Weather and Climate Summary and Forecast
March 2025 Report

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March 2, 2025

Summary:

- February was cooler than average[1] across northern regions of the west and warmer than average southward.
- February was wetter than average for most of the northern portion of the western US and drier than average in the southwest and southern Rockies.
- Drought conditions improved in northern California into the PNW, remain in southern California and the southwest. March 1 snow water equivalents across watersheds in the west are below average in California, the northern Cascades, and especially the southwest and southern Rockies. Above average snowpacks are currently across northern California, Oregon, and portions of the Great Basin and Rockies, and near average in the central Rockies.
- Seasonal temperatures over the next 10 days with precipitation likely for most, though the highest amounts are likely in the PNW. Turning cooler mid-month, then wetter for everyone including most of California.
- The forecast and historical analogs point to the likelihood of a generally cool and wet month of March in the west, with the greatest probability of a cool and wet month from the Bay Area into the PNW.
- The spring forecast continues to point to a cooler and wetter period from northern California into the PNW and cool to near average and dry into southern California and the southwest. Breaking it down by months, the forecast hints at a mostly cool March and April and a warm May. Spring is on the horizon.

Past Month and for the Water Year to Date:

The forecast for February held to a cool and wet month in the PNW and northern states and a dry month in California and the southwest. (Figure 1), however, portions of California and the Basin were warmer than forecast. The coldest conditions were experienced across the Northern Rockies into the Plains, while the Four Corners regions saw the warmest conditions. Similar to January, Arctic air reached south to Texas, across the mid-south and into the Great Lakes (not shown). The wettest areas in the western US were northern California, Oregon, and the northern Rockies and Plains (Figure 1) while the southwest and Four Corners region remained dry. The central Plains, Texas, and Mississippi River valley were moderately drier than normal for the month, while the Ohio River valley and mid-Atlantic were much wetter than normal (not shown).

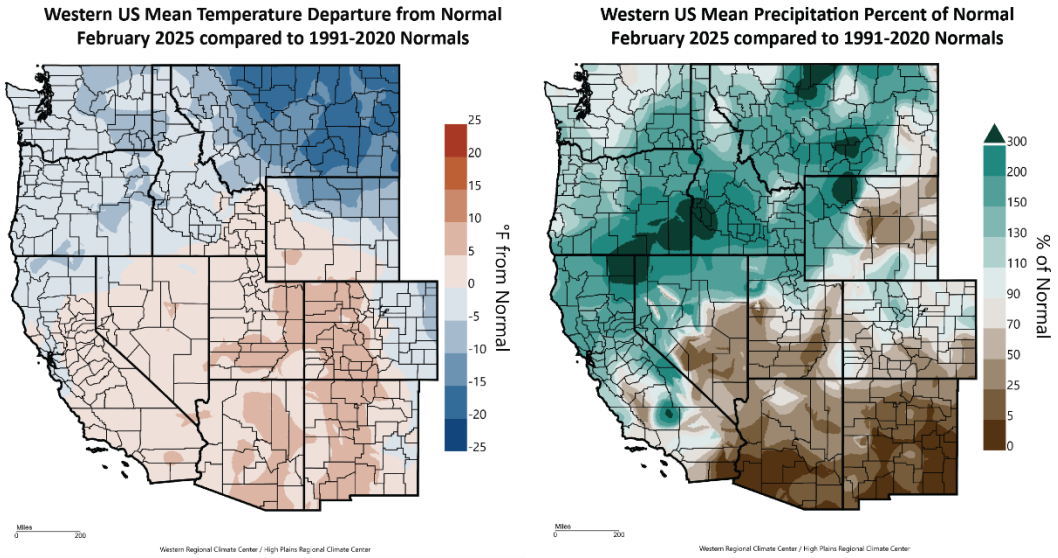

Figure 1 – Western US February 2025 temperature departure from normal (left) and percent of normal precipitation (right; images from Western Regional Climate Center and High Plains Regional Climate Center, 2024)

[1] Note that all references to normal or averages in this report are to the 1991-2020 climate normal for each weather/climate parameter unless stated otherwise. See this website (https://www.climateofwine.com/climate-normals) for more information on climate normal.

Generally warmer than average conditions have been experienced over the western US for the water year to date (October through February) (Figure 2). Much of the west has seen temperatures between 1-4 degrees above average with portions of the Rockies seeing 2-5 degrees warmer than average temperatures. Extreme northern California, western Oregon, and portions of Washington and Idaho are currently running 0.5-1.0 degrees below average for the five month period. The rest of the country continues to experience largely warmer than average temperatures since October 1, with the Plains and Great Lakes to Texas and the Gulf experiencing the warmest conditions (not shown). Closer to average or slightly cooler water year to date conditions have been seen in the northern Plains and the Appalachian mountains (not shown).

The pattern of a wetter north and a drier south continues over the western US. Precipitation for the western US for the water year to date has been wetter than average from northern California into Oregon, eastern Washington, and western Idaho (100-200% of normal) while the rest of the region remains on the dry side (Figure 2). From the Bay Area southward into southern California and the southwest most areas are running 5-50% of normal. Figure 2 also shows that the eastern portions of Colorado and New Mexico have experienced a wetter than normal winter so far, which extends across the central Plains and portions of the middle Mississippi River and Ohio River valleys, otherwise most everywhere else in the country has seen a dry water year to date (40-80% of normal; not shown).

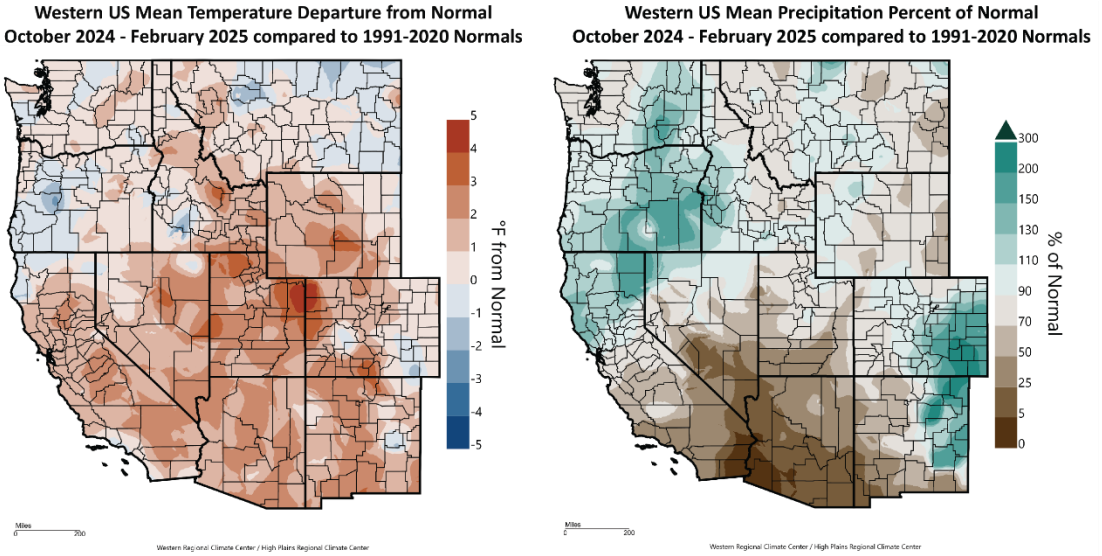

Figure 2 – Western US water year (October 2024 through February 2025) temperature departure from normal (left) and percent of normal precipitation (right; images from Western Regional Climate Center and High Plains Regional Climate Center, 2024).

Drought Watch – February brought some drought relief to portions of the US yet worsened in others. From central California, across much of the Great Basin, across the southwest and into the northern Rockies and Plains continue to have the most prolonged and severe drought situation (Figure 3). Drought concerns are also continuing along the eastern seaboard from Florida to Maine. For the lower 48 states, the overall drought footprint depicted in Figure 3 decreased slightly from last month to just over 66% with the most extreme drought categories remaining close to 18%. For the western US, the overall drought footprint also dropped slightly from last month to just above 67% with the most extreme categories remaining near 27% of the west. Washington experienced a moderately wet February on the east side and drier on the west side with the drought area rising to just above 50% of the state with the most extreme categories staying at zero. February was wetter overall in Oregon (Figure 1) lowering the drought footprint in the state to just under 4% with the extreme drought categories (severe, extreme, and exceptional) staying at zero. The mountains of northern Idaho and western Montana have remained one of the drier regions in the west. However, a relatively wet February lowered Montana's drought footprint to 59% of the state in some level of drought with the extreme categories decreasing to just over 14% of the state. Idaho also had a relatively wet February, which resulted in a drop to 53% of the state in overall drought coverage but with the most extreme drought categories dropping to just less than 6%. California continued its wet winter to date in the north with the southern portion of the state finally getting some precipitation (Figure 1). The result is still a drought free north and severe drought conditions in the south (Figure 3) that results in a slight drop in overall area in drought to 58%. The more extreme drought categories also declined slightly with nearly 25% of the state now enduring severe drought, all located in the southern portion of the state (Figure 3).

The seasonal forecast (Figure 5) shows a continued wet north and dry south framework. As such, the seasonal drought outlook in Figure 3 shows some improvement while the long term drier zones are likely to have continuing drought concerns. Drought conditions remain and are likely to develop further across the south from southern California to the Four Corners region, to Texas and northward into the Rockies and Plains (Figure 3; right panel). Drought concerns along the eastern seaboard are also forecast to remain or develop further. Improving conditions or complete removal from drought is forecast for New England, portions of the Great Lakes, and across the PNW and northern Rockies.

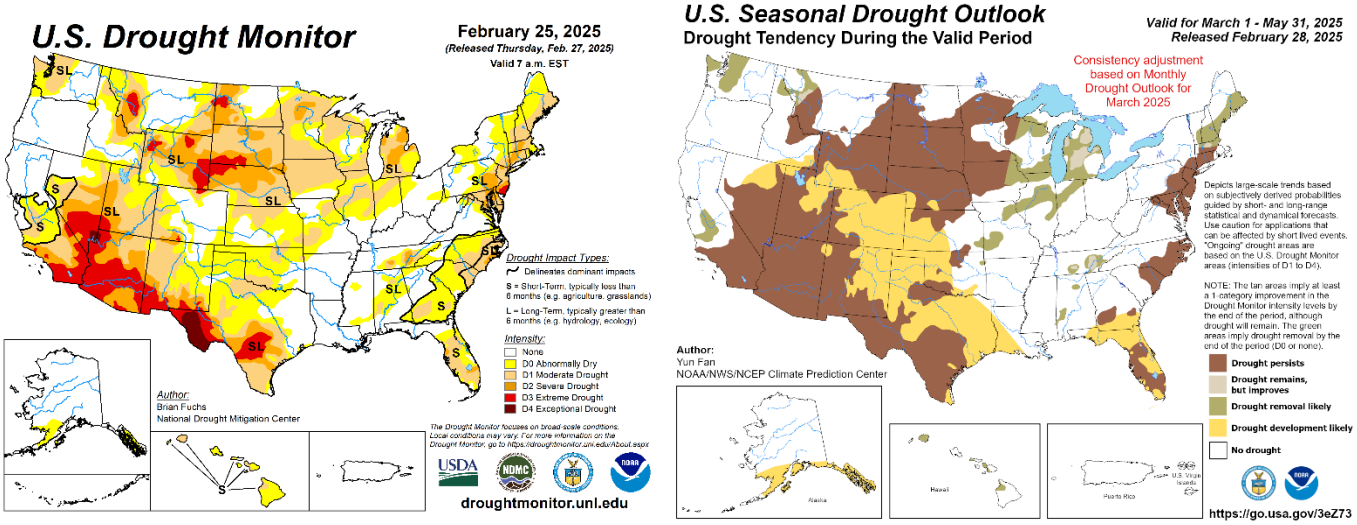

Figure 3 – Current US Drought Monitor and seasonal drought outlook.

ENSO Watch – La Niña conditions continue in the Tropical Pacific Ocean with areas across the central to eastern equatorial Pacific seeing below average sea surface temperatures (SSTs) (Figure 4). The ENSO alert system therefore remains in a La Niña Advisory as detailed by the Climate Prediction Center (CPC). Observations and models are continuing to show a trajectory of SSTs remaining near average to below average over the next few months. The CPC expects La Niña conditions to persist in the near term, with a 66% chance of conditions transitioning to ENSO-neutral during March to May 2025. Other agencies around the Pacific basin are in agreement on the forecast for a weak and likely short duration La Niña during the next few months. Conditions so far this winter have flipped back and forth between cool/wet and cool/dry for the west, with the broad pattern over the western US being close to what would be expected in a La Niña winter. The forecast models (see below) are starting to deviate off the La Niña driven forecast to more neutral condition influences. However, the 90-day forecast still has northern California northward into the PNW likely to see a cooler/wetter period, while the forecast trend is less clear elsewhere in the west (see the 90-day forecast).

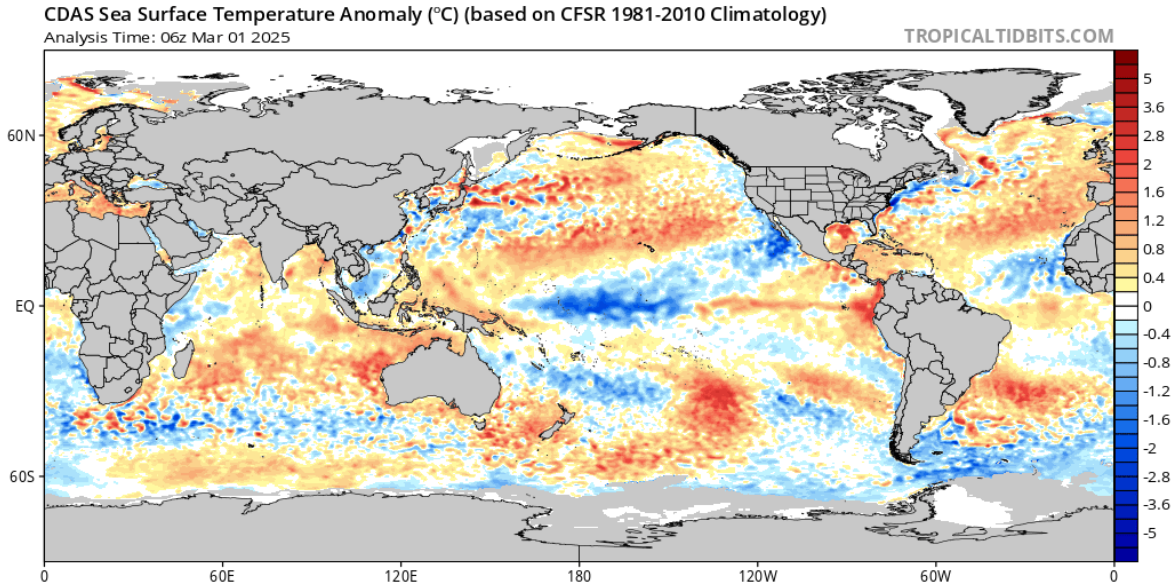

Figure 4 – Global sea surface temperatures (°C) for the period ending March 1, 2025 (image from Tropicaltibits.com).

North Pacific Watch – Most of the changes over the last month occurred in the Tropical Pacific with warming SSTs off central and south America. Over the North Pacific the broader pattern has remained the same with most of the North Pacific basin remaining warmer than average (Figure 4). Cooler than average SSTs also remain along the western North American coast from Alaska south as far as Baja California and central Mexico. As mentioned here previously, the pattern in SSTs in the North Pacific continues the long run of the Pacific Decadal Oscillation (PDO) which has been in a strong negative phase since early 2020. However, from December through February the PDO values have risen from near all-time lows during 2024. During winter and into the spring, the negative phase of the PDO typically brings warmer than normal conditions for much of the southern and eastern states, while the west coast and the PNW are normally colder than normal. Precipitation is normally mixed over the lower 48, with typically a wetter, snowier winter in the PNW and northern Rockies, and drier conditions across southern regions. Conditions so far this winter have somewhat followed what the historical data would have forecast (Figure 2).

Forecast Periods:

Next 5 Days: After a warm ending to February temperatures will moderate to seasonal or slightly cooler than average over the west. No extremely cold air forecast in the short term. Rain chances return for nearly everyone, including central to southern California, but the best chance for rain is from northern California into Oregon, Washington, and British Columbia.

6-10 Day (valid March 7-11): Temperatures over the western US are likely to remain near normal (PNW, Rockies) to below normal (California, southwest) with no extremely cold air in the current forecast. Above normal temperatures from the northern Plains to Texas, then near normal temperatures in the mid-south to southeast and cooler temperatures likely in the NE. This period is forecast to see above normal precipitation over much of the west with near normal amounts expected in the Rockies transitioning to below average in the middle of the country into the eastern seaboard.

8-14 Day (valid March 9-15): Shift to colder temperatures over most of the western US is likely with the greatest probability centered on California, southern Oregon, and Nevada. The forecast for a cooler mid-month for the western US, transitions to much warmer than average conditions very likely over the eastern two thirds of the country. The previous outlook period for a wetter than average western US holds during this period with a significant chance for very wet storms that cover the west but are centered on California. Dry to near normal in the heartland, southeast, and mid-Atlantic. Slight chance for wetter than average conditions over the upper Ohio River valley and Great Lakes region.

30 Day (valid March 1-31): The forecast and historical analog years are pointing to the likelihood of a generally cool and wet month of March in the west (Figure 5). The greatest probability for a cool and wet month is from the Bay Area into the PNW while the rest of the West has equal chances of slightly above/below. Most of the rest of the country is forecast to see above average temperatures, especially in Texas and across the Gulf Coast, while the Great Lakes and New England have equal chances of slightly above/below temperatures for the month. March is forecast to be wetter than average in the Great Lakes region, drier than average in Texas and equal chances of slightly above/below elsewhere (Figure 5).

90 Day (valid March-April-May): The seasonal forecasts from many sources continue to reflect the broader influences in the Arctic, North Pacific, and Tropical Pacific leaning to wetter and cooler in the PNW (Figure 5). California, portions of the Basin and northern Rockies have equal chances of slightly above/below temperatures and precipitation heading into spring. The 90-day forecast for the southern tier of states continues to show the likelihood of above average temperatures that extend from the southwest across to Texas, the Gulf Coast, southeast, and into the mid-Atlantic and New England. The precipitation forecast for the rest of the US for this period has the southwest, southern Rockies, and Texas very likely staying dry into spring, while the Great Lakes and Ohio River valley are forecast to see a wetter than average March through May (Figure 5).

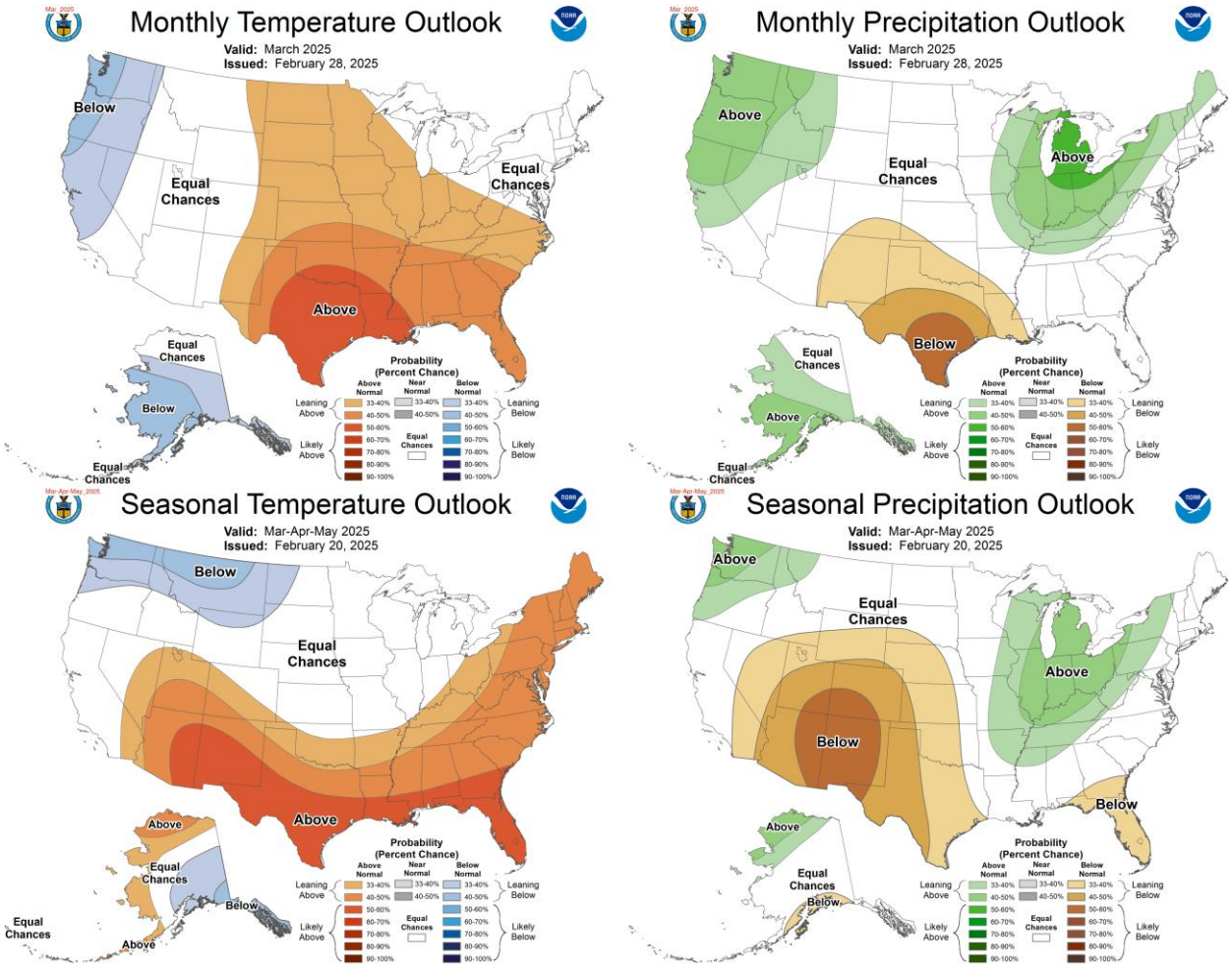

Figure 5 – Temperature (left panel) and precipitation (right panel) outlooks for the month of March (top panel) and March, April, and May (bottom panel) (Climate Prediction Center, climate.gov).

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