



National Significant Wildland Fire Potential Outlook

Predictive Services
National Interagency Fire Center

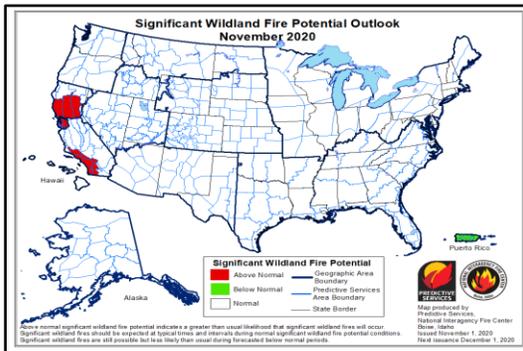


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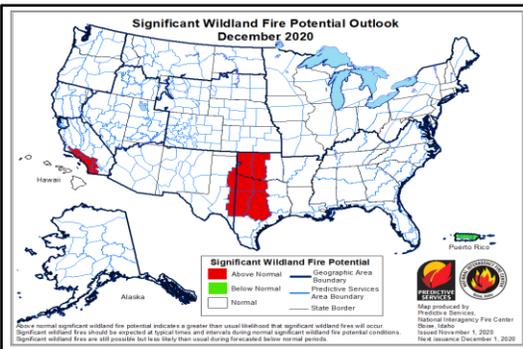
Outlook Period – November 2020 through February 2021

Executive Summary

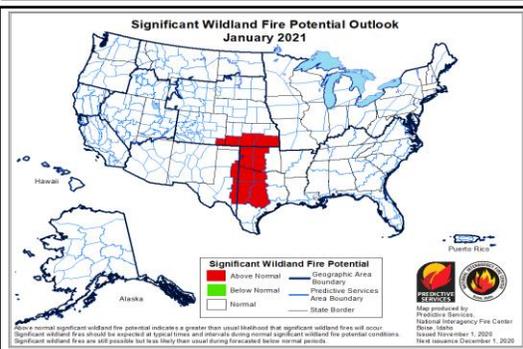
The significant wildland fire potential forecasts included in this outlook represent the cumulative forecasts of the ten Geographic Area Predictive Services units and the National Predictive Services unit.



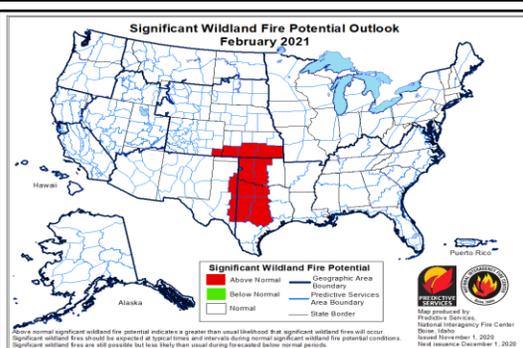
Large fire activity continued across California and central and southern portions of the Intermountain West in October. Mostly above normal temperatures and below normal precipitation with multiple strong wind, low relative humidity events drove this activity. However, large fire activity was greatly reduced across the Intermountain West by the end of October after a strong upper-level trough moved through the region.



During October, much of the large fire activity occurred in California and Colorado, although new large fires and growth on existing large fires continued in Arizona, New Mexico, and Utah. Multiple strong wind events led to rapid and record-setting fire growth on the Cameron Peak and East Troublesome Fires in Colorado, and a strong offshore wind event in California led to increased fire activity as well. Consistent cold frontal passages in the Northwest and Northern Rockies geographic areas ended fire season with landfalling tropical cyclones providing precipitation relief for portions of Southern Area.



La Niña and current fuel conditions are the main drivers of significant fire potential through fall and winter. Drought conditions are expected to continue for much of California, the Great Basin, and the Southwest into the winter with drying expected to increase across portions of the southern Plains and Southeast. Offshore wind events will continue to be a concern across northern California in November and likely into December for southern California. Significant fire potential is forecast to be above normal in downslope and offshore wind favored locations in California during November. The focus will shift to southern California in December as precipitation is likely to quell large fire concerns across northern California by then.



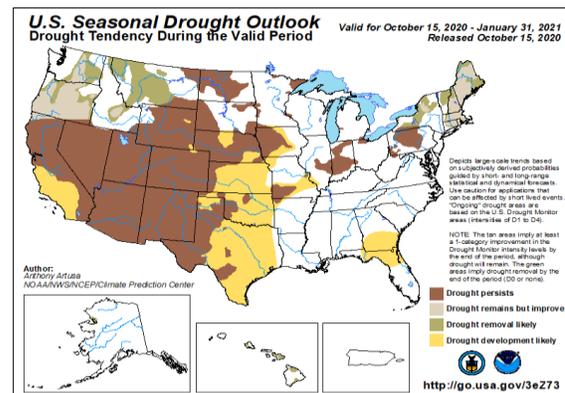
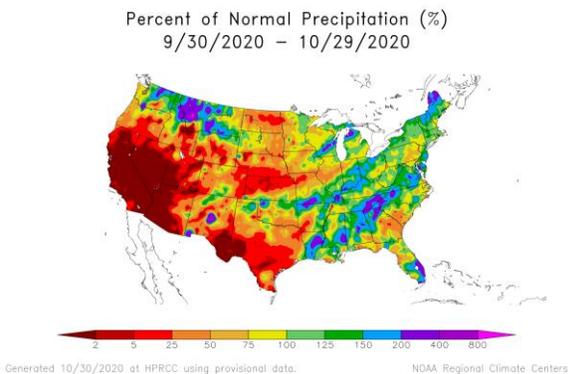
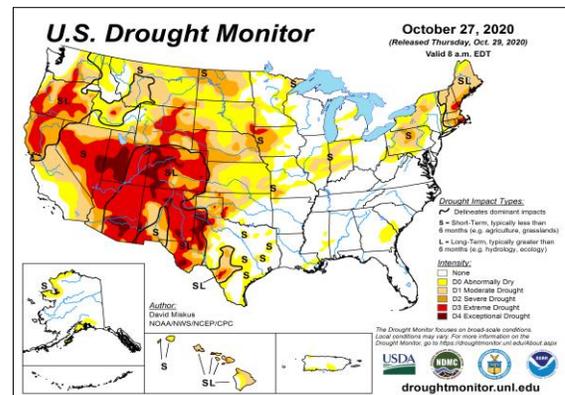
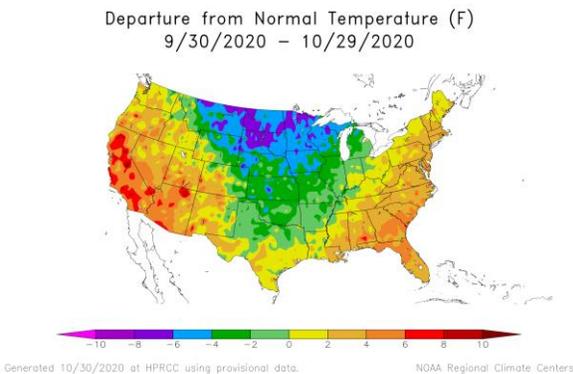
Over the winter, the expected warming and drying trend across the southern tier of the United States due to La Niña and other large-scale climate forcing will likely result in above normal significant fire potential in portions of the southern Plains. Drought intensification and expansion from the southern Plains into southern California is likely. Strong wind and low relative humidity events could occasionally increase fire activity in portions of the Great Basin and Southwest this fall into winter as well. However, outside of the southern Plains, significant fire potential will likely remain near normal for the rest of the United States.

Past Weather and Drought

Upper-level ridging over California and the Southwest led to well below normal precipitation and above normal temperatures across much of the West except for portions of the Pacific Northwest and Northern Rockies. This persisted and intensified drought across much of the West. Frequent upper-level trough and frontal passages also led to early snow and below normal temperatures across the northern Plains into the Upper Midwest. Season ending precipitation finally came to the Northwest and Northern Rockies geographic areas by mid-month. Hurricane Delta made landfall in Louisiana on October 9th, setting a record for most tropical cyclone landfalls in the US during a season and the record was broken again on October 28th when Hurricane Zeta made landfall in southeast Louisiana.

A dry airmass remained entrenched across California, the Great Basin, the Southwest, and most of the central and southern Rocky Mountains during October. Most upper-level trough passages traversed northern portions of the Pacific Northwest, Intermountain West, and Plains leading to stronger winds overlapping the northern edge of the dry airmass. The strong winds and dry air resulted in conducive burning conditions, and fires in these areas experienced periods of rapid fire spread, including overnight. Many of these fires made large runs at eight to eleven thousand feet of elevation reflecting the record dry fuels in the region. The Cameron Peak and East Troublesome Fires became the largest two fires in Colorado history surpassing the Pine Gulch Fire, which set the record earlier this year. Of note, the East Troublesome Fire made a 20-mile run and spotted over the Continental Divide during a 24-hour period on October 21-22. Record breaking snow and cold arrived on October 24-27 in the central and southern Rockies, which significantly reduced fire activity.

Multiple weak to moderate offshore wind events affected northern and southern California into the third week of October. However, an extremely strong offshore wind event in the Coast Ranges of northern and southern California and western slopes of the Sierra occurred on October 25-27. Single digit relative humidity and very strong winds were prevalent across the region, including 100+ mph near the Sierra crest, 80+ mph near the Bay Area, and 90+ in the San Gabriel Mountains.



Left: Departure from Normal Temperature (top) and Percent of Normal Precipitation (bottom) (from High Plains Regional Climate Center). Right: U.S. Drought Monitor (top) and Drought Outlook (bottom) (from National Drought Mitigation Center and the Climate Prediction Center)

Weather and Climate Outlooks

La Niña continues with below average sea surface temperatures (SSTs) in the Equatorial Pacific Ocean. The Climate Predicter Center (CPC) forecasts an 85% chance that La Niña conditions will persist through the winter and a 60% chance through April. La Niña will continue to significantly impact the fall fire season in California by producing persistent drier than average conditions along with a possible higher frequency of wind events. Warmer and drier conditions are also likely to continue for much of the Great Basin and Southwest through fall and into winter. Drier than normal conditions are likely to develop across portions of the Southern Area this winter.

Geographic Area Forecasts

Alaska: Normal fire potential is expected in Alaska for the winter. As snow is covering most of the state, Alaska is generally out of fire season through the outlook period.

The Drought Monitor shows abnormally dry conditions over northwest Alaska and parts of south-central Alaska, including Kodiak. There is also an area of Moderate Drought in northwest Alaska around Kotzebue Sound. However, Alaska is now covered in snow, so cold temperatures and snowfall will prevent meaningful fire activity.

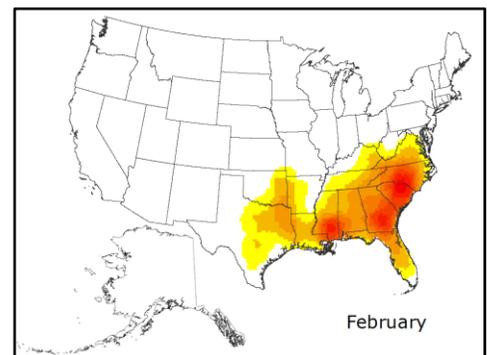
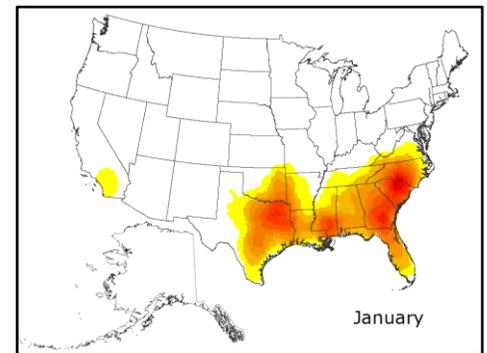
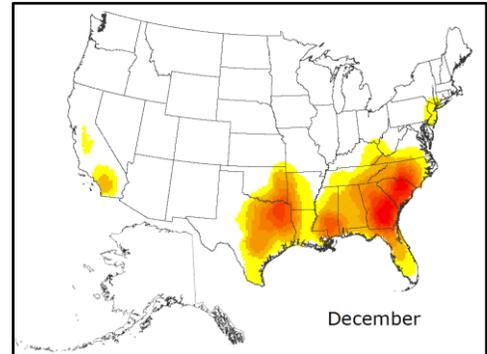
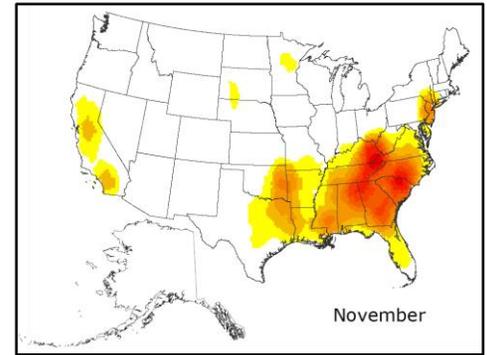
The summer was rather wet over much of Alaska, and this has rendered the mid layers of forest fuels nearly unburnable. November weather in Alaska is typically well below freezing in most areas with snow cover likely to remain through March or April. La Niña, which is likely to continue through winter, typically brings a cool but mostly dry winter to much of Alaska.

Northwest: Fire activity dramatically declined in October, which is typical, and the Northwest geographic area is now out of fire season. The risk of large, costly fires between November and May is historically very low; therefore, normal (i.e., low) significant fire potential is expected for the Northwest geographic area through February.

October started off much warmer than normal, but temperatures gradually declined toward the middle of the month then fell below normal in the last week, especially east of the Cascades where some areas observed record cold maximum temperatures. Overall, October ended with slightly above normal temperatures for the month.

Precipitation was more varied in October with several Pacific weather systems arriving after October 10th providing ample rainfall for Washington. Washington's monthly precipitation totals were generally near to above normal, including many reporting stations east of the Cascades. However, much of Oregon recorded less precipitation and was mostly below normal for the month, including well below normal precipitation in southern and central Oregon.

After a busy September, growth on existing large fires was minimal with no new large fires reported in October, and several large fires were declared contained or near containment. Initial attack activity was also light for the region despite a dry wind event late in the month.



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)

Energy Release Component (ERC) values climbed well above average in Oregon during the first ten days of October and climbed to near average in Washington. ERC values declined in mid-October with the onset of rain but hovered near normal afterwards. Dry weather increased ERC values to above average in southwest Oregon by the end of the month. Climate outlooks express confidence that fall and winter are likely to be colder and wetter than normal over the Pacific Northwest.

Northern California and Hawai'i: The fall northerly and offshore wind season off to an intense start and fuels remain very dry. As a result, coastal areas from Mendocino County south through the Bay Area, the Sacramento Valley and surrounding foothills, and western Cascade-Sierra slopes will have above normal significant fire potential in November. Significant fire potential will be normal across the rest of the North Ops geographic area for November and in all areas from December through February. Hawai'i will continue with normal significant fire potential through February.

Fuels throughout the North Ops geographic area are drier than average for late October with some areas at or above the 90th percentile for ERC values. A few areas are setting new ERC and dead fuel moisture records. Dry cold fronts have led to new fast-spreading fires and have allowed existing fires to become more active in recent weeks. Little to no precipitation is forecast through the first two weeks of November in most of northern California, although better chances of precipitation exist in far northwest California. Areas typically affected by the very strong and dry offshore winds have not received any wetting rain in months, and upcoming cold fronts through the first two weeks of November are expected to be dry. This will lead to additional high fire danger days from Mendocino County and Shasta County southward and west of the Cascade-Sierra crest. Current outlooks call for drier and warmer than normal weather through February, but a better chance of near normal precipitation is forecast by January. Even with the expectation of below normal precipitation, occasional light wetting rain events will likely impact the region beginning in mid to late November. This will eventually slow and end the fire season for the North Ops geographic area.

SSTs surrounding the Hawai'ian Islands are forecast to remain slightly warmer than normal through February leading to above normal temperatures in the region. Rainfall has been well below average in all areas this summer leading to abnormally dry and drought conditions across the entire region. La Niña is expected to continue into the spring with the outlook indicating rain events becoming more common beginning in November. This will likely improve drought conditions, although, drought may persist into the winter at some leeward locations.

Southern California: Significant fire potential will be above normal across and west of the mountains of southern California from Ventura County southward to San Diego County in November and December. Otherwise, expect normal large fire potential across the region through February.

Upper-level ridging and surface high pressure remained dominant over central and southern California in September and October. This area of high pressure brought above normal temperatures to much of the South Ops geographic area for most of October. However, a couple of Pacific troughs brought brief periods of near to slightly below normal temperatures on October 8-11 and October 22-26. The high pressure was at its strongest the first couple days of the month when widespread temperatures in the valleys were 100°F – 110°F degrees and many record high temperatures were broken. Overall, temperatures for October were well above normal. Well below normal precipitation continued over the region with most locations receiving no rainfall in October.

There were two Santa Ana wind events in October. The first event occurred on October 16th. The second event, which occurred from October 26-27, was the stronger of the two with sustained northeast winds of 20 to 40 mph and gusts to 60 mph across the mountains, passes, and canyons of southern California. The windiest locations had gusts more than 80 mph.

There was no change to the drought situation across the region in October. Moderate drought to Abnormally Dry conditions continued across interior portions of central California north of Kern County and across the deserts. There was no drought along the central coast and the mountains westward from Kern County to San Diego County. Fuels remained very dry in October with 1000-hour dead fuel moisture mainly below the third percentile across the mountains. While 100-hour dead fuel moisture was more variable in

October, it dropped below the third percentile and set record lows at the beginning of the month. There was little change in the live fuel moisture remaining mostly between 50% and 70%, but some of the old growth live fuel moisture was between 40% and 50%. These live fuel moisture values are below normal for this time of year.

While SSTs have cooled slightly in the Gulf of Alaska, central and southern California will most likely have well below normal precipitation and well above normal temperatures through December amid an ongoing La Niña and above normal SSTs along the West Coast. Upper-level ridging off the California coast is expected to remain the dominant weather feature through December. Pacific troughs dropping down the east side of the ridge will likely bring stronger and more occasional Santa Ana wind events to southern California in November and December. Thus, significant large fire potential will remain above normal across southern California from the mountains westward through December. Offshore winds are much less common across central California and due to heat waves being uncommon and of short duration during the fall, significant fire potential will return to normal across central California in November. Forecast guidance shows cooling SSTs off the West Coast, and La Niña will begin weakening during winter, which will allow for cooler temperatures and precipitation to occur. As a result, significant fire potential is expected drop to normal across the entire region in January and February.

Northern Rockies: Significant fire potential for the Northern Rockies geographical area is expected to be normal and out-of-season for the period from November through February.

Precipitation was well below-average in North Dakota and some parts of eastern Montana, but above normal west of the Continental Divide in north-central Idaho and western Montana due to a series upper-level trough passages. Until the last week of October, mean temperatures were slightly cooler than average east of the Divide due to persistent northwest flow aloft delivering cooler airmasses. High pressure ridging west of the Divide kept temperatures unseasonably warm. Central and south-central Montana had extended periods reaching temperatures above 80°F with relative humidity in the single digits and teens, which is very unusual for October. Lingering areas of Abnormally Dry conditions and Moderate drought persist in the Northern Rockies with a small area of Severe (D2) drought from northeast Montana through central North Dakota.

Increasing fuel moistures and reduced fire potential in the western PSAs were reinforced by several timely precipitation events in October, including high elevation snowfall. East of the Divide, however, a series of wet storms during the last half of the month was needed to gradually increase fuel moisture and reduce fire potential. More specifically, an unseasonably cold pair of Arctic outbreaks brought record cold and widespread snow to the Northern Rockies on October 20-24, especially along and east of the Divide in central and south-central Montana. Many stations recorded their all-time coldest October temperatures and all-time highest snow amounts for the month, including the valleys of western Montana. In contrast, the areas that received the least amount of snow, but still very cold temperatures were in northeast Montana and northern North Dakota. In mid-October, the Northern Rockies geographical area decreased to Preparedness Level 1 due to reduced fire activity and reduced fire potential.

For the first week or two in November, there will be a period of warmer and drier weather as the effects of La Niña synchronize between the ocean and atmosphere. A high-pressure ridge will establish over much of the West with mostly stable conditions, but some continued periods of downslope wind events along the eastern slopes of the Continental Divide. These events will bring warming temperatures locally and aid in melting snow between weather systems but will not increase fire potential.

NOAA's 30-day and seasonal outlooks for November through January, especially the December through February period, depict colder and wetter than average conditions for the Northern Rockies. Based on these outlooks and the most similar analog year of 2017, normal fire potential is expected for the outlook period. These months are considered "out of season" for the Northern Rockies due to the cold temperatures and mountain snowpack. Accordingly, fire potential for all PSAs will be indicated as "normal/out of season" for the period.

Great Basin: Normal significant fire potential is expected for the Great Basin geographic area November through February.

Temperatures across the Great Basin have been above normal over the past 30 days, as stronger high pressure has been dominant. Precipitation over the last 30 days has been well below normal across most of the Great Basin, and only near or slightly above normal over parts of central Idaho and Wyoming due to cold fronts dropping south bringing some wetting rain and mountain snowfall. However, no precipitation has occurred in portions of the southern Great Basin in months. Hot weather developed periodically July through October with periods of record heat, along with breezy winds at times and very dry conditions. Cold fronts were quite dry in September and October as they swept through Nevada and Utah bringing stronger winds. Moisture remained confined to the northern portion of the Great Basin, affecting Idaho, Wyoming, and far northern Utah. Farther south, the only precipitation came in late October as a passing cold front brought showers to parts of eastern and central Utah.

The drought has intensified to Extreme and Exceptional categories over much of Nevada, Utah, and the Arizona Strip due to the abnormally dry conditions July through September related to the lack of monsoon moisture. Moderate to localized Extreme drought is also occurring in a small portion of south-central Idaho due to summer dryness. These drought areas are expected to persist into the winter across Nevada, Utah and the Arizona Strip and improve across Idaho due to recent moisture and likely additional moisture this fall and winter as cold fronts return to the region. La Niña will likely continue to strengthen with the storm track targeting northern areas of the Great Basin more often through the fall and winter.

Fine fuel loading is still 100-300% of normal across parts of Nevada, Utah, the Arizona Strip, and southern Idaho, especially in parts of southern and eastern Nevada, western Utah, and the Arizona Strip. Most of the higher fuel loadings over the northern half of the Great Basin are due to dead carryover fuels. Fuels remain very dry over the southern portions of the Great Basin where ERCs, live and dead fuel moisture are still at record levels for the time of year. However, fuel moisture has increased, and ERC values have dropped due to the most recent cold front across Utah and eastern Nevada. Fuel moisture is much higher in Idaho and Wyoming due to more widespread showers, prolonged higher relative humidity, and cooler temperatures.

Above normal temperatures and dry conditions are expected across the Great Basin through early November, with better chances of cooler weather and moisture toward mid-November. As cold fronts return, breezy winds are likely, and moisture may remain more limited until later in November and December except for portions of Idaho and Wyoming. The southern half of the Great Basin is expected to be drier than normal heading into winter, while precipitation may start increasing over the winter in northern areas toward Idaho and Wyoming as La Niña strengthens.

Fire activity typically decreases significantly in October and is minimal from November through winter. Moisture and colder weather that has affected most of Idaho and Wyoming will likely be enough to minimize any significant fire potential concerns through the fall and winter. While no significant moisture is expected to end fire season across Nevada, Utah, and the Arizona Strip, longer nights and shorter days will keep most new fires in November to one burning period in the absence of strong winds.

Normal fire potential is expected November through February. However, depending on moisture, the southern and central Great Basin will be monitored for cold frontal passages as there could be periods of elevated fire potential during windy periods, especially due to dry and soon-to-be dormant fuels. Drier winters typically increase the likelihood of non-natural ignitions that could be driven by strong winds for a burning period or two in more heavily populated areas.

Southwest: Normal significant fire potential is expected across the Southwest geographic area November through February.

Over the past two months, high temperatures have been mostly 6-9°F above normal across most areas along and west of the Continental Divide with of the plains 2-4°F above normal. Precipitation is 50% of normal or below across most of the region and 25% of normal or below across most areas west of the

Continental Divide with the driest areas across in far western and northwest Arizona. New Mexico has received more precipitation overall, but precipitation was 5-50% of normal in many areas of New Mexico. A late October winter storm helped significantly increase fuel moisture across much of New Mexico with mountain and valley snowfall.

Oceanic conditions have been shifting and are now into a moderate La Niña heading into November. La Niña generally leads to above normal temperatures, but cold frontal passages will become more likely and regular as November arrives with some brief respites from the warmer than normal conditions. Below normal precipitation is expected across the region for November and likely into early winter.

Model guidance is consistent with forecasting mild to warmer than normal temperatures with primarily dry conditions into winter. A negative Pacific North American (PNA) pattern could arrive periodically during the next few months leading to brief periods of breezy and cooler conditions with a chance of precipitation focused in northern and western portions of the Southwest and the southern High Plains. However, dry and mild conditions into winter for the Southwest Area are expected.

Normal significant fire potential is expected November through February. The western half of Arizona could have occasional fire activity due to critical north wind events and remaining drier than normal. However, the loss of daylight hours and colder overnight temperatures will likely preclude any significant issues through the month of January. An expected lack of high-risk triggers is anticipated over the next few months as significant wind episodes and lightning events are not frequent this time of year. This will likely negate above normal significant fire potential west of the Divide during November, although increases of fire activity are possible given that some ignitions are likely to occur. A very dry late fall into early winter remains likely with small, nuisance fires to continue through the next few months. As spring arrives, La Niña is expected to weaken, which could portend to allow a gradually more active weather pattern over the region. However, there will be some concerns across the southern High Plains with some wind driven fire events.

Rocky Mountain: Extreme drought during much of October was moderated late in the month by an early season snow event. Normal large fire potential is forecast across the geographic area during November. Warm and dry long-range forecasts are expected to result in above normal significant fire potential in southeast portions of the Rocky Mountain Area (RMA) during January and February.

Cooler and wetter than normal conditions settled in over northern portions of the RMA during October. Above normal temperatures were observed across Colorado into southern Wyoming with drier than normal conditions over southern Wyoming into Colorado and Kansas. However, a major late month snow event moderated the precipitation deficits and ended the month with much colder weather. The most extensive drought remains in Colorado, especially in central and western portions of the state, with Severe to Extreme drought present.

Large fire activity was well above normal in October due in part to fires started in September across south-central Wyoming (Mullen Fire) and north-central Colorado (Middle Fork Fire). Additionally, the Cameron Peak Fire in north-central Colorado, which started the second week of August, remained very active during the latter portion of September into October. Two additional large incidents emerged in mid-October, the East Troublesome and Calwood Fires, with Cameron Peak and East Troublesome becoming the two largest fires in Colorado's history.

ERC values during October were above seasonal records across Colorado into southern Wyoming and were near all-time records at some locations. Late October ERC values dropped dramatically due to the major snow event. The first week of November is predicted to have minimal precipitation over the RMA with better chances of precipitation during the second week of the month. CPC longer range forecasts are warmer and drier than normal across southern portions of the RMA through fall and winter with northern portions cooler and wetter than normal.

Extreme drought was moderated late in the month by the early season snow event. Long term drought is now well established across the RMA, especially in Colorado, despite the late October snow. Mild temperatures are predicted early in November across the RMA with no critical or extreme fire weather

patterns expected. Additionally, expectations are for an increasing chance of precipitation during the second week of November. Fire activity in late fall to early winter is typically minimal across the geographic area. Significant fire potential will remain normal in November with increasing significant fire potential in the longer range over the southern Plains as warmer and drier than normal conditions are forecast during the winter. The warm and dry long-range forecasts are expected to result in above normal significant fire potential in southeast portions of the RMA during January and February into early spring during the pre-green-up transition period.

Eastern Area: Near normal significant fire potential is forecast across the Eastern Area into February. Elevated fire potential is possible across parts of the southern tier if the forecast drier than normal conditions develop. However, cooler than normal temperatures are expected to prevail over most of the Eastern Area into January curtailing overall fire potential in any drier than normal areas.

30-day soil moisture and precipitation anomalies were below normal across parts of northwestern Minnesota, northern Iowa, the northwestern half of Missouri, and eastern Pennsylvania towards the end of October. Longer range drought conditions were indicated across parts of western and central Pennsylvania, western Iowa, southwestern Missouri, Illinois, and Indiana.

Cooler temperature trends overall are forecast over much of the Eastern Area November into January with drier than normal conditions across much of the geographic area in November. With La Niña conditions expected to strengthen into winter, drier than normal conditions are likely across the southern tier of the Eastern Area into January. Wetter trends may develop across much of the Eastern Area in February with warmer than normal conditions across the eastern states.

Near normal fire danger indices and fuel moisture levels were indicated across the majority of the Eastern Area towards the end of October. Precipitation events increased across drier portions of the geographic area through the second half of October, including parts of the Northeast and Mississippi Valley. Near normal fire potential is forecast across the majority of the Eastern Area into February. The late fall fire season is forecast to possibly end earlier than normal across the southern tier of the Eastern Area due to widespread precipitation near the end of October.

Southern Area: Overall, a generalized upward trend back to normal significant fire potential is expected for most of the Southern Area through fall. This is due to the broader warmer and drier weather resulting from the strengthening La Niña and other supporting intraseasonal atmospheric oscillations. The ongoing exceptional rain producing tropical pattern will continue to mute fire danger in central and southeast states of the geographic area but will begin to weaken. Most of the Southern Area is forecast to have normal significant fire potential through February except for areas of Oklahoma and central and west Texas where a warmer and drier fall and winter is expected.

Except for drought conditions in west Texas and western Oklahoma, the rest of the Southern Area is essentially drought free courtesy of a wet pattern during summer into fall, including a very active tropical cyclone season. Through January, drought is likely to develop and spread across Oklahoma and Texas due to multiple large-scale climate pattern signals.

Fire activity has been minimal and below normal for most of the geographic area through October due to weather and climate teleconnections associated with ENSO and the Madden-Julian Oscillation. More recently, Texas began to experience more precipitation, which reduced fire activity. Frosts and freezes have produced cured vegetation, which increase quick response drying and an increase in ignition potential during periods of low relative humidity. Fuel moistures continue to trend at well above average levels across all fuel classes except for western areas of Oklahoma and Texas. With a drying trend expected, the exceptionally high fuel moistures should begin to decrease through fall into winter.

Expecting broader, enhanced drying during November due to a strengthening La Niña. Antecedent very moist fuel conditions from September, potential dry episodes during October, fall freeze events, and the unfolding fall leaf drop complicate the outlook for November. While timing of these events will be critical,

conditions seem borderline at this time for precisely indicating above normal significant fire potential. With drier and warmer conditions anticipated, managers should plan for at least normal significant fire potential.

Except for western Oklahoma and areas of central and west Texas, winter significant fire potential should remain mostly normal. As La Niña continues to strengthen in the tropical Pacific, weather patterns should produce broadly warmer and drier than normal conditions across the Southern Area. Some periodic increases in ignition risks (mainly fine fuel drying episodes) are likely across the more southern states. Cured grasses and a dry winter forecast could keep western Oklahoma and areas of central and west Texas in elevated to above normal fire risk. The fire season in Texas typically begins January into February, but if antecedent conditions trend drier as they currently are, the season could start in mid-December.

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>