

The Month In Review

June 2019

National Weather Service
Pendleton, Oregon

June, 2019 Climate Summary

June 2019 has been mostly a benign month as far as weather and climate are concerned. There have been a couple thunderstorm events, with some significant weather statements issued, and a Severe Thunderstorm Warning that was issued for Wasco County, in north central Oregon on June 12th and then another event on June 26th and 27th when a couple of Severe Thunderstorm Warnings were issued. Temperatures during the month were not too hot and not too cold, but overall just slightly above normal for the month at most locations. The hottest days were on the 12th and 13th where temperatures were in the lower to mid 90s at many lower elevation locations. There were also periods of cooler weather with high temperatures not getting out of the 60s in (the lower elevations), and a few warm spells with temperatures mostly in the 80s in the lower elevations. The coolest days were on the 6th, 7th and 8th, and again on the 20th and 21st. It was also a slightly drier than normal month, overall, with many stations receiving less than a quarter of an inch of rain. Below are some photos that represent the month of June, 2019.



Early morning noctilucent clouds in Pasco, WA.



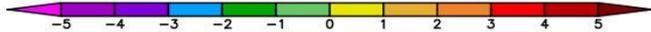
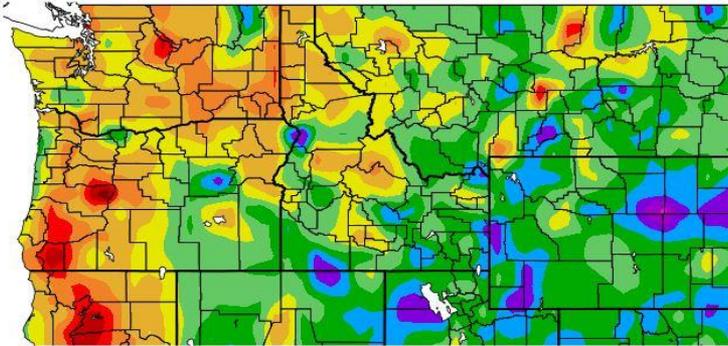
Dark thunderstorm clouds to the west (looking west).



Distant thunderstorms in the Blue Mountains.

June, 2019 Departure from Normal Temperatures

Departure from Normal Temperature (F)
6/1/2019 – 6/30/2019

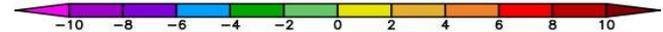
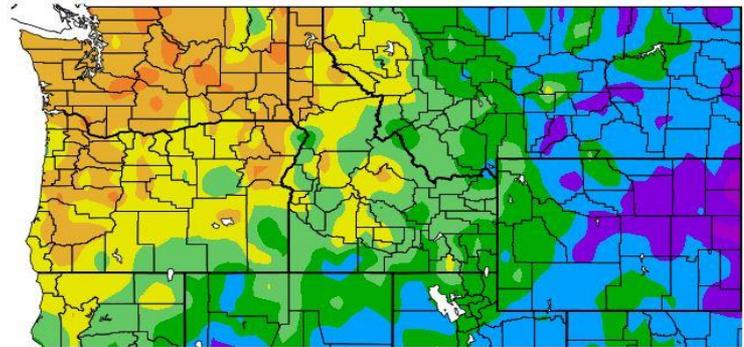


Generated 7/1/2019 at HPRCC using provisional data.

NOAA Regional Climate Centers

Departure from normal for June, 2019

Departure from Normal Temperature (F)
5/1/2019 – 5/31/2019



Generated 6/2/2019 at HPRCC using provisional data.

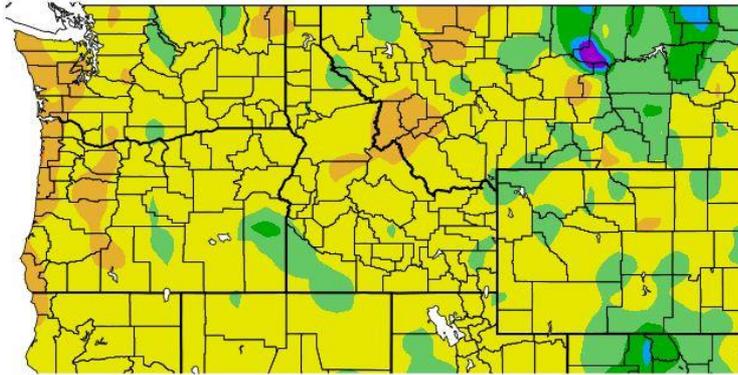
NOAA Regional Climate Centers

Departure from normal for May, 2019

As was the case in May, the images above show that June had mostly slightly above normal temperatures overall for the month. The departure from normal was actually slightly more than it was in May, except over east central and southeast Oregon where it was a little more cooler than normal than in May.

June, 2019 Departure from Normal Precipitation

Departure from Normal Precipitation (in)
6/1/2019 – 6/30/2019

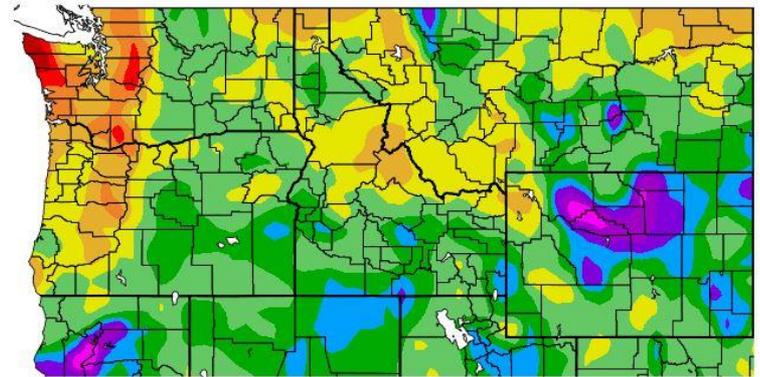


Generated 7/1/2019 at HPRCC using provisional data.

NOAA Regional Climate Centers

Departure from normal precipitation for June

Departure from Normal Precipitation (in)
5/1/2019 – 5/31/2019



Generated 6/2/2019 at HPRCC using provisional data.

NOAA Regional Climate Centers

Departure from normal precipitation for May

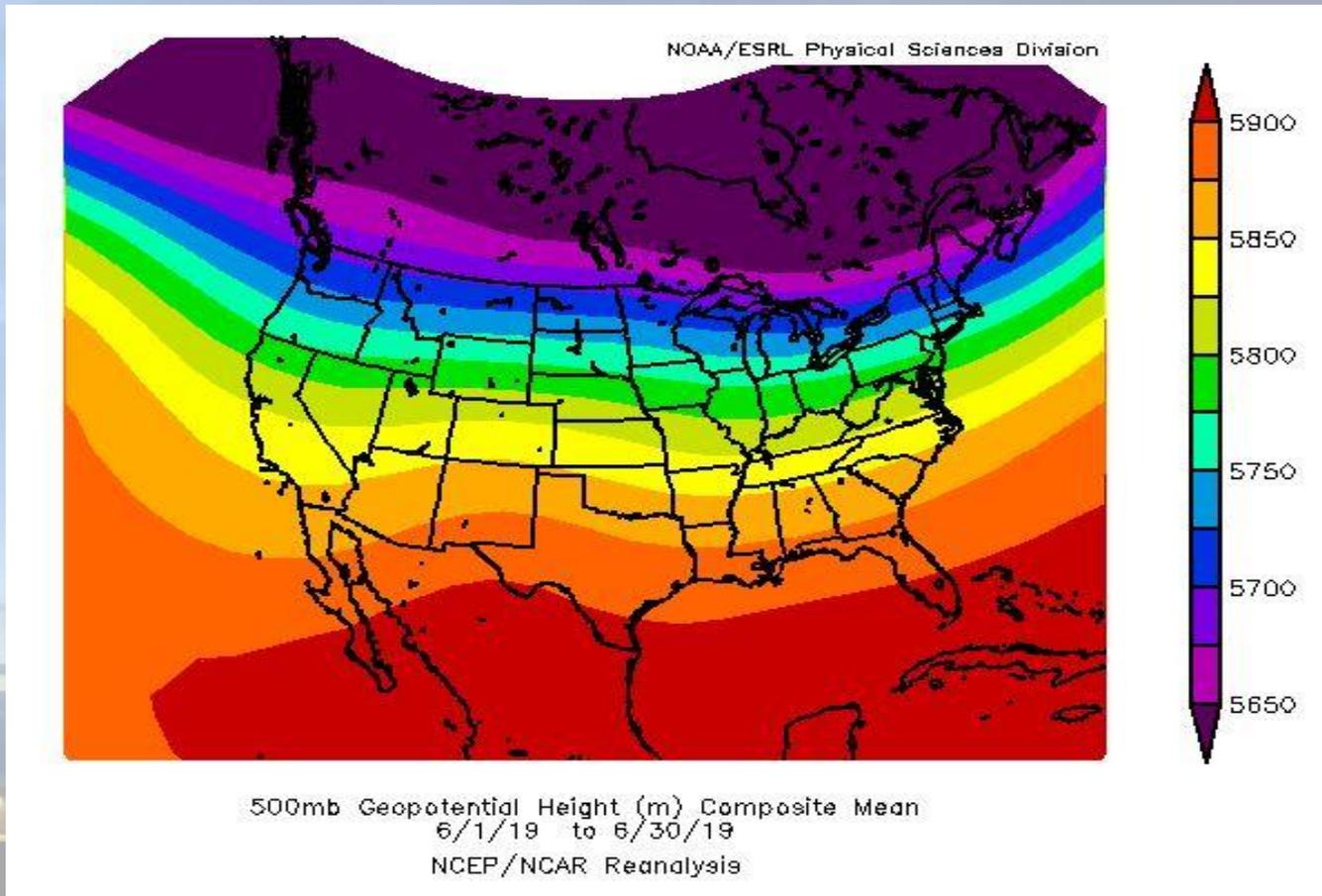
The above images show a comparison of June vs. May, 2019 departure from normal of precipitation. June was slightly drier than normal over most of the forecast area, where as May had overall slightly above normal precipitation than normal.

June, 2019 average highs, average lows, average monthly temperatures, precipitation totals and departures from normal for select cities.

	Max T	Max T D	Min T	Min T D	Ave T	Ave T D	PCPN	PCPN D
Yakima	82.6	3.1	50.2	1.9	66.4	2.5	0.02	-0.60
Kennewick	84.9	3.3	58.6	2.5	71.8	3.0	0.20	-0.31
Walla Walla	80.8	2.0	55.9	1.7	68.4	1.9	0.49	-0.79
The Dalles	80.4	1.3	54.6	-0.2	67.5	0.5	0.09	-0.52
Redmond	79.1	3.0	42.4	1.4	60.8	2.3	0.36	-0.28
Pendleton Airport	80.4	2.2	50.7	-0.8	65.5	0.6	0.29	-0.69
La Grande	78.3	3.6	47.3	-1.4	62.8	1.1	0.87	-0.67

The table above shows the mean highs, lows, mean daily average of temperatures and the total precipitation for select cities across the forecast area. Most of the temperature data shows that they were above normal, except for The Dalles, the Pendleton Airport, and La Grande which all had below normal mean low temperatures. Every station had below normal precipitation for the month as shown in the last two columns (blue represents below normal and red is above normal).

June, 2019 Average 500 MB Weather Pattern



On average for June, the Pacific Northwest and the forecast area was under a very slight trough pattern, though this was not enough to cause the month to be either mostly cooler than normal or wetter than normal as we saw in previous slides. The reason for this is not clearly known, however, the entire country was under an overall trough to a zonal flow pattern. Perhaps further analysis will reveal the reasons for these findings. It could be that the slight anomalies were simply not enough to cause that much of a difference.

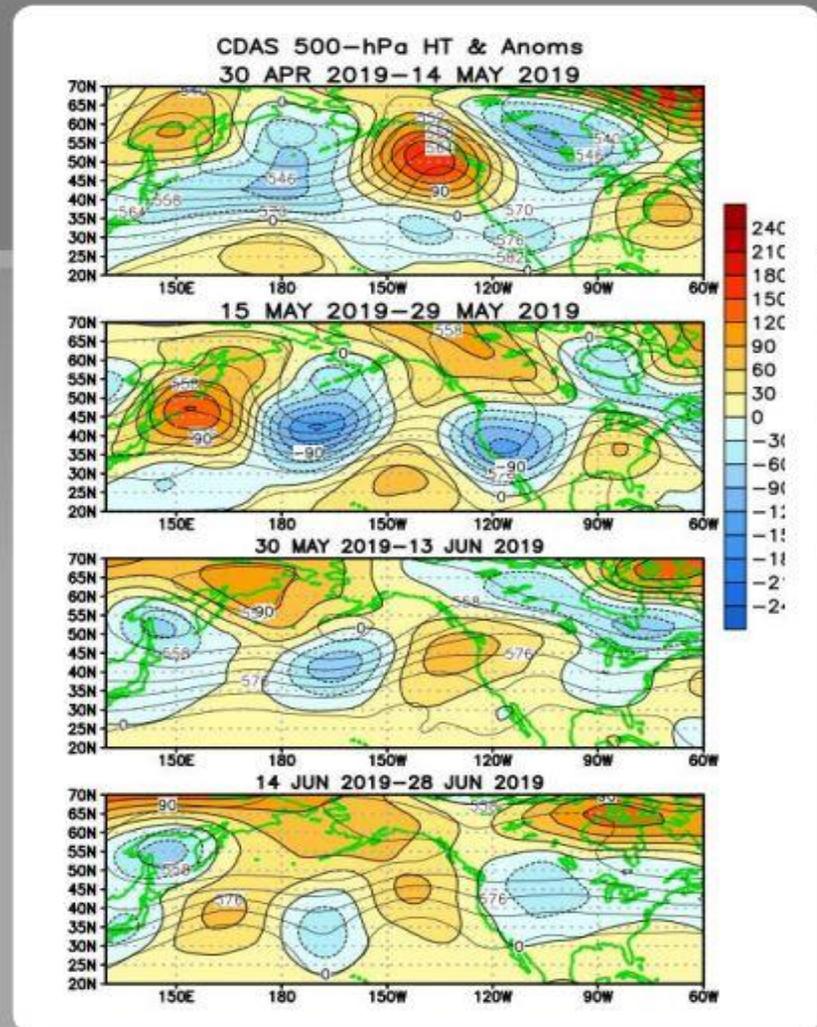
More Detailed 500 MB Plots for May & June, 2019

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

During May, anomalous troughing and negative temperature anomalies were observed in the central and southwestern U.S., while above-average temperatures persisted over the eastern U.S. and Pacific Northwest.

During the first half of June, anomalous ridging (and above-average temperatures) was observed over the western U.S., while anomalous troughing (and near-to-below average temperature) were evident over most of the central and eastern U.S.

Since mid-June, near-to-below average heights and temperatures were most evident over the western-central U.S.



Note that in June, the anomalous ridging at the beginning of the month and the anomalous troughing during the latter half of the month canceled each other out and resulted in a “near normal month”, overall, for both temperature and precipitation (though there was some departure).

Record Weather Reports (RERs)

	DATE	STATION	PREVIOUS RECORDS / YEAR	NEW RECORD	RECORDS BEGAN
RECORD LOW TEMPERATURES	JUNE 7	YAKIMA, WA	35 / 2002	33	1909
		HANFORD, WA	42 / 2012	42 (TIED)	1945
RECORD HIGH TEMPERATURES	JUNE 12	MEACHAM, OR	82 / 1999	83	1929
		THE DALLES, OR	95 / 1999	96	1929
RECORD HIGH TEMPERATURES	JUNE 13	MEACHAM, OR	81 / 1974	84	1929
		YAKIMA, WA	96 / 1974	97	1909
		PASCO, WA	100 / 1974	101	1894

There were some record temperatures that were either tied or broken during the Month of June, 2019. They were all either record high or record low temperatures. The highest record temperature was 101 degrees at Pasco, WA on June 13th. The Lowest record temperature was 33 degrees at Yakima, WA on June 7th.

Local Storm Reports of Significant Weather Events

PRELIMINARY LOCAL STORM REPORT

NATIONAL WEATHER SERVICE PENDLETON OR
122 PM PDT FRI JUN 7 2019

..TIME... ..EVENT... ..CITY LOCATION... ..LAT.LON...
..DATE... ..MAG.... ..COUNTY LOCATION..ST.. ..SOURCE....
..REMARKS..

1130 AM HAIL 1 SE PRINEVILLE 44.30N 120.83W
06/07/2019 E0.25 INCH CROOK OR TRAINED SPOTTER

NO THUNDER

0100 PM HAIL SENECA 44.13N 118.98W
06/07/2019 E0.25 INCH GRANT OR CO-OP OBSERVER

PRELIMINARY LOCAL STORM REPORT

NATIONAL WEATHER SERVICE PENDLETON OR
1118 PM PDT WED JUN 26 2019

..TIME... ..EVENT... ..CITY LOCATION... ..LAT.LON...
..DATE... ..MAG.... ..COUNTY LOCATION..ST.. ..SOURCE....
..REMARKS..

0300 PM HAIL 6 SSW ANTELOPE 44.83N 120.77W
06/26/2019 E0.88 INCH WASCO OR CO-OP OBSERVER

HAIL AND HEAVY RAINFALL OF 0.62 INCHES.

0348 PM TSTM WND GST 8 NNW CLARNO 45.03N 120.54W
06/26/2019 M60.00 MPH WASCO OR MESONET

RAWS SITE NPFO3

0410 PM HAIL 1 SW CONDON 45.23N 120.20W
06/26/2019 E0.88 INCH GILLIAM OR AMATEUR RADIO

TIME ESTIMATED FROM RADAR.

Severe Thunderstorm Warnings were issued on June 7th and June 26th, in which an LSR was also Issued. The data shown for the 26th is not a complete list of reports. The rest of the latter month reports will be on the next two slides.



Local Storm Reports of Significant Weather Events (continued)

PRELIMINARY LOCAL STORM REPORT

NATIONAL WEATHER SERVICE PENDLETON OR
1118 PM PDT WED JUN 26 2019

..TIME... ..EVENT... ..CITY LOCATION... ..LAT.LON...
..DATE... ..MAG.... ..COUNTY LOCATION..ST.. ..SOURCE....
..REMARKS..

06/26/2019 E0.50 INCH GILLIAM OR TRAINED SPOTTER

HEAVY RAIN AND DIME SIZED HAIL LASTED FOR ABOUT 10 MINUTES.

0430 PM HAIL 3 E CONDON 45.24N 120.12W
06/26/2019 E0.25 INCH GILLIAM OR TRAINED SPOTTER

PEA SIZED HAIL.

0430 PM HAIL SE CONDON 45.23N 120.18W
06/26/2019 E0.25 INCH GILLIAM OR TRAINED SPOTTER

HEAVY RAIN, PEA SIZED HAIL UP TO 2 INCHES DEEP.

0510 PM HAIL 10 NE GOLDENDALE 45.92N 120.66W
06/26/2019 E0.75 INCH KLUCKITAT WA TRAINED SPOTTER

TIME ESTIMATED FROM RADAR.

0520 PM HAIL 11 NE GOLDENDALE 45.93N 120.66W
06/26/2019 E0.75 INCH KLUCKITAT WA TRAINED SPOTTER

NEIGHBOR A HALF MILE NORTH OF SPOTTER REPORTED 2-3 INCH HAIL ACCUMULATIONS AND 0.70 INCHES OF RAIN WITHIN 15-20 MINUTES.

0645 PM TSTM WND GST 24 SSE VANTAGE 46.64N 119.73W
06/26/2019 M62.00 MPH BENTON WA MESONET

HANFORD RESERVATION MESONET SITE NEAR VERNITA BRIDGE REPORTED A GUST TO 62 MPH.

LSR's for the June 26th thunderstorm event continues to be listed here.



Local Storm Reports of Significant Weather Events (continued)

PRELIMINARY LOCAL STORM REPORT

NATIONAL WEATHER SERVICE PENDLETON OR
920 PM PDT THU JUN 27 2019

..TIME... ..EVENT... ..CITY LOCATION... ..LAT.LON...
..DATE... ..MAG.... ..COUNTY LOCATION..ST.. ..SOURCE....
..REMARKS..

0905 PM HAIL LONEROCK 45.09N 119.88W
06/27/2019 E0.88 INCH GILLIAM OR PUBLIC

0905 PM HAIL NNW LONEROCK 45.09N 119.88W
06/27/2019 E0.75 INCH GILLIAM OR TRAINED SPOTTER

HAIL FROM LAST NIGHTS STORM. WOKE UP EARLY IN THE MORNING
AND HAIL WAS STILL ON THE GROUND IN THE SHADE WITH THE
LARGEST HAIL THE SIZE OF A PENNY.

0645 PM HAIL 12 WNW LA PINE 43.76N 121.71W
06/29/2019 E0.50 INCH DESCHUTES OR TRAINED SPOTTER

SPOTTER RELAY A REPORT FROM THE PUBLIC 3 MILES SOUTHWEST
OF THERE LOCATION OF MARBLE SIZE HAIL.

0848 PM HAIL 15 WSW MITCHELL 44.47N 120.42W
06/29/2019 M0.50 INCH CROOK OR TRAINED SPOTTER

SPOTTER REPORTED MODERATE RAIN WITH EMBEDDED HAIL THE
SIZE OF A DIME. BREEZY.

LSR's for the June 27th – 29th
thunderstorm events continues
to be listed here.



June 2019 Observed Monthly Highest Max & Min Temperatures

Location	Highest Maximum Temperature	Lowest Minimum Temperature
Pendleton, OR	93	41
Redmond, OR	91	30
Pasco, WA	101	41
Yakima, WA	97	33
Walla Walla, WA	94	47
Bend, OR	89	32
Ellensburg, WA	93	37
Hermiston, OR	100	41
John Day, OR	93	39
La Grande, OR	90	36
The Dalles, OR	99	44
MT Adams RS, WA	89	32

In the month of June, the hottest temperature reported here was 101 degrees at the most likely station to have a temperature that high (Pasco, WA). However, having a temperature at or just over 100 degrees is not unusual for June. The coldest reported minimum temperature was 30, at Redmond, OR, which is a high elevation station that has strong radiational cooling on a clear night.

June, 2019, Monthly Total Precipitation Totals

Location	Total Monthly Precip	Total Snowfall or Hail
Pendleton, OR	0.29	0
Redmond, OR	0.36	0
Pasco, WA	0.12	0
Yakima, WA	0.02	0
Walla Walla, WA	0.49	0
Bend, OR	0.40	0
Ellensburg, WA	0.30	0
Hermiston, OR	0.13	0
John Day, OR	0.37	0
La Grande, OR	0.87	0
The Dalles, OR	0.09	0
Mt Adams RS, WA	0.04	0

There was not a single station which had more than an inch of rain. In fact, most of these reports were less than a half inch. This is not unusual for June, as June is the month in the warm season when conditions start to become very dry.

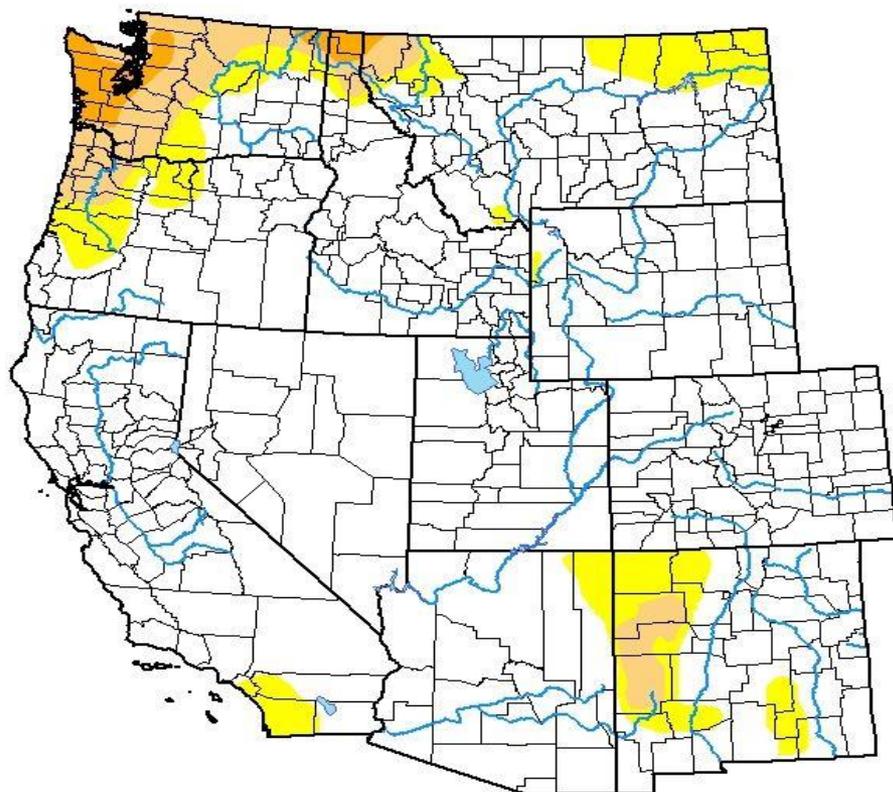
End of June, 2019 - Drought Monitor

U.S. Drought Monitor West

June 25, 2019

(Released Thursday, Jun. 27, 2019)

Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	86.79	13.21	5.51	1.24	0.00	0.00
Last Week <i>06-18-2019</i>	86.79	13.21	5.87	0.91	0.00	0.00
3 Months Ago <i>03-26-2019</i>	70.71	29.29	9.03	1.65	0.00	0.00
Start of Calendar Year <i>01-01-2019</i>	28.03	71.97	53.25	27.22	8.35	2.88
Start of Water Year <i>09-25-2018</i>	13.91	86.09	59.57	39.68	18.15	4.36
One Year Ago <i>06-26-2018</i>	30.59	69.41	47.99	31.42	18.70	4.65

Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

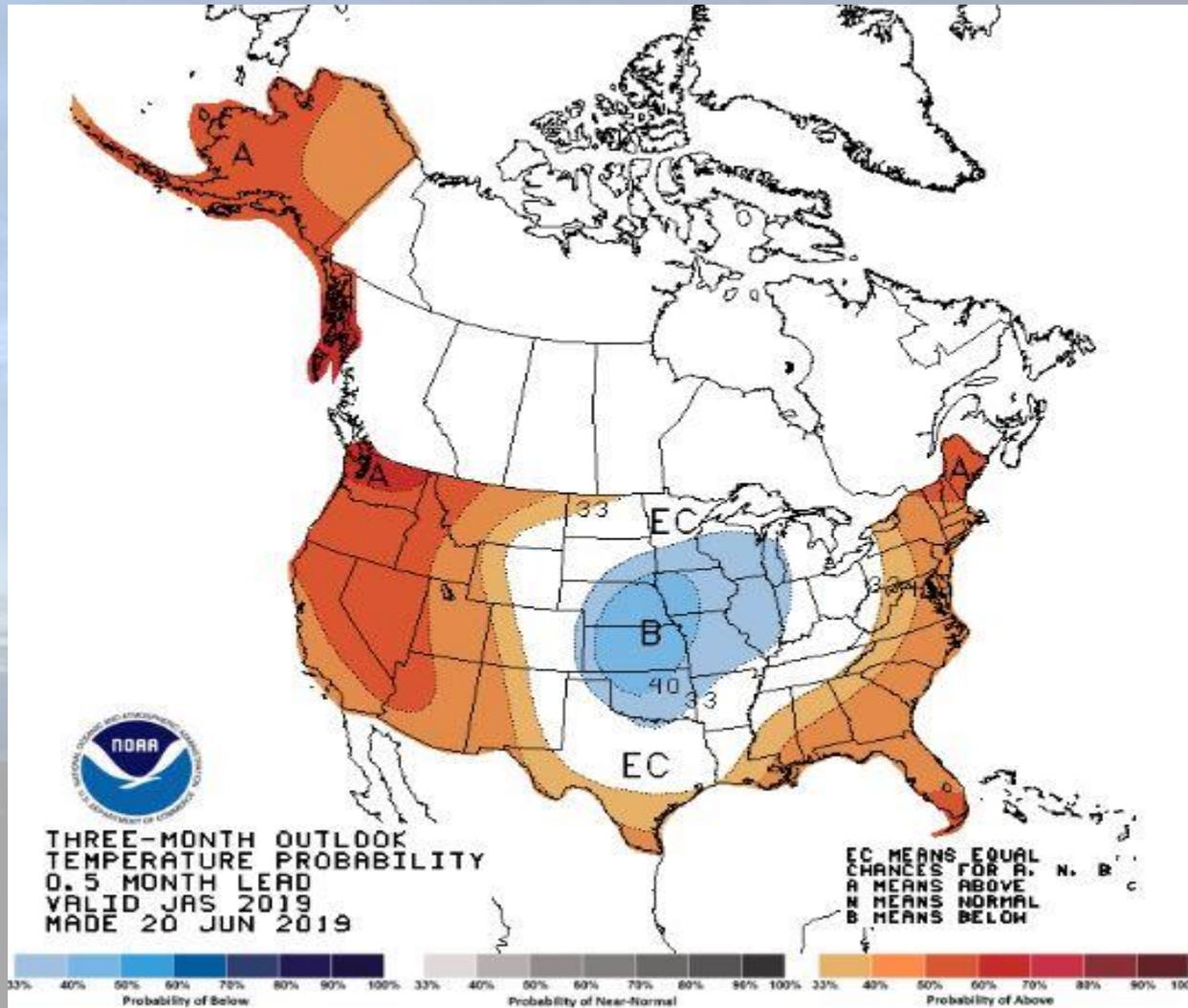
Brad Pugh
CPC/NOAA



droughtmonitor.unl.edu

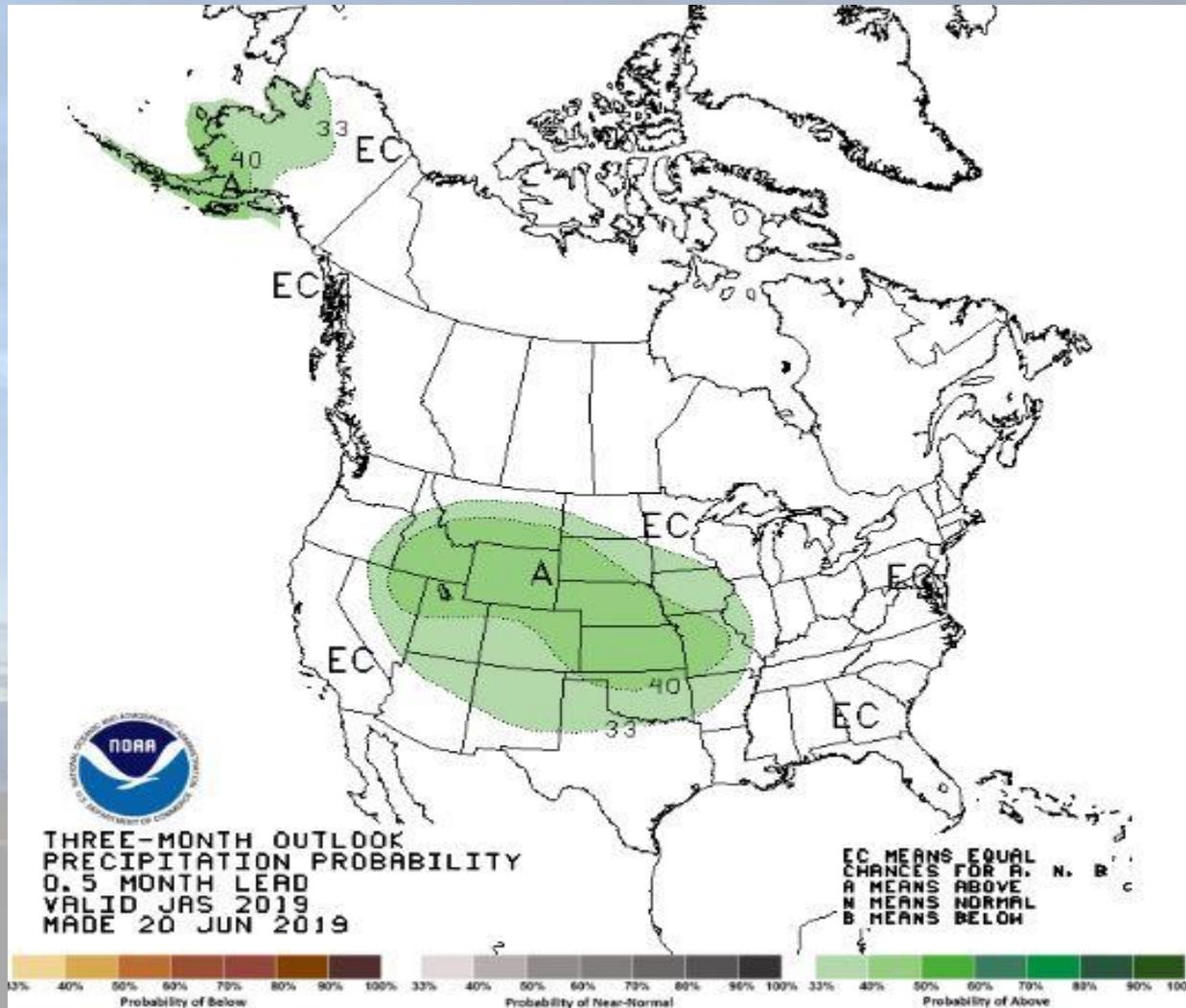
At the end of June, 2019, the forecast area and Pacific Northwest had a drought index of near normal (Drought Condition of “none”), except for along the Cascade east slopes which is shown above to have a drought index of “abnormally dry” (D0-D4).

Three Month Temperature Outlook (July, August & September)



The temperature outlook for the next three months shows that there is about a 50-70 % probability of having above normal temperatures over the Pacific Northwest and all of the Forecast Area (northeast OR & southeast WA).

Three Month Precipitation Outlook (July, August & September)

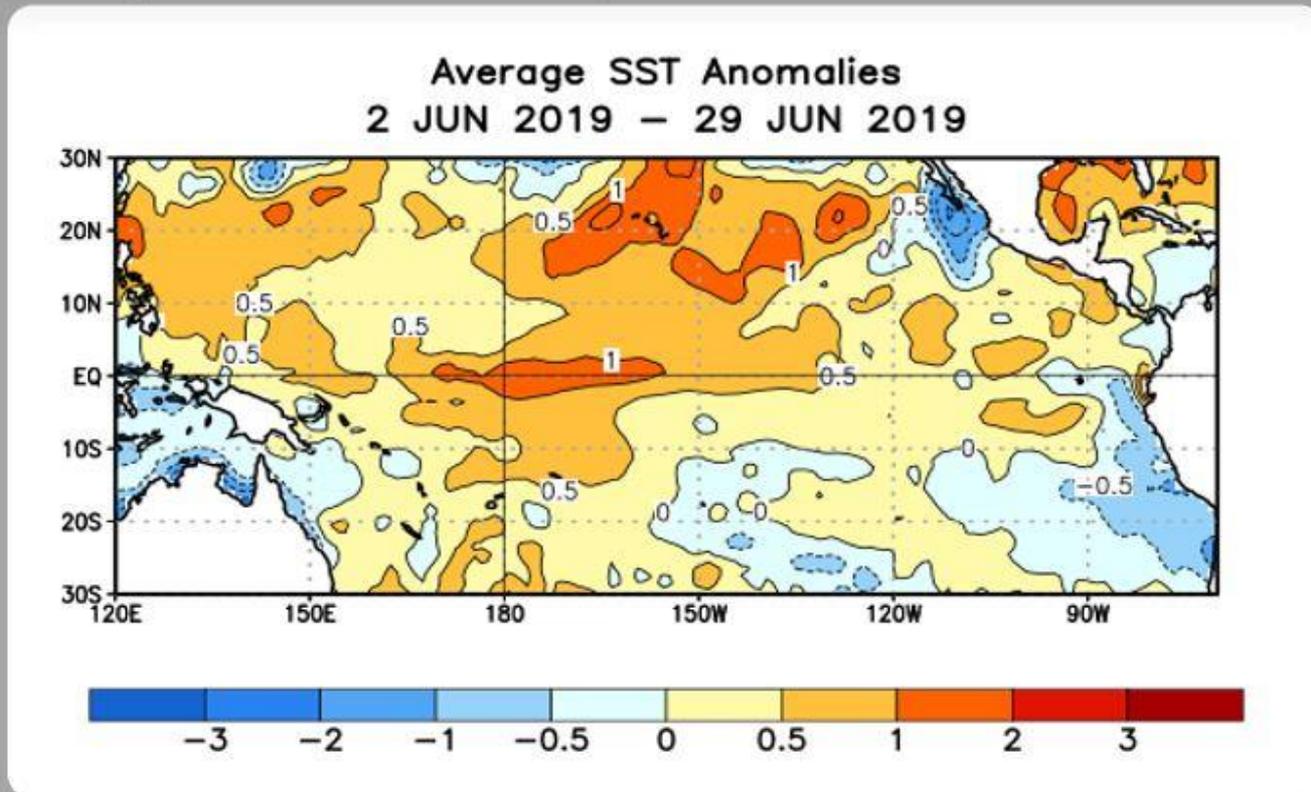


The precipitation outlook for the next three months shows that there is mostly an equal chance of an above or below normal amount of precipitation for the next 3 months, except along the Idaho border which has about a 33-40% chance of above normal precipitation.

Sea Surface Temperatures from June 2nd through June 29th

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

During the last four weeks, equatorial SSTs were above average across most of the Pacific Ocean, with the largest departures between 170°E and 140°W. Near-to-below average SSTs were evident in parts of the eastern Pacific.



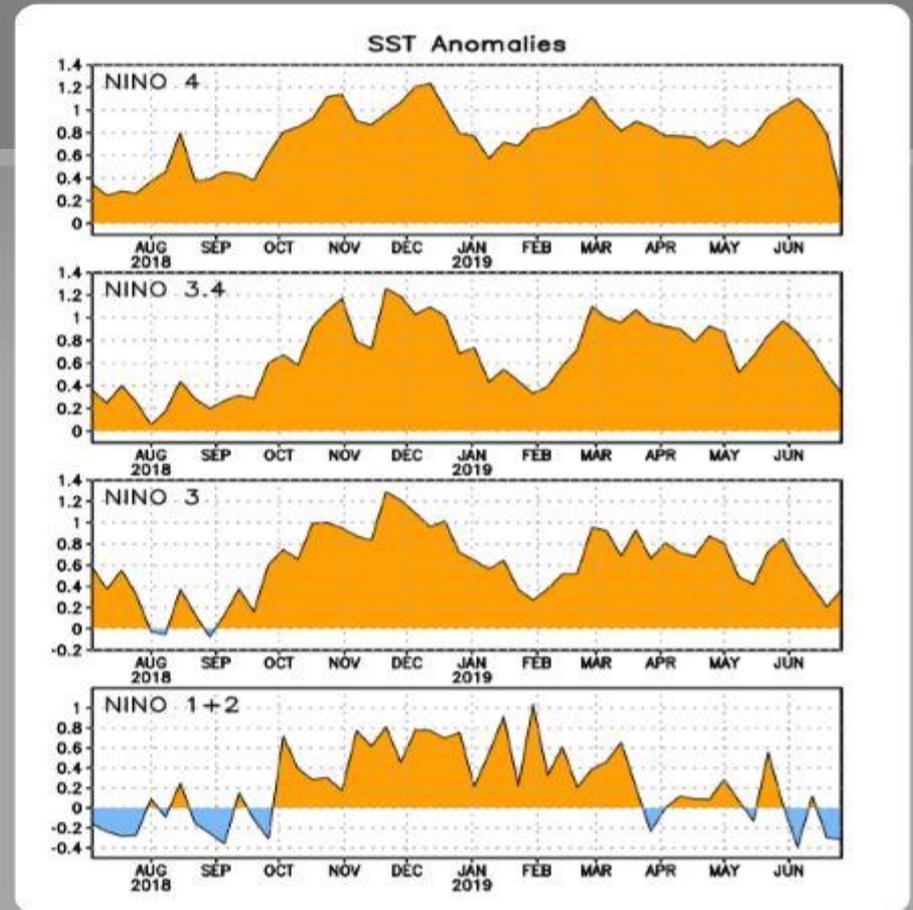
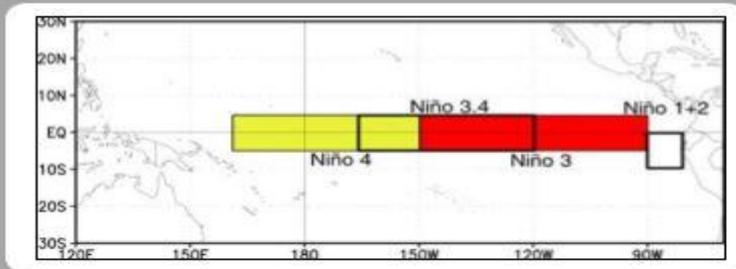
The image shows that the warmer central and north Pacific indicate that an El-nino is still occurring. The next slide will show how much, but “nino regions”.

Niño Regions Showing SST Anomalies for June

Niño Region SST Departures (°C) Recent Evolution

The latest weekly SST departures are:

Niño 4	0.2°C
Niño 3.4	0.3°C
Niño 3	0.4°C
Niño 1+2	-0.3°C



Niño regions 3, 3.4 and 4 all show solid warmer than normal anomalies of the sea surface temperatures in the Pacific. Only Niño regions 1 & 2 show some cooler than Normal SSTs. This slide confirms that El-Niño is still in effect.



Thank You!