

Weather and Climate Summary and Forecast February 2019 Report

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Summary:

- January was mild over much of the west, adding to a relatively warm winter so far.
- Split flow over the west has brought some welcomed precipitation to California while the PNW has remained mostly dry. Current transition to colder temperatures for February likely, mixed bag for precipitation.
- Regardless of the colder temperatures forecast for February, the seasonal forecast for February through April continues the odds toward a warmer western US, while precipitation is forecast to be near average in central to southern California and below average for most of the PNW.

The relatively mild winter in much of the western US continued during the month of January. Central California north to Washington and across into the northern Rockies saw temperatures 1-5°F above normal (Figure 1), while the southwest and into the Four Corners were average to cooler than average for the month. The upper Midwest, Great Lakes, and northern New England were cooler than average while the southeast was warmer than average for January (not shown). Some welcomed precipitation in January was seen in portions of California (although in some areas too much, too fast) and scattered across the Rockies, while much of the PNW saw a drier than average month (Figure 1). The majority of the rest of the country saw substantially wetter than average conditions with the Mississippi and Ohio river valleys seeing 150-250% of normal, while portions of Texas and the Plains experienced below normal precipitation for the month (not shown).

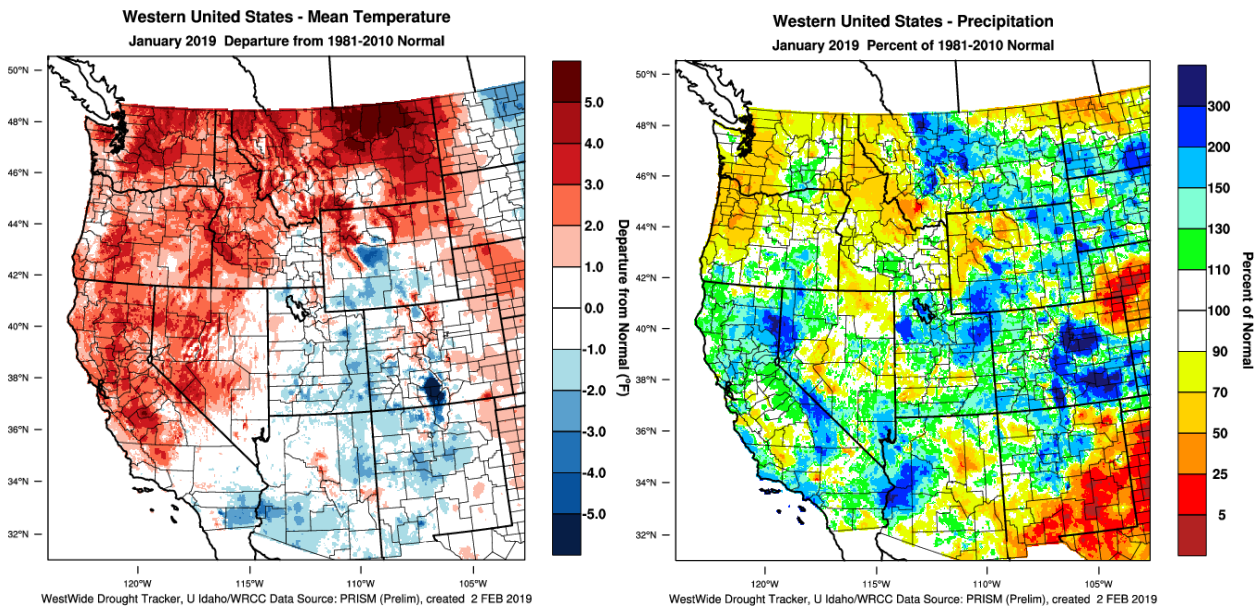


Figure 1 – Western US January 2019 temperature departure from normal (left) and percent of normal precipitation (right; images from WestWide Drought Tracker, Western Region Climate Center; University of Idaho).

Water year to date (starting October 1st) temperatures are so far running 1-3°F warmer than average in most of California, Oregon, Washington and across into Idaho and Montana (Figure 2). Much of the Great Basin and Rockies have been 1-3°F colder than normal which extends into the entire central portion of the country, Great Lakes, and northern New England, while the southeast has been warmer than average (not shown). The winter so far has produced drier than average conditions in the PNW, near average to slightly wetter than average conditions in California, and wetter than average areas in the southeast and Rockies (Figure 2). The eastern US has seen precipitation amounts running 110-200% of normal so far this winter (not shown).

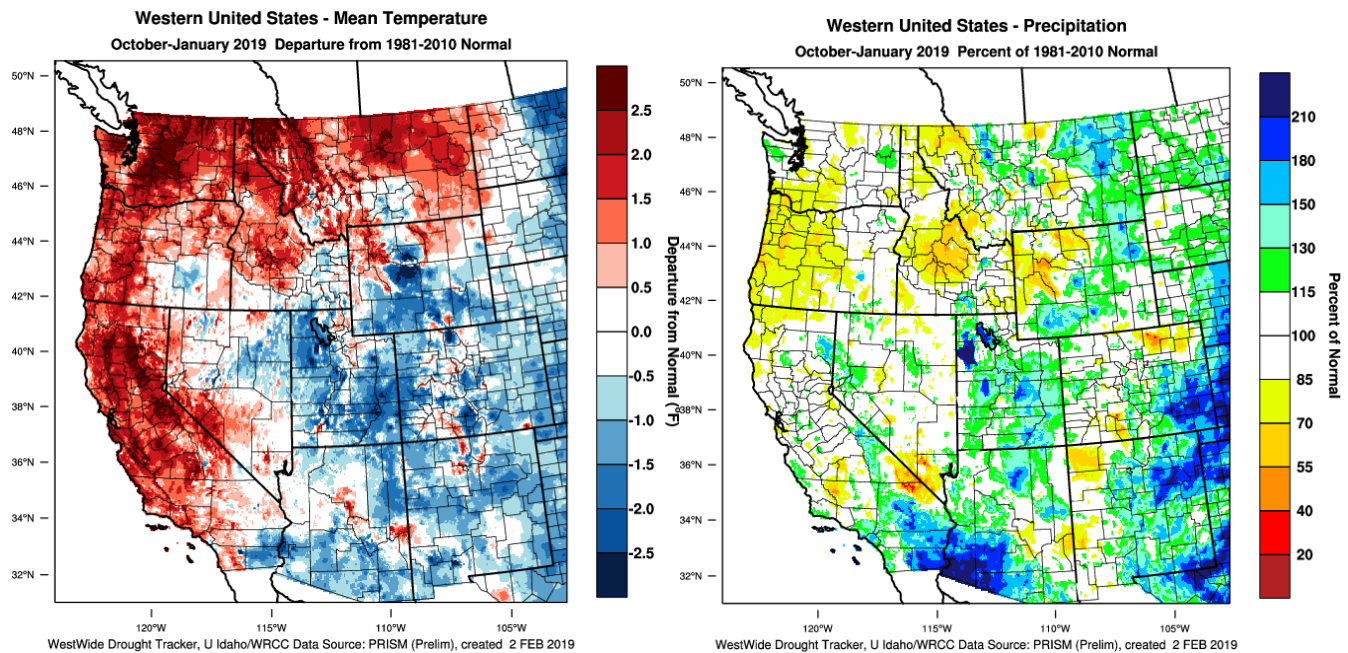


Figure 2 – Western US October 2018 - January 2019 temperature departure from normal (left) and percent of normal precipitation (right; images from WestWide Drought Tracker, Western Region Climate Center; University of Idaho).

Drought Watch – While the current US Drought Monitor shows continued dry conditions in the west, recent precipitation inputs have helped to lower the magnitude in central to southern California and into the desert southwest (Figure 3, left panel). The US drought footprint has continued its decline as much of the central to the eastern US has received enough precipitation to have no widespread drought. However, the western US continues to see drought conditions with the main areas of severe to extreme drought over the Four Corners region increases in severity seen in Oregon. The longer-term outlook for the US through April shows some changes, and will likely continue to do so with the next release. Areas of California and portions of the Great Basin will likely see some improvement or complete drought removal over the next three months. However, much of the long-term persistent drought seen in eastern Oregon is being forecast to expand to cover the whole state of Oregon, much of northern California, eastern Washington, and northern Idaho (Figure 3, right panel).

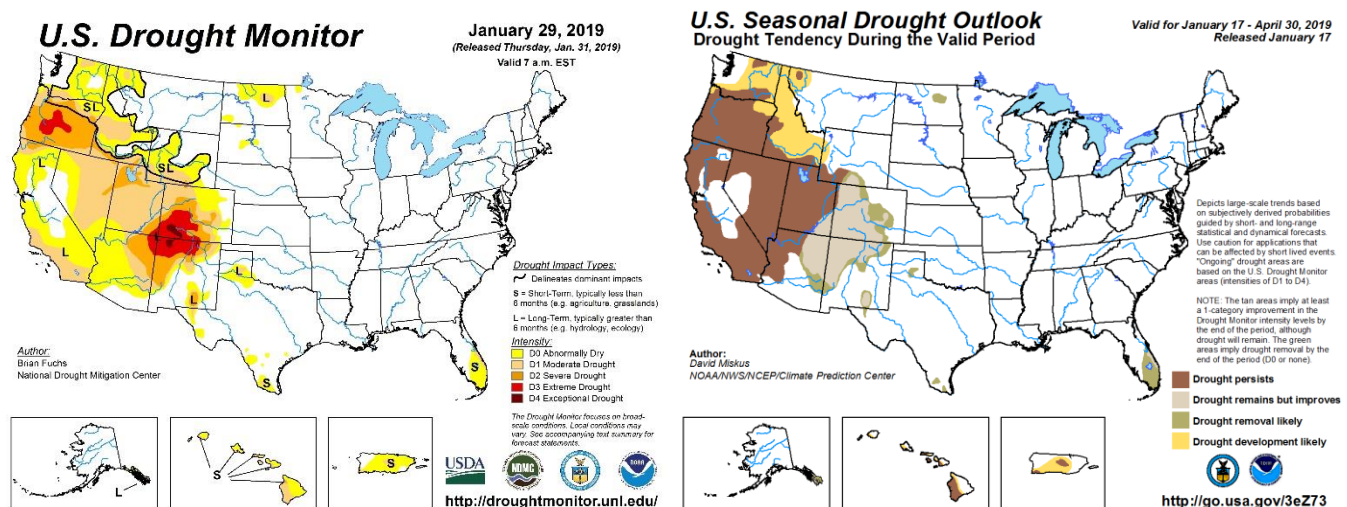


Figure 3 – Current US Drought Monitor and seasonal drought outlook.

ENSO Watch – Well this El Niño appears to be a wimp. While conditions continue to be warm in east-central tropical Pacific SSTs (Figure 4), this event has not developed as anticipated. El Niño-level SSTs continue to be observed in the mid-December to mid-January averages, and the subsurface waters continue to be warmer than average, but less

strongly so. However, key atmospheric variables continued to show mainly ENSO-neutral patterns. The official CPC/IRI outlook calls for an 82% chance of El Niño prevailing during January through March, and 66% during March through May. Therefore, the CPC is still holding to an El Niño watch being in effect. The most recent forecasts of statistical and dynamical models collectively show continuing weak El Niño-level SSTs through late spring. If the El Niño conditions continue to hold to weak, the weather across the western US will still likely continue to follow the warmer and drier than average conditions in the 90-day forecast (especially in the PNW) and beyond (see forecast periods below and Appendix Figure 1). Areas from southern California across the south and into the mid-Atlantic will likely see a wetter than average winter and early spring, which has already played out to some degree.

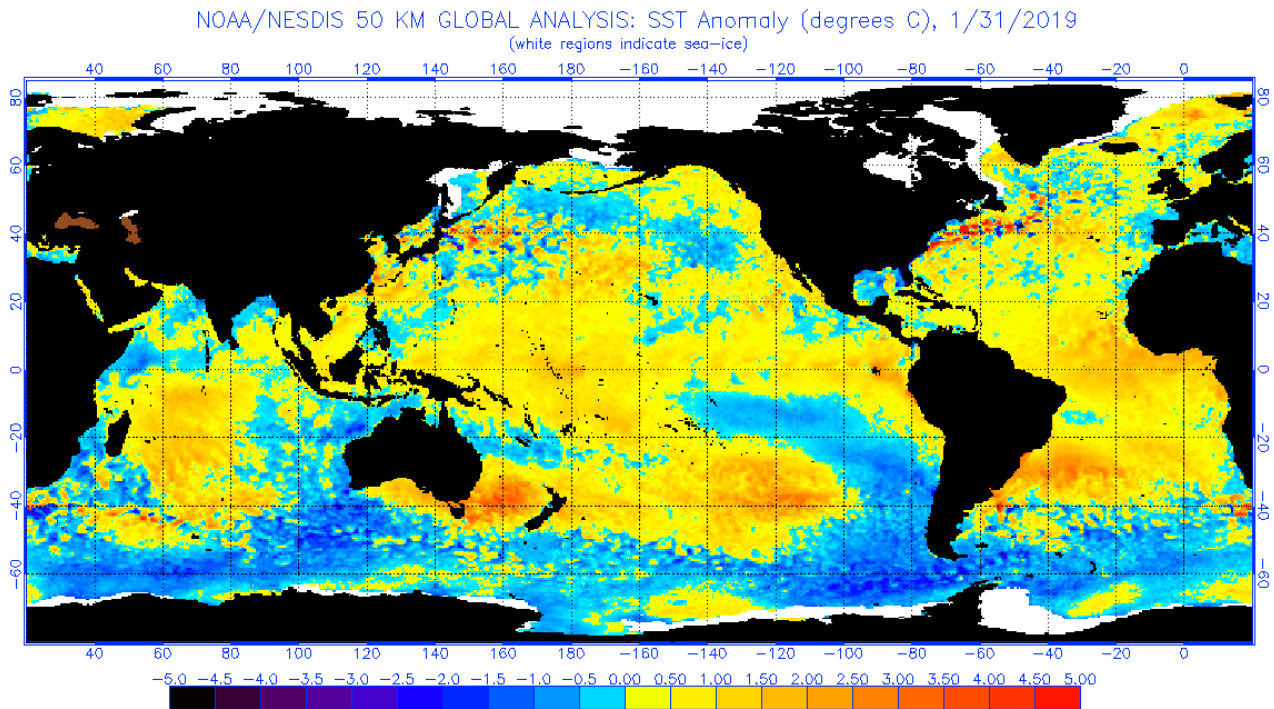


Figure 4 – Global sea surface temperatures (°C) for the period ending January 31, 2019 (image from NOAA/NESDIS).

North Pacific Watch – No major change in the North Pacific and the Gulf of Alaska over the last month (Figure 4). The upper 300ft of the North Pacific Ocean north of 40°N remains warmer than normal (1980-present). The current North Pacific sea surface temperatures (SSTs) combined with the El Niño in the tropics have had a moderate to strong influence over current winter conditions, but the spatial pattern is not quite what we saw with the ‘Blob’ in 2012-2016 as the bulk of the warmth continues to be a little further to the west (Figure 4). Regional forecasting agencies are saying that the warming North Pacific will likely continue to interact with the relatively warm Tropical Pacific (see above) to enhance the normal weather/climate patterns in the west during weak to moderate El Niño years (see the FMA forecast below).

Forecast Periods:

6-10 Day (valid February 7-11): Dramatic flip-flop in store for the country during this forecast period. Warm and relatively dry conditions in the west are now giving way to some precipitation but more importantly the coldest period of the winter so far. Temperatures will likely be significantly below average for the western 2/3 of the country during this forecast period while the eastern 1/3 of the country rebounds dramatically from the deep freeze of the last few days. While some moisture is likely over the next ten days in the west, the overall period is forecast to be drier than average. With the exception of Florida, the eastern 2/3 of the country is forecast to see wetter than average conditions for early February.

8-14 Day (valid February 9-15): Overall trend to a relatively cold period continues for the bulk of the country with only the extreme southeast likely to see above average temperatures. The PNW across the northern Rockies and

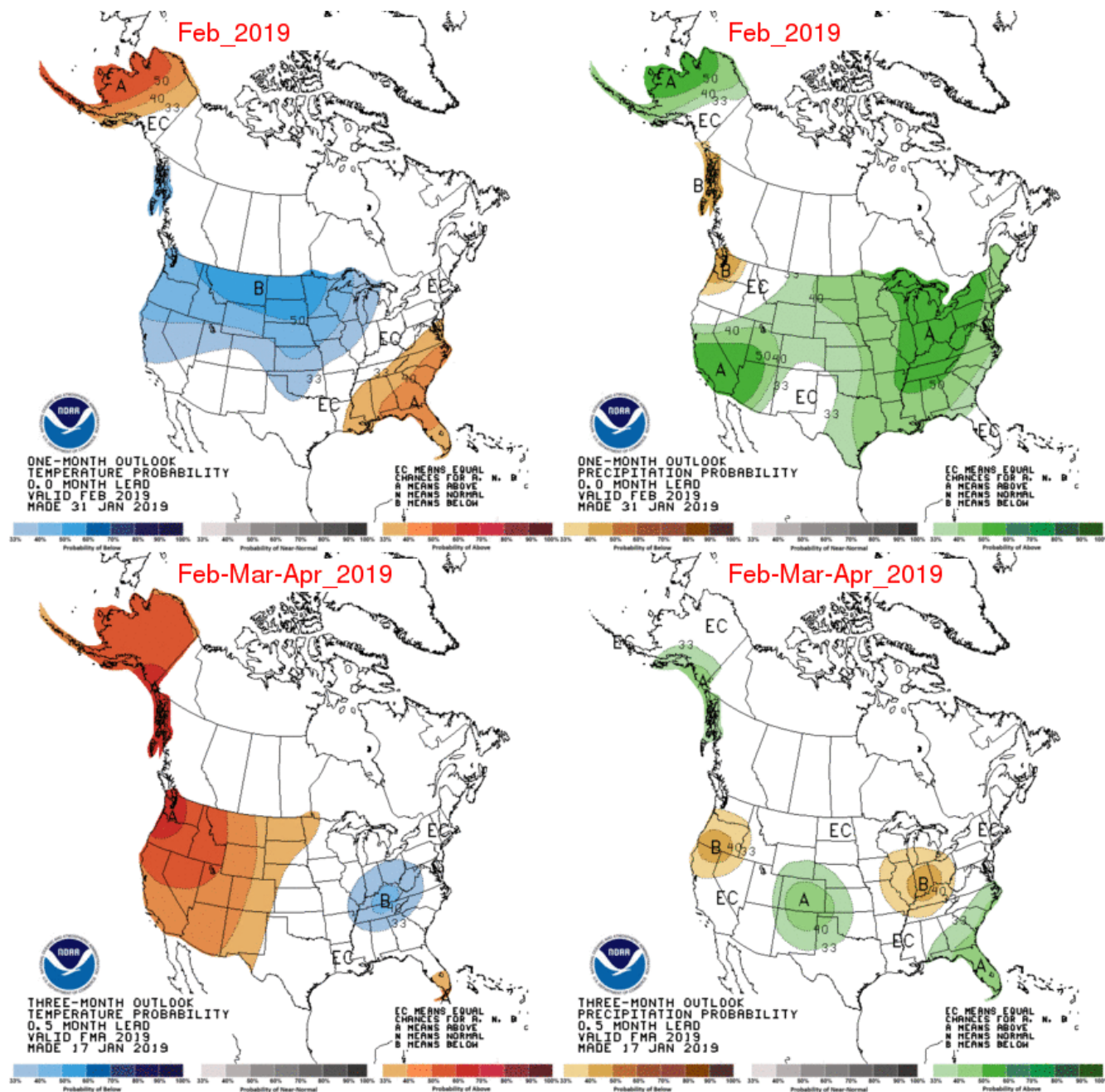
northern Great Plains will likely see the coldest overall conditions. Through mid-month, precipitation is forecast to remain below normal in the PNW but higher than average everywhere else, especially possibly along the Gulf Coast.

30 Day (valid February 1-28): As the result of the first two weeks of the month, the 30-day lead forecast for the month of February is pointing to a cooler than average month across the western US through the Rockies and into the northern Plains (see Appendix Figure 1). The bulk of the rest of the country is forecast to have an equal chance of above, normal or below normal temperatures for the month, except the far southeast which is forecast to be warmer than average. For precipitation, the 30-day forecast is tilting the odds to the likelihood of an overall wetter than average month nearly everywhere except the PNW. Some significant precipitation in Southern California and into the desert southwest will put a damper on the drought conditions there!

90 Day (valid February-March-April): In spite of the dramatic shift to colder conditions currently in place, the extended forecast through April continues to hold from prior months showing a high likelihood of a warmer than average western US and especially in the PNW. Besides a small area of the Ohio River valley, which is forecast to see cooler conditions over the next three months, the bulk of the rest of the country has equal chances of being slightly warmer to slightly cooler than average. The three month forecast window show four zones that will likely deviate somewhat from average and include a forecast for a drier than average northern California across Oregon and southern Washington along with the Ohio River valley, and wetter than average conditions likely in the southern Rockies and Front Range along with the southeast (see Appendix Figure 1). Everywhere in between has an equal chance of being above, normal, or below average in terms of precipitation.

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Appendix Figure 1 – Temperature (left panel) and precipitation (right panel) outlooks for the month of February (top panel) and February, March, and April (bottom panel) (Climate Prediction Center, climate.gov).