Weather and Climate Summary and Forecast
October 2025 Report

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Summary:

- September was much warmer than average[1] over the majority of the western US, especially across the inland PNW and Northern Rockies.
- Subtropical moisture brought thunderstorms to much of the West, especially California, the Southwest, and portions of the Great Basin. It was dry across the northern tier of the western states.
- March through September temperatures over the western US were 3°F warmer than average, with 64 of the 83 climate divisions seeing top ten warmest periods on record. The other 19 climate divisions, including coastal zones in central and southern California, all recorded temperatures that were in the warmest 1/3 in 131 years.
- A substantial portion of the West remains in drought with slight shifts in areas affected and the magnitude of dryness. The 90-day outlook points to southern California remaining dry, most of central to northern California staying out of drought, and improved conditions or complete removal of drought in the PNW.
- Generally cool to mild and dry over the west during the first week or so of October, then turning cooler and wetter for the rest of the month.
- 90-day seasonal outlooks heading from fall into winter often have significant week to week and month to month variation; the current forecast is no different. The overall forecast is pointing to the three-month period ending up largely warmer than average over the majority of the US; however, currently it appears that October will be mild early, cooler and wetter later, with November being relatively mild and dry, and December trending cold.

Past Month and Year to Date:

Warmer than average September across most of the western US, with the PNW and northern Rockies seeing temperatures 2°F to over 8°F above average (Figure 1). Cloud cover from monsoon and tropical storm remnants kept much of southern California, the Great Basin, and southern Rockies slightly below average up to nearly 2°F above average. Even coastal zones in California, which had seen a cooler than average earlier part of the summer, were warmer than average for the month of September. The rest of the country also experienced a largely warmer than average month, especially across the northern Plains, western Great Lakes, and Mississippi River valley, while cooler than average conditions were experienced in the Southeast, where tropical storm activity brought significant cloud cover (not shown).

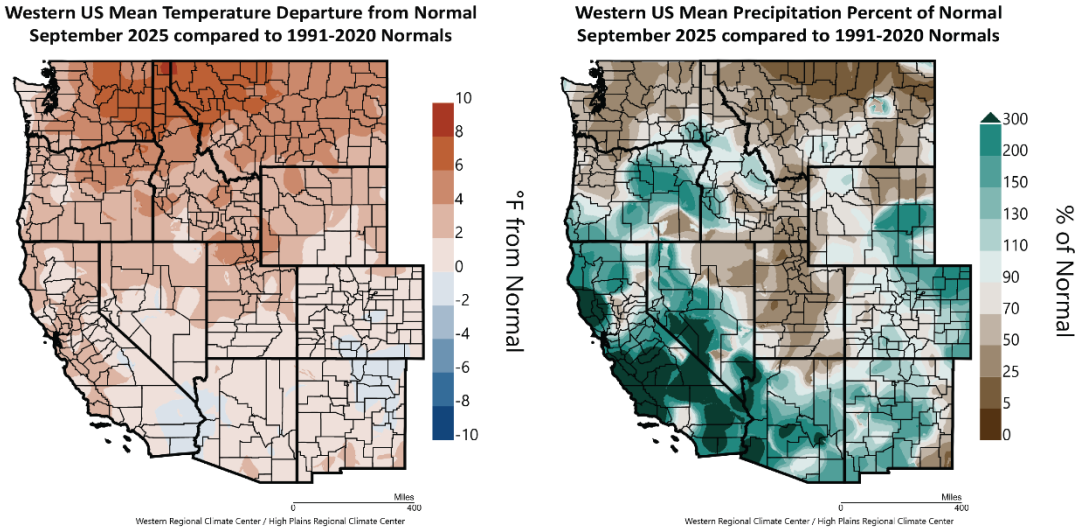

Figure 1 – Western US September 2025 temperature departure from normal (left) and percent of normal precipitation (right; images from Western Regional Climate Center and High Plains Regional Climate Center, 2025)

[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.

Precipitation during September in the western US was dominated by thunderstorm activity over most of California, the Southwest, Nevada, and much of eastern Oregon, where 150-300% of average was seen (Figure 1). Many of these areas do not receive much, if any, rainfall during September, so that actual totals are not remarkably high. But receiving some rain helped lower wildfire and drought concerns for many of these regions. The rest of the country was largely drier than average in September, with Texas across through the Gulf Coast and Southeast and most of the Great Lakes and New England receiving 10-70% of normal, while the Plains of portions of the Ohio River Valley saw 110-200% of normal during the month (not shown).

A warm August and September have brought year to date temperatures over the western US to mostly above average (Figure 2). The warmest areas for the first nine months of the year are Washington, Idaho, Utah, and scattered regions of California and the Southwest, which are now 1.5-3.5 degrees warmer than the average for the 1991-2020 period. Other areas that have been relatively cool year to date are mostly in the Plains southward along the Front Range of the Rockies. The Plains, from the Canadian border to northern Texas, has seen temperatures for the year to date closer to average or as much as 2 degrees below average, while the rest of the eastern US has seen temperatures year to date that are running 1-3 degrees above average (not shown).

A relatively wet September in the western US (Figure 1) has kept year to date amounts between 50 to 150% of average for most regions (Figure 2). Drier than average conditions are found in central to southern California, the Southwest, Four Corners, Great Basin, Washington, northern Oregon, and portions of Idaho, with 25-90% of normal year to date. The exception continues to be the areas from northern California into southern and central Oregon, continuing eastward to the northern Rockies and along the Front Range, which have seen a wetter than average first nine months of the year. The rest of the country has maintained a similar pattern of year to date precipitation since late winter and early spring with near average to moderately above average precipitation in the Plains and into the Ohio River valley and Southeast, although drier conditions remain in Florida and New England (not shown).

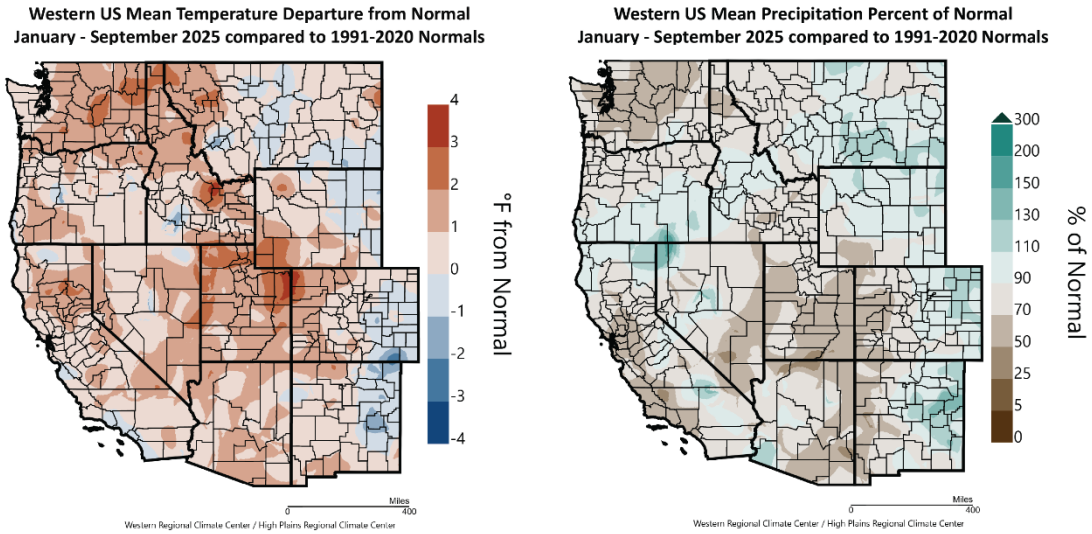

Figure 2 – Western US Year-to-Date (January 1 through September 30, 2025) temperature departure from normal (left) and percent of normal precipitation (right; images from Western Regional Climate Center and High Plains Regional Climate Center, 2025).

Heat Accumulation: While many have finished harvesting, others continue to bring in fruit across many regions in the western US. As we move into the last month of heat accumulation, the 2025 vintage has brought largely higher growing degree-days for much of the west, while coastal zones and elevated areas in California have seen lower heat accumulation compared to the 1991-2020 climate normals (Note that the 1991-2020 period was extremely warm relative to the longer data record, so seeing lower GDD compared to this normal period is still warmer than most years pre-1990). The warmest areas include inland regions in California, western and eastern valleys in the PNW, the Great Basin, Idaho, and Montana, where GDDs are mostly 100-600 GDD above the 1991-2020 climate normals (Figure 3). Coastal zones in California, portions of the Southwest, and mountain locations scattered across the west are currently running near average to 500 GDD below average. The 2025 vintage was mostly one to three weeks ahead of normal accumulation (1991-2020) for many wine regions, while the coolest regions along the coast in California are one to two weeks behind normal accumulation for the vintage (not shown).

A moderately warm September added to the general warmer than average vintage across Oregon, with temperatures 2.1 to 5.2 degrees warmer than normal (Figure 1). With the warm month, heat accumulation (GDD) amounts for the Rogue Valley, Umpqua Valley, Walla Walla Valley, and Willamette Valley are now 19-29% above the 1981-2010 climate normals and 8-20% above the 1991-2020 climate normals (Figure 4). The Rogue and Umpqua valleys are now above the

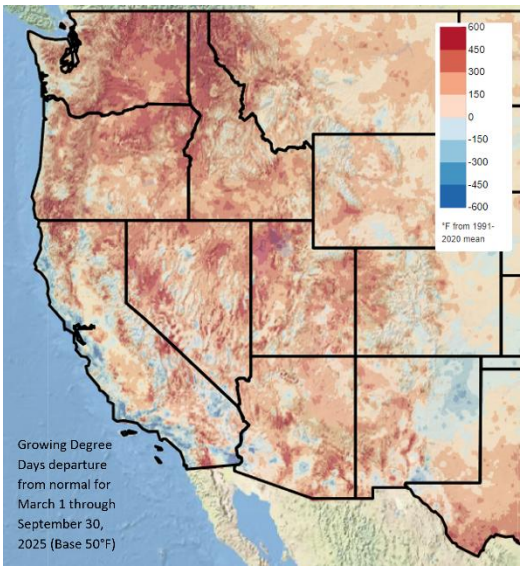

Figure 3 – Western US March through September 2025 growing degree-days (image from Climate Impacts Research Consortium, University of Idaho).

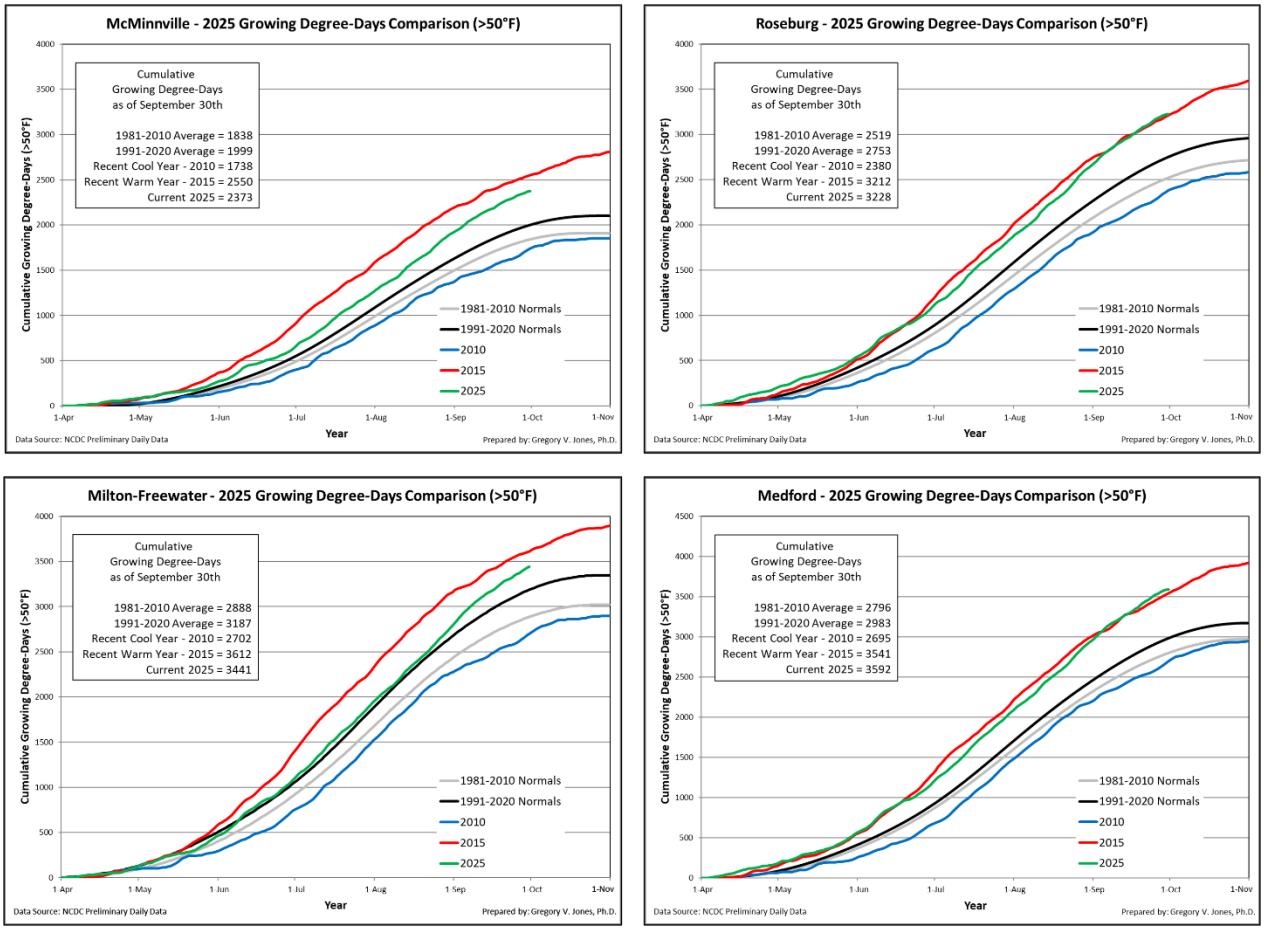

Figure 4 – Cumulative growing degree-days (base 50°F, no upper cut-off) for McMinnville, Roseburg, Milton-Freewater, and Medford, Oregon. Comparisons between the current year (2025) and a recent cool year (2010), a recent warm year (2015), and both the 1981-2010 and 1991-2020 climate normals are shown (NCDC preliminary daily data).

warmest vintage in the last 25 years (2015), while the Willamette Valley and Walla Walla Valley are within 5% of the accumulation during the 2015 vintage. These four locations are now 5-11% higher during the 2025 vintage compared to the 2024 vintage.

Drought Watch – The two dominant signatures for drought over the last month are a broad expansion of dry conditions from the southwest across much of the eastern US and the continuation of drought in the west (Figure 5). Dry conditions from Texas into the Midwest, Great Lakes, Southeast, and New England increased drought concerns across the country. The overall drought footprint over the continental US rose from just over 50% to nearly 70% with the most extreme categories of drought rising to 23%. While September brought cooler conditions and rain to areas of the west (Figure 1), the overall dry summer has left most of the west currently experiencing drought, with the area from southern California, across much of the southwest, and into the Rockies remaining the most prolonged and severe drought situation in the country (Figure 5). The overall drought footprint in the west did not change much during September, remaining close to 82%, with the most extreme categories dropping slightly to just over 44% of the western states. California's overall area in drought dropped slightly in September to just over 73% of the state, with the more extreme drought categories also dropping to close to 19% of the state now enduring more severe drought. Washington has remained at 100% of the state in some level of drought for three consecutive months now, with the most extreme categories of drought staying close to 80%. Thunderstorms in southeastern Oregon have kept that region out of drought and lowered the state to 67% in some level of drought, with the extreme drought categories dropping to just above 24%. During September, Montana's overall drought footprint rose to nearly 73% of the state, with the extreme categories also increasing to nearly 32% of the state. Idaho also has seen its drought footprint remain at 100% for three straight months; however, the most extreme drought categories dropped slightly to nearly 49% of the state. (Figure 5).

The seasonal outlook for drought continues to show the anticipated fall to winter precipitation leading to a decline or improvement in drought in the PNW (Figure 5; right panel). Central to northern California, southeastern Oregon, and northern Nevada are forecast to remain out of drought heading into winter, while the rest of the Great Basin, central and southern Rockies, and the Southwest are forecast to remain dry. In addition, the area from Texas, across the Gulf Coast states into the Ohio River valley and southern Great Lakes are forecast to see drought conditions persist or develop further as we move into the first half of winter (Figure 5; right panel).

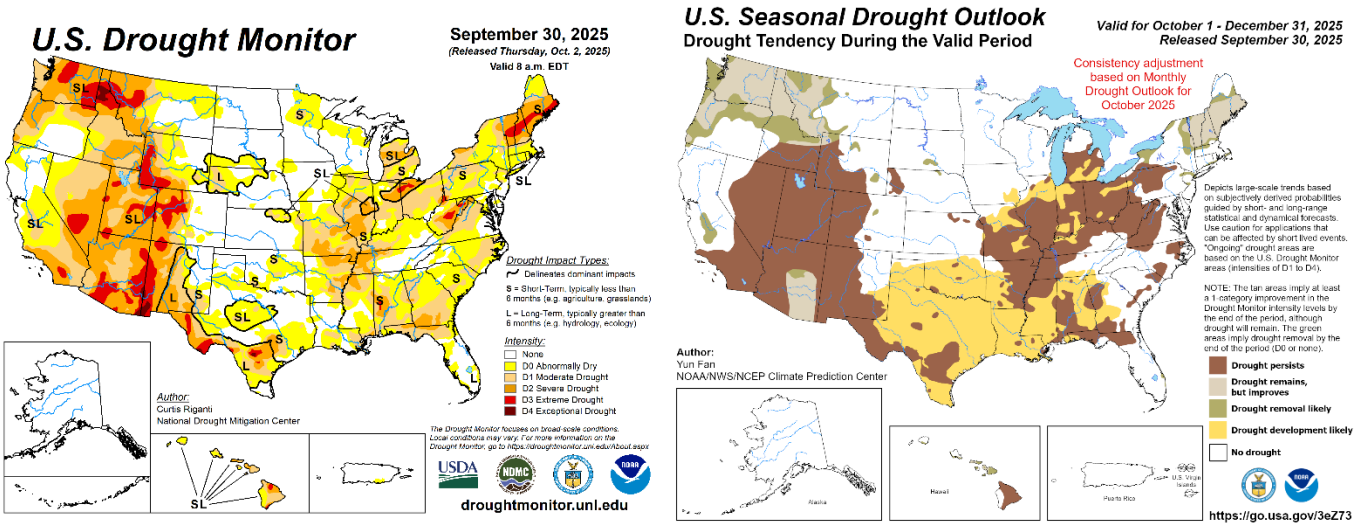

Figure 5 – Current US Drought Monitor and seasonal drought outlook.

ENSO Watch – The September 29th Climate Prediction Center update on ENSO has neutral conditions still present in the Tropical Pacific with cool but near average SSTs across the equator (Figure 6). However, the CPC has increased the chances of La Niña developing in the fall to 71%, up from 53% a month ago. With this change, the CPC has altered the ENSO Alert System to a La Niña Watch. Observations and modeling across numerous agencies also show changes in SSTs and tropical winds and other factors that favor La Niña developing during October through December 2025, after which it drops closer to 50% with either neutral or La Niña equally likely in the second half of winter and spring of 2026. Typically, La Niña conditions that last into winter have their biggest influence on U.S. weather, most often by shifting the jet stream northward. This shift in the storm track over North America typically brings wetter-than-normal conditions in

the PNW. By contrast, it means drier-than-average conditions along the southern tier of the U.S., including central to southern California. Northern California is typically the tipping point where the effects can be similar to the PNW in some La Niña winters or similar to central to southern California in other years. These effects often are stronger when a La Niña is strong, but the CPC thinks this winter's event is likely to be relatively weak, with the spatial patterns less certain.

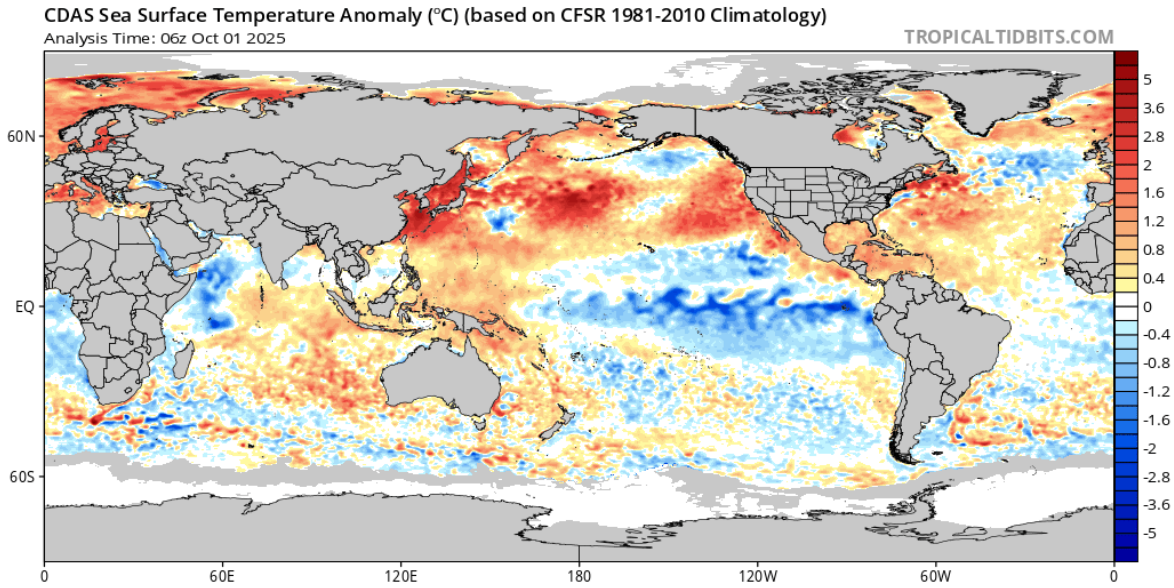

Figure 6 – Global sea surface temperatures (°C) for the period ending October 1, 2025 (image from Tropicaltibits.com).

North Pacific Watch – Very warm SSTs continue to dominate most of the North Pacific (Figure 6). SSTs are 2-6°F warmer than average over much of the basin, including along the west coast from Canada to Central America. The Pacific Decadal Oscillation (PDO) index remains in its negative phase at some of the strongest levels ever recorded. Cooler SSTs in the North Pacific are now found in a portion of the Gulf of Alaska and from south of Hawaii to just off of Baja California. As we move into winter, the PDO's effects on North American weather become more evident. However, the shift from colder to warmer SSTs off the west coast has already warmed coastal temperatures and lowered the marine layer depth and extension along the coast of California. As such, I still expect warmer coastal temperatures heading into early winter, but these conditions might be enhanced or muted depending on whether a weak or strong La Niña develops in the Tropics.

Forecast Periods:

Next 5 Days: October has started off with the typical fall systems coming off the Pacific and more seasonal temperatures. A little rain over the past few days, but drying into this next week for pretty much the entire western US. Warm to mild south in California to mild to cool north into the PNW.

6-10 Day (valid October 9-13): After the dry and mild conditions over the last week or so, expect conditions to turn cooler and wetter for most of the west during October 9-13. Active storm patterns will bring off and on chances for precipitation into mid-month, with temperatures dropping to near normal or below average for the west coast states. Further east, from the Basin and Rockies across to the eastern seaboard, the forecast points to a high likelihood for above average temperatures and below average rainfall, except maybe along the southeastern coast.

8-14 Day (valid October 11-17): Overall pattern holds moving through mid-month with the west coast states remaining near normal to cooler than normal with elevated chances of precipitation, especially in the southwest and into the Great Basin. Warmer and drier conditions will likely prevail across most of the eastern two-thirds of the country. Tropical storms are still in play in October with chances for elevated precipitation amounts in the southeast and Florida.

30 Day (valid October 1-31): After a mild and dry first half of October, cooler temperatures and wetter conditions are forecast for the remainder of the month. Overall, the month is forecast to end up near average to cooler than normal with above average precipitation likely across the PNW and northern Rockies, while most other areas have equal chances of slightly above to slightly below precipitation for the month (Figure 7). From the Front Range of the Rockies,

across the Plains, and into the Great Lakes and all along the eastern seaboard, October temperatures are forecast to be warmer than normal. A dry month is forecast for a large area from New Mexico and Texas, extending to the northeast across the Ohio River valley and into New England. The southeast and Florida monthly forecast is for near normal to above average precipitation, although variance in tropical system development and tracks could swing the forecast dramatically wetter or drier (Figure 7).

90 Day (valid October-November-December): 90-day seasonal outlooks heading from fall into winter often have significant week to week and month to month variation; this forecast is no different. The overall forecast is pointing to the three month period ending up largely warmer than average over the majority of the US (Figure 7), however, currently it appears that October will be mild early, cooler late, with November being relatively mild, and December trending cold. SST conditions and the core area of storm formation will likely change heading into December, so confidence in the later part of the 90 day forecast is much lower. Similar for precipitation where lower confidence leads to an uncertain forecast with equal chances for much of the west, except in the PNW, where a wet October and early November will likely drive an overall above average 90 day period. The rest of the country is forecast for generally a warmer start to winter with moderate confidence for below average precipitation over the next three months across the southwest, Texas, and the Gulf Coast, but lower confidence elsewhere (Figure 7).

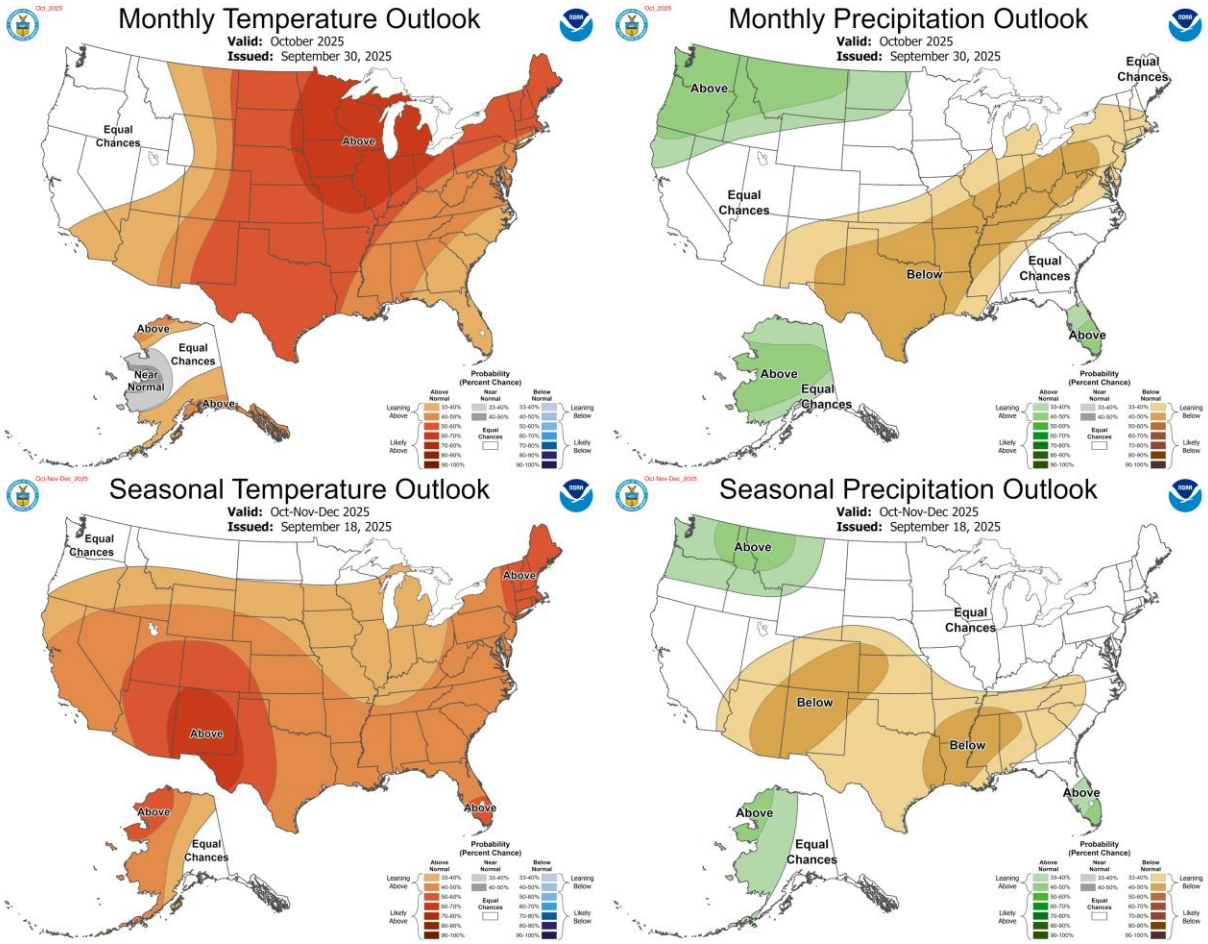

Figure 7 – Temperature (left panel) and precipitation (right panel) outlooks for the month of October (top panel) and October, November, and December (bottom panel) (Climate Prediction Center, climate.gov).

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