

National Significant Wildland Fire Potential Outlook

Predictive Services
National Interagency Fire Center

Issued: December 1, 2018

Next Issuance: January 1, 2019



Outlook Period – December and January through March 2019

Executive Summary

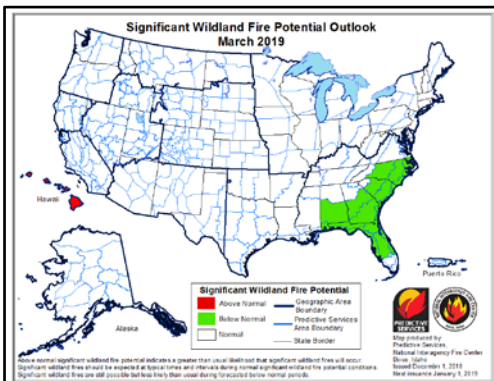
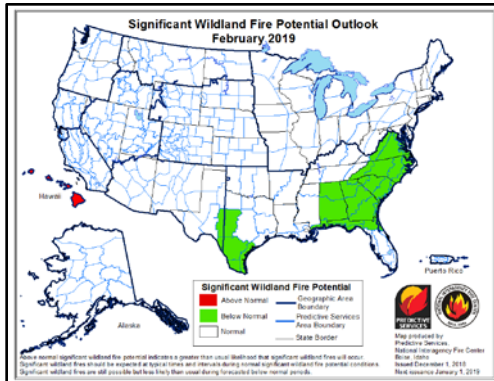
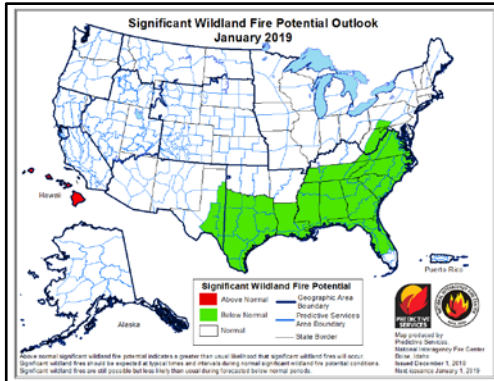
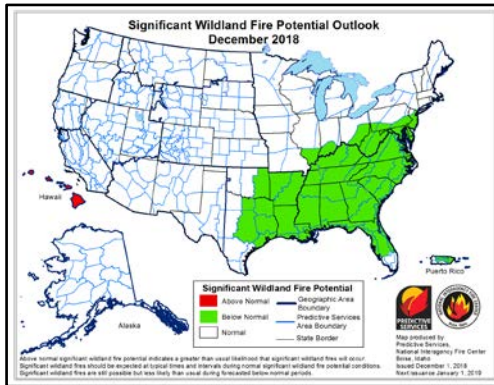
The significant wildland fire potential forecasts included in this outlook represent the cumulative forecasts of the ten Geographic Area Predictive Services units and the National Predictive Services unit.

Most of the nation remained out of fire season during November. In the West, the prolonged period of drier than average conditions continued. Approximately 70% of the West received less than 25% of average precipitation during the month. Impacts from the dryness were felt mid-month during a Mono and Santa Ana wind event where deadly wildfires developed across portions of Central and Southern California. The Camp Fire claimed numerous lives before the wind event subsided making it the deadliest in the state's history.

Exceptions to the observed widespread dryness were the North Cascades of Washington and the Northern Rockies where average to above average precipitation was received. Precipitation amounts across the Great Plains fared better than their western neighbors. Amounts were only slightly below average. In the East, effects of the developing El Niño continued to be felt as many areas along and east of the Mississippi River received at least 200% of average precipitation during the month. Temperatures were generally above average along both the Atlantic and Pacific Coasts and well below average from the Continental Divide east to the Mississippi River.

Climatologically speaking, fire activity during the winter months, December through February, is at a minimum. Areas most susceptible to activity are generally restricted to the southeastern states where periodic increases in fire activity are possible during dry periods until spring greenup begins. However, current data and expected trends in precipitation suggest that large fire potential will be Below Normal in this region. The abundance of moisture should keep fuels in most areas from becoming critically dry. Drought forecasts project that the region should remain mostly free of drought. In March, short duration wind events can trigger grassfire activity across the southern Great Plains while the fuels are receptive prior to greenup. This is considered normal and some activity is expected entering spring.

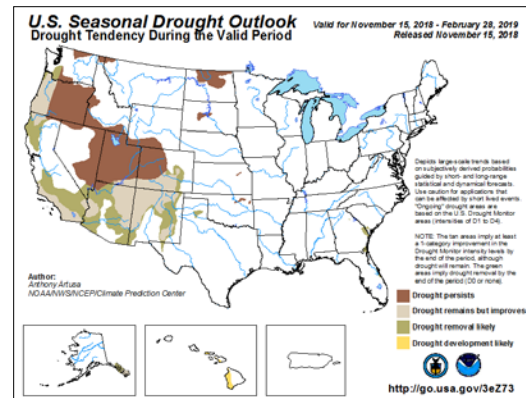
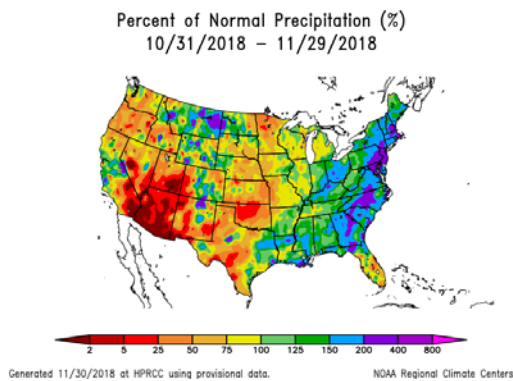
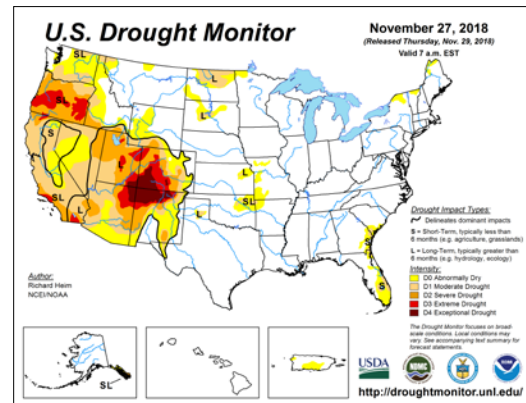
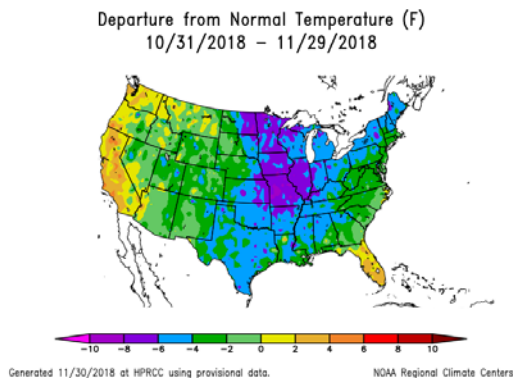
The ongoing weak El Niño event will lead to an overall below average snowpack west of the Continental Divide this winter except possibly across the southern Rockies where above average precipitation is expected. Snowpack deficits along the Divide will likely be buffered by northeasterly flow events as fronts drop south into the country from central and northern Canada.



Past Weather and Drought

Temperatures west of the Continental Divide were near average in November except along the Pacific Coast where they were slightly above average. Along and east of the Divide, temperatures were below to well below average. Some portions of the Midwest experienced sustained periods of temperatures that were 12 degrees or more below average. Temperatures east of the Appalachian Mountains were closer to averages, generally only 3 to 6 degrees below average for most of the month. Precipitation received varied dramatically across the country. In the East, amounts received were generally 200%-400% of average. In the West, a majority of the land area received less than 25% of average precipitation. In fact, a large portion of the southern Great Basin and the Southwest received 2% or less than average precipitation for the month.

The western drought persisted during November. Drought saw some intensification in the Sierra and the Mendocino National Forest while western Washington and portions of the Northern Rockies experienced drought relief. Portions of the Southwest saw a reduction in drought severity as well, especially across southern Arizona and southeastern New Mexico. In the East most areas were drought-free, though there were some portions of southern Florida that experienced abnormally dry conditions. Alaska was also largely drought free except in the southern panhandle near Ketchikan. Puerto Rico and Hawaii were also largely drought-free.



Weather and Climate Outlooks

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)

Latest sea surface temperature anomalies across the equatorial Pacific Ocean indicate that a weak El Niño event has begun. Both sea surface temperature anomalies (SSTAs) and temperature anomalies at depths beneath are at least one half a degree above average which is the minimum threshold for an El Niño event. Forecast data suggests that the weak to moderate El Niño event will persist through the winter and spring months before ending.

Weather patterns in association with the event are expected to follow climatological trends. Wetter than average conditions are expected to continue across the south central and southeastern states. Overall warmer and drier than average conditions are expected across the northwestern quarter of the country while a trend towards average conditions is expected across the southwestern quarter of the nation except California where drier than average conditions are expected. Mountain snowpack accrual should be below average across the northwest and near average across the southwest.

Geographic Area Forecasts

Alaska: Normal significant wildland fire potential is expected for the region during the outlook period.

The U.S. Drought Monitor shows an area of Abnormally Dry conditions in the northern Alaska Panhandle and Severe Drought conditions in the southern Panhandle. The remainder of the state has received ample precipitation this fall, with some snowpack accruing across most of the state.

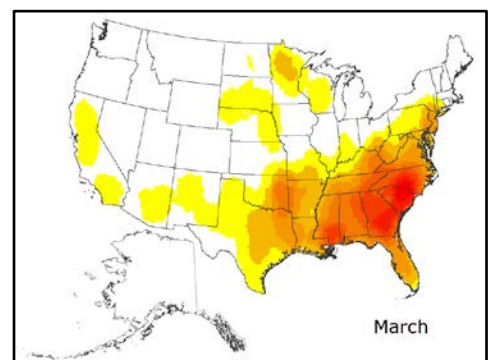
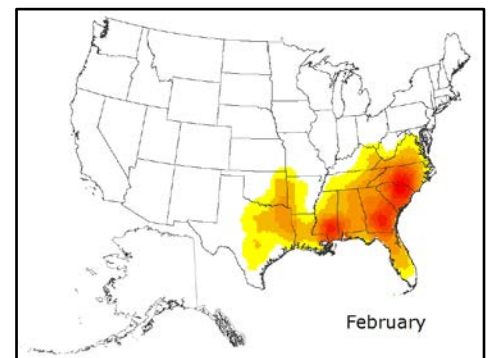
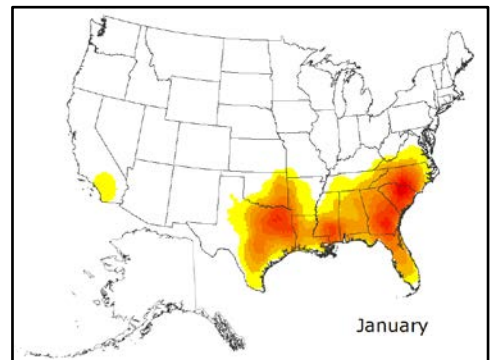
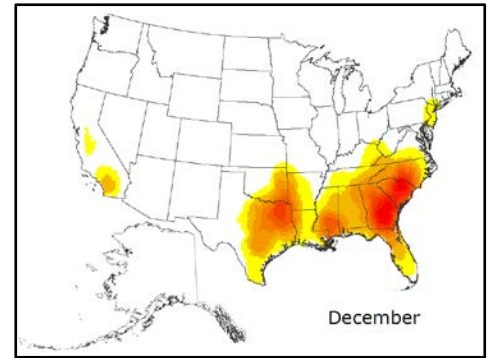
Weather outlook maps are forecasting warmer than normal conditions for all of Alaska this winter, with a focus on western and northwestern Alaska, particularly along the coast for December. This is likely due to the extremely low sea ice content of the Chukchi Sea this fall. Both medium and long range forecasts indicate a likelihood for ample precipitation across all but the eastern Interior over the next few months.

Calculations of the Canadian Forest Fire Danger Rating System have all been turned off for the season as temperatures are mainly in the 30s and 40s, the ground is frozen or even snow-covered in most areas, and ignitions are unlikely.

Alaska is out of fire season with little to no fire activity expected through the winter, which is normal.

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

After an unusually warm and dry summer, conditions returned to more seasonable averages during September and October. Cooler temperatures and normal precipitation amounts eased fire danger and drought conditions. The latter part of October and November were drier than average, keeping most of the Pacific Northwest in Abnormally Dry to Extreme drought conditions, with only the northwest corner of the region recovering. The US Drought Outlook forecasts persisting drought conditions for most of Oregon (but improving west of the Cascades), while Washington is expected to find relief from drought.



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)

With a weak El Niño forecasted to persist through the winter months, above average temperatures are expected. There is no discernable trend in the forecasted precipitation data. Near-average amounts appear to be the most plausible scenario since the region is expected to receive moisture from passing storms as is typically the case.

After dropping back to normal levels in the latter part of August, ERC and 100-Hour Fuel Moisture moved back into risky territory for some PSAs by mid-November due to extended dry conditions. Relief is expected in the short term as the frequency of passing systems increase.

Northern California and Hawaii: Normal significant large fire potential is expected across mainland portions of the region and Hawaii during the outlook period except across Hawaii where Above Normal potential will exist.

Although precipitation was nearly nonexistent during the first 20 days of November, periods of heavy rain and mountain snow began to arrive on the 21st and persisted intermittently through the end of the month. This effectively ended the fall fire season. The outlooks for the next several months call for warmer and drier than normal conditions throughout the entire December-March timeframe. However, periodic light precipitation will be enough to limit any new ignitions to small slow spreading fires that would be easily controlled. The greatest threat of significant fires during the North Ops winter comes when dry windy weather occurs after 2 or more weeks of dry conditions when ignitions occur in beds of continuous dead and dormant brush and/or cured annual grasses. These rare, generally occurring on a local scale and are only forecast accurately on a short term basis. December through March is typically the quietest time of the year for wildfires, and expectations are that there will be little to no significant fire activity in the next four months. Therefore, all areas can expect Normal Significant Fire Potential from December through March.

Sea surface temperatures (SSTs) surrounding the Hawaiian Islands range from half a degree to 2 degrees Celsius above average. Average temperatures throughout the region are expected to continue to be slightly above average through March. Rainfall was above normal in October but dropped off sharply in November. The official outlook for Hawai'i follows historic correlations, calling for below average rainfall from December through the spring months. Fuel loading has been above average since last spring, and fire activity was above average during the drier portions of the summer. Therefore, as dry weather continues Significant Fire Potential will increase to Above Normal in December and remain there through March and likely beyond.

Southern California: Above Normal significant wildland fire potential is expected along the coast and foothills of Southern California in early December. For January and February, Normal significant large fire potential is expected in all areas. Areas not mentioned above can expect Normal significant large fire potential through the outlook period.

A stationary ridge of high pressure and a sinking airmass kept the area much warmer than average in November. On the 7th and 8th, a strong northerly wind aloft and an offshore pressure gradient combined to produce critical fire weather conditions. Several large fires erupted, including the devastating Camp Fire and Woolsey incidents over Northern and Southern California. These fires were driven southward at extreme rates of spread, tearing through tinder-dry vegetation. While winds during the initial 24-48 hours of the fires were quite strong, the destructive result of the fires was due, in part, to the extremely dry live and dead fuels.

Many areas are experiencing a continued die off of live vegetation due to the lingering effects of the 5 year drought and invasive species such as the bark beetle. Dead fuels were already close to record low readings at the start of the month prior to the hot and very dry streak that began on the 7th. But the 10 day stretch of very low relative humidity with little, if any, nighttime recovery that followed caused dead fuels to drop to record low moisture readings. A few areas of Southern California even saw fuel moistures drop to

the lowest levels ever recorded. (Annual minimums are typically seen in September or early October). Live fuels were either dormant or critically dry most of November.

However, a change to a cooler, wetter pattern is expected at the beginning of December. The storm track should align favorably to bring the northern half of the state near average rainfall – at least during the first half of December. Southern California will likely be the last section of the Continental U.S. to see large fire potential drop to near Normal toward the end of the month. Temperatures will likely remain above average in December while precipitation remains close to average over Central California. Southern California is expected to remain drier than average, but timely rains and short daylight hours should bring large fire potential back to seasonally low levels by the close of December.

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

Precipitation was above average during November across most of northern Idaho, Montana, and the western half of North Dakota. However, there were small areas in far northern Idaho, southwestern Montana, and eastern North Dakota saw below average accumulations. Temperatures have been slightly above average west of the Continental Divide, but cooler than average further east, especially in North Dakota. Mountain snowpack building in the western PSAs began in earnest during the first ten days of November but is still below average in portions of northern Idaho. Along and east of the Continental Divide, early season amounts are near to above average. Only very small areas of Moderate drought exist in far northern Idaho and north central North Dakota.

Current seasonal temperature and precipitation outlooks reflect a likelihood of above average temperatures for December through March region-wide, warmest in the west. Along with near average precipitation, with a slight chance of below average for the eastern half of North Dakota. Mountain snowpacks during weak to moderate El Niño winters tend to end up below average in Snow Water Equivalent (SWE) for the winter months. The relatively cool and moist conditions that have occurred over most of the region since the beginning of the new water year have ensured that dead fuel moistures are at or above seasonal average levels.

The NRGAs in the December through February period typically is too cold and moist for any significant fire potential to occur except for a few days during warm, dry, and windy periods in the plains when southwest to west Chinook flow occurs. In March, during warm, dry springs (such as in 2015), significant plains grass and brushfire activity can occur, especially if the preceding winter was fairly dry. This often occurs in moderate to strong El Niño winters. This will need to be monitored. For now, Normal fire potential is forecasted for each month through March. If significantly warmer and drier than average conditions occur across central Montana and locations east of there during the late winter months, then fire potential could be elevated to Above Normal by March on the high plains.

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

Over the past month, temperatures were near to slightly above average while the presence of a persistent ridge of high pressure led to precipitation amounts that were well below average. Fuel moisture conditions were near average in most areas except across portions of southern and western Nevada where dry anomalies persisted. The mountain snows began to arrive at month's end but accrual rates have led to less than average amounts in the higher terrain.

Forecast data for December indicates at least a temporary change to a wetter and colder pattern. This should curtail the fire activity that was observed in the Sierra in November and limit the potential going forward. The coming wet pattern should also limit the occurrence of dry, downslope wind events that occasionally produce short duration fire events.

As El Niño persists through the winter and into the early spring, near-average temperatures and precipitation are expected. Snowpack in northern areas will likely be below average while snowpack in southern areas will be near to above average by late season.

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

Given the ongoing onset of an El Niño state in the eastern-central Pacific Ocean this fall the overall expectation is for average to above average precipitation to occur for the region through the forecast time frame. Confidence in this overall outlook is above average as the expected wet trend for the coming winter months is already developing. In addition, overall temperatures are expected to be below average as well during the outlook period though a few warm and dry periods may be observed here and there. Mountain snowpack is expected to be at least average if not above average given the expected wetter than average conditions this winter.

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

Cooler than average conditions intensified across the region from October into November. Drier areas were constrained primarily to locations west of the Divide in Colorado and southwestern Wyoming. Long range drought trends have reversed course across the geographic area, however, worst case “Exceptional” ratings from the Drought Mitigation Center continue over portions of southern (especially southwestern) Colorado.

Snow cover and/or frozen precipitation this time of year limits the utility of ERC readings from RAWs sites across the geographic area, and November snowpack across the mountains was near average.

Short term forecast data for early December indicates cooler than average temperatures are expected across the geographic area with opportunities for precipitation that could alleviate deficiencies in locations west of the Divide. Consensus long term forecasts for the winter into early spring lean toward an average to warmer than average temperature regime for northern portions of the area, and near average temperatures and precipitation in the south.

Short term and long range outlooks for the winter into early spring point toward an average/out of season fire regime for the region. Fire history for the geographic area shows a continued drop off in large fires from December through January, then with an increasing pre-greenup fire risk mainly east of the Continental Divide by March with short duration wind-driven fires. Above average fuel loading across the eastern plains may result in a slightly earlier than average onset to pre-greenup fire activity.

Eastern Area: Below Normal significant large fire potential is expected across the Ohio River Valley in December followed by a return to Normal significant large fire potential. Areas not mentioned above can expect Normal significant large fire potential through the outlook period.

30 day soil moisture and precipitation anomalies were slightly below average across parts of the western Mississippi Valley and far northern Minnesota towards the end of November. Well above average precipitation and soil moisture 30 day anomalies were in place over much of the eastern tier of the region.

Drier than average conditions overall are forecast across much of the western half of the Eastern Area this winter into the early spring. Wetter than average trends are expected across the Ohio Valley and Appalachians in December and along the Atlantic Coast in January. Above average temperature trends are expected to develop over the western Great Lakes and last through the winter into the early spring as the El Niño episode lingers. Below average temperatures are forecast across the eastern half of the region January into February.

100 and 1000 hour fuel moistures, Energy Release Components, and Canadian Build-Up Indices were near seasonal average levels toward the end of November across a majority of the region.

Near to below average fire potential is expected over the majority of the region through the much of the 2018-19 winter. The spring fire season may begin earlier than average across parts of the Mississippi

Valley if the forecast of warmer and drier than average conditions come to fruition. Above average potential may develop over parts of the Mississippi Valley later this winter into the early spring fire season.

Southern Area: Below Normal significant wildland fire potential is expected throughout the outlook period except in areas shown on the maps above where Normal significant wildland fire potential is expected.

A colder and mostly wetter than average outlook period is expected for the region. The expected development, strength, and location of a persistent atmospheric blocking pattern across Alaska and Canada will provide clues for the degree of cooling the region will see. Some snowfall is possible in the Deep South. To the south, a strong Atlantic high pressure system will likely continue to reduce the quantity and frequency of rainfall across Florida. That said, a higher trending humidity environment and some rain activity is still expected which will limit the fire potential. A drier than average pattern may develop from the Ohio Valley southwest into Oklahoma, Arkansas, and Texas. In late winter/early spring this could elevate fire potential for Oklahoma and Texas. On the island of Puerto Rico, a declining tropical pattern will usher in the dry season beginning in January. Excessive drying occurring at this time could be a fuel loading issue given the rather wet conditions of summer and fall.

With the exception of Florida, soil moisture, precipitation, and stream flows are all above to well above the average and fuels remain extremely moist (18 to 25% plus). Most of the region is drought-free. A very small area of long term drought is shown in far northeastern Oklahoma. Abnormally dry conditions are present across southern Florida.

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>