

Weather and Climate Summary and Forecast

February 2020 Report

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Summary:

- January continued the relatively mild first half of the winter with warmer than average temperatures over much of the west and throughout the rest of the United States.
- January brought welcomed rain/snow to the PNW, but little to no precipitation across most of California, the Great Basin, and southwest. Mountain snowpack development for the winter is now below average in California but has recovered to near average or slightly above average in Oregon, Washington, and Idaho.
- The dry and warm January in California has brought back drought concerns, while a wet January has alleviated some of the concern of drought in the PNW.
- The short-term forecast is pointing to a cold period with possible low elevation snow as Arctic air fills in over central North America. Models indicate that these conditions will likely last through the rest of the month.
- The seasonal forecast for February through April tilts the odds to a near-normal PNW, to a warmer than average period for northern to southern California and across the southern tier of states to all the way to the east coast. Precipitation for FMA is forecast to be near average in the PNW and drier than average from northern to southern California and across the southern border with Mexico.

The relatively mild start to winter continued in January with temperatures over much of the western US near average to above normal (Figure 1). The interior basin, inland PNW and western valleys of Oregon and Washington were the warmest areas with temperatures 2-6°F above normal while most of California, Southern Oregon and the central Rockies were near normal to 1-2°F below average (Figure 1). The blue areas in Figure 1 were the only places in the entire country seeing cooler than average conditions with the rest of the country experiencing a 4-7°F above average January (not shown). Precipitation across the west was largely a north-south split, but flipped from December, with wet conditions (110-200% of normal) from northern California throughout Oregon, Washington, and Idaho, while central California into Nevada and the southwest saw a very dry January (5-70% of normal; Figure 1). The pattern of January precipitation lowered drought concerns in the PNW, while bringing back drought concerns in California (see Drought Watch section below). For the rest of the country, the northern Plains, the northeast and Florida were drier than average while the heartland saw a wetter than average month (not shown).

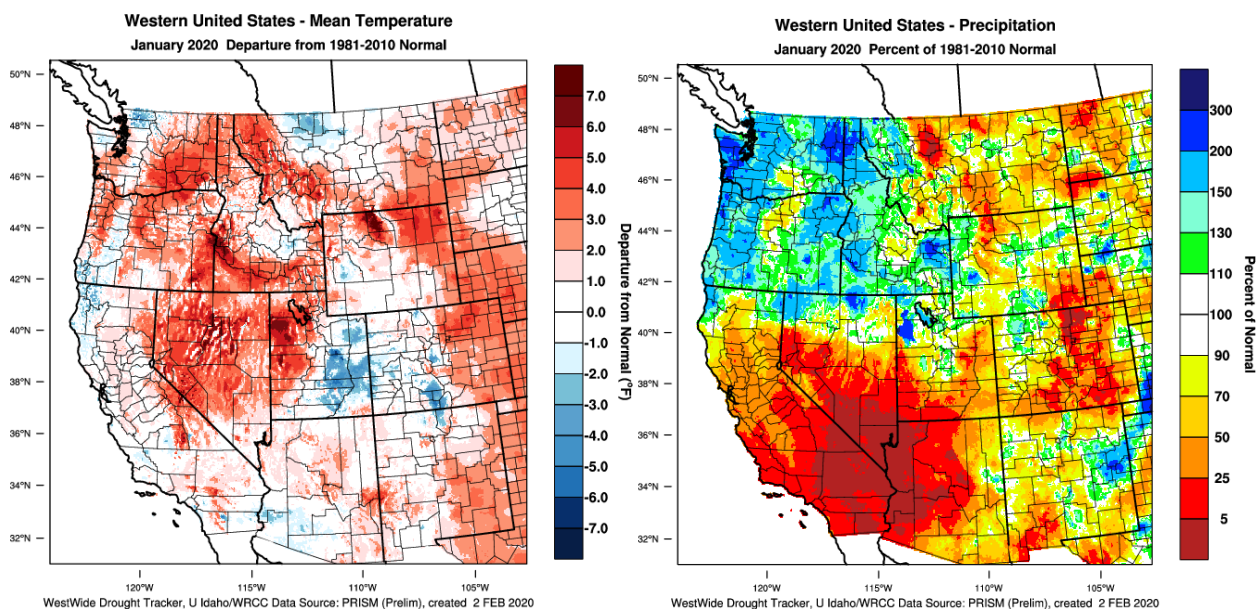


Figure 1 – Western US January 2020 temperature departure from normal (left) and percent of normal precipitation (right; images from WestWide Drought Tracker, Western Region Climate Center; University of Idaho).

The current water year, starting with October 2019, is mixed for temperature and generally dry for precipitation across the western US (Figure 2). California has been mostly warmer than average with only portions of inland southern California slightly below normal. Overall Oregon and Washington have been slight to moderately warmer than average with portions of the southeastern part of Oregon and eastern wine regions lagging slightly below average. The rest of the west is running mostly cooler than average, especially the Rockies (Figure 1). The Rockies and Northern Plains are the only areas of the country running colder than average (1-4°F below normal) while the rest of the eastern US is running 1-4°F above normal (not shown). The water year so far is running 60-80% of average over much of the western US with only western Washington closer to average and the southwest and few isolated areas in the Rockies above average due to early precipitation at the start of the water year (Figure 2). The relatively dry first half of winter is adding to longer-term drought concerns (see Drought section below), however, January inputs in the PNW have helped that region. The majority of the rest of the country has seen wetter than average conditions for the water year, except Texas which continues to be much drier than average (not shown).

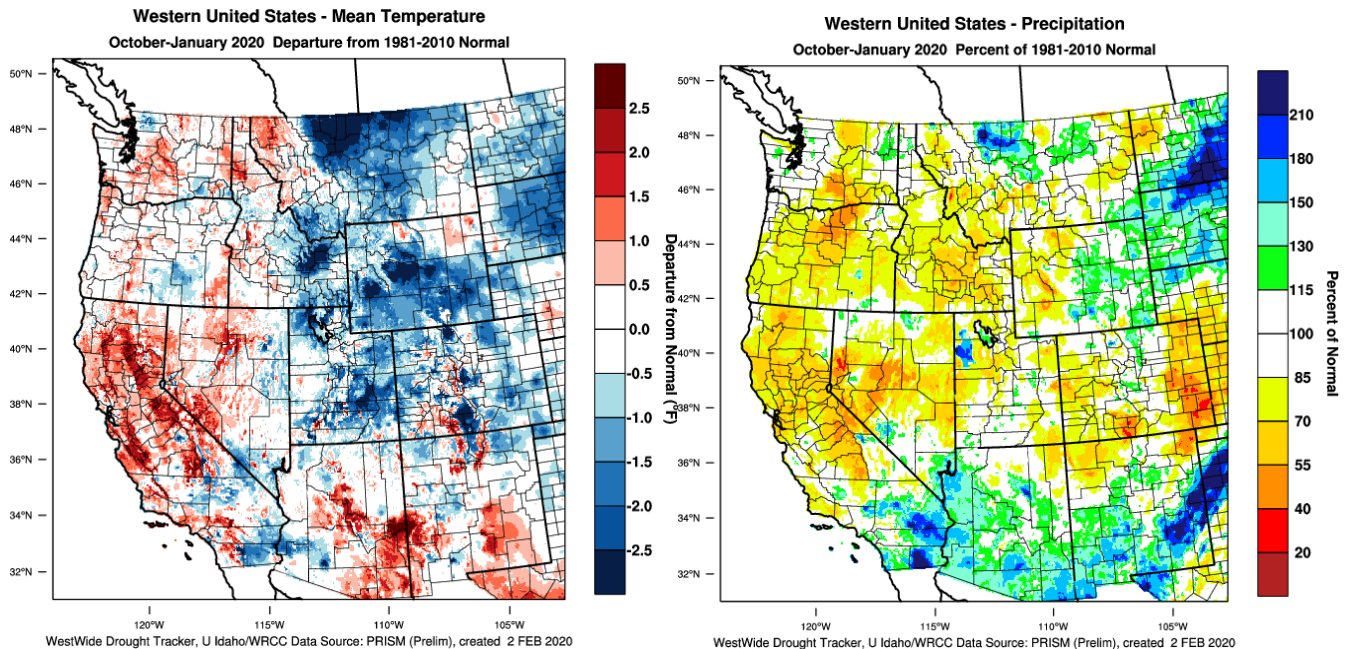


Figure 2 – Western US water year to date (October-January) temperature departure from normal (left) and percent of normal precipitation (right; images from WestWide Drought Tracker, Western Region Climate Center; University of Idaho).

Drought Watch – Main changes from last month include some reduction in the area of the PNW that is in drought while portions of central California have moved back into the abnormally dry category (Figure 3, left panel). The rest

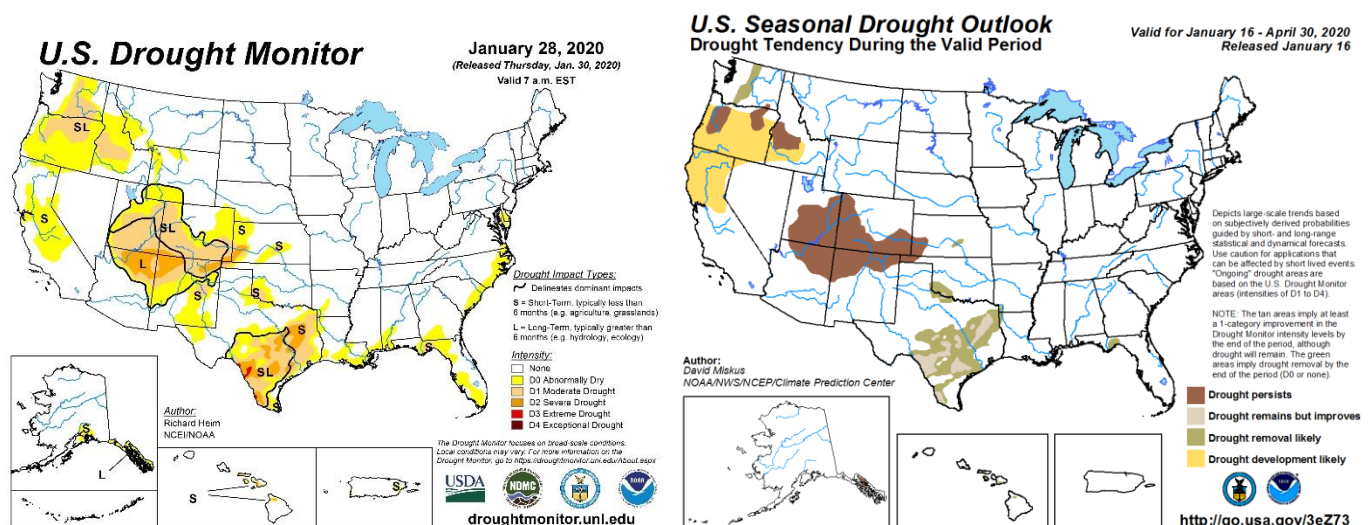


Figure 3 – Current US Drought Monitor and seasonal drought outlook.

of the US has not changed much with the Four Corners and southern Texas regions continuing to be the driest areas in the country. Snowpack numbers for late January across the western US are showing snow water equivalents have dropped to 60-80% of normal in California but increased to 85-110% of normal in Oregon and Washington due to a wetter than average January (see above). The longer-term outlook for the US through April shows some changes, especially in the western valleys of the PNW where drought is forecast to persist through FMA, although after January storms it may be reduced some at the next release of the outlook. California is now forecast to have drought development, while the Four Corners region is expected to remain dry and Texas will likely improve into the second half of winter and early spring (Figure 3, right panel).

ENSO Watch – The tropical Pacific continues to wax and wane between weak El Niño and neutral conditions. The latest reports indicate SSTs in the east-central Pacific were near the borderline of weak El Niño levels during mid to late January. Patterns in atmospheric variables have mainly maintained neutral conditions, with some trends toward El Niño conditions. The slightly oceanic warming is attributed to intra-seasonal variability, and the overall diagnosis indicates ENSO-neutral conditions will likely persist. Most model forecasts favor borderline weak El Niño SST conditions during winter, returning to ENSO-neutral by early spring and beyond. The official CPC/IRI outlook and numerous other forecasting agencies outlooks, are consistent with these model forecasts. When ENSO is in a neutral phase, tropical Pacific SSTs are usually close to average. However, ENSO-neutral conditions do not mean that regional weather conditions will necessarily be average, but that these types of winters tend to be the least predictable. If these conditions continue to hold, the weather across the western US will likely be cool to average in terms of temperatures and dry for the first part of winter and then average for the second part of winter (see forecast periods below and Appendix Figure 1).

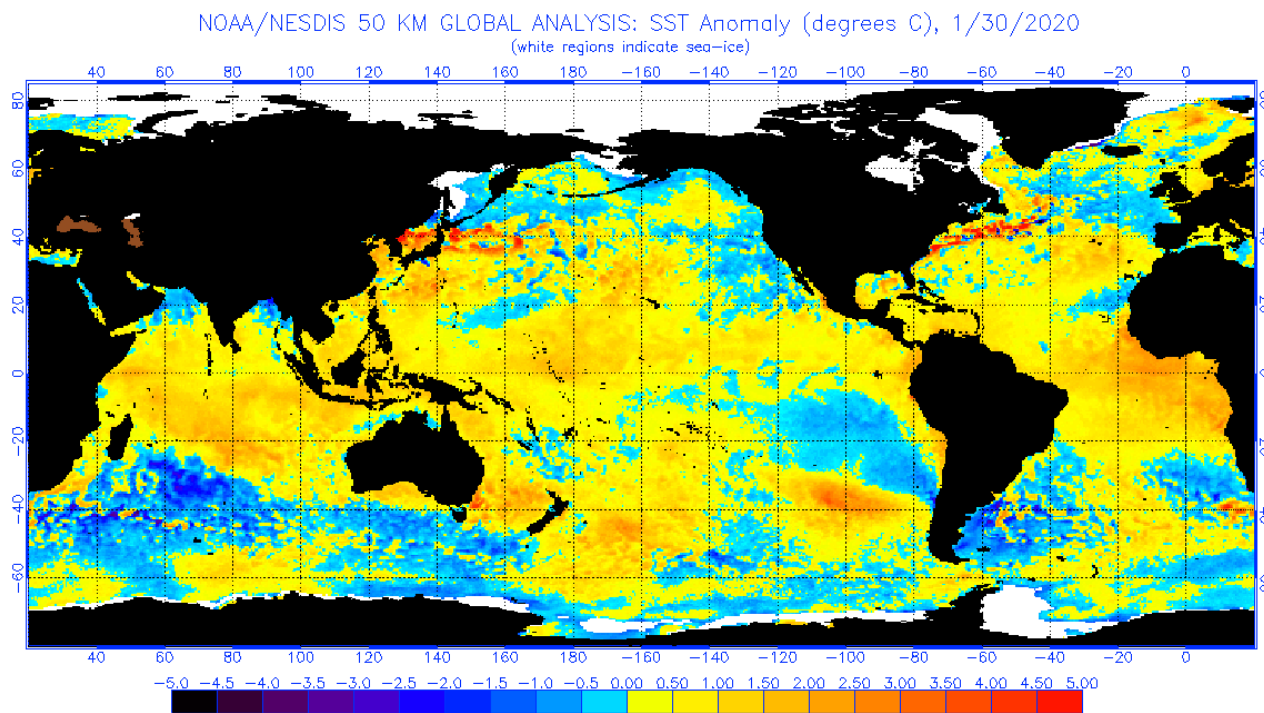


Figure 4 – Global sea surface temperatures (°C) for the period ending January 30, 2020 (image from NOAA/NESDIS).

North Pacific Watch – Some surface water cooling over the near coastal waters along western North America and out into the North Pacific (Figure 4). The coastal water cooling is partially attributed to enhanced upwelling which is typically stronger during this time of year. Additional cooling further out into the North Pacific is tied to high cloud cover reducing surface heating from solar radiation and colder air masses. Still, much of the North Pacific is warmer than normal and there are some indications that the cooling might be short-lived. The short-term influence here is the ocean is now supporting a strengthening ridge just off western North America that will likely bring lower precipitation during the second half of winter for many regions up and down the western US (see the FMA forecast below).

Forecast Periods:

Next 5 Days: The current record warmth being experienced over much the western US will be replaced with a fairly abrupt cold front that should bring snow down to lower elevations. The cold front does not pack much moisture, especially the further south you go, but will likely bring snow and moderate to high winds to most of the west.

6-10 Day (valid February 6-10): Conditions will remain cold and likely dry through the first ten days of the month. Cold air from the Arctic will fill down into the central US while a ridge just off the west coast will likely block storms from the west coast. Some precipitation is likely across southern Canada and the PNW but not likely much or any at all in California. The main signature during this period will likely be overall cooler than average temperatures from the plains westward, near average temperatures in the Mississippi River valley to a much warmer than average eastern US. Precipitation across the country is forecast to be above average in all regions except California, Nevada, and Southern Oregon which are all forecast to be drier than average.

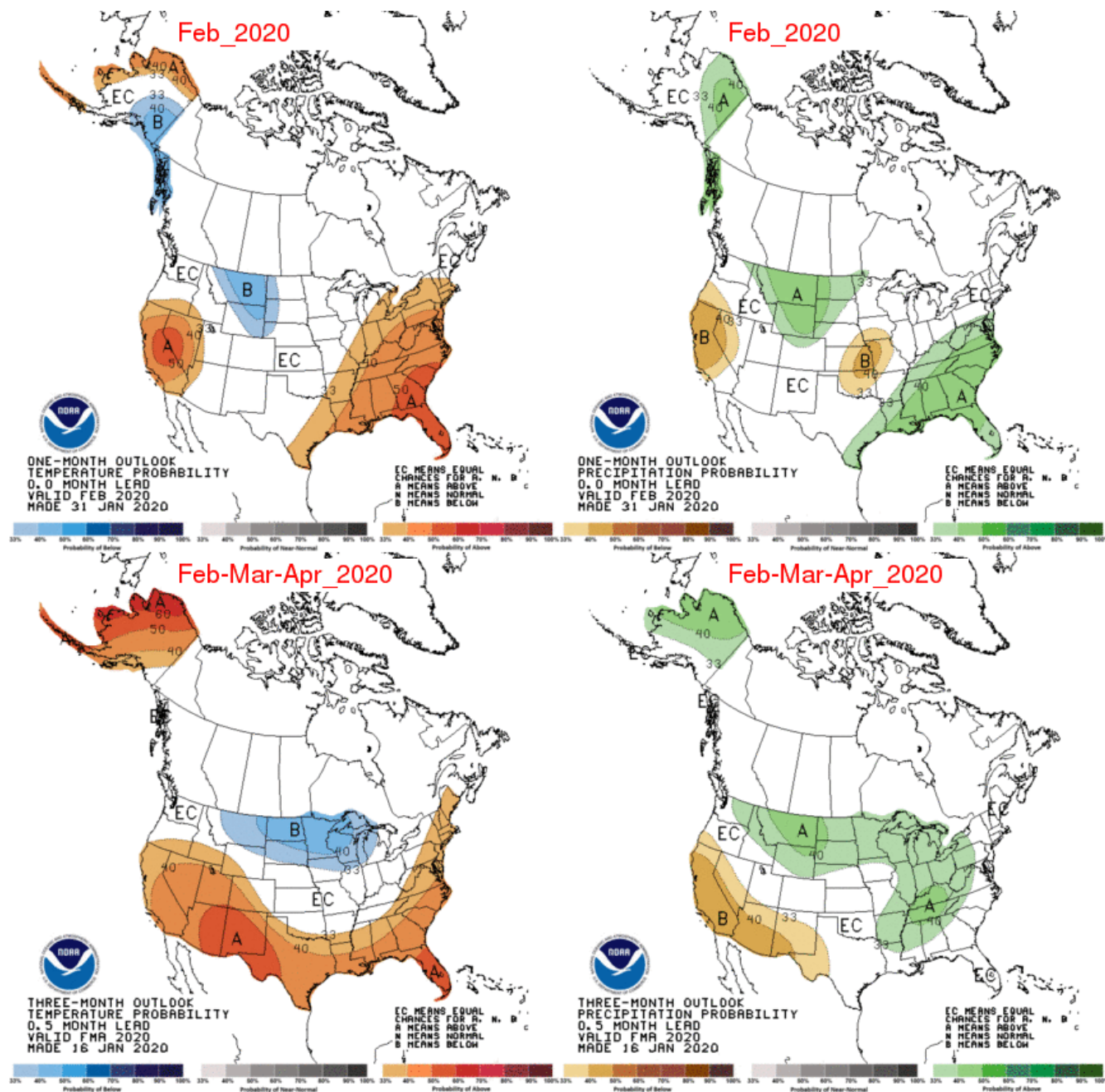
8-14 Day (valid February 8-14): Overlap with the previous forecast period with colder than average conditions forecast to fill in even more over the western US and into the heartland, but the eastern US will likely remain much warmer than average. The precipitation forecast for this period expands the likelihood of dry conditions up and down the west coast states and inland into portions of Nevada and Idaho. The rest of the country is forecast to experience wet conditions through mid-month.

30 Day (valid February 1-29): The current forecast for February points to California continuing its warm winter along with a good chance of seeing a dry month. The PNW is currently forecast to have equal chances of being slightly above to below average for both temperature and precipitation, although some forecasting models are pointing to warmer and drier conditions there as well. The northern Plains are forecast to remain colder than average, while the eastern US is forecast to see a warmer than average February. The precipitation forecast for February is pointing a wet southeastern US and northern Plains, and equal chances elsewhere.

90 Day (valid February-March-April): Not much change from last month's extended forecast with the expectation for warmer than average temperatures from the east coast across the southern tier of states and into California and the Great Basin (see Appendix Figure 1). The northern Plains are forecast to continue to see colder than average conditions into spring. In terms of precipitation, the expectation is for slightly drier conditions from west Texas into California and Southern Oregon. The northern tier of states and into the Ohio River valley is forecast to see a wet start to spring while the rest of the PNW, Rockies, Gulf Coast, and eastern seaboard have equal chances of being slightly above to below average.

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