National Significant Wildland Fire Potential Outlook

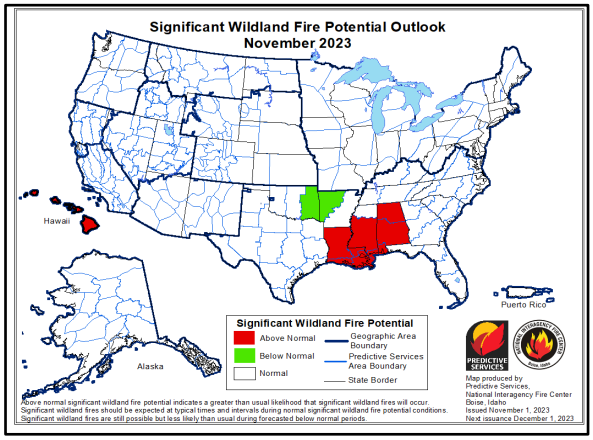
Predictive Services
National Interagency Fire Center

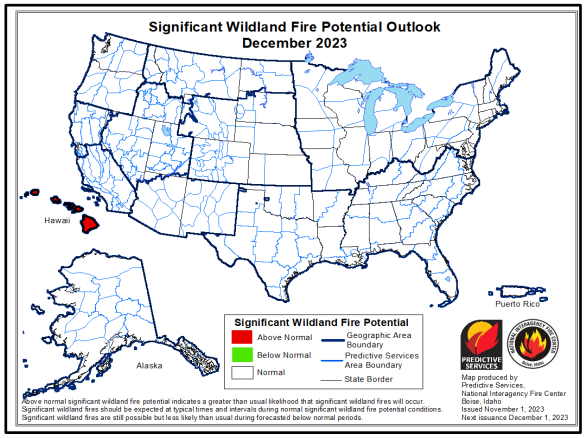
Issued: November 1, 2023
Next Issuance: December 1, 2023

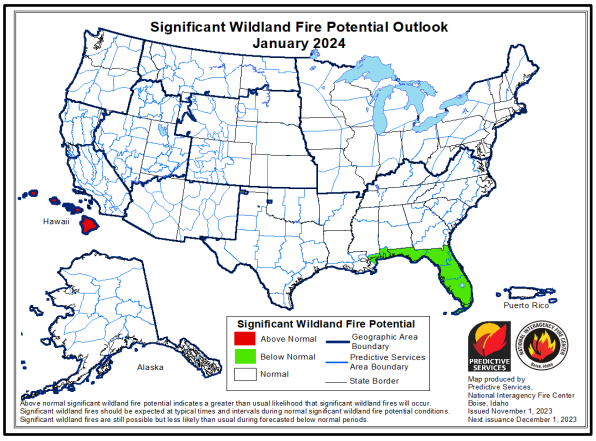
Outlook Period – November 2023 through February 2024

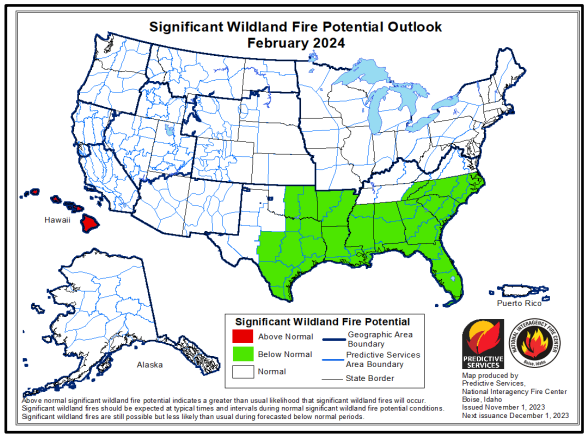
Executive Summary

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.









Significant fire activity generally decreased through October as the national preparedness level dropped from two to one October 13. However, very dry and occasionally windy conditions at the end of the month from California into the greater Four Corners area resulted in a brief uptick in activity across California, the Southwest, and southern Colorado. Moderate initial attack and periodic large fires continued in the Southern Area as well, mainly in the Deep South and southern Appalachians. Year-to-date acres burned for the US remains well below the 10-year average at just over 38%, with a near average number of fires as well, about 99% of average. Significant fire activity diminished across northwestern Canada as well, with commitment of US resources ending in early October.

Early and late October precipitation events in the northwestern US continued to slow significant fire activity, with most large fires now contained, but moderate to extreme drought continues along and west of the Cascades stretching into northern Idaho and northern Montana. Extreme and

exceptional drought expanded and intensified across east Texas through the Lower Mississippi Valley, with continued warmer and drier than normal conditions. Much of the Southwest and Four Corners had warmer and drier than normal conditions, with drought continuing across much of Arizona and New Mexico. Warmer and drier than normal conditions spread across the Ohio and Tennessee Valleys into the southern Appalachians as well, with expansion and intensification of drought. Periods of precipitation, occasionally falling as snow, fell across the northern Rockies east of the Divide and into much of the northern Plains and western Great Lakes, with a reduction in drought classification across the Upper Mississippi Valley and western Great Lakes.

Climate Prediction Center and Predictive Services monthly and seasonal outlooks depict likely below normal precipitation and above normal temperatures for the northwestern US into winter. Above normal precipitation is likely from the southern Plains through the Southeast into the winter, and possibly extending through the Southwest, Four Corners, and Mid-Atlantic for portions of the winter. The greatest chance for above normal precipitation is across the Southeast and much of Florida. Above normal temperatures are likely across much of the West into the southern Plains and Southeast in November. Above normal temperatures are forecast for the winter across much of the northern half of the US, with near normal temperatures likely across the southern Plains into portions of the Southeast. However, there is greater forecast uncertainty than typical for El Niño due to other climate, teleconnection, and ocean temperature patterns that do not often coincide with El Niño leading to a lack of previous events to predict from.

Above normal significant fire potential is forecast across Hawai'i, Louisiana, much of Mississippi, and all of Alabama during November. Normal potential is forecast across the contiguous US in December, but above normal potential is forecast to continue in Hawai'i, where it will continue through January and February. Below normal potential is also likely from the central Gulf Coast through Florida in January, and expand to include much of Texas, Oklahoma, the Lower Mississippi Valley, and Southeast in February as confidence is high for above normal precipitation this winter.

Past Weather and Drought

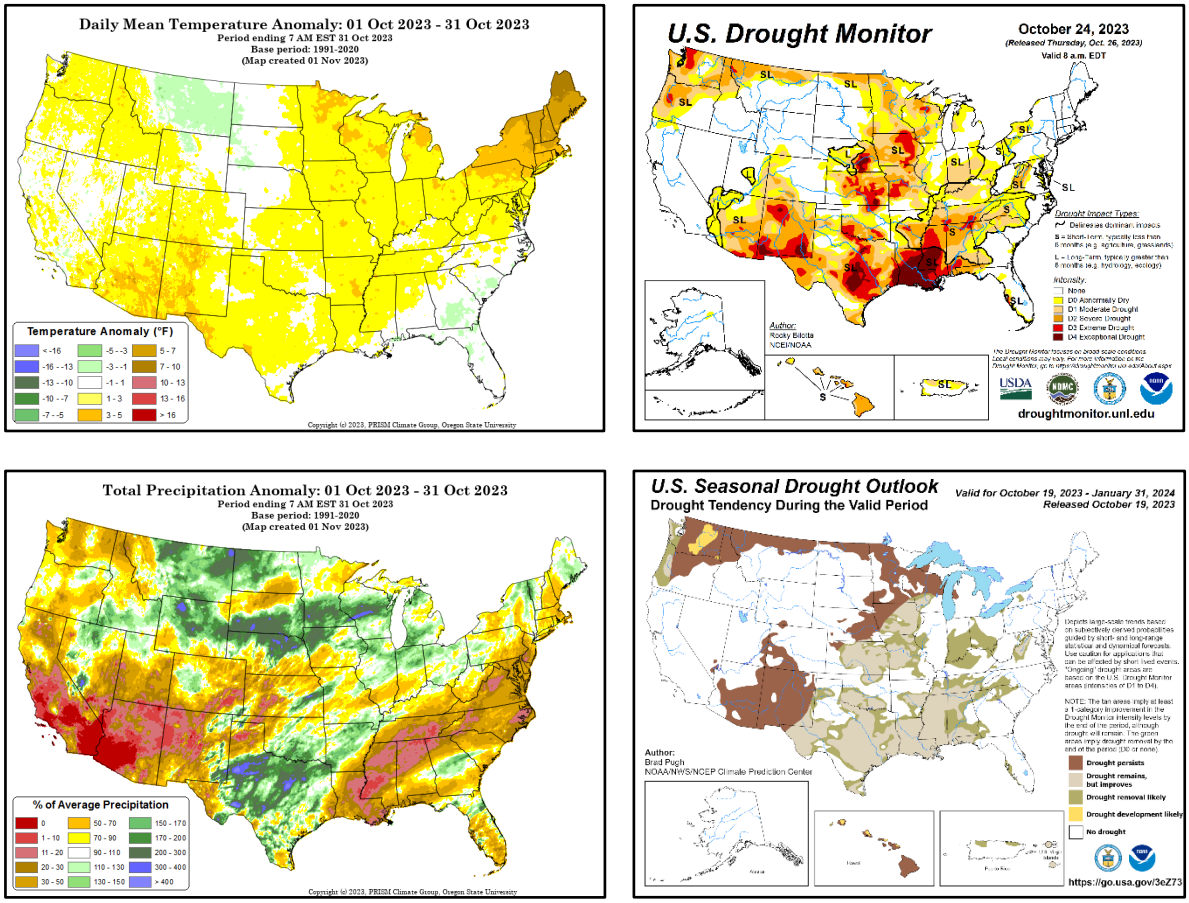
Near to well above normal temperatures continued across much of the US in October, with near normal temperatures confined to the Carolinas, Georgia, and Florida. Below normal rainfall continued across much of the Southwest into portions of the southern Great Basin, although a few days of showers and thunderstorms across southern Arizona and New Mexico the latter half of the month modestly reduced rainfall deficits. Well below normal rainfall was observed from Lower Mississippi Valley through the much of the Tennessee and Ohio River Valleys, southern Appalachians, and Mid-Atlantic. Above to well above normal rainfall was observed the latter half of October across Texas and the southern Plains as two slow-moving cold fronts combined with moisture from remnant east Pacific hurricanes. These fronts also brought precipitation to much of the Mid-Mississippi Valley into the Great Lakes, but rainfall was near normal.

Despite a moderate to strong atmospheric river event in the Pacific Northwest and northern California at the beginning of the month, precipitation was near to below normal with near normal rainfall mainly observed across western and northern Oregon. Precipitation was also below normal for northern Idaho into far western Montana for October. However, a late month storm brought heavy snow to much of Montana and Wyoming near and east of the Divide, resulting in above normal monthly precipitation, with above normal precipitation also observed westward across the northern Great Basin. Above normal precipitation fell across much of the northern Plains into the Upper Mississippi Valley as well, with heavy snow and blizzard conditions across portions of the Dakotas during a late month storm.

Extreme to exceptional drought continued across much of the Lower Mississippi Valley with a degradation of drought by multiple classes across the Tennessee Valley, and drought also expanded into much of the Ohio Valley and southern Appalachians. Drought continued across

much of the Southwest, with intensification of drought mainly observed across central Arizona into northern New Mexico.

Drought continued in the Pacific Northwest into northern Idaho and northern Montana, but some modest improvement was observed, manly across portions of western Oregon and northern Montana. The above normal rainfall across much of Texas into portions of Oklahoma the latter half of the month resulted in an improvement of drought, but drought continues to persist, with extreme to exceptional drought continuing over portions of central and north Texas.

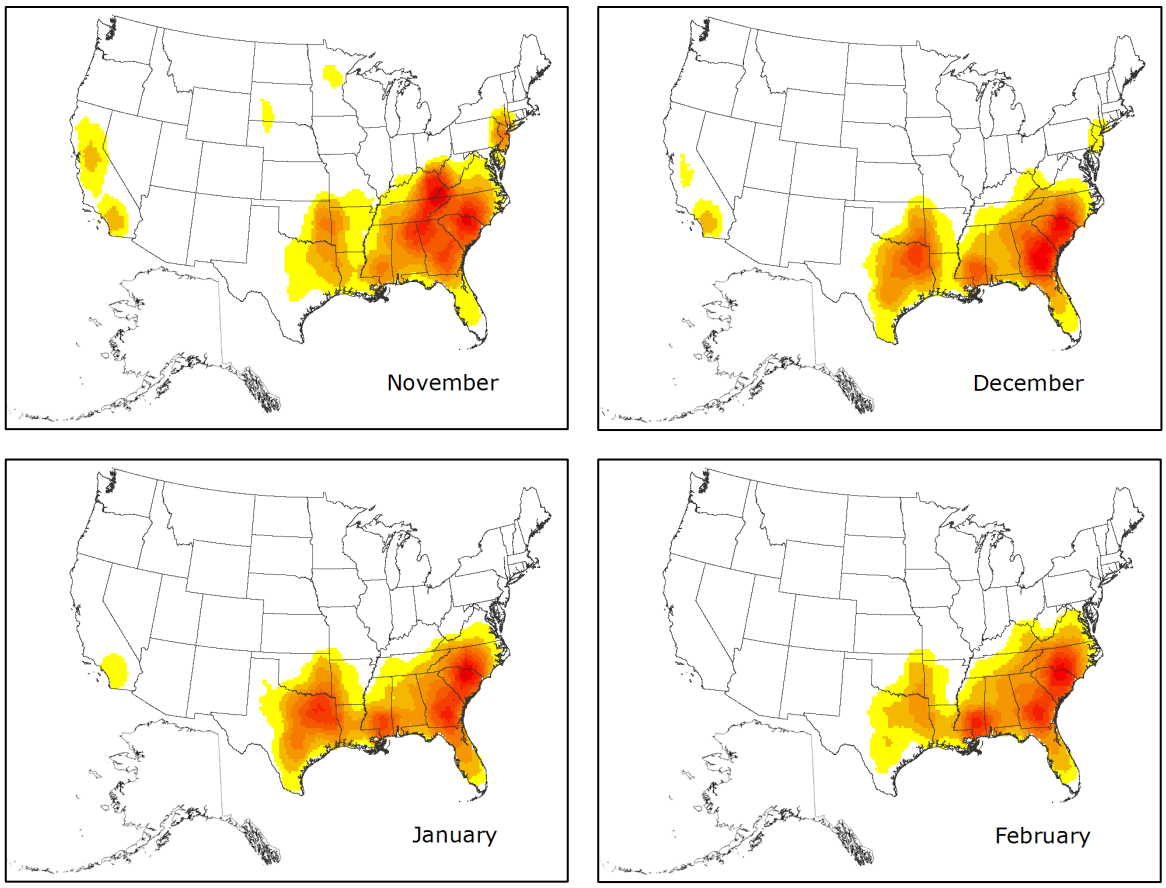


Left: Departure from Normal Temperature (top) and Percent of Normal Precipitation (bottom) *(from PRISM Climate Group, Oregon State University).* **Right: U.S. Drought Monitor (top) and Drought Outlook (bottom)** *(from National Drought Mitigation Center and the Climate Prediction Center).*

Weather and Climate Outlooks

El Niño continues in the equatorial Pacific Ocean, with the warmest sea surface temperature (SST) anomalies in the eastern equatorial Pacific Ocean. SSTs are consistent with a moderate to strong El Niño, and atmosphere responses to El Niño are being observed. The Climate Prediction Center forecasts El Niño conditions continuing through winter into spring, with a strong El Niño likely this winter. Other teleconnection patterns, such as the Madden Julian Oscillation (MJO), Pacific Decadal Oscillation, and Pacific-North American Pattern may influence weather and climate during the outlook period, but El Niño will be the main driver through the outlook period.

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 from November through February, a time of year when minimal activity is normal, and the winter snowpack prevents significant wildfire activity. Alaska is out of fire season.

No areas of Alaska are in drought status, although the US Drought Monitor shows a local area of abnormally dry conditions in the Upper Yukon Valley. With the lone exception of the Upper Yukon, the Interior had already established a respectable snowpack early in the season by the end of October. As is typical for the beginning of winter, the depth of snow was much lower and even discontinuous across southwest, south-central, and southeast Alaska, especially at the lowest elevations and along the coast. Alaska is out of season, and no wildfires are being tracked as of late October. Fuels across the state are unburnable and are expected to remain so through the end of February.

The prominent El Niño now in place suggests a tendency for warm weather through the winter for the entire state, with this tendency maximized over the North Slope. The signal regarding precipitation is less clear, with a slight signal for above-normal precipitation over the North Slope and equal chances across the remainder of Alaska. The vital factor to watch over the coming months is the phase of precipitation, especially over southwest and south-central Alaska. If the proportion of precipitation falling as rain is unusually high, an early start to the 2024 wildfire season will be possible even if the overall amount of precipitation received through the winter is at or above normal.

No meaningful wildfire activity is expected for the next four months. Small local fires are possible in areas with minimal or no snowpack, such areas are typically along the coastline in western and

southern Alaska. Any such fires will be confined to the surface and near-surface fuels, with no potential to involve the deeper duff layers.

Northwest

No significant fire activity occurred during October with the overall number of ignitions below normal as well. The Northwest Geographic Area significant fire potential is expected to remain normal, with minimal activity through the winter months.

Mean daily temperatures across the geographic area were two to four degrees above normal. Exceptions were along the Idaho border where temperatures were five to seven degrees above normal and southwest Oregon, which was one to two degrees above normal. Precipitation followed a typical pattern in which significantly more rain, and eventually high elevation snow, fell from the Cascades westward. Areas east of the Cascades received far less rain and snow. Precipitation anomalies were below normal, mostly east of the Cascades with several areas 25-50 percent of normal. However, a late September storm carried over into the first day of October resulting in above normal precipitation amounts for the lower Columbia Basin and southeast Oregon.

About two-thirds of the geographic area is in some form of drought. There was a one to two category reduction in drought status from last month for several areas west of the Cascades. Interior northwest Washington and the southern Willamette Valley continue in extreme drought. Southeast Oregon and a small portion of northeast Washington remain free of any designation as was the case last month.

The number of new fires in October continued to remain below average. All the existing large fires west of the Cascades received substantial rainfall that has significantly reduced fire behavior and spread potential. Large fire growth continued to slow in October and spread potential west of the Cascades remains minimal.

Energy Release Component (ERC) values across the Northwest have continued to drop to below average as precipitation events become more frequent. 1000-hour fuels remain above significant thresholds in most Predictive Service Areas (PSAs) and continue to recover from seasonal drying that occurred over the summer. Some areas of western Washington and Oregon remain in higher drought classification and will need more consistent rain to ease those conditions. East of the Cascades cured low elevation rangeland fuels will become flammable and exhibit increased potential rates of spread when aligned with strong winds.

NOAA outlooks covering the Pacific Northwest for November lean toward above normal temperatures. There are no dominant precipitation signals for the geographic area with equal chances of above, near, or below normal noted for November. December through February favor a 50-60 percent chance of above normal temperatures. Again, there are no dominant precipitation signals for the Northwest except for a 33 to 40 percent chance of below normal precipitation amounts covering northeast Oregon and eastern Washington.

The temperature pattern forecast for both periods is consistent with historical strong El Niño conditions across the geographic area. The precipitation forecast strays away from historical El Niño conditions with NOAA noting a similar pre-season set-up, but different results observed during winter 2015-16.

Normal significant fire potential is expected through winter. A typical moderate to strong El Niño winter will produce one to two week-long drying episodes. These episodes then have the potential to dry 100-hour and lighter fuels to a point of carrying fire for multiple burn periods under supportive wind and low humidity conditions. Given the low predictability for these events on a seasonal scale, normal fire conditions are thus forecast.

Northern California and Hawai'i

Significant fire potential is projected to be near average from November through February. From November through January all PSAs average less than one large fire per month. Hawaii's significant fire potential is forecast to be above normal for November through February.

The weather pattern during October was geared more towards drier and warmer ridging with periodic Pacific troughs. The precipitation events tended to be more focused during the middle of the month. Precipitation was generally near to below normal although some above normal readings were observed across large portions of the North Coast and Mid Coast into portions of the Sacramento Valley. Average temperatures were generally near to above normal with six separate fall heat days October 4-7 and October 18-19. Lightning was observed on four separate days with the bulk of the 253 strikes occurring on October 22. The 2012-2022 October lightning strike average is 602. Five sets of noticeable north-northeast and easterly wind periods combined with low to marginally low humidity occurred during the month with the strongest occurring during October 28-29. There were a few gusty west-southwest-south wind events ahead of the Pacific cold frontal passages as well, but humidity levels were generally elevated.

Dead fuel moisture conditions were variable during October due to the mix between warm-dry and cool-moist periods with a near normal Energy Release Component (ERC) monthly average. Shrub and canopy fuels were generally flammable, especially within the chamise, manzanita, and sage fuel types, although sampling indicated near to above normal values for the time of year across most elevations and aspects. Herbaceous fuels were also in a mixed state with cured or mostly cured grasses across the mid and upper elevations due to dormancy. The lower elevations experienced larger patches of light to moderate green-up mixed between a fully cured landscape due to a few notable wetting events since September 1. Drought was removed across far northern Del Norte County during the middle of the month, with abnormally dry conditions depicted by the US Drought Monitor across the northern tier.

Wildfire business lowered during October compared to September. No lightning ignitions were reported, and the average daily ignition count was seven. Despite the lower wildfire business numbers, fuel conditions were just right for numerous broadcast or understory burn projects with active burning implemented during the entire month.

There will be several strong oceanic-atmospheric teleconnections during the next four months that will either constructively or destructively interfere with each other making for an interesting and dynamic outlook. Therefore, some wild fluctuations in the atmospheric patterns are likely as they shift between cool-moist and warm-dry periods. The weather outlook for November is for above normal temperatures and near to below normal precipitation although a wetter signal is possible across the far northwest corner. The December to February seasonal outlook calls for near to above normal temperatures and near normal precipitation. A moist storm track could be more active during January while an extended warm-dry period should also occur sometime between December to February due to ridging and a semi-permanent atmospheric blocking pattern. Enough timely moisture intrusions, including snow cover across the higher elevations, and a lessening sun angle and shorter daylengths will keep large fire potential on the lower side most of the period. Sufficient green-up, generally below 1,000 to 1,500 feet, is expected to develop across the lower elevations sometime during November and December thus reducing the large fire threat there. Therefore, normal significant fire potential has been designated for northern California from November through February.

Sea surface temperature (SST) anomalies surrounding the Hawai'ian Islands were generally near to a little above normal. Near to slightly above average SST anomalies are expected to remain the next four months with the warmer signal across the north. Average temperature anomalies observed during October were mixed with some near to above normal areas favoring the Big Island and O'ahu, while near to below normal readings were found elsewhere. Precipitation was below to well below normal although a weak cold frontal boundary brought heavier showers to Kauai and to a lesser extent O'ahu on October 23. Due to the dry conditions drought intensities

increased with moderate to extreme drought covering around 75% of the island chain. No Red Flag Warnings were issued by the National Weather Service in October.

El Niño will likely peak during the outlook period and become strong. Precipitation is likely to be below to well below normal during the next four months for the islands. Average temperatures should be near to a little above normal. Several fire growth enhancing ingredients will impact the island chain during the outlook period. These include abundant cured herbaceous fuels with less than normal new herbaceous growth during the upcoming wet season, widespread and increasing drought intensity, and a heavy dead and down component due to the August 7-9 windstorm. There should also be periods of stronger westerly-downslope winds across the expected drier than normal windward sides that may prompt some Red Flag Warnings from the National Weather Service. Above normal significant fire potential is forecast for the island chain from November through February and a specialized fuels and fire behavior advisory may be needed in the coming months due to the unusually flammable conditions.

Southern California

October was overall warmer and drier than normal for southern California, with temperatures generally 2-4^{o}F above average. Most areas only received 5% or less of the average monthly precipitation for October due to the persistent high-pressure ridging. A couple weak offshore wind events occurred during the middle of the month, and a moderate Santa Ana wind event occurred October 29-31.

Moderate to strong traditional (East Pacific) El Niño conditions persist across the equatorial Pacific. Sea surface temperature (SST) anomalies have consistently remained above 1^{o}C above normal across the Niño 3.4 Region. The traditional state of El Niño means the warmest SST anomalies are in Niño 1+2 and Niño 3 Regions, the eastern equatorial Pacific.

There is a variance in the fuel status throughout southern California. Below normal 1000-hr dead fuel moisture is observed in 9 out of 16 Predictive Service Areas (PSAs). However, 3 of these 9 PSAs that have below normal 1000-hr dead fuel moisture have a very low load of 1000-hr fuels, the Lower Deserts, Eastern Deserts, and Central Mojave PSAs. Moreover, there is a large load of live fuels in all 16 PSAs this fall season due to the abnormally wet winter, spring, and summer. These live fuels have above normal live fuel moisture in all 16 PSAs. The large load of live fuels that consists of above normal live fuel moisture will help reduce the risk of large fire in Southern California despite the warm and dry conditions during October.

The odds slightly tilt in favor towards dead fuel moisture remaining below normal for November, equal chances in the odds for December, and then tilting towards above normal for January and February. However, there is greater confidence that live fuel moisture will continue to remain above normal. The absence of drought conditions across southern California is also likely to support the tilt towards live fuel moisture remaining above normal.

A continuation of moderate to strong El Niño is likely for the late fall through the upcoming winter. Climate models suggest a warmer than normal onset to the November – February period, with conditions becoming cooler and wetter as the season progresses. There is moderate confidence in a warmer and drier November, with equal chances of above and below normal for December and then a slight tilt towards a cooler and wetter January and February. Climate models show stronger low-pressure anomalies off the California coast January and February, which will help enhance onshore winds and increase the chance for precipitation. El Niño-Southern Oscillation influences peak during the winter months, which also results in a likely change from warm and dry to cool and wet as the season progresses.

With respect to large fire, the antecedent fuel conditions allow for a near normal chance for a large fire in all 16 PSAs. The large load of above normal live fuels will help reduce the potential for large fire coupled with a slight tilt towards above normal dead fuel moisture as the season progresses.

Northern Rockies
Significant wildland fire potential in the Northern Rockies Geographic Area (NRGA) for November through February is expected to be normal. Overall, in the last month, temperatures have been warmer than usual, but this has been offset by slightly lower winds, leading to slightly below normal potential evapotranspiration across most of the geographic area. Precipitation has been lowest over the eastern and western ends of the NRGA. Some of the areas with more significant precipitation deficits are locations that have already been experiencing drought for the last several months. However, as winter snowpack builds over the mountains, this will not be a concern until spring.

Drought continues to affect the northern edge of Idaho, Montana, and North Dakota, although the area of extreme drought has shrunk considerably, now only in a small area of northwest of Montana. Precipitation has stayed close to normal in the last month, with slightly below normal precipitation across the mountains of north Idaho and western Montana and most of eastern North Dakota. Overall, though precipitation anomalies were small for this month, no progress was made on overcoming precipitation deficits from the previous water year, and the snowpack got a slightly later start than normal over the mountains. All US Drought Monitor category changes over the past month were small, but positive, leading to a slight overall decrease in drought in the geographic area.

All PSAs are below the 60th percentile for Energy Release Component (ERC) reflecting very low fire danger. However, there is general dryness around and west of the Continental Divide reflecting the below normal precipitation. Stronger winds were also observed in the lee of the Rockies as October storms moved through the area. Central Idaho (Predictive Service Area (PSA) NR-06), southwest Montana (PSAs NR-08, NR-09), and locations near or on the lee side of the continental divide (PSAs NR-07, NR-10) have slightly below average 1000-hour dead fuel moistures, while ERCs are above average for those same PSAs and forecast to increase with warmer weather the first part of November. The remaining PSAs in central and eastern Montana and North Dakota reflect indices that are average or below average for this time of year. With a dramatic shift towards colder weather across the area over the past few days, live fuels should generally be cured as reflected in Growing Season Index (GSI) values that are in a sharp decline for all PSAs reflecting the end of the growing season. Widespread snow has fallen across both low and high elevations, with it expected to remain over higher elevations. Over the month of October, minimal initial attack was recorded for most days, with prescribed burning that started last month continuing when dispersion conditions allow.

All PSAs are expected to have normal significant wildland fire potential for November through February. While long term drought is present across the landscape in the northern portions of the geographic area, winter conditions have moved in and the cold, snow, and short daylight hours will prevent most significant fires. However, due to above normal temperatures and below normal precipitation in longer term outlooks, we will not be putting any PSAs in below normal risk for this outlook.

Great Basin
Fire activity remains low in the Great Basin, due to time of year with shorter daytime hours, along with several cold frontal passages bringing much cooler temperatures, higher humidity, and some precipitation, especially across Idaho, Wyoming, and the northern half of Nevada and Utah. Fire activity is expected to remain normal for the time of year (i.e., low) through February. There may be a few upticks in fire potential on windy days in areas that have prolonged dryness and above normal grass crops at lower elevations. However, these instances would be localized and for short periods.

Temperatures over the last 30 days have been warmer than normal across the Great Basin. Despite the overall warmer than normal conditions, a few cold fronts have moved through the

region in October and brought significantly cooler temperatures for short periods to all areas. Precipitation has been largely below normal across most of the Great Basin the last 30 days. Some exceptions are the western half of Nevada and parts of southern and eastern Idaho where precipitation has been near to above normal. The Great Basin is generally absent of drought, except for far southern Nevada, the Arizona Strip, and eastern Utah where abnormally dry to moderate drought conditions exist. These areas will likely see improvements to the drought through the winter as El Niño potentially brings more precipitation to the southern Great Basin.

Fuel moisture will continue to increase through winter. We will need to monitor the areas of eastern Utah, southern Idaho, and northern Nevada that have above normal fine fuel loading. Windy conditions after prolonged dry periods through December or early January may drive fire potential up for a burning period or two, as grasses will be transitioning into dormancy.

Fire activity remains low across the Great Basin, with only light initial attack each day and all fires remaining very small. A few fires grew more than 10 acres on windy days, but overall fire potential remains low.

Normal fire potential is expected through February, which is low for the Great Basin. Despite areas of significant carry-over fuels in parts of northern Nevada and southern Idaho, the continued pattern of cold fronts moving through the Great Basin is expected to continue through the fall keeping fire potential low. The only areas to watch will be parts of eastern Utah, northern Nevada, and southern Idaho if prolonged dry periods occur that are followed by strong winds. This may increase fire potential at times temporarily for a burning period or two.

Southwest

Normal significant fire potential is expected through February for the Southwest Area (SWA). Some localized areas of above normal significant fire potential could arise across parts of Arizona during November but are still expected to be closer to normal overall.

The overall trend through most of the first six months of 2023 was for cooler temperatures nearly areawide and wetter than normal conditions focused along and west of the Continental Divide as well as across the northern tier of New Mexico. During the months of May through July, precipitation was below normal for much of the SWA except for northeastern New Mexico, while temperatures were above normal. The forecast of a weaker than normal monsoon this summer with above normal temperatures was quite accurate. Over the past two months, precipitation has been below normal overall with some above normal areas across both the far western and far eastern portions of the SWA. Temperatures have been above normal areawide, although a bit closer to normal across far western Arizona.

The ongoing El Niño conditions and likely further intensification into the late fall and early winter will likely continue to have a big influence on the weather and climate for the forecast period. Unfortunately, this means that some lingering dry areas could continue into late fall. Although overall significant fire potential is expected to be near normal for the SWA, some localized areas of above normal potential could result through late fall primarily west of the Divide coincident with some periods of drier than normal conditions. The weather pattern will likely start out milder and drier but is likely to become more active as November turns to December with more frequent cold air intrusions and areas of precipitation. The active pattern will be infrequent through December but will likely become more frequent as mid-winter arrives with January and February likely being wetter than average for at least some areas west of the Divide. Expect high temperatures to be close to or below average for many periods during the forecast timeframe. Much of this forecast is based on the ongoing El Niño and forecast peak of this event late this year into early 2024. The near normal to wetter than normal pattern is likely to continue into the spring, especially from the Divide eastward into the plains. As a result, besides periods of drier conditions in late fall, significant fire potential should be not be an overall concern during the forecast period.

Rocky Mountain
The Rocky Mountain Area (RMA) is expecting normal significant fire potential through the outlook period. The El Niño pattern has continued to keep temperatures above normal through the month. However, the area continued to see several storm systems that brought precipitation to the area, with snow starting to fall in the higher elevations. The drought conditions have continued with little changes through the month.

The last month saw a more progressive pattern continue across the RMA. Several storm systems moved through and kept the area from experiencing prolonged dry conditions. However, these systems also brought dry and windy weather ahead of the cooler, wetter weather. A mid-month system brought heavy rain and snow to parts of Wyoming, South Dakota, and Nebraska, with some areas seeing as much of 6 inches of rain, and some of the higher elevations in Wyoming receiving over 2 feet of snow. However, temperatures overall continued to run above normal as the El Niño continues, although parts of the area did see below freezing temperatures with these cooler storm systems. Overall, the weather during October did not really change drought conditions across the geographic area.

With cooler temperatures arriving with the frequent storm systems, areas have started to see low temperatures dripping below freezing, pushing fuels into dormancy. Above normal fuel loading from the wet spring continues, so any prolonged warm, dry, and windy period could result in fires spreading more easily through these fuels.

Most of the fire activity was small initial attack the past month, though late in the month a couple of larger fires did start that needed an extended resource response. With quieter weather periods, several units have been able to get prescribed burns completed the past month.

Seasonal precipitation outlooks depict normal or above normal for much of the RMA. Across Wyoming and parts of northern South Dakota the El Niño pattern could bring some below normal precipitation for part of the winter season. Temperatures will continue to be above normal through November for Wyoming and Colorado, while the central Plains will generally be near normal, before becoming more normal across the entire RMA into winter. However, there is some indications that the El Niño pattern may shift farther to the west, which could bring more warming than is typical for an El Niño winter. The late winter outlook continues to have higher uncertainty.

Eastern Area
Near normal significant fire potential is forecast across the Eastern Area November into February.

Negative 14-to-30-day precipitation anomalies appeared towards the end of October across parts of the Mid-Mississippi and Lower Ohio River Valleys as well as the southeastern tier of the Mid-Atlantic states. Longer term drought remained in place across the western Mississippi Valley and the central Great Lakes. This is a result of warmer than normal temperatures, below normal precipitation, and widespread low relative humidity levels, which affected these areas earlier in the summer.

The El Niño Southern Oscillation (ENSO) transitioned from a 3-year episode of La Niña conditions (cooler than normal Pacific Ocean sea surface temperatures (SSTs) off the western coast of South America) to increasingly warmer than normal SSTs depicting an El Niño regime through the spring and into the summer. This transition has led to some uncertainty in the longer-term weather model forecasts for the winter season. Historical or analog climate trend comparisons are also limited due to very few past similar ENSO transitions on record, making longer term weather trend forecasts challenging. Other SST regimes also contribute to global weather patterns adding to the uncertainty in long term weather forecasts. Despite these uncertainties, the north-central portions of the US has typically experienced above normal temperatures in past moderate to strong El Niño episodes during winter.

The Predictive Services precipitation outlooks forecast above normal precipitation across the western Mississippi Valley and the central Great Lakes in November. Drier than normal precipitation is forecast over the Upper Mississippi Valley in December, and the central and eastern Great Lakes and Mississippi Valley progressing into January. Much of the Eastern Area is expected to experience below normal precipitation in February. According to the NOAA Climate Prediction Center long term outlooks, below normal precipitation is forecast across northwestern Minnesota and the eastern Great Lakes through the rest of the fall into winter, with slightly above normal precipitation across the western Mid-Mississippi Valley.

According to the Predictive Service temperature outlooks, above normal temperatures are forecast across the western tier of the Eastern Area in November and much of the Eastern Area in December. Near to below normal temperatures are expected January into February. The Climate Prediction Center also forecasts above normal temperatures across the Eastern Area into January.

Normal fire potential is forecast for the Eastern Area November through February. Drought Codes from the Canadian Forest Fire Danger Rating System (CFFDRS) that represent drying deep into the soil are still showing areas of high indices in the Great Lakes Region. A large portion of the Eastern Area is at a 2-6” precipitation deficit for the last 60 days going into winter where monthly precipitation is less and often in the form of snow. Snowpack amount and density will be a big factor in fire potential during the outlook period and beyond. Leaf drop is occurring, and outlook predictions for precipitation are normal to above normal for November, which should maintain normal fire potential for the Eastern Area deciduous forest regions. Overall, fire potential is expected to significantly decrease by mid-November with shorter days and colder temperatures.

Despite widespread areas of rainfall through the end of October, longer term drought and negative soil moisture anomalies remained in place across the western Mississippi Valley and the central Great Lakes toward the end of October. Due to uncertainty in the longer-term weather outlooks through the rest of the fall into winter, these areas may experience periods of above normal fire potential heading into the spring if below normal precipitation trends occur across these areas through the winter season.

Southern Area

Drought rapidly expanded across the Southern Area in October, to include large portions of the Tennessee Valley and Appalachian states. Extreme to exceptional drought remains established throughout the central Gulf states and Lower Mississippi Valley, while multiple category improvements have occurred across Texas and portions of Oklahoma over the past month. This improvement in the Plains states has accelerated through the end of October as moisture from the remnants of eastern Pacific Hurricanes Norma and Otis streamed directly into the region.

Multiple states across the Appalachians have reported that fires in the duff layer are requiring extended mop-up and patrolling for hot spots, indicative of the persistent drought that has dried out organic surface fuels. Drought has been especially long-lived in portions of eastern Kentucky and Virginia, with only brief periods of improvement earlier this year. A recent uptick in activity across the Appalachians, where leaf drop is accelerating at higher elevations, suggests the fall fire season will begin in earnest across the mountains in early November. Leaf drop appears to be slightly earlier than last year but is reportedly within the realm of average conditions. All other hardwood-dominant areas are expected to see abnormally cold weather and frost in early November, which should accelerate leaf drop and result in increasing fire potential as sunlight reaches leaf litter on the forest floor. Outside of the southern tier where it will not be quite as cold to start the month, the anticipated freeze will also make herbaceous fuels fire-receptive in much of the rest of the geographic area.

Most areas of Louisiana, Mississippi, and Alabama that saw drought develop over the summer have not seen wetting rainfall in at least several weeks. Annual rainfall deficits along the central Gulf Coast are at least 20-30", while Keetch-Byram Drought Indices (KBDIs) continue to track near or above the historical maximum. Recent observations of normally floating bogs in southeastern Louisiana indicate the peat layer is in contact with mineral soils below. Marsh fires along the central Gulf Coast are often inaccessible except by air and may require extensive pumping of water where possible. These fuel types are also prone to producing dense fog, which becomes climatologically more likely in the fall and winter along the Gulf Coast. Otherwise, early leaf drop continues in drought-stressed areas, while pine mortality has also occurred in south-central portions of the Southern Area.

Preliminary surveys of fuel loading in grass-dominant areas of the Plains are supported by remotely sensed data indicate the mostly wetter-than-normal growing season contributed to normal or above normal grass loading in most of the region. Above normal grass loading can be strongly correlated to wildfire potential in these areas when exposed to periods of fire-effective weather during the dormant season.

Recent tropical activity in the eastern Pacific is strongly associated with above normal sea surface temperatures (SSTs) that are part of the maturing warm phase of the El Niño Southern Oscillation (ENSO). Despite this, the normal increase in frequency and coverage of wetting rainfall across the Southern Area in early fall has predominantly been focused over the Plains. There is a strong consensus that a significant pattern change associated with El Niño will occur in November, but the timing of this turn towards more widespread drought relief is highly uncertain. Any further delay of this pattern change could substantially increase wildfire risks during periods of breezy and dry weather given the ongoing and expanding drought.

Seasonal climate models are in excellent agreement with El Niño climatology for the end of fall into winter. Most of the geographic area is favored to see above normal precipitation through the forecast period, particularly from the Plains eastward along the Gulf Coast and up the Eastern Seaboard. Florida is perhaps the most favored area to see an unusually wet winter, with above normal SSTs in the Gulf of Mexico and Caribbean likely contributing to heavy rainfall during what is typically their dry season. This wet, cloudy, and cool pattern often continues well into the spring in many of the same areas.

There are several potential exceptions here, namely for portions of the Mid-Mississippi Valley east through Kentucky and portions of western Virginia. Expansive high-pressure domes aloft often produce warmer and drier than normal weather over the northern tier of the country during El Niño winters, which can impact the north-central and northeastern tier of the Southern Area. Another possible caveat this winter relates to global SSTs that are among the warmest on record. It is still not clear how or whether abnormal conditions globally will interact or factor into our climate this winter. It is also worth noting that short-term weather patterns driven by other climate factors could result in periods of weather that differ from what is expected on average. Atmospheric blocking is one such phenomenon that could overwhelm the pattern with dry and bitterly cold conditions at times, while also enhancing risks for destructive winter storms. Although most moderate or stronger El Niño winters fit into the pattern depicted by NOAA, there are different flavors of El Niño that might shift things enough to be impactful to our temperature and precipitation patterns. Fortunately, there is plenty of time to see how that plays out before we head into next spring's fire season.

El Niño winters are snowier than ENSO-neutral or La Niña winters in most of the geographic area, and this could be most impactful to the fuelscape across the High Plains. Heavy, wet snow in the Appalachians and other hardwood-dominant areas could delay or reduce wildfire risks in late winter and early next spring, as well.

This outlook has been challenging to produce, particularly for November, which is the peak month of our fall fire season. Recent flooding across eastern Oklahoma and western Arkansas has

skewed this forecast towards below normal significant fire potential there, but trends later in the month will be dependent on whether rain returns, given ongoing drought. Meanwhile, historically dry conditions and little to no relief through the first week or two of November are the primary drivers for above normal significant fire potential in Louisiana, central and southern Mississippi, and Alabama for November. Large portions of the Appalachians and Piedmont were considered for above normal significant fire potential, and the first one to two weeks of the month could become quite problematic if rainfall does not materialize. Unless the turn towards wetter conditions is delayed into December, activity should diminish as the month progresses across eastern Kentucky and much of Tennessee into north Georgia, the western Carolinas, and Virginia.

Normal significant fire potential is forecast for December, which typically sees activity diminish due to long nights and colder temperatures. The Plains will have to be watched for any longer periods of dry, warm, and windy weather given the above normal grass loading.

Large fire climatology begins to increase regionally by January, particularly in Florida and adjacent areas along the eastern Gulf Coast. Below normal significant fire potential is forecast here due to expectations for a wet November, December, and January. The rest of the region is forecast to see normal significant fire potential in January, but an expansion of below normal potential is possible in areas currently affected by drought in the Lower Mississippi Valley and Plains.

Widespread below normal significant fire potential is anticipated by February should this winter remotely follow canonical El Niño conditions. February typically features a rapid uptick in activity in large parts of the geographic area, but a slow start to the late winter and early spring season appears likely. Potentially drier areas of Virginia and Kentucky could trend in either direction depending on how the next few months evolve. Conditions across West Texas and Oklahoma will also be dependent on snowfall this winter and whether any periods of fire-effective weather envelop the region, but high wind events are more likely to occur later in the spring for the Plains. The Caribbean islands are expected to see normal significant fire potential through the period, where drought relief appears likely in November.

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