

# National Significant Wildland Fire Potential Outlook

Predictive Services  
National Interagency Fire Center

Issued: October 1, 2018

Next Issuance: November 1, 2018



Outlook Period – October, November, and December 2018 through January 2019

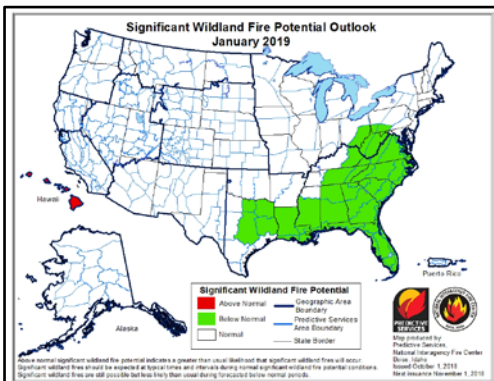
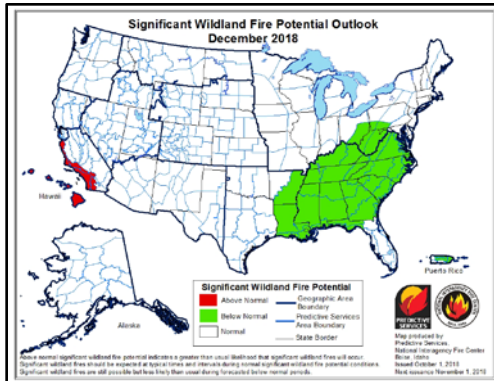
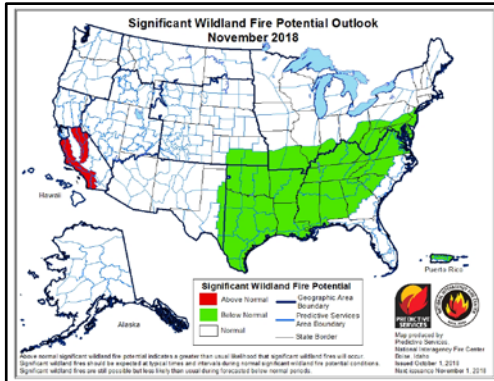
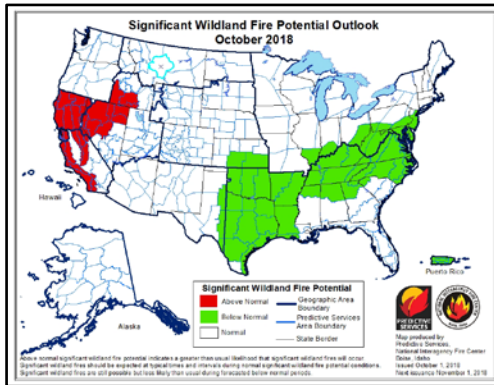
## Executive Summary

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.

The Western fire season began the seasonal transition out of its peak in early September. Several weak weather systems moved southeastward across the Pacific Northwest and the Northern Rockies and brought wetting rainfall and high elevation snow to areas experiencing significant large fire activity. California and the Great Basin remained much drier than average through late in the month when the remnants of a tropical system moved northeastward across the Great Basin. Prior to this, a wind event impacted the Great Basin mid-month which allowed for several fires to experience significant fire growth under a multi-day period of critical fire weather conditions. Overall, temperatures across the West were near to slightly below average. In the East, wet conditions persisted. Hurricane Florence made landfall on September 15 and produced catastrophic flooding across the Carolinas and displaced nearly a million people. Hawaii was impacted by two tropical systems and experienced significant flooding as well.

October and November mark another transition in the western fire season as the focus typically shifts to California as occasional Foehn wind events develop. The Southeast also typically experiences a fall peak during this period. The fall season this year might not follow the traditional script, however. Expected long-range weather patterns for at least October do not support the development of a significant number of wind events. While they may occur, the total number of events should be less than average. Considering that expected precipitation will be below average during this period, this could be a big factor in keeping some of the impacts from having an elevated potential at bay. Across the Southeast, conditions have been very wet over the past several months. With the potential development of an El Niño, the wet pattern is not likely to change. This should result in overall Normal to Below Normal significant wildland fire potential throughout the remainder of the fall.

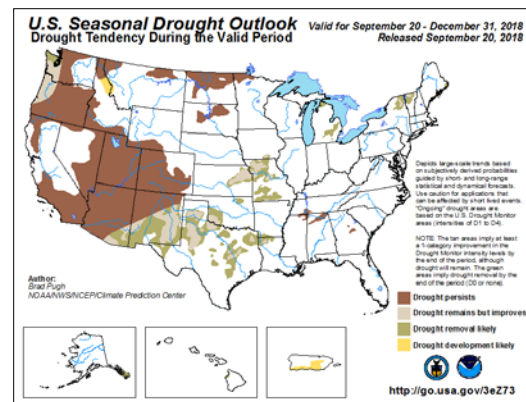
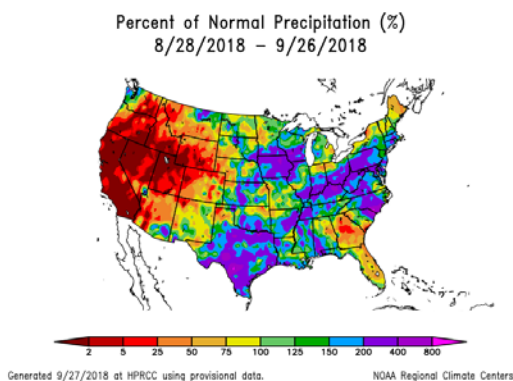
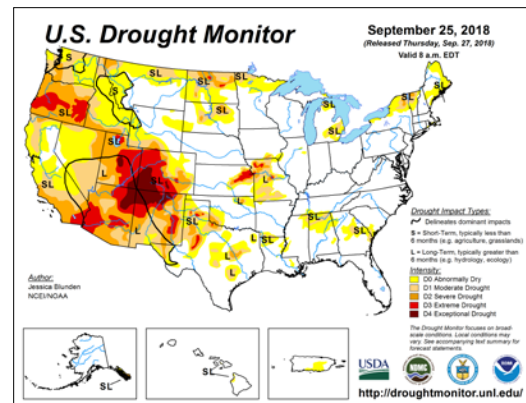
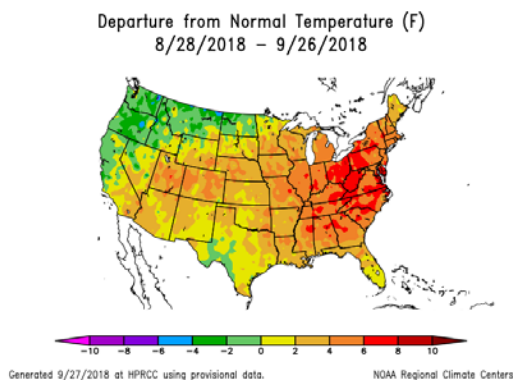
Transitioning from November into December and January, all regions are expected to experience reduced fire activity with the arrival of winter. Brief periods of critical fire weather conditions could elevate fire potential during occasional wind events over areas that are not snow covered. Events such as this are generally short in duration. Areas to monitor are along the Rocky Mountain Front, the Great Basin, the Southwest, and the southern Great Plains (during January.) All of these areas were experiencing some measure of drought at the end of September though some improvement is expected along the Rocky Mountain Front in southern Colorado and New Mexico.



## Past Weather and Drought

Temperatures across the country were generally 4 to 6 degrees above average in September except across the West where they ranged from near average across the Southwest to 6 degrees below average across portions of the Pacific Northwest under the presence of a persistent trough. Rainfall amounts were extraordinary across the Carolinas with more than 800% of normal precipitation were received mostly due to Hurricane Florence's impact. Other locations across the East were also generally above average except across Georgia, Alabama, and Maine where below average rainfall was received. In the West, the story was much different. More than 60% of the West received less than 25% of average precipitation. Nearly a third received less than 5% of average precipitation!

The strong monsoon season prior to September did reduce the severity of the drought across the Southwest; however, it did not reduce its areal coverage as the region remained under mostly moderate to occasionally exceptional drought. The remainder of the West saw drought expansion and intensification, especially across Oregon and Washington which by month's end had developed large areas of severe to extreme 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

El Niño-Southern Oscillation (ENSO) continues a slow transition into a weak El Niño and should be in place by late October where it will persist into the winter months. Latest forecasts suggest that this will be a weak to moderate event that should end by early spring.

While the event is slowly evolving, weather patterns appear to be transitioning accordingly and are supportive its development. Overall, warmer and possibly drier than average conditions are expected across the northwestern portion of the country. This should lead to below average snowpack in the higher elevations across portions of the Pacific Northwest and the Northern Rockies. Further south, mountain snowpack will trend toward average as passing systems are enhanced by a slightly more active subtropical jet stream located over the southern United States. In the East, near average temperatures are expected along with near average precipitation except across the southeast where above average precipitation is possible.

### Geographic Area Forecasts

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

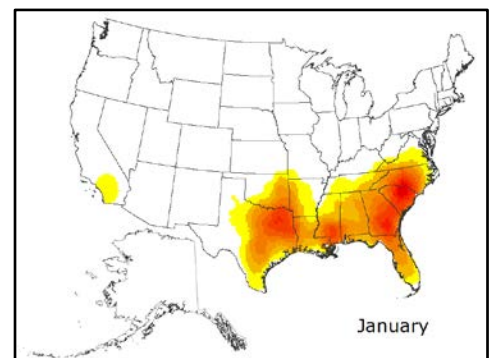
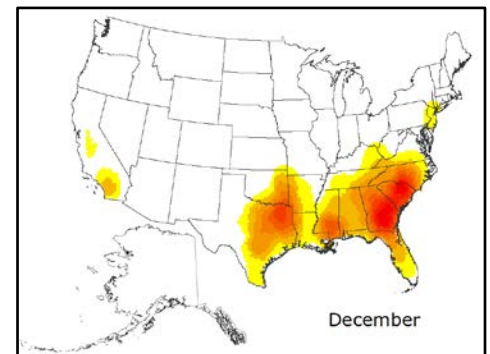
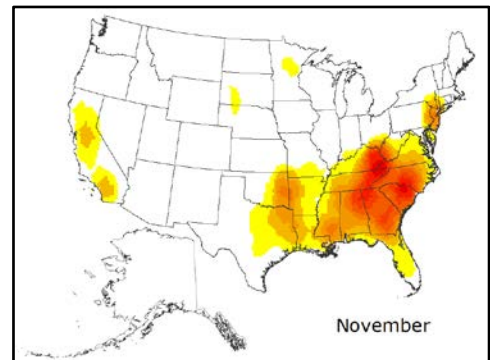
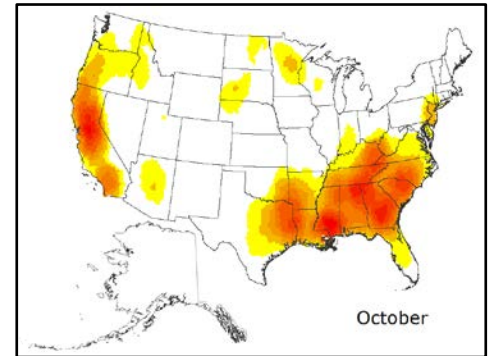
Most of Alaska, with the exception of the panhandle, received average to above average precipitation the past two months. Wetter conditions are expected for most of western Alaska in October and drier conditions are expected in the southern panhandle. The remainder of the outlook predicts above average precipitation occurring across the west and southwest in October and across the west-central through January. Outlook maps are forecasting warmer than average conditions for all of Alaska in October with focus points in western and northwestern Alaska and continuing warmer than average into the winter. Highest probability for these conditions will be in coastal areas.

Calculations of the Canadian Forest Fire Danger Rating System show that surface and duff fuels are damp statewide. The Yukon Flats, however, have dry deeper fuels in the DC layer. Starts are not expected with limited ignition sources, cooler temperatures and higher humidity. CFFDRS calculations will be ending through the next month as stations get freezing temperatures and eventually snow cover.

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

**Northwest:** Normal significant wildland fire potential is expected during the outlook period.

September continued preexisting trends with cooler than average temperatures and significant precipitation in western Washington and northwestern Oregon. Seasonally average precipitation was observed across northern Washington. However, much of the region remained in abnormally dry to extreme drought conditions, which are expected to persist into the winter.



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)

The latest seasonal climate outlooks suggest temperatures will be above average for the region through the winter. Precipitation shows a slight tilt toward below average for the November through January time frame. While drought conditions are expected to persist through the end of the year, recent precipitation and near-term forecasts for more precipitation for early October temper the implications to fire danger.

After remaining at or near record levels for much of July and August, ERC and 100 hour fuel moisture finally dropped back to seasonally average levels under the influence of marine air in the latter part of August and moderated further in September. 1000 hour fuel moisture recovered to average levels for most of the region during September. Abundant precipitation in western Washington dropped ERCs substantially in late September.

Cooler, moister conditions reduced fire behavior during September with less than a dozen new large fires and generally low growth on existing incidents.

**Northern California and Hawaii:** Above Normal significant large fire potential is expected for the entire outlook area in October followed by a return to Normal potential for November through January except for Hawaii which will see Normal potential through November before experiencing Above Normal potential for December and January

September was slightly cooler than average throughout the region and little to no rain fell. All areas west of the Cascade-Sierra ranges, plus the far northern counties to the east of the crest, are now considered abnormally dry, with a large portion of that area now in the moderate drought category and a small area of severe drought observed within it. However, the spring months were wetter than average in most areas. This led to an above average crop of fine fuels and robust brush growth at mid and lower elevations. This new crop of fine fuels and brush growth, combined with a large carryover fuel load from 2017, dried to extreme levels by early August. Fuels of all size classes in most areas passed their 10<sup>th</sup> percentile fuel moisture readings and in many cases reached their 3<sup>rd</sup> percentile values and set all-time records for dryness. Live fuels are also very dry. The loading of cured fine fuels and dry brush below elevations of 6000' is 180% or more of average. All fuels are susceptible to extreme fire behavior and spread rates, even during fairly average wind patterns and speeds.

Many parts of the region have not received measurable rainfall since May, and rainfall is not in the forecast for the early part of October. Dry and windy periods will cause critical fire weather conditions and a high risk of significant fire development until fall rains arrive. Overall, October is expected to be drier than average with near average to slightly cooler than average temperatures. The potential for large costly wildfires is above average across the entire region in October. However, northern and eastern areas may trend toward Average by the middle of the month if even widespread light precipitation falls. From November through January all areas have Normal Significant Fire Potential, even with an outlook of below average precipitation.

Sea surface temperatures surrounding the Hawaiian Islands are above average to the south and slightly below average to the north. Average temperatures throughout the region are expected to continue near to slightly above average through January. Outside of impacts from Tropical Storm Olivia, rainfall was below average to near average in September. Fuel loading is above average and fire activity has been more active than average this summer. The outlook calls for wetter than average conditions through October then trending toward average rainfall in November. The Large Fire Potential for Hawai'i is Normal through November. The potential of El Niño conditions in the equatorial Pacific beginning this winter is more than 65%, and this pattern tends to produce drier than average conditions during the Hawaiian rainy season. Therefore, the Large Fire Potential for Hawai'i is Above Normal from December through January, and likely for a few months beyond.

**Southern California:** Above Normal significant wildland fire potential is expected along the coast and foothills across Southern California and the hills and mountains surrounding the central valley including the Sierra in October and November. For December and January, these areas will retain the elevated potential except for the central Sierra which will return to Normal potential. Areas not mentioned above can expect Normal significant large fire potential through the outlook period.

After a blistering July and August, temperatures in September took a dramatic dip toward normal as a series of troughs entered the Pacific Northwest. These troughs ushered cooler air into the area as well as onshore flow which allowed fire activity to drop across the Geographic Area. Large fire activity dropped to very low levels and very few fires required extended attack despite the very dry fuel conditions. Preparedness levels at the time of this writing was only at 2 which underscores the minimal role weather has played in generating fire activity during the past month.

Cool temperatures are not sufficient to change fuel moisture conditions significantly in the long term. Dead fuel moisture remains low with readings close to record levels in both 100- and 1000-hour fuels. Live fuel moisture (LFM) continued to drop in September and most forests are reporting critically dry fuels. Most of Southern California saw LFM reach critically dry levels several weeks ago and nearly all areas away from the coast have fuels dry enough to rapidly carry fire during peak heating hours. These dry conditions will continue to predicate fire behavior until seasonal wetting rains occur. Therefore, large fire potential will remain above normal through most of the fall and into early winter. Expect the large fire threat to drop from north to south during the outlook period with all areas seeing normal fire activity by the middle of December.

Most long range models point toward the evolution of a blocking pattern across the eastern Pacific which may lead to an interruption of the trough pattern seen last month across the West Coast. Instead, a warmer, drier pattern may ensue with much less cold air intrusion into California going forward into fall. Local studies indicate this year's pattern will be far less conducive to offshore flow than was forecast at this time for 2017. Santa Ana wind events may be normal to slightly less active than usual. But along with fewer offshore wind events, the blocking pattern may lead to a delay in the onset of significant wetting rains. Thus, this fall may be drier than normal with significant rainfall possibility occurring 4-6 weeks later than usual.

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

The lack of amplified weather patterns during the first half of September prevented widespread moisture with fewer lightning ignitions. A trough over the eastern Pacific developed late in the month produced cooler than average conditions across much of the West as the pattern stagnated. The last week of September brought a major pattern change with unseasonably cool weather resulting from a deep trough of low pressure over the northern Plains. This allowed for the cooler than average conditions to continue. Precipitation during the period was generally below average except across North Dakota where near average precipitation was received.

The latest climate forecasts suggest above average temperatures with below average precipitation across western portions of the region for the period from October through December, especially west of the Continental Divide in northern Idaho. There may still be additional curing of the fine fuels in the eastern areas due to frost/freeze kill. Those fuels may become more available for burning later in the season, especially in the heavier fuels loads of eastern Montana and North Dakota where last winter's precipitation was plentiful.

Fuels across the Northern Rockies have already responded favorably to the August rainfall events with decreased fire behavior and lower probabilities of ignition. The increasingly longer nights, cooler temperatures, and shorter daily burn periods have been reflected in the ERCs with near average conditions in the western areas, and there are no concerns with the eastern areas as fuels conditions there are not critically dry, despite some short-term drought along the Canadian border. Some of the driest areas remain in southwest Montana and Yellowstone National Park where there could be elevated potential until significant snow accumulates, but still within what would be considered normal significant wildland fire potential. Normal fire potential is expected in all areas during the outlook period.

**Great Basin:** Above Normal significant wildland fire potential is expected in early October across northern Nevada and southwestern Idaho. These areas will return to Normal potential by mid-October and remain

there through January. Areas not mentioned above can expect Normal significant wildland fire potential during the outlook period.

Over the last month, much drier than average conditions have occurred across the Great Basin, with many areas of Nevada into southwest Idaho and western Utah seeing no measureable precipitation. Only local areas along the Arizona Strip into southern Utah have seen near average precipitation. Severe to extreme drought persists across the eastern and southern half of Utah into the Arizona Strip, with moderate drought to abnormally dry conditions occurring farther west across much of Nevada and Idaho. Exceptional drought has even developed due to prolonged recent dry and warm weather over parts of central and southeastern Utah. Wet and cooler conditions may return early in October to Utah, Wyoming and parts of Idaho, however much less precipitation is expected across western and northern Nevada into far southwestern Idaho.

Significant Large Fire activity continued across the Great Basin in September, with large fires observed in Utah, western-northern Nevada, Idaho and Wyoming. After long periods of little rainfall, hot temperatures and very low humidity, the fuels remain critical in these areas with ERCs, 100-hr fuel moisture, 1000-hr fuel moisture, and sagebrush live fuel moisture values at record levels entering October. Above normal significant large fire potential will continue through at least the first half of October across much of the northern half of Nevada into southwestern Idaho where the low elevation grass crop will allow rapid fire spread for a burning period or two on windy days. Normal fire potential is expected to return to all areas by November with fire activity rapidly decreasing due to cooler temperatures and longer nighttime periods, despite any precipitation. However, after dry periods even throughout November or December, large fires are possible on windy days for a burning period or two due to the above normal fine fuel load.

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

Given the slow but continued onset of an El Niño in the eastern-central Pacific Ocean as the fall season evolves, the overall expectation is for above average precipitation to occur for the majority of the region through much of the outlook time frame. Continued periods of moisture transport into the region via tropical remnants will combine with active westerlies this fall to provide an active weather pattern into the early winter time frame. Confidence in this overall outlook is above average. There is some uncertainty in regards to what type and how strong the expected El Niño event will evolve, but the expectation is for overall temperatures to generally remain cooler than average through the forecast period with some brief periods of warmer than average conditions occurring during drier periods. Any drier than average periods are not expected to result in fires that will require out of area resources.

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

Precipitation deficits during September were greatest across western-northwestern Colorado into central and southern Wyoming with less than 25% of average amounts received during the month. Above average temperatures in September occurred across all but the far northern portion and far southeastern portions of the region. Long range drought trends continue most notably with extreme to exceptional drought across west-central to southwestern and south-central Colorado with severe ratings observed across the northwestern corner of Colorado into south-central Wyoming.

ERC and 1000 hour fuel moisture values across north central and south central Colorado as well as southwestern Wyoming show values much drier than average entering October. Abundant fine fuel loading across the lower elevations in northern portions of the geographic area has been mitigated by a relatively wet pattern during the early fall.

Short term forecasts for early October show an active and changing pattern with a stronger influence of tropical moisture surges into the geographic area at times conjunction with an occasionally active northern jet-stream. Consensus long term forecasts for fall and winter lean towards an average temperature regime

for the geographic area, with average to wetter than average conditions focused mainly across the southern half of the geographic area.

Critically dry fuel moistures and associated large fire risk is expected to moderate in October as a result of forecast precipitation and seasonal considerations in climate. As a result, the late September above average large fire risk across northwestern Colorado and south-central to southwestern Wyoming is expected to decrease closer to average values during October. Abundant fine fuel loading across the lower elevations in northern portions of the geographic area has been mitigated by a relatively wet pattern during the late summer and early fall, and long range forecasts for the fall and winter are expected to continue this trend. Fire history for the geographic area shows a continued drop-off in large fires during October especially after the first week of the month, and large fires become of primary focus (short duration wind driven) across the lower elevations and grasslands, especially east of the Continental Divide.

**Eastern Area:** Normal significant wildland fire potential is expected across the region through the outlook period except along the southern border of the region where Below Normal significant wildland fire potential is expected throughout the outlook period.

30 day soil moisture and precipitation anomalies were below average across northern New England at the end of September. Well above average precipitation and 30 day soil moisture anomalies were in place over parts of Iowa, southern Wisconsin and Minnesota, and portions of the Mid-Atlantic States.

Wetter than average conditions overall are forecast to across the Mid-Mississippi and Lower Ohio River Valleys in October. The wetter trends are expected to shift into the eastern states November into December. Below average temperatures are forecast across much of the Eastern Area October into November. Above average temperatures trends are expected to develop over the eastern states in December.

100 and 1000 hour fuel moistures as well as Energy Release Components or Canadian Build-Up Indices were near or above/below seasonal average levels respectively towards the end of September over the majority of the Eastern Area.

The onset/duration of the fall fire season will likely be delayed/diminished over parts of the Eastern Area where wetter than average conditions develop/persist.

**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.

As a weak El Niño continues to develop during the fall and as colder, below average ocean temperatures persist in the northern and eastern tropical areas of the northern Atlantic, the southern portion of the country will continue to experience above average precipitation overall except possibly across portions of Georgia, Florida, and Alabama. Existing and long range data suggests that the fall and winter months will produce periods of colder than average conditions except across the southeastern portion of the region where average to warmer than average conditions may persist.

Puerto Rico continues to benefit from a peaking and enhanced tropical Atlantic wave period where tropical wave tracks continue to produce episodes of broader coverage rain fall. That said, moderately dry anomalies persist over the southeastern half of the island. The expectation is the humid and higher frequency rain pattern will keep fire danger in this area at a lower level and should create less volatile conditions as the normally drier season returns by December.

Overall. We are expecting a rather muted and lower fire risk period as fire danger remains low through the outlook period.

## ***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>