



# National Significant Wildland Fire Potential Outlook

Predictive Services  
National Interagency Fire Center

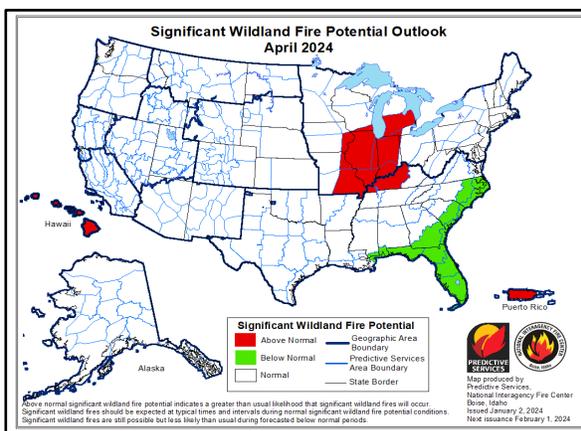
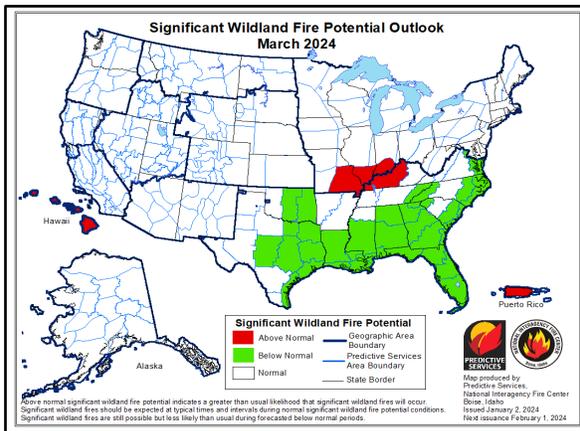
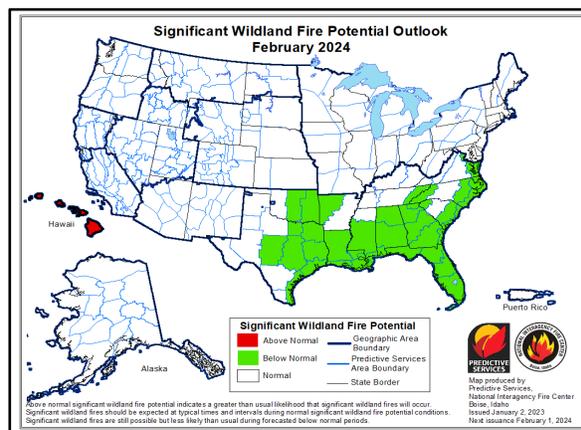
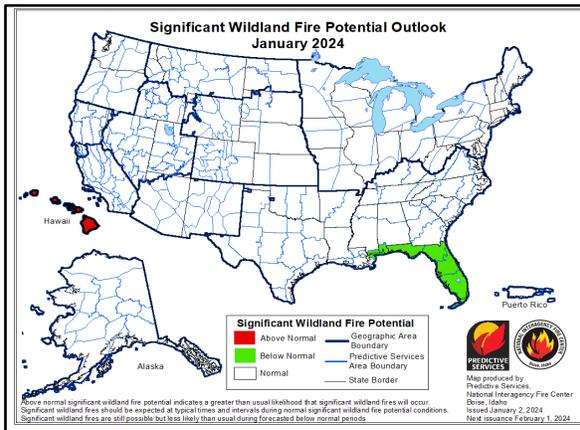


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Outlook Period – January through April 2024

## 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.



Fire activity continued to decrease throughout December across the US, continuing the trend from late November, with minimal fire activity recorded the last half of the month. A limited number of large fires burned briefly across the country, mainly in the Eastern, Southern, and Southwest Areas, although a large fire was recorded in southern California early in the month due to a Santa Ana wind event. Annual acres burned for the US in 2023 is well below the 10-year average at just over 37%, with slightly below average number of fires as well, at 95%.

Precipitation across the CONUS varied widely from well above normal to well below normal. The greatest departures above normal were recorded on much of the central and northern Plains into Minnesota, while well below normal precipitation was found across much of the central and southern Great Basin and the northern Rockies. Temperatures were generally above normal across most of the US, with the warmest anomalies from central and eastern Montana through the northern Plains into the Great Lakes. Periodic dry, offshore downslope winds occurred in

southern California during the first week of December, while periods of enhanced trade winds amid dry airmasses resumed on the Hawaiian Islands, with a gradual increase in fire activity at the end of the month. Extreme to exceptional drought persists in portions of Louisiana and Mississippi with other areas in Iowa, Nebraska, and New Mexico. Drought improved slightly across portions of the Lower Mississippi and Tennessee Valleys as well as portions of the Gulf Coast, Mid-Atlantic, and northwestern US. However, drought worsened over portions of the Mid-Mississippi and Lower Ohio Valleys.

Climate Prediction Center and Predictive Services December outlooks depict above normal temperatures are likely for much of the West Coast and northern third of the US, while temperatures likely to be near to below normal across the Southwest, southern Plains, and Southeast. Precipitation is likely to be above normal across much of Arizona, southern California, and southern Nevada into early spring, with above normal precipitation also likely across much of the central and southern Plains into the Southeast. Precipitation is most likely to be above normal across south Georgia into Florida. Meanwhile, below normal precipitation is likely across the Northwest and northern Rockies, as well as portions of the Great Lakes into the Ohio Valley. The temperature and precipitation forecasts are consistent with a mature El Niño.

Above normal significant fire potential is forecast across Hawai'i into April, with above normal fire potential also forecast for Puerto Rico and the US Virgin Islands for March and April. Southern Area will see an expansion of below normal significant fire potential across the northeast Gulf Coast and Florida in January to central and eastern Oklahoma and Texas eastward into much of the Carolinas and southeast Virginia. Below normal significant fire potential will continue for much of these areas in March, but western Arkansas will return to normal potential with above normal potential forecast for the Mid-Mississippi and Lower Ohio Valleys. For April, much of the Southern Area will return to normal except for the northeast Gulf Coast, Southeast Coast, and Florida. Above normal potential will continue across western Kentucky and the Mid-Mississippi and Ohio Valleys, with expansion across much of Illinois, Indiana, and southern Michigan.

### ***Past Weather and Drought***

Above normal temperatures were observed across much of the contiguous US and Hawai'i, with temperatures well above normal from central and eastern Montana into the Great Lakes, where monthly temperature anomalies were as much as 14 degrees above normal. Above normal precipitation was recorded along the East and Gulf Coasts, Northwest, southern Arizona, and much of New Mexico, while well above normal precipitation fell from the Texas Panhandle into much of the central and northern Plains into Minnesota. Well below normal precipitation fell across the central and southern Great Basin into the Northern Rockies, with the central Great Lakes, Ohio, Tennessee, and Lower/Mid-Mississippi Valleys also receiving less than average precipitation in December.

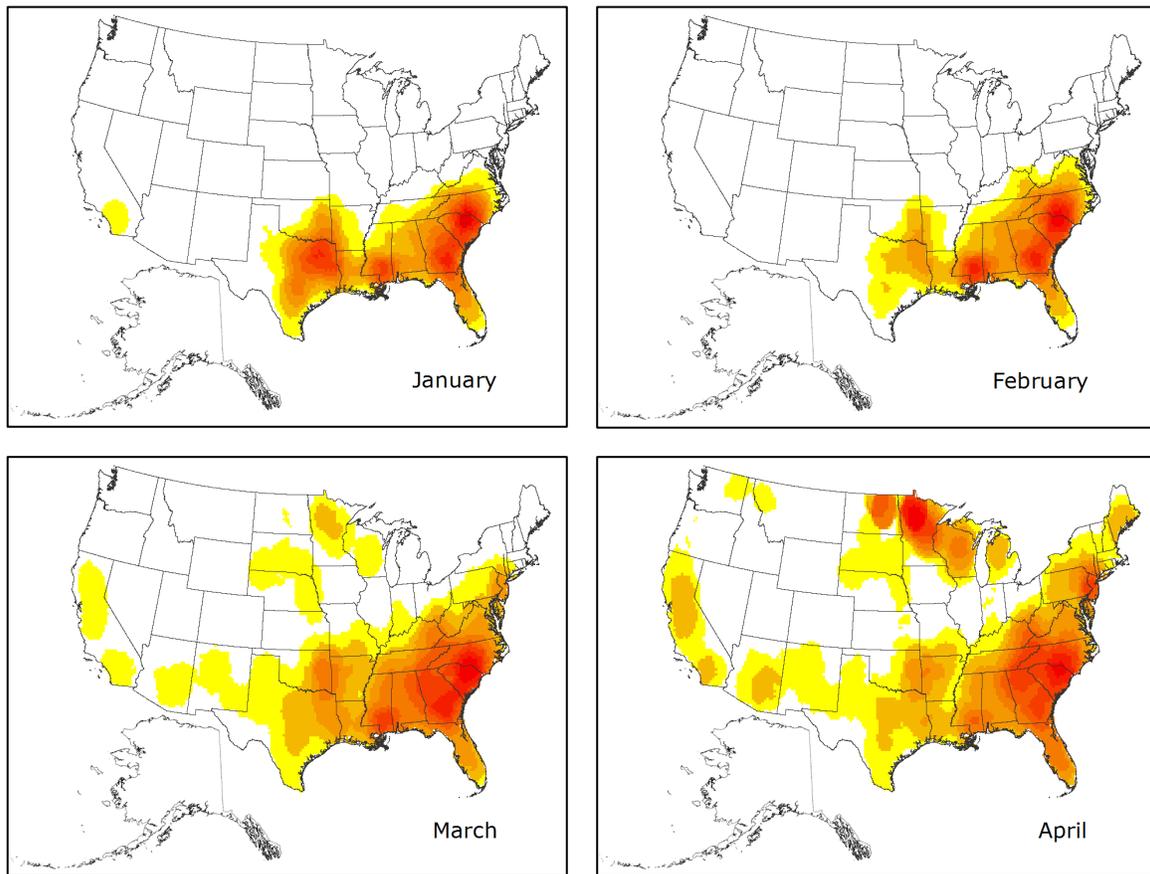
Much of California started December dry, with a moderate Santa Ana wind event December 8-10 resulting in the South Fire. However, wetting rain fell mid-month reducing fire potential, with a stronger storm that produced heavy rain and significant flooding across southern California December 20-22. A significant atmospheric river December 1-3 began the month wet across the Northwest, northern Great Basin, and northern Rockies, but little precipitation spread east of the Cascades the remainder of December. Snowpack has had a slow start to the season across the West with most basins reporting snowpack at only 25-70% of normal as of December 29, including much of the Sierra and Cascades where above normal temperatures has limited what precipitation as fallen as snow to the higher elevations. Snowpack near to slightly below normal is confined near and east of the Continental Divide in Colorado and New Mexico.

Several cold fronts moved from the Plains to the East Coast during the month, but these tended to be drier until they reached the Appalachians, Gulf and East Coasts. A significant severe weather outbreak occurred across the Tennessee Valley December 9-10. However, the latter half



January are likely to influence weather and climate during the outlook period, but El Niño will be the main driver.

### **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 January through April. Wildfire behavior is typically minimal through March as the winter snowpack prevents significant wildfire activity. The season's first wildfires will likely break out in April at lower elevations in the Interior as the snowpack begins melting.

No areas of Alaska are in drought status. Much of the Interior and south-central Alaska have established a respectable snowpack by the end of December. As is typical for the first half of winter, the depth of snow was much lower and even discontinuous across southwest and southeast Alaska, especially at the lowest elevations and along the coast.

Fuels across the state are unburnable and are expected to remain so through the end of March. The snowpack will begin melting in April, especially at lower elevations across the Interior. The absence of snow will allow dead surface fuels to dry, but subsurface duff layers will remain comparatively cool and wet through the end of April. Alaska is out of season, and no wildfires are being tracked as of late December.

The prominent El Niño now in place suggests a tendency for warm weather through the winter for the entire state. The signal regarding precipitation is less clear. The vital factor to watch over the coming months is the phase of precipitation, especially over southwest 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 finishes at or above normal.

No meaningful wildfire activity is expected for the next three 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. The opportunity for more meaningful wildfire begins in April as the snowpack begins to melt. Any fires that break out in April will be wind-driven surface fires, as the deeper subsurface fuels will still be too cold and wet to contribute to wildfire behavior.

## **Northwest**

No significant fire activity occurred during December with a minimal number of ignitions. The Northwest Geographic Area significant fire potential is expected to remain normal with minimal activity through the winter months. Spring months are less certain and could trend toward above normal activity.

Similar to November, weather was most active early in the month. An atmospheric river brought flooding conditions to much of western Washington and Oregon. Activity was rather uneventful thereafter with only periodic warm weather systems bringing precipitation under a typical El Niño blocking pattern. As such, most precipitation tracked north and south of the geographic area. Mean monthly temperatures across the geographic area ran a few to several degrees above normal, with many stations breaking monthly mean temperature records. Above normal precipitation the first week of December quickly diminished to below normal during the second week. Most areas saw less than 50 percent of normal amounts for the final three weeks of December. End of month precipitation totals across northwest Oregon and western Washington finished at 100-150 percent of normal. Southwest Oregon and the mountains east of the Cascades were mainly less than 75 percent of normal. Large portions of north-central Washington and south-central Oregon received less than 25 percent of normal precipitation.

Snowpack development struggled as result of the warmer and drier weather pattern. When cooler weather systems deposited snow across the higher terrain, rain and high snow levels followed to melt much of what was deposited. All basins hold less than 75 percent of median snow water equivalent and all Cascade basins are below 45 percent. A reduction in drought conditions continued. Several areas of western Washington and Oregon have been removed from drought designation. Most remaining areas across the geographic area have been downgraded to moderate drought or better. Only the lower Deschutes and Pend Oreille basins remain in severe drought.

Periods of dry weather west of the Cascades has allowed fuels to dry to lower than normal conditions before rebounding to near normal conditions during subsequent rounds of moisture. Along the Cascades, the lack of consistent snowpack has prevented fuels from consistently recovering to normal conditions. Fuels in southeast Oregon continue to trend drier than normal. East of the Cascades cured low elevation rangeland fuels remain flammable and will exhibit increased potential and rates of spread when aligned with strong winds. However, minimal fire activity continued in December across the Northwest Geographic Area. Prescribed fire activity continued as conditions allowed.

NOAA's January through April outlooks bring a 40-60 percent chance of above normal temperatures across the geographic area. For January precipitation, western Oregon has a 33-50 percent chance of above normal amounts. The remaining areas did not lean one way or the other. February through April show a 33 to 50 percent chance of below normal precipitation across all the geographic area except for southern Oregon.

Normal significant fire risk is expected through the winter months, which is low. Spring conditions are more uncertain. A weak snowpack could produce an earlier start to 2024 fire activity, particularly from the Cascades westward. Above normal potential may develop earlier in the season depending on remaining winter month snowpack development and spring rainfall.

## **Northern California and Hawai'i**

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

December was dominated by drier and warmer ridging, but three widespread and beneficial moisture events impacted northern California December 6-7, 17-20, and 27-30. Precipitation anomalies were mixed with some areas below and other areas above normal. Average temperatures were generally above normal. Lightning was observed on four separate days totaling just over 450 strikes. The 2012-2022 December lightning strike average is a little over 240. Three periods of drier northerly and easterly winds occurred, but the events were fairly weak in nature with the strongest December 12-13. Strong southerly winds occurred December 18, 19, and 27, but they were generally accompanied with elevated humidity.

Dead fuel moistures experienced moistening and drying fluctuations during December. Moisture content in the heavier fuels was generally near to below normal but not very flammable. Shrub and canopy fuels became mostly dormant and were generally flammable, especially within the chamise and manzanita fuel types, although limited sampling indicated near to above normal values. Herbaceous fuels were dormant across the mid and upper elevations while in various phases of green-up across the lower elevations, generally below 3000 feet. The snowpack by the end of the month was well below normal both in terms of depth and moisture. The December 17-20 atmospheric river event eroded most of the snow between 5000 to near 6200 feet, but some snow fell towards the end of the month. There were no drought designations for northern California.

Fire business was light during December with an average of one fire per day. There were no lightning fire ignitions. The largest human start was 19 acres located near Bay Point in the East Bay on December 15. Pile burning continued to be the main managed burn activity during December.

There will be several strong oceanic-atmospheric teleconnections during the next four months that will alter the jet stream and storm track. El Niño will likely be the most significant player, but fluctuations in the polar vortex and Madden Julian Oscillation (MJO) will also likely be key influencers. The storm track should be active over northern California during extended periods of January thus leading to near to above normal precipitation. Precipitation for February and March is expected to be near to below normal as the storm systems tend to skirt portions of the area. There is less certainty for the precipitation forecast during April. Temperatures during the next four months should be near to above normal. The frequency of dry northerly or offshore winds should be near normal although there is a possibility of above normal numbers during late January into February depending on how the polar vortex evolves. Due to the warmer temperature regime, the more significant portion of the growing season should start a few weeks early across the lower elevations. The key green-up period, in terms of significant growth across the lower elevations, should occur during March and April. The standing dead from the previous herbaceous growing season should also noticeably lessen during the next few months leaving less potential for growth during extended drier periods. The snowpack is in a precarious state due to the slow start and is looking less likely that it will be above normal by early spring. The most impactful snow cover and depths should be found above 6000 feet. Last year, impactful snow cover was much lower in elevation. Despite some drier periods during the next four months, significant or extended critically flammable fuel alignments and drought development is not anticipated. Therefore, normal significant fire potential has been designated for northern California from January through April.

Sea surface temperature (SST) anomalies surrounding the Hawai'iian Islands were generally near to above normal. Near to above average SST anomalies are expected to remain the next four months with the warmer signal across the north. Temperature anomalies observed during December were generally near to above normal. Precipitation anomalies were generally near to

below normal. Drought intensities and coverage improved across all the islands due to the late November Kona Low, but drought impacts remain. The strongest drought signatures were found across the leeward areas by the end of December. An increase in wildfire frequency occurred as the month progressed but fires were small.

A strong El Niño will peak during the outlook period and likely result in below normal precipitation during the next four months. Average temperatures should be near to above normal. Fire danger moderated due to the Kona Low a month ago, but drought conditions remain and will likely increase in intensity during the next few months despite some short-term fluctuations. Green-up has been a bit slow in areas across the leeward sides and abundant carryover herbaceous fuels remain from the previous growing season, thus creating a potential spread risk. One wildcard with any ignition will be the presence of the heavy dead and down induced by the August 7-9, 2023 windstorm. There should also be periods of stronger westerly and easterly/northerly winds. Above normal significant fire potential is forecast for the lee side areas of the island chain from January through April.

### **Southern California**

December was overall a warmer and drier month for much of southern California. Most areas were 2-6°F above normal with respect to temperature. For precipitation, there is a much larger variance across southern California due to recent wetting rains across coastal areas that did not produce as much precipitation farther inland. The driest anomalies were areas along the southern South Coast (Orange and San Diego Counties), the lower and eastern deserts, the high desert, and areas east of the Sierra Crest. The wettest anomalies were along the northern South Coast (Los Angeles County northward) PSA, Western Mountains, and along the Central Coast as these areas received several inches of rain December 21-22.

The current state of the El Niño Southern Oscillation (ENSO) shows the early stages of a shift between a traditional East Pacific El Niño to a Central Pacific El Niño Modoki. This means the core of the warmest sea surface temperature anomalies in the equatorial Pacific is shifting westward from the east Pacific off the coast of South America into the central Pacific Ocean. There has been a consistent cooling trend over the past month in the Niño 1+2 region while a warming trend is occurring across the Niño 3.4 and Niño 4 regions. For reference, the Niño 1+2 region is the eastern most region in the equatorial Pacific right off the South American coast, while Niño 3.4 region is in the central equatorial Pacific, and Niño 4 region in the western equatorial Pacific.

The latest US Drought Monitor indicates no areas in drought status across southern California. Moreover, live fuel moistures remain above normal with a large load of live fuel present. Larger dead fuels also have above normal moisture content.

Climate models continue to suggest the westward shift of the core of the warmest sea surface temperature anomalies during the January through April period. However, El Niño conditions are highly likely to continue during this period with some modest weakening towards the end of the forecast period as the current projections suggest a transition into a neutral ENSO state by the late spring months. This pattern suggests cooler than normal temperatures across southern California and above normal precipitation. Therefore, there is a high probability the live fuel moisture remains above normal since the live fuel moisture has remained anomalously high for several months. Dead fuels are also more likely to remain above normal for the majority of the January through April period.

Therefore, significant fire potential is forecast to remain near normal for all 16 PSAs with the climatological normal for large fires being zero across all 16 PSAs for this time of the year. The combination of above normal fuel moisture for larger dead fuels and live fuels coupled with the El Niño pattern and absence of drought support this forecast for January through April.

## **Northern Rockies**

Significant wildland fire potential from January through April is expected to be normal for the entire Northern Rockies Geographic Area (NRGA). This period sees little fire activity in the NRGAs except for fires associated with extreme wind events in the lee of the Continental Divide. While El Niño is expected to bring warmer and drier than normal conditions this winter, it is not expected to support a significant departure from expected fire activity. In addition, the likelihood is increasing that El Niño has already reached its peak, which may allow the pattern to switch and change the areas getting moisture by the end of this outlook period.

In December, average temperatures were uniformly above normal in the NRGAs. Only a few locations received above normal precipitation: the northern Idaho panhandle, the north-south valleys along the Canadian border in northwest Montana, and a few areas east of Billings, Montana and west of Bismarck, North Dakota along the Montana-North Dakota border. The rest of the NRGAs received below normal precipitation. However, the areas of above normal precipitation were mostly areas that are currently experiencing drought and as a result, much of northern Idaho and the northern edge of Montana saw a one-class improvement on the drought monitor. The lack of precipitation was enough to cause one to two-class degradation throughout southwestern Montana, leaving all northern Idaho and western Montana in abnormally dry conditions, moderate drought, or severe drought. Abnormally dry conditions continue across the northern edge of Montana and North Dakota, with moderate to severe drought continuing in northeast North Dakota. The seasonal drought outlook shows that drought is likely to continue in north Idaho, northwest Montana, and northeast North Dakota, and continue to develop in southwest Montana.

As a result of warmer than normal conditions and large areas of below normal precipitation, snowpack is well below normal in all basins in the northern Rockies. A few individual stations are near or at normal snowpack west of the Continental Divide and in southern Yellowstone National Park. With no snow on the ground at lower elevations, rangeland fire continues to be a concern in cured light fuels. Most Energy Release Component (ERC) values around the area are below normal for this time of year. The highest ERCs and lowest dead fuel moistures are in west-central Montana. Persistent inversions are preventing rapid drying in the valleys and mid-slopes west of the Continental Divide while most higher elevations are seeing at least some snow cover despite snowpack being below normal. Over the month of December, minimal initial attack was recorded. Any prescribed burning was largely limited to pile burning.

All PSAs are expected to have normal significant fire potential for January through April. The progress of snowpack and winter temperatures will be monitored for possible changes in subsequent months.

## **Great Basin**

Fire activity remains low in the Great Basin, due to time of year with shorter daytime hours, fuels in dormancy, and occasional cold frontal passages bringing cooler temperatures, higher humidity, and some precipitation, especially across the northern half of the Great Basin. Fire activity is expected to remain low and normal through April. There may be a few upticks in fire potential on windy days in areas that have prolonged dryness and above normal grass crops in the lower elevations. However, these instances would be localized and for a burning period.

Temperatures over the last 30 days have been near to just above normal. A few cold fronts have moved through the region in December and brought drops in temperatures and breezy winds for short periods to all areas. Parts of southern Idaho and northern Utah have seen near to just above normal precipitation over the last 30 days, but all other areas have been below normal, with precipitation over the southern half of the geographic area well below normal. The Great Basin is generally absent of drought, except for far southern Nevada, the Arizona Strip, and far eastern Utah where abnormally dry to moderate drought conditions continue. 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 the winter. We will continue to monitor the areas of eastern Utah, southern Idaho, and northern Nevada that have above normal fine fuel loading for windy conditions after prolonged dry periods through January that may drive fire potential up for a burning period or two, as grasses will be dormant. Fire activity remains low across the Great Basin, although prescribed burning activity continues over southern Utah and the Arizona Strip.

Normal fire potential is expected through April, which is low for the Great Basin. Despite areas of above normal carry-over fuels in parts of northern Nevada and southern Idaho, the pattern of cold fronts moving through the Great Basin is expected to continue through the winter 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 and then are followed by strong winds. This may increase fire potential at times for a burning period or two. Otherwise, the focus over the next few months will be watching the shift in precipitation and temperatures associated with El Niño. The storm track is expected to shift more south in January and February, with above normal precipitation potential over the southern half of the Great Basin. The Great Basin could be primed for significant fine fuel growth in the spring depending on the weather over the next few months.

### **Southwest**

Normal significant fire potential is expected for both January and the remainder of the winter into the early-mid spring.

Over much of this past fall, precipitation was mostly below normal, with some above normal areas across the far southeast portion of the Southwest Area. Temperatures were above normal areawide, although a bit closer to normal across northwestern Arizona. During December, some wetter than normal areas have arisen, with above normal precipitation recorded across southern Arizona and much of central and northeastern New Mexico. Much of northern into northwestern Arizona have been below normal for precipitation during December.

The ongoing El Niño conditions, which will linger through the early winter months, will continue to have a strong influence on the weather and climate for the forecast period. Although much of December has been milder than average, the weather pattern will likely become more active as early January arrives with more frequent cold air intrusions and areas of precipitation interspersed more regularly thereafter. The pattern will continue to be more regularly active into late winter with both January and February likely being wetter than average, especially for areas focused along and west of the Divide. High temperatures are forecast to near to below average for many periods during the forecast timeframe. Much of this expectation is based on the ongoing El Niño, which is likely to peak early in 2024. The near normal to wetter than normal pattern is likely to continue into the spring, especially from the Divide eastward onto the plains as this is traditionally a wetter than normal area of the country in a lingering El Niño. As a result, significant fire potential is expected to remain near normal area-wide during the forecast period.

### **Rocky Mountain**

The Rocky Mountain Area continues to expect normal significant fire potential into mid-spring. An El Niño pattern remained the dominant influence on the weather over the last month, but its influence is expected to gradually decrease into the spring. Temperatures largely continued above normal across the area. Precipitation was below normal on the West Slope of Colorado and much of Wyoming, otherwise above normal for the rest of the area due to a couple of late month storms. This did not produce much change in the drought conditions, though Kansas saw some improvements.

The weather over the last month followed an El Niño pattern. Temperatures were above normal for most of the Rocky Mountain Area, 3 to 6 degrees above normal on average. Some locations in northeastern South Dakota were more than 6 degrees above normal. Precipitation was scarce through much of the month, especially in South Dakota where some locations had only reported a few hundredths through the first three weeks. The second half of the month turned wetter, starting with Kansas then across much of the central Plains towards Christmas. Some of the extreme drought areas in Nebraska and Kansas picked up 1 to 2 inches of total precipitation. The mountains of Colorado and Wyoming did not fare as well from these storms and continue to be below normal for snowpack, around 60 to 80 percent. Drought conditions remain stable for much of the area, with some improvement in the areas that saw significant precipitation.

There are still areas that have above average fuel loading from the wet spring and summer, mainly in eastern Colorado and Wyoming into the central Plains. This above normal fine fuel loading may lead to brief increases in fire potential during windy days following extended dryness. However, these instances would be localized and brief, likely only a burning period. Even though the month was warm and dry, initial attack activity remained minimal. Most fires were less than an acre in size.

El Niño will continue into the early spring but will be weakening. By April conditions may transition into neutral conditions, with neutral conditions favored by late spring. Temperatures should slowly trend away from above normal conditions as El Niño loses strength, but periods of well above temperatures remain possible through the outlook period. Precipitation will be trending towards normal conditions as well. The northern part of the Rocky Mountain Area is more likely to have below normal precipitation.

The outlook for the Rocky Mountain Area anticipates normal significant fire potential across the geographic area through April.

### **Eastern Area**

Normal fire potential is forecast across the Eastern Area January through February, with possible above normal significant fire potential across portions of the western tier beginning in March.

Fourteen to 30-day negative precipitation anomalies were indicated across the eastern half of the Great Lakes as well as portions of the Mid-Mississippi Valley toward the end of December. Longer term drought remained in place across portions of the Mississippi and Lower Ohio Valleys at the conclusion of 2023.

The El Niño Southern Oscillation (ENSO) transitioned from a 3-year episode of La Niña conditions (i.e., cooler than normal Pacific Ocean sea surface temperatures off the western coast of South America) to increasingly warmer than normal sea surface temperatures depicting an El Niño regime through the spring and into the summer of 2023. This El Niño episode is expected to remain in place through the spring of 2024, possibly into the summer season, although ENSO neutral conditions are looking more likely. Historical or analog climate trend comparisons are somewhat limited to very few past similar ENSO transitions on record, making longer term weather trend forecasts challenging. Other sea surface temperature 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 contiguous US has typically experienced above normal temperatures in past moderate to strong El Niño episodes during the winter season.

The Predictive Services precipitation outlooks forecast below normal precipitation across much of the Eastern Area in January, and central Great Lakes as well as the Mississippi and Lower Ohio Valleys heading into February. Wetter than normal trends may develop over the Mid-Mississippi and Lower Ohio Valleys in April. The Climate Prediction Center seasonal precipitation

forecast indicates drier than normal trends across the central and eastern Great Lakes south into the Lower Ohio Valley January into March.

According to the Predictive Service temperature outlooks, near normal temperatures are forecast across much of the Eastern Area January into February. Above normal temperature trends are expected across much of the Eastern Area March into April. The Climate Prediction Center forecasts above normal temperatures across the northern two-thirds of the Eastern Area January into March.

Normal fire potential is forecast for the Eastern Area January through February, with above normal potential possible within the western tier beginning in March if no pattern change occurs from above normal temperatures, below normal snowpack in the Great Lakes states, and negative precipitation departures in the southwestern states (Iowa, Missouri, Illinois, and Indiana). 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 central part of Minnesota, as well as moderate to extreme drought for a majority of the Midwest in the US Drought Monitor. Snowpack amount and density will be a big determinate in fire potential during the outlook period and beyond. Above normal temperature probabilities are forecast for the majority of the Eastern Area through the outlook period by the Climate Prediction Center. If these trends are realized their impacts could have the potential to bring the eastern tier into an early fire season and in areas where snowpack melts off early or anywhere that leaf litter and grasses don't get compressed by snow.

Longer term drought and negative soil moisture anomalies remained in place across much of the Mississippi and Lower Ohio Valleys as well as the central and eastern Great Lakes towards the end of December. If these areas receive below normal precipitation through the rest of the winter into the early spring seasons resulting in below average snowpack and/or precipitation, these areas may experience periods of above normal fire potential heading into the spring season.

### **Southern Area**

Significant drought relief is evident from the Gulf Coast into most of the Appalachians and eastern states, with three- to four-category improvements in the U.S. Drought Monitor (USDM) noted over the past month from southern Louisiana and coastal Mississippi into southern Alabama, the Florida Panhandle, and southwestern Georgia. Portions of the Tennessee Valley, southern Appalachians, and Piedmont have also observed significant drought improvement. Drought has expanded or intensified recently in portions of the Mississippi Valley, while minor changes are indicated elsewhere. The USDM updated on December 26 continues to show notable areas of extreme to exceptional drought across parts of Texas, Louisiana, Arkansas, Mississippi, Alabama, and Tennessee.

Rainfall anomalies over the past 90 days remain below 50% of normal from much of Kentucky and Tennessee into southeastern Arkansas, far southeast Texas, northern Louisiana, central and northern Mississippi, and Alabama, in addition to the far southern Appalachians, while more critical areas of below 25% of normal remain in northern Mississippi. Similar extreme dryness has been observed in the Trans Pecos, while the rest of the geographic area is closer to normal over the last three months. Scattered portions of Texas and Oklahoma, and most of Florida into south Georgia, in addition to portions of the Carolinas are in a surplus of precipitation, and 14-day averaged streamflow from USGS indicates much above normal water levels in these areas. Areas with Keetch-Byram Drought Indices (KBDIs) above the climatological maximum for this time of year in the Mississippi Valley will have to be monitored closely through the winter months since any lingering drought could affect the spring wildfire season there.

Above normal grass loading in the High Plains and Rolling Plains of Texas and western Oklahoma, in addition to portions of South Texas, may enhance the risk for wildfires if extended periods of dry, warm, and windy weather develop during the forecast period. On the other hand,

the Texas A&M Forest Service estimates below normal grass loading from the Hill Country into portions of the Trans Pecos, owing to the long-term drought and drier than normal growing seasons in 2023.

Wildfire occurrence across the majority of the Southern Area typically remains low in January, resulting from the coolest temperatures of the year and limited daylight. The main exception is across the Florida Peninsula and eastern Gulf Coast, where the probability for large fires begins to increase later in the month. February sees a continued increase in activity across Florida and along the Gulf Coast, with a notable increase in risk during the latter half of the month across much of Texas and Oklahoma as well. March into the first half of April is generally the peak of spring fire season for most of the geographic area, including the Caribbean islands. Timing of green-up in grass- and hardwood-dominant areas is the main driver of decreasing risks later in spring.

The ongoing strong El Niño event is the primary basis for expected weather conditions throughout the forecast period. Sea surface temperatures in the central tropical Pacific have continued to warm in recent months, while the cooling of eastern tropical Pacific waters adjacent to South America may be an indication that El Niño is nearing its maturity. This event rivals the five strongest El Niños going back to 1950 but, to date, falls just short of the historic Super El Niños of 2015-2016 and 1997-1998. El Niño is a near certainty through spring before neutral conditions develop by next summer. Long-lived El Niños are rare, and the pendulum has the potential to swing towards La Niña conditions as early as fall 2024.

Whereas El Niño correlates strongly to precipitation trends on seasonal timescales in the Southern Area, other climate drivers that are less predictable can still have major, hard-to-predict impacts beyond a few weeks at a time. If Arctic air masses plunge into the eastern U.S. as some guidance hints at later in January and February, the storm track could conceivably be nudged far enough south that very cold and dry conditions overwhelm the pattern outside of the Gulf Coast and Florida peninsula. Significant winter storms are also possible once colder air masses become available, which could theoretically alter fuels significantly, both in terms of compacting herbaceous fuels and by creating a fresh supply of heavy, dead fuels due to potential tree damage.

Most long-range weather and climate models continue to agree with El Niño climatology, and above normal precipitation is likely as a result along much of the Gulf Coast and East Coast the next few months. Stronger El Niños similar to this one have a wetter than normal signal across most of the geographic area, though some years feature drier than normal conditions from northern Mississippi into portions of Arkansas, Tennessee and especially western Kentucky. A sharp gradient in seasonal precipitation may occur in the Mid-Mississippi Valley through March and April, potentially setting up highly varying conditions during the spring wildfire season over a short distance. Confidence in precipitation trends is somewhat lower for the Rio Grande Valley, West Texas, and most of the Plains, which could allow for drought to persist or possibly expand in these areas. Meanwhile, above normal snowfall is favored because of this year's El Niño from the southern end of the Appalachians and Piedmont into most of central and eastern Virginia, with February expected to be the coldest and snowiest month of the outlook period. This may act to diminish or delay risks during the spring fire season in these areas. Should the coldest seasonal forecasts verify, spring green-up will be delayed as compared to 2023 for most of the Southern Area.

The Caribbean's dry season has begun, and conditions appear to favor worsening drought the next several months for much of Puerto Rico and the U.S. Virgin Islands. A relative peak in wildfire occurrence during March for the Caribbean islands may be exacerbated by worsening drought over the winter months, resulting in above normal significant wildfire potential in Puerto Rico and the U.S. Virgin Islands.

As a result of recent rainfall, a continued wet and cool pattern, along with above normal water levels, below normal significant fire potential is forecast across Florida into coastal Alabama and Mississippi in January. Normal conditions are anticipated elsewhere.

Below normal significant wildfire potential is likely to become more widespread in February as wetter than normal conditions alleviate drought and maintain elevated fuel moisture. Winter storms and below normal temperatures are also expected to be a factor in February, while below normal grass loading in portions of the Texas Hill Country should minimize risks there.

March is forecast to remain wet due to the continued influences of El Niño in most of the Southern Area, resulting in below normal significant wildfire potential from eastern portions of the Plains, along the Gulf Coast to the East Coast, to include the southern Appalachians. Above normal significant wildfire potential has been introduced in western Kentucky, in line with adjacent forecasts for the Eastern Area. Drought is likely to develop there over winter, and depending on conditions the next few months, adjacent PSAs in western Tennessee, northern Mississippi and eastern Arkansas may be included.

Conditions in April are of lower confidence, but even with expectations for a weakening El Niño, its impacts should linger well into 2024. As a result of what is likely to be an unusually wet winter, above normal water levels in portions of the Southeast and Florida will result in below normal significant wildfire potential there. If green-up is delayed in hardwood-dominant areas farther north, that could result in peak activity being skewed later into April than what typically occurs, especially for the Appalachians and Mid-Mississippi Valley. Above normal significant wildfire potential is maintained across the Caribbean and western Kentucky. Areas with above normal grass loading in Texas and Oklahoma may be candidates for above normal significant wildfire potential in April, but confidence is low in fire-effective weather occurring because of continued impacts from El Niño. In addition, areas that ultimately experience a wet and cool few months ahead are likely to see less-than-favorable conditions for prescribed fire, particularly for Florida, the Gulf Coast, and East Coast.

### **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>