



National Significant Wildland Fire Potential Outlook

Predictive Services
National Interagency Fire Center

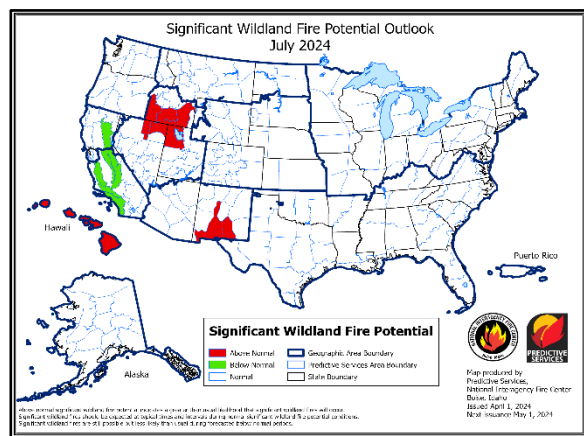
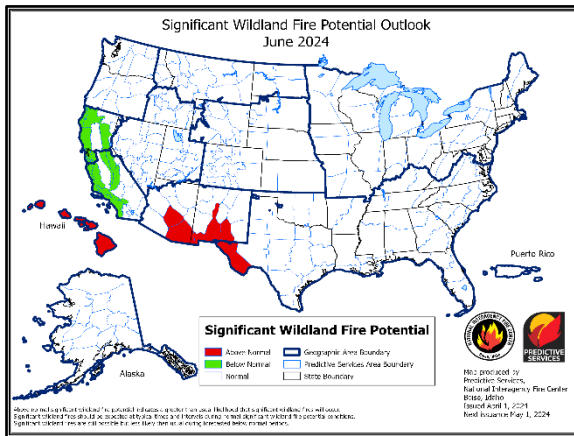
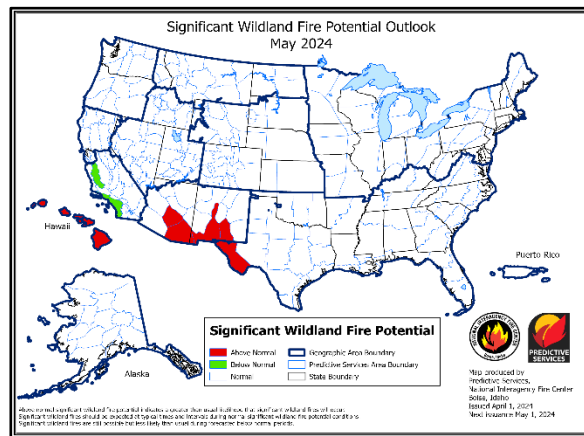
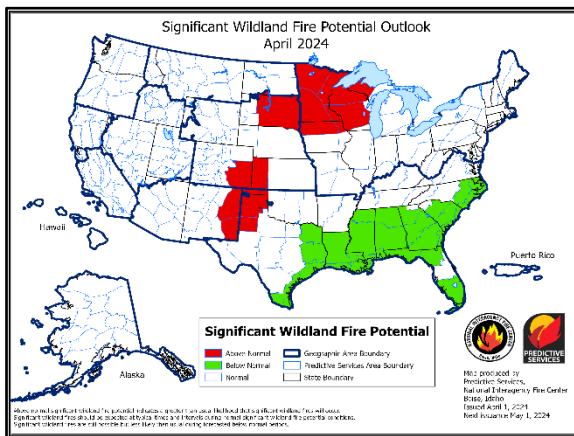


Issued: March 1, 2024
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Outlook Period – March through June 2024

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 began the month active for the Southern, Eastern, and Rocky Mountain Areas, but subsided some at the end of the month except for the Southern Area. The Eastern and Southern geographic areas remained at preparedness level 2 and 3 (on a scale of 1-5) at the end of the month. Significant fires continued to emerge at times across the Upper Midwest and southern/central Plains the first half of the month, but timely precipitation mid-month resulted in a decrease in activity, at least temporarily. However, fire activity increased in the central Appalachians the latter half of March, with several large fires in West Virginia and Virginia. Year-to-date annual acres burned for the US is well above the 10-year average at 350% of normal, but with a slightly below average number of fires, **near 95%**.

Precipitation across the CONUS was above normal across much of the East Coast into the Southeast, but below normal across most of the Plains and Ohio Valley. Precipitation was also above normal across the Four Corner and much of the Great Basin, but below normal in the

Mojave Desert and portions of the Northwest and northern Rockies. Temperatures were above normal across the eastern Plains to the East Coast, with near to below normal temperatures across much of the West. Extreme to exceptional drought persists in southern New Mexico, with extreme drought also in portions of eastern Iowa and northwest Montana. Drought persists in much of the Upper Midwest westward into the northern Rockies and across portions of Arizona.

Climate Prediction Center and Predictive Services March outlooks depict above normal temperatures are likely for much of the US and Alaska, although there is no strong signal for temperatures across portions of the central and northern Plains. Precipitation is likely to be above normal across much of the Southeast and across portions of Alaska, but below normal for much of the Northwest, northern Rockies, Southwest, and central and west Texas.

Much of the Southern Area is forecast to have below normal significant fire potential from southeast Texas to the Southeast Coast in April, although portions of the Florida peninsula will have normal potential. Above normal significant fire potential is forecast for portions of the central and southern High Plains April, as well as eastern South Dakota and the Upper Midwest. 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 portions of the northern Great Basin in July, and the lee sides of Hawai'i in May through July. Portions of central and southern California will have below normal potential in May expanding to include the Sierra, Coast Ranges, Bay Area, and Transverse and Peninsular Ranges in June. Below normal potential will continue in the Sierra, southern California, and interior central coast of California for July.

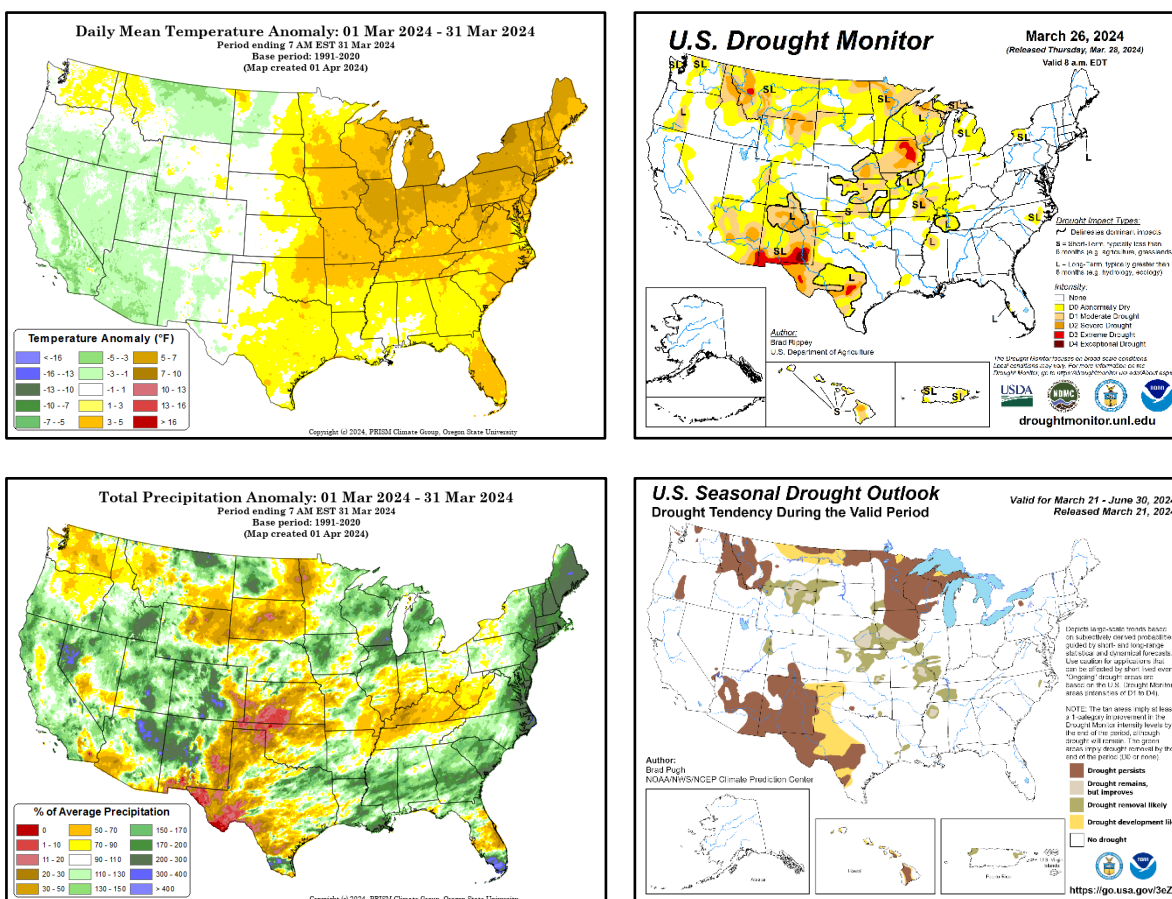
Past Weather and Drought

Temperatures were above normal for much of the eastern half of the US, with the greatest anomalies across the Great Lakes and Northeast, where temperatures averaged 5 degrees or more above normal for March. Near to below normal temperatures were observed across much of the West, except for portions of Washington and the northern Rockies which were slightly above normal. Temperatures in Alaska and Hawai'i were near to slightly above normal except for Kaua'i which was well below normal. Above normal precipitation fell across much of the East Coast and Southeast, with almost 300% of normal precipitation falling across south Florida. Precipitation was also above normal in much of the Great Basin, northern California, Four Corners, and Great Lakes. However, below normal precipitation was found on much of the Plains, including the High Plains, and across much of the Ohio Valley. Below normal precipitation fell across the Mojave and Sonoran Deserts, Washington, and northern Rockies. Precipitation was below normal across much of south-central and Interior Alaska.

A strong downslope wind event occurred across the central Appalachians on March 20, where westerly wind gusts up to 60 mph amid relative humidity as low as 15% resulted in critical fire weather conditions. Numerous significant fires emerged on that day with two incident management teams deployed. After a very warm first three weeks of March, heavy snow fell across much of northern New York and northern New England March 23-25, and heavy rain fell in the Mid-Atlantic with the wettest March days ever recorded in New York City and Philadelphia. A strong storm developed on the Plains March 24-26, with strong winds gusting to 70 mph across the southern High Plains but no significant fires resulted. The storm also brought heavy snow and blizzard conditions to much of the central High Plains into Minnesota, with heavy rainfall across much of the Great Lakes. The storm also spawned severe weather across the Ohio Valley, with numerous damaging tornadoes.

Storms were active across the West the first half of March, with precipitation falling across much of the West. Strong high pressure brought a brief warm spell to much of the West, especially the northern half of the West, March 16-20 with temperatures as much as 20 degrees above normal. Storms returned to the west at the end of the month, with the heaviest precipitation falling across

California, the Great Basin, and Southwest. The March 24-26 Plains storm also brought heavy snow to the Front Range of Colorado where up to 4 feet of snow fell in the mountains.



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).

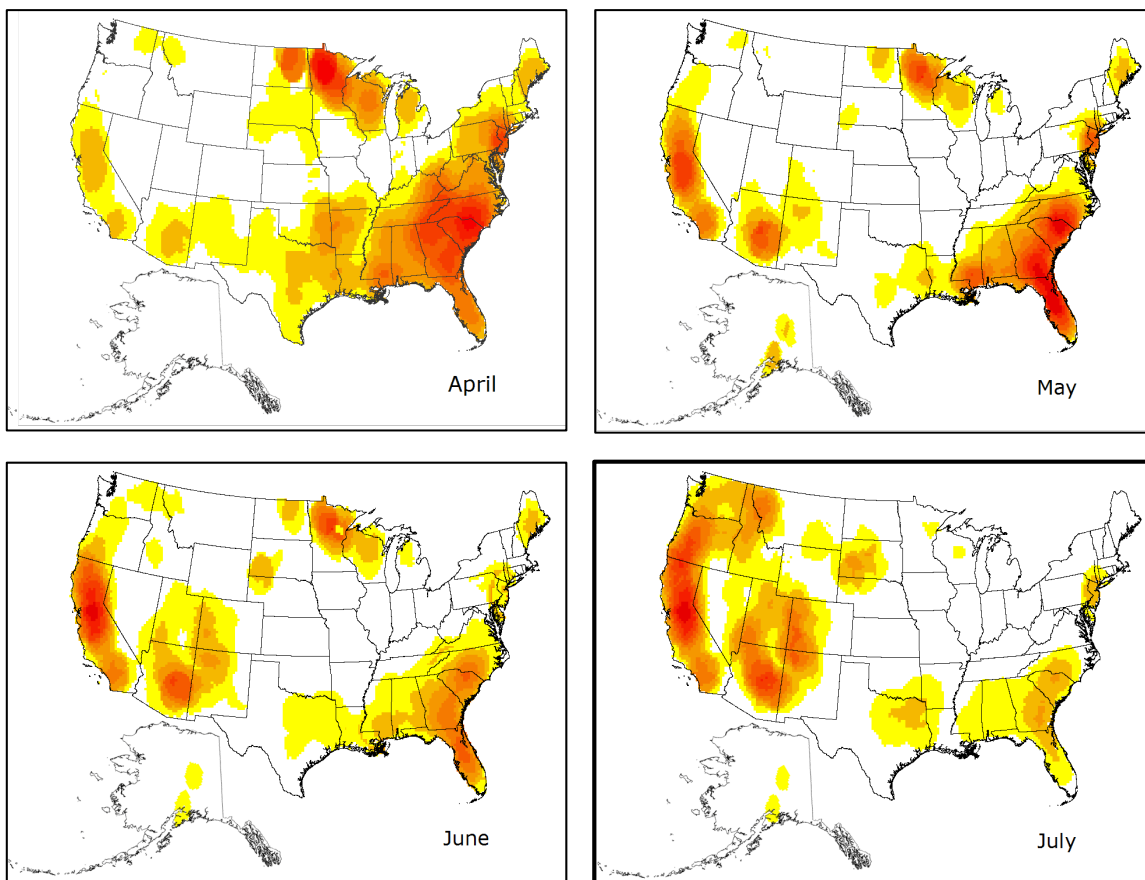
Drought improved in portions of Iowa, Nebraska, and Wisconsin but worsened across portions of southeast Missouri. Drought also improved across portions of the Cascades and eastern North Carolina. However, drought persisted across much of the northern Rockies, with drought development across northeast Minnesota. California remains drought free, but drought persists on the Big Island of Hawai'i with drought development on the lee sides on the rest of the Hawaiian Islands. Drought persists across portions of Puerto Rico and the US Virgin Islands but has continued to improve the past month. Drought is forecast to persist across much of New Mexico into West Texas, with drought development across the Texas High Plains. Drought improvement is forecast across Arizona, the Mid-Mississippi Valley, central Plains, and northern Wyoming. Drought is forecast to develop across portions of northeast Minnesota and northwest North Dakota as well as northern Minnesota and the Upper Peninsula of Michigan where drought does not yet exist.

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 three months, with another active episode of the active Madden Julian Oscillation (MJO) in mid to late March. A rapid weakening of the current El Niño is forecast to continue through April, with the Climate Prediction Center (CPC) forecasting neutral El Niño-Southern Oscillation (ENSO) conditions for the April – June period (an 83% chance). A rapid transition to La Niña is becoming increasingly likely by early summer, with CPC forecasting a 62% 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, especially the MJO during the first half of April, but the transition from El Niño to ENSO neutral and potential La Niña 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 from April through July.

No areas of Alaska are in drought status as of late March. Fuels are snow-covered and unburnable. Cured fine fuels at the surface will emerge in April and early May as the snowpack retreats, but the subsurface duff layers typically do not become dry enough to influence fire behavior until June. Alaska is out of season, and no wildfires are being tracked as of late March.

The Climate Prediction Center shows a slight tilt toward warmer than normal temperatures statewide from April through June, with the most prominent signal for warm temperatures over western Alaska. Temperatures in April and early May will strongly influence the timing of the start to the wildfire season. Broadly speaking, as of late March the liquid water content of the snowpack across Alaska is around or slightly above normal. The factors of a healthy snowpack and a slight trend toward warmer temperatures may cancel each other and yield a typical start to Alaska's season.

The prominent El Niño now in place is expected to fade over the coming months and is likely to transition to La Niña by late summer. The flip from El Niño to La Niña occurring during the peak of Alaska's wildfire season complicates the outlook and introduces considerable uncertainty. No meaningful wildfire activity is expected in early April, but wind-driven grass fires will become possible during the window between the melting of the snowpack and the leafing out of vegetation a few weeks after snowmelt. By the end of April, most locations at low elevations in the Interior and across southwest Alaska will be free of snow. Thunderstorms typically become a factor in starting wildfires by late May and even more so in June and July. The overall outlook for Alaska calls for typical wildfire potential statewide from April through July.

Northwest

The Northwest Geographic Area significant fire potential is expected to remain normal through April.

March weather systems primarily moved into California, missing much of the Northwest Geographic Area. At times, the main precipitation bands clipped the Pacific Northwest, focused on both sides of the Cascades over the southern third of Oregon. As such, that area was cooler and wetter than normal, but points farther north were drier and warmer than normal. The third week of March saw an unusually strong upper ridge build over the region bringing a few days of record setting warmth.

When low-pressure systems moved across the region, temperatures were cool enough to bring snow down to lower elevations of the Cascades. But, as previously stated, it was mostly the central and southern Cascades which increased the existing snowpack. All the Washington Cascades plus the northern Oregon Cascades maintained the snowpack they had to end the month, despite lower precipitation and the warm week in mid-March.

Winter snowpack normally peaks on April 1. Most major river basins across Oregon have accumulated near 100 percent, or close to, of their 1991-2020 median snow water equivalent. Basins along the Oregon- Washington and Washington-Idaho borders are lower at 70-80 percent of median snowpack. Remaining basins in Washington have accumulated 55-65 percent of their medians. Snowpack itself is not necessarily a strong indicator of fire season intensity. Lower accumulations in a basin may indicate an earlier than typical beginning for increased fire occurrence. However, that is only when spring continues to be drier than normal.

Drought designations changed little over the past month. The Willamette Basin and portions of the southern/western Olympics had areas removed and reduced, respectively. Some areas from the Cascades eastward plus the Olympic north slopes remain abnormally dry or are classified in moderate drought.

Fire activity continued to be minimal in March. Prescribed fire activity continued as conditions allowed. Fuels continue to be too moist to support noteworthy risk of significant fires in the Northwest Geographic Area. Periods of warmer and drier weather temporarily increases fire danger, followed by moisture which drops fire potential back to more normal conditions. Fuels will continue to be monitored as we move towards summer. If spring conditions trend warmer and drier, low elevation rangeland fuels east of the Cascades may be more flammable until green-up occurs. When aligned with wind, cured rangeland fuels have higher potential for increased rates of spread and higher potential for ignition.

The Climate Prediction Center outlooks for April through July indicate temperatures will generally remain above average for the Pacific Northwest. Precipitation will start below average for western Washington and northwest Oregon for April. That area then shifts to eastern Washington and northeast Oregon by the end of July. El Niño conditions are expected to rapidly shift toward La Niña the next few months. It should be noted that some similar past transitions have produced a warmer and drier end of spring across the Pacific Northwest. This was followed by cooler and wetter summer periods. The summers of 1973, 1998, 2010, and 2016 followed similar transitions though no years specifically matched the winter of 2023 into 2024, but 2016 was the closest.

The Pacific Northwest is expected to remain under normal significant fire activity through July. Lightning is expected to remain the primary catalyst for significant fire ignitions. Based on similar years of 2010 and 2016 where lightning and fire data are available, 2010 had above average lightning strikes, but significant fire activity was below average as thunderstorms mainly brought beneficial rains, while 2016 had below normal lightning strikes and fewer ignitions. That said, 2023/2024 is different than those past years and the Northwest Geographic Area is not yet willing to state significant fire activity will stray far from normal, pending any stronger signals from the spring rainfall season.

Northern California and Hawai'i

Significant fire potential is projected to be normal for April and May and near to below normal for June and July. During April and May all Predictive Service Areas (PSAs) average less than 1 large fire per month. During June, generally 1-2 large fires occur per PSA. During July, generally 1-3 large fires occur per PSA except for the Bay Area PSAs which is less than 1. Hawaii's significant fire potential is normal for April then transitions to above normal for the leeward areas from May through July.

The weather patterns during March were widely variable. Cool and moist periods occurred during the first two weeks and last week of the month, while a prolonged warm and dry spell occurred during the third week. There were no discernible atmospheric river events during the month. Precipitation anomalies were mixed with near to above normal favoring the coastal areas and most locations along and east of the Cascade-Sierra Crest while near to below normal precipitation occurred across central areas. Average temperatures were generally near to below normal although some pockets of above normal occurred favoring the Sacramento Valley. As of March 27, there were nearly 1,500 lightning strikes recorded during the month, above the 2012-2022 March lightning strike average of nearly 800 strikes. A couple of northerly and easterly wind events occurred during the month. The offshore winds observed between the 13th to 15th were especially strong with humidity readings falling into the teens across some areas west of the Cascade-Sierra Crest. Several gusty southerly wind events occurred but were accompanied with higher humidity.

Dead fuel moistures were generally moist across most of the area during March and not flammable although readings noticeably dried during the third week of March and briefly led to near to below normal values. Green-up within the shrub and tree canopies became much more noticeable as the month progressed, generally below 2,500 feet in elevation. Dormancy remained across most mid and upper elevations. Herbaceous fuels were in various forms of green-up, generally below 3,500 ft, with a significant growth spurt across the lower elevations. Moisture found within the snowpack continued to climb and by March 27 ranged between 100 to 115 percent of normal with snow cover generally found above 4,500-5,000 feet in fully sheltered locations. There were no drought designations for northern California.

Fire business increased slightly during March, especially during the third week. An average of one fire occurred per day. The largest fire was a little over 1 acre which occurred during the middle of the month. There may have been a lightning fire or two in the Coastal Ranges early in the month based on media and law enforcement reports, but they never made it into the official fire records. Prescribed pile burning was the main fire business activity although some broadcast burns began as well.

A few complex oceanic-atmospheric teleconnections will remain during the next four months thus leading to some outlook uncertainties. There are mixed signals for the temperature forecast during the next few months and the uncertainty is largely tied to how quickly the ENSO state transitions. If the central Pacific based El Niño trends quickly to a neutral and eventually La Niña state, then more cool intrusions are likely during the spring. There are also no discernible precipitation signals so timely spring moisture intrusions are a better bet leading to near average results. A Four Corners High could become more prominent during July and allow for some weaker monsoon

lightning episodes to reach northern CA, although lightning trend forecasts four months out aren't reliable. Dry northerly or offshore wind event activity should be near to below normal from April to June with typical minimal activity during July. Gusty and dry onshore wind events are likely to be more of a player by early summer.

Shrub and tree canopy green-up has started across the lower elevations and will transition further up the slope as spring progresses into early summer. Adequate soil moisture should lead to near to above normal live fuel moisture readings thus providing less flammability in these fuel types during most of the outlook period. Abundant herbaceous growth is well underway across the lower elevations and curing will be more noticeable during May and June, when green-up transitions farther up the slopes. The herbaceous curing will lead to higher initial attack fire numbers but there doesn't appear to be any foreseeable extended critically dry live and dead fuel alignments to suggest above normal large fire activity. Therefore, near to below normal large fire activity is the better bet based on timely moist and cool intrusions, the lack of a drought signal, and a more typical melting snowpack providing a fire spread barrier across the higher elevations. If a clearer heat signal shows up in subsequent forecasts, then adjustments may be needed. The prescribed fire burn window for larger projects should be favorable the rest of the spring into the early summer.

Sea surface temperature (SSTs) anomalies surrounding the Hawai'ian Islands were generally near normal by the end of March. Average temperature anomalies observed during March were generally near to above normal although a cooler than normal signal occurred across Kaua'i. Precipitation anomalies were below to well below normal across most of the island chain except for some above normal precipitation across far eastern portions of the Big Island. The most abundant-widespread precipitation occurred during the first week of the month due to a strong and moist jet stream. Due to the dryness, drought coverage and intensity increased some by late March favoring the leeward sides as compared to late February. Drought was observed on the islands of Kaua'i, Maui, and the Big Island. Gustier westerly and easterly wind events occurred throughout the month, but no Red Flag Warnings were issued. Satellites detected several smaller fires during March.

El Niño conditions will transition to an ENSO neutral state during the next few months and could transition to La Niña as early as the summer. Average temperatures during the next four months should generally be near to above normal while precipitation should generally be below normal. Drought coverage and intensity is likely to expand as the transition from the wet to dry season occurs. Herbaceous fuel loading is expected to be near to below normal. Normal significant fire potential is projected for April due to expected timely moisture intrusions as well as residual green-up mitigations despite increasing drought concerns. Above normal significant fire potential has been designated for May through July across the leeside areas due to drought expansion and more available or flammable live fuels. Wind events will be a wildcard.

Southern California

The past three-month period was above average for temperatures for most of the Central Valley, Central Coast Interior, and Central Coast Predictive Service Areas (PSAs). The same period remained slightly below average for temperatures across much of the South Coast, Eastern, and Southern Mountains PSAs, as well as the Lower and Eastern Deserts. Due to an abnormally wet February, most areas across Southern California are running well above average for three-month precipitation. Portions of the South Coast, Western Mountains, and Eastern Mountains PSAs, as well as the high desert, received upwards of 150% of the three-month average precipitation for January through March. Snow water equivalent is currently near normal across the Sierra. The odds tilt in favor of a cool and wet weather pattern persisting across southern California over the next couple of weeks.

Current sea surface temperature patterns in the equatorial Pacific suggest a weakening of the current El Niño state as all Niño regions experienced a slight to moderate cooling over the past

month. The equatorial Pacific continues to remain in a weak El Niño state as the Niño 3.4 region sea surface temperature anomalies remain around 1 C above normal.

The latest US Drought Monitor shows zero areas in drought status across Southern California. Small portions of the Northern Deserts PSA as well as the Eastern Deserts PSA remain abnormally dry, though these areas are not in a formal drought. Live fuel moistures continue to remain well above normal due to the abundance of precipitation during the late winter and early spring across southern California. The live fuel component represents most of the total fuel load and is thus weighted heavily in this month's seasonal outlook. Larger dead fuel (1000-hr fuel) continues to remain above normal with respect to dead fuel moisture.

Climate models suggest a weakening of the El Niño state and a transition into an El Niño-Southern Oscillation (ENSO) neutral state during this spring. The odds also tilt in favor of a potential transition into a weak La Niña at the end of the forecast period for this seasonal outlook. This could potentially result in a drier weather pattern overall, especially for the end of the forecast period. There is good agreement between the various climate models with respect to the precipitation anomaly outlook for southern California. All models show a slightly wetter than normal start to the period (April and May) and a slightly drier than normal end to the period (July). Given the abundance of precipitation during the late winter and early spring months and above normal live and dead fuel moisture, odds indicate a moderate tilt towards below normal large fire potential for all PSAs where the climatological normal for large fire is non-zero. All PSAs where the climatological normal for large fires is zero, the odds show a slight to moderate tilt in favor of normal large fire potential.

Northern Rockies

Significant wildland fire potential in the Northern Rockies Geographic Area (NRGA) for April through July is expected to be normal. A weakening El Niño is expected to transition to ENSO-neutral by April-June and may continue transitioning to La Niña by June-August. The Climate Prediction Center (CPC) monthly and seasonal outlooks show an area of above normal precipitation expected in southeastern Montana, which hints at the wet signal that has been present in long range models for May in the NRGAs for the past several months. This is an important detail because May is a high moisture month for the region, and a wet May could reduce deficits accumulated over the drier months of January through March. An anomalously wet May could impact this year's prescribed burning windows as well. Normal to above normal May moisture supports a traditional start to fire season in the western NRGAs, which usually requires drying through the month of July.

The temperature and precipitation trends from the last month were milder than the anomalies have been for the past several months. A cold and wet signal from March 17-24 over eastern Montana and North Dakota did a lot to mitigate the warm and dry anomalies in those areas from earlier in the month. The first half of the month saw significant one category expansion of drought across eastern Montana and North Dakota, the rest of the month saw no drought expansion in those areas.

The western half of Montana and northern Idaho was cool and wet for much of the month, with 1- to 2-class improvement in drought conditions across the western half of the geographic area. The overall result of these expanding and contracting areas of drought over the last month is widespread abnormally dry conditions across most of the NRGAs, moderate to severe drought across northeast North Dakota, southern and western Montana, and northern Idaho, and one small pocket of extreme drought in west-central Montana.

The seasonal drought outlook from CPC calls for improvement or removal of drought in southern Montana due to the expected above normal precipitation over the next three months. However, with no above normal precipitation currently forecasted in the remainder of the NRGAs, drought is expected to persist and possibly expand in northern and western portions of the area.

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 80% of normal snowpack, with one basin below 50% and one basin above 90%. The basin that is below 50% snowpack is also above normal for precipitation totals in both the last 30 days and the water year mitigating short term concerns.

Green-up of live fuels has not yet occurred across the Northern Rockies. Dead fuel moistures started to show concerning high values in portions of southeast Montana and southwest North Dakota during the first half of March, but much cooler temperatures and higher precipitation amounts since then have returned the dead fuels to seasonably low values. As we move into less stable spring airmasses, inversions have been less prevalent in the western valleys. As a result, those valleys will be less insulated from spring drying and warming trends going forward.

A few fires were reported in southeast Montana early in the month. Otherwise, little to no initial attack was recorded, and conditions generally prevented prescribed burning across the area after the middle of the month.

All PSAs are expected to have normal significant wildland fire potential for April through July. Seasonal forecast charts indicate hotter and drier than normal conditions starting in June or July. However, this should be mitigated by closer to normal activity by the wetter than normal May. Long-term forecasts show a wetter than normal first half of April and near-normal second half of April, which could result in only a small window for prescribed burning this spring if the wetter than normal May occurs as forecast.

Great Basin

Fire activity remains low in the Great Basin due to continued storm systems moving across the region keeping humidity higher and bringing consistent periods of precipitation and cooler temperatures. Fire activity is expected to remain low and normal for the time of year through April then increase in May and June from south to north, which would be normal. Due to continued spring moisture in April and possibly into May, fine fuel growth is expected to be above normal over northern Nevada, southern Idaho, northern Utah, and possibly eastern Utah. Carryover will still be present in some of these areas as well adding to the fine fuel loading. Once fine fuels dry out later in the spring toward summer, above normal fire potential is possible in these areas by July, or possibly as early as June depending on the weather pattern.

Temperatures over the last 30 days have been cooler than normal in most areas of the Great Basin. Precipitation was above normal in the Sierra into western Nevada, as well as portions of northern Nevada, southern and eastern Idaho, and much of Utah. There were some drier spots where precipitation was below normal over southern and central Nevada and portions of southern and eastern Utah. March began with significant winter storms, especially in the Sierra and on the western side of the Great Basin which brought the Sierra snowpack up to normal. Weaker storms continued through the month and brought continued rain and snow to the Great Basin. There was a period of above normal temperatures and dry conditions just past mid-March that allowed for increased snowmelt and even early signs of green-up. This period was short lived, and cooler storms quickly moved in by the end of the month with additional precipitation. . The snowpack is near to just above normal across most areas of the Great Basin except for central Idaho, which is near 85% of normal. The Great Basin is generally absent of drought. There are small areas of abnormally dry conditions over eastern Utah and portions of central Idaho, however these areas have been improving in recent months due to continued periods of precipitation. Currently, no drought is expected to develop across the Great Basin heading into the fire season.

Fuel moisture will continue to increase through the spring. Green-up may occur on time or slightly delayed with expectations of continued storms bringing cooler temperatures and periods of

precipitation potentially through April and into May. Due to the lack of drought and two wet winters, the soil should be primed for above normal fine fuel growth. Once green-up starts, above normal fine fuel growth is expected over portions of northern Nevada, southern Idaho, and northwest Utah. Eastern Utah may see greater than normal fine fuel growth as well. However, due to lack of drought in higher elevations and near to above normal snowpack, fuel moisture in the timber should remain elevated until later in the summer, which would be normal.

Wildfire activity remains low across the Great Basin, although prescribed burning activity continues throughout the area.

Normal fire potential is expected through May, when fire occurrence is low for the Great Basin anyway. Despite areas of above normal carry-over fuels in parts of northern Nevada, southern Idaho, and northwest Utah, the continued pattern of cold fronts moving through the Great Basin is expected to extend through the spring, keeping fire potential low. Fire activity should start picking up over the southern half of the region May into June, along with lower elevation areas with 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 effects of precipitation patterns and temperatures on fine fuel growth. The Great Basin could be primed for significant fine fuel growth later in the spring depending on the weather over the next few months. Confidence is moderate for which areas will have above normal fire potential by July, however the most likely areas would be across southern Idaho, northern Nevada, and northwest Utah. These areas of above normal in July could change and expand as we move through April and May depending on the weather. Long range weather forecasts are still showing wetter conditions through April with drying starting by May. The North American Monsoon looks to be delayed or weaker this year, which could result in warmer and drier conditions across the Great Basin. This adds to the likelihood of significant fuel drying in June and July, with better chances of above normal fire potential. Most of the fire potential concerns will be in the lower elevations, however the higher elevations of central Idaho may be a concern later this summer with the below normal snowpack.

Southwest

While normal significant fire potential is expected for much of the region from April to July, some areas of above normal significant fire potential are expected across both the southeast and eastern sections of the area during the rest of the spring. In addition, areas of above normal significant fire potential are likely to arise across portions along and south of the Mogollon Rim the latter half of May into June, and areas of significant fire potential are likely to remain above normal east of the Divide through July.

Over the bulk of the period from late last fall through January, precipitation was below normal across central and northwestern Arizona, then across far southeastern New Mexico. During this time, southern sections of Arizona and much of central New Mexico experienced above normal precipitation. From January through most of March, wetter than normal areas occurred across northern/northeastern New Mexico and across southern Arizona into southwestern New Mexico, while northwestern and central Arizona as well as eastern New Mexico observed 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 rest of the spring into the middle of summer. El Niño is weakening quickly and is expected to transition into a weak La Niña by the middle of summer into the fall, although some uncertainty on the timing of this shift remains. While 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 during January. The Southwest Areas has continued to have a cooler temperatures for much of the last two months except for milder temperatures across far eastern New Mexico. A thorough inspection of past years with a flip from an El Niño to La Niña in less than six months reveal colder and more moist tendencies across the northwestern two-thirds of the region as the jet stream remains nearby 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. It may not be until late in April or May before 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 month 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. Once May arrives, areas of above normal significant fire potential for east and far southeast New Mexico will recede or diminish while areas along and south of the Mogollon Rim region could rise to above normal significant fire potential given elevated amounts of fine fuels and periods of hotter and drier weather.

Looking ahead 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. However, hotter and drier than normal conditions could occur across the far eastern plains and far northeastern New Mexico, coincident with a forecast swath of abnormally dry and hot conditions over the midsection of the US. Confidence is increasing in this scenario as there is a strong signal from past transitions from El Niño to La Niña depicting this pattern.

Rocky Mountain

Few changes were observed on the landscape the past month. The weather pattern remained active, but also warmer than normal for much of the Rocky Mountain Area east of the Rocky Mountains across much of the Plains. This resulted in no significant changes to the drought conditions around the area, and snowpack in the mountains remain near normal. Fire potential remains elevated for much of South Dakota, southeast Colorado, and southwest Kansas through the end of April.

An active pattern continued through most of March, bringing several significant storm systems. A couple of these systems produced some heavy snowfall in the mountains as well as onto the central Plains. While this helped bring in additional moisture, temperatures were still warmer than normal east of the Rocky Mountains. Overall, the precipitation and the increased evaporation due to the above normal temperatures largely offset each other and drought conditions remained the same. El Niño continued to weaken throughout the month.

Green up started across portions of eastern Kansas as temperatures remained above normal through the first part of the month. As several storms moved across the geographic area, there were several killing freeze events. Given that there had been some fuels that had started greening up, there could be some additional dead fuel loading as some of these early grasses were killed off. This is in addition to the increased carry fuel over from last year.

Most fires were less than an acre in size. A few fires saw more growth but were still contained in one operational period. No significant wind driven fires occurred this month. However, some fires saw larger growth in Oklahoma and Texas where the fuels conditions are very similar to southeast Colorado and southwest Kansas.

El Niño will continue weakening, with neutral conditions expected by the late spring. For April and into the summer months, above average temperatures will continue across the Rocky Mountain Area. Now through May will see wetter conditions from the Bighorn Forest down through the Black Hills and Nebraska, and across most of Kansas. Otherwise, typical conditions will prevail. Heading into the summer, and core of fire season, drier weather is expected to spread from West of the Divide out onto the eastern Plains of Colorado and Wyoming then into the Central Plains.

Given the increased potential for wind events accompanied by warm and dry conditions in southeast Colorado and southwest Kansas, above normal potential is expected to continue into April before green-up. With the dry, warm winter in South Dakota outside of the Black Hills, there is increased significant fire potential through the spring green-up as well. May and June will see typical conditions across the Rocky Mountain Area. For July, fire potential west of the Divide will

be trending normal, to slightly above normal, depending on how quickly hot and dry conditions develop, with the remainder of the Rocky Mountain Area expected to continue with normal fire potential.

Eastern Area

Normal fire potential is forecast across the majority of the Eastern Area through July 2024, with above normal wildfire potential across the Upper Mississippi Valley into April. 30-to-60-day negative precipitation anomalies were indicated across the northwestern Great Lakes as well as portions of the Mid-Mississippi and Lower Ohio Valleys. Longer term drought remained in place across portions of the Mississippi Valley and the northeastern Great Lakes towards the end of March. In addition, below normal snowpack remained in place across much of the northern tier of the Eastern Area towards the end of March.

The El Nino Southern Oscillation (ENSO) is forecast to transition from an El Nino to an ENSO neutral sea surface temperature regime this spring into June, and then La Nina conditions through the rest of the summer of 2024. Other sea surface temperature regimes also contribute to global weather patterns adding to some uncertainty in long term weather forecasts. With El Nino conditions expected to linger into the spring season, the north central portions of the Lower 48 United States will likely continue to experience above normal temperature trends. Precipitation trends are more uncertain but drier than normal trends across the Upper Mississippi Valley may persist through the spring season.

The Predictive Services precipitation outlooks forecast below normal precipitation trends across the northwestern third of the Great Lakes and the southern Mid-Atlantic States in April 2024. Wetter than normal trends are forecast over the Mississippi and Ohio Valleys eastward into the Appalachians in May and the majority of the Mississippi Valley in May. Near normal precipitation trends are forecast over the majority of the Eastern Area in June with wetter than normal trends across the Mississippi and Lower Ohio Valleys heading into July. NOAA's Climate Prediction Center forecasts above normal precipitation trends across the southern tier of the Eastern Area April into June.

According to the Predictive Service temperature outlooks, above normal temperature trends are forecast across the majority of the Eastern Area April into July. The Climate Prediction Center forecasts also predicts above normal temperature trends across the majority of the Eastern Area April into June 2024.

The current year is trending similarly to the climate analog year of 2010 with several fire danger rating indices having peaks significantly above normal with some setting historic levels for the time of year. Snow depth has been at a deficit from normal all winter with the most significant deficits occurring across the entire northern tier of the Eastern Area and in the Appalachians down into West Virginia. All these areas have experienced above normal fire activity in the fall-like hardwood leaf litter conditions and areas with grasses that were not compressed under snow. Since several indices are trending similarly to 2010 then periodic above normal fire activity potential exists into mid-late spring in the Great Lakes and as climate patterns shift then fire danger indices potentially will trend to average or below normal through July. The Northeast and Mid-Atlantic will potentially continue to have periodic above normal indices into July. The southern tier of the Eastern Area is experiencing green up and with forecasts of above normal precipitation then normal fire potential is expected during the outlook period.

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 may temper the fire potential in some areas, while the spring dip in pine live fuel moistures is expected to increase fire potential. Carryover of low water tables from fall in lowland grass and marsh areas have already made organics available to burn and fires in these areas are requiring extended mop up not typical of spring.

Longer term drought, negative soil moisture and precipitation anomalies remained in place across portions of the Mississippi Valley and the central Great Lakes towards the end of March 2024. If these areas experience below normal precipitation and above normal temperature trends through rest of the 2024 spring season, periods of above normal fire potential are likely. Below normal snowpack remained in place over much of the northern tier of the Eastern Area towards the end of March which is leading to an earlier than normal onset of the 2024 spring fire season.

Southern Area

An early green-up has been the rule for the majority of the Southern Area, which is likely to be most impactful in reducing wildfire risks in grass- and hardwood-dominant areas. As of late March, High Plains grasses remain largely dormant, while areas with above normal grass loading in western and central Oklahoma into western North Texas, in addition to South Texas, have begun the transition towards greening up. Local reports and webcams at higher elevations in the Appalachians indicate that shading from the tree canopy is still at least several weeks away, while leaf on has rapidly progressed from the coastal plain into portions of the Piedmont. Lack of snowfall in most of the Appalachians this winter has left leaf litter less compacted, which allows it to dry more rapidly during periods of abnormally low humidity. This may factor into fuel availability until the canopy fills in.

Most of the Southern Area is free of drought, but drier conditions have expanded across portions of Texas and Oklahoma, in addition to scattered areas of the Florida peninsula. Soil moisture is estimated to be well below normal for this time of year across western Kentucky and smaller parts of Oklahoma and Texas, while wetter than normal conditions are found in South Florida and much of the Southeast through the Lower Mississippi Valley. High water levels in wetland areas will be a factor in reducing significant fire potential in early spring, but this can quickly change now that vegetation is more readily pulling moisture out of the ground.

Last year's drought in the Lower Mississippi Valley is no longer evident on the US Drought Monitor, but the long-term blend from the National Drought Mitigation Center indicates lingering impacts across far southeast Texas into much of Louisiana and portions of Mississippi. The US Forest Service has observed notable pine mortality in these areas, and the southern ipine beetle may lead to additional availability of heavy fuels this year. It is not yet clear if 2023's drought has impacted the region's hardwood species. Deciduous trees in urban areas and near the wildland interface may be more likely to show stress and potential mortality based on current expectations. Hurricane debris from 2020's Laura and 2021's Ida in Louisiana may continue to contribute to fuel loading there, while Ian's impacts could affect southwest Florida if drier conditions develop through the period.

Conditions are mixed across the Florida peninsula, where March was unexpectedly dry in some areas. Most of the state is experiencing near to above normal water levels, but portions of central Florida will start April on a dry note, increasing the potential for moisture loss if hot and dry weather becomes persistent which is more likely by May. Meanwhile, a gradient in conditions is evident for South Florida, with very wet conditions at the far south end of the state and increasing dryness with northward extent.

The spring fire season in the South normally lingers into the first half of April, with a decreasing trend in most areas through the month due to green-up. The Florida peninsula is one exception to this, with an increasing trend in April that carries into June, before the rainy season sets in. West Texas also typically sees steady or increasing activity due to high wind events in the Plains that are common through April, along with an uptick in lightning potential across the mountains during May and June. The Gulf Coast and Southeast Coast can also see increasing activity during late spring and summer when drought and hot weather align.

El Niño's end is forthcoming, and conditions are likely to quickly turn towards La Niña as early as this summer. The typical lag in how the atmosphere responds to changing oceanic conditions may mean that El Niño will influence conditions into April, but confidence diminishes in how weather will differ from what is normal through the rest of the period. Wetter than normal conditions are currently favored through the spring in most of the Southeast, while warmer and drier than normal weather is expected to expand across western areas heading into summer. Many years with decaying El Niños trend drier in April across the Appalachians, but it is not clear if this will hold true in 2024.

Heat waves will become increasingly likely from May into the summer as the expected La Niña begins to influence the pattern, and there is perhaps more concern for this than ever given record-setting warmth in the Atlantic and Pacific Oceans. A warmer planet can paradoxically lead to higher rainfall from thunderstorms and tropical cyclones while at the same time creating unusually dry conditions elsewhere, all depending on the source region for a region's air masses. We have already seen this play out several times in 2024, with extreme to exceptional evaporative demand in short bursts that led to rapid drying of fuels prior to fire-effective weather events. Another impact from the unusually warm Atlantic will be an increased risk for tropical cyclones this year. Record warm sea-surface temperatures in the north Atlantic may support activity beginning earlier than normal, but there is little skill this early in predicting what parts of the Southern Area could see heavy rainfall from tropical systems later in the summer or fall.

Drought is likely to expand in Texas and far western Oklahoma through the end of June, but there is high uncertainty in any potential flash drought development through the next four months in the remainder of the geographic area. Prior year analogs show mixed signals, which increases uncertainty in any rapid drying on weekly to seasonal timescales.

Above normal grass loading and the likelihood of high wind events are the main factors favoring above normal significant fire potential across the High Plains of Texas and Oklahoma in April. Some modest green-up has occurred, but consistent, widespread precipitation and warmer temperatures are needed to produce a more robust response in grasses. There are mixed signals as to when this will occur, but high winds become less likely during May and unlikely by June and July. Triple-digit heat could be of concern this summer, which lowers the typical thresholds for critical fire weather and can bring dormancy to new grasses if it is prolonged. Similarly, there are conditional risks for increased significant fire potential where long-term drought is ongoing in the Hill Country by June or July.

The Texas mountains are forecast to see above normal significant fire potential during May and June due to long-term drought and the increasing potential for lightning-caused fires. The areas of near-normal grass loading will be of more concern than areas with sparse herbaceous fuels. The North American Monsoon could bring an end to risks early in the summer as rainfall becomes more frequent, but any delay in consistent rainfall could prolong risks there given the expected severity of drought conditions.

Below normal significant fire potential is forecast during April along most of the Gulf Coast and East Coast, to include much of East Texas, Louisiana, Mississippi, Alabama, Georgia, and portions of the Carolinas into Florida. Early green-up and recent wet weather are the main drivers of continued lowered risks in these areas. Central Florida is an exception here as April starts on a drier and warmer than normal note. May could trend busier in terms of wildfire potential if recent dryness unexpectedly lingers through April.

Uncertainty is higher than normal for the Appalachians. Below normal significant fire potential was considered in the Southern Appalachians in April due to the early green-up, but wildfires will be possible until leaf on is complete. Note that recent wildfires in Virginia occurred after an 11-day stretch of no wetting rainfall, which is certainly possible anywhere in the region. Any potential in this complex terrain will rapidly end during the latter half of April as shading from the hardwood canopy increases. Mountain wave and downslope wind events, along with dry cold fronts remain

possible into April but become less likely later in spring. These weather events may be of highest concern following periods of above normal vapor pressure deficits and accelerated drying.

Above normal significant fire potential cannot be ruled out in coastal and pine-dominant areas later in the period, but confidence is too low for now. Any extended periods of below normal rainfall concurrent with above normal evaporative demand, should they occur, may result in rapidly changing conditions by summer. Areas of East Texas, Louisiana, Mississippi and southwest Alabama impacted by last year's drought should be monitored especially closely for flash drought development.

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>