National Significant Wildland Fire Potential Outlook
Predictive Services
National Interagency Fire Center
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Outlook Period–November, December and January through February 2020

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.

National fire activity was generally average in October except across Southern California and Colorado where wind events coupled with ongoing dryness produced event-driven fire activity that required resource allocation. In California, the Foehn Winds (Santa Ana, Sundowner, Diablo, Mono, and North Winds) arrived mid-month. While the events were of average strength, they were frequent and caused many fire starts. Continued breeziness associated with the seasonal transition and passing weather systems allowed for fire activity across Colorado to persist. By mid-month, areas along and east of the Continental Divide began to receive periodic precipitation that allowed activity to begin to diminish. However, the southwestern portion of the state remained dry. Both Texas and portions of the Deep South remained dry during the first half of the month. By mid-month, the Southeast began to receive relief as the frequency of passing cold fronts increased and as a weak tropical storm quickly moved across the Florida Panhandle, Georgia, and the Carolinas and provided additional relief. Texas, however, remained dry and is an area to monitor closely through the winter months as the dry pattern is expected to continue.

Entering the outlook period, most states will remain out of fire season in November. Exceptions to this will continue to be California, Colorado, and possibly Texas where drier than average conditions will continue. Expect periodic increases in fire potential and activity during wind events that not only bring strong winds but also drier air that lowers humidity levels to critical levels. The occurrence of such events should begin to diminish in frequency later in the month as the seasonal transition begins to end. Medium range data suggests that conditions across the Southeast will continue to show improvement as the frequency of moisture events continues to increase.

Climatologically speaking, most regions have exited fire season by December as winter takes hold. Only the Southeast typically experiences sustained large fire activity during the winter months. This year, some potential will remain across portions of Texas, the southern Great Basin, and northern Arizona as abnormally dry conditions lead to drought expansion and intensification. Activity occurring in these areas will be event-driven and likely short in duration. For January and February, the focus will shift to areas along the Rocky Mountain Front across the central and southern Great Plains where the significant large fire potential is expected to remain elevated due to ongoing dry conditions that will allow the fine fuels to remain susceptible.
Past Weather and Drought

October was atypically cool across the West and warm across the East. Greatest departures from average were observed across the northwestern portion of the country where temperatures averaged 5 to 10 degrees below average. The Deep South experienced temperatures that were 6 to 8 degrees above average. The Great Plains, New England, and the Southwest experienced temperatures that were near average as these regions were situated between a cold trough of low pressure over the Pacific Northwest and the high pressure ridge over the Southeast. Precipitation patterns did not follow expected trends as much drier than average conditions were observed across California, the Great Basin, and Colorado where generally less than 25% of average precipitation was received. Texas received between 25% and 75% of average precipitation while the Southeast started the month much drier than average but finished the month with near average precipitation. Part of the reason for the recovery of the precipitation was the passage of Tropical Storm Nestor mid-month. The Foehn Wind season in California began early in the month. Wind events were generally of average strength, but they were more frequent. The occurrence of the events led to additional drying in the fuels. Soil moisture anomalies across the Great Basin and California went from being above average to being near average as abnormally dry conditions develop.

Drought conditions continued to develop and expand across the southern Great Basin and Central Rockies during October. Across Texas, little drought expansion was observed, but the ongoing dryness did lead to drought intensification across portions of central Texas. Georgia, Alabama, and the Carolinas observed drought intensification as well early in the month; however, the timely occurrence of precipitation events mitigated some of the effects of the ongoing dry conditions. The wetter than average conditions across the Pacific Northwest continued in October. This allowed for nearly all of the areas in this region to exit the preexisting drought conditions by late in the month. Alaska, Hawaii, and Puerto Rico showed small areas of moderate or greater drought conditions.

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**

Sea surface temperature (SST) anomalies along the equator indicate that ENSO Neutral conditions continue across the equatorial Pacific Ocean with little change in temperatures observed over the past several months.

The outlook for ENSO calls for a continuance of neutral conditions through the winter months. The neutral conditions are likely to continue through spring 2020 into the early summer before a gradual descent into cooler than average conditions occur. The impacts of this on the nation’s weather should be for overall weather patterns that produce near average precipitation, except along the West Coast where some below average anomalies may be observed and across the Great Plains, where above average anomalies may be experienced. Overall, temperatures should be near to slightly above average this winter.

**Geographic Area Forecasts**

**Alaska:** Normal significant large fire potential is expected during the outlook period since the state is now out of season.

The U.S. Drought Monitor shows Abnormally Dry to Moderate Drought conditions across much of the South Central and the Panhandle portions of the state. The far southern Panhandle is in Severe Drought. That said, there have been significant precipitation events to alleviate conditions in these areas in the last month or so, but long-term dryness is still taking a toll on reservoirs and landscapes.

Summer has ended, and Alaska is awaiting more snowfall to encase the land. Warm weather over most of the state has melted much of the small snowfalls that have occurred; higher elevations are the exception. The forecast looks to bring in continued very warm weather for much of November. With temperatures in the 40s or colder, fuels are wet or frozen and will remain so through the forecast period. Alaska is out of fire season.

**Northwest:** Normal significant large fire potential is expected across the region during the outlook period.

Wildfire activity was minimal across the region in October. Temperatures in the Pacific Northwest were colder than average in October due to a series of cold fronts moving southeast across the region from the Pacific and Canada. Washington and northwestern Oregon were wetter than average for the month. Much of southern and central Oregon remained quite dry in comparison. As a result, fire danger indices are quite low over Washington due to the wet and cold weather. Over Oregon, where drier conditions predominated, fire danger crept back up to seasonal normal by the end of the month in PSAs NW04, NW06 and NW07. Fire danger is too low to support much risk of large wildland fires.

Outlooks for the region are noncommittal for November. There is no strong signal for temperature or precipitation anomalies. For December through February, warmer and drier than average conditions are the most probable scenario for the region.
This implies that a lower than average accrual of snowpack is expected in the lower elevations; however, there may be some brief phases within the December-February period where rain and snow are heavy.

**Northern California and Hawaii:** The Sacramento Valley and Foothills, entire Bay Area, Mid Coast PSA from Clear Lake south, and the western slopes of the Cascade-Sierra range have Above Normal Significant Fire Potential in November, with the emphasis on the first half of the month. All other areas have Normal Significant Fire Potential in November. Additionally, the entire North Ops region has Normal Significant Fire Potential from December 2019 through February 2020. Significant Fire Potential is Normal for the remainder of Hawaii in November, and Normal in all areas from December through February.

Little to no rainfall occurred within the North Ops region in October. Near-term forecasts and outlooks call for warmer and drier than normal conditions to continue into the middle of November across the region. In fact, no rainfall is expected within the region through the first week of November. Overall, the four-month period through February 2020 is expected to remain warmer and drier than normal.

North-northeast/offshore wind events are expected to occur once or twice per week at low to medium strength through the end of November. Moderate or stronger events such as the ones that occurred in October will likely occur once or twice in November. The Sacramento Valley, Foothills, entire Bay Area, Mid Coast PSA from Clear Lake south, and the western slopes of the Cascade-Sierra range have been the driest areas and receive the most intense warming and drying effects during wind events. These areas have a heavier than normal crop of yearly brush growth and cured fine fuels. Live fuel moisture values, as well as dead fuel moisture values, in these areas are at critical levels. Recent fire activity below 5000 feet has demonstrated extreme fire behavior with rapid spread rates, confirming that fuels indices are at their seasonal extreme values.

Sea surface temperatures (SSTs) surrounding the Hawaiian Islands are warmer than normal, and the warm SSTs are expected to continue through February, leading to above average temperatures in the region. Rainfall has been mixed in recent months, and generally above normal in all but the middle islands. The Drought Monitor for Hawai‘i shows that recent dry conditions from the west side of the Big Island to Molokai has led to increasing drought conditions there, and Maui continues to have problems with active wildfires. Near term forecasts continue to show somewhat dry conditions into the middle of November. Therefore, areas from the west side of the Big Island to Molokai have Above Normal Significant Fire Potential in November, with the focus on the lee sides during the first half of the month. The overall outlook from November through February is for warmer and wetter than average conditions throughout the region.

**Southern California:** Above Normal significant large fire potential is expected in the middle elevations and East Wind-prone areas during November and early December followed by a return to Normal significant large fire potential. Other locations can expect Normal significant large fire potential.

The repercussions of an expansive area of an anomalously warm sea-surface temperature (SST) distribution to weather patterns of the West were finally discernable in October. Warmer than average water temperatures had spanned the eastern Pacific during the past several weeks, but until recently, the circulation pattern across the Pacific had not been impacted. Instead, an unusually strong jet stream had been bringing storm systems into the Pacific Northwest on a roughly bi-weekly schedule since spring. However, in late September, the jet stream seemed to wane in influence. The weakening of the jet, in turn, allowed a strong ridge to build off the coast, leading to warmer and drier conditions across the region.

The ridge’s placement allowed cold air advection to spill into the Rockies and Great Basin. Offshore gradients were generated from this pattern and the first moderate to strong offshore wind event of the season occurred on October 10 through 11. Some wind gusts exceeded 60 mph across Southern California during the event, fueling the rapid spread of the Saddle ridge and Sandlewood Fires. The extremely dry, windy and warm weather caused dead fuel moisture to drop to the 90-95th percentile in terms of dryness while live fuel moisture dropped to near critically dry levels by month’s end. Further offshore wind events occurred on a 3-5 day cycle through October 31.

Long-range models offer little optimism that wetter weather will arrive anytime soon. The ridge off the coast is expected to figure prominently in the overall weather pattern for the next several weeks, if not longer.
Wetting rains do not appear imminent, or even possible, through the middle of November. In addition, most long range models indicate that the next three months may be drier than average as well. While, admittedly, long-range models are not terribly accurate more than a few weeks out, the overall pattern this winter is trending drier in most long-term model guidance. Therefore, we expect large fire potential to remain well above normal across much of the area in November and across the southern half of the district in December. Offshore wind events are expected to arrive on a near to slightly above normal level of frequency.

**Northern Rockies:** Normal significant large fire potential is expected across the region during the outlook period.

The wettest September on record in North Dakota was followed in October by continued wet conditions there and across most of the Northern Rockies Geographic Area. Although there were a handful of days with above average temperatures, they were typically short-lived before cold frontal passages. Overall, the Northern Rockies saw temperatures 5 to 15 degrees below seasonal averages during the past 30 days.

During a slow-moving storm mid-month, the second of three early-season upslope snow events occurred along the Continental Divide and the Absaroka-Beartooth Mountains. This laid the foundation for our winter snowpack, which is earlier and deeper than it was at this time last year. East Glacier Park and the adjacent plains to Great Falls saw snowfall of one to four feet in early to mid-October, followed by record cold temperatures in the single digits. The same storm moved east to produce a blizzard in Central and Eastern North Dakota with a wide swath of two to three feet of snow and winds over 60 miles per hour. By the end of the month, northwesterly flow aloft became more pronounced in response to higher pressure off the Pacific Coast. Chinook westerly wind events became more of an occurrence on the Front Range.

The latest Outlooks for the three-month period from November through January depict above average temperature potential for the Northern Rockies, with highest probabilities in Central Idaho and Southern Montana.

All of the PSAs in the Northern Rockies measured a multi-day hard freeze during the first week of October and again the last week of October. This has transitioned the fuels from live back to dormant or dead. Until a widespread covering of snowpack accumulates on the brush and grass fuels, they may still be available to burn during short-lived dry and/or windy events.

**Great Basin:** Normal significant large fire potential is expected across the region during the outlook period.

Temperatures across the majority of the Great Basin have been below normal over the past 30 days, with the coldest weather being observed across Idaho, Wyoming into northern Nevada and northern Utah. Southern and eastern Utah remained near to just above normal. Precipitation has been near to just above average across parts of Idaho, Wyoming, into northeastern Nevada and northern Utah, but well below average across the southern half of the Great Basin. Many areas in the south have not seen any precipitation in the last 30 days, with some areas of southern Nevada, southwestern Utah and the Arizona Strip not seeing any precipitation in the last 60 days. The late, weak, and short-lived monsoon created very dry conditions across Utah, the Arizona Strip and eastern Nevada during July and August, with ERCs at or above record levels heading into September. The dry conditions since August have kept ERCs at record levels for the time of year, with many areas across the southern half of Utah into southern Nevada still seeing ERCs above the 85th percentile. Moderate to severe drought has returned to the southern two thirds of Utah, far southern Nevada, the Arizona Strip, with abnormally dry conditions further north into northern Utah and over the southern two thirds of Nevada. Cold fronts that have moved through Great Basin over the past couple of weeks have brought much cooler temperatures to most of the Great Basin, but have only brought some moisture to the northern half of the region, bringing dead fuel moisture up to well above normal, with an exception being the far south. Fine fuel loading is still 100-300% of normal across the Great Basin. The fine fuels can dry out during longer periods of warm/dry weather, but tend to
moisten up when cold fronts bring cooler temperatures, higher humidities and some precipitation by mid to late November.

Cold fronts are expected to continue to move across the Great Basin periodically in November, bringing periods of breezy winds, cooler temperatures, and higher humidities to most of the Great Basin. Fronts appear to remain on the drier side through at least mid-November, with a shift to wetter weather potentially later in the month and into December. When stronger pre and post frontal winds occur after periods of warm and dry weather (through at least mid-November, then again later in the winter), the winds may briefly increase fire potential if there are ignitions in continuous beds of fine fuels across the lower elevations of Nevada and Utah. However, this would last for one or two burning periods, and would quickly subside when winds decreased and cooler and moist weather returned. Otherwise, fuel moisture will gradually increase and fuels will transition into dormancy with normal fire potential expected through February.

**Southwest:** Normal significant large fire potential is expected across the region during the outlook period.

Over the past two months, average high temperatures have run from two to six degrees above average across the northeastern half to two thirds of the region. Other areas were closer to average. As far as precipitation, overall the southern tier of the region has been moist with many areas reporting above average precipitation during the period while areas further north have been below average.

As fall transitions into winter over the next month, expect overall high temperatures to remain above average and precipitation below average in most areas. There are some signs that a wetter than average signal is possible by February for areas east of the divide region. More than likely, frequent backdoor cold fronts will affect the region as an eastern Pacific/western U.S. upper level ridge pattern is expected to develop lingering into the winter months. This will allow storm systems to traverse from west to east to the north and drop backdoor cold fronts that will move from northeast to southwest across the region. This type of pattern provides semi-frequent to frequent temperature drops focused along and east of the divide region but is not an overly wet one.

**Rocky Mountain:** Normal significant large fire potential is expected during the outlook period.

During the second half of October a cooler than average cycle emerged across much of the region. A dry pattern intensified in October west of the Continental Divide, and east of the divide until the second half of the month when there was an increase in precipitation. The Drought Mitigation Center has showed an intensification of the drought in Colorado mainly in the west and south extending into southwestern Kansas.

Early season snowfall has reduced the availability of reliable RAWS indices, with snowfall amounts in excess of 20 inches in some of the higher elevations of central through northern Colorado and Wyoming and with 10 inches or more over the higher peaks of the Black Hills of South Dakota. In areas not yet impacted by snow, there is a robust grass crop in the lower elevations east of the divide, with significant fuel loading because of an early season hard freeze during October.

Short-term model forecast precipitation for the first half week or two of November is average to warmer than average along with drier than average conditions. The consensus of long-range weather forecasts anticipate wetter than average conditions in the northern portion of the geographic area and a potential for warmer than average across the southwestern portion of the region.

After above average large fire risk occurred over portions of Colorado during the first half of October, early season snowfall reduced the large fire potential across the region by month’s end. Warm, dry, and windy periods are not unusual during the remainder of fall; however, episodes are significantly less common when compared to September and October. Large fire activity for November through February period across the geographic area is expected to be Normal and limited mainly to short duration and wind-driven grass fires east of the Continental Divide mainly during November and February.
**Eastern Area**: Normal significant large fire potential is expected across the outlook area all four months except across the southern areas near the Ohio River and Potomac River Valleys November through January where Below Normal significant fire potential is located. All areas can expect Normal significant large fire potential in February.

30 to 90 day soil moisture and precipitation anomalies were near to above normal across the majority of the region toward the end of October. Well above normal soil moisture and precipitation anomalies were indicated across much of Iowa, northern Missouri, Minnesota, Michigan, and Wisconsin.

Warmer than normal conditions are forecast across the southern tier of the region into November. Wetter than normal trends are forecast over much of the region through the rest of the year along with a transition to a colder than normal weather pattern over the much of the region December into February of 2020.

Above normal fuel moisture levels and below normal fire danger indices were indicated over much of the area towards the end of October due to widespread rainfall through the second half of October. The fall fire season may end earlier than normal across parts of the southern tier of the Eastern Area if wetter than normal conditions persist into November.

**Southern Area**: Below Normal significant large fire potential is expected across the central portion of the geographic area in November and across the eastern portion of the region in December and January. Other areas can expect Normal significant large fire potential November through January. All areas can expect Normal significant large fire potential in February.

The current neutral ENSO state should it hold for the next couple of months. This oceanic temperature state normally produces and enhanced precipitation pattern for the U.S. east and southeast but an average to drier than average trend heading west across Texas into the Southwest. Other northern hemisphere pressure and ocean temperature patterns across the northern Pacific and the northern Atlantic Oceans can have a significant impact on weather patterns as well. This raises the level of uncertainty during the outlook period. That said, most outlooks are looking for an average to wetter than average conditions for the more eastern and southeastern states.

The onset of the fall rains in October beneficially affected the onset of the 48 day or so “flash” type of drought condition that emerged across the South during September and October by allowing improvement to occur. While drought conditions have significantly improved, there remains areas where significant short-term drought exists. The national drought outlook is looking for drought improvement and/or removal across the Southeast. Drier conditions area expected in Texas, which will allow drought to persist. With the return of frequent and longer duration rain events for most of the rest of the Southern Area, 100 and 1000 hour fuels moistures have significantly risen back to the 20-25% range with the exception to this being the lower ranges for western Oklahoma and the western half of Texas where moisture remain very low.

In spite of the dry fire environment in western Oklahoma and Texas, fire activity has generally been light across the region. Leaf drop is underway, though it is running several weeks behind normal. With dry and warm weather expected in the coming months, the fall fire season is expected to be more active. Winds, minimum afternoon humidity levels, and a still active tropical season will influence severity. Rain frequency, cooler (likely much colder), and windy periods in November should bring on accelerated leaf drop but likely not until later in the month. Because of this, and perhaps a few more days of fine fuel drying potential in between wet cold fronts, there could still be areas that experience short periods of elevated ignition potential.

**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