

# Weather and Climate Summary and Forecast

## March 2022 Report

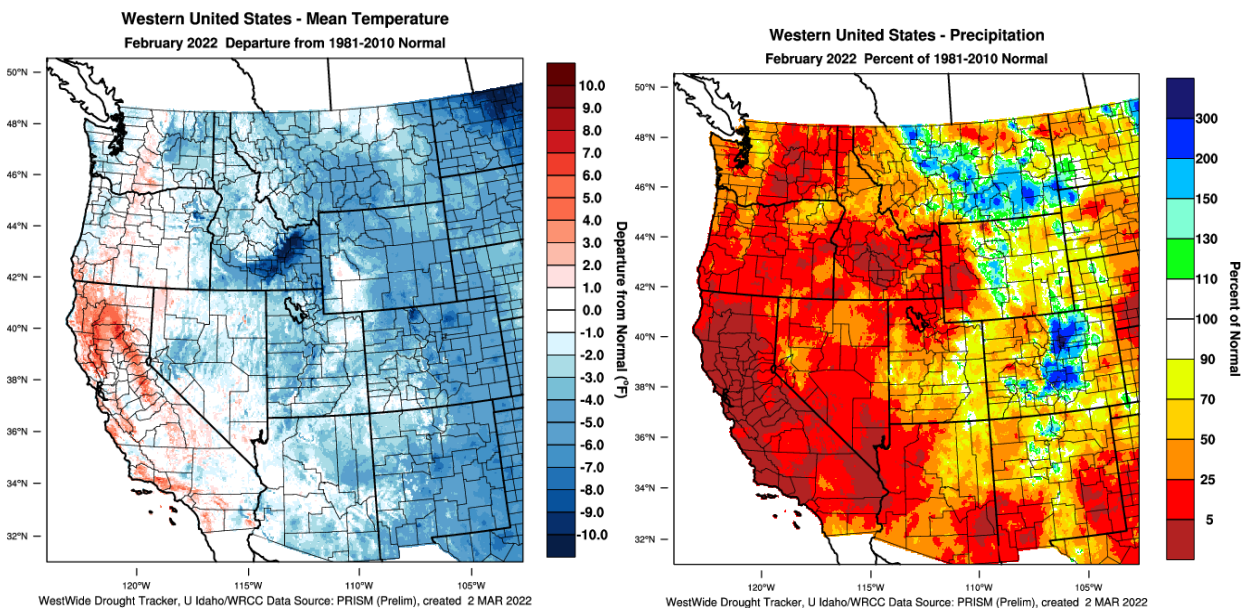
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March 3, 2022

### Summary:

- The high-pressure blocking pattern has persisted resulting in back-to-back dry months over most of the west. Some changes already underway bring many more chances for precipitation than we have had lately.
- Cooler than average<sup>1</sup> temperatures over much of the west in February, except for coastal southern California, northern California, the Sierra Nevada, and the Cascades which were closer to normal or slightly warmer.
- Drought concerns elevated again in February with a near-record dry month over the west. Over 95% of the west continues in some level of drought, with the most severe to exceptional drought conditions rising again from the dry year-to-date conditions. Chances for drought improvement in the PNW are forecast, but little improvement is expected in California, the Great Basin, and the southwest.
- Cooler temperatures along with some precipitation are forecast for the first and second week of March for most of the west. The rest of the month hints at cool and wet from northern California into the PNW, and near average temperatures and near average precipitation to dry southward and eastward.
- The spring month forecasts are showing the continued La Niña and PDO influence and are pointing to the west a cool April with near-average precipitation and a warm and dry May. PNW is more likely to recover some of their water year precipitation deficit, while California and the southwest are less likely.

### Past Month and 2021-22 Water Year to Date

A warm January gave way to a cooler than average February for most of the west. Portions of California, especially the northern part of the state, and the Cascades were near average to warmer than normal but most everywhere else experienced a cool February (Figure 1). A much cooler than average month was seen in the Snake River Valley, which continued from January due to stable air and persistent fog and low clouds. The rest of the country saw temperatures that were largely below average with portions of the northern Plains and western Great Lakes seeing temperatures 5-10°F below average for the month (not shown). For precipitation, the continuing story was how dry it has been for the western US (Figure 1). We can continue to point at the high-pressure ridge which had been out over the Pacific blocking storms northward over the west coast for a couple of months now. Much of the west saw 25% or less of normal

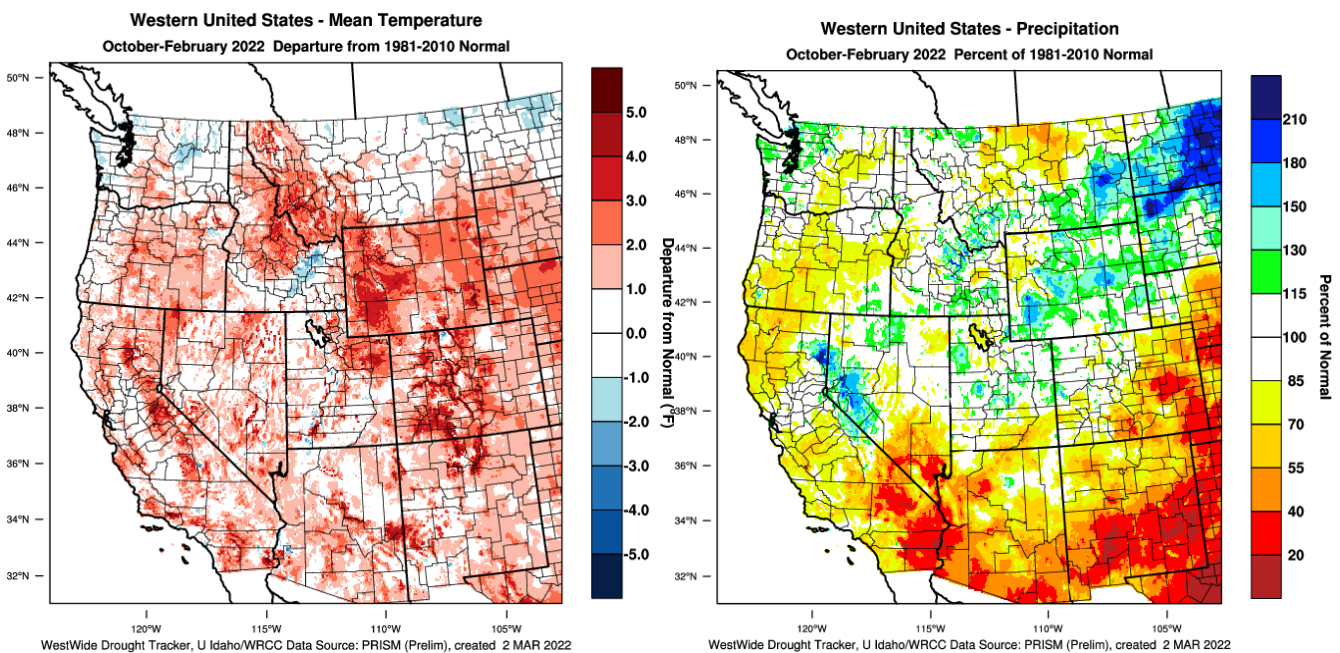


**Figure 1** – Western US February 2022 temperature departure from normal (left) and percent of normal precipitation (right; images from WestWide Drought Tracker, Western Region Climate Center; University of Idaho).

<sup>1</sup> Note that all references to normal or averages in this report are to the 1981-2010 climate normal for each weather/climate parameter unless stated otherwise. Also, note that the 1991-2020 climate normals are starting to become available across reporting agencies and will be used in this report when possible.

precipitation for February, with only portions of the Front Range of Colorado and the northern Rockies seeing anything greater than average. Dry conditions extended across the southwest into most of Texas, up into the Plains, across the Gulf Coast, and southeast. A wetter than average month was seen in the Ohio River valley, into the Great Lakes, and across into New England (not shown).

Water year-to-date (October through February) in the western US has so far seen temperatures mostly near average to above average, although some coastal zones, interior valleys, and scattered isolated areas are closer to average (Figure 2). Most of the rest of the country has been warmer than average for the water year-to-date, with only the northern Plains experiencing closer to average to cooler than average temperatures for the year (not shown). Without much input in January and February, precipitation amounts for the water year have fallen to 85% or less for a large area of the western US. Areas such as the Sierra Nevada mountains, portions of the Great Basin, areas in the Rockies, and the northern Cascades are still holding to 100% of normal or higher (Figure 2). However, snow water equivalent (SWE) amounts continue to decline due to the dry pattern since the first of the year with SWE falling below 75 percent of normal for much of the southern Cascades, Sierra Nevada Mountains, and Great Basin. Moving out of the Rockies, the northern Plains and portions of the Great Lakes and Ohio River valley are experiencing a wet water year-to-date, while the southwest across to Texas, the Gulf Coast, and southeast up to the mid-Atlantic has seen a dry period so far (not shown).



**Figure 2** – Western US water year to date (October 2021 to February 2022) 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** – The dry pattern that started in early January has persisted through much of February for most of the west (Figure 1). While water year-to-date precipitation is 70% or higher for California and the PNW, year-to-date precipitation averages less than 25% of normal throughout much of California and the Great Basin. Given the dry start to the year and the falling SWE amounts in western basins, the current Drought Monitor continues to depict over 95% of the west still in some level of drought (Figure 3). While our winter precipitation to date has lowered areas with the most extreme drought conditions (extreme and exceptional) from over 50% three months ago to close to 20% today, extreme drought conditions have continued inching back up for many locations. Drought zones also continue to extend across the Rockies, much of the Plains, most of Texas, and the western Great Lakes. Short- and long-term drought indicators from the seasonal outlook (Figure 3, right panel) point to the PNW across to portions of the northern Rockies seeing continued improvement or drought removal through spring. However, the outlook continues to show the long-term drought in California, the southwest, Great Basin, and up into the Rockies, while also indicating the likelihood of drought developing further in Texas, across the Gulf Coast, and along the southeastern coast into the mid-Atlantic states (Figure 3).

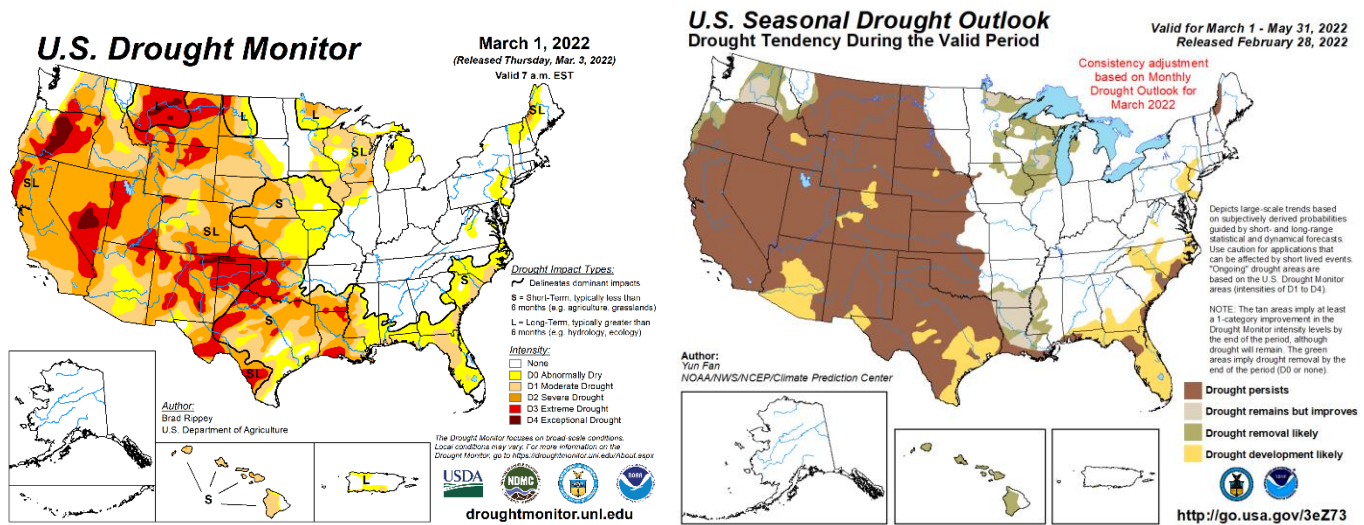


Figure 3 – Current US Drought Monitor and seasonal drought outlook.

**ENSO Watch** – By mid to late February tropical Pacific SSTs in the central-eastern equatorial Pacific were continuing below normal indicating that La Niña conditions are still with us (Figure 4). As such, the Climate Prediction Center (CPC) is continuing the La Niña Advisory. Additional support from the evolution and current framework of other key oceanic and atmospheric variables are consistent with weak La Niña conditions. The current run of models also continues to predict SSTs remaining below average during the next three months and then returning to ENSO-neutral levels during late spring to early summer. The official outlook from numerous agencies confirms this forecast with the outlook calling for a weak La Niña continuing, although the forecast methods vary on the dissipation timing, the probability window is generally from March to May. Even with the weaker La Niña conditions, seasonal model forecasts continue to be influenced, pointing to the PNW likely seeing a cooler/wetter second half of winter, while California is likely to see near average to slightly below average precipitation and temperatures during the second half winter (see the 90-day forecast below).

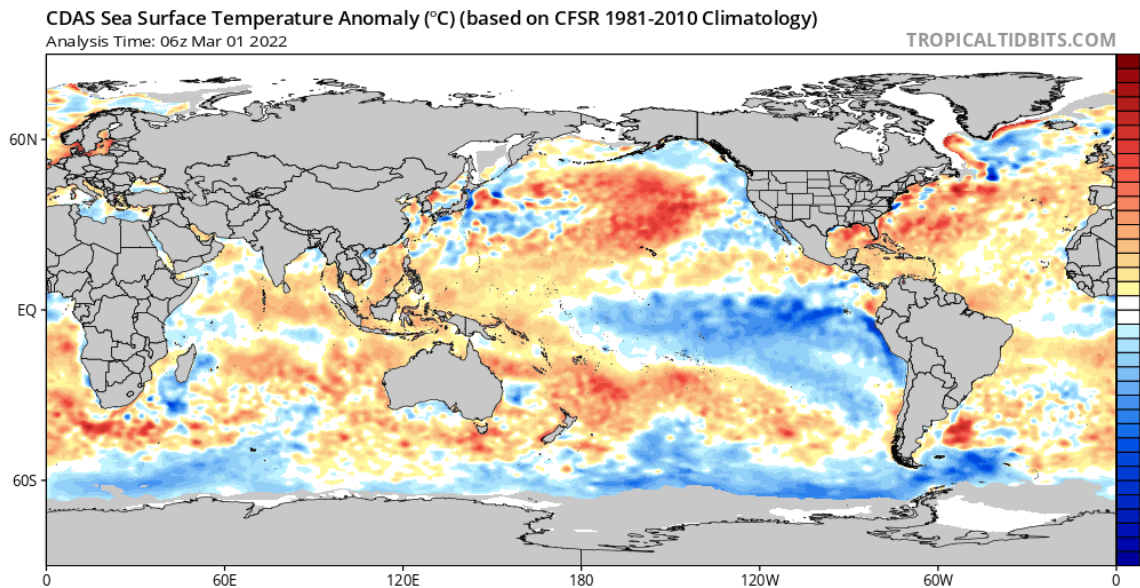


Figure 4 – Global sea surface temperatures (°C) for the period ending March 1, 2022 (image from Tropicaltidbits.com).

**North Pacific Watch** – The Pacific Decadal Oscillation continues to be in one of its strongest negative or cool phases on record. This phase is categorized by warm SSTs out over the central Pacific and cooler SSTs in the Gulf of Alaska and southward along the west coast to Baja California (Figure 4). This pattern has been in place for a couple of years now and has been in phase with the last two winter’s La Niña events which are represented by the cooler SSTs across the ENSO area from South America across the tropics (see above). This type of pattern in cooler North Pacific SSTs continues

to inform the seasonal forecast showing the tendency for a cooler/wetter PNW, transitioning to cool and near average precipitation in northern California and to slightly cool and near average to dry overall during the winter and spring in most of California.

#### **Forecast Periods:**

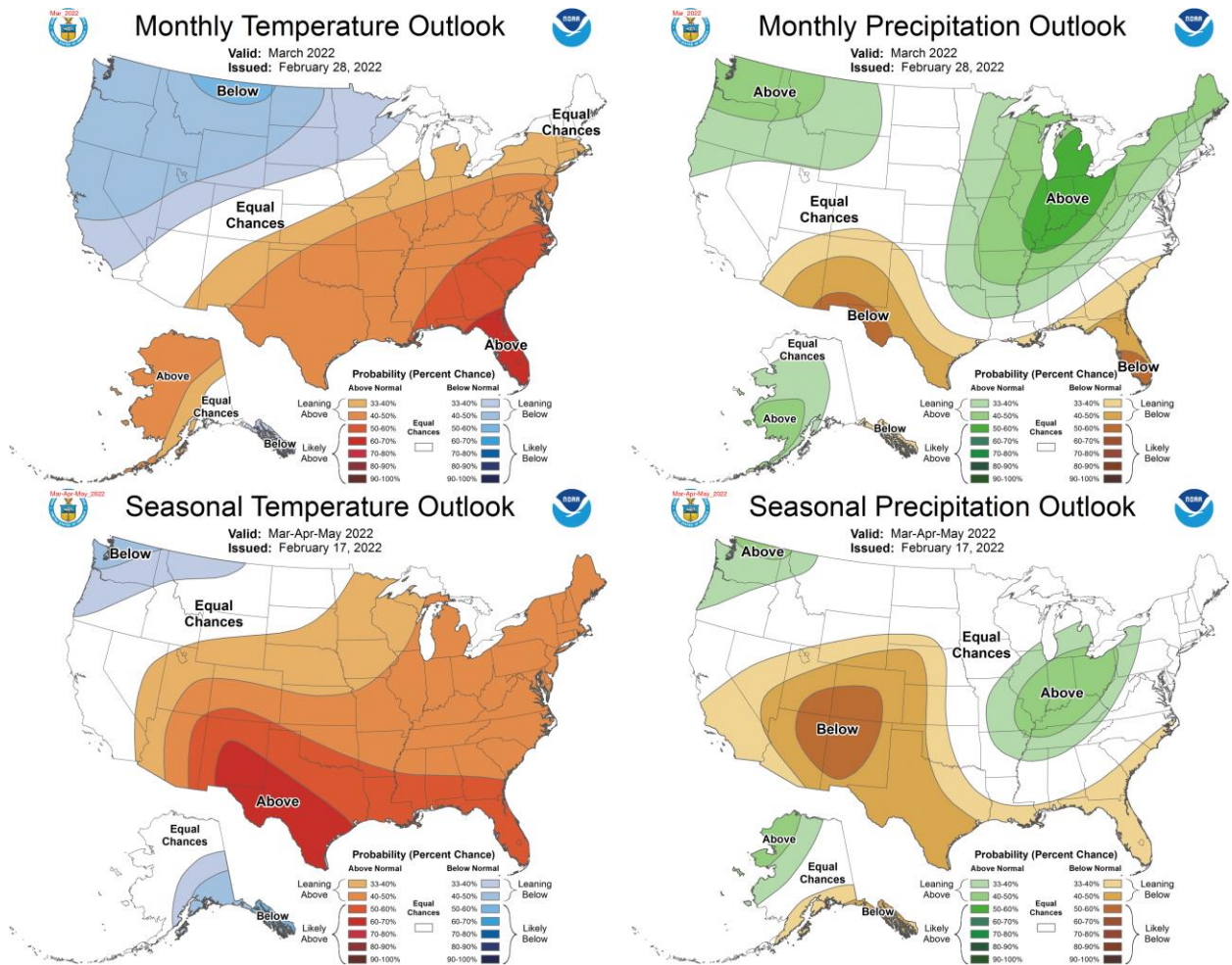
**Next 5 Days:** Finally, some rain. After a prolonged period of dry conditions for most, the end of February brought significant precipitation northward that is now draping over southern Oregon and northern California. Expect this pattern to continue to push southward into California bringing some precipitation to most areas. Precipitation probabilities decline across the PNW as the system pushes south. Temperatures will remain close to the average for this time of year, although nighttime lows will dip into the upper 20s and low 30s once the system moves out and clear skies return later this week and weekend.

**6-10 Day (valid March 8-12):** Conditions during this forecast period will be dominated by Arctic air moving into the northern Rockies and Great Plains. The result is that the western two-thirds of the country will likely see colder than average conditions while the area from New Orleans north to New England and eastward will likely be warmer than average. After the precipitation through the first week of March, conditions will likely dry out from southern Oregon south into California and across the southwest to Texas. The PNW across the northern Rockies and Great Plains is expected to see above-average precipitation during this period. The eastern third of the country is also forecast to be wetter than average through the second week of the month.

**8-14 Day (valid March 10-16):** More of the same from the previous forecast period with temperatures dominated by the cold air forecasted to dip into the lower 40s from Canada. Colder than average temperatures are forecast for the PNW across the Rockies, Plains, and Great Lakes down into Texas and the western Gulf Coast. Near-average temperatures are expected for California, the southwest, and much of the eastern third of the country except Florida, which is expected to see above-average temperatures. The forecast pattern for precipitation is like the previous period with the PNW, northern Rockies, Plains, and most of the eastern third of the country likely seeing a wetter than average period while California and the southwest across through Texas are forecast to be drier than average.

**30 Day (valid March 1-31):** As mentioned previously in these reports, March appears to be a largely colder than average month for the PNW, the northern Rockies, Plains, and most of California (Figure 5). Near-average temperatures are forecast in the area from Arizona northeast to the Great Lakes and northern New England, while the rest of the south, southeast, and mid-Atlantic is forecast to see a warmer than average month. Again, following previous seasonal forecasts, the PNW is likely to see a wetter than average month, with California having equal chances for slightly above to slightly below for the month. Portions of the desert southwest, across Texas, the Gulf Coast, and Florida are forecast to see a dry month, while the Great Lakes, Ohio River valley, and New England are forecast to see a wetter than average month (Figure 5).

**90 Day (valid March-April-May):** The seasonal outlook for the next 90 days is hinting at a pattern for the west that will result from a cold and slightly wet March, a cool April with near-average precipitation, and a warm and dry May. Within regions, the PNW is forecast to see a cool and wet three-month period, while California is forecast to see near-average temperatures and near-average to below-average precipitation across the spring months (Figure 5). The bulk of the rest of the country is forecast to see a warmer than average spring with the warmest conditions likely seen in New Mexico, Texas, and the Gulf Coast states. Unfortunately, an already dry southwest is forecast to remain dry for the spring. While portions of the Ohio River valley are forecast to see a wetter than average spring, most of the eastern US is forecast to be near average (Figure 5).



**Figure 5** – Temperature (left panel) and precipitation (right panel) outlooks for the month of March (top panel) and March, April, and May (bottom panel) (Climate Prediction Center, climate.gov).

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