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 minimal in November as most of the country remained out of season. The above normal large fire activity observed across California in October waned in November as the frequency and strength of wind events decreased. Overall, the West was drier than average, and the East was wetter than average. The driest areas were observed across Northern California and the Oregon where less than 25% of average precipitation was received during the first three weeks of the month. While a pattern change at the end of the month provided some precipitation, it did little to affect the developing drought. As winter began to arrive, most locations across the West had failed to receive adequate fall moisture. In the East, precipitation amounts received were generally 125% to 200% of average. Precipitation was widespread and frequent which further reduced the elevated fire potential that had been observed in October. Temperatures west of the Continental Divide and along the East Coast were average to above average. Across the central portion of the country, they were generally 2 to 8 degrees below average as a series of passing Canadian fronts prevented meaningful warmups from occurring.

The period December through early February is when the least fire activity is observed nationally. When activity occurs, the development of large fires coincides with the onset of wind events that bring warmer temperatures and lower humidity levels that allow for fine fuels to quickly dry and become receptive to fire activity. Such incidents are generally short-lived, lasting several days. Entering the winter, areas most susceptible this year are the Four Corners, California and the Rocky Mountain Front across Colorado and New Mexico where an average risk exists. Expected large fire potential across the East and along the northern tier of the country is expected to remain at a minimum.

In mid-late February, the frequency of wind events across the southern portion of the Great Plains begins to increase as the region prepares to begin a transition into spring. The fine fuels, grasses, quickly dry and fire activity begins to increase during the episodes. In areas where drought is also present and where winds are particularly strong, fires can quickly become very large. Entering late winter and early spring 2020, an average risk is expected. Areas of concern to monitor are southeastern Colorado and the panhandles of Oklahoma and Texas that show a trend toward developing drought. Elsewhere, the risk is expected to be average to below average.
Past Weather and Drought

Overall November was a warmer than average month across the West. Temperatures were generally near average to about 4 degrees above average west of the Continental Divide. From the Divide east across the Great Plains and into the Mississippi River Valley, temperatures were generally 5 to 15 degrees below average. Along the East Coast, temperatures were near average to a couple of degrees above average. Precipitation amounts received west of the Divide were generally less than 25% of average except across the southern Great Basin and the Southwest where they were well above average for the month. There were many locations that had gone 3 to 4 months without precipitation until late November when a pattern change finally allowed for moist weather systems to begin entering the West and begin providing much needed moisture. Conditions were better across Texas and the East. Most areas received average to 200% of average precipitation during November. Some areas across the South even recorded early snowfall. A survey of mountain snowpack data painted a bleak picture of the early season snowfall as most basins west of the Continental Divide reported less than 50% snowpack. Closer to the Divide, amounts were close to average. East of the Divide, they were well above average due to the frequent passage of cold fronts dropping south into the country from Canada.

With the return of frequent moisture to the East, drought conditions improved. However, pockets of severe drought remained across Georgia, Alabama, and South Carolina. While Texas still reported pockets of extreme drought across west-central portions of the state, the state as a whole experienced significant recovery during November. Drought removal occurred across the Pacific Northwest. In the Southwest, the developing drought at the Four Corners expanded north and west. Portions of the southern Great Basin and central California began to experience abnormally dry conditions to severe drought. Northern portions of the Hawaiian Islands and southern Puerto Rico remained under a persistent moderate drought. In Alaska, improvement in drought conditions continued along its southern Coast with the Kenai Peninsula experiencing the greatest relief.

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 and into the spring of 2020 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 below average anomalies will continue to be observed and across the East, 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.

Drought Monitor shows Abnormally Dry to Moderate Drought conditions through parts of South Central Alaska and the Panhandle. Conditions have moderated quite a bit in the Panhandle, but there have been long-term impacts to the normally wet rainforests.

Alaska is generally snow covered, and expecting more snow and below freezing temperatures across most of the burnable landscape. Fuels are frozen in almost all areas, and will not be particularly burnable through the rest of the winter months. Alaska is out of fire season.

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

Temperatures in the Pacific Northwest were generally warmer than average in November although the Columbia Basin and Willamette Valley underwent cooler than typical conditions, mainly due to persistent temperature inversions. November was quite dry with Oregon and much of Washington tallying well under a quarter of normal rain and snow totals for the month. The warmth and dryness of November resulted in a resurgence of fire danger. By the middle of the month, ERC and 100 hour dead fuel moisture values over Oregon returned to levels typically experienced early in fire season. Washington was not quite so dry but still underwent an unusual rise in fire danger, particularly east of the Cascades in the first week of the month. Fire danger moderated later in the month as temperatures cooled and humidity rose.

Outlooks for the region for December 2019 are continuing to indicate that warmer than average temperatures are most likely for much of the region (and much of the rest of the contiguous United States). Above average rain and snow accumulation are the most likely scenario during December. For January through March, the west coast is most likely to experience warmer than average temperatures with no consistent signal for precipitation accumulation.
**Northern California and Hawaii:** Normal significant large fire potential is expected across the region during the outlook period except across the lee sides of the Hawaiian Islands where Above Normal Significant Large Fire Potential is expected.

Rain and mountain snow in late November led to higher fuel and soil moisture throughout the region. Current outlooks call for warmer and drier than average conditions throughout the region from December through March. However, even occasional light amounts of precipitation during the winter months will keep fire activity minimal. The entire region should expect Normal Significant Fire Potential from December 2019 through March 2020.

Sea surface temperatures (SSTs) surrounding the Hawaiian Islands are warmer than normal, and the warm SSTs are expected to continue through March. This should lead to above average temperatures across the region. Rainfall has been mixed in recent months, generally closer to average on the windward sides of islands and below normal on lee sides. The Drought Monitor for Hawaii shows increasing Abnormally Dry and Drought conditions across the region, and Maui continues to have problems with active wildfires. Rainfall is expected to be near to above average through March, but the lee sides may not receive enough to reduce the fire potential there. Significant Fire Potential is Above Normal on the lee sides of the islands and Normal throughout the remainder of Hawaii from December through March.

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

The first three weeks of November were a continuance of the extended hot and dry period that was observed across the region in October. Many locations across the region had not received precipitation since late spring or early summer. Fuels remained critically dry, especially in the lower elevations. The periodic Santa Ana, Sundowner, and Mono Wind events began do decrease in frequency by mid-month. As the high pressure ridge off shore began to break down late during the third week of the month, an active weather pattern began to develop. Two very wet systems were able to move across the region during the last week of the month. Fire potential began to diminish to normal levels with the arrival of much needed moisture.

While the potential for the development of large fires has lessened, there remain a few dry areas should a late season wind event develop. However, the expected continuance of the active and periodically wet conditions should be enough to curtail significant activity in the short term. Looking long range, from mid-December through March, the overall long-range forecast models suggest that the region can expect overall warmer and drier than average conditions during the remainder of the outlook period. Fire activity during these periods is typically wind-driven when it occurs. Therefore, attention will remain focused on the potential for the development of offshore winds during favorable patterns, which include cold high pressure ridges over the western Great Basin and thermal troughing along the California Coast. At this time, such events are not expected to occur more than what is typical for the winter months.

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

Moist conditions persisted during the past month east of the Continental Divide across Montana, where precipitation was 125% to 500% of average. This contrasts with areas just to the west, and east. North Idaho and Western Montana have only received 20% to 70% of their average precipitation during the past month, as has far Eastern Montana and the bulk of North Dakota. Fortunately, the dryness in these areas has been accompanied by cooler than average temperatures. Mountain snowpack got off to a relatively early start in Northern Idaho and Montana, but by mid-month had fallen to well below in the western-most areas.

Latest climate outlooks for the period December through February depict above average temperatures for Northern Idaho and Western Montana, but near average probabilities further east. This is accompanied by above average precipitation probabilities for the entire region. In the shorter term, outlooks for December
depict near average temperature and above average precipitation probabilities for the entire region, which will help mountain snowpacks accumulate in the western PSAs. Given that a much colder and potentially moist pattern is evolving in the short term for the next ten days, the December outlook seems to be on track.

Live vegetation is dormant region-wide. The dryness in far eastern Montana and North Dakota over the past month, accompanied by occasional short-term windy periods has allowed fine dead fuel moisture and 100 and 1000 hour dead fuel moisture values to drop below average in those areas. Given the outlooks for the December-February period, this trend should level off and perhaps reverse in far eastern Montana and North Dakota.

The timbered areas of northern Idaho and western Montana with their complex topography, and stable valley inversions are considered out of season during the December-March period. The plains of central Montana eastward into North Dakota are out of season as well in December and January as dry, warm Chinook Wind periods are climatologically less frequent. In some years, warm, dry windy periods become more frequent and persistent in February and March in the plains region, leading to enhanced pre-greenup fire potential and activity.

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

A prolonged wet and cool period occurred over the latter half of November across the southern half of the Great Basin, the only region where fuels were still marginally critical. Significant amounts of valley rain and mountain snow have ended any widespread threat of large fires across the Great Basin. Further north, conditions were much drier than average, across Idaho and Western Wyoming, but those areas already had season ending rains the previous month, along with a developing snowpack across the higher terrain. The weather is expected to remain cool and most across southern areas of Utah, Nevada and the Arizona Strip into the first part of December, with drier conditions further north. Afterwards, long-range models indicate there could be a reversal to warmer, drier conditions across southern areas, and a return to near normal winter conditions across the northern Great Basin areas.

Fire activity has diminished to near nothing in the latter part of November. Prescribed burning has been most successful across central and northern portions of the Great Basin where the weather has been drier, mainly in lower to middle elevations that do not yet have snow cover.

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

Over the past month, temperatures have been near average across the region. Precipitation, however, has begun to rebound. Drier than average conditions continued to be observed through the first half of the month with some areas not having received measurable precipitation in months. A pattern shift occurred mid-month that allowed for several wet systems to produce much needed precipitation across most areas. By month’s end, most locations west of the Continental Divide had received between 150% and 300% of average precipitation for November.

As fall transitions into winter, 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.

Warmer than average temperatures expanded through the early fall most notably across Colorado and Kansas, but during October and especially the second half of the month a cooler than average
cycle emerged before readings moved closer to average in November. A dry pattern persisted through October and into November west of the Continental Divide into portions of south central Colorado and southwestern Kansas. Otherwise, conditions were wetter than average from northern portions of the region into the central portion of the Colorado front range. The Drought Mitigation Center portrays drought continuing to intensify in Colorado mainly in the west and south into southwestern Kansas.

There is a robust grass crop in the lower elevations east of the divide with significant fuel loading aided by the early season hard freeze during October. These fuels will be most likely available to burn during the February-March period when pre-greenup conditions coincide with a climatological increase in warm, dry, and windy periods.

Short-term weather models for late November through the first few weeks of December indicate an active pattern with occasional low pressure systems and frontal passages keeping wet conditions in all but portions of southeastern Colorado and western Kansas. Most of the precipitation is expected to be in the form of snow with the exception being rain in southern and eastern Kansas. The consensus of long range weather forecasts for December-March in northern portions of the geographic area is average to wetter than average with average to cooler than average temperatures; while in the south, average to warmer and drier than average indications are evident, especially in the southwestern portion of the region.

Fire potential across the region continues in the average range after moderating conditions occurred during November resulting from early season cold temperatures and snowfall. Warm, dry, and windy periods are at a climatological (seasonal) lull this time of year; however, an increase in these events typically occurs during February and especially March as the pre-green fire season expands mainly across the eastern plains. Although large fire activity for the December-March period across the geographic area is expected to be average, the emergence of drought coinciding with areas of heavy fuel loading across southeastern Colorado and southwestern Kansas will need to be monitored for the possibility of an early and extended pre-greenup fire season in February and especially March.

**Eastern Area:** Normal significant large fire potential is expected across the outlook area during the outlook period except across the middle Mississippi River Valley in December and January and across the central Appalachian Mountains in February.

30 to 90 day soil moisture and precipitation anomalies were near to above average across the majority of the Eastern Area towards the end of November. Well above average soil moisture and precipitation anomalies were indicated across much of Iowa, northern Illinois, Minnesota, Michigan, and Wisconsin. Some dryness lingered across the southeastern Mid-Atlantic States into November.

Colder than average conditions are forecast across much of the Eastern Area through the 2019-2020 winter season. Wetter than average trends are forecast over much of the Eastern Area into January of 2020. A transition to a drier than average weather pattern may occur over the western tier of the Eastern Area as we move into March of 2020.

Near average fuel moisture levels and fire danger indices were indicated over much of the Eastern Area towards the end of November. Some elevated indices were indicated over parts of western New York as well as the eastern Big Rivers due to shorter term drying trends through the end of November. The late fire season may end earlier than normal across parts of the southern tier of the Eastern Area if forecast wetter than average conditions prevail into December.

Near to Below Normal fire potential is expected over much of the Eastern Area through the rest of the late fall fire season with colder and wetter than average conditions forecast. Above Normal fire potential may develop over the Mid-Mississippi Valley in March if drier than average conditions develop.
**Southern Area:** Below Normal significant large fire potential is expected across the northwestern portion of the geographic area December through February followed by a return to Normal potential for March. All other areas can expect Normal significant large fire potential during the outlook period.

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 and 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](http://www.nifc.gov/nicc/predictive/outlooks/outlooks.htm)