

The Month In Review

April 2019

National Weather Service
Pendleton, Oregon

April, 2019 Climate Summary

April, 2019 can be summarized with above normal temperatures, and above normal precipitation. In fact, there were a couple heavy rain events which caused some flooding to occur. One such flood was on McKay Creek below the McKay dam due to the need to release enough water to prevent over-topping of the dam, which caused flooding in the McKay residential area of Pendleton. Other significant flooding occurred on the John Day river near Service Creek, and also on Canyon Creek near the city of John Day. The flooding was caused by heavy rain combined with rapid snow melt in the mountains, after record amounts of snowpack accumulated in the Forecast Area from the past winter. Below are some images taken of the McKay Creek flooding and a nice spring day showing blooming tulips in Pendleton. Temperatures for the month were near normal, with a couple days of temperatures well above normal.



McKay Creek Flooding April 12th – 15th in McKay Park.



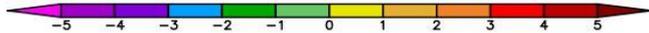
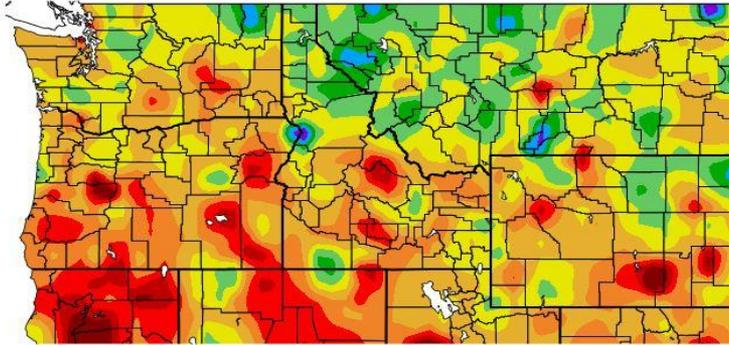
McKay Creek Flooding, April 12th – 15th of a house in the McKay area.



Spring arrives with blooming Tulips.

April, 2019 Departure from Normal Temperatures

Departure from Normal Temperature (F)
4/1/2019 – 4/30/2019

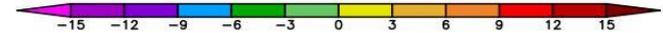
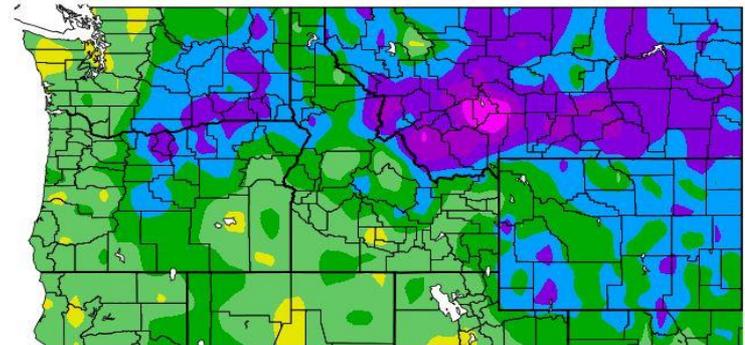


Generated 5/1/2019 at HPRCC using provisional data.

NOAA Regional Climate Centers

Departure from normal for April, 2019

Departure from Normal Temperature (F)
3/1/2019 – 3/31/2019



Generated 4/2/2019 at HPRCC using provisional data.

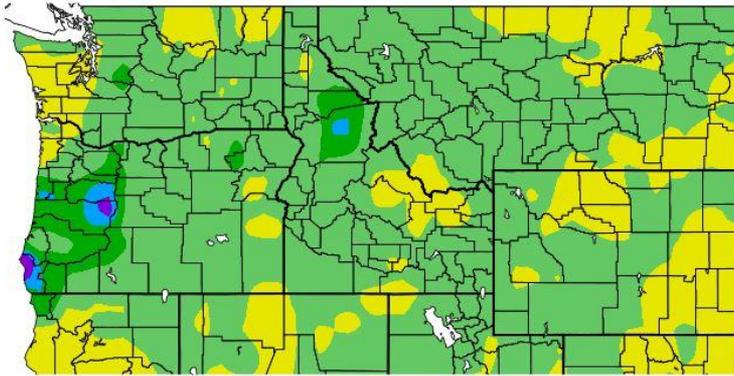
NOAA Regional Climate Centers

Departure from normal for March, 2019

The images above show that April had mostly above normal monthly average temperatures. Some locations were as much as 3 to 4 degrees above normal for the month. This is a sharp contrast to the colder than normal average temperatures for the month of March as seen in the lower image.

April, 2019 Departure from Normal Precipitation

Departure from Normal Precipitation (in)
4/1/2019 - 4/30/2019

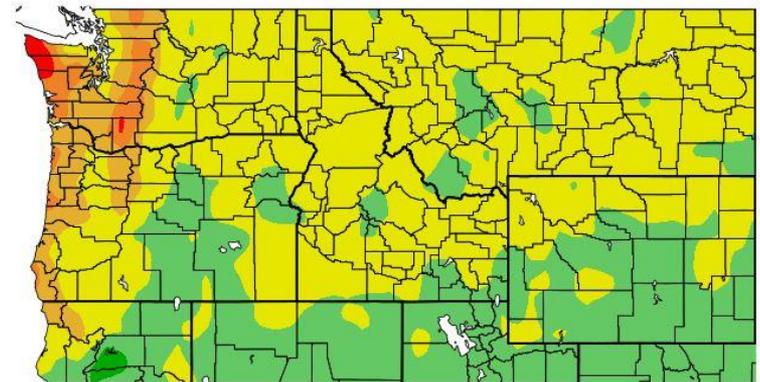


Generated 5/1/2019 at HPRCC using provisional data.

NOAA Regional Climate Centers

Departure from normal precipitation for April

Departure from Normal Precipitation (in)
3/1/2019 - 3/31/2019



Generated 4/2/2019 at HPRCC using provisional data.

NOAA Regional Climate Centers

Departure from normal precipitation for March

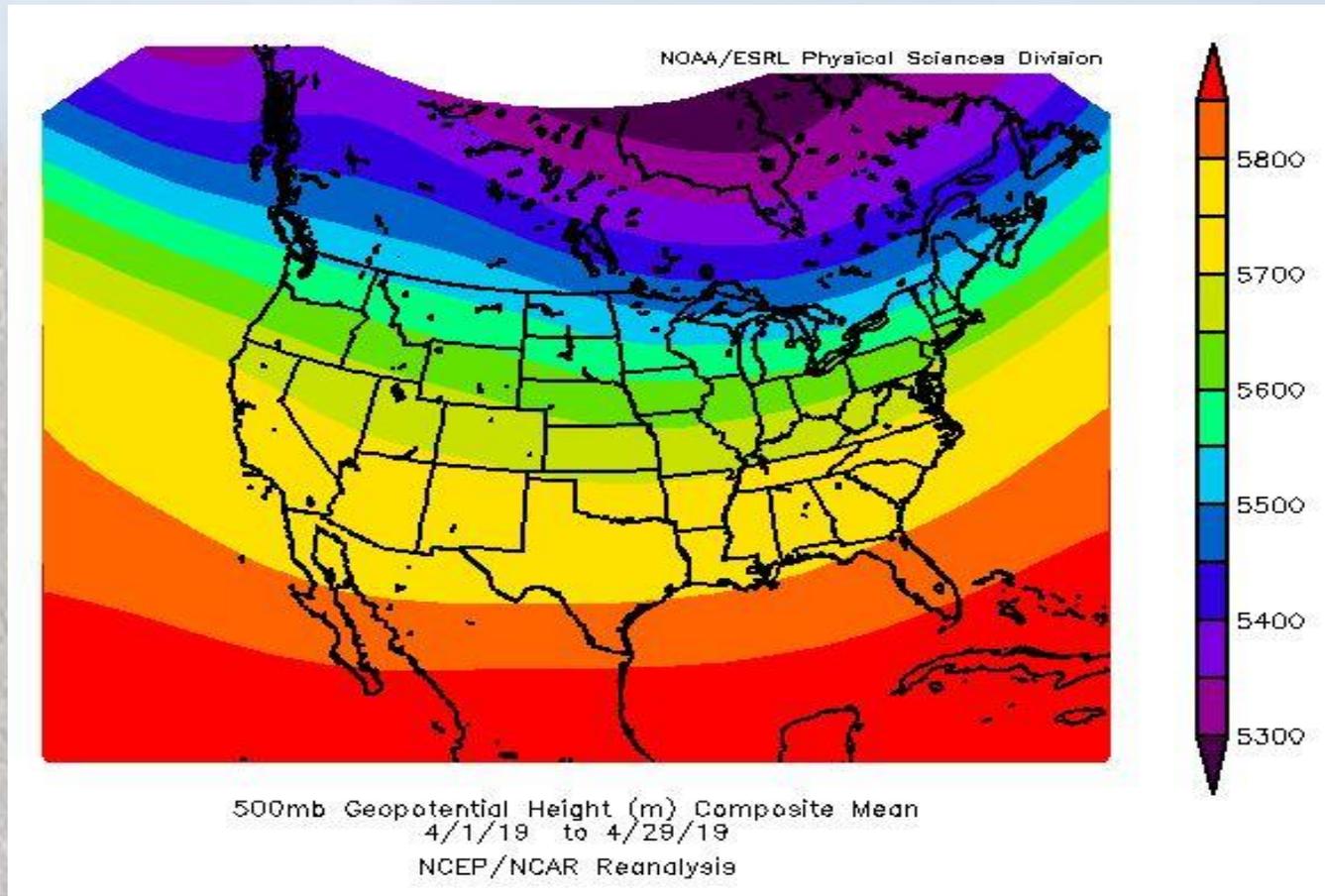
The above images show a comparison of April vs. March, 2019 departure from normal precipitation. As can be seen, April had a departure from normal that was greater than the departure from normal precipitation in March. The top image shows an almost solid coverage of green (+3 to +6 inches), indicating that almost all areas had above normal precipitation. March had near normal (-3 to +3 inches), which crosses the “zero” inch departure (yellow to green).

April, 2019 Average Highs, Average Lows, Average Daily Temperatures, Precipitation Totals and Departures For Select Cities

	Max T	Max T D	Min T	Min T D	Ave T	Ave T D	PCPN	PCPN D
Yakima	64.5	0.7	40.3	5.9	52.4	3.3	0.68	0.13
Kennewick	67.2	0.9	44.9	2.6	56.1	1.8	0.95	0.39
Walla Walla	63.2	0.7	44.7	2.7	54.1	1.9	2.97	1.05
The Dalles	64.6	0.2	44.1	2.6	54.4	1.5	2.01	1.22
Redmond	61.0	1.4	35.0	5.9	48.0	3.6	1.34	0.61
Pendleton	62.1	0.0	40.8	1.6	51.5	0.8	1.68	0.48
La Grande	61.1	2.8	36.8	1.7	49.0	2.3	2.86	1.28

The data above shows that all locations had slightly at or above normal average temperatures (both maximums and minimums and daily averages) for all stations listed, and greater than normal precipitation for the month of April, 2019. The greatest amount of precipitation departure from normal was at Walla Walla and at La Grande with nearly 3 inches of rainfall at both of those stations.

April, 2019 Average 500 MB Weather Pattern



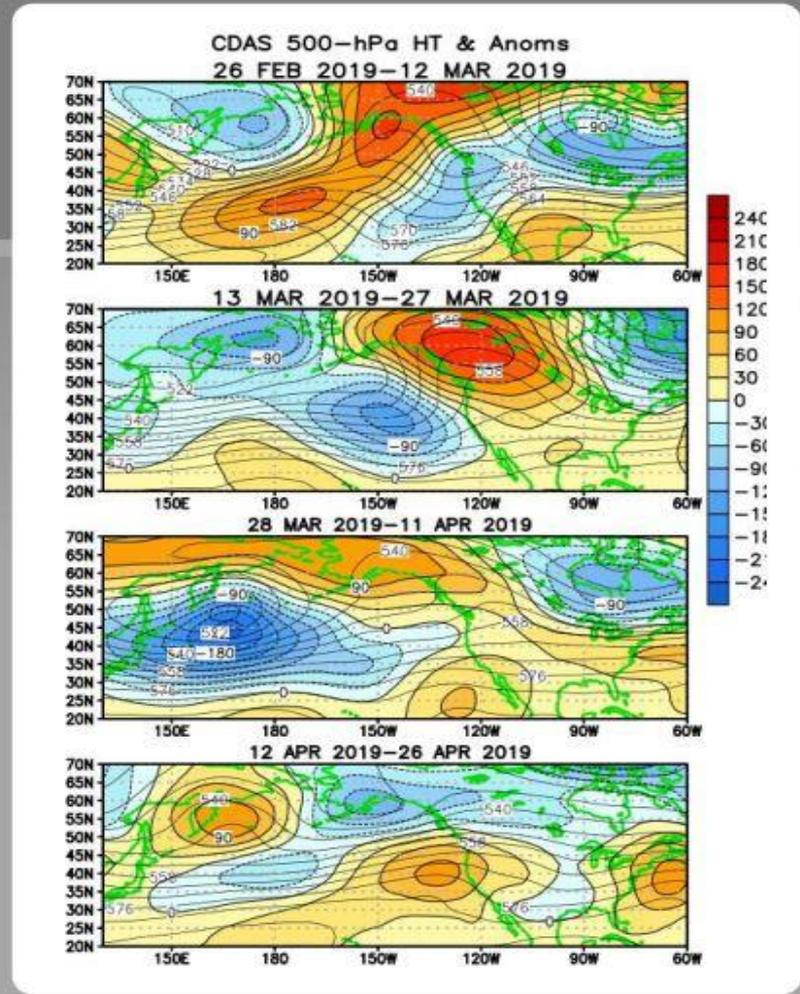
The flow over the Pacific Northwest was mostly west to east (a zonal flow). This would indicate near normal temperatures and precipitation for the month. However, this image also indicates a pattern that allows more frequent Pacific storms to move into the Pacific Northwest, which would result in greater than normal precipitation and possibly also warmer temperatures due to the relatively warmer waters of the Pacific than over land, still in early spring.

More Detailed 500 MB Plots for March & April, 2019

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

From late February to late March, an anomalous ridge was present over western Canada, and a downstream anomalous trough was present over eastern Canada. These conditions contributed to well above-average temperatures in Alaska, and to below-average temperatures across much of Canada and parts of the U.S.

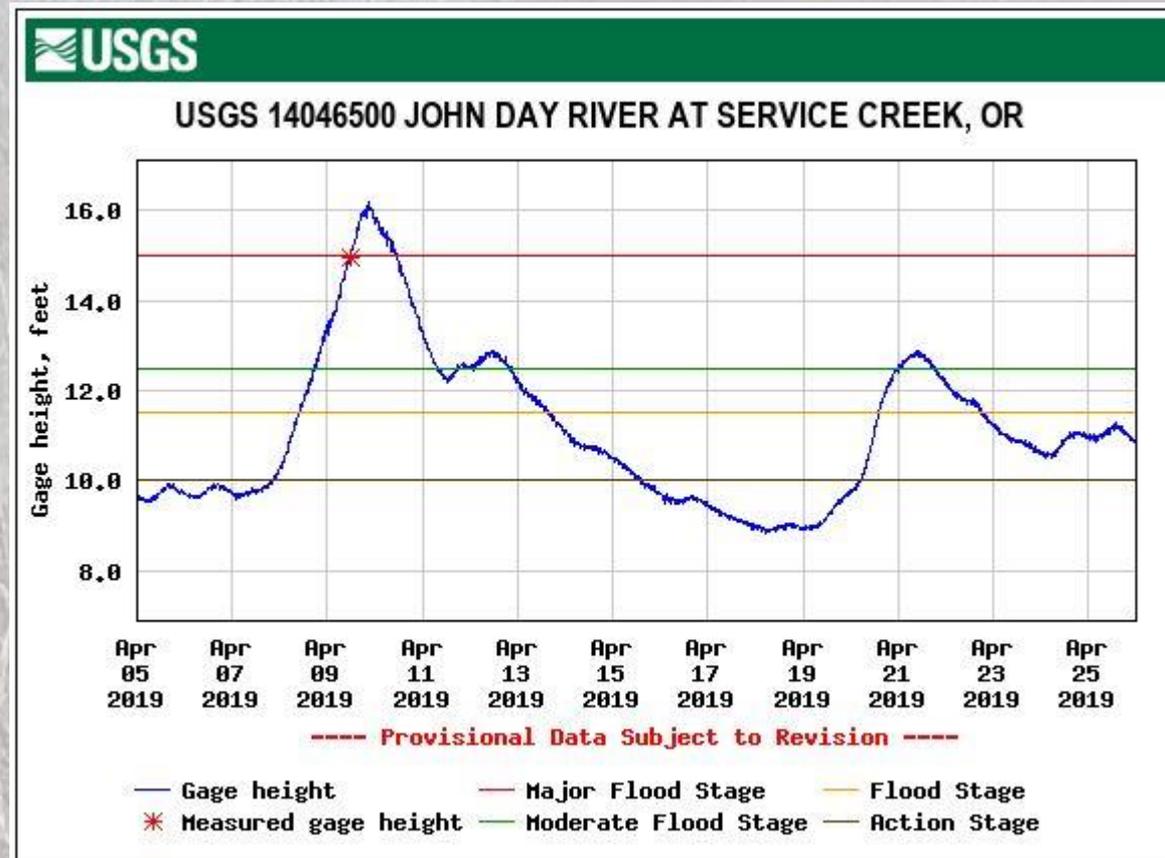
Since late March, anomalous ridging and above-average temperatures have prevailed over most of the contiguous U.S.



Note that during the month of April, a ridge of high pressure prevailed over the Pacific Northwest and the forecast area (see bottom two images).

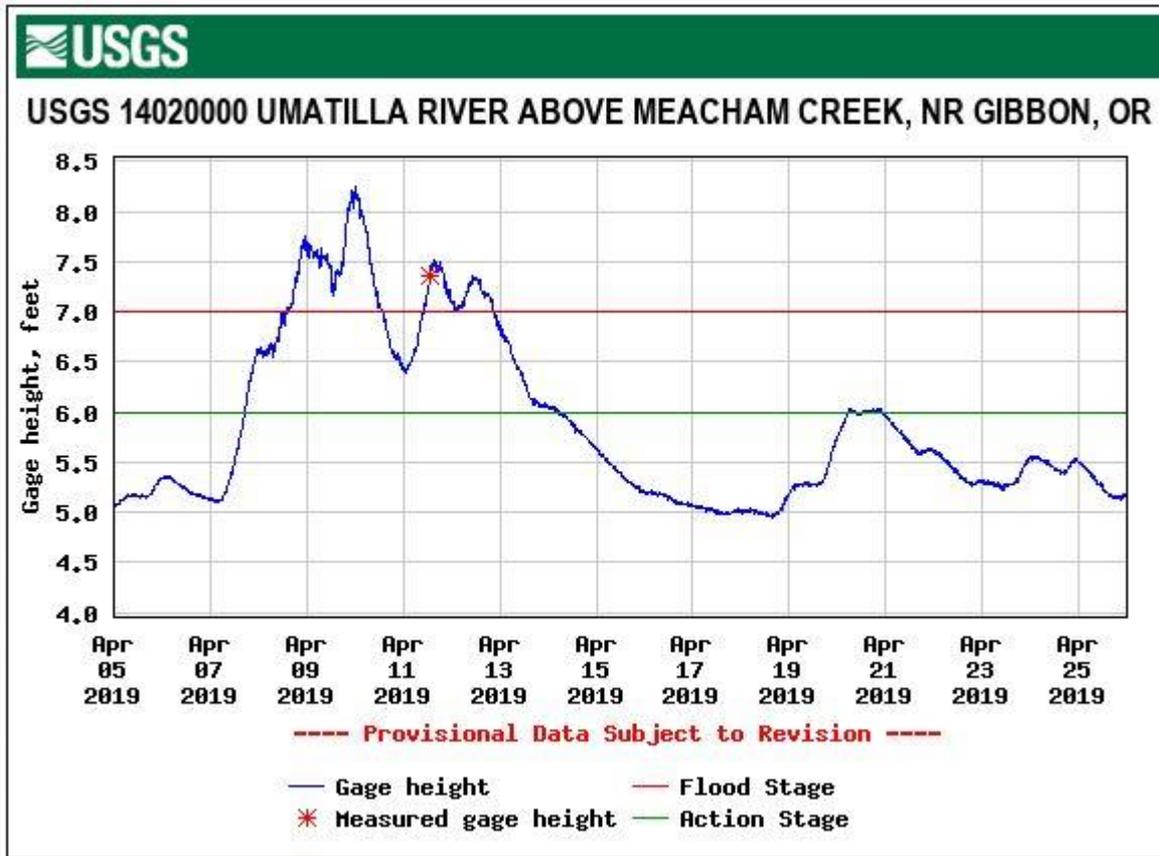
Hydrology Concerns During the Month with Significant Flooding

During April, significant rains and melting snow caused several rivers to have significant rises which over-flowed their banks and caused flooding, some of which was major flooding. The next couple of slides will show time series plots of a few river gage levels for a period when flooding occurred.



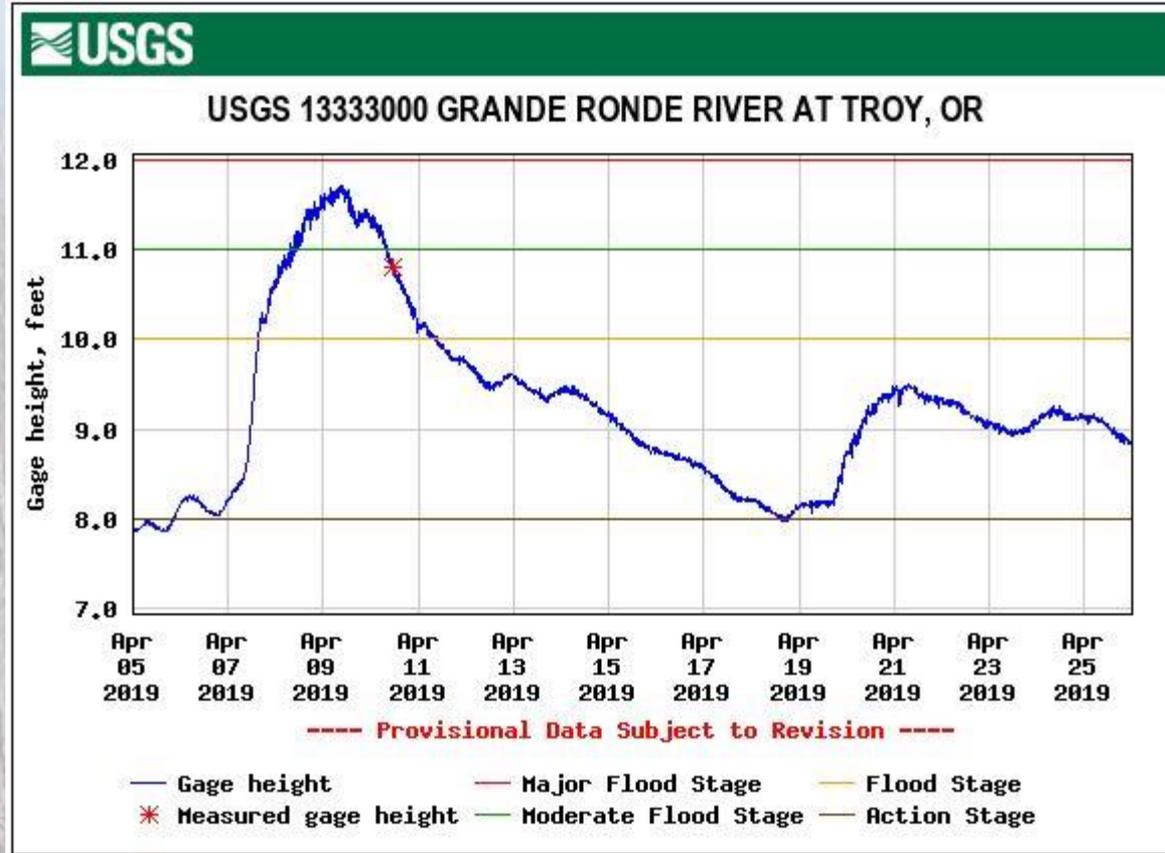
The John Day River at Service Creek reached major flood stage on April 10th for about a day.

Hydrology Concerns During the Month with Significant Flooding



The Umatilla River above Meacham Creek near Gibbon reached general flood stage on April 8th and continued through April 13th and then fell below flood stage.

Hydrology Concerns During the Month with Significant Flooding



The Grande Ronde River at Troy reached moderate flood stage on April 8th, and continued until April 10th, and then fell to general flood stage until April 11th.

Flooding also occurred at the following locations, but river gage plots are not available:

- * McKay Creek – Major flooding caused by significant water release at the McKay Dam spillway due a need to prevent over-topping of water over the dam.
- * Canyon Creek – Near Canyon City, south of John Day, which caused moderate flooding.

Local Storm Reports of Significant Weather Events

..TIME...	...EVENT...	...CITY LOCATION...	...LAT.LON...
..DATE...	...MAG....	..COUNTY LOCATION..ST..	...SOURCE....
..REMARKS..			
0400 PM	FLASH FLOOD	2 E MITCHELL	44.57N 120.11W
04/19/2019		WHEELER	OR CO-OP OBSERVER
THUNDERSTORMS PRODUCED HEAVY RAIN WHICH CAUSED ROAD LEADING UP TO OBSERVERS HOUSE TO WASH OUT IN PLACES...AS WELL AS OTHER ROADS WEST OF MITCHELL. ALSO CAUSED MUD AND ROCK SLIDES TO OCCUR IN TOWN ON NELSON STREET. POWER OUTAGE FROM 6 PM FRIDAY TO 4 AM SATURDAY.			
0518 PM	HAIL	NW UNION	45.21N 117.87W
04/19/2019	M0.75 INCH	UNION	OR TRAINED SPOTTER
TRAINED SPOTTER REPORTED A HAIL SHOWER IN UNION AND MEASURED THE LARGEST HAILSTONE AT 5/8 INCH.			
0655 AM	HEAVY RAIN	JOSEPH	45.35N 117.23W
04/20/2019	M0.61 INCH	WALLOWA	OR CO-OP OBSERVER
PRECIPITATION IS 24 HR TOTAL.			
0700 AM	HEAVY RAIN	2 E MITCHELL	44.57N 120.11W
04/20/2019	M1.05 INCH	WHEELER	OR CO-OP OBSERVER
PRECIPITATION IS 24 HR TOTAL.			

..TIME...	...EVENT...	...CITY LOCATION...	...LAT.LON...
..DATE...	...MAG....	..COUNTY LOCATION..ST..	...SOURCE....
..REMARKS..			
04/20/2019	M0.55 INCH	GRANT	OR CO-OP OBSERVER
PRECIPITATION IS 24 HR TOTAL. OBSERVER REPORTED THUNDERSTORM WITH LIGHTNING, SMALL HAIL, HEAVY RAIN AND WIND PREVIOUS EVENING OF 04/19.			
0800 AM	HEAVY RAIN	UNION	45.21N 117.87W
04/20/2019	M0.43 INCH	UNION	OR CO-OP OBSERVER
PRECIPITATION IS 24 HR TOTAL.			
0800 AM	HEAVY RAIN	1 E COVE	45.30N 117.79W
04/20/2019	M0.41 INCH	UNION	OR CO-OP OBSERVER
PRECIPITATION 24 HR TOTAL...OBSERVER REPORTED THUNDERSTORMS BEGAN 4 PM ON 04/19 AND CONTINUED INTO EVENING.			
0800 AM	HEAVY RAIN	4 NE LOSTINE	45.53N 117.37W
04/20/2019	M0.82 INCH	WALLOWA	OR CO-OP OBSERVER
PRECIPITATION IS 24 HR TOTAL. OBSERVER REPORTED THUNDERSTORM WITH HEAVY RAIN AND SOME HAIL PREVIOUS EVENING OF 04/19.			
0845 AM	HEAVY RAIN	4 ESE PILOT ROCK	45.46N 118.75W
04/20/2019	M1.10 INCH	UMATILLA	OR TRAINED SPOTTER

Local Storm Reports of Significant Weather Events

..TIME...	...EVENT...	...CITY LOCATION...	...LAT.LON...
..DATE...	....MAG....	..COUNTY LOCATION..ST..	...SOURCE....
..REMARKS..			
0400 PM	FLASH FLOOD	2 E MITCHELL	44.57N 120.11W
04/19/2019		WHEELER	OR CO-OP OBSERVER
THUNDERSTORMS PRODUCED HEAVY RAIN WHICH CAUSED ROAD LEADING UP TO OBSERVERS HOUSE TO WASH OUT IN PLACES...AS WELL AS OTHER ROADS WEST OF MITCHELL. ALSO CAUSED MUD AND ROCK SLIDES TO OCCUR IN TOWN ON NELSON STREET. POWER OUTAGE FROM 6 PM FRIDAY TO 4 AM SATURDAY.			
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..DATE...MAG....	..COUNTY LOCATION..ST..	...SOURCE....
..REMARKS..			
0655 AM	HEAVY RAIN	JOSEPH	45.35N 117.23W
04/20/2019	M0.61 INCH	WALLOWA	OR CO-OP OBSERVER
PRECIPITATION IS 24 HR TOTAL.			
0700 AM	HEAVY RAIN	2 E MITCHELL	44.57N 120.11W
04/20/2019	M1.05 INCH	WHEELER	OR CO-OP OBSERVER
PRECIPITATION IS 24 HR TOTAL.			
0800 AM	HEAVY RAIN	1 E COVE	45.30N 117.79W
04/20/2019	M0.41 INCH	UNION	OR CO-OP OBSERVER
PRECIPITATION 24 HR TOTAL...OBSERVER REPORTED THUNDERSTORMS BEGAN 4 PM ON 04/19 AND CONTINUED INTO EVENING.			

..TIME...	...EVENT...	...CITY LOCATION...	...LAT.LON...
..DATE...	....MAG....	..COUNTY LOCATION..ST..	...SOURCE....
..REMARKS..			
04/20/2019	M0.43 INCH	UNION	OR CO-OP OBSERVER
PRECIPITATION IS 24 HR TOTAL.			
0800 AM	HEAVY RAIN	LONG CREEK	44.71N 119.10W
04/20/2019	M0.55 INCH	GRANT	OR CO-OP OBSERVER
PRECIPITATION IS 24 HR TOTAL. OBSERVER REPORTED THUNDERSTORM WITH LIGHTNING, SMALL HAIL, HEAVY RAIN AND WIND PREVIOUS EVENING OF 04/19.			
0800 AM	HEAVY RAIN	4 NE LOSTINE	45.53N 117.37W
04/20/2019	M0.82 INCH	WALLOWA	OR CO-OP OBSERVER
PRECIPITATION IS 24 HR TOTAL. OBSERVER REPORTED THUNDERSTORM WITH HEAVY RAIN AND SOME HAIL PREVIOUS EVENING OF 04/19.			
0845 AM	HEAVY RAIN	4 ESE PILOT ROCK	45.46N 118.75W
04/20/2019	M1.10 INCH	UMATILLA	OR TRAINED SPOTTER
0518 PM	HAIL	NW UNION	45.21N 117.87W
04/19/2019	M0.75 INCH	UNION	OR TRAINED SPOTTER
TRAINED SPOTTER REPORTED A HAIL SHOWER IN UNION AND MEASURED THE LARGEST HAILSTONE AT 5/8 INCH.			

Local Storm Reports of Significant Weather Events

..TIME...	...EVENT...	...CITY LOCATION...	...LAT..LON...
..DATE...	....MAG....	..COUNTY LOCATION..ST..	....SOURCE....
..REMARKS..			
0100 AM	HEAVY SNOW	10 NNE UKIAH	45.27N 118.84W
04/11/2019	E5.0 INCH	UMATILLA	OR MESONET
LUCKY STRIKE SNOTEL. SINCE 5 PM WEDENSDAY.			
0300 AM	HEAVY SNOW	9 SW SKI BLUEWOOD	45.98N 117.94W
04/11/2019	E10.0 INCH	WALLOWA	OR MESONET
FROM MILK SHAKES SNOTEL. SINCE 4PM WEDNESDAY			
0300 AM	HEAVY SNOW	11 ESE HARDMAN	45.10N 119.49W
04/11/2019	E6.0 INCH	MORROW	OR MESONET
MADISON BUTTE SNOTEL. SINCE 10 PM WEDNESDAY.			
0300 AM	HEAVY SNOW	5 SSW SPOUT SPRINGS	45.69N 118.10W
04/11/2019	E7.0 INCH	UMATILLA	OR MESONET
HIGH RIDGE SNOTEL. SINCE 4 PM WEDNESDAY.			
0200 AM	HEAVY SNOW	5 SW SPOUT SPRINGS	45.70N 118.12W
04/10/2019	E9.0 INCH	UMATILLA	OR MESONET
HIGH RIDGE SNOTEL. 9 INCHES OF NEW SNOW SINCE 11 AM TUESDAY. ELEVATION 4920 FEET.			

..TIME...	...EVENT...	...CITY LOCATION...	...LAT..LON...
..DATE...	....MAG....	..COUNTY LOCATION..ST..	....SOURCE....
..REMARKS..			
0831 AM	FLOOD	ELGIN	45.56N 117.92W
04/09/2019		UNION	OR TRAINED SPOTTER
FLOODING REPORTED ALONG PHILLIPS AND INDIAN CREEKS.			
0500 PM	TSTM WND GST	5 N RICHLAND	46.36N 119.29W
04/05/2019	M62 MPH	BENTON	WA MESONET
MESONET STATION H300A HANFORD 300 AREA. OUTFLOW WIND GUSTS FROM NEARBY THUNDERSTORMS.			

Records That Were Broken or Tied in April, 2019

	DATE	STATION	PREVIOUS RECORDS / YEAR	NEW RECORD	RECORDS BEGAN
TEMPERATURES	APRIL 30	MEACHAM, OR	23 / 1954	19	1929
		PENDLETON (ARPT), OR	30 / 1972	27	1934
		PENDLETON (CITY), OR	28 / 1904	28 (TIED)	1889
TEMPERATURES	APRIL 29	MEACHAM, OR	22 / 1972	20	1929
		PENDLETON (ARPT), OR	32 / 1999	29	1934
		WALLA WALLA, WA	33 / 1972	33 (TIED)	1930
TEMPERATURES	APRIL 28	GOLDENDALE, WA	24 / 1970	24 (TIED)	1905
PRECIPITATION	APRIL 10	MEACHAM, OR	0.67 / 1974	1.38	1929
PRECIPITATION	APRIL 9	COVE, OR	0.66 / 1922	0.84	1917
		LA GRANDE (CITY), OR	0.56 / 2013	1.15	1887
		MEACHAM, OR	0.88 / 2019	0.88 (TIED)	1929
		MORO, OR	0.32 / 1962	0.63	1897
		PELTON DAM, OR	0.41 / 1976	0.42	1958
		PENDLETON (ARPT), OR	0.63 / 2019	0.63 (TIED)	1934
		SISTERS, OR	0.70 / 2006	1.62	1958
		THE DALLES, OR	0.48 / 2019	0.48 (TIED)	1929
		UNION ES, OR	0.43 / 1995	0.56	1911
		WALLA WALLA, WA	0.66 / 2019	0.66 (TIED)	1930
		WHITMAN MISSION, WA	0.33 / 1984	0.61	1962

April 2019 Observed Monthly Highest Max & Min Temperatures

Location	Highest Maximum Temperature	Lowest Minimum Temperature
Pendleton, OR	77	27
Redmond, OR	80	21
Pasco, WA	84	32
Yakima, WA	76	28
Walla Walla, WA	77	33
Bend, OR	77	24
Ellensburg, WA	74	29
Hermiston, OR	82	28
John Day, OR	79	27
La Grande, OR	76	27
The Dalles, OR	80	31
MT Adams RS, WA	75	25

Every station had a maximum temperature of 70 or greater. The lowest minimum temperature were all above 20, but only one station was above freezing (Walla Walla, WA).

April, 2019, Monthly Total Precipitation Totals

Location	Total Monthly Precip	Total Snowfall or Hail
Pendleton, OR	1.68	0
Redmond, OR	1.34	0
Pasco, WA	0.85	0
Yakima, WA	0.68	0
Walla Walla, WA	2.97	0
Bend, OR	2.26	0
Ellensburg, WA	0.83	0
Hermiston, OR	0.29	0
John Day, OR	1.35	M
La Grande, OR	2.86	0
The Dalles, OR	2.01	M
Mt Adams RS, WA	1.01	0

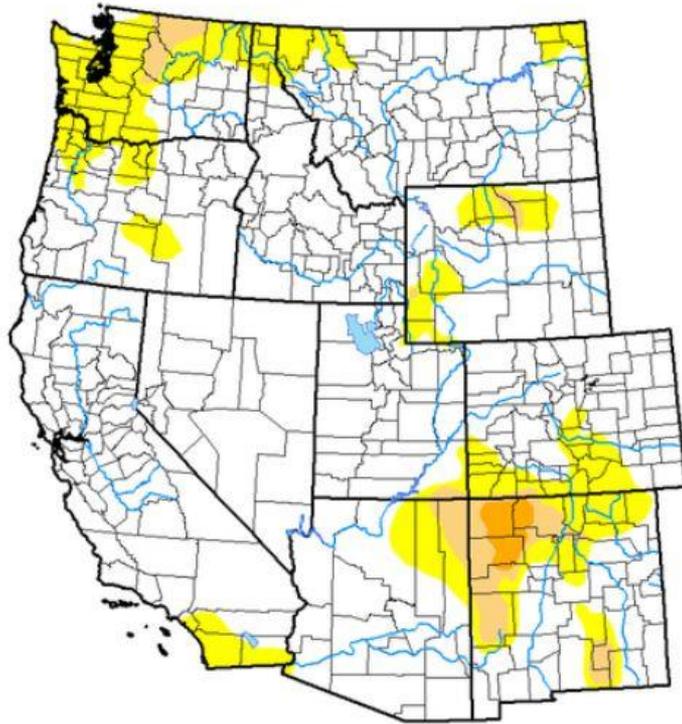
Most stations had over an inch of rainfall for the month, with the highest being at Walla Walla with near 3 inches for the month. The lowest was 0.29 at Hermiston, which is not unusual being that Hermiston is in the normally driest location here.

End of April, 2019 - Drought Monitor

U.S. Drought Monitor - Western RCC

As of April 23, 2019

Author: David Miskus, NOAA/NWS/NCEP/CPC



Drought Intensities

None: No Drought
D0: Abnormally Dry

D1: Moderate Drought
D2: Severe Drought

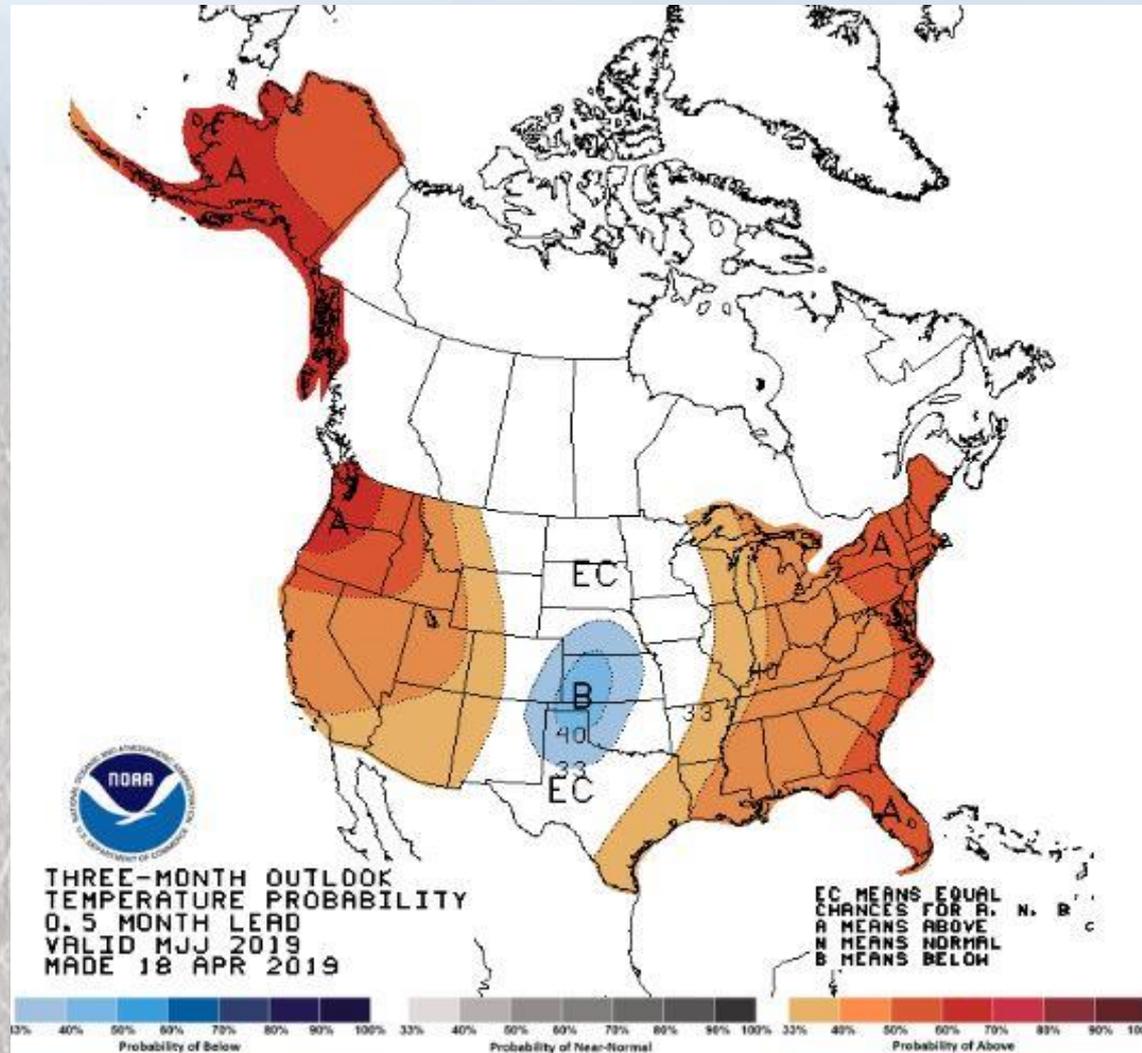
D3: Extreme Drought
D4: Exceptional Drought

Drought Conditions (Percent Area)

Week	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current 4/23/2019	81.99%	18.01%	3.78%	0.69%	0.00%	0.00%
Last Week 4/16/2019	79.85%	20.15%	5.92%	1.65%	0.00%	0.00%
Three Months Ago 1/22/2019	27.25%	72.75%	48.43%	20.28%	5.01%	0.39%
Start of Calendar Year 1/01/2019	28.03%	71.97%	53.25%	27.22%	8.35%	2.88%
One Year Ago 4/24/2018	38.60%	61.40%	43.93%	28.11%	14.37%	2.47%

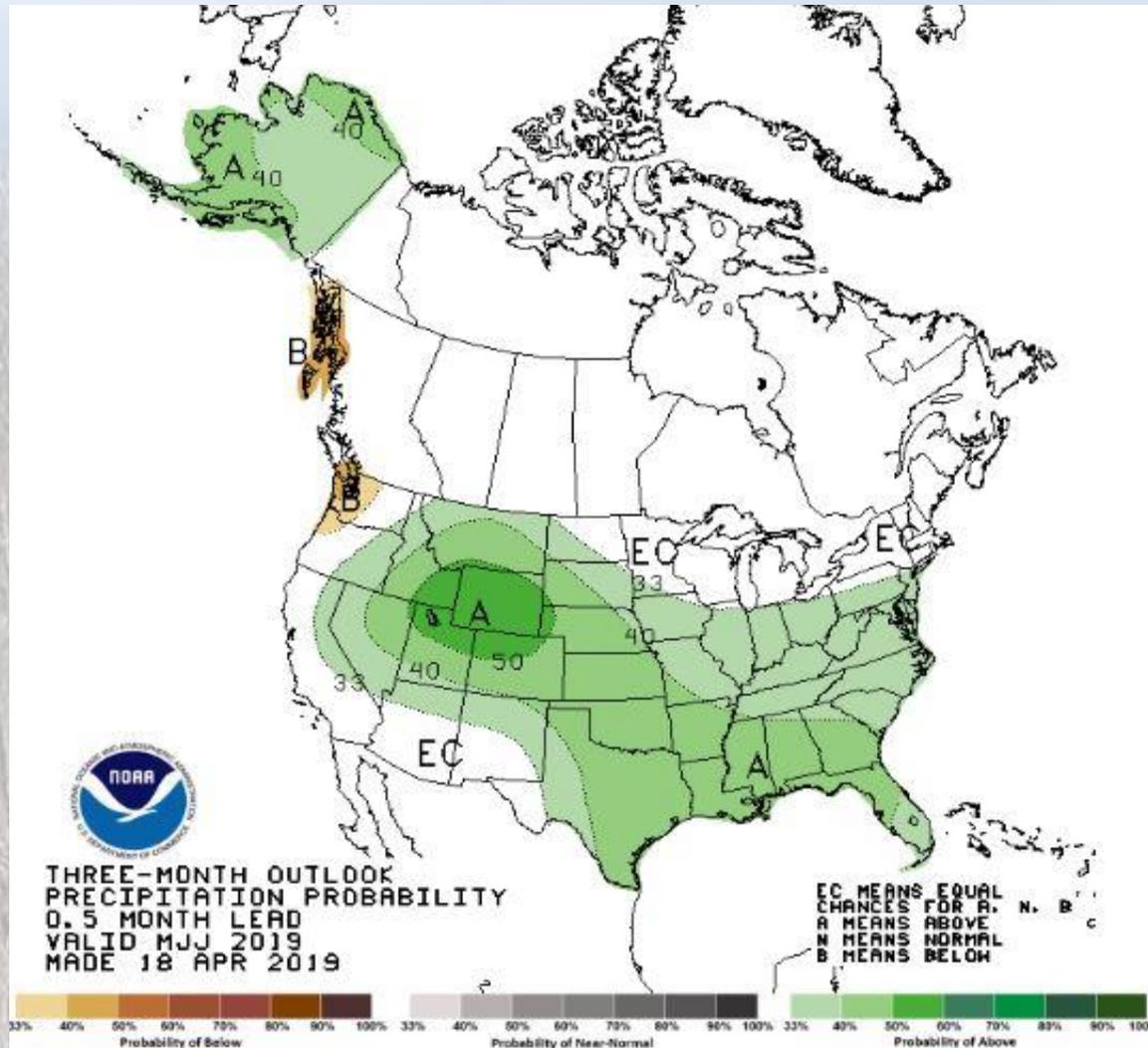
At the end of April, 2019, the Pacific Northwest returned to normal with most of eastern Oregon and Washington under normal conditions with no drought. This was likely due to the wet February – April time period after a drought.

Three Month Temperature Outlook (May, June & July)



The temperature outlook for the next three months shows that there is about a 60-70 % probability of having above normal temperatures over the Pacific Northwest and much of the Forecast Area (northeast OR, southeast WA).

Three Month Precipitation Outlook (May, June & July)

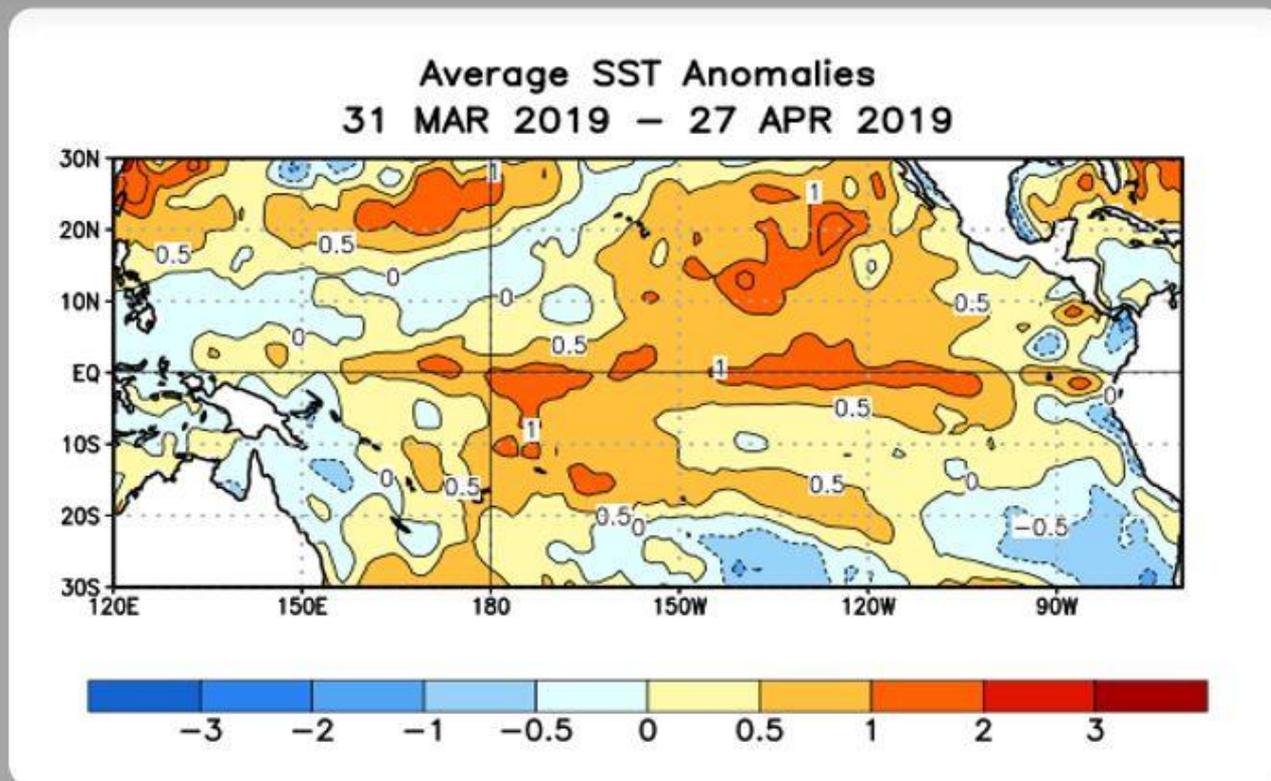


The precipitation outlook for the next three months shows that there is an equal chance of above or below normal amount of precipitation for the next 3 months (May, June and July) for most of the area.

Sea Surface Temperatures from March 31st until April 27th, 2019

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

During the last four weeks, equatorial SSTs were above average in the central and east-central Pacific Ocean. SSTs were below average around Indonesia and in parts of the far eastern Pacific.



This shows that the region is still under an El-Mino pattern. The warmest Pacific Water temperatures were over the eastern Tropical Pacific near Central America to the California Baja.



Thank You!