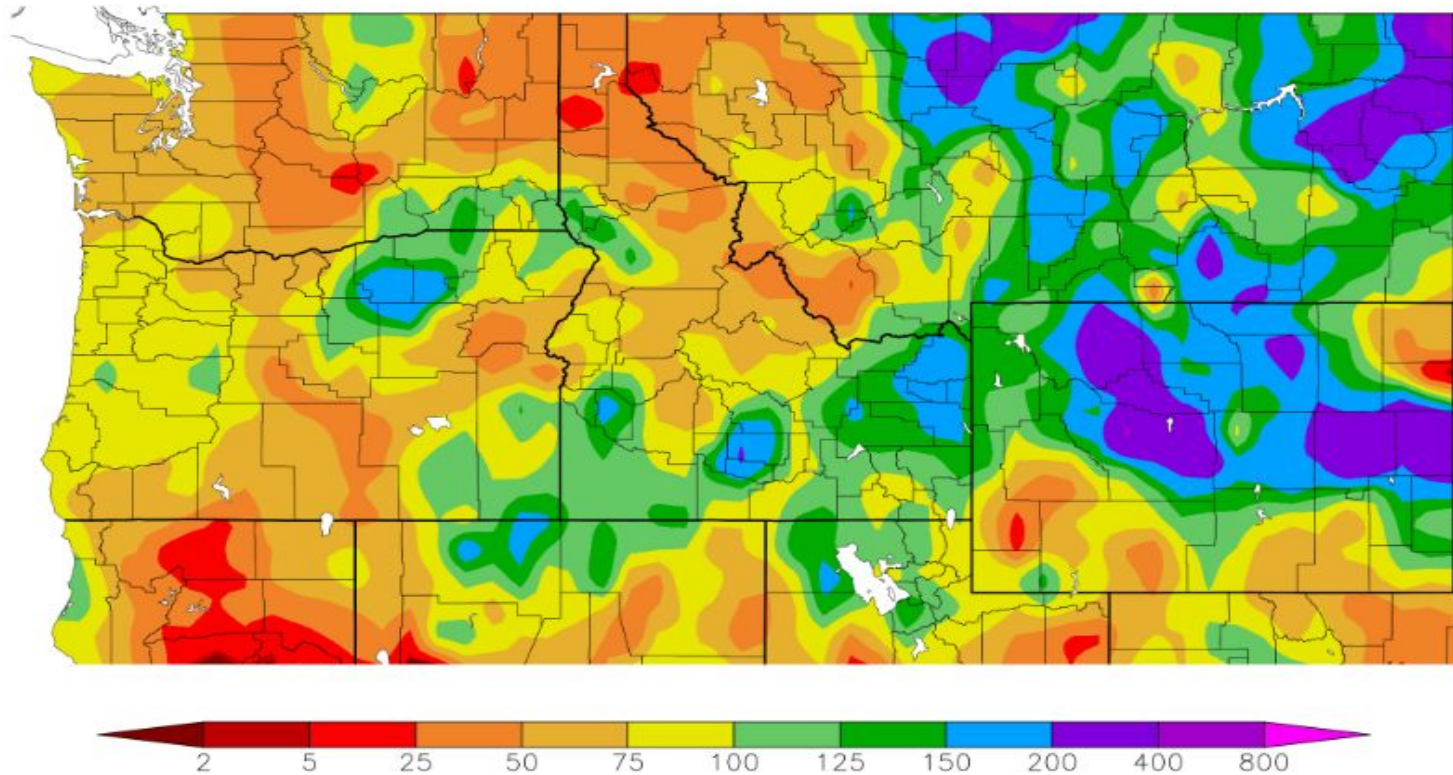
Departure from Normal Temperature (F)
10/1/2023 – 10/31/2023



Overall, the Pacific Northwest had slightly above normal average temperatures. Departures from normal ranged from -3 degrees below normal in central OR, to as much as +6 degrees above normal in northeast OR. The first half of the month was warmer than normal, and the last week of the month had the coldest temperatures. However, the warmer than normal first half of the month dominated over the cold temperatures at the end of the month.

October 2023: Percent of Normal of Precipitation

Percent of Normal Precipitation (%)
10/1/2023 – 10/31/2023



The percent of normal precipitation had about an equal mix of above and below normal temperatures. The wettest locations were over the southern Blue Mountains northeast across the Lower Columbia Basin to the Blue Mountains & Foothills. The driest locations in the surrounding areas. Departures ranged from 25 percent of normal to as wet as 200 percent of normal. These differences averaged out to be an overall slightly wetter than normal month.

October 2023: Departures from Normal Means/Sums for Select Cities

Source: ASOS, or otherwise stated	Max T	Max T D	Min T	Min T D	Ave T	Ave T D	PCPN	PCPN D
Yakima, WA	65.3	0.9	37.7	2.4	51.5	1.7	0.31	-0.33
Kennewick, WA	66.8	0.9	45.3	2.2	56.1	1.6	0.78	0.11
Walla Walla, WA	63.0	-0.4	44.6	0.7	53.8	0.1	1.83	0.17
Dallesport, WA	66.6	1.1	44.4	1.8	55.5	1.5	0.72	-0.42
Redmond, OR	66.8	2.3	33.3	0.6	50.1	1.5	0.32	-0.36
Pendleton Airport	65.6	2.1	42.6	3.2	54.1	2.6	1.26	0.17
La Grande Airport	63.8	1.4	37.4	1.8	50.6	1.6	1.67	0.09
John Day, OR	62.4	0.2	33.8	2.7	48.1	1.4	0.80	-0.24

All of the mean maximum temperature departures were positive (above normal), except for Walla Walla, WA, which had a departure of -0.4 of a degree. The greatest departure (absolute value) was at Redmond, OR, with a departure of 2.3 degrees. All of the mean minimum temperatures and the mean average temperatures were positive (above normal). The greatest absolute value departures were both at Pendleton, OR, with a departure of +3.2 degrees and +2.6 degrees, for the mean departure minimum and mean departure average respectively. There was a near even split of the departures from normal precipitation, thus making October having slightly above normal precipitation overall. The greatest departure was -0.42 of an inch at Dallesport, WA, and the least departure was +0.09 of an inch at the La Grande Airport.

The greatest departures are outlined in black boxes.

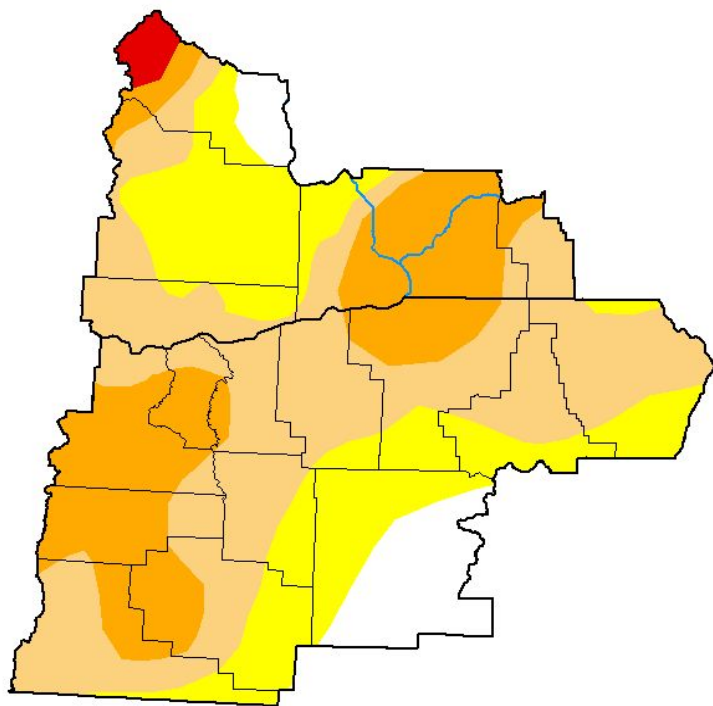
October 2023: Observed Total Precipitation and Total Snowfall / Hail

Location <small>Source: ASOS, or otherwise stated</small>	Total Precipitation (inches)	Total Snow/Hail (inches)
Pendleton, OR	1.26	0.0
Redmond, OR	0.32	M
Pasco, WA	0.74	M
Yakima, WA	0.31	M
Walla Walla, WA	1.83	M
Bend, OR CoOp	0.76	0.0
Ellensburg, WA	0.32	M
Hermiston, OR	0.84	M
John Day, OR CoOp	0.80	0.0
La Grande, OR CoOp	1.12	0.0
The Dalles, OR	0.72	M
Meacham, OR	3.23	M
Mt. Adams R.S., WA	2.28	0.0

The greatest reported total precipitation for October was at Meacham, OR, with 3.23 inches, and the least was at Yakima, WA with 0.31 of an inch. The Mt. Adams Ranger Station came in second place with a total precipitation amount of 2.28 inches. There were not any reports of snow at any of the stations that do report snow. However, there was light snow in the northeast Mountains and in the Cascades at the end of the month.

October 2023 - Drought Monitor – Pendleton Forecast Area

U.S. Drought Monitor Pendleton, OR WFO



October 31, 2023

(Released Thursday, Nov. 2, 2023)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	7.74	92.26	65.74	24.92	1.09	0.00
Last Week 10-24-2023	7.48	92.52	66.95	24.92	1.09	0.00
3 Months Ago 08-01-2023	1.52	98.48	73.93	26.70	0.00	0.00
Start of Calendar Year 01-03-2023	29.80	70.20	39.93	22.93	15.24	3.17
Start of Water Year 09-26-2023	1.51	98.49	71.11	31.58	1.09	0.00
One Year Ago 11-01-2022	0.00	100.00	51.51	25.59	17.46	3.17

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>

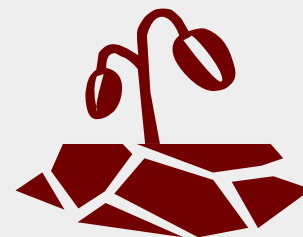
Author:

Brian Fuchs
National Drought Mitigation Center



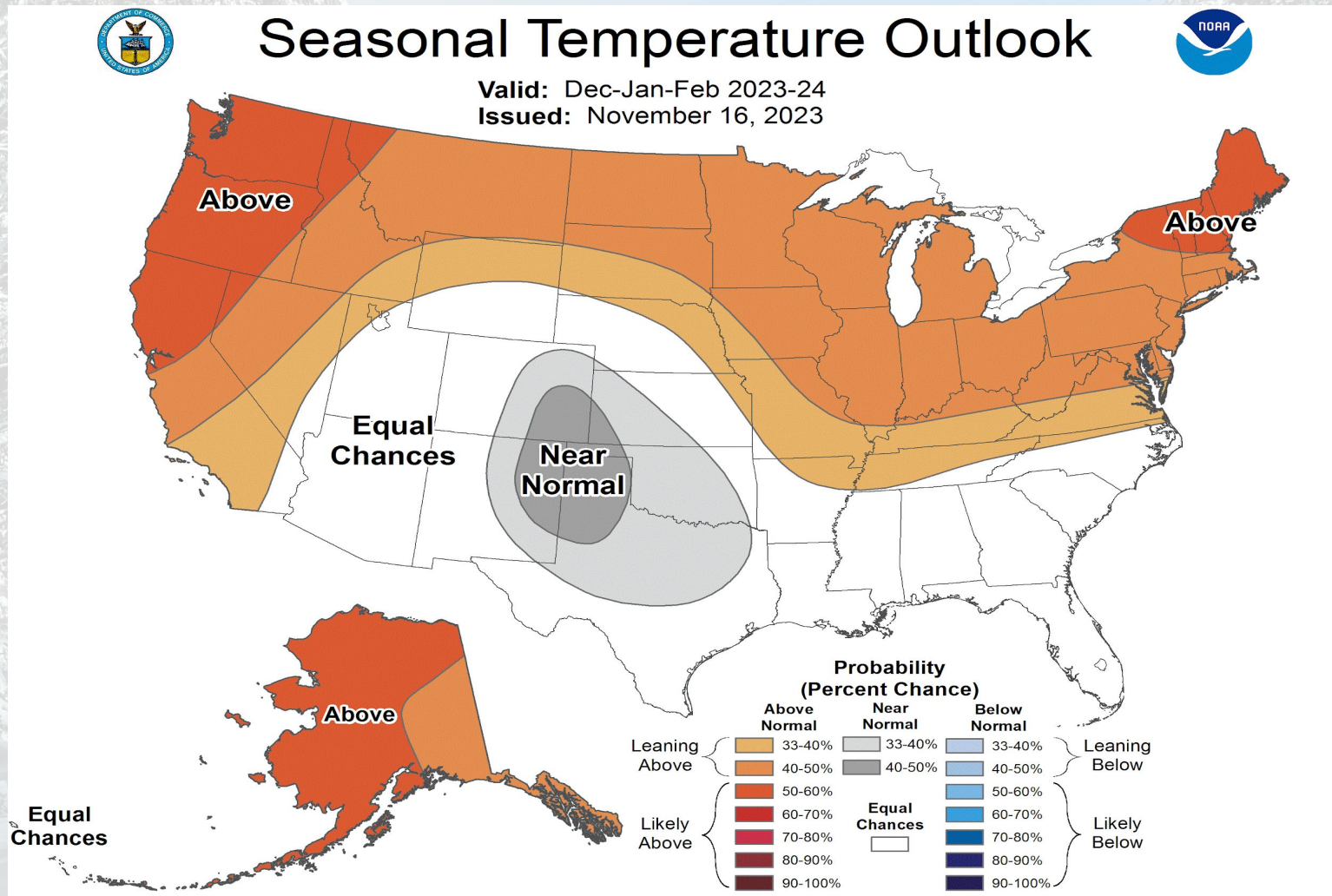
droughtmonitor.unl.edu

For additional drought and water supply information, please check out the Latest NWS Pendleton [Drought Summary / Water Supply Outlook](#), which has been released on Monday, November 16th, 2023.



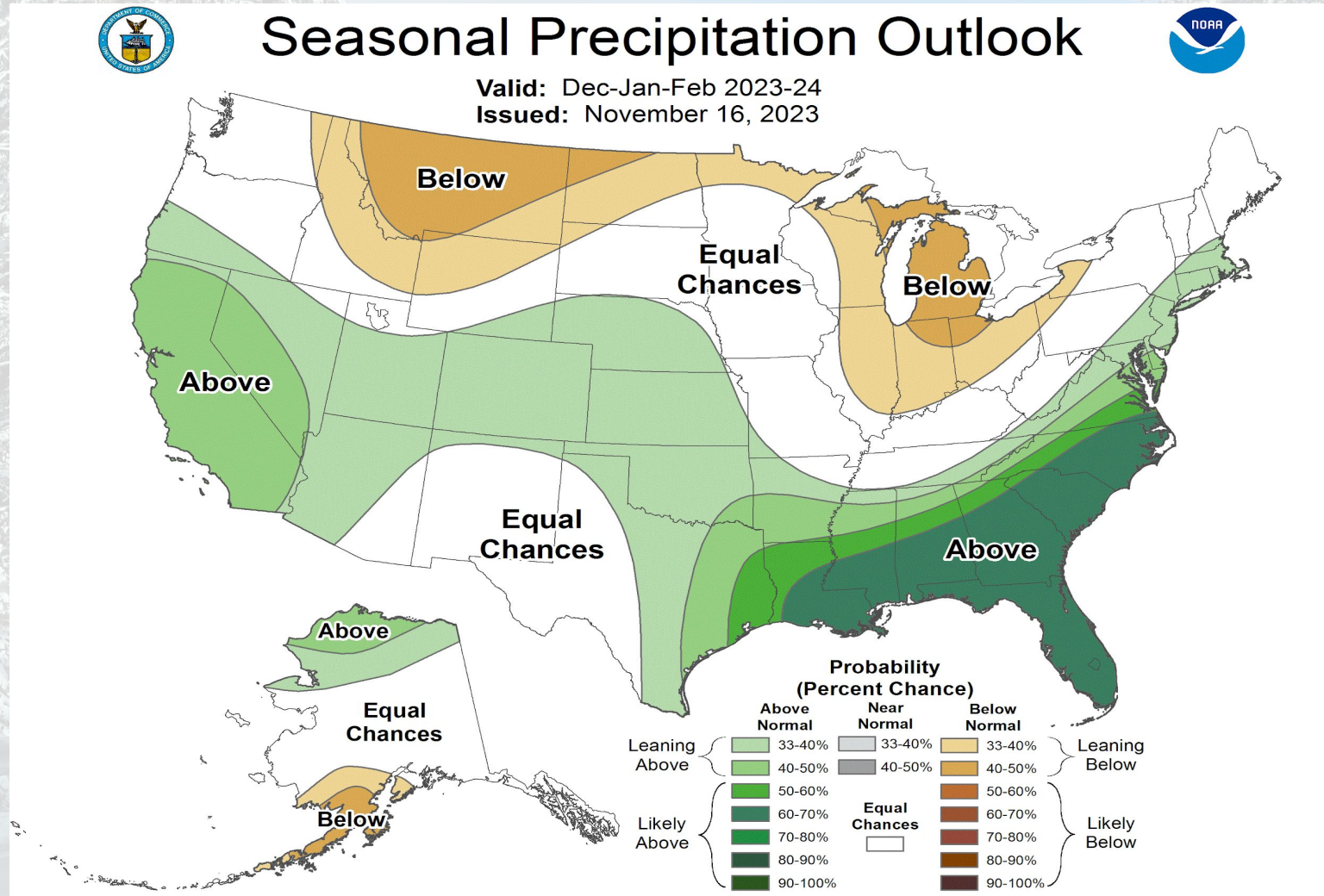
As of October 31st, the greatest drought conditions were in far northwest Kittitas County with “D3” (Extreme Drought) conditions. Elsewhere drought conditions ranged from as high as “D2” (Severe Drought) over central and north central OR, as well as the Lower Columbia Basin of both OR and WA, to no drought (None) in southeast Grant County, OR, and far eastern Kittitas County in south central WA. However, most areas had drought conditions that ranged from “D0” (Abnormally Dry) to “D1” (Moderate drought).

USA Three Month Temperature Outlook



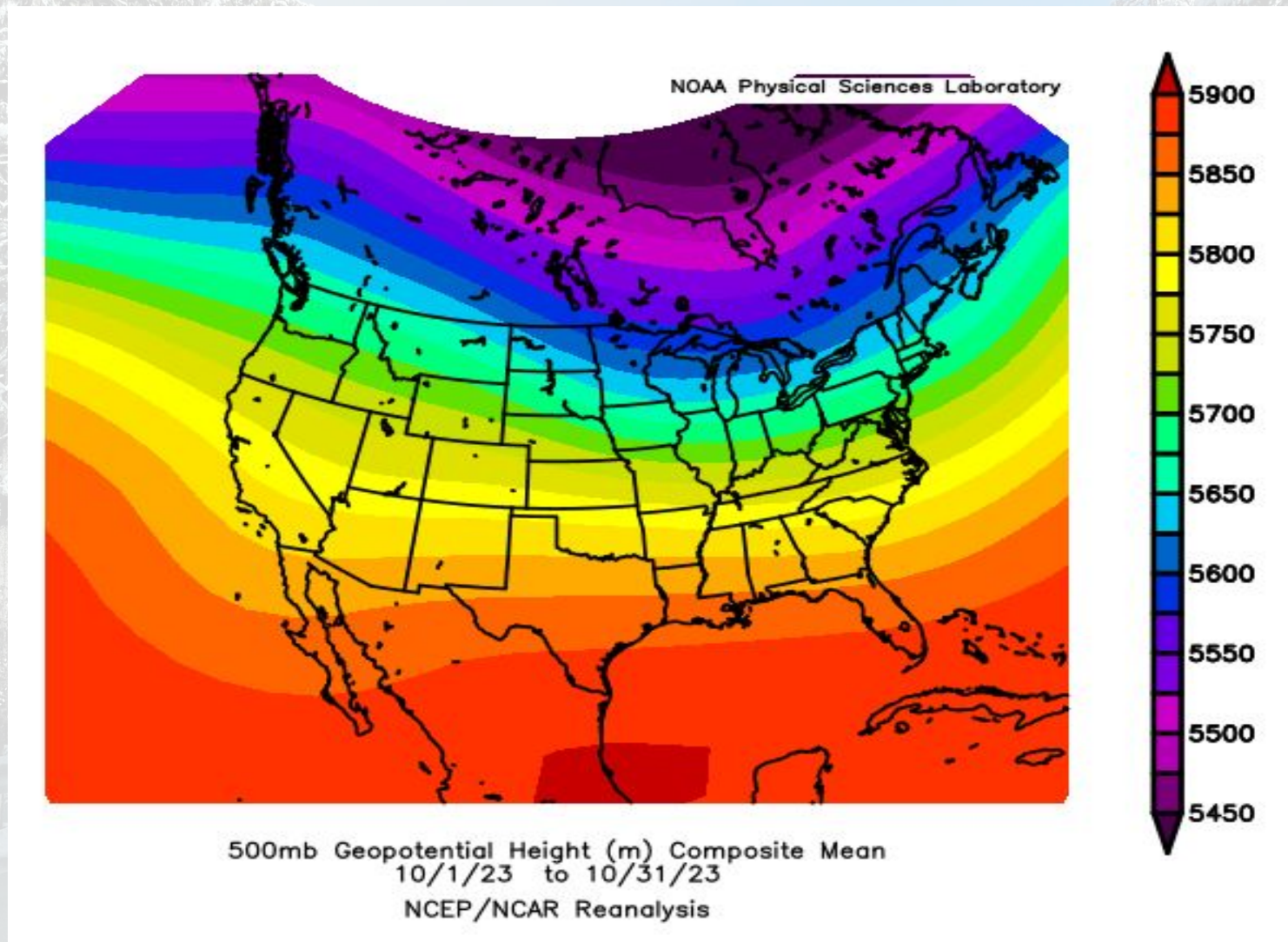
The three month outlook for the period November through January over the Pacific Northwest shows temperature probabilities leaning towards above normal (50-60%). This is a greater probability of above normal temperatures than the previous 3 month outlook from September 2023. However, it should be noted that warmer than normal conditions are not always dependent on El-Nino events, of which one is currently ongoing.

USA Three Month Precipitation Outlook



The three month precipitation outlook for the period November through January over the Pacific Northwest shows precipitation amounts leaning towards equal chances to slightly above normal (33-50%). This is not much of a change from the previous 3 month outlook (September 2023). Again, as with temperatures, precipitation is not always dependent on El-Nino events.

October 2023 Average 500 MB Pattern

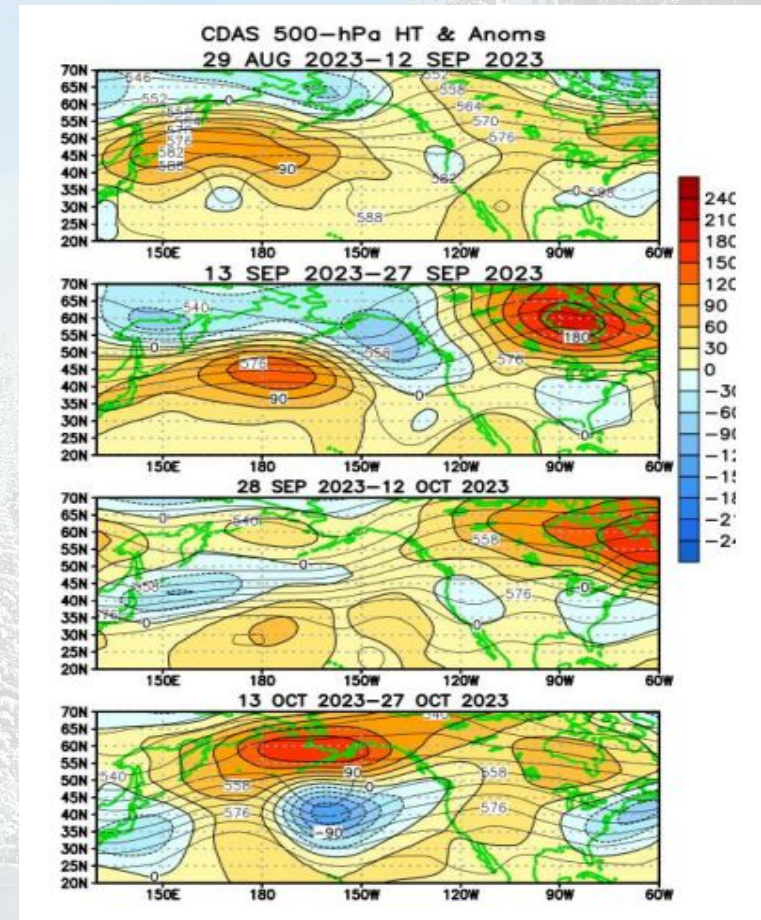


The average 500 mb flow pattern for October 2023 averaged out to be a zonal westerly flow aloft over the Pacific Northwest. As a result, there were a greater amount of precipitation events with the more progressive westerly flow. This also was one of the reasons that the month had close to normal overall temperatures, that were just slightly above normal.

Two Month, average Bi-weekly 500 MB Plots for September - October 2023

These are more detailed bi-weekly average 500 mb pattern plots that were sampled from the end of August through the end of October. These images are updated on the 2nd Thursday of each month.

The area of focus is the Pacific Northwest (OR & WA). The land boundaries are shown by the green lines. Yellow and orange colored areas represent areas of high pressure or ridges at 500 mb. The blue colors show areas of low pressure systems or troughs at 500 mb.

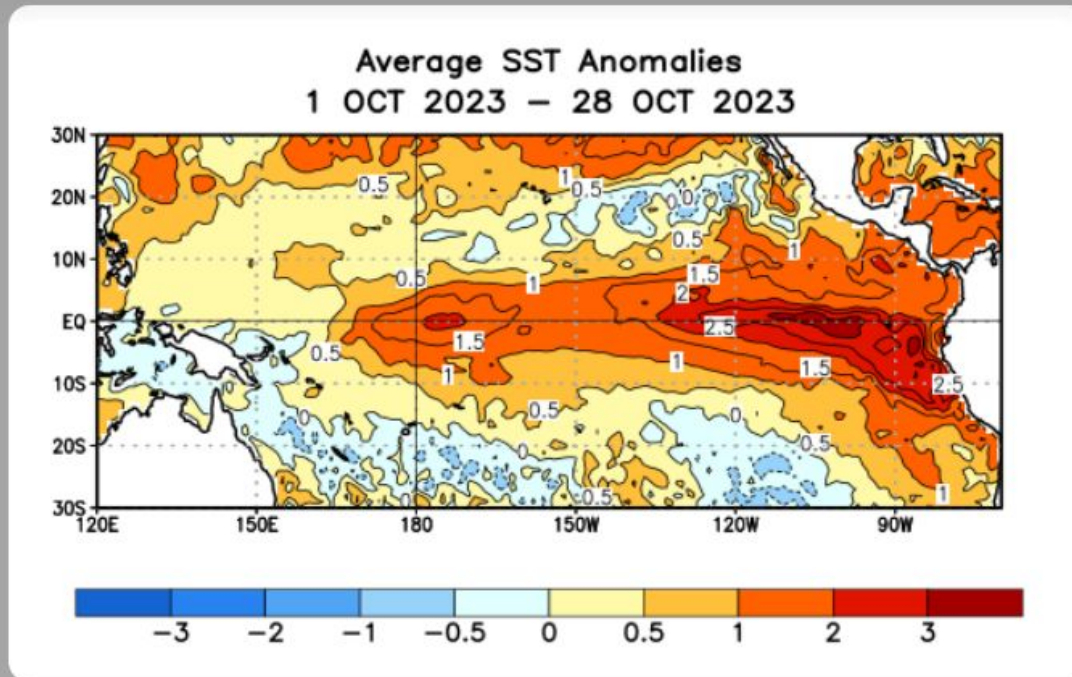


From late August (the 29th) through the 27th of September (the top two images) there was a southwest flow pattern, east of an upper trough along the coast, over the Pacific Northwest, with a more zonal flow pattern to the south over California during the second period from the 13th to the 27th of September. Then, from the 28th of September to the 12th of October, a very subtle troughing pattern developed over the Pacific Northwest. From the 13th of October to the 27th, the flow aloft became more amplified over the northeast Pacific (which is typical of El Niño), with a more zonal flow to southwest flow over the Pacific Northwest.

Sea Surface Temperature (SST) Anomalies for October 2023

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

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



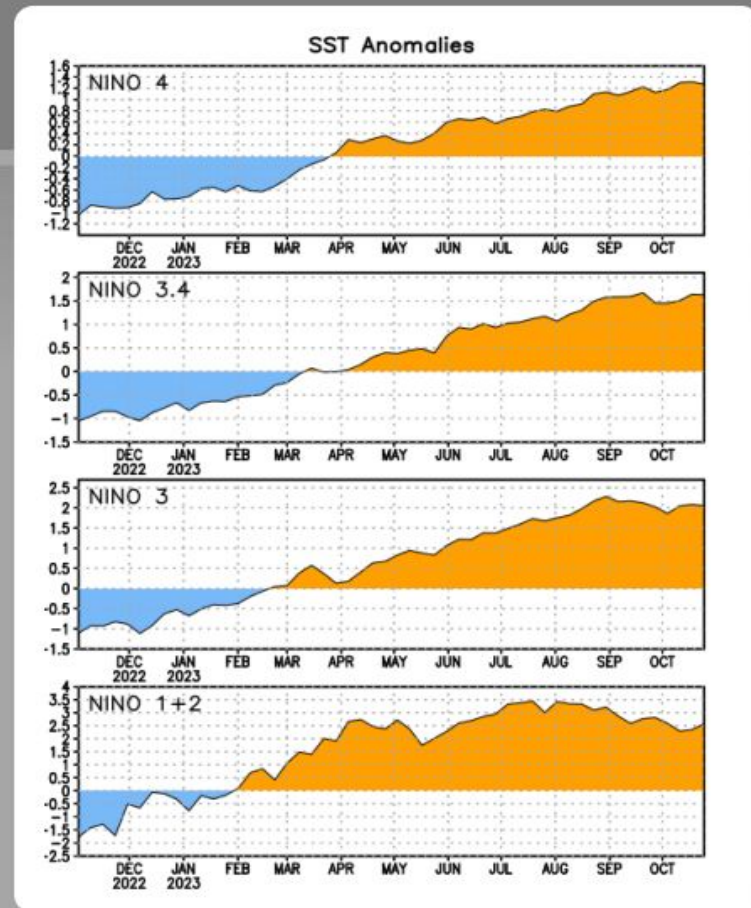
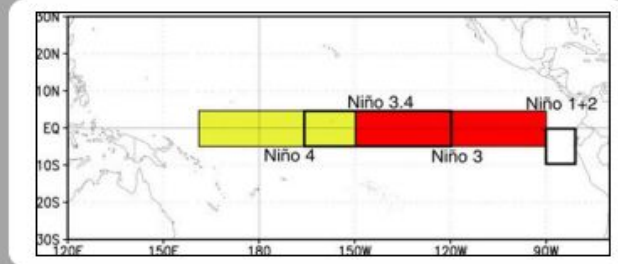
During the last four weeks, equatorial Sea Surface Temperatures (SSTs) were again above average over most of the Pacific Ocean (especially across the eastern equatorial Pacific, where SSTs were the warmest). These persistent, above normal SSTs continue to show the ongoing El Niño event, and is forecast to continue through the Northern Hemisphere spring of 2024.

ENSO Niño Regions SST Anomalies Ending in October 2023

Niño Region SST Departures (°C) Recent Evolution

The latest weekly SST departures are:

Niño 4	1.3°C
Niño 3.4	1.6°C
Niño 3	2.0°C
Niño 1+2	2.6°C



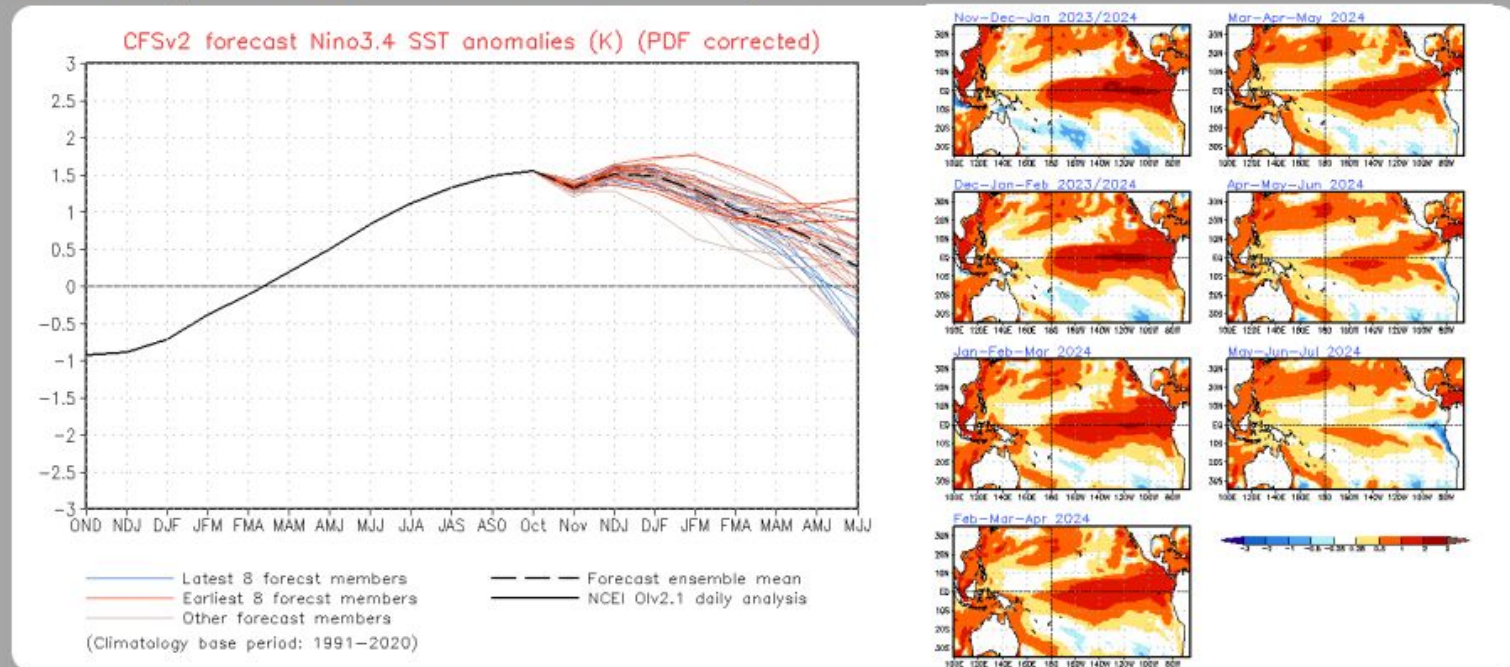
All Niño Regions showed little change during October, except for Niño region 1 + 2 which showed a dip during the first half of the month, and then a rise during the second half of the month. Nevertheless, SST conditions are still consistent with the ongoing El Niño, with a continued increasing area of orange shading, which shows above normal SSTs since the winter to spring of this year.

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

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

Issued: 30 October 2023

The CFS.v2 ensemble mean (black dashed line) indicates El Niño will continue through the Northern Hemisphere spring 2024. A moderate-to-strong El Niño is favored (ONI between 1.0°C and 2.0°C).



The SST CFS.v2 forecast ensemble mean (the black dashed line) shows that El Niño will continue through the Northern Hemisphere spring of 2024. This is favored to be a moderate to strong El Niño. Also, all of the thumbnail images to the right consistently show that well above normal SSTs will continue through spring, and then begin to decrease by early summer of 2024.

Current ENSO (El Niño Southern Oscillation) Alert System Status

Summary

ENSO Alert System Status: **El Niño Advisory**

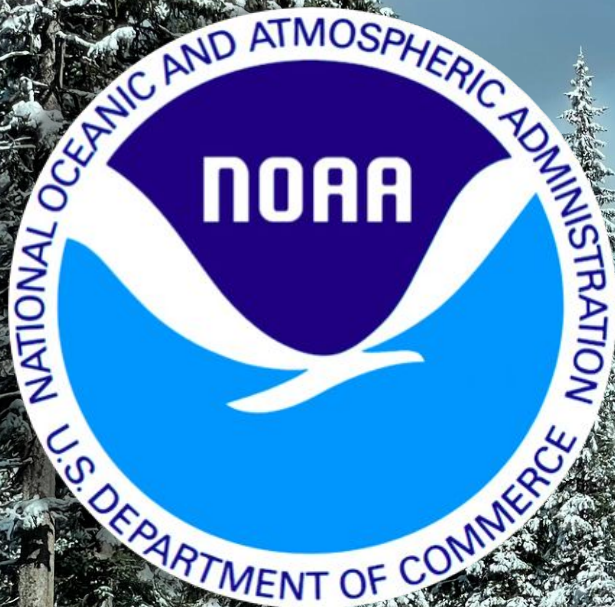
El Niño conditions are observed.*

Equatorial sea surface temperatures (SSTs) are above average across the central and eastern Pacific Ocean.

The tropical Pacific atmospheric anomalies are consistent with El Niño.

El Niño is anticipated to continue through the Northern Hemisphere spring (with an 80% chance during March-May 2024).*

The current ENSO Alert System Status is still **“El Niño Advisory”**. El Niño conditions are still observed with equatorial SSTs above average across the central and eastern Pacific Ocean. The tropical Pacific atmospheric anomalies remain consistent with El Niño. El Niño is anticipated to continue through the Northern Hemisphere spring of 2024, with an 80% chance during March - May 2024.



Thank You!