The Month In Review

November 2023

National Weather Service,
Pendleton, Oregon

Funnel Cloud Near John Day, OR on the 5th. Photo courtesy of Eric Bush - Grant County Emergency Manager

November 2023 Climate Conditions Summary

November was a more active weather month with more frequent weather systems, as well as more basin/valley fog and low cloud episodes. Overall average temperatures for the month were slightly warmer than normal. The warmest areas were in the Cascades and the eastern/northeastern mountains. Elsewhere, average temperatures were slightly cooler than normal. However, there is a greater coverage of warmer than normal areas than cooler than normal areas (see slide 9), which shows the departure from normal temperatures over the Pacific Northwest. There were more precipitation events in November, of which the most significant were on the 4th - 6th, 13th, 15th, 18th - 19th, and on the 30th. The lower atmosphere was cold enough on the 30th to bring the first measurable snowfall to most lower elevations.

There were only two weather events which resulted in broken records. Both were record maximum 24 hour rainfall amounts, which occurred at Pendleton, OR and The Dalles, OR (Dallesport, WA airport) with 0.70 and 0.90 of an inch of rain respectively (see slide 6).

There were a total of 44 significant weather events which warranted Local Storm Reports (see slide 4 and 5). One of these was a weak EF0 tornado near John Day, OR, which did cause some property damage. The month did lack in snowfall in the mountains, but there was an event or two that did produce some snow in the mountains. Overall, November had near normal precipitation in northeast OR and southeast WA.

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

EF0 tornado damage near John Day, OR

Fog season getting started in Pendleton, OR

Brilliant sunrise over northeast Oregon

More Images Representing November 2023 Weather/Climate Conditions

First measurable snowfall in Pendleton, OR of 1.3 inches.

Rime ice in the trees and bushes from days of freezing fog.

Dense fog over northeast OR on I-84, on Thanksgiving Day.

Funnel cloud preceding a weak EF0 Tornado near John Day, OR

Significant Weather Events - Local Storm Reports for November 2023

Significant Weather Events					
Date	**Location**	**State**	**Event Type**	**Magnitude**	**Source**
November 5, 2023	Elgin	OR	RAIN	1.53	Public - Social Media
November 5, 2023	2.6 SSE Dayton	WA	RAIN	0.9	Cocorahs
November 5, 2023	12.6 SSW Canyon City	OR	RAIN	0.96	Cocorahs
November 5, 2023	0.7 WNW White Salmon	WA	RAIN	0.94	Cocorahs
November 5, 2023	19 N White Salmon	WA	RAIN	0.9	Cocorahs
November 5, 2023	0.4 W Elgin	OR	RAIN	1.01	Cocorahs
November 5, 2023	1.0 S La Grande	OR	RAIN	0.9	Cocorahs
November 5, 2023	9.8 N Elgin	OR	RAIN	1.27	Cocorahs
November 5, 2023	1.1 NE Walla Walla	WA	RAIN	1.06	Cocorahs
November 5, 2023	25 NNE Wallowa	OR	RAIN	1.05	Cocorahs
November 5, 2023	3.0 SSW Enterprise	OR	RAIN	1.05	Cocorahs
November 5, 2023	2.6 SW Wallowa	OR	RAIN	1	Cocorahs
November 5, 2023	4 NNW Island City	OR	RAIN	1.3	Trained Spotter
November 5, 2023	2 ENE Canyon City	OR	TORNADO	EF0	NWS Storm Survey
November 30, 2023	9 NW Seneca	OR	SNOW	1.5	Public
November 30, 2023	11 ESE Lonerock	OR	SNOW	2	Dept of Highways
November 30, 2023	2 NW Pendleton	OR	SNOW	1.3	Official NWS Obs
Nov 30 - Dec 1, 2023	2 WNW Sisters	OR	SNOW	2	Cocorahs
Nov 30 - Dec 1, 2023	5 S Richland	WA	SNOW	0.5	Cocorahs
Nov 30 - Dec 1, 2023	4 WNW West Valley	WA	SNOW	1.1	Cocorahs
Nov 30 - Dec 1, 2023	2 NNW Sunnyside	WA	SNOW	0.5	CO-OP Observer
Nov 30 - Dec 1, 2023	10 NNW Naches	WA	SNOW	1.5	Cocorahs
Nov 30 - Dec 1, 2023	4 N Goldendale	WA	SNOW	3.5	Cocorahs
Nov 30 - Dec 1, 2023	1 WNW White Salmon	WA	SNOW	5.5	Cocorahs

Please note: Magnitude units are either inches, mph, degrees F, miles, or tornado EF scale 0-5.

Significant Weather Events - Local Storm Reports for November 2023

Significant Weather Events					
Date	**Location**	**State**	**Event Type**	**Magnitude**	**Source**
Nov 30 - Dec 1, 2023	18 N White Salmon	WA	SNOW	6.5	Cocorahs
Nov 30 - Dec 1, 2023	9 NW Seneca	OR	SNOW	3.8	Cocorahs
Nov 30 - Dec 1, 2023	29 SSW Dayville	OR	SNOW	0.5	Cocorahs
Nov 30 - Dec 1, 2023	4 WNW Benton City	WA	SNOW	1	Cocorahs
Nov 30 - Dec 1, 2023	2 NNE Richland	WA	SNOW	1	Cocorahs
Nov 30 - Dec 1, 2023	4 SSE Pendleton	OR	SNOW	1.1	Cocorahs
Nov 30 - Dec 1, 2023	4 NW Selah	WA	SNOW	2	Cocorahs
Nov 30 - Dec 1, 2023	1 NE Sunnyside	WA	SNOW	1	Cocorahs
Nov 30 - Dec 1, 2023	1 NW Heppner	OR	SNOW	1	CO-OP Observer
Nov 30 - Dec 1, 2023	2 NE Selah	WA	SNOW	1	CO-OP Observer
Nov 30 - Dec 1, 2023	2 NNE Granger	WA	SNOW	1.5	Cocorahs
Nov 30 - Dec 1, 2023	2 WSW Fruitvale	WA	SNOW	1.5	Cocorahs
Nov 30 - Dec 1, 2023	10 N Elgin	OR	SNOW	0.6	Cocorahs
Nov 30 - Dec 1, 2023	2 S Bend	OR	SNOW	1.2	Cocorahs
Nov 30 - Dec 1, 2023	Prairie City	OR	SNOW	2	Cocorahs
Nov 30 - Dec 1, 2023	Prosser	WA	SNOW	1.4	Cocorahs
Nov 30 - Dec 1, 2023	1 WNW Arlington	OR	SNOW	1.5	CO-OP Observer
Nov 30 - Dec 1, 2023	1 WSW Fruitvale	WA	SNOW	1.5	Cocorahs
Nov 30 - Dec 1, 2023	2 NW Pendleton	OR	SNOW	1.3	CO-OP Observer
Nov 30 - Dec 1, 2023	Pendleton	OR	SNOW	1.1	Official NWS Obs

Please note: Magnitude units are either inches, mph, degrees F, miles, or tornado EF scale 0-5.

There were 44 Local Storm Reports that were warranted for significant weather events. At the beginning of the month, significant weather was mostly significant rain amounts. There was also a weak EF0 tornado on the 5th near John Day, OR. On the last day of the month (the 30th) a weather system brought the first measurable snowfall of the season for many lower elevation locations.

Record Weather Events for November 2023

Record Weather Reports					
Event	**Date**	**Where**	**Previous Record**	**New Record**	**Records Began**
Maximum Rainfall	November 4, 2023	Pendleton, OR	0.55 inch / 1994	0.70	1929
Maximum Rainfall	November 4, 2023	Dallesport, WA (DLS)	0.77 inch / 1988	0.90	1934

There were only 2 record weather events during November, both of which occurred on the 4th of the month. These were also both for maximum 24 hour rainfall. One was at Pendleton, OR, with a new record of 0.70 inch, which broke the old record of 0.55 inch in 1994. The other was at Dallesport, WA (The Dalles), with a new record of 0.90 inch, breaking the old record of 0.77 inch in 1988.

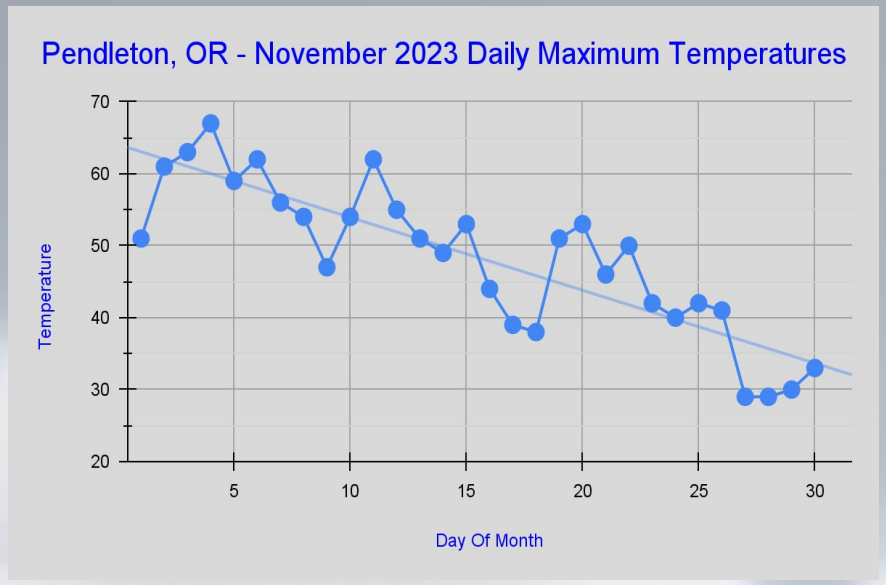
Record rainfall event in Pendleton, OR on November 4th, 2023

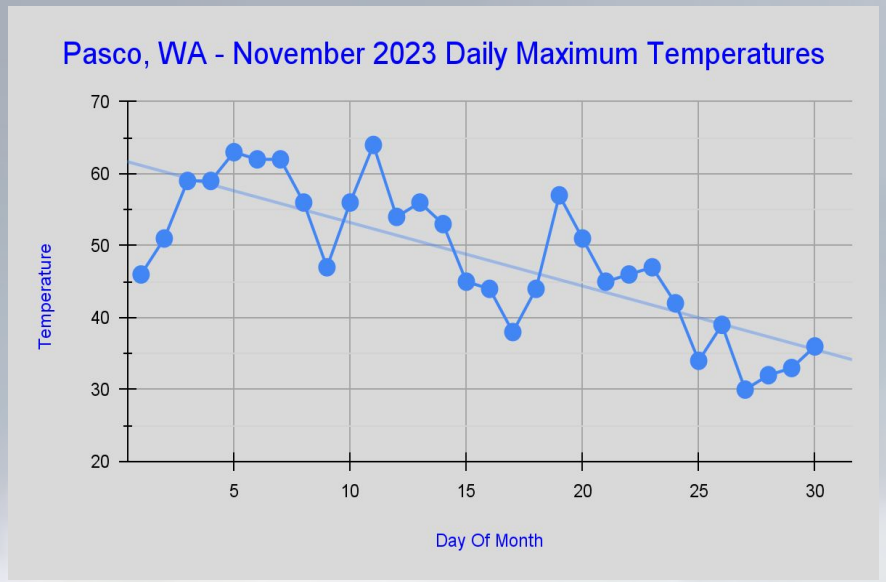
November 2023: Observed Monthly Maximum & Minimum Temperatures

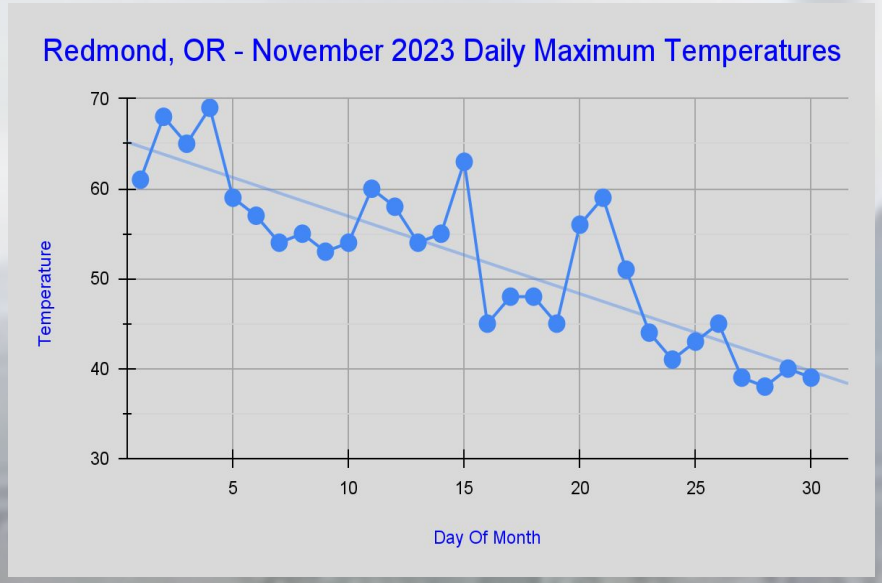
Location Source: airport ASOS, or otherwise stated	Highest Maximum	Lowest Minimum
Pendleton, OR	67	20
Redmond, OR	69	6
Pasco, WA	64	20
Yakima, WA	61	15
Walla Walla, WA	67	21
Bend, OR CoOp	68	5
Ellensburg, WA	58	17
Hermiston, OR	64	17
John Day, OR CoOp	62	13
La Grande, OR	61	15
Dallesport, WA	63	21
Meacham, OR	58	11
MT Adams R.S., WA	56	16

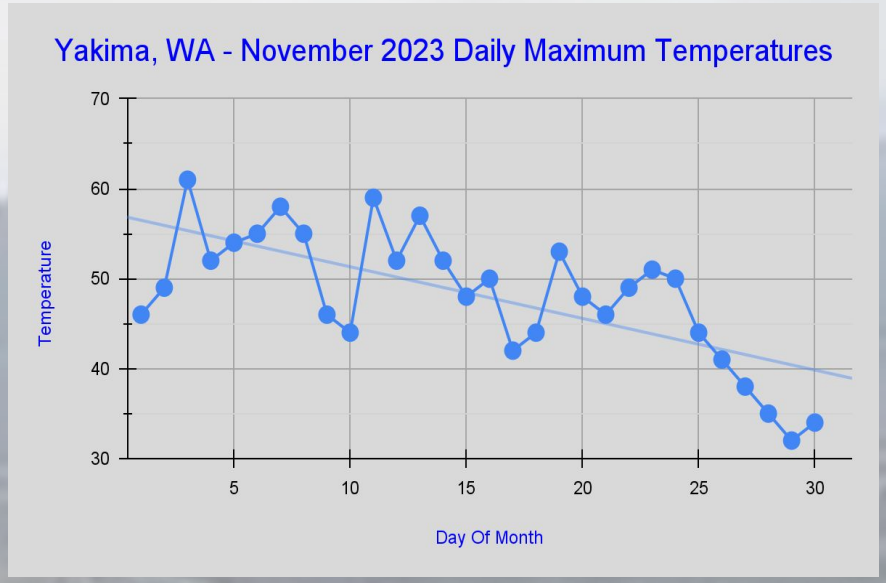
The highest maximum temperatures, except for three, were above 60 degrees, with the other three were between 56 and 58. The highest was 69 at Redmond, OR, and the coolest was 56 at the Mt. Adams Ranger Station. The coldest minimum temperature was 5 degrees above zero at the Bend, OR CoOp station, and the warmest was 21 at both Dallesport, WA and Walla Walla, WA, with a lowest minimum temperature of 21 degrees. It is not that unusual to have these mild temperatures or low minimums in November.

November 2023 - Daily Maximum Temperatures For Select Cities



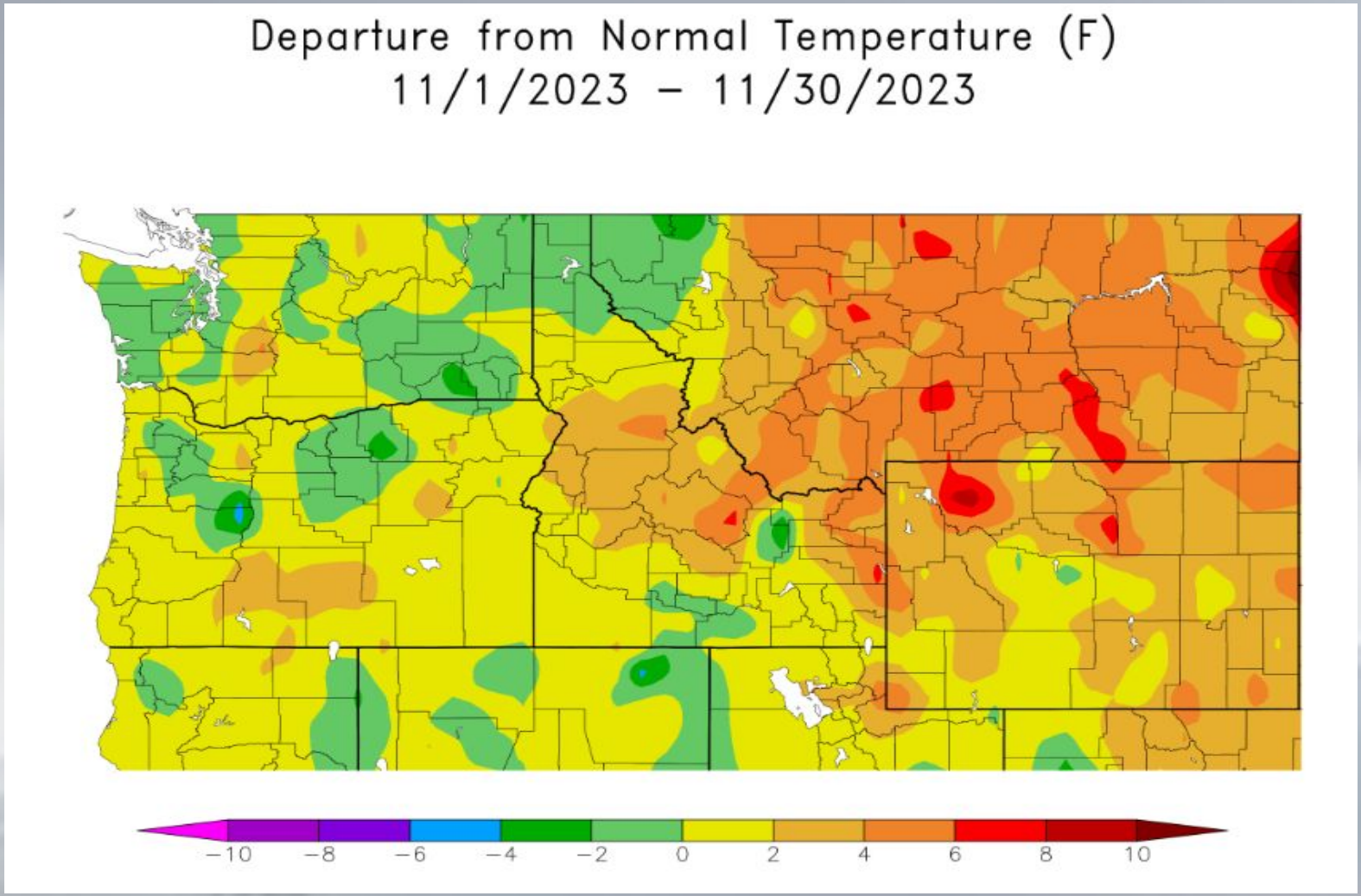






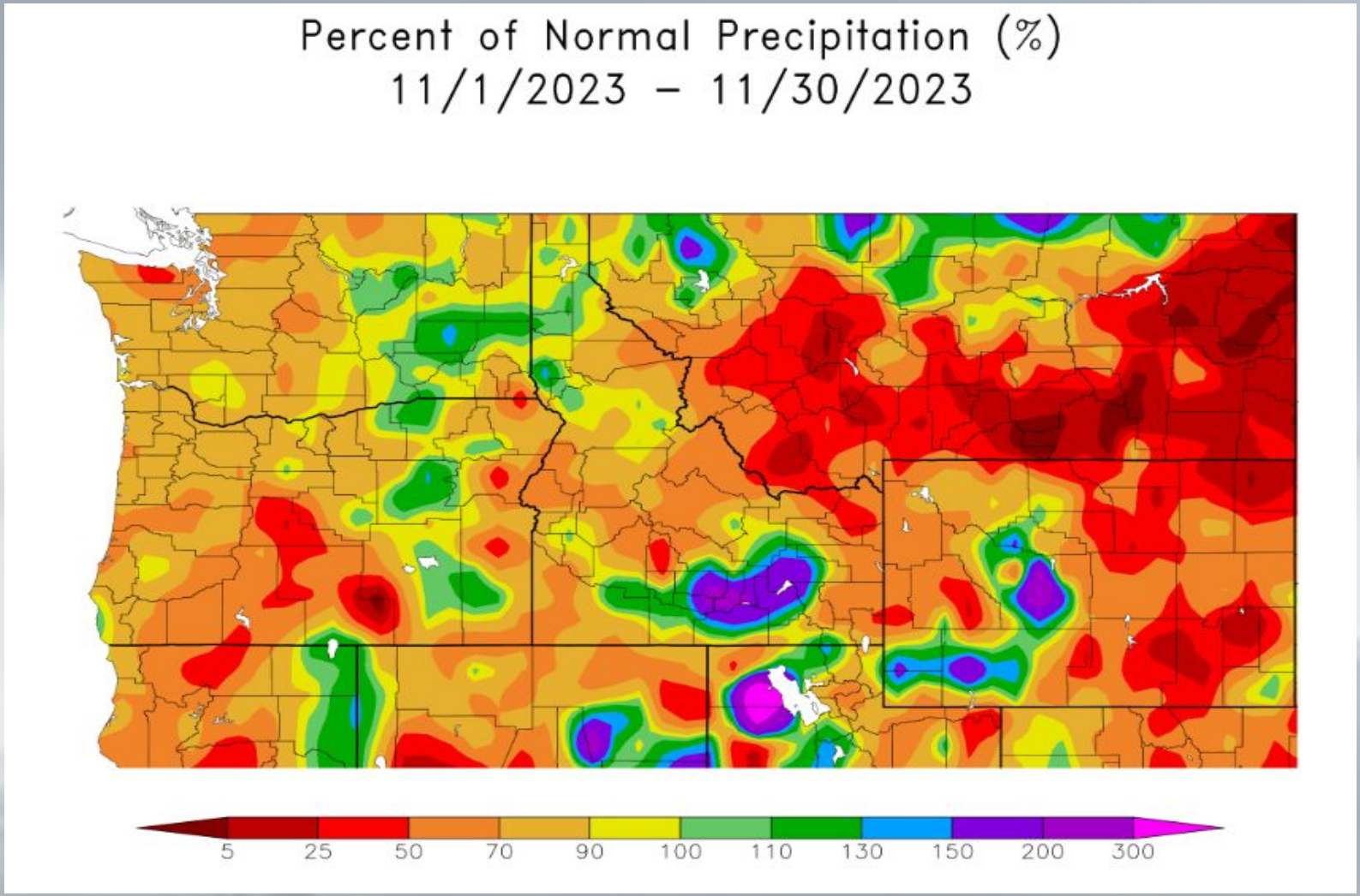
The graphs above show that the overall high temperatures trended downward through the month, which would be expected in an autumn transition month between the summer and winter solstices.

November 2023: Departure from Normal of Average Temperatures



About half of the forecast area had positive (warmer than normal) temperature departures from normal, and the other half had negative (cooler than normal) temperature departures from normal. These ranged from -4 to +4 degrees across northeast OR and southeast WA. These departures from normal cancel each other out, resulting in overall near to slightly warmer than normal temperatures for the month.

November 2023: Percent of Normal Precipitation



There was a wider range of the percent of normal precipitation in November, which mostly ranged from 25% to 130% of normal across northeast OR and southeast WA. The wettest areas were in the John Day Highlands, the Lower Columbia Basin and southern Union County, OR. The driest area was in Deschutes County, OR, with lesser dryness extending northward across north central OR and south central WA, and also in Wallowa County, in far northeast OR.

November 2023: 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, WA Airport	48.2	-0.7	28.5	1.3	38.4	0.4	0.89	0.03
Kennewick, WA CoOp	49.0	-1.9	34.8	-0.1	41.9	-1.0	0.89	0.02
Walla Walla, WA Airport	45.4	-4.5	33.9	-1.7	39.6	-2.8	2.10	-0.15
Dallesport, WA (The Dalles)	50.6	0.4	36.0	0.5	43.3	0.6	1.87	-0.10
Redmond, OR Airport	52.2	1.4	27.4	-0.1	39.8	0.7	0.42	-0.39
Pendleton, OR Airport	48.4	-0.7	34.5	2.2	41.4	0.7	1.71	0.32
La Grande, OR Airport	49.1	1.4	31.0	1.0	40.1	1.3	1.46	-0.48
John Day, OR CoOp	51.0	3.5	26.5	0.9	38.7	2.1	1.57	0.38

The above table shows that temperatures were close to normal in each category (mean high, mean low and mean average temperatures). For the mean maximums, there was an even split between above and below normal. For the mean minimums, there were three cities with below normal, and five that were above normal. However, the greatest absolute value departure from normal was only 2.2 degrees. For the mean average temperatures, there were two cities with below normal and six above normal. However, the greatest absolute value departure was 2.8 degrees. It can be said overall November had just slightly above normal temperatures. There was an even split of above vs below normal precipitation. The departures were close enough to cancel each other out, resulting in near normal precipitation.

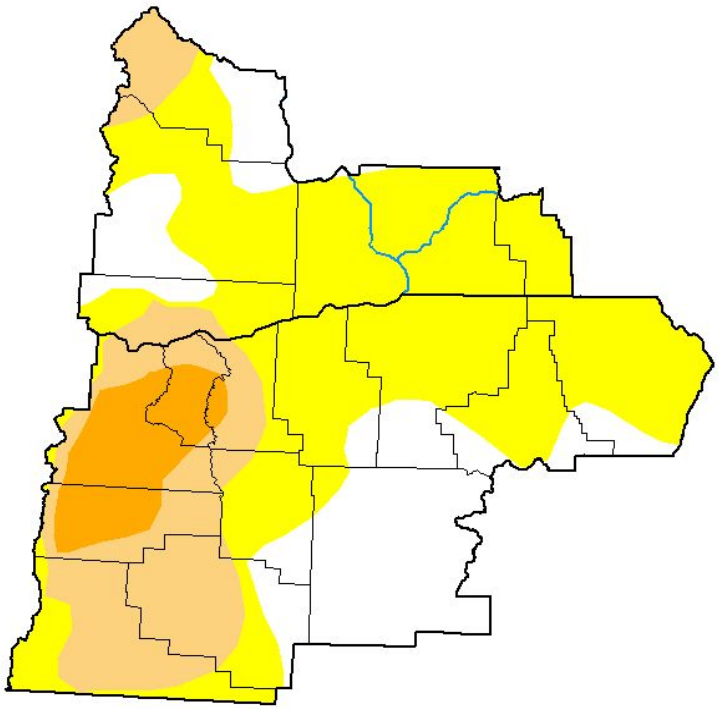
The greatest departures are outlined in black boxes.

November 2023: Observed Total Precipitation and Total Snowfall / Hail

Location Source: airport ASOS, or otherwise stated	Total Precipitation (inches)	Total Snow/Hail (inches)
Pendleton, OR	1.71	1.3
Redmond, OR	0.42	M
Pasco, WA	0.74	M
Yakima, WA	0.89	M
Walla Walla, WA	2.10	M
Bend, OR CoOp	0.32	0.0
Ellensburg, WA	0.98	M
Hermiston, OR	1.22	M
John Day, OR CoOp	1.57	M
La Grande, OR	1.46	0.0
The Dalles, OR	1.87	M
Meacham, OR	4.00	M
Mt. Adams R.S., WA	7.38	1.1

The greatest total precipitation for November was a whopping 7.38 inches at the Mt. Adams Ranger Station, WA, and the least amount of precipitation was at the Bend, OR CoOp station, with 0.32 of an inch. Most of the precipitation at the Mt. Adams Ranger Station fell on the 6th (3.43 inches), followed by 1.72 inches on the 2nd. The greatest amount of snow reported was at Pendleton, OR with 1.3 inches, which was followed by 1.1 inches at the Mt. Adams Ranger Station, WA. The least was 0.0 inches at the Bend, OR CoOp staton and at La Grande, OR.

November 2023 - Drought Monitor – Pendleton Forecast Area



U.S. Drought Monitor

Pendleton, OR WFO

December 12, 2023

(Released Thursday, Dec. 14, 2023)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	23.80	76.20	25.74	7.08	0.00	0.00
Last Week 12-05-2023	23.47	76.53	31.23	7.08	0.00	0.00
3 Months Ago 09-12-2023	1.51	98.49	77.43	28.29	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 12-13-2022	26.16	73.84	39.93	22.93	15.24	3.17

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:

Curtis Riganti

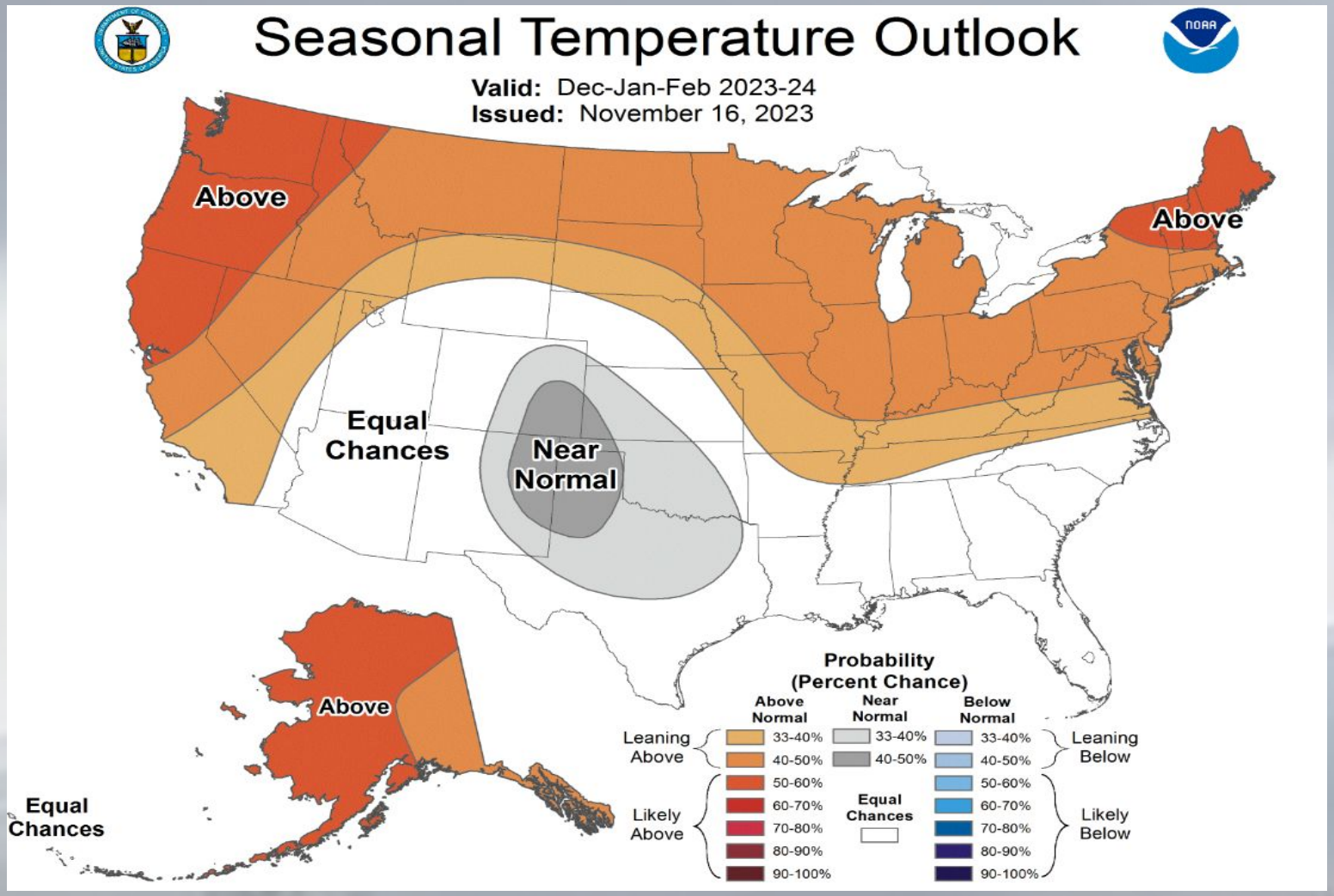
National Drought Mitigation Center

droughtmonitor.unl.edu

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

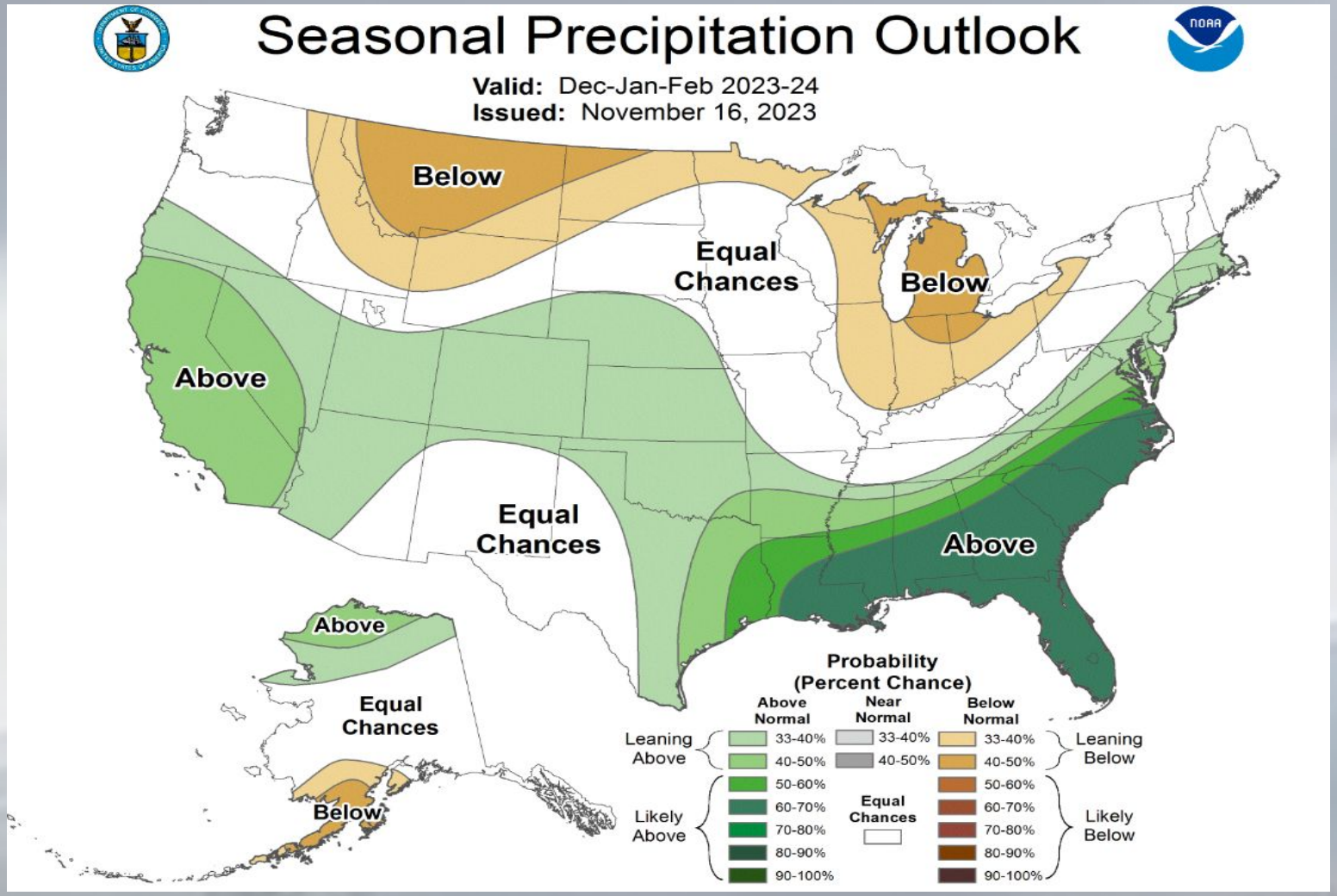
Extreme northwest Kittitas County lowered to a “D1” (Moderate Drought) intensity from a “D3” (Extreme Drought) intensity from October. Elsewhere drought conditions have not changed much, and ranged from as high as “D2” (Severe Drought), over mainly north central OR, and “D0” to “D1” (Abnormally Dry to Moderate Drought) conditions over most of the rest of the forecast area. The exceptions were in portions of the southern WA Cascades, far eastern Kittitas County, WA and the eastern and some northeast mountains of OR, which all have a “None” drought intensity.

USA Three Month Temperature Outlook



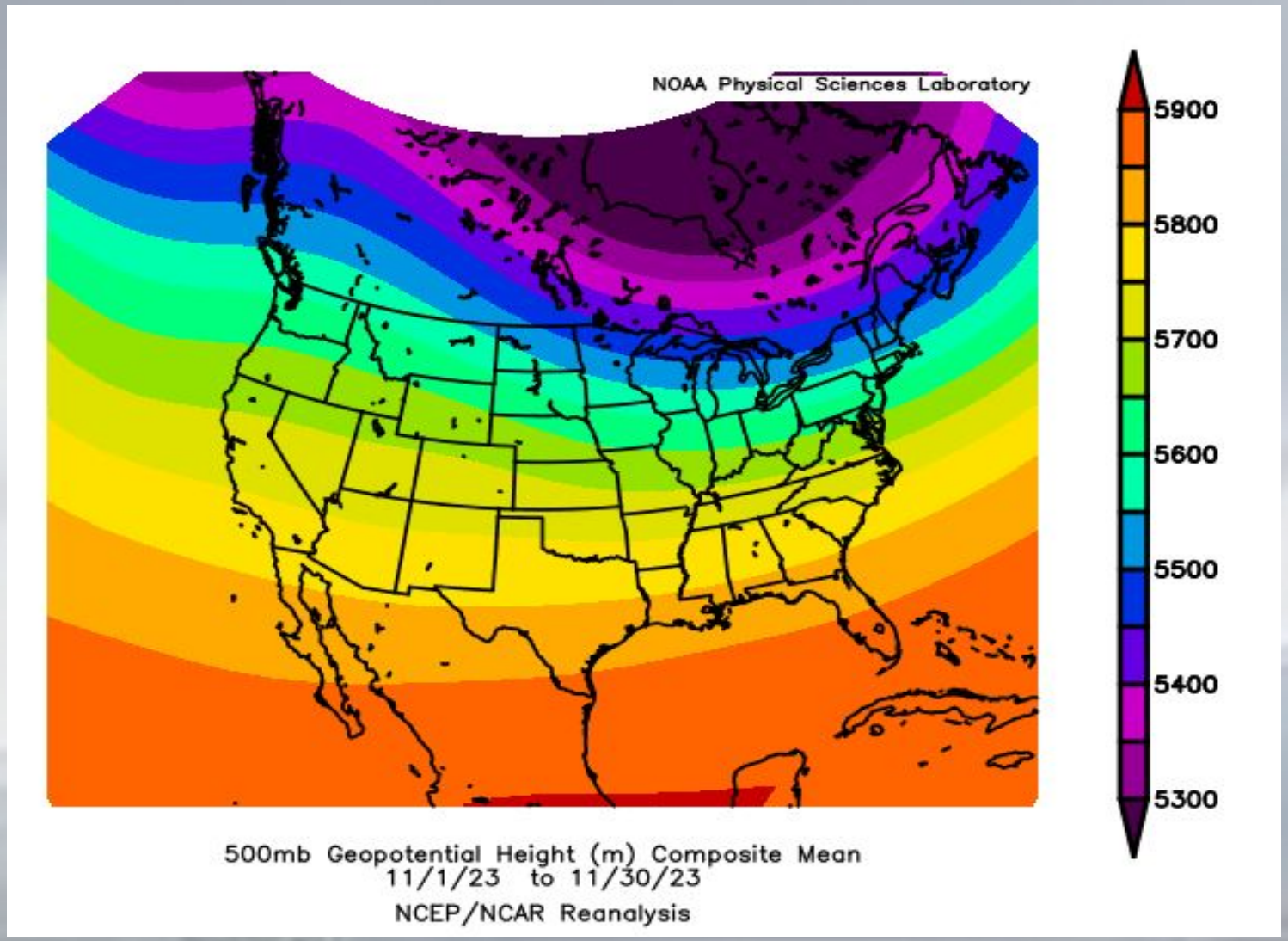
The three month temperature outlook for the period December through February over the Pacific Northwest shows temperature probabilities leaning towards above normal (50-60%). This is about the same probability for temperatures than the previous 3 month outlook from October 2023. However, it should be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

USA Three Month Precipitation Outlook



The three month precipitation outlook for the period December through February over most of the Pacific Northwest shows precipitation probabilities leaning towards equal chances. Probabilities are slightly above normal to the south and slightly below normal to the northeast of the forecast area. This is not much of a change from the previous 3 month outlook (October 2023). Precipitation is also not always dependent on El Niño events over the Pacific Northwest.

November 2023 Average 500 MB Pattern

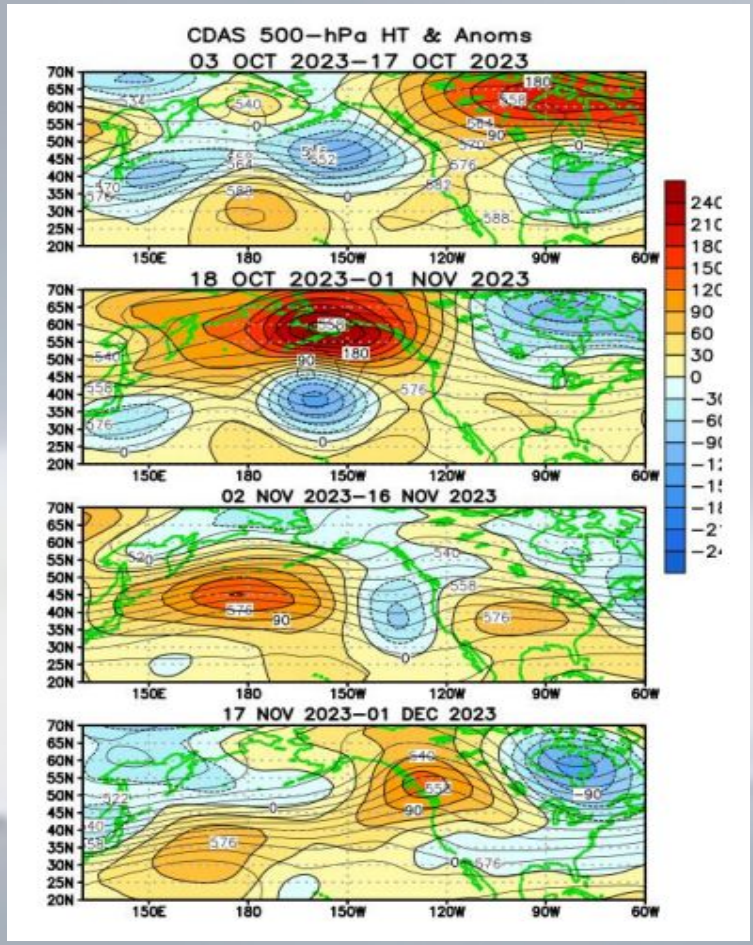


The average 500 mb flow pattern for November 2023 averaged out to be mostly a zonal westerly flow aloft over the Pacific Northwest. As a result, there were a greater amount of precipitation events with the more progressive westerly flow. This is also one of the reasons that the month had close to normal temperatures that could be attributable to a lack of deep troughs or ridges.

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

These are more detailed bi-weekly average 500 mb pattern plots that were sampled from the beginning of October through the end of November. 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.

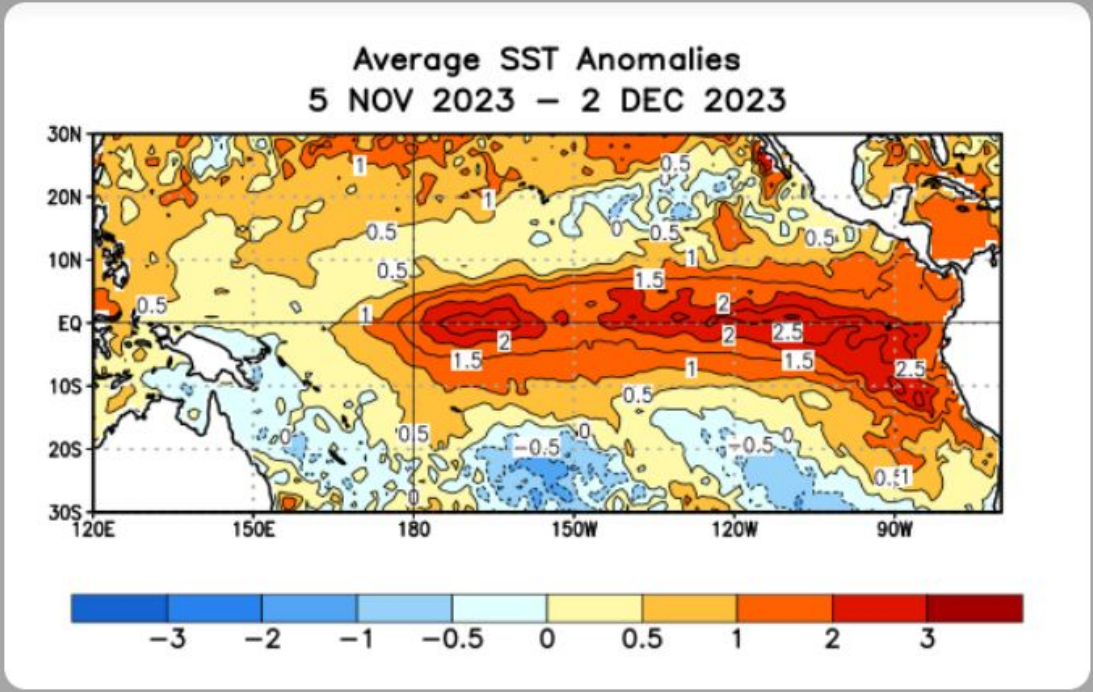


There was mostly a weak upper ridge pattern over the Pacific Northwest from early October (the 3rd) through November 1st (the top two images). There was an upper trough over the northeast Pacific during the first half of October, and then a strong Rex Block pattern (a strong upper high directly north of a deep upper low) over the northeast Pacific during the latter half of October. The pattern was much like the first half of October from the 2nd of November to the 16th. The latter half of November had a stronger upper ridge over the Pacific Northwest, which extended southwestward over the northeast Pacific.

Sea Surface Temperature (SST) Anomalies for November 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.



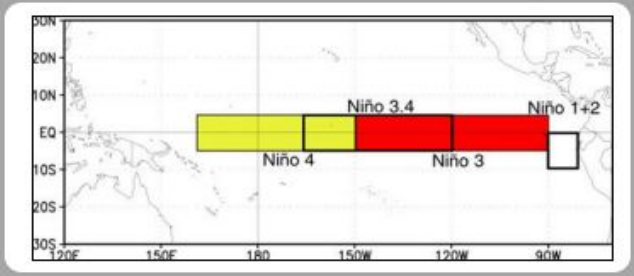
During the last four weeks, equatorial Sea Surface Temperatures (SSTs) continued above average over most of the Pacific Ocean (mainly across the central and eastern equatorial Pacific, while the far western equatorial Pacific remains near to slightly below average). These persistent, above normal SSTs continue to show the ongoing El Niño event, which is forecast to continue through the spring of 2024.

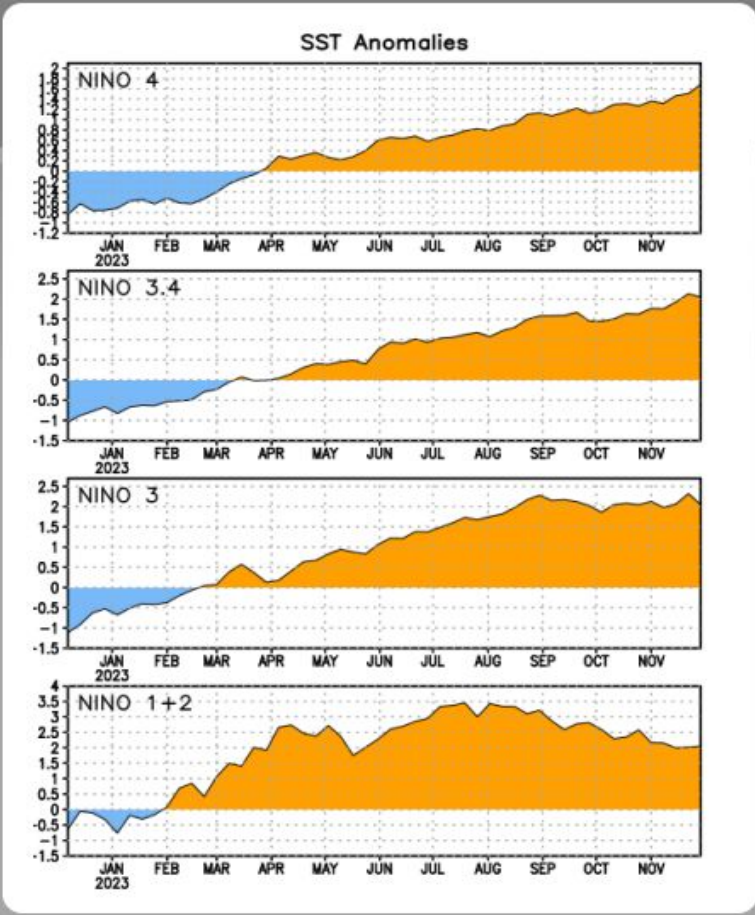
ENSO Niño Regions SST Anomalies Ending in November 2023

Niño Region SST Departures (°C) Recent Evolution

The latest weekly SST departures are:

Niño 4	1.7°C
Niño 3.4	2.0°C
Niño 3	2.0°C
Niño 1+2	2.1°C





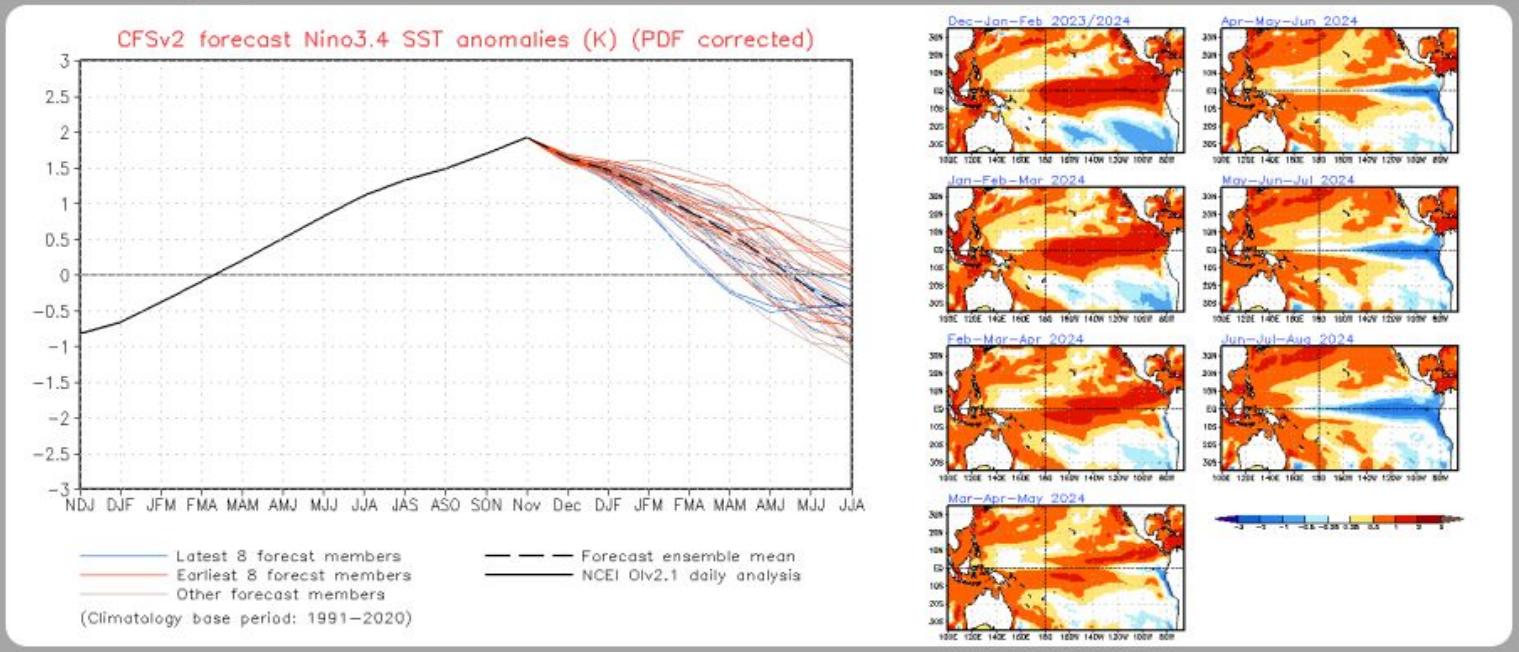
Niño Region 1+2 (bottom image) has been showing a slow decline in positive anomaly (orange shaded areas, which indicate warmer than normal SSTs) during the past several months. The other 3 Niño regions showed little change to a slight increase in positive anomaly area in November, and an overall increase over the past few months. Nevertheless, SST conditions are still consistent with the ongoing El Niño event in all Niño regions.

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

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

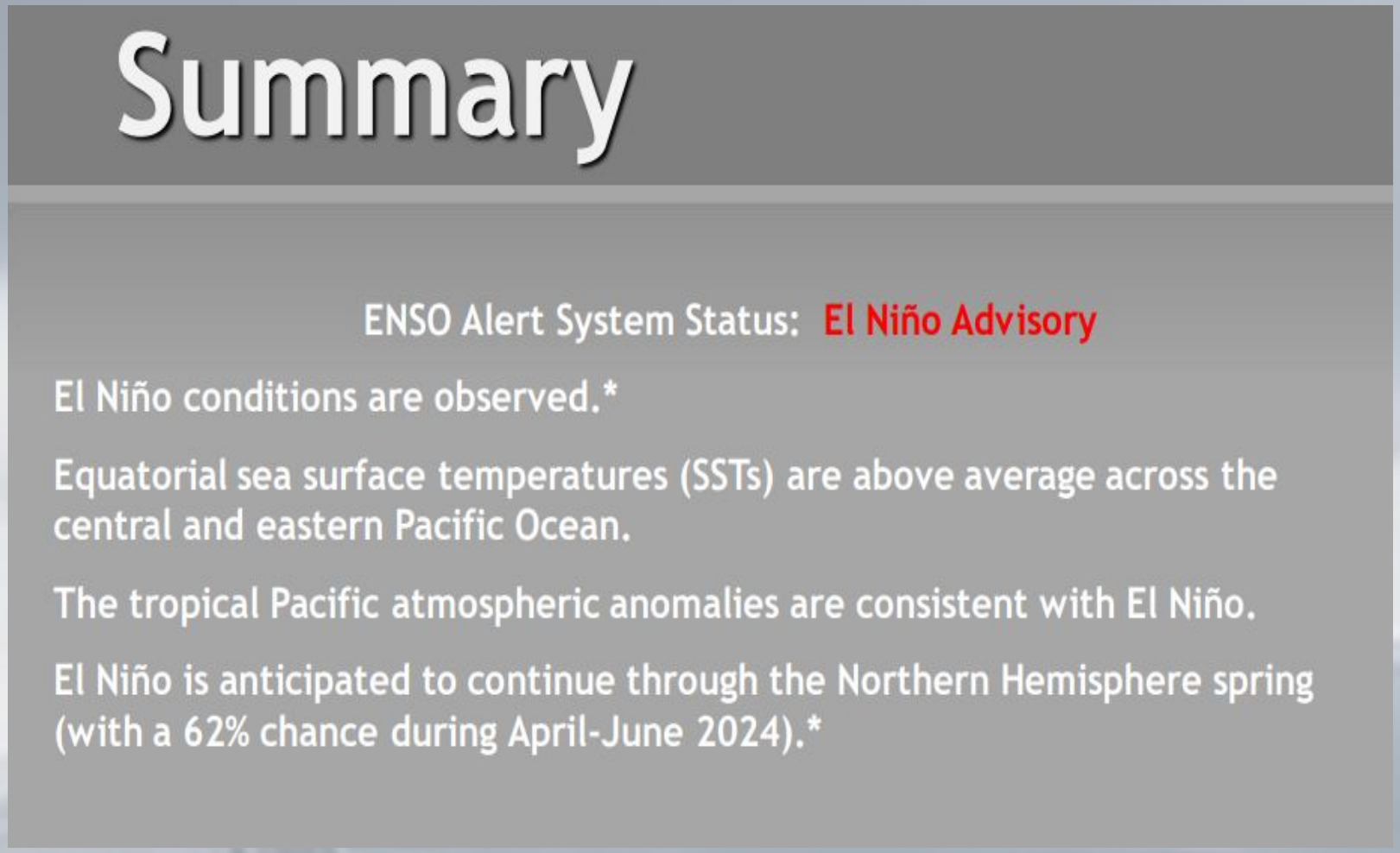
Issued: 4 December 2023

The CFS.v2 ensemble mean (black dashed line) indicates El Niño will continue through the Northern Hemisphere spring 2024 and then transition to ENSO-neutral by April-June 2024.



The CFS.v2 ensemble mean for Niño Region 3.4 (our most influential Niño Region) will continue warmer than normal through the Northern Hemisphere spring of 2024. However, the line indicates that it peaked at the end of November, and is now trending downward. As such, El Niño is expected to continue through the early spring of 2024, and then transition back to ENSO-neutral by April-June. The SST thumbnail images to the right also shows this trend of a gradual cooling of SSTs.

Current ENSO (El Niño Southern Oscillation) Alert System Status



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 a 62% chance during April - June 2024.


NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE


NATIONAL WEATHER SERVICE

Thank You!