National Significant Wildland Fire Potential Outlook

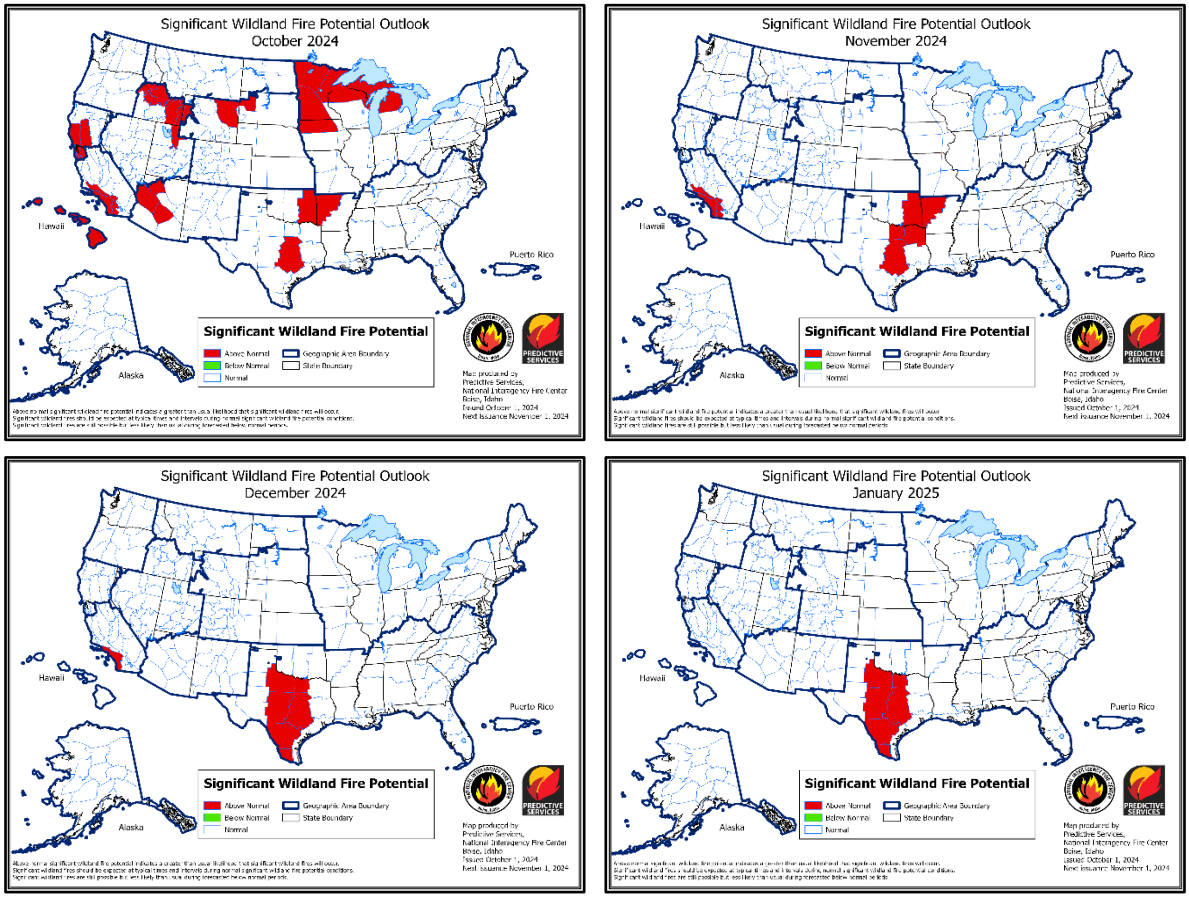
Predictive Services
National Interagency Fire Center

Issued: October 1, 2024
Next Issuance: November 1, 2024

Outlook Period – October 2024 through January 2025

Executive Summary

The significant wildland fire potential forecasts included in this outlook represent the cumulative forecasts of the ten Geographic Area Predictive Services units and the National Predictive Services unit.



Fire activity escalated significantly at the beginning of September, with the National Preparedness Level returning to five (on a scale of 1-5) September 6. Fire activity then significantly moderated the latter half of September, with the National Preparedness Level was decreasing to four September 20 and three September 26. Having started September with exceptionally high levels of fire activity, the Northwest and Great Basin Geographic Areas saw the correspondingly greatest decreases in activity by the end of the month. The remaining geographic areas also observed a general decline in activity, except the Eastern Area had a modest increase in activity at the end of September. Year-to-date annual acres burned for the US is above the 10-year average at 131% of normal, but the national year-to-date tally of wildfires remains below average, near 84%.

Precipitation in the western US in September was below normal in much of southern California into the Southwest, west of the Divide, central/southern Great Basin, and near and west of the Cascades. Precipitation was also below normal in much of Wyoming into the Great Lakes and

Northeast. Precipitation was above normal in portions of western Nevada and southeast Oregon into central Montana. Precipitation was well above normal in the Southeast, especially Georgia into the southern Appalachians, primarily due to Hurricane Helene. Temperatures in September were above normal for much of the US, especially from the northern Rockies into the Great Lakes, but near normal in much of the Southeast and Mid-Atlantic. Drought in September improved slightly in the Northwest but expanded across the Lower Colorado River Valley. Drought intensified in the Ohio and Tennessee Valleys, mainly before Helene moved through at the end of the month. Drought also developed in portions of the Upper/Mid-Mississippi Valley, with drought persisting on much of the Plains and West Texas.

Climate Prediction Center and Predictive Services outlooks issued in late September depict above normal temperatures are likely across the West and Plains in October. Precipitation in October is likely to be below normal across much of the Intermountain West into the Plains, Ohio Valley, and Lower Great Lakes. For November through January, above normal temperatures and below normal precipitation are likely in the southern third of the US. No clear signal for temperatures is forecast along the northern tier of the US, but above normal precipitation is likely along in the northern quarter of the US from the Northwest to the Great Lakes and Northeast.

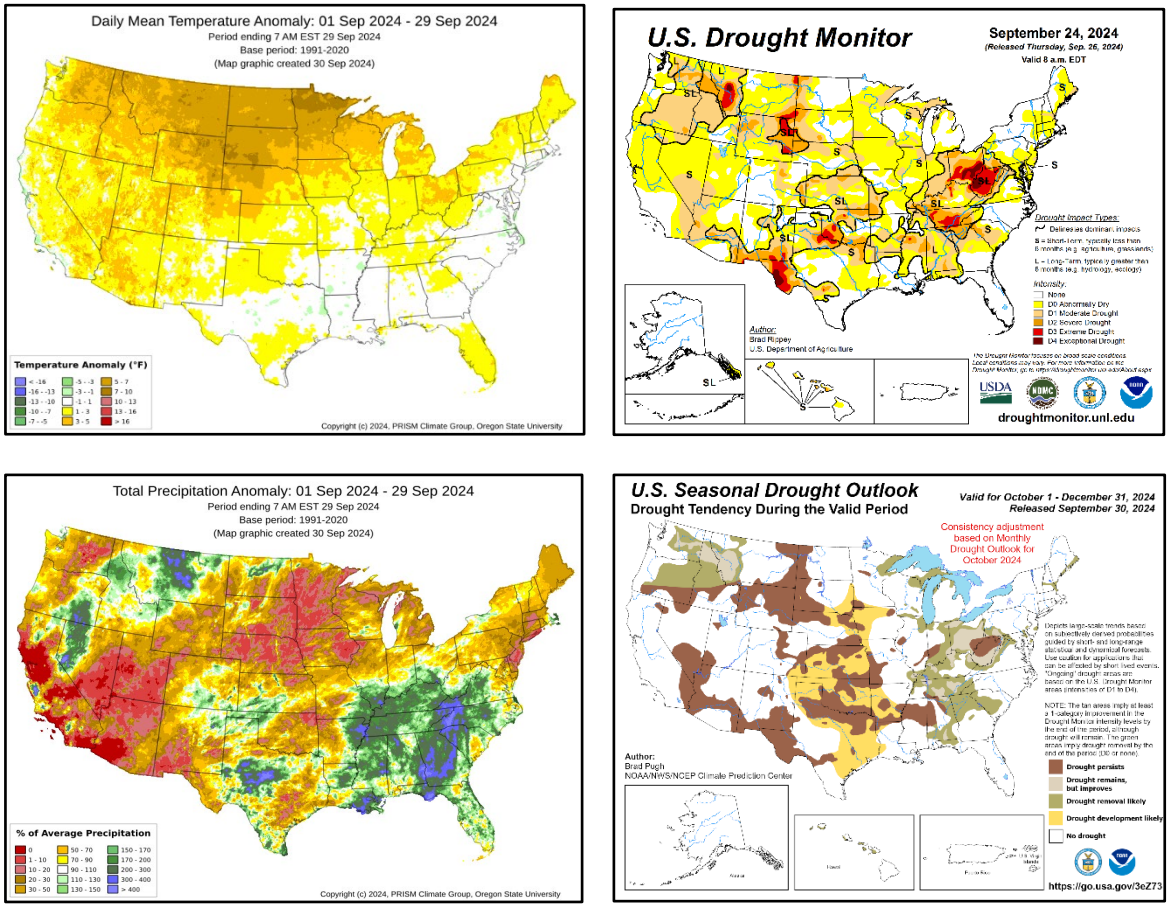
In October, above normal significant fire potential is forecast for portions of northern and southern California, northwest Arizona, northeast Wyoming, the Upper Mississippi Valley, Upper Great Lakes, eastern Oklahoma, western Arkansas, central Texas, and Hawai'i. For November, above normal potential will continue in the southern California coast and mountains, with above normal potential expanding into northeast Texas while potential returns to normal in the rest of the US. Above normal potential will continue along the southern California coast in December, while much of central Texas is forecast to have above normal significant fire potential, as well. Above normal potential will continue across much of central Texas into January, with normal potential across the rest of the US.

Past Weather and Drought

Temperatures were above normal for much of the West into the northern Plains and Great Lakes in September. Near normal temperatures were observed in the southern Plains, Southeast, and Mid-Atlantic, as well as along the immediate California coast. A heat wave was observed across the West at the beginning of September, followed by cooler than average temperatures mid-month. Another heat wave occurred across the West late in the month focused on California, the Southwest, and northern Plains, where numerous daily record highs were set. This latter heat wave produced exceptional readings for so late in the season, with Phoenix, Arizona reaching 117°F September 28, setting a new monthly record, and Rapid City, South Dakota hitting 100°F the following day.

Below normal precipitation was observed across much of California and the Northwest, although very localized areas of above normal precipitation occurred in both northern and southern California. Below normal precipitation was also observed across much of the Southwest, southern Great Basin, Rockies, northern Plains, Great Lakes, and Northeast. Much of the Upper Mississippi Valley was exceptionally dry, with many areas receiving less than 25% of normal rainfall. Above normal precipitation was observed in northwest Nevada, southeast Oregon, northern Idaho, central Montana, and portions of central Texas. Above normal precipitation also fell from the Ohio Valley into the Southeast, focused on the latter half of the month when exceptional amounts of rain fell near the Big Bend of Florida, Georgia, and across the southern Appalachians due to Hurricane Helene. Widespread rainfall totals over 5 inches were observed in this area, with totals of one to two feet in the southern Appalachians, including over 30 inches in a 48-hour period in Busick, North Carolina. Widespread catastrophic flooding occurred in the southern Appalachians due to the historic rainfall.

Another significant round of lightning occurred September 1-3 in the Northwest and northern Great Basin bringing a large increase in fire activity. At the same time, extreme heat in southern California resulted in three significant fires, the Airport, Bridge, and Line Fires. Fire activity then moderated in the middle of the month as much cooler temperatures and periods of precipitation spread across northern California, the Northwest, northern Great Basin, and northern Rockies resulting in the National Preparedness Level falling to three on September 26. However, with the heat and occasional winds at the end of the month, fire activity slowly began to increase once again. Nonetheless, activity overall at the end of the month remained significantly lower than what was observed at the beginning of the September. In the eastern US, persistently dry conditions resulted in a slow increase in activity in the Ohio Valley and Appalachians that abruptly ended when Helene moved in. The persistently dry conditions in the Upper Mississippi Valley and Upper Great Lakes resulted in increasing activity at the end of the month.



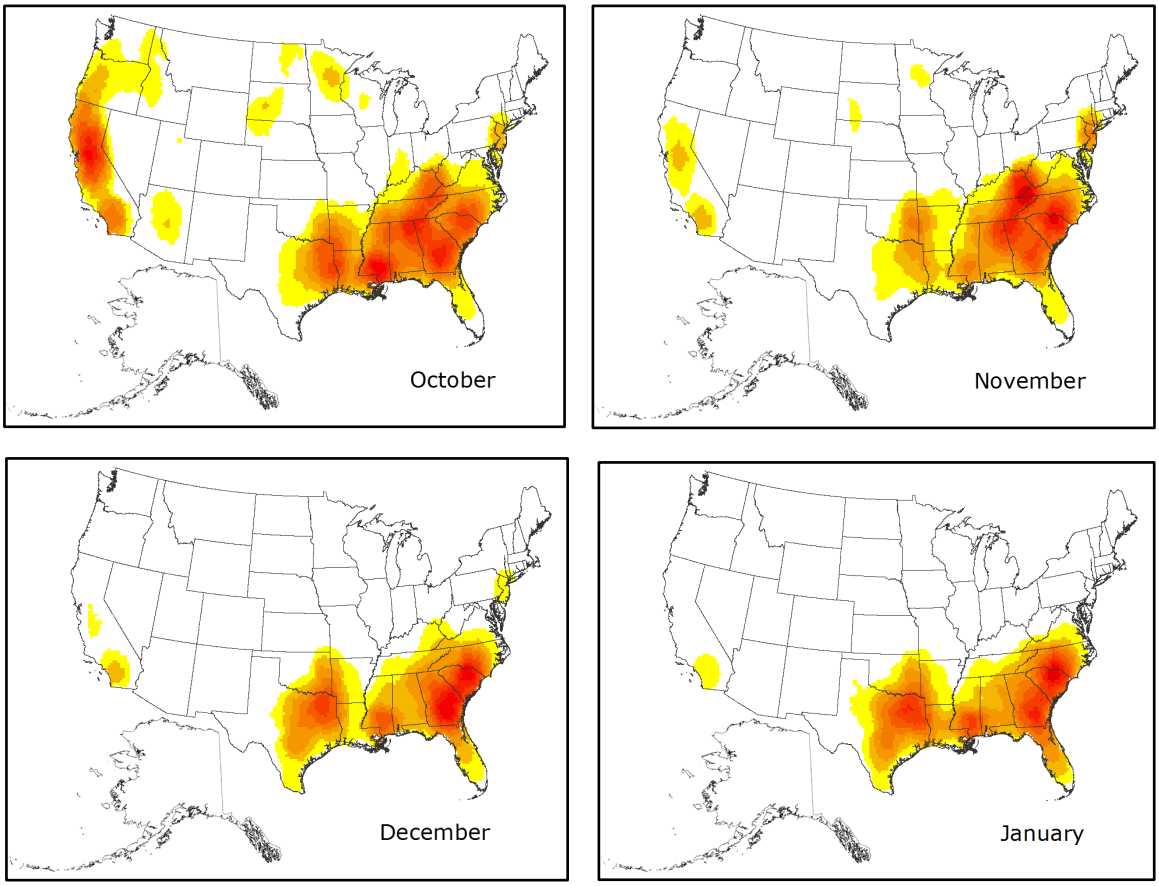
Left: Departure from Normal Temperature (top) and Percent of Normal Precipitation (bottom) *(from PRISM Climate Group, Oregon State University).* **Right: U.S. Drought Monitor (top) and Seasonal Drought Outlook (bottom)** *(from National Drought Mitigation Center and the Climate Prediction Center).*

Drought improved slightly in the Northwest during September. However, drought expanded and worsened in much of the central Appalachians westward into the Ohio and Tennessee Valleys. Drought also developed in portions of the Upper/Mid-Mississippi Valley, Great Lakes, and Northeast. Drought also developed along much of the Lower Colorado River Valley, and portions of the Nebraska and South Dakota. Drought persisted in much of the northern Rockies into the northern High Plains, west Texas, New Mexico, and southern Plains. However, drought improved over portions of central Texas as well as portions of the Lower Mississippi Valley. Extreme to exceptional drought expanded overall, covering portions of West Virginia, southern Ohio, west Texas, western Montana, the Oklahoma/Texas border, eastern Tennessee, northeast Wyoming, and far eastern Montana. Extreme to exceptional drought now covers more than 3% of the US at the end of September.

Weather and Climate Outlooks

El Niño-Southern Oscillation (ENSO) neutral conditions are present in the equatorial Pacific Ocean. Sea surface temperature (SST) anomalies in the central equatorial Pacific are near average but trending cooler, with near average SST anomalies found off the South America coast. A transition to La Niña is still forecast into the fall, with the Climate Prediction Center forecasting a 71% chance of La Niña developing in the October through December period, and La Niña is expected to persist through winter. A negative phase of the Pacific Decadal Oscillation (PDO) is also expected to persist into the winter. The Madden-Julian Oscillation has increased in activity the past two weeks and could also affect the pattern. However, the developing La Niña and negative PDO are expected to be the main drivers of this outlook.

Geographic Area Forecasts



Normal fire season progression across the contiguous U.S. and Alaska shown by monthly fire density (number of fires per unit area). Fire size and fire severity cannot be inferred from this analysis. (Based on 1999-2010 FPA Data)

Alaska

Typical wildfire potential is expected for Alaska in October before the winter snowpack arrives and takes Alaska out of season from November through the spring. Alaska is free of drought as of late September, although the US Drought Monitor classifies the southern half of the southeast panhandle as abnormally dry.

Through January, the Climate Prediction Center shows a slight signal for warmer and wetter weather for the northern third of Alaska, a slight signal for cooler and drier weather across the southern third of Alaska, and equal chances for both temperatures and precipitation over Alaska's midsection.

Alaska had a handful of wildfires in monitor status as of late September. Daily growth on these fires was minimal or zero during the final two weeks of September.

Surface fuels statewide are generally cool and wet. The deeper duff layers are mainly wet and cool as well, with three notable exceptions: the Yukon Flats, the Upper Tanana Valley, and the Copper River Basin are all much drier in the deep duff layer.

In October, the last wildfires of the year are likely to be human-caused and to occur along the road system or at hunting camps. These fires will be easily contained. By the end of October, and certainly in November, the permanent winter snowpack will cover the valley bottoms and take Alaska out of fire season.

Northwest

The Northwest Geographic Area continues a gradual fade away from fire season. Increasing frequency of rain events plus longer nights and improving relative humidity recovery precludes development of new significant fires requiring Incident Management Team mobilizations. Single day rapid fire growth events are expected and will become less frequent through the month of October.

September began with a series of low-pressure systems mixed with warm to hot high-pressure periods. The hot, dry, and unstable lower levels promoted moderate to strong ventilation of the existing fires. Meanwhile, mixed wet and dry thunderstorms resulted in numerous ignitions during the first two weeks of the month. Mid-month, a significant cold front tempered conditions bringing light and moderate rainfall to the Cascades westward. Little or no rain fell east of the Cascades. Cooler and slower moving low-pressure systems over the next several days brought additional rainfall to the West Side. Southeastern Oregon also received the first significant rain following a two-to-three-month dry period. September ended with alternating low-pressure and high-pressure systems primarily bringing significant rain to western Washington and northwest Oregon. Localized beneficial rain fell east of the Cascades along with periods of moderate to strong winds. Overall, weather conditions have transitioned to a fall pattern at month's end. Despite the weather pattern change, parts of central Oregon and eastern Washington have extended a summer rain deficit into the fall months, with many areas not having received significant rainfall in the past 3-4 months.

Regional drought conditions saw little change since August. Portions of the Upper Columbia Basin were added to the severe drought category given a prolonged lack of rain. The extreme drought designation for the Washington Cascade east slopes was reduced to severe. Some areas across southern Oregon were reduced from severe drought to moderate drought.

Fire activity increased the first week of September. Lightning started several new large fires in eastern Oregon. Instability west of the Cascades supported large fire growth on uncontained portions of long duration fires that continued to burn in southwest Oregon. Initial attack continued to be below average for most of the month with only one spike due to lightning caused ignitions the first half of the month. Persisting large fires east of the Cascades continued to have periods of growth but not to the extent that was experienced earlier in the summer. Moderated weather conditions the latter half of the month have allowed suppression efforts to make gains towards containment. Fires across the geographic area have become easier to suppress, as well. However, periods of higher wind east of the Cascades have allowed for wind-driven range fires to spread rapidly for single burn periods.

Energy Release Component (ERC) for all Predictive Service Areas spiked again the first week of September, but not to the levels seen in July. This brief spike in flammability was followed by a drop in ERCs area wide. Areas east of the Cascades had rising ERCs for the last week of September, but in general fuels across the Northwest are declining seasonally due to shorter burn windows, lower sun angle, and good overnight relative humidity recovery. Periods of increased

flammability will continue in areas where winds, fuels, and slope align, but these will generally be short-lived and limited to a single burn period.

Medium and long-range weather models show an alternating weather pattern continuing through the first couple weeks of October, albeit at a slower pace than late September. NOAA's Climate Prediction Center (CPC) outlook for October acknowledges the challenge in forecasting temperature and precipitation tendencies under such a pattern. CPC indicates no significant signals for temperatures, while precipitation tendencies are split. They lean toward above normal precipitation across far northwest Washington and below normal precipitation clipping southeast Oregon. As of this writing, no significant east wind events appear likely for the start of October, though they remain possible. East wind event probability typically shows a rapid decline through October with this month unlikely to be an exception.

La Niña conditions are favored to develop over the next several weeks at a 71% probability. CPC's November-December-January outlook indicated no significant temperature tendencies, with precipitation trends indicating a 33-50% chance of above normal precipitation for all but southeast Oregon. These outlooks are somewhat commonplace for the geographic area under weak La Niña conditions.

Normal, or relatively low, significant fire potential is forecast October through January. The potential for notable single day wind-driven fire spread potential across eastern Predictive Service Areas may occur until the remaining dry areas experience multiple significant rain episodes.

Northern California and Hawai'i

Significant fire potential is projected to be above normal for the Sacramento Valley westward to the Coast during October then normal areawide November through January. During October, average occurrence is generally one large fire or less per Predictive Service Area (PSA), and the averages drop to less than one fire per PSA during November through January. Hawaii's significant fire potential is above normal for October across the leeside areas, then returns to normal for November through January.

The weather patterns across northern California during September alternated between periods of warmer-drier upper-level ridging and cooler-moister upper-level troughing. The most distinct cool-moist period occurred September 15-19. Patches of above normal precipitation occurred across the upper Sacramento Valley, Far East, and South Bay PSAs, otherwise below normal readings prevailed. Mean temperatures were generally near to above normal. Around 3,500 lightning strikes were recorded, surpassing the 2012-2022 September average of nearly 2,600 strikes. Two days between September 15-19 yielded over 1,000 strikes each. There were several dry and gusty onshore wind days that required National Weather Service Red Flag Warnings and Predictive Service High Risk designations during the earlier half of the month. Several, generally weaker dry northerly wind periods occurred during the latter half of the month, with the most notable September 30.

Dead fuels experienced wild swings in flammability during September with critically flammable fuels during the first half of the month that were followed by an extended cool-moist period during the middle of the month. A return to critically flammable readings occurred late in the month. Live woody vegetation continued to cure with most of the sampling revealing seasonal to below normal values translating to flammable to critically flammable conditions. Herbaceous fuels were generally in a cured or significantly curing state although a light flush of green-up was prevalent across some northwest and upper Sacramento Valley locations due to areas of abundant rainfall. The ratio of dead versus live herbaceous fuels remained heavily tilted towards the dead side. The moderate drought classification shrunk some from late August to late September and was focused across the northeast.

Fire business during September fluctuated due to the changeable weather patterns. The average number of fires reported per day was 14. Two large or costly fires ignited during the month. The

Bear Fire started September 2 near Loyalton and required a Complex Incident Management Team to help manage it. The Boyles Fire ignited within the city limits of Clear Lake and burned several structures and vehicles across 80 acres. Prescribed burn projects were conducted throughout the month and large projects were completed later in the month.

There are some significant uncertainties for the predicted weather patterns during the next four months. The uncertainty is largely due to how all the various pieces to the puzzle such as El Niño-Southern Oscillation trends, the negative Pacific Decadal Oscillation, active Madden Julian Oscillation periods, and Polar Vortex fit together. Overall, temperatures are expected to be near to above normal during October and November with mixed precipitation anomalies but generally a drier tilt, especially during October. Some of the analog years suggest portions of northern California getting clipped at times by a moist Pacific jet stream during November and December. This would likely promote an end to the significant portion of the fire season and aid in prescribed burning. Episodic atmospheric blocking patterns are also likely to occur and would lead to either extended warm and dry or cool and moist periods as was observed during a large portion of September. Alternating northerly/offshore and onshore wind events should also continue the next few months, with a higher likelihood of some stronger offshore events during October.

Based on the current fuel state and future weather predictions above normal significant fire potential is projected for the Sacramento Valley westward to the coast during October while normal should exist elsewhere. Normal is expected during November through January areawide. Some critical offshore wind events are likely, especially during October, and could lead to episodic bursts of fire activity, but lowering sun angles, shorter daylight periods, and timely cool-moist events should ultimately trend the potential towards near seasonal levels as the outlook period progresses. Large fire potential will remain across the lowlands until there is sufficient widespread herbaceous green-up, acting as a wildcard during the next couple of months. Widespread green-up is expected during December and January.

Sea surface temperature (SST) anomalies surrounding the Hawai'ian Islands were near to slightly above normal during September. Average temperature anomalies were generally near to above normal. Precipitation was generally below normal although some localized above normal amounts were observed on the Big Island and Maui. Drought severity and coverage shrank between late August to late September but remained prevalent across the island chain's leeside areas except for the Big Island. No Red Flag Warnings were issued during September. Fire activity began to increase during the latter half of the month as conditions dried out from Hurricane Hone's impacts in late August.

A weak La Niña is expected to be in place during the earlier portion of the wet season. Average temperatures in Hawai'i during the next four months should generally be near to above normal. Precipitation should be below normal during October while the early wet season months should trend near to above normal. Drought conditions and live fuel stresses should remain elevated across most of the leeside areas through October and then gradually improve November through January. Herbaceous green-up was observed in areas, especially across the Big Island, following Hurricane Hone, but a more widespread green-up period should develop during November through January helping to mitigate large fire potential. Some stronger easterly trade wind periods will also be possible during the next few months and aid in fire growth potential during October. October is forecast to have above normal significant fire potential month for most of the islands' leeside areas then return to normal as conditions are expected to improve November through January.

Southern California

A warm and dry pattern has persisted across much of southern California during September 2024. Temperatures generally remained 1-3^{o}F above average for most of the area. For precipitation, most areas experienced less than 25% of the average September precipitation. The only areas that experienced above average precipitation are portions of the Riverside County mountains due

to wet monsoonal thunderstorms that developed mid-month. However, most areas still remain around 100-150% of average for the total precipitation for the past water year (since Oct 1st 2023).

The El Niño Southern Oscillation (ENSO) remains neutral, but ENSO is trending towards La Niña as sea surface temperatures in the equatorial Pacific continue to show cooling. The US Drought Monitor depicts portions of the eastern deserts and central Mojave under a short-term moderate drought. Otherwise, there are no other areas currently in drought status.

Due to more of a marine layer influence in September than previous months, 1000-hour dead fuel moisture is currently above normal in more than half of the Southern California Predictive Services Areas (PSAs). Energy Release Component (ERC) is also below normal in more than half of the PSAs. However, live fuel moisture is running near the 5-year average and slightly above the 10-year average at Los Padres National Forest.

Climate models suggest the continued transition into La Niña as the fall progresses into winter. Therefore, there is a consensus among the various climate models that warmer than normal temperatures are likely along with below normal precipitation.

Due to the developing La Niña pattern, there is a moderate likelihood of above normal significant fire potential for the western, eastern, and southern mountains and south coast PSAs for October and November. By December, the fire potential significantly decreases across the mountains climatologically. There is still a possibility of above normal significant fire potential for the south coast PSA due to the likely scenario of drier than normal conditions prolonging the Santa Ana driven fire season. Then near normal significant fire potential is expected for all PSAs in January 2025.

Northern Rockies

Significant wildland fire potential in the Northern Rockies Geographic Area (NRGA) for October through January is expected to be normal. Most of October is expected to maintain late September trends with above normal temperatures and dry conditions. However, drought conditions are not at a sufficient level to expect above normal activity. Fires do occur in October, mainly driven by wind events, and this year looks to be similar. November through January forecasts are favoring normal to above normal moisture, which would limit concerns for significant fire potential.

Two significant precipitation events slowed fire activity during September and lowered the potential for new large wildfires. The rainfall event of September 3-4 curtailed activity for the Bitterroot and portions of central Idaho and western Montana. A second event September 12-14 impacted southwest Montana through central Montana. These events supported a green-up in live fuels. The end of the month saw persistent dry conditions, which is removing some of the buffer these precipitation events provided, but a widespread frost has not occurred, so the live fuels continue to be a mitigating factor in fire spread.

Drought conditions improved during the past month in parts of central and western Montana but worsened in parts of southeast Montana, western North Dakota, and the lower elevations of north Idaho. The border between Montana and North Dakota has severe to extreme drought, which is also present in a small portion of western Montana. The southern portion of northern Idaho is reporting severe drought. Elsewhere, most of the region is reporting abnormally dry conditions to moderate drought.

Significant precipitation events at the end of August and early September plummeted Energy Release Component (ERC) values to the 10th percentile for many of the long duration, remote wildfires in the western Northern Rockies. In the absence of rain, dead fuel moistures have begun to worsen, but ERCs are still below the 60th percentile at the end of September. Cooler fall temperatures and diminishing daylight will make it difficult for significant large fuel drying and

higher ERC values. Finer dead fuels (in the 1-hour and 10-hour timelag classes), are responding to the drying trend and are projected to hover in the mid to low teens for many locations west of the Continental Divide. In forested landscapes, surface fire spread with decent consumption, torching trees, and smaller, isolated crown fire runs are possible. Live fuel moistures continue to show seasonal curing but have generally not endured a hard frost yet due to thermal belts and warmer than normal temperatures so far this fall. On north aspects and in drainages, live fuel moisture is generally high enough to act as a barrier to fire spread.

Central and eastern Montana into North Dakota are notably dry. The lack of precipitation, especially in North Dakota, has resulted in much drier conditions, and ERCs are projected to be above the 90th percentile until a rain event. Live fuel moistures are variable. Some locations of unshaded grasslands are fully cured, but warmer fall temperatures have resulted in a second green-up helping to deter fire spread despite the dryness. There are locations of deep dryness along the Montana-North Dakota border and southeastern Montana that will present containment challenges during wind events.

Fire activity in September consisted of a limited number of new fires and limited growth on existing fires. Only five new large fires were reported, none of which exceeded 1,000 acres, and none after the September 14. Only one Complex Incident Management Team was in the Northern Rockies during September. This team transitioned from managing the Sharrott Creek Fire to managing that fire and a handful of others on the Bitterroot National Forest. Otherwise, there was substantial initial attack activity during September, but despite unusually high amounts of lightning, few starts were resistant to control.

The first half of October is expected to maintain dry conditions with above normal temperatures then trend toward normal conditions over the last half of the month. While continued drying would be expected to compound trends seen at the end of September, most of the NRGA is not at drought categories which would lead to expectations of above normal significant wildland fire potential. Long range models indicate normal or above normal moisture is a possibility as fall progresses into November, and temperatures should be near normal. This leads to a normal outlook through January, which is a period of limited fire activity.

Great Basin

Fire activity has been decreasing across the Great Basin the last half of September, although it increased at the end of the month across Idaho, western Wyoming, and northern Utah. Multiple large fires are ongoing across central Idaho, but large fire growth declined substantially later in September after cool and wet conditions associated with cold fronts significantly increased fuel moisture in mid-September. However, the first week of October is expected to be warm and dry across most of the Great Basin, continuing the trend at the end of September. Therefore, fuel moisture will continue to decrease to below normal and, in some areas, may reach record minimums for the time of year. Precipitation may begin to move in by mid-October, which will alleviate long term fire potential concerns. The fire season is expected to gradually wind down through October, mainly in the latter half of the month, with normal or low fire potential expected from November through January. Carryover fine fuels and new fine fuel growth from this past spring will still be present and remains above normal in many areas of southern Idaho, northern Nevada, and northwest Utah. Fires may still ignite and spread in these areas through the next few months after prolonged dry periods on windy days.

Temperatures over the last 30 days have been near to above normal across much of the Great Basin. Precipitation was well above normal in western Nevada and slightly above normal in parts of southern and central Idaho. Much drier than normal conditions occurred throughout September in southern and eastern Nevada and much of Utah. Drought has been developing over the last couple months due to the very warm and drier than normal summer weather in most areas of the Great Basin. Abnormally dry conditions expanded across much of the region, and areas of moderate drought have developed in portions of central and eastern Idaho, Wyoming, southern

Nevada, and southwest Utah. Drought may intensify in portions southern Nevada, southwest Utah, southern Idaho, and Wyoming, but may improve over central Idaho as precipitation is expected to increase through the fall.

Energy Release Component (ERC) dropped to below normal with the cooler and wet weather in the latter half of September in Idaho, Wyoming, and northern and western Nevada. Fuel moisture also increased significantly. Fuels will become drier through early October in these areas. However, fuel moisture is expected to increase through the month. ERCs in Utah, southern Nevada, and the Arizona Strip remained higher due to recent dryness and remain in the 60th to 80th percentile. Fuel moisture is expected to gradually increase through October and November. Dried grasses will still be abundant over southern Idaho, northern Nevada, and northwest Utah. Fuels will gradually go into dormancy by November and December as temperatures continue to cool.

Fire activity decreased across the Great Basin from mid-late September onward, but numerous large fires are still on the landscape across central Idaho and in western Wyoming. New fires also emerged at the end of the month across western Wyoming and northern Utah. These fires will gradually wind down in the latter half of October with decreasing temperatures, higher overnight relative humidity recoveries, and less daylight, along with occasional precipitation.

However, regardless of colder nighttime temperatures and shorter daylight, fuels rebounded quickly due to above normal temperatures and low humidity. 100-hr fuel moisture is at or near record lows for the time of year and will continue to drop in the coming weeks due to continued warm and dry weather the first half of October. Fire activity picked up in late September in Idaho, western Wyoming, and northern Utah. Fire potential is expected to remain above normal through at least the first half of October in the north until precipitation increases or relative humidity increases with cooler temperatures. Otherwise, normal fire potential is expected across the Great Basin from October through January. Fire potential is expected to decrease gradually through late October and November. Low elevation areas of southern Idaho, northern Nevada, and northwest Utah may see brief increases in fire potential after extended dry periods and on windy days through November due to above normal fine fuel loading.

Southwest

Between June 15-20 an advantageous weather pattern brought significant moisture into the region. Thereafter, the summer monsoon period was up and down, which is not unusual, with an overall wetter tilt across eastern Arizona and many areas east of the Divide. The month of August ended up with above normal temperatures for most places, especially across the southeastern three-quarters of New Mexico. Below normal precipitation was observed over most of the southern two-thirds of the region with wetter conditions across the north. September, as expected, has been quite dry and warm overall with the only wetter than normal conditions across the northeastern tier of New Mexico. As a result, normal significant fire potential is expected for much of the region during October with above normal significant fire potential expected for portions western and central Arizona.

Some other areas of above normal significant fire potential are likely to develop through October before decreasing burn periods, a lower sun angle, and some frontal system intrusions finally draw the large fire season to a close from north to south across the Southwest Area.

Over the bulk of the period from March through May an active weather pattern generally brought above normal moisture to areas along and west of the Divide and below normal precipitation to the east, especially across southeast New Mexico. High temperatures were generally below normal during this period from around central New Mexico westward to Arizona with areas across the eastern plains right around normal for the spring period. So far in September, high temperatures have been above to well above normal across most of the region, but especially from the Continental Divide eastward into the eastern plains. Precipitation has generally been

above average from northern Arizona eastward into northern New Mexico and for some sections of the eastern plains. Elsewhere, precipitation has been below normal regionally.

A shift in the equatorial Pacific sea surface temperatures will likely play a prominent role in shaping the weather pattern for the rest of the fall months. Neutral El Niño-Southern Oscillation (ENSO) conditions are expected to transition into La Niña territory sometime this fall, although the shift so far has been slow. Some uncertainty remains revolving around the La Niña transition. However, a La Niña Modoki setup is most likely to evolve over the next few months.

Despite the early monsoon onset back in June, the up and down nature of this past summer's monsoon and a rather recent shift to a dry and overly warm early fall has caused significant fire potential to increase across most areas of the region. Elevated significant fire potential could linger well into mid to late October and perhaps longer across the western portion of the area before a pattern change later in October brings some relief. A close eye will be kept on the emergence of a La Niña as that will strongly impact the fall weather and climate for the Southwest Area. The longer a neutral ENSO lingers, the more active the weather pattern will be into the fall. However, a less active and drier weather pattern would occur with a firmer, more distinct change to La Niña.

Rocky Mountain

September continued to see warm dry conditions punctuated by brief cooler, wetter weather. Wyoming continued to see drier than average conditions, resulting in several large fires starting in mid-September. Drought conditions have continued to worsen slightly. A La Niña event is expected to develop later this fall or early winter. Normal significant fire potential is expected through January 2025 for much of the Rocky Mountain Area, but northeastern Wyoming and portions of western South Dakota will continue to see increased potential through October.

September saw the summer pattern of a strong ridge over the western US continue. Above normal temperatures continued through the month, with much of the area remaining 3 to 5 degrees above average. This heat was punctuated every seven to ten days by cooler temperatures as the ridge would briefly break down. However, this break from the heat largely only brought temperatures to near to slightly below normal. With the ridge keeping shower and thunderstorm activity suppressed through most of the month, most of the Rocky Mountain Area received 30 to 70 percent of normal precipitation. The mountains of southern Colorado, the eastern plains of Colorado, and most of Kansas received better rainfall through the month with some surges of moisture out of the Southwest, resulting in 120 to 200 percent of normal rainfall. The breakdowns of the ridge also brought stronger winds to the area, with periods where wind gusts reached 30 to 50 mph. Given these hot, dry, and occasionally windy conditions, drought conditions largely continued or have worsened over the last month. However, the West Slope and parts of western Kansas had slight improvement.

With the increased relative humidity and rain during the breakdowns in the ridge, most areas across Wyoming and northern Colorado saw fire indices dropping below the 90th percentile but remaining above normal. However, these were short-lived reprieves, especially in the lower elevation cheatgrass, which quickly responded to the drying conditions. The high fuel loading across eastern Colorado and Wyoming continued to support large fires during the wind events.

Despite the continued hot, dry conditions and worsening drought, most fires remained small during September and were contained in one operational period. Most of the larger fires occurred during wind events associated with the ridge breakdowns. The most significant ridge breakdown occurred September 11-12, producing both the Short Draw and Power Dam Road Fires that burned around 40,000 and 15,000 acres, respectively.

Going into the fall and winter, a weak La Niña is expected to develop. Current weather outlooks through January currently fit with a typical La Niña winter. October through December will remain

warmer than average for much of the area, with Wyoming and South Dakota trending towards normal. January will see cooler than normal temperatures develop across Wyoming and South Dakota while the rest of the area will be trending towards normal. For precipitation, the area will remain below normal in October. November and December will see Wyoming and South Dakota trend towards normal, while the rest of the area will remain below normal. By January, much of the area is expected to see above normal precipitation.

Given the current fuels conditions and the recent fire activity in northern Wyoming, the lower elevations in northeastern Wyoming extending into portions of western South Dakota will continue to see above normal fire potential through October before returning to normal potential in November. The rest of the Rocky Mountain Area will see normal fire potential through the outlook period.

Eastern Area

Normal fire potential is forecast across the majority of the Eastern Area through January 2025. The greatest 30-to-60-day negative precipitation anomalies were indicated across the western and northern tiers of the Great Lakes as well as along the Atlantic Coast. These areas will likely experience periods of above normal fire potential through October if forecast warmer and drier trends persist. Longer term drought was in place across much of Ohio and West Virginia towards the end September. The remnants of Hurricane Helene provided some much-needed rainfall over these areas through the end of September but will need to be monitored for increasing fire potential once again later in the fall.

Neutral El Niño Southern Oscillation (ENSO) conditions remained over the central Pacific towards the end of September. A transition to a La Niña sea surface temperature regime is still forecast the rest of this year into early 2025 with moderate to high confidence of La Niña development. Other sea surface temperature regimes also contribute to global weather patterns adding to some uncertainty in long term weather forecasts. Near to above normal temperature trends overall are forecast over much the Eastern Area this fall with precipitation trends more uncertain.

The Predictive Services precipitation outlooks for October 2024 forecast below normal precipitation over the western and eastern Great Lakes, the Mid-Mississippi and Ohio Valleys, northeastern Mid-Atlantic States, and the New England Metro Area. Drier than normal precipitation is forecast to continue over southern Missouri November into December with above normal precipitation over the central and eastern tiers of the Eastern Area in November. Near to above normal precipitation is forecast over the Eastern Area December into January 2025. Above normal temperature trends are forecast over much of the Eastern Area in October and mainly the southern tier through the rest of the outlook period.

According to the latest Climate Prediction Center October 2024 outlook, above normal temperatures are likely over the eastern and northern tiers of the Eastern area in October. Below normal precipitation trends are expected over portions of the Mid-Mississippi Valley into the Ohio River Valley and southern Great Lakes states in October, with no strong signal for above or below precipitation elsewhere in the Eastern Area. The seasonal outlook through the rest of 2024 projects warmer than normal conditions are likely over the southern and eastern tiers of the Eastern Area with wetter than normal trends across the eastern Great Lake eastward into the Northeast.

With below normal precipitation forecasted for October, fuels are of most concern in the northern tier of the Great Lakes Compact, including all of Minnesota. Several factors are contributing to the potential for above normal fire activity in fire occurrence, spread with wind, and extensive mop up. The thunderstorm patterns since mid-late August have provided spotty and infrequent precipitation to this area with a considerable amount of lightning that has already produced fires from holdovers. Continued drying of surface fuels as the season transitions into fall will maintain the potential for more holdover fires. The Canadian Forest Fire Danger System (CFFDRS) indices

are showing drying deep into the soil, which is requiring extended mop up and resource commitment when fires do occur. Ferns and grasses are curing out, lowland grass and marsh are available to burn in areas where water bodies never recharged from a minimal snowpack winter combined with drought effects, and leaf fall is occurring early in some areas from drought stress. Hunting season and fall activities with colder temperatures will also increase the potential for above normal fire activity with the forecasted dry conditions. Any fires that start have the potential to spread and challenge initial attack resources under dry and windy conditions. These resources are already reduced due to the active western fire season and the time of year.

The eastern tier of the Northeast and Mid-Atlantic Compacts are experiencing similar drought conditions and fire activity potential in areas with above normal values for the Keetch-Byrum Drought Index (KBDI). If the Predictive Services precipitation forecast holds true, bringing normal to above normal precipitation to most of the Eastern Area in November and beyond, fire activity should remain at normal levels for the latter portion of the outlook period. The southern tier of Eastern Area has also been in drought, but with precipitation from Hurricane Helene the dryness has been temporarily relieved. The return to increased fire potential will depend on the rate of drying of newly downed leaf litter and fuels and occurrence of any other precipitation events. For all Eastern Area, fall curing of grasses and shrubs combined with leaf fall will increase the available fuels environment so that any prolonged dry periods and days with persistent winds will increase potential for fire activity during the outlook period.

Short to medium range precipitation deficits developed through the latter half of the summer season through early fall across the western and northern Great Lakes, as well as along the East Coast. If these areas continue to experience below normal precipitation and above normal temperature trends in October and through the rest of this fall, periods of above normal fire potential are likely, especially across the Great Lakes where medium range weather forecasts into the first portion of October were projecting the driest conditions. In addition, long term drought was in place over the western Mid-Atlantic States towards the end of September will need to be monitored for elevated fire potential after some relief from the remnants of Hurricane Helene. Aside from the areas of above normal significant fire potential expected in October in the northwestern areas, the remainder of the Eastern Area should experience near normal fire potential through the rest of the fall season outside of any dry and windy periods which may occur.

Southern Area

Tropical activity in September has increased confidence in expectations for at least the beginning of the fall wildfire season across the Southern Area. Drought-easing rainfall associated with Francine, Potential Tropical Cyclone Eight and Helene generally affected the areas that needed it most, unfortunately at the cost of historic flooding for portions of the Appalachians. Assessments of impacts to the canopy and leaf drop from Helene are not yet available, but there is ample time for drier weather to result in increasing wildfire potential later this fall. Otherwise, forested areas across portions of eastern Oklahoma and western Arkansas are moving deeper into drought. Dryness has also recently emerged in portions of east-central Texas, while areas closer to the Red River in Texas and much of Oklahoma saw another round of rain that will briefly temper wildfire potential there.

The likelihood of above normal grass loading across Texas along with the developing La Niña point to the potential of a significant dormant wildfire season in the Plains. Whether dormancy comes from dry and warm conditions through the fall or a hard freeze by early winter, grass-dominant areas are likely to come into play by December and continue at times through winter. Conditions are mixed across the High Plains, but at least portions of northwest Oklahoma saw abundant rainfall during the growing season. Confidence is highest in well above normal grass loading elsewhere in north Texas, extending into southern parts of the state.

A back-loaded hurricane season appears likely to maintain at least some risk for landfalling storms through October and November. Forecast models are of little use more than a week out, but there

are general indications in seasonal guidance of impacts to coastal areas in the Southeast, which could bring additional rain to portions of the Appalachians and areas impacted by pine mortality farther south. Otherwise, dry and warm conditions will likely become common through the fall and early winter, which has strong support from model guidance and all seasonal outlooks across the Plains and Mid-Mississippi Valley. With conditions more dependent on the tropics across the Southeast, confidence is lower, but redevelopment or worsening of any lingering drought can not be ruled out by November.

Above normal significant fire potential will initially be limited to western Arkansas and eastern Oklahoma, in addition to the eastern Hill Country and adjacent central Texas. Fire danger will likely trend up elsewhere in the Plains as drought expands in October. For November, above normal significant fire potential is forecast from east-central Texas into much of northeast Texas, continuing across eastern Oklahoma and western Arkansas. These areas could be impacted by dry and breezy conditions on the outskirts of any tropical disturbances that affect areas farther to the east, in addition to dry cold fronts that will become more common through the fall. An uptick in wildfire activity should still occur as leaves fully drop off this fall, especially if no additional rainfall occurs behind Helene, but any above normal significant fire potential appears limited there in the short term.

By December and January, significant wildfire potential is forecast to increase in areas of Texas that are likely to have above normal grass loading and worsening drought. Not every La Niña winter is warm and dry in the state, but most signs point towards an upper-level weather pattern that will feature troughing in the northwestern US and ridging along the Gulf Coast into the Southeast. This is a highly favorable pattern for above normal temperatures and occasional high wind events, which may become even more likely in later winter and spring. Unusually dry and warm weather will also be likely across Florida this winter, but water levels should be well above normal heading into late fall, resulting in normal significant fire potential for now.

Outlook Objectives

The National Significant Wildland Fire Potential Outlook is intended as a decision support tool for wildland fire managers, providing an assessment of current weather and fuels conditions and how these will evolve in the next four months. The objective is to assist fire managers in making proactive decisions that will improve protection of life, property, and natural resources, increase fire fighter safety and effectiveness, and reduce firefighting costs.

For questions about this outlook, please contact the National Interagency Fire Center at (208) 387-5050 or contact your local Geographic Area Predictive Services unit.

Note: Additional Geographic Area assessments may be available at the specific GACC websites. The GACC websites can also be accessed through the NICC webpage at:
http://www.nifc.gov/nicc/predictive/outlooks/outlooks.htm