National Significant Wildland Fire Potential Outlook

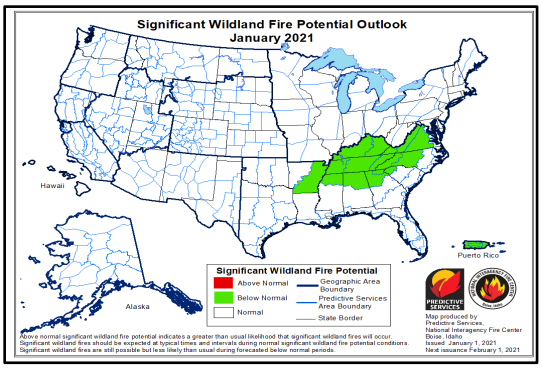
Predictive Services
National Interagency Fire Center

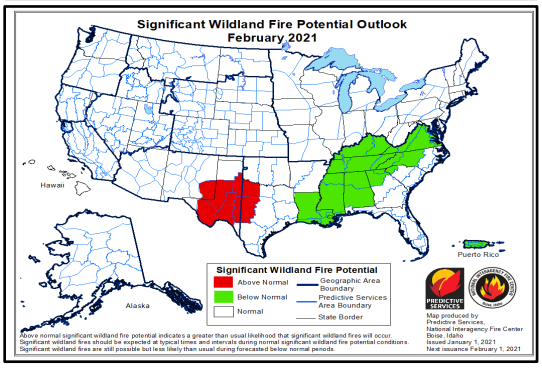
Issued: January 1, 2021
Next Issuance: February 1, 2021

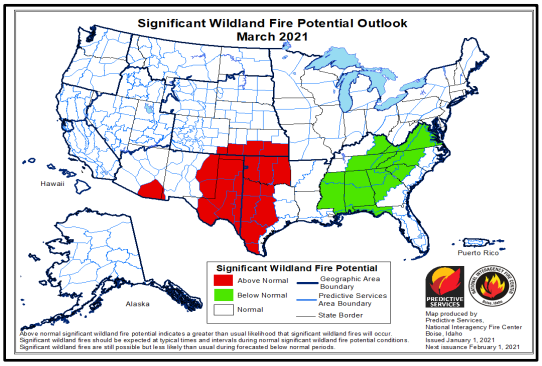
Outlook Period – January 2021 through April 2021

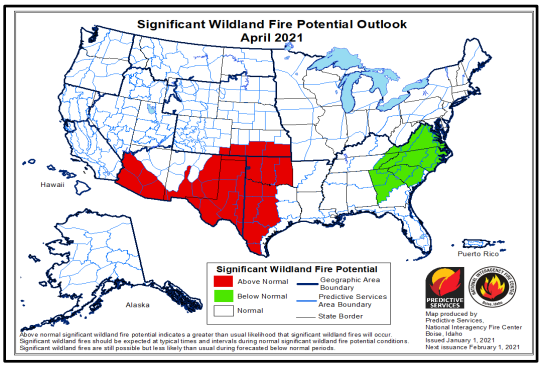
Executive Summary

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 fires were largely absent from the West, but scattered fire activity continued in the Southern Area during December. While multiple offshore wind events, including Santa Ana winds, affected California during December, much needed precipitation arrived in northern California in mid and late December with precipitation arriving in southern California the last week of December. These precipitation events have significantly reduced fire potential in California.

Much of the United States (US), especially the contiguous US (CONUS), experienced below normal precipitation and above normal temperatures, most prominently in the northern Plains. However, much of the Mid-Atlantic and Northeast observed above normal precipitation with near to below normal temperatures in the Southeast. Drought persisted across much of the West and Plains with some intensification and expansion in portions of these regions. Large portions of the Southwest, Great Basin, Colorado Rockies, and southern High Plains are in exceptional drought (i.e., the highest category).

La Niña will continue to significantly affect the weather and climate patterns through winter and into spring. Drought conditions are expected to continue for much of California, the Great Basin, and the Southwest through winter into spring with drying expected to increase across portions of the Plains and Southeast. Recent cool and wet weather in the Southeast and Mid-Atlantic along with climate outlooks suggest normal to below normal significant fire potential is likely for large portions of the Southeast, Appalachians, and Mid-Atlantic. However, an early and active start to the fire season is expected for the southern High Plains during late winter.

Given the background drought and anticipated warmer and drier than normal conditions across the Southwest and southern Plains, significant fire potential is forecast to be above normal during the spring. Lower elevations in the Southwest are favored to have above normal significant fire potential beginning in March and April. Oklahoma, eastern New Mexico, and most of Texas are forecast to have an active spring fire season before green-up in March and April and possibly beginning as early as February. Above normal significant fire potential is also likely to extend north into southern Kansas and southeast Colorado in March and April.

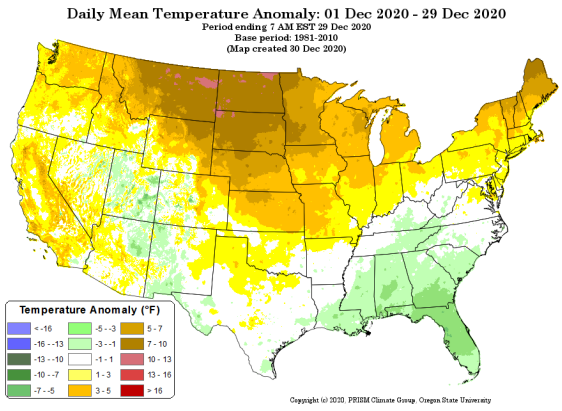
Past Weather and Drought

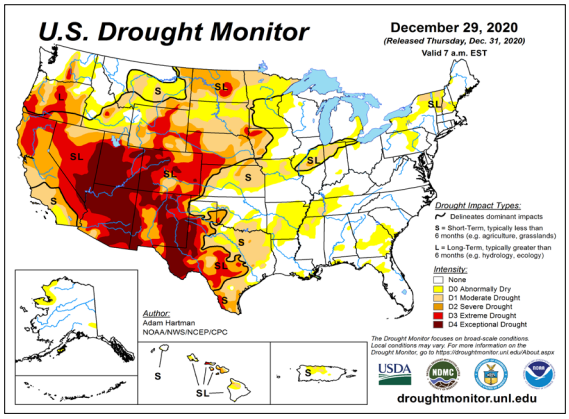
Warmer and drier than normal conditions were observed across much of the CONUS during December. However, multiple storms passed over the Mid-Atlantic and Northeast, including recording setting snow, resulting in above normal precipitation. Additionally, cold fronts pushed south across the Intermountain West, Plains, and into the Southeast resulting in near to below normal temperatures across the Southeast and into Texas and the Southwest. However, the storm track stayed mostly to the north across the West before dipping southward over the eastern US. Well above normal temperatures and well below precipitation and snow were observed as a result across the northern Plains and into the Upper Midwest.

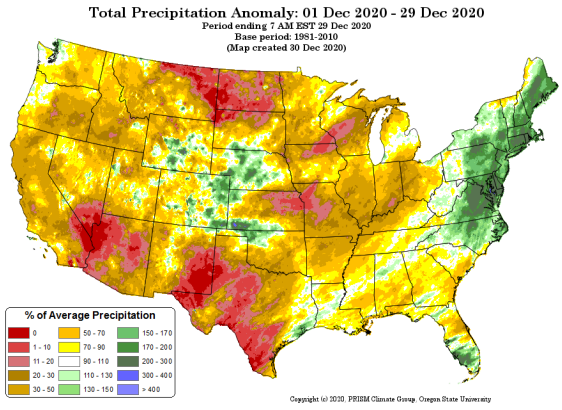
Snowfall and snowpack across the West remain mostly below normal, generally 50-75% of the 30-year median for snow water equivalent, according to Natural Resources Conservation Service (NRCS) data. Near to above normal snowfall is present across portions of Washington and the Northern Rockies due to the northerly storm track. The Southwest has remained dry with snow water equivalent mostly below 50% of median, including some basins reporting below 20%.

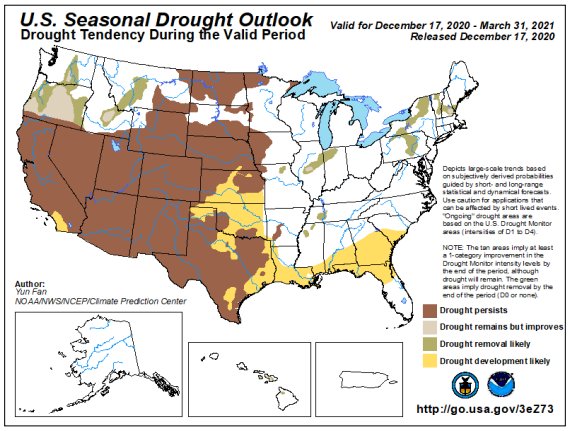
Multiple offshore wind events affected California during December with an increase of initial attack noted, but no significant large fires were reported. Well-timed precipitation in northern California during mid-December and again the last week of December have quelled significant fire concerns. Southern California finally received wetting rain, including snow at higher elevations, the last week of December, which significantly reduced fire potential.

Drought persisted across the West with some expansion and intensification in places, including portions of California, the Southwest, and the Great Basin. Drought also intensified and expanded in portions of the Plains with some improvements in portions of Pennsylvania and the Northeast.









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 a 95% chance that La Niña conditions will persist through March. There is a 50% chance that ENSO neutral conditions will return April – June with the transition likely occurring during the spring. La Niña will continue to significantly impact weather and climate patterns into spring with warmer and drier than normal conditions forecast across the southern tier of the US, especially the Southwest and southern High Plains.

Geographic Area Forecasts

Alaska: Normal fire potential is expected in Alaska for the winter. With snow covering most of the state, Alaska is out of fire season.

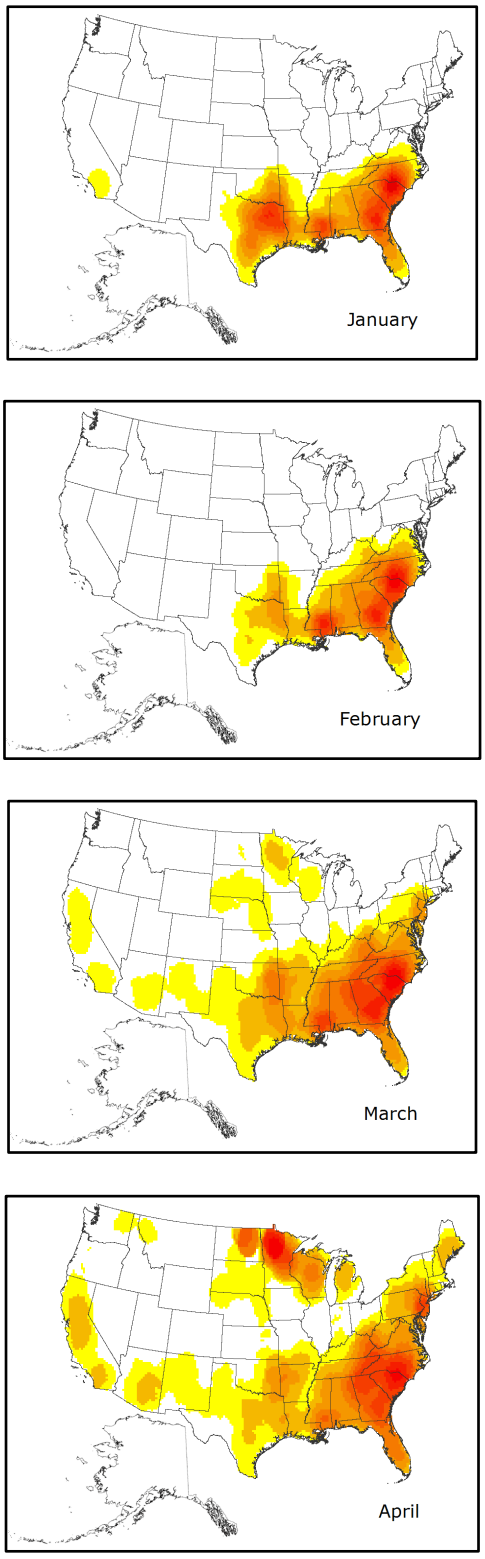
The US Drought Monitor shows abnormally dry conditions over the Alaskan northwest coast, Kodiak Island, the Yukon Flats, and the Upper Tanana Valley. Fuels are currently snow-covered and frozen. As such, there are no active fires at this time; the only potential is for small, human-caused ignitions that are easily suppressed. The spring melt cycle and amount of winter snowfall will determine spring fuel conditions.

CPC outlooks for Alaska forecast warmer and wetter conditions in the northwest while colder and drier conditions are expected for south-central and southeast Alaska. Snowpack is likely to remain into April. La Niña, which is forecast throughout the winter, typically brings a cool but somewhat dry winter to southern Alaska.

Northwest: The Northwest Geographic Area is out of fire season. The risk of large, costly fires is anticipated to be very small until June. "Normal" (meaning low) potential for large fires is expected.

Pacific frontal systems moved across the Northwest Geographic Area at regular intervals during December. However, accumulation of rain and snow proved to be less than the monthly average for most areas except sections of western Washington, the central Oregon coast, and the northern Oregon Cascades. Temperatures during December averaged several degrees above normal for the entire geographic area. The warm and dry trend through December is similar to that observed over most of the region since October 1. Snow accumulation at low and mid elevation locations is slightly below average for late December. Accumulation at higher elevations is near average for Washington and slightly below average for Oregon.

Fire activity was minimal in December with few starts and no new large fires reported. NFDRS Energy Release Component (ERC) values are near zero west of the Cascades. East of the Cascades ERC values were near average for late December for both Oregon and Washington. Climate outlooks suggest winter and spring is likely to be colder and wetter than typical over much of the Pacific Northwest.



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)

Northern California and Hawai'i: For the North Ops region from January through April, significant fire potential is normal in all areas. Normal is defined as less than one large fire per Predictive Service Area per month. Significant fire potential in Hawai'i is normal from January through April, although some lee side locations may see drought conditions persist longer into winter.

Occasional wet fall and winter weather systems moved through the North Ops region in November and December. Although monthly and seasonal precipitation totals have been below average since the water year began on October 1, there has been enough precipitation to increase fuel and soil moisture to minimize significant fire potential as 2021 begins. At elevations below 2000 feet, a new crop of green grass has come in, and older cured grasses are becoming matted down and decomposing in some areas. The outlook for the North Ops region for January through April is for warmer and drier than normal conditions. On a regional scale, enough precipitation is expected to keep fire activity relatively quiet. A winter-spring fire weather threat develops when more than two weeks of dry weather occurs prior to the spring green-up. Middle elevations that are snow-free and have fuel loading of litter and dormant fuels can see fire potential increase during windy weather. This situation is more of a shorter-term, local-scale forecast issue and not seen multiple weeks in advance.

Sea surface temperatures (SSTs) surrounding the Hawai'ian Islands are warmer than normal, and the warm SSTs are expected to continue through April, leading to above average temperatures in the region. Rainfall has been well below average over the past several weeks, leading to abnormally dry and drought conditions across the entire region. A weak La Niña pattern is expected to continue into the spring. The outlook calls for rain events to become more common beginning in January, leading to improving drought conditions. However, lee sides of some islands may still see locally dry conditions and higher wildfire potential in January and February.

Southern California: Significant fire potential is expected to be near normal across all of South Ops January through April.

Strong high pressure aloft sat off the California Coast most of December. This high pressure aloft brought above normal temperatures to both central and southern California. There were a few fast moving upper-level Pacific troughs that moved inland across northern California bringing near to slightly below normal temperatures. However, the storm track remained to the north of the region most of December. Scattered showers moved across central California mainly from a Monterey/Tulare County line northward December 11, 13, and 17. Most locations received between a quarter inch and three quarters inch of rainfall with each of the three upper-level troughs. The snow level over the Sierra was between 7,000 and 8,000 feet and over a foot of new snow fell over the crest. However, there was little or no rainfall across southern California and the southern portions of central California with these three troughs. Widespread showers moved across the area December 27-28 as an upper low-pressure area moved inland near Point Conception.

Overall, temperatures were well above normal and rainfall was well below normal for December with predominant offshore flow. There were two strong offshore wind events across southern California early in the month. They occurred from December 2-3 and December 7-8. North to east winds of 20 to 40 mph with gusts to 80 mph surfaced across the mountains and in the canyons and passes from Ventura County to San Diego County. On December 7, offshore winds of 15 to 30 mph with gusts to 50 mph surfacing across portions of central California, which is quite unusual.

Drought expanded and intensified across both central and southern California. The desert areas bordering Nevada and Arizona are now under extreme to exceptional drought. The rest of the area is mostly under moderate to severe drought, but across Orange County, the Inland Empire, and San Diego County only abnormally dry conditions exist. All of South Ops now has some type of drought condition. The 1000-hour dead fuel moisture has increased to near normal across much of central California and to between the 10th percentile and the 3rd percentile across southern California. The 100-hour dead fuel moisture values were below the 3rd percentile and breaking record levels across southern California during the first week of the month. These values increased substantially by the end of the month. Live fuel moisture remains extremely dry and mainly between 50% and 70% across southern California. There has been a slow increase in the live fuel moisture across central California this month.

Even though SSTs remain above normal in the Gulf of Alaska and along the West Coast, they are starting to cool. These cooling SSTs will most likely cause the upper-level high pressure off the California coast to weaken. The weakening upper-level high pressure will allow upper-level Pacific troughs to move inland farther south along the West Coast, periodically bringing cooler temperatures and better chances of beneficial rainfall this winter into the early spring. Well below normal SSTs are expected to continue across the Equatorial Pacific Ocean limiting the amount of sub-tropical moisture that gets entrained into upper-level Pacific troughs. Temperatures are expected to remain above normal and precipitation below normal each month January through April, but values are expected to be much closer to normal than in recent months. Enough precipitation is expected from January to April to cause the large fire threat to be near normal regionwide. A near normal amount of Santa Ana wind events is expected across southern California January through April.

Northern Rockies: Significant wildland fire potential for the Northern Rockies Geographical Area is expected to be out of season/normal January through April.

A distinct split from west to east began over the summer and continued through the fall with much cooler and wetter conditions west of the Continental Divide as a series of weak upper-level trough passages moved through at regular intervals. East of the Continental Divide, warmer and drier weather continued with Chinook wind events along the eastern slopes and adjacent plains. The first two weeks of December saw bare ground with very little snow cover there, but gradually filled in somewhat during the last part of the month.

In conjunction with the lack of snow cover on the Plains, severe to extreme drought continued over the past month in North Dakota, along with low soil moistures and a shallow layer of frost about six inches deep. Severe drought was also noted in northeast Montana and a small sliver of extreme southeast Montana according to the US Drought Monitor. In the southern two thirds of Montana, moderate drought persists. The only areas of the Northern Rockies that do not reflect abnormally dry conditions are in the panhandle of northern Idaho and northern Montana, west of the Continental Divide. The Evaporative Demand Drought Index for the past month continued to show the evaporative demand (i.e., “atmospheric thirst”) as high over most the Northern Rockies. CPC’s US Seasonal Drought Outlook predicts that these trends will persist through March, but drought removal is anticipated in southwest and south-central Montana as increasing precipitation is forecast there through the period. This is a welcome development as that area (PSAs 9 and 11) were some of the most extreme in terms of fire potential during the past fire season.

In the western PSAs, high elevation snowpack that began building in November generally remained intact with near-average temperatures, but much of the snow water equivalent (SWE) decreased as the snow compacted. Very little additional snow fell during the first two weeks of December, but an increased frequency of weak troughs brought additional snow to both mountains and valleys west of the Continental Divide, especially in north-central Idaho and Glacier National Park. East of the Continental Divide, conditions were still much drier. One aspect that set December apart from November’s semi-critical fuels was that it was much cooler beginning the second week of the month, when minimum temperatures reached -15 to -20°F in northern North Dakota and northwest Montana. This combined with low sun angles and short burning periods diminished fire potential east of the Divide in December, even though freeze-dried fuels remained exposed to several wind events in the absence of continuous snow cover.

The Northern Rockies Geographical Area has been at Preparedness Level 1 since mid-October with low fire potential and minimal fire activity. During an uptick in warm, dry, and windy conditions the first week in December, there were a handful of small fires in North Dakota, but otherwise there were very few reports. There was, however, a strongly inverted atmosphere in the western PSAs of northern Idaho and western Montana that brought air stagnation for several days in early December. Fortunately, there was very little smoke as fall prescribed burning from the agencies ended November 30.

CPC 30-day and seasonal outlooks for the January – April period depict colder and wetter than normal conditions for the Northern Rockies with higher probabilities over the western PSAs. Their confidence for

the northern Plains, including North Dakota, is relatively low, which could continue the west-east split and persistent dryness in those eastern PSAs at least until late January or early February when there is higher potential for increasing precipitation there. One of the most significant factors in these outlooks is the expectation (95% likelihood) that a moderate La Niña pattern will continue into spring with a transition toward neutral ENSO conditions during the spring or summer.

January through March are climatologically considered "out of season" for much of the Northern Rockies Geographic Area with winter snowpack continuing to accrue at all elevations. April is the month of transition, and this year is anticipated to be normal regarding snow melting off at lower elevations before the spring flush in the higher mountains. Accordingly, fire potential for all PSAs in the Northern Rockies will be indicated as "out of season/normal" for the period.

Great Basin: Normal fire potential is expected across all of the Great Basin through March, which for this time of year translates to minimal fire activity. However, due to exceptionally dry conditions across the southern part of the area, there could be periods of elevated fire potential during windy periods.

Temperatures across the Great Basin have been above normal across the northern portion of the area and near normal farther south over the past 30 days. Precipitation over the last 30 days has been well below normal across the entire Great Basin, with the driest conditions across the southern portion of the area. No precipitation has occurred over parts of far southern Nevada in months. Extreme to exceptional drought is in place across much of Nevada and Utah, with moderate to severe drought across northern Nevada and Utah into southern Idaho. Mid to high elevation snowfall has been below normal across the entire Great Basin, with almost all SNOTEL stations reporting snow water equivalent values 50 to 75 percent of normal for the time of year. There was no significant fire activity in the Great Basin during December.

Fine fuel loading is above normal across portions of Nevada, southwest Idaho, and western Utah. Most of the higher fuel loadings over the northern half of the Great Basin are due to dead carryover fuels. New fine fuel growth was patchy and low in many areas over the northern half of the Basin. Fuels remain very dry over the southern half of the Great Basin where some areas have had less than half of an inch of precipitation over the past 90 days.

Abnormally dry conditions are expected to continue through the winter months across the southern portion of the Great Basin. Far northern Utah, Idaho, and Wyoming may see increasingly wet conditions as La Niña continues.

Southwest: Normal significant fire potential is expected across the Southwest Geographic Area in January followed by above normal significant fire potential in portions of west Texas and southeast New Mexico (PSAs 14S and 14N). Above normal significant fire potential expands to include much of the southern High Plains and southeast Arizona into southwest New Mexico for March with above normal significant potential across much of western and southern Arizona, southern and eastern New Mexico, and west Texas (PSAs 2, 3, 6N, 6S, 9, 12, 13, 14N, and 14s).

Over the past two months the dry trend has continued across the Southwest, while temperatures have moderated and become more variable. Temperatures have ranged from a few degrees above average across the western half of the area to a few degrees below average across the eastern portions of the area. Precipitation was generally 50-70% of average or less except for notable areas of above average precipitation in the mountains near and east of the Continental Divide. These enhanced areas of precipitation were largely the result of a single storm in mid-December.

A moderate La Niña continues, and this usually results in normal to above normal temperatures and drier than normal conditions through winter for the Southwest. Long range outlooks are persisting La Niña into the spring, and temperature and precipitation outlooks are likewise extending the forecast for overwinter warm and dry conditions into March and April.

As is typical for the Southwest, just a few major storm systems in an otherwise dry period can have a substantial impact on fire potential. At least a few major storms are expected to move through the area this winter and spring with beneficial moisture impacts most likely to be focused over northern and mountain areas. Unless these storms occur in March and April, lower elevations are not as likely to benefit from precipitation.

Normal significant fire potential is expected through January with any fire activity most likely confined to the eastern plains of New Mexico and west Texas. Moving into February, above normal significant fire potential is expected to develop and expand across eastern New Mexico and west Texas where the driest, warmest, and most windy conditions are expected to align. Progressing further into March and April, a continuation of warmer and drier than normal conditions in combination with spring winds will cause significant fire potential concerns to expand across all the lower elevations of southern Arizona, southern and eastern New Mexico, and west Texas.

Rocky Mountain: Although drought is still in place across the Rocky Mountain Area (RMA), and the geographic area was warmer than average during much of November and December, occasionally cool conditions and limited precipitation has kept the risk for new large fires near normal. Near normal significant fire potential is forecast across the geographic area during January. Warm and dry long-range forecasts are expected to result in above normal significant fire potential over southeast portions of the RMA from late February through April.

Warmer and drier than average conditions occurred during November and December across the RMA, especially across eastern portions of Wyoming and Colorado and onto the Plains. The US Drought Monitor portrays little change from last month with the exceptional drought west of the Continental Divide in Colorado and extreme drought in much of Colorado, central and eastern Wyoming, and western Nebraska.

Large fire activity has been near normal, which is characterized by very few or no large fires with most fires of short duration and wind-driven on the Plains. This time of year, the fuels most available to burn are in brush and grass regimes across the Plains during warm, dry, and windy conditions. These conditions occur periodically with increasing frequency during the early spring pre-green-up period of February through April.

Precipitation is forecast at times from short-term models in an active weather pattern from December through the first half of January across the RMA. CPC forecasts show warmer and drier than normal conditions across southern portions of the geographic area through the winter and early spring with northern portions of the area cooler and wetter than normal.

Although drought is still in place across the RMA and the geographic area was warmer than average during much of November and December, occasionally cool conditions and areas of precipitation has kept the risk for new large fires near normal. An active weather pattern is forecast in the short term during the latter portion of December through the first half of January keeping opportunities for precipitation in the forecast. Normal significant fire potential is forecast to continue across the geographic area during January, and normal fire activity in January is minimal across the RMA. Warm and dry long-range forecasts are pointing towards above normal significant fire potential over southeast portions of the RMA during late February through April during the pre-green-up period.

Eastern Area: Near normal fire potential is forecast across the majority of the Eastern Area into April. However, if the wetter than normal conditions do occur across the southern tier February into March, fire potential may be curtailed over these areas through the early spring.

30-day soil moisture and precipitation anomalies were below normal across parts of the Upper and Mid-Mississippi Valley as well as northern New England towards the end of December. Longer term drought conditions were indicated across parts of central Pennsylvania, central Illinois, and central New England.

La Niña conditions are expected to persist through the spring creating drier than normal conditions across the southern tier of the Eastern Area into January. Wetter than normal conditions are forecast to develop across much of the Eastern Area in February, persisting into April.

Near normal fire danger indices and fuel moisture levels were indicated across the majority of the Eastern Area towards the end of December. Precipitation events increased across drier portions of the geographic area through the end of December, including parts of the Great Lakes and Mid-Mississippi Valley. Fuel moisture levels may remain below normal across northwestern Minnesota into January if precipitation events do not increase over this area. The spring fire season may start later than normal over parts of the Eastern Area if the forecast above normal precipitation trends develop.

Southern Area: A rather muted fire potential outlook is expected for most of the Southern Area for the next four months despite a typically drier precipitation anomaly pattern expected with a La Niña. Persisting and expanding cold anomaly ocean water in the northeast North Atlantic, high pressure blocking across the Greenland area, and very warm and broad coverage in the northern Pacific are the main features that will continue to drive and modify hemispheric flow. The net result will be a continued higher frequency of rather moderate precipitation producing weather systems and only muted periods of lower surface humidity episodes. The only part of the Southern Area that is likely to see periods of elevated potential is west Texas. A projected near term warming of stratospheric temperatures is expected to produce a "stratospheric warming event", which would necessarily result in periods of much colder and wintry weather for the Southern Area in January.

Recurring (and at times higher accumulation) rain events because of a continuing progressive and higher frequency weather pattern have kept higher surface and soil moisture levels for most areas of the South. Due to this, the South, except for Texas, remains mostly drought free with only small pockets of moderate drought. Texas, particularly western counties, long and short term drought expanded and worsened since last month, which was the forecast. Drought or drier than normal conditions are typical for the South during a La Niña, but a more southerly storm track due to supportive Madden-Julian Oscillation phases and a Pacific/North Atlantic SST anomaly pattern, which are promoting negative trending Eastern Pacific and Arctic/North Atlantic Oscillation episodes.

Fire activity remains minimal and well below average with any periods of elevated initial attack being driven by short-term drying of the litter layer and fine fuels. For Texas, winter weather and some episodes of rain have limited large fire occurrence. Fuel moistures are currently very high, most near or better than 20% with the only lower and/or marginal conditions (15% and below) occurring in the west and central-west Texas PSAs. This should continue through winter.

In short, a still active and recurring storm track into and across the southern US is expected to dampen significant fire activity. Through the rest of winter and into very early spring, the CPC's current December 17 Seasonal Drought Outlook calls for potential drought development across essentially southern areas of the Gulf Coast states, central and southern Georgia, and north Florida. Drought is expected to persist across most of Texas with development expected in Oklahoma. Rain and some snow along with periodic moderate to high precipitation events will keep fire potential at seasonal to mostly below seasonal levels.

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**