

The Month In Review

March 2020

National Weather Service
Pendleton, Oregon

March, 2020 Climate Summary

The month of March can be characterized as being close to normal for temperatures. However, precipitation was below normal for the month. The most significant weather events for the month was a cold spell in the middle of the month in which there was moderate snow and very cold temperatures for March. This began on March 13th and continued for a several days. At the NWS Forecast Office in Pendleton, OR the high temperature did not rise above freezing for two days, which is quite unusual for March. However, with that being said, the rest of the month had some warm periods which offset that cold snap and thus resulted in monthly averages close to normal. Snow amounts were generally light to moderate in most areas, but some local areas had significant snow totals. As for the rest of the month, the weather was rather benign without any events being too far out of the ordinary. The following pictures below represent some scenes during the month (in particular, the cold snap and snow during the middle of the month).



Cold arctic blast with moderate snow on Friday, March 13th, 2020.



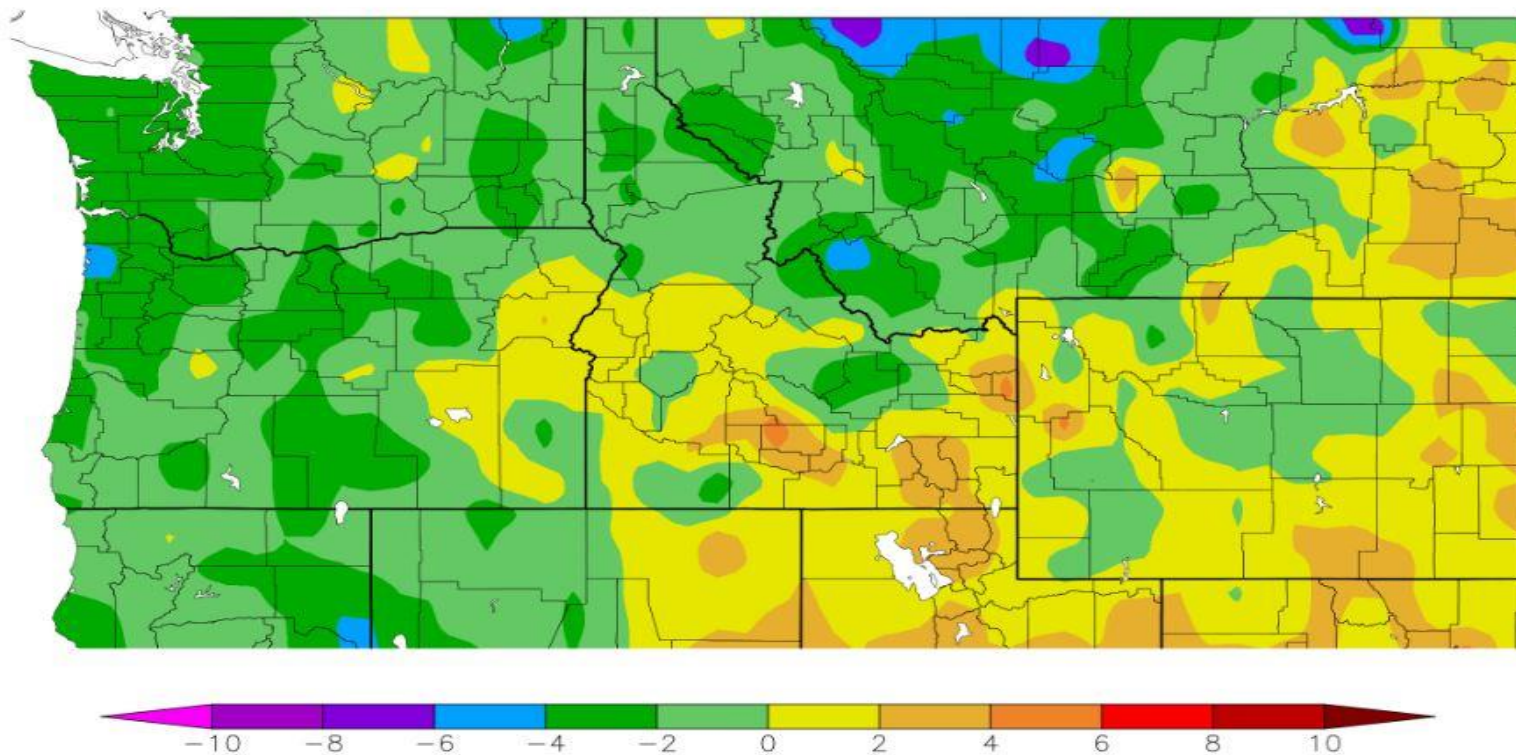
Snow coated trees at the NWS Forecast Office in Pendleton, OR on March 13th.



The morning of Saturday, March 14th after a night of moderate snow.

March 2020, Departure from Normal of Average Temperatures

Departure from Normal Temperature (F)
3/1/2020 – 3/31/2020



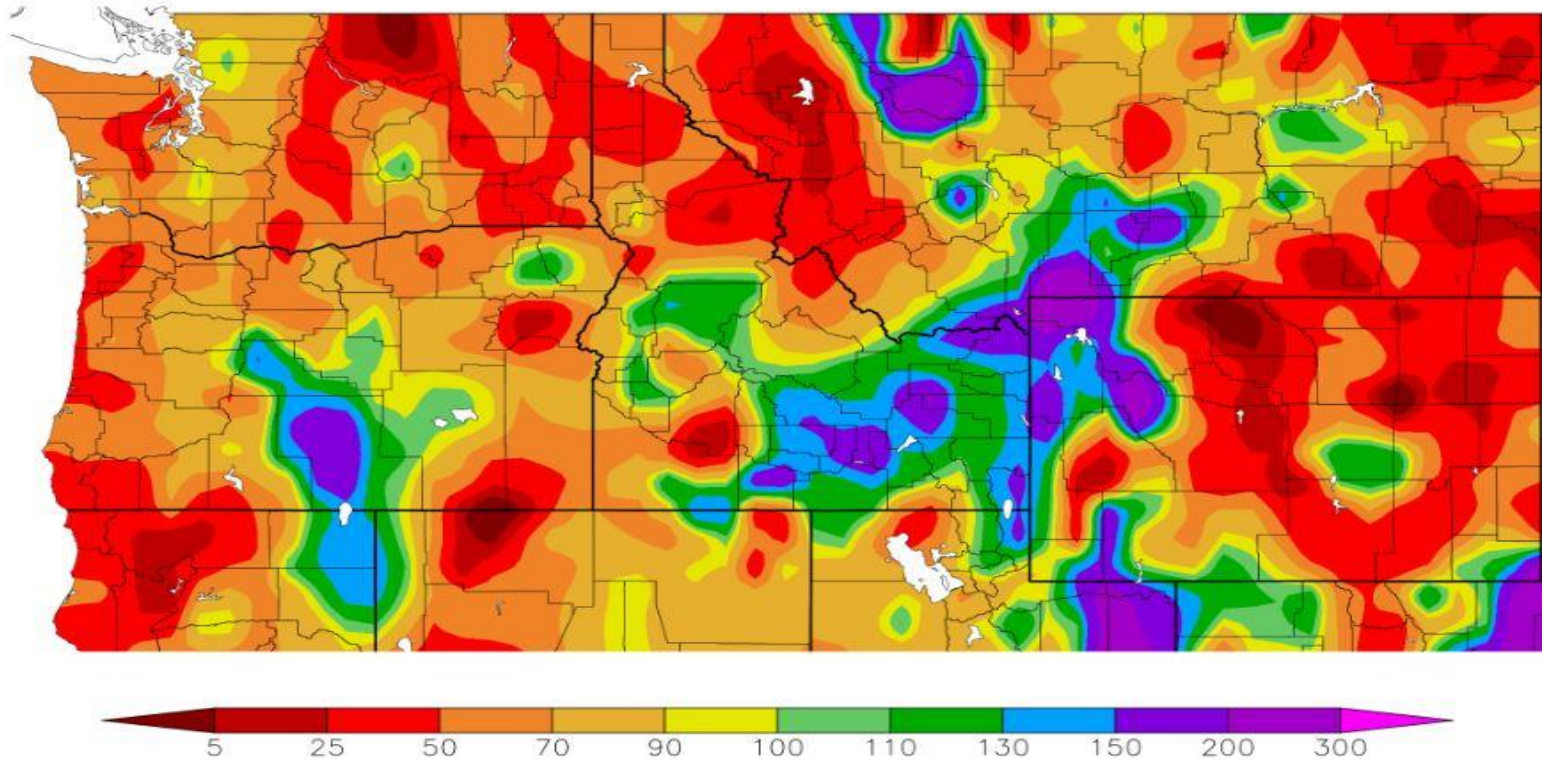
Generated 4/20/2020 at HPRCC using provisional data.

NOAA Regional Climate Centers

The image above shows that most of the forecast area (northeast Oregon and southeast Washington) had slightly below normal temperatures (-2 to -4 degrees F). The only location which had near to above normal average temperatures was in southern Union and southern Wallowa counties (0 to +2 degrees F).

March 2020, Percent of Normal of the Average Precipitation

Percent of Normal Precipitation (%)
3/1/2020 – 3/31/2020



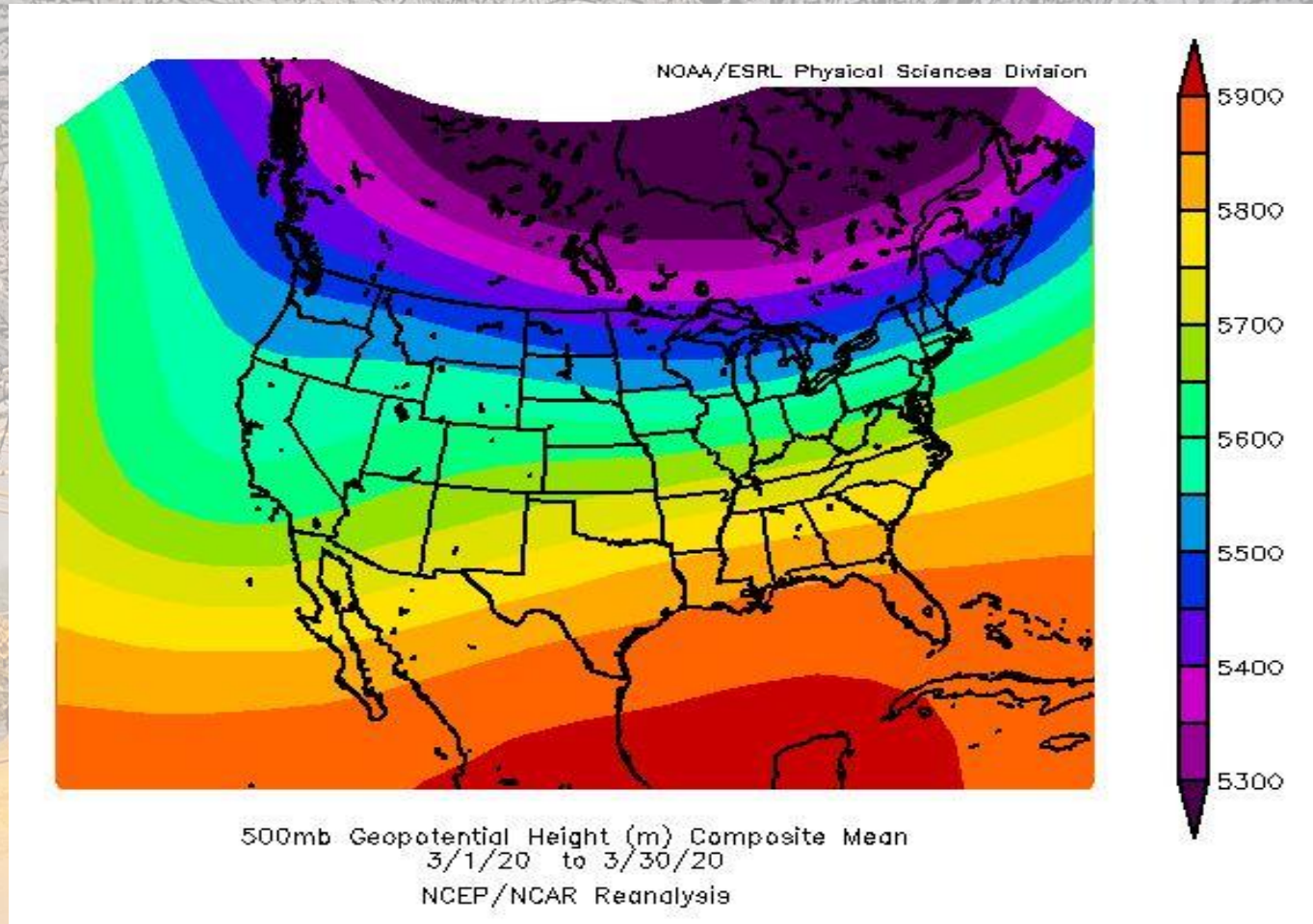
The forecast area had mostly less than 100 percent of normal precipitation for March (by as much as 25 to 50 percent of normal). The exceptions were in central Oregon and a small area in extreme northeast Oregon. However most of the drier than normal areas were about 70 to 90 percent of normal.

March 2020, Departures from Normal of Averages for Select Cites

	Max T	Max T D	Min T	Min T D	Ave T	Ave T D	PCPN	PCPN D
Yakima	56.9	0.7	27.5	-2.6	42.2	-1.0	0.33	-0.29
Kennewick	57.7	-0.7	34.7	-1.7	46.2	-1.2	0.73	0.00
Walla Walla	52.4	-2.8	35.2	-2.2	43.8	-2.5	0.89	-1.41
The Dalles	56.9	-0.1	35.0	-1.6	45.9	-0.9	0.46	-0.70
Redmond	53.2	-0.6	23.5	-2.5	38.4	-1.6	0.54	-0.12
Pendleton Airport	54.3	-0.9	32.9	-2.1	43.6	-1.5	0.89	-0.43
La Grande	54.0	2.8	28.1	-2.3	40.8	0.0	0.09	-1.37

The data above shows that most stations had below normal temperatures for the month of March 2020 (blue). The exceptions are Yakima and La Grande's average high temperatures which were slightly above normal (orange). La Grande had a mean average temperature (as shown in very light grey). All stations had below normal precipitation, for the month (orange), except Kennewick, WA which had an average precipitation amount (very light grey). These temperature departures from normal are consistent with a mean average trough over the forecast area, but not the below normal precipitation amounts.

March 2020 Average 500 MB Weather Pattern



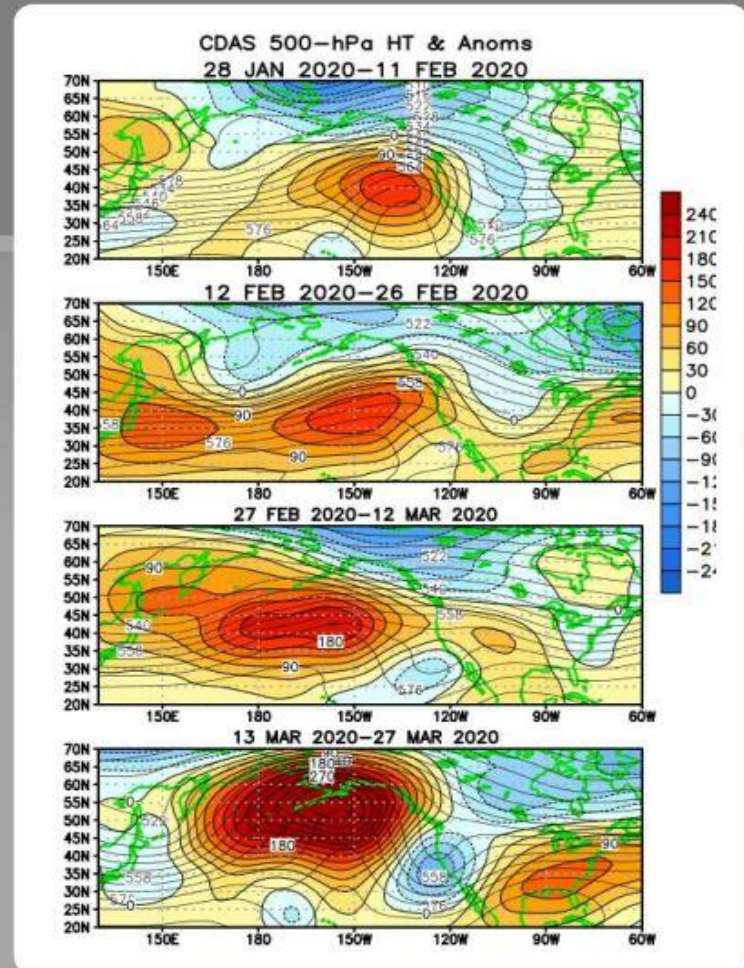
The average 500 mb pattern over the Pacific Northwest was an upper level trough pattern which may have been strongly influenced by the deep trough which brought arctic air to the forecast area during the middle of the month. The reasoning for this is because this type of pattern would usually result in below normal temperatures and above normal precipitation, which previous slides contradict. The southern portion of the Pacific Northwest (Oregon and Washington) had a more prominent upper trough than the northern portion.

More Detailed 500 MB Plots for March 2020

Atmospheric anomalies over the North Pacific and North America During the Last 60 Days

From late January to late March, above-average heights and temperatures were generally evident over the eastern United States.

During mid-March, heights and temperatures switched from mostly above-average to below-average over the western United States.



For the Pacific Northwest there was a mean average high pressure ridge over the west coast until late February. Then in March, the pattern changed to mostly an upper trough along the west coast. This is consistent with the previous slide.

Significant Weather Events / Records for March, 2020

Significant Weather Events				
Event	Date	Report	Where	Source
Snow	March 14, 2020	M 2.5 inches	6 SE Pendleton, OR	NWS Employee
Heavy Snow	March 14, 2020	M 10.0 inches	4 NW Meacham, OR	Co-Op Observer
Heavy Snow	March 14, 2020	M 4.0 inches	Antelope, OR	Co-Op Observer
Snow	March 14, 2020	E 2.5 inches	WSW Condon, OR	Trained Spotter
Snow	March 14, 2020	E 3.0 inches	6 W Condon, OR	Trained Spotter
Snow	March 14, 2020	E 2.0 inches	E 2.0 inches, OR	Trained Spotter
Snow	March 14, 2020	E 6.0 inches	SSW Meacham, OR	Trained Spotter
Snow	March 14, 2020	E 8.0 inches	WNW Tollgate, OR	Trained Spotter
Heavy Snow	March 14, 2020	E 3.5 inches	Condon, OR	Public
Snow	March 15, 2020	M 5.8 inches	2 SW Sisters, OR	Co-Op Observer
Heavy Snow	March 15, 2020	M 4.0 inches	6 NNW Madras, OR	CoCoRahs
Heavy Snow	March 15, 2020	M 5.0 inches	Heppner, OR	Co-Op Observer
Snow	March 15, 2020	M 4.0 inches	S Prineville, OR	Public

The table above shows that all of these events during the month of March were either snow or Heavy Snow, and were in the middle of the month when the arctic Blast hit the region.

Record Weather Reports					
Event	Date	Where	Previous Record	New Record	Records Began
High Temp	March 5, 2020	Meacham, OR	56 / 2015	59	1929
High Temp	March 5, 2020	Redmond, OR	70 / 1986	71	1941
Low Temp	March 14, 2020	Walla Walla, WA	28 / 1962	26	1930

The table above show that all of the record events were either record low or record high temperature events.

March 2020 Observed Monthly Max & Min Temperatures

Location	Highest Maximum Temperature	Lowest Minimum Temperature
Pendleton, OR	64	23
Redmond, OR	71	13
Pasco, WA	68	21
Yakima, WA	67	18
Walla Walla, WA	62	24
Bend, OR	62	13
Ellensburg, WA	66	17
Hermiston, OR	67	20
John Day, OR	72	20
La Grande, OR	62	21
The Dalles, OR	70	24
MT Adams RS, WA	64	19

The highest maximum temperatures were mostly in the 60s, with a few lower 70s. The warmest was at John Day, OR with a maximum high of 72, while the coolest was at Walla Walla, Bend and La Grande all with maximum highs of only 62. The lowest minimum temperatures were at Redmond and Bend with a lowest minimum of 13, the two highest and driest cities to allow strong nighttime cooling.

March 2020, Monthly Precipitation and Snowfall Totals

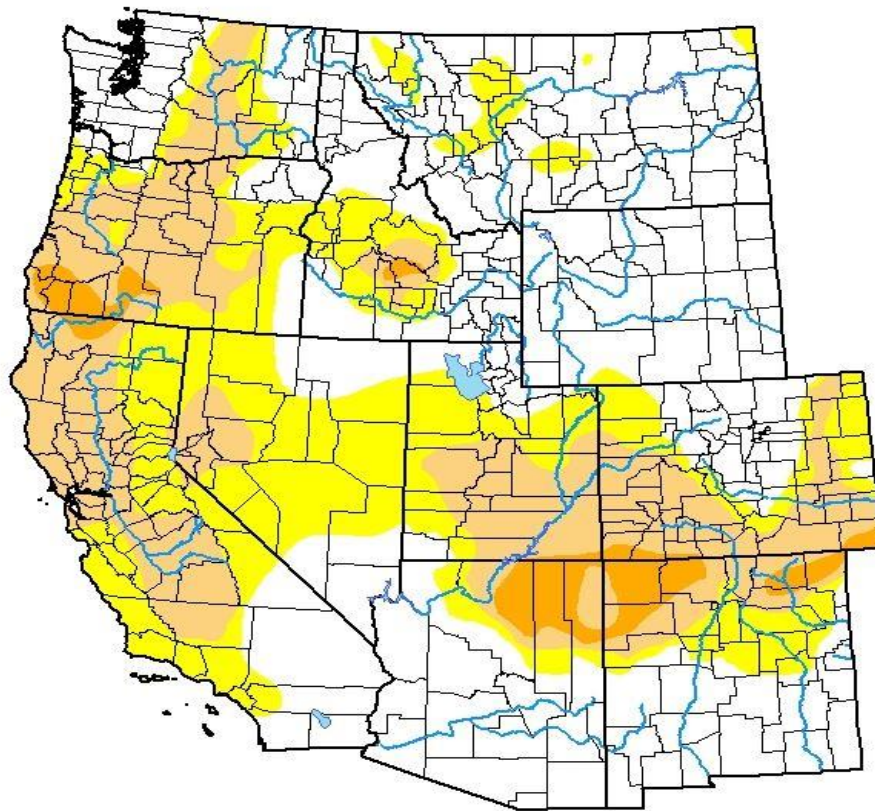
Location	Total Monthly Precip (inches)	Total Snowfall (inches)
Pendleton, OR	0.89	2.5
Redmond, OR	0.54	0.0
Pasco, WA	0.49	0.0
Yakima, WA	0.33	0.0
Walla Walla, WA	0.89	0.0
Bend, OR	1.05	3.5
Ellensburg, WA	0.33	Missing
Hermiston, OR	Missing	Missing
John Day, OR	0.95	Missing
La Grande, OR	0.09	0.0
The Dalles, OR	0.46	Missing
Mt Adams RS, WA	0.93	3.0

Only one station had more than 1.00 inch of precipitation (Bend, OR). Every other station had less than an inch. Most of these are below normal for the month of March. Three stations (Pendleton, Bend and the Mt Adams Ranger Station) had snowfall greater than zero, with Bend, OR receiving the most (3.5 inches). The snowfall came during the mid month arctic cold snap of March 13th – 15th.

March 2020 - Drought Monitor

U.S. Drought Monitor West

March 24, 2020
(Released Thursday, Mar. 26, 2020)
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	51.19	48.81	24.66	3.60	0.00	0.00
Last Week <i>03-17-2020</i>	51.28	48.72	26.13	3.55	0.00	0.00
3 Months Ago <i>12-24-2019</i>	58.23	41.77	18.65	7.68	0.00	0.00
Start of Calendar Year <i>12-31-2019</i>	59.17	40.83	18.17	7.12	0.00	0.00
Start of Water Year <i>10-01-2019</i>	68.40	31.60	16.32	3.16	0.00	0.00
One Year Ago <i>03-26-2019</i>	70.71	29.29	9.03	1.65	0.00	0.00

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:

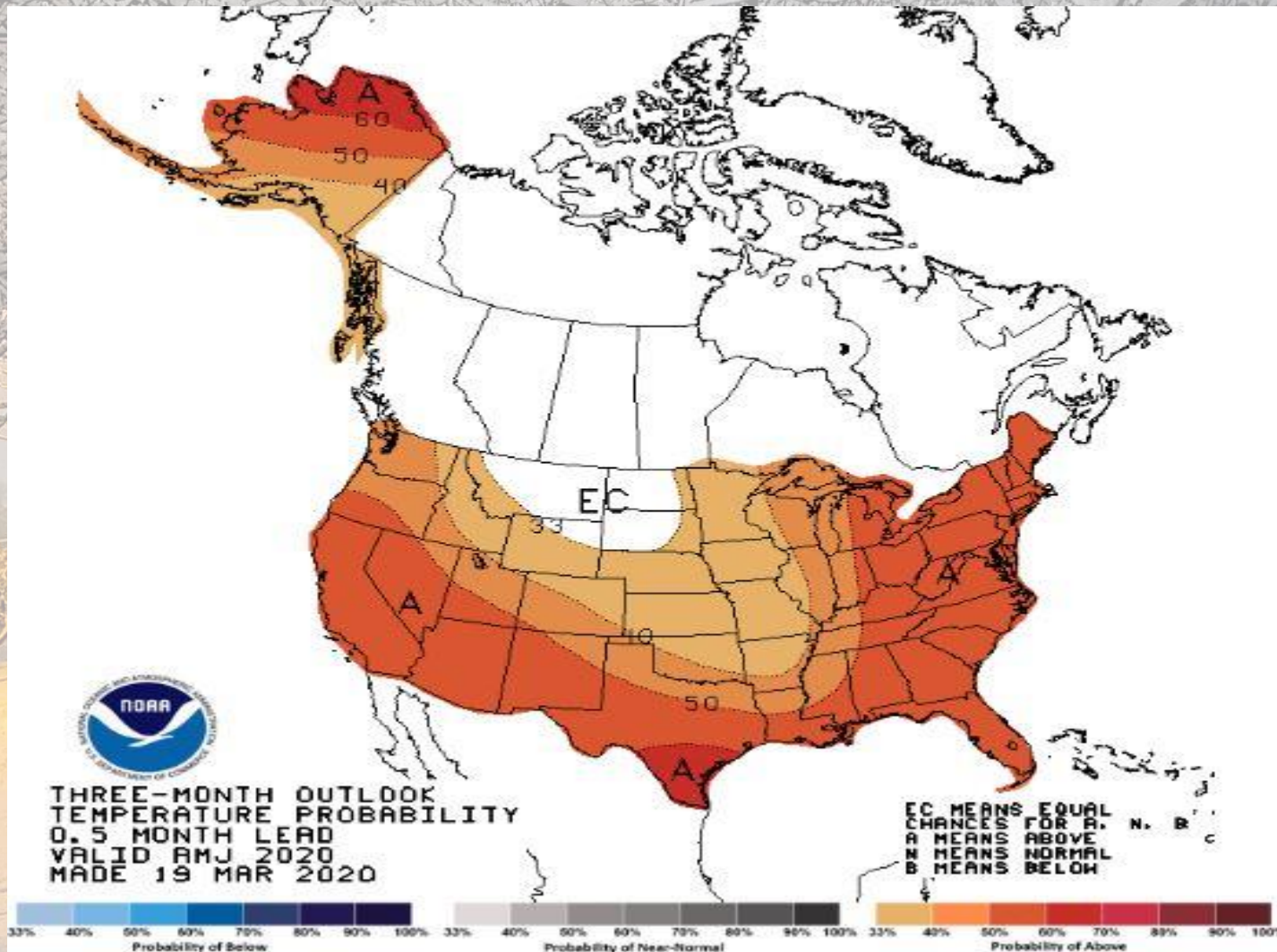
Brad Rippey
U.S. Department of Agriculture



droughtmonitor.unl.edu

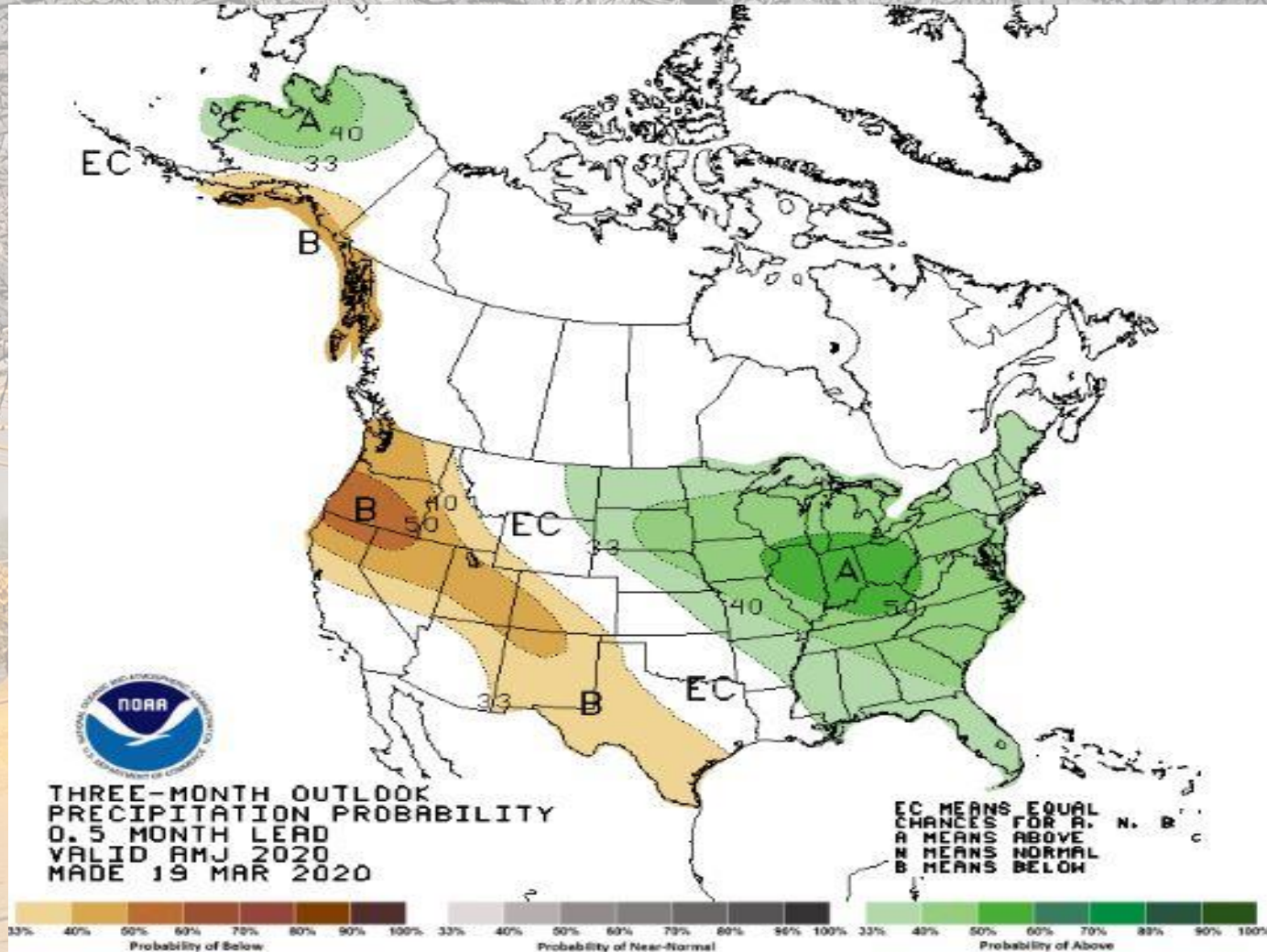
As of late March (the 24th) most of the forecast area was in a drought classification of “Abnormally Dry (D0) to Moderate Drought” (D1). The exception was in the northeast corner of Oregon and the southeast WA Blue Mountains which was “none” (D0).

USA Three Month Temperature Outlook



The temperature outlook for the next three months (April, May & June) shows about a 40 to 50 percent chance of having above normal temperatures for all of the forecast area.

USA Three Month Precipitation Outlook

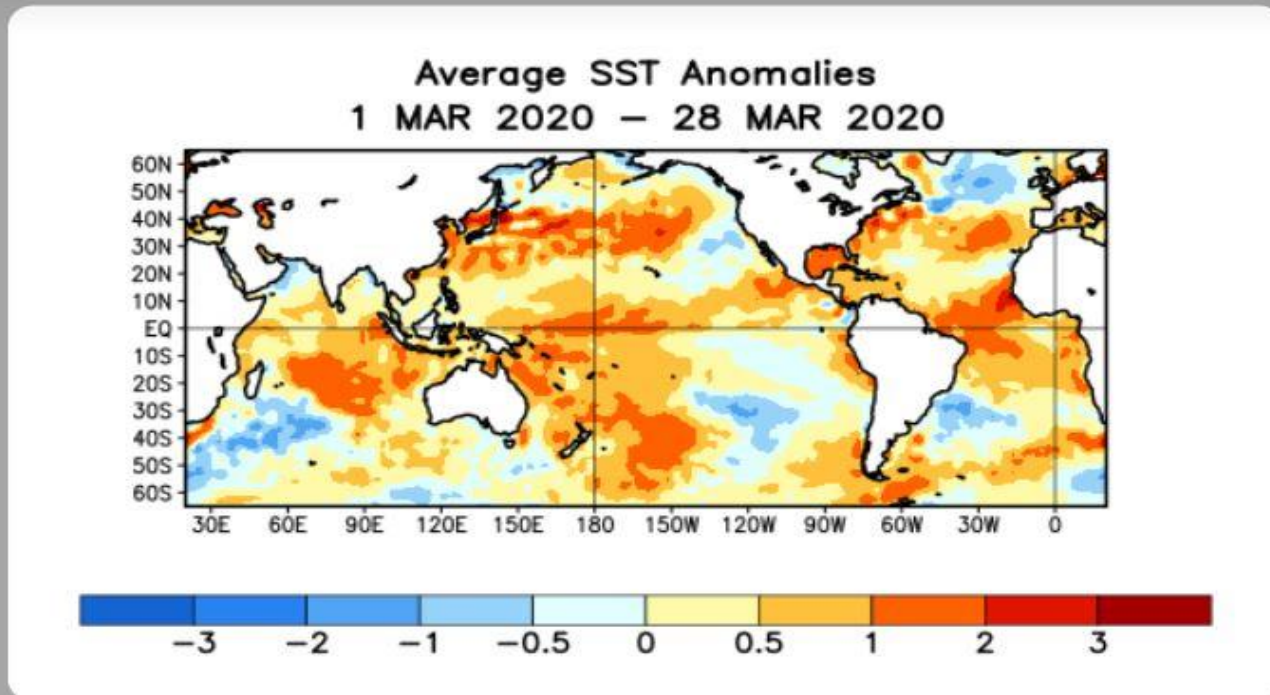


The percent of normal precipitation outlook for the next three months (April, May & June) shows that the forecast area will have from a 40 to 50 percent chance of below normal precipitation.

Sea Surface Temperature (SST) analysis for March 2020

Global SST Departures (°C) During the Last Four Weeks

During the last four weeks, equatorial SSTs were above average across most of the Pacific, the Atlantic Ocean and the Indian Ocean.



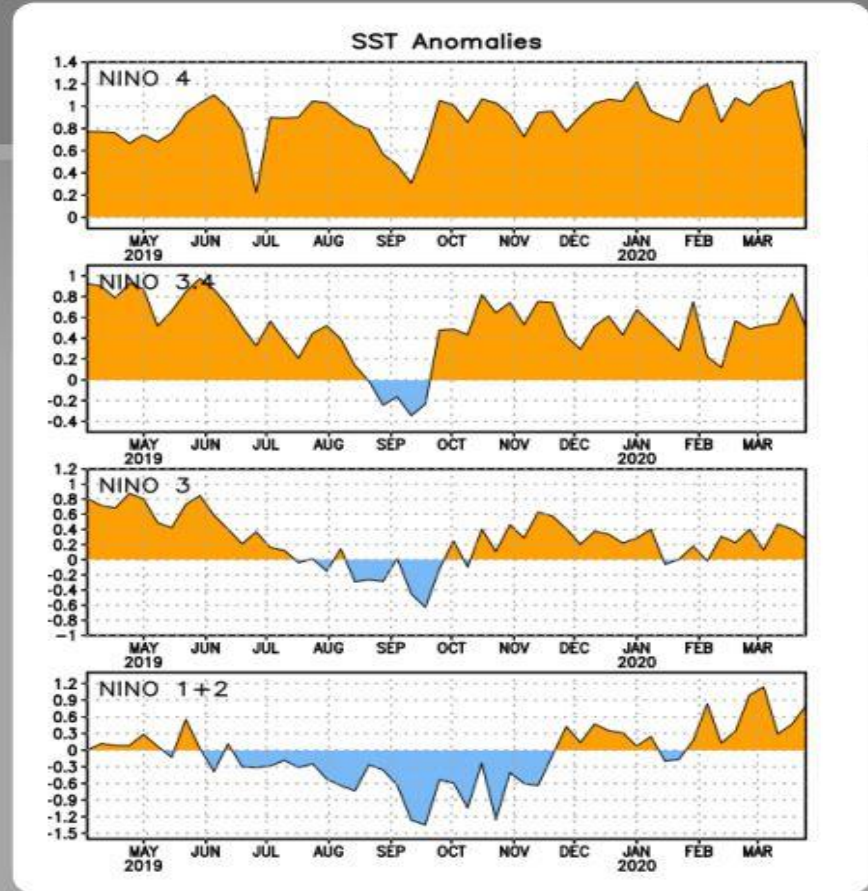
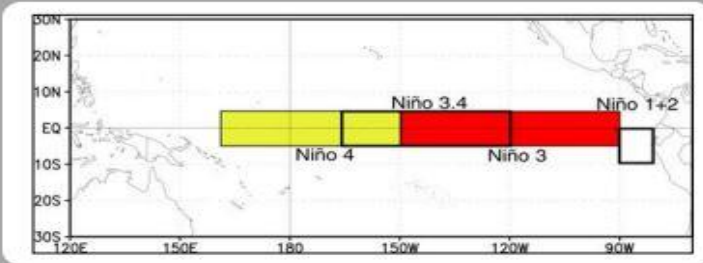
SSTs were above average for all of the tropical Pacific and in the North Pacific. There was a cool area off the USA west coast. These SSTs do not indicate either El Nino or La Nina conditions. However, these anomalies are consistent with previous slides showing overall warmer and drier than normal conditions for the month of March.

El Nino/ La Nina Regions, Showing SST Anomalies for Each Nino Region

Niño Region SST Departures (°C) Recent Evolution

The latest weekly SST departures are:

Niño 4	0.6°C
Niño 3.4	0.5°C
Niño 3	0.3°C
Niño 1+2	0.8°C



Comparing to the previous several months, the SSTs are showing an upward trend since the autumn of 2019 for all of the Niño regions. No longer are there any below normal SSTs for any Niño region since November-December, except for a small time period in Niño region 1+2 in January. However, this still does not conclude an El Niño or La Niña event either. However, it would be consistent for a greater number of Pacific storms that reached North America.

Current ENSO (El Nino Southern Oscillation) Alert System Status

ENSO Alert System Status: Not Active

ENSO-neutral conditions are present.*

Equatorial sea surface temperatures (SSTs) are near-to-above average across the Pacific Ocean.

The tropical atmospheric circulation is generally consistent with ENSO-neutral.

ENSO-neutral is favored for the Northern Hemisphere spring 2020 (~65% chance), continuing through summer 2020 (~55% chance).*

In the previous two slides, both showed warmer than normal SSTs. However, the ENSO Alert System Status is still shown as “Not Active” for the fourth month in a row, meaning that we are not in either an El-Nino or a La-Nina status, but in a “Neutral” ENSO status. These neutral conditions are forecast to continue through the spring and summer, into autumn of 2020 (about an overall 60 percent chance).



Thank You!