National Significant Wildland Fire Potential Outlook

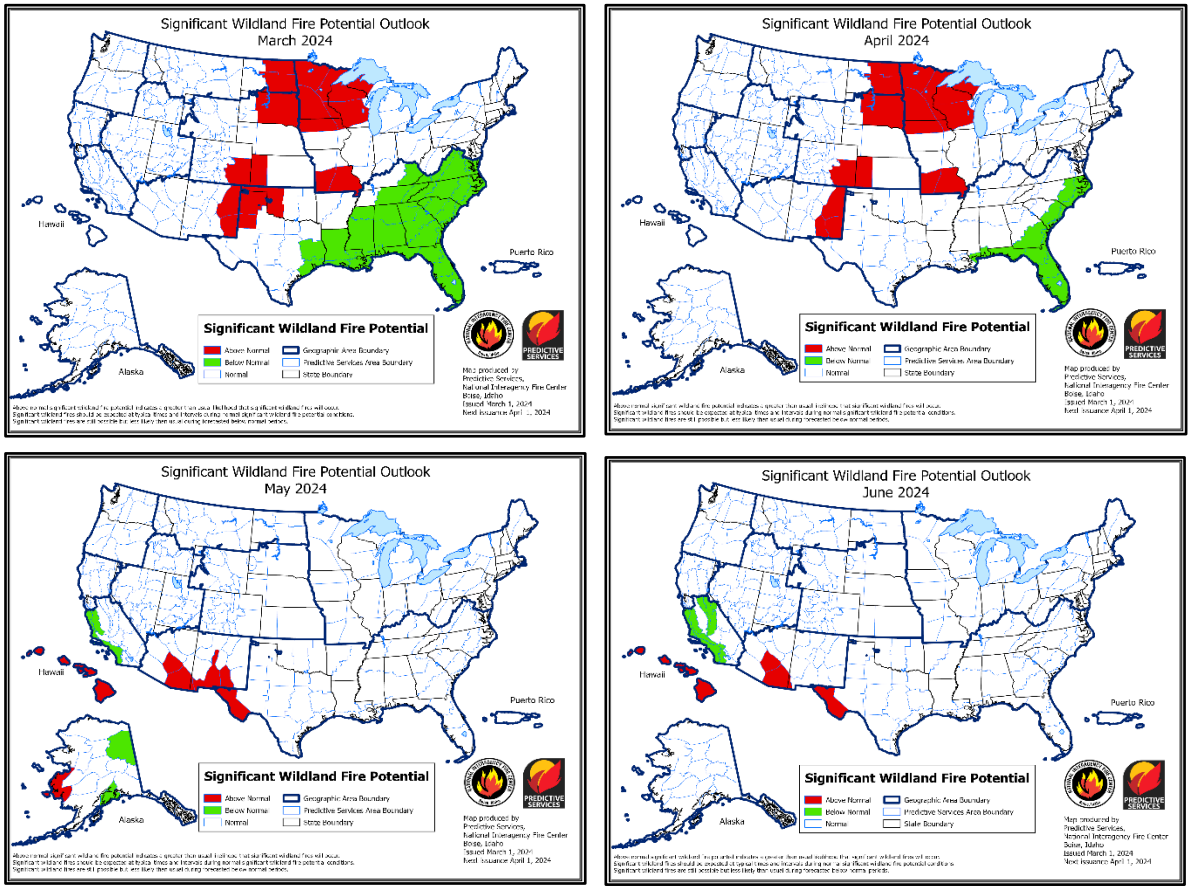
Predictive Services
National Interagency Fire Center

Issued: March 1, 2024
Next Issuance: April 1, 2024

Outlook Period – March through June 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 remained at low levels across the US at the beginning of February, but activity increased significantly across portions of the Rocky Mountain, Eastern, and Southern Areas the latter half of the month. The Eastern and Southern geographic areas increased to preparedness level 2 (on a scale of 1-5) on February 26 due to increased fire activity, with Southern Area increasing to preparedness level 3 on February 28, with dozens of large fires burning in the Southern Area at the end of the month. Year-to-date annual acres burned for the US is well above the 10-year average near 135%, but with a below average number of fires, near 92%.

Precipitation across the CONUS was below normal across the northern Plains, Midwest, Northeast, and Mid-Atlantic, with below normal precipitation across portions of west Texas and Washington into northern Idaho as well. Above normal precipitation fell across California and much of the southern two-thirds of the Intermountain West into portions of eastern Montana and the central High Plains. Precipitation was below normal across Interior Alaska, and much of

Hawai'i was below normal as well. Temperatures were above normal across the Plains and Mississippi Valley into the northern Rockies, Appalachians, Northeast, and Mid-Atlantic. Extreme to exceptional drought persists in southern New Mexico, with extreme drought also in portions of eastern Iowa and northwest Montana. Significant drought improvement occurring in the Lower Mississippi Valley where most areas were removed from drought, but drought developed in portions of the Upper Midwest and northern Rockies.

Climate Prediction Center and Predictive Services March outlooks depict above normal temperatures are likely for much of the northern half of the US and Alaska, while temperatures are likely to be near to below normal across the Southwest into the Southeast. Precipitation is likely to be above normal across much of southern California into the Great Basin and central Plains, while below normal precipitation is likely for portions of the Great Lakes and southwest Texas. By late spring, above normal temperatures are likely across much of the US, except for portions of the northern and central Plains where equal chances of below or above normal temperatures are forecast. Below normal precipitation will continue across portions of the Northwest through late spring, with below normal precipitation likely to encompass much of Texas, New Mexico, and eastern Arizona.

Much of the Southern Area is forecast to have below normal significant fire potential from southeast Texas to the Southeast Coast in March, retreating to the northeast Gulf and Southeast Coasts in April. Above normal significant fire potential is forecast for portions of the central and southern High Plains in March and April, as well as the Eastern Dakotas, Upper Midwest, and southern Missouri. These areas will return to normal potential in May, but potential will increase to above normal in the lower elevations of the Southwest into West Texas in May and June. Above normal potential is forecast for the lee sides of Hawai'i in May and June as well. The central and southern California coast will have below normal potential in May expanding to include the southern Sierra and Transverse and Peninsular Ranges of southern California in June. For Alaska, normal potential is forecast except for above normal potential in the Yukon/Kuskokwim Delta, and below normal potential for the Upper Yukon District and Kenai Peninsula in May.

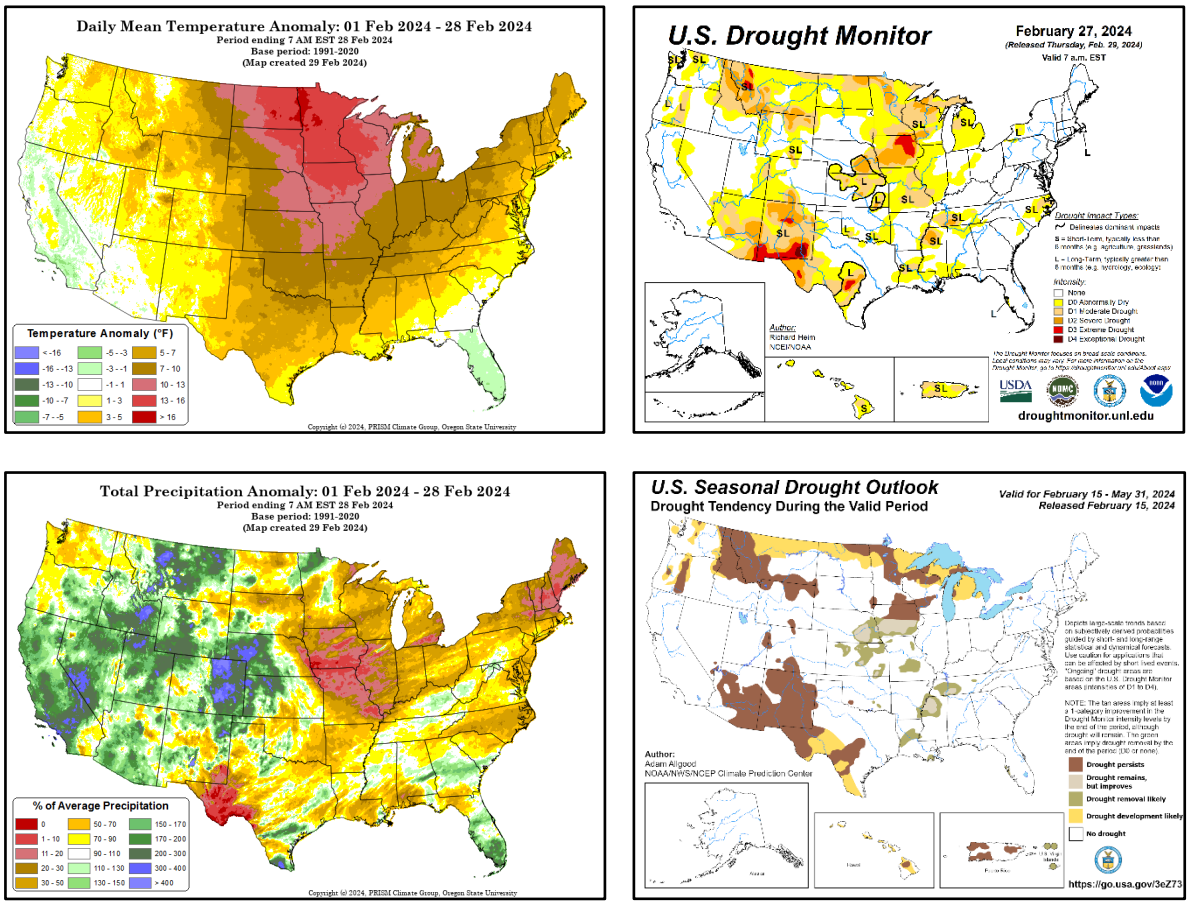
Past Weather and Drought

Temperatures were well above normal across the central and northern Plains into the Midwest for February, with the most extreme anomalies of greater than 15 degrees above normal over portions of North Dakota and Minnesota. Above normal temperatures also extended into the northern Rockies, southern Plains, Lower Mississippi Valley, Appalachians, and Northeast, while temperatures were near normal over much of California, the Great Basin, Southwest, and portions of the Southeast. Temperatures in Alaska were below normal across much of the Interior in February but were slightly above normal for the North Slope and Panhandle. Near normal temperatures were observed in Hawai'i. Precipitation was below normal across much of the northern Plains through the Midwest into the Northeast and Mid-Atlantic. Below normal precipitation was observed across portions of west Texas, western Oregon, Washington, and northern Idaho. Above normal precipitation fell across much of California, the Great Basin, Southwest, central Rockies, Montana, and the central High Plains. Interior Alaska recorded below normal precipitation for February, while portions of southwest Alaska were wetter than normal. Hawai'i precipitation was well below normal, with much of Kauai and the Big Island receiving less than 25% of normal precipitation for February.

Several atmospheric rivers made landfall on the West Coast, with the greatest impacts in California. The strongest series of atmospheric rivers hit California February 3-6, with downtown Los Angeles receiving over 8 inches of rain in a 72-hour period. Over a foot of liquid equivalent precipitation fell in portions of the southern California mountains, much of which fell as snow above 6,000 feet. Heavy snow fell across portions of central and eastern Montana February 6-7 as well. A potent Nor'easter affected the Mid-Atlantic and southern New England February 12-13 with heavy snow, but the rest of the month was relatively dry with only periodic cold fronts

producing light precipitation. Continued weak atmospheric rivers the remainder of the month brought frequent periods of precipitation to much of the West, with near to above normal precipitation.

Periods of well above normal temperatures were common across the Plains, with the northern Plains as much as 30 degrees above normal February 1-8 and 25 degrees above normal February 19-25. Well above normal temperatures spread into the southern Plains as well February 23-26, with dozens of record high temperatures set February 25 and 26 as temperatures rose above 90°F across portions of Texas. With the warmer than average temperatures, winds increased at times as well, particularly across the High Plains. A strong westerly wind event coupled with low relative humidity February 25-26 triggered a fire outbreak across the central and southern Plains from Nebraska to Texas. Several new and significant fires began during this outbreak including the Betty's Way Fire near North Platte, Nebraska and the Smokehouse Creek and Windy Deuce Fires in the Texas Panhandle. Alaska was very cold to start February with continued snow in the Anchorage area, but temperatures warmed significantly to well above normal for mid-February before temperatures cooled back to below normal values at the end of the month.



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

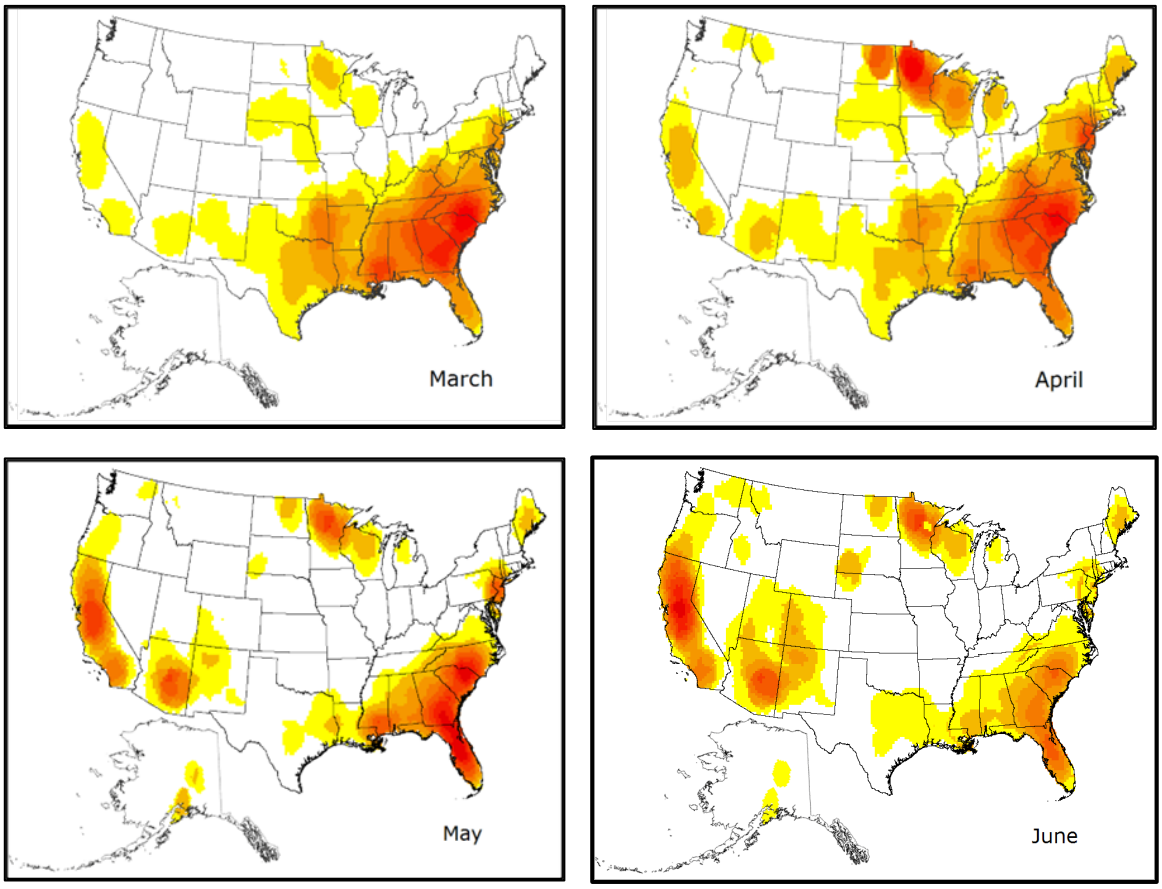
Drought improved in much of the Lower Mississippi and Tennessee Valleys, with drought removal across much of the area. Drought also improved across portions of the Southwest and eastern Montana. However, drought worsened in northern Idaho and Montana west of the Continental Divide, with drought developing and intensifying across the Upper Mississippi Valley and northern Great Lakes. An area of abnormally dry conditions has developed across eastern North Carolina due to dry conditions the past two months. California remains drought free, but drought persists on the Big Island of Hawai'i with much of Hawai'i abnormally dry as well. Drought persists across Puerto Rico and the US Virgin Islands but has improved the past month. Drought will persist across the Southwest and is forecast to develop across southwest Texas. Drought is also

expected to develop where it does not yet exist from portions of Washington eastward into northern Michigan.

Weather and Climate Outlooks

El Niño continues in the equatorial Pacific Ocean, with the warmest sea surface temperature (SST) anomalies in the central Pacific Ocean. El Niño has also been weakening the past two months, with the active Madden Julian Oscillation (MJO) of January weakening over the past month as well. A rapid weakening of the current El Niño is forecast to continue through March, with the Climate Prediction Center (CPC) forecasting neutral El Niño-Southern Oscillation (ENSO) conditions for the April – June period. A rapid transition to La Niña is becoming increasingly likely by early summer, with CPC forecasting a 55% of La Niña for the June – August period. The MJO, Pacific Decadal Oscillation, Pacific-North American Pattern, and Arctic Oscillation are likely to influence weather and climate during the outlook period, but the transition from El Niño to ENSO neutral conditions 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 in March and April. In May the potential will be above normal in the Yukon-Kuskokwim Delta but below normal in the Upper Yukon Valley and south-central Alaska. In June typical wildfire behavior is expected statewide.

Wildfire activity is typically minimal through March as the snowpack prevents significant activity. The season's first wildfires will likely break out in April at lower elevations in the Interior as the snowpack begins melting. All areas will become free of snow in May, and Alaska's wildfire season proper will begin. June typically sees some of the most serious wildfire concerns of Alaska's season.

No areas of Alaska are in drought status. As of late February, most of Alaska is covered by a normal or even above normal snowpack, but the snowpack over portions of southwest Alaska is below normal.

The prominent El Niño now in place suggests a tendency for warm weather for the end of the winter and into early spring. 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 portion 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 March and April finishes at or above normal.

Alaska is out of season, and no wildfires are being tracked as of late February. 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. The snowpack across most remaining burnable elevations will melt in May, and the subsurface fuels will begin drying and warming. Subsurface fuels typically warm and dry significantly in June, opening the opportunity for significant wildfire activity in the duff layer as well as the larger vegetation.

No meaningful wildfire activity is expected through March. 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. The window for significant wildfire potential opens in May over southwest Alaska, provided the current trend for a below-normal snowpack persists in that area. The season may begin with a delayed start in the Upper Yukon Valley and over south-central Alaska where the snowpack is somewhat higher than usual and may take more time than usual to melt.

Northwest

The Northwest Geographic Area significant fire potential is expected to remain normal through March, which is minimal. Despite with warmer and drier conditions anticipated throughout the late winter and early spring for Washington and sections of Oregon, the potential for significant fires will remain at minimal or low risk until late June or July.

Weather systems moving onto the West Coast from the Pacific brought heavy precipitation to California and the Great Basin. Some of the abundant moisture also moved into central and eastern Oregon and northeastern Washington where precipitation was above average for the month. Farther north and west, precipitation in February was less than average for western Washington and northwestern Oregon.

Temperature in February was above average for just about the entire region, especially northeastern Washington and eastern Oregon. The unusually warm temperatures for the region meant that the snow level was higher than typical for incoming weather systems. This has largely been true for much of the geographic area since October 2023.

Snow water equivalent at the end of February for reporting stations above 4,500 feet are at or above average for much of Oregon with some exceptions near Mount Hood. Temperature at high

elevation has remained cool enough to prevent melt. However, at elevations below 4,500 feet in Oregon there are many stations reporting below average accumulation of snow, which is melting due to the unusually warm temperatures.

Snow water equivalent for Washington in late February are overwhelmingly below average, especially for the Olympic Peninsula and west slopes of the Cascades. Accumulation has been poor, and melt has been continuing, especially at lower elevations.

Drought designations have shrunk over western Oregon and western Washington since December. However, during that same time some drought areas have worsened in central and northeastern Oregon.

Fire activity continued to be minimal in February. Prescribed fire activity continued as conditions allowed. In general, fuels continue to be too moist to support noteworthy risk of significant fires in the Northwest Geographic Area. There continues to be a lack of substantial snowpack across much of the Pacific Northwest. Fuels conditions will continue to be monitored as we move toward spring and green-up. East of the Cascades cured low elevation rangeland fuels may exhibit increased potential rates of spread when aligned with strong winds.

The outlook for February and beyond from NOAA and other sources continues to suggest that temperatures will generally remain above average for the Pacific Northwest and precipitation below average for Washington and northern Oregon.

Northern California and Hawai'i

Significant fire potential is projected to be normal from March through June. During March through May all PSAs average less than 1 large fire per month. During June, generally 1-2 large fires occur per PSA. Hawaii's significant fire potential is normal for March and April then transitions to above normal for the leeside areas during May and June.

February was an unsettled weather month with extended periods of significant moisture due to an active jet stream. Precipitation was reported on at least portions of northern California on all but seven days, and atmospheric river events occurred during three separate periods. Precipitation anomalies were generally above to well above normal with a few small pockets of below normal across the far north and east. Average temperatures were generally near to above normal with some smaller pockets of below normal. There were nearly 1,400 lightning strikes recorded during the month, which is well above the 2012-2022 January lightning strike average of just under 250. Weak to very weak drier northerly and easterly wind events occurred on February 10 and 23. Several strong southerly wind events occurred but were accompanied with higher relative humidity.

Dead fuel moistures were unusually moist across most of the area and not very flammable. However, readings were closer to normal, if not a little below normal, across the Northeast California and Far Eastside Predictive Service Areas (PSAs) during the first half of February. Shrub and canopy fuels were mostly dormant and less flammable. Some species like manzanita and chamise were starting to show some green-up signatures during the latter half of the month across the lower elevations. Herbaceous fuels were in various forms of a green-up state below 3,500 feet with some noticeable growth across the lowest elevations. Moisture found within the snowpack continued to climb and by February 27 ranged between 80 to 95 percent with snow cover generally found above 4,500 to 5,500 feet depending on aspect and sheltering. There were no drought designations for northern California.

Fire business was light during February with an average of less than one fire per day. The largest fire was less than one acre and there were no lightning fire ignitions. Pile burning was the main fire business activity and there was a slow down during the third week of the month due to significant precipitation and access issues.

There will be several complex oceanic-atmospheric teleconnections during the next four months that will alter the jet stream and storm track, leading to outlook uncertainties. Mixed precipitation signals show up for March although the pattern has trended more moist so expect near normal results with some pockets of both below and above normal precipitation. March temperatures should be near to below normal. Near normal precipitation is expected for April through June which suggests at the very least timely moisture intrusions. The temperature forecast is a bit more uncertain and will be tied to how quickly El Niño transitions to a neutral state and perhaps La Niña beyond the 4-month outlook period. The latest dynamic climate models indicate a warmer than normal trend while chosen analog years depicting a quick ENSO transition suggests near to below normal results. Dry northerly or offshore wind event activity should be near to below normal.

Based on the latest weather projections peak green-up should be near normal which means late March to early May. More noticeable curing across the lowlands should occur from mid-May into June although the curing may be slowed if the cooler temperature forecast comes to fruition. The snowpack improved significantly during the past two months and the expectations are for near normal moisture content on April 1, when snowpack moisture is generally at its peak. The most impactful snow cover should be found above 5,500-6,000 feet heading into the early summer with a tight gradient between the snow covered and non-snow-covered areas. Drought is not expected to develop, and critically dry alignments should be kept at a minimum therefore normal significant fire potential has been designated for northern California from March through June. Some below normal areas may need to get introduced for June if confidence in the forecast builds. The prescribed fire burn window for larger projects should be favorable this spring into the early summer.

Sea surface temperature (SSTs) anomalies surrounding the Hawai'ian Islands were generally near normal by the end of February. Average temperature anomalies observed during February were mixed with some islands near to above normal and others near to below normal. The cooler readings favored Moloka'i and Maui. Precipitation anomalies were below to well below normal. As of February 27, drought coverage changed little compared to late January although more abnormally dry areas developed across the island chain, and drought remained relegated to portions of the Big Island. Drier cold front and enhanced trade wind periods impacted the island chain throughout the month and lead to several days of gustier winds, but no Red Flag Warnings were issued.

El Niño conditions will likely transition to an ENSO neutral state during the outlook period. Average temperatures should generally be above normal while precipitation should be near to below normal. Drought coverage and intensity is likely to expand as the transition from the wet to dry season occurs. The new herbaceous fuel loading is expected to be near to below normal although some abundant standing dead from the previous growing season may still be a player going into the dry season. Normal significant fire potential is projected for March and April with some expected timely moisture intrusions coupled with residual green-up mitigation despite increasing drier than normal conditions. Above normal significant fire potential has been forecasted for May and June due to the expansion of drought and the likelihood of more noticeable herbaceous curing across the leeside areas. Wind events will be a wildcard.

Southern California

The potential for significant fires will be near normal across the entire region through April. The lower elevations will likely see a below normal threat for significant fire in May, then most of the region will likely see a below normal threat for significant fire in June.

A series of strong Pacific troughs and associated atmospheric rivers moved inland into California from the Pacific Ocean during February. Only brief weak areas of high pressure moved inland in between the storms. Temperatures were well below normal with the troughs and near to slightly below normal with the weak ridges. Overall, temperatures were 3 to 7 degrees below normal for

the month. Periods of rain, heavy at times, moved across the area during the month, with only brief breaks in between storms. For the month, precipitation was between 200 and 400% of normal over most of the region. The snow level was mainly between 6,000 and 8,000 feet for much of the month, but briefly dropped to between 4,000 and 5,000 feet February 6-7. Many new feet of snow fell over the High Sierra and over the higher mountains of southern California. Since snow levels were high most of the month, the snowpack in the Sierra is currently only 80% to 85% of normal and is around 65% of normal for the typical peak, which is on April 1. Strong southerly winds accompanied the Pacific troughs throughout the month, but there were no significant Santa Ana wind events.

Almost the entire region remains absent of drought. However, abnormally dry conditions continue near the Colorado River. Also, a new area of abnormally dry conditions has emerged over the eastern Sierra in Mono County. The well above normal rainfall brought well above normal 1000-hr and 100-hr dead fuel moistures to most of the region during the month, except over the eastern Sierra where dead fuel moistures were near to below normal. Live fuel moistures are slowly increasing and are now mainly between 80% and 100%, and widespread green-up continues across the lower elevations. Expect curing of fine fuels over the lower elevations to start in April and be almost entirely cured by the beginning of May. However, fuel moisture in the brush is expected to last into at least early summer.

Sea surface temperatures (SSTs) are slowly cooling over the Gulf of Alaska and West Coast, even though on average they remain quite a bit above normal. Computer models show that these SSTs will continue to slowly cool through the spring months. With SSTs slowly cooling over the Gulf of Alaska and West Coast, expect low pressure to be the dominant weather feature over California with only brief periods of high pressure. This dominant trough will likely continue to bring below normal temperatures and near to above normal precipitation March through June. Above normal sea surface temperatures over the Equatorial Pacific will allow stronger troughs to bring subtropical moisture and heavy rainfall into the region through April. The amount of Santa Ana wind events will likely be well below normal through June as well. Cooling sea surface temperatures off the West Coast will allow for an above normal marine layer influence over the coastal areas in May and June. Due to the expected wet and cool conditions, large fire activity will likely remain normal through April and then become below normal in May and June when fire activity normally increases.

Northern Rockies

Significant wildland fire potential in the Northern Rockies Geographic Area (NRGA) for March through June is expected to be normal, except above normal potential is forecast in eastern North Dakota in March and April. This period sees little fire activity in the NRGA except for fires associated with extreme wind events in the lee of the Continental Divide. Weakening El Niño indices are expected to transition to ENSO-neutral by late spring and may continue transitioning to La Niña by early summer. While Climate Prediction Center forecasts do not show any areas of above normal precipitation potential in the outlook, some long-range climate models have shown consistently wet signals in May. This is an important detail because May is a high moisture month for the region, and a wet May could reduce precipitation deficits accumulated over the drier months of February through April. In addition, an anomalously wet May could impact this year's prescribed burns.

The temperature and precipitation trends from the last month were strongly different from west to east in the geographic area. Northern Idaho and western and central Montana had slightly below normal temperatures, rising to slightly above normal in eastern Montana, trending to well above normal temperatures in eastern North Dakota over the last 30 days. While precipitation is not as smooth of a gradient, it shows a somewhat similar trend, with generally below normal precipitation over north Idaho and western Montana and then slightly above normal precipitation in central Montana gradually fading to slightly below normal precipitation in most of North Dakota. Warmth and lack of precipitation continued the expansion of drought and abnormally dry conditions, with

1- to 2-class degradation across a large swath of the Northen Rockies. All western Montana and northern Idaho are currently under moderate to severe drought, with small pockets of extreme drought. Abnormally dry conditions reach across most of central and eastern Montana and North Dakota. The northeastern corner of North Dakota is also experiencing moderate to severe drought. The seasonal drought outlook shows that drought is likely to continue expanding in central and eastern Montana and in North Dakota.

As a result of warmer than normal conditions, some precipitation falling as rain rather than snow, and some areas of below normal precipitation at higher elevations, snowpack is still below normal in all basins in the Northern Rockies. Most basins are between 60% and 70% of normal snowpack, with two basins between 50% and 60%. A few individual stations are near normal snowpack just west of the Continental Divide, but no stations are above normal. Periodic light snowfall over the plains has kept fire danger indices low in central and eastern Montana and North Dakota so far. Grass fuel types are usually compacted by snow this time of year, making these fine fuels harder to burn. However, in areas with little snow accumulation, uncompacted grassy fuels will be more readily available to burn during high wind and low humidity events. 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 below normal snowpack levels.

Late in the month a 600-acre fire due to a coal seam occurred in southeast Montana. Otherwise, little to no initial attack was recorded, and conditions generally prevented prescribed burning across most of the area.

Most PSAs are expected to have normal significant wildland fire potential for March through June. The two PSAs in eastern North Dakota have experienced well above normal temperatures and below normal precipitation with lingering drought warranting above normal significant fire potential for March and April. The seasonal forecasts for March and April suggest warmer and drier than normal conditions, which could trigger an earlier onset of prescribed fire season. This may be especially important if the wetter than normal forecast for May manifests and impacts the ability to burn during that month. The continued drought signature, especially in north Idaho and northwest Montana, could result in drier than normal fuel conditions this spring and have impacts for prescribed burning prescriptions. Managers should start watching trends in Energy Release Component (ERC), dead and live fuel moistures, and Burning Index (BI) earlier this season in preparation for a potentially earlier than normal prescribed fire season.

Great Basin

Fire activity remains low in the Great Basin, due to time of year with shorter daytime hours, fuels in dormancy, and cold frontal passages bringing cooler temperatures, higher humidity, and precipitation. Fire activity is expected to remain low and normal for the time of year through April and pick up in May and June from south to north, which would be normal. 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, depending on weather conditions. However, these instances would be localized and for a burning period.

Temperatures over the last 30 days have been near to just above normal. However, a few cold fronts have moved through the region and brought drops in temperatures and breezy winds for short periods to all areas. Most areas of the Great Basin have seen near to well above normal precipitation. Some drier areas that received below normal precipitation are portions of central Idaho, the Arizona Strip, and portions of eastern Utah. The Great Basin is generally absent of drought, except for far southern Nevada, the Arizona Strip, and far eastern Utah where abnormally dry conditions still exist. These areas will likely see some improvements to the drought into the spring as El Niño potentially brings more precipitation to the south. Areas that have shown signs of drying are western Nevada and central Idaho, where abnormally dry to moderate drought conditions have developed. These areas may remain unchanged heading into the fire season.

Fuel moisture will continue to increase through the spring. 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 that may increase fire potential for a burning period or two, as grasses will be dormant through at least early spring.

Fire activity remains low across the Great Basin, although prescribed burning activity continues over the southern half of the Great Basin.

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 continued pattern of cold fronts moving through the Great Basin is expected to continue as spring approaches keeping fire potential low. Fire activity should start picking up over the southern half of the region toward May into June, along with the lower elevation grasses in northern Nevada, southern Idaho, and northern Utah, which would be normal. Otherwise, the focus over the next few months will be watching the precipitation pattern and temperatures, along with the duration of lower elevation snowpack. The Great Basin could be primed for significant fine fuel growth in the spring depending on the weather over the next few months. However, the normal weather impacts that would occur from El Niño have been modified due to more dominant atmospheric oscillations, so the precipitation may not be as heavy or classic as would normally occur with most of El Niño years. Above normal precipitation is still expected for March and April across much of Nevada and Utah, which could quickly translate to areas of above normal fire potential by June in some lower elevation areas. Confidence is too low to forecast above normal potential, however, it is very possible with later outlooks. There are lower chances that above normal precipitation will affect central Idaho, which will be a factor later in the summer.

Southwest

While normal significant fire potential is expected for much of the region from March to June, some areas of above normal significant fire potential are expected across both the southeast and eastern sections of the region during the spring. In addition, areas of above normal significant fire potential are likely to arise across portions along and south of the Mogollon Rim later in May into June.

Over the bulk of the period from late last fall through January, precipitation was below normal across central and western Arizona and across far southeastern New Mexico, while southern sections of Arizona and much of central New Mexico experienced above normal precipitation. During February, some wetter than normal areas occurred across northern into northeastern New Mexico and across southern Arizona into southwestern New Mexico, while western into central Arizona was below normal and southeastern New Mexico saw below normal precipitation.

A shift in the Equatorial Pacific sea surface temperatures will most likely play a prominent role in shaping the weather pattern for the spring months into early summer. El Niño is starting to weaken and is expected to continue to weaken, maybe even quickly, over the next couple months, with a possible transition into weak a La Niña by the late spring or summer months. Although the late fall through January period turned out to be milder than average for much of the western part of the region, the beginning of the new year turned cooler than normal for most locations of the region during the month of January and has continued to have a cooler tilt for much of February. However, milder temperatures were observed across much of New Mexico. A thorough inspection of past years with a flip from an El Niño to close to or into La Niña in less than 6 months reveal overall cooler and more moist tendencies across the northwestern two-thirds of the region with a close or nearby jet stream well into the spring months. This spring could see periods of cooler temperatures well into April with wetter than normal precipitation areas focused north and west through March and perhaps lingering well into April. It could be until April or May before regular drier than normal periods arrive, especially across the northwestern portion of the region. As a result, significant fire potential is expected to remain near normal for most portions of the region for the first few months of the forecast period except for the eastern and southeastern plains

where the combination of frequent strong winds and low relative humidity will be common. This will bring about areas of above normal significant fire potential for the east and southeast through April. The abundance of fine fuels across parts of the eastern plains could add to the concern during the spring months. In addition, sections along and south of the Mogollon Rim could point towards above normal significant fire potential later in the spring into the early summer given elevated amounts of fine fuels as well.

Farther out to the summer monsoon season, there is some potential for a slightly delayed onset this year with an eventual focus for enhanced precipitation along and west of the Divide. Drier than normal conditions for the monsoon are possible across both the far eastern plains and areas to our northwest in the Great Basin. While confidence is increasing in this scenario, it's still uncertain as much of it will depend on how quick the transition out of El Niño occurs this spring.

Rocky Mountain

Much of the Rocky Mountain Area will continue to see normal fire potential. However, part of southeast Colorado and much of South Dakota will see above normal potential in March and April. The El Niño pattern has continued to weaken and is expected to dissipate by the late spring. After a brief break from typical El Niño pattern last month, largely the normal pattern returned for February. Most of the area saw drought conditions remain largely unchanged with some worsening conditions across northern Wyoming.

After the departure in January away from the typical El Niño, the pattern returned to more typical conditions. Much of the northern Plains saw a return of above normal temperatures for the month, with parts of eastern South Dakota more than 10 degrees above normal. The rest of the area saw fewer extreme temperatures but were still 3 to 7 degrees above normal. Precipitation was a little less typical for El Niño, with much of the area above normal, as only northern Wyoming and South Dakota, along the Missouri River Basin, below normal. However, with the warmer than normal temperatures, more of the precipitation that fell was rain rather than snow. This has resulted in lower-than-normal snow cover into the Plains. The lack of precipitation across northern Wyoming has worsened the ongoing drought. Across the rest of the area, drought conditions remained largely unchanged through the month.

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. The lack of the fine fuels being compacted from the snow cover has left more fuels available going into the spring warm up.

With cold and wet conditions, initial attack activity remained minimal. Most fires were less than an acre in size. A few fires did grow larger but were still contained in one operational period. At the end of the month, a significant wind event produced several wind-driven grass fires east of the Rockies in Colorado, and on the Plains in Nebraska and Kansas. Several of these ran for several miles, such as the Betty's Way Fire near North Platte, Nebraska.

El Niño will continue weakening and by April conditions may transition into the neutral phase, with neutral conditions likely by the late spring. Temperatures across the northern Plains will continue to decrease from above normal values as El Niño weakens. Temperatures for Colorado and Wyoming are less certain but are likely to turn above normal heading into May and June. Precipitation will be trending towards normal conditions as well, but conditions may start to trend back below normal in May and June. During March there is an increasing chance for wind events along and just east of the Rocky Mountains, which could be accompanied by warm and dry conditions, especially in southeast Colorado and western Kansas.

The outlook for the Rocky Mountain area anticipates normal significant fire potential across most the geographic area through June. However, with the increased potential for wind events accompanied by warm dry conditions along the southern Rocky Mountains, above normal

potential is expected in March into April. The dry, warm winter across South Dakota will increase the large fire potential through the spring warmup as well.

Eastern Area

Normal fire potential is forecast across the majority of the Eastern Area through June, with above normal wildfire potential across the Upper Mississippi Valley and the north-central Great Lakes March into April. 30-to-60-day negative precipitation anomalies were indicated across the much of Minnesota, northwestern Wisconsin, the Upper Peninsula of Michigan, and the central and northeastern tiers of the Northeast towards the end of February. Longer term drought remained in place across portions of the Mississippi Valley and the northeastern Great Lakes towards the end of February. In addition, below normal snowpack was in place across the northern tier of the Eastern Area towards the end of February.

The El Nino Southern Oscillation (ENSO) is forecast to transition from an El Niño to an ENSO neutral sea surface temperature regime this spring, and then La Niña conditions by early summer. Other sea surface temperature regimes also contribute to global weather patterns adding to some uncertainty in long term weather forecasts. With El Niño conditions expected to persist through the rest of the winter into the early spring season, the north central portions of the contiguous US will likely continue to experience above normal temperatures. Precipitation trends are more uncertain but drier than normal conditions across the Upper Mississippi Valley and north central Great Lakes may persist into the spring season.

The Predictive Services precipitation outlooks forecast below normal precipitation across the Mid-Atlantic states and southern New England in March. Drier than normal conditions are expected over the Upper Mississippi Valley and the central Appalachians heading into April. Above normal precipitation is forecast over the Mid-Mississippi Valley in April and the majority of the Mississippi Valley in May. Drier than normal conditions are forecast over the northern Mid-Atlantic States, Indiana, and the southeastern Lower Peninsula of Michigan in May. NOAA's Climate Prediction Center's precipitation outlook for March through May indicates wetter than normal conditions likely across the southern tier of the Eastern Area.

According to the Predictive Service temperature outlooks, above normal temperatures are forecast across the majority of the Eastern Area April into June. The Climate Prediction Center forecast also predicts above normal temperatures are likely across the majority of the Eastern Area March into June 2024, with the warmest temperatures across the Northeast.

Normal fire potential is forecast for the eastern tier of the geographic area through the outlook period. For the western tier, including Michigan and Indiana, fire season has had an early beginning and potential for increased and potentially significant fire activity is present due to continue above normal temperatures and very early snow off conditions. Exposed fine fuels and tall grasses that were not compressed under snow have become available to burn. Hot, dry, windy events and persistently strong winds will be a big determinant in both the potential for increased and significant fire activity during the outlook period. Early green up or lack of curing of grasses from a warm and predominantly snow free fall and early winter may temper the fire potential from an early snow melt in some areas. Long term drought as shown in the US Drought Monitor continues to exist in the western tier but is not expected to become a driving factor until green up starts occurring, which is likely to be earlier than normal during this outlook period. Environmental conditions for both prescribed burning and wildfire will be present simultaneously during the outlook period, trending towards a truncated burning season due to early green up and even early wildlife migration.

Longer term drought and negative soil moisture anomalies remained in place across portions of the Mississippi Valley and the northeastern Great Lakes towards the end of February. If these areas continue to experience below normal precipitation and above normal temperature trends through the spring season, these areas are likely to experience periods of above normal fire

potential. Below normal snowpack was in place over the northern tier of the Eastern Area towards the end of February which is leading to an earlier than normal onset of the 2024 spring fire season.

Southern Area

Meteorological winter featured significant drought relief across the Southern Area, most notably throughout the Appalachians, Mississippi Valley, and middle Gulf Coast. On the US Drought Monitor over the past three months, small areas of developing dryness or drought are noted in eastern North Carolina, Puerto Rico, and southwest Texas, with the only lingering extreme drought found in small portions of the Texas Hill Country and Trans Pecos. For the Caribbean islands, 90-day rainfall has been below normal in scattered areas, but February has unexpectedly turned the corner. Most of the islands have seen 2-4 times normal rainfall over the past 30 days, likely reducing wildfire potential there from what was expected on previous outlooks.

Green-up is under way and is estimated to be earlier than normal by several weeks where temperatures have averaged above normal this winter across the northern tier, while conditions farther south have lagged normal by up to a couple of weeks. All of this is according to the National Phenology Network's Daily Spring Index Leaf Anomaly. As has been the case the past few springs, an early green-up followed by late-season hard freezes could temporarily alter the state of fuels. Spring green-up along with longer days can also result in increased demand for water, so areas with below normal soil moisture will have to be watched closely, especially in pine-dominant and wetland communities. Pine trees and southern rough fuels typically see an annual minimum in live fuel moisture during March or early April, just ahead of a flush of new growth. This could enhance wildfire risks until live fuel moisture increases seasonally.

Recent precipitation deficits have proven problematic, even in areas that have had a wet winter. This has been especially true as abnormally dry air masses have infiltrated the Southern Area in February. Lower than forecast minimum relative humidity has occasionally plagued prescribed fire operations in portions of the region, while leading to rapid surges in fuel dryness from the Plains into the Mississippi Valley, Southeast, and Appalachians. A break in what was an otherwise wet winter led to drier-than-expected fuels developing across the middle Gulf Coast, where some areas may be continuing to experience impacts from the 2023 drought. Tree mortality from drought and the Southern Pine Beetle may contribute to the fire environment this year, especially from southeast Texas into Louisiana, Mississippi, and Alabama. The National Drought Mitigation Center's Long-Term Composite Drought indicates lingering drought in these areas, most notably from Louisiana into parts of Mississippi, and from eastern Kentucky into western and northern Virginia. The 3-week Evaporative Demand Drought Index () as of February 22 was most alarming across the Appalachians and West Texas, indicating less than 2% of years have observed higher evaporative demand for this period.

Of greatest concern, 2023's growing season featured wetter than normal conditions that were centered on the Texas and Oklahoma panhandles, where ground reports from the Texas A&M Forest Service and Oklahoma Forestry Services show widespread above normal grass loading. This heavy fuel loading extends into much of the rest of western Oklahoma and northwest Texas. Meteorological winter was much wetter than normal across most of northwest Texas into western Oklahoma, which has resulted in cool season grasses greening up and providing some breaks in the fuelscape. Nevertheless, above normal dormant grass loading has shown its hand in the High Plains as the region has moved into a 14-day period of no wetting precipitation, with periods of record warmth leading to accelerated drying of the grass-dominated landscape. Of note, the 2015-2016 growing season and dormant fire season are eerily similar to what has evolved in 2023-2024, both dormant seasons occurred amid an historically strong El Niño. Six-month rainfall anomaly maps during last year's growing season reveal the areas with at least 150% of normal rainfall were scattered from the Texas panhandle and smaller parts of the Rolling Plains and northwestern Oklahoma, coverage of these rainfall anomalies was higher in 2015. Grass loading is also above normal in interior South Texas, while most of the rest of the Plains has ground-verified near to below normal fuel loading.

Below normal temperatures and above normal precipitation have been common across the Florida peninsula this winter, where soil moisture data from and streamflow data from support reports of above normal water levels.

Hurricane debris from 2020's Laura and 2021's Ida in Louisiana could at times contribute to available fuels there, while Ian's impacts may affect southwest Florida if drier trends develop this spring.

The probability for large fires typically peaks in March to early April for most of the geographic area, with diminishing risks tied to green-up in grass- and hardwood-dominant areas. Meanwhile, the Texas mountains and Florida peninsula normally expect an increase in lightning-caused large fires later in spring, with diminishing trends in early summer as fuel moisture increases after multiple wetting rain events. Large fire climatology across the Plains extends from March into April and sometimes later depending on if or when grasses see sufficient precipitation to induce new growth. Deeper layer soil moisture in the Plains may be sufficient to induce green-up across portions of the Plains unless hot and dry conditions become persistent through the spring.

There is plenty of uncertainty in expected weather conditions heading through the next several months. El Niño is likely to quickly fade, with neutral conditions by the end of spring and a burgeoning La Niña possible as early as June. Current forecast guidance is supportive of the idea that atmospheric conditions often lag changes in oceanic temperatures, and periods of wet and cool weather appear increasingly likely for parts of the eastern United States during March and April. In fact, model guidance unanimously supports the return of abundant rainfall and limited drying for the central and eastern Gulf Coast into northern Florida, the Appalachians, and much of the East Coast during the opening weeks of March. The risk for Nor'easters capable of producing coastal flooding, heavy rainfall, and mountain snow may increase if the impacts from a polar vortex disruption and high latitude blocking develop over the North Atlantic, as current guidance is trending towards. It should be noted that model guidance also showed a similar pattern in February, which never materialized. If frequent soaking rainfall does not return to North Carolina in March and April, concerns for wildfires may grow later in the spring as conditions warm.

Prior year analogs across the southern United States are highly variable heading out of strong El Niño events, while climate models lend little confidence to expected weather later this spring into the start of summer. Flash drought development is possible across portions of the geographic area, but it is too early to say what areas are in play. The impact from a potential La Niña could even begin to be felt by June, in which case, hotter and drier than normal conditions could develop along much of the Gulf Coast into the Lower Mississippi Valley. An early start to the Atlantic hurricane season may also occur given record warm sea surface temperatures are pervasive throughout the main development region. However, it is too early to know if activity may impact the Southern Area.

Periods of unsettled weather will likely kick off March in the Caribbean. As the rainy season kicks in later this spring, concerns will shift towards flooding potential, especially if La Niña develops as expected.

Confidence is high in above normal significant fire potential for at least the beginning of March across Predictive Service Areas (PSAs) SA01, SA02 and SA04 in the Texas and Oklahoma Plains. The duration of these abnormally dry, cured fuels and frequency of fire-effective weather patterns are in question, but forecast guidance depicting a mean upper trough in the West during March suggests multiple high wind events will occur. Despite the lack of appreciable drought, additional short-term drying and most importantly, above normal grass loading, are the primary factors here. This above normal potential could easily expand both in time or deeper into the region later in March and April, but confidence is too low for now.

Although initial attack fires, a few of significance, have rapidly picked up as of late February in the rest of the region, confidence is high in wet conditions returning in early March and continuing at times into at least mid-month. This results in a continued forecast of below normal significant fire potential, as recent drought removal remains an important factor in resistance to control. That said, any deviations in the forecast from what is expected that result in a week or more of

abnormally low relative humidity and above normal temperatures could bring additional rounds of activity later in March or early April before green-up gets into full swing. Please note that below normal significant fire potential does not mean that no large fires or heavy initial attack days will occur.

Eastern Oklahoma and western Arkansas are forecast to be near the edge of heavy rain events in the coming weeks, resulting in relatively lower confidence in rainfall anomalies. Occasional wetting rain and more humid periods may ease dryness at times, but there is too much uncertainty to maintain the previous outlook for below normal risk. Recent activity is mostly in line with what is common this time of year, a rush of prescribed and cultural fire prior to the growing season beginning in earnest can result in escapes on windy, warm and dry days.

April is expected to have continued below normal significant fire potential for the eastern Gulf states into South Georgia and the eastern Carolinas. Above normal water levels in wetlands are the primary factor, while wetter and periods of cooler than normal weather may continue across the region. The rest of the geographic area is forecast to see normal conditions, primarily due to low confidence in weather and impacts to fuels. Current guidance continues to lean towards below normal significant fire potential for the Appalachians and the rest of the Southeast, while guidance is mixed farther west in the Plains. Some of the South Texas PSAs with above normal grass loading may need to be included in above normal significant fire potential for April on the next update.

Finally, May and June are forecast to see above normal significant fire potential in the Texas mountains due to worsening drought and areas of normal fuel loading. If the North American monsoon is delayed at all, the risk for lightning-caused fires may be pushed back later into the summer. Confidence is low in significant fire potential elsewhere.

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