National Significant Wildland Fire Potential Outlook

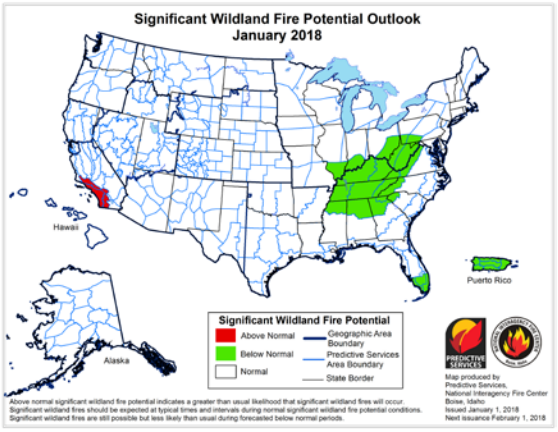
Predictive Services
National Interagency Fire Center

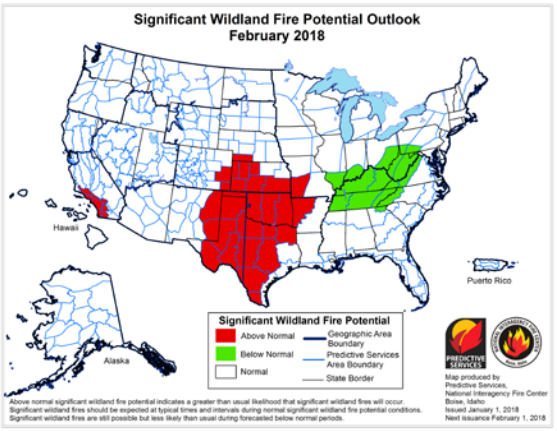
Issued: January 1, 2018
Next Issuance: February 1, 2018

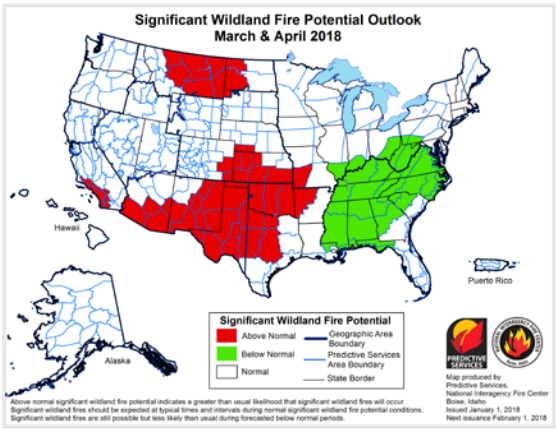
Outlook Period – January, February and March through April 2018

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.







Preexisting warm and dry conditions across the Southwest and California allowed for fuels to become critically dry in December. The occurrence of two significant Santa Ana wind events in California during the first half of the month led to the development of several very large wildfires which burned more than two hundred thousand acres over a span of two weeks. Worsening drought conditions across the Great Plains also contributed to periodic increased wildfire activity during wind events. Elsewhere, average to below average fire activity was observed in December.

The overall cool, wet pattern observed in November across the West gave way to overall warm and dry conditions as a strong, persistent ridge of high pressure developed over the western half of the nation. The favorable start to the development of winter snowpack gave way to strong deficits by month's end. In the East, the pattern shift was less pronounced. The overall pattern that produced a trough of low pressure over the East continued. Wind events with some lake effect snow were observed throughout the month across the Great Lakes region. Periodic intrusions of increasingly cold Canadian air continued…reaching as far south as the Gulf coast where snow was observed during the second week of the month. While colder than average, the delayed development of sea ice along the Arctic Coast kept temperatures less frigid than what would normally be observed during such a deep trough-like pattern like what was observed.

While the average weather patterns produced overall warmer than average conditions across the West through the Great Plains and colder than average conditions across the East, the lower elevations across the West experienced several temperature inversion events across the Great Basin, inland Pacific Northwest, and the Northern Rockies. Overall, precipitation was well below average across nearly the entire CONUS. Only Alaska experienced near average precipitation but an overall strong southerly flow along with well below average icepack along the Arctic coast kept temperatures at or near record high levels for much of the month.

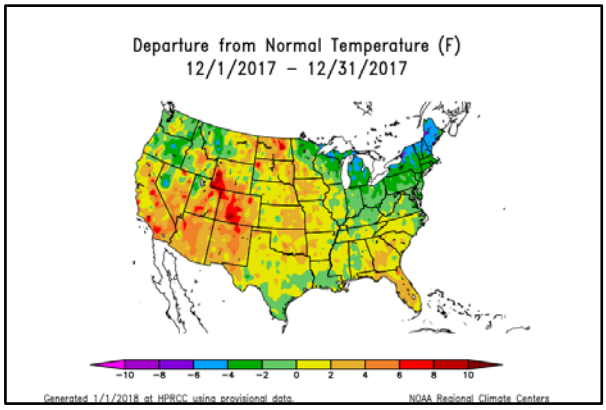
Looking forward, a less amplified pattern is expected to develop for January and February with the mean position of the high pressure ridge being along or just off the West Coast. This should result in overall slightly colder than average conditions in northern areas with pockets of above average precipitation over the Northwest and Great Lakes regions. There is some concern that an active, westerly flow could produce overall warmer and drier than average conditions in March and April in these areas. Across the southern tier of the country, the overall warmer and drier than average conditions will continue through February and into March and possibly April. For this outlook period, the areas of note for increased fire potential will remain Southern California and the southwest. The Great Plains could see periodic increases in activity when wind events arise.

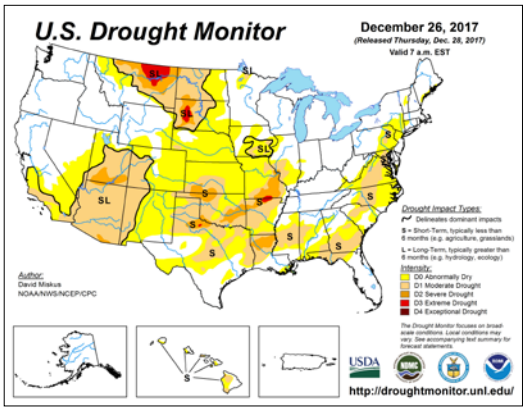
Past Weather and Drought

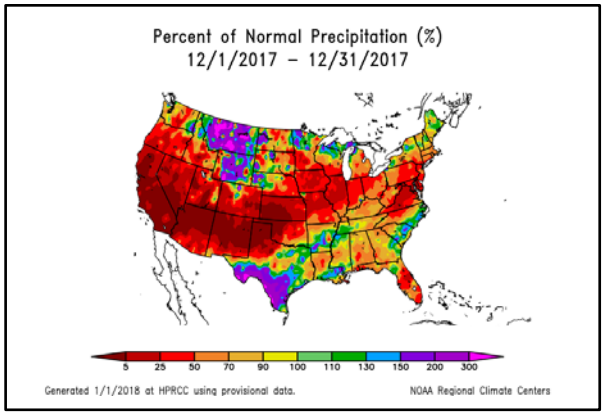
While the ridge of high pressure over the West and the trough of low pressure over the East were the dominate features in December, periodic disturbances dropping southeast into the country from Canada intermittently weakened both and allowed for some minor influxes of precipitation. However, these weak systems also brought gusty winds which briefly elevated fire activity, especially across the Great Plains. Also, the highly amplified ridge of high pressure. The strong low elevation temperature inversions across the West intensified the surface high pressure ridge over the Great Basin and strengthened the periodic easterly flow over the Sierras and into California. The increased downslope winds further dried an already dry airmass. Middle single digit humidities became commonplace.

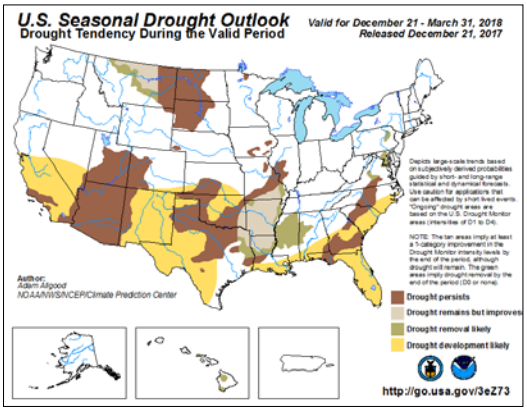
The effects of the noted warmer than average temperature across the Great Plains and the West were enhanced by the entrenched dry airmass which led to dramatically low humidities in the mountains as well. The reversal of the state of the mountain snowpack spoke not only to atypical melting but to significant sublimation as well as high elevation humidities also suffered.

Trend data over the past month shows drought expanding and intensifying across the length of the Great Plains. Like trends are being observed across the Four Corners, Gulf Coast, and East Coast regions as well. Portions of Central and Southern California are also showing initial signs of drought redevelopment. Drought outlooks suggest that these trends will continue. Furthermore, the preexisting Severe to Extreme drought conditions observed across eastern Montana and the Dakotas is expected to persist through the remainder of winter and into spring.









Weather and Climate Outlooks

El Niño-Southern Oscillation (ENSO) continues to produce a weak La Niña in the surface waters across the equatorial Pacific Ocean. Latest model forecasts show the event peaking in early January and then beginning a gradual weakening toward neutral conditions by early spring.

Temperatures will generally remain average to above average for the southern half of the country and below average across the northern half of the country through April with periods of deep cold reaching the Southwest and the southern Plains in January. The persistent dry conditions will continue across the Southwest, Great Plains, and Florida through March and into April. Wetter than average conditions are expected across the Pacific Northwest in January and February but should transition to average conditions in March and April. The wetter than average conditions expected across the Great Lakes region in January and February will shift eastward in March and April to impact the states along the East Coast.

Geographic Area Forecasts

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

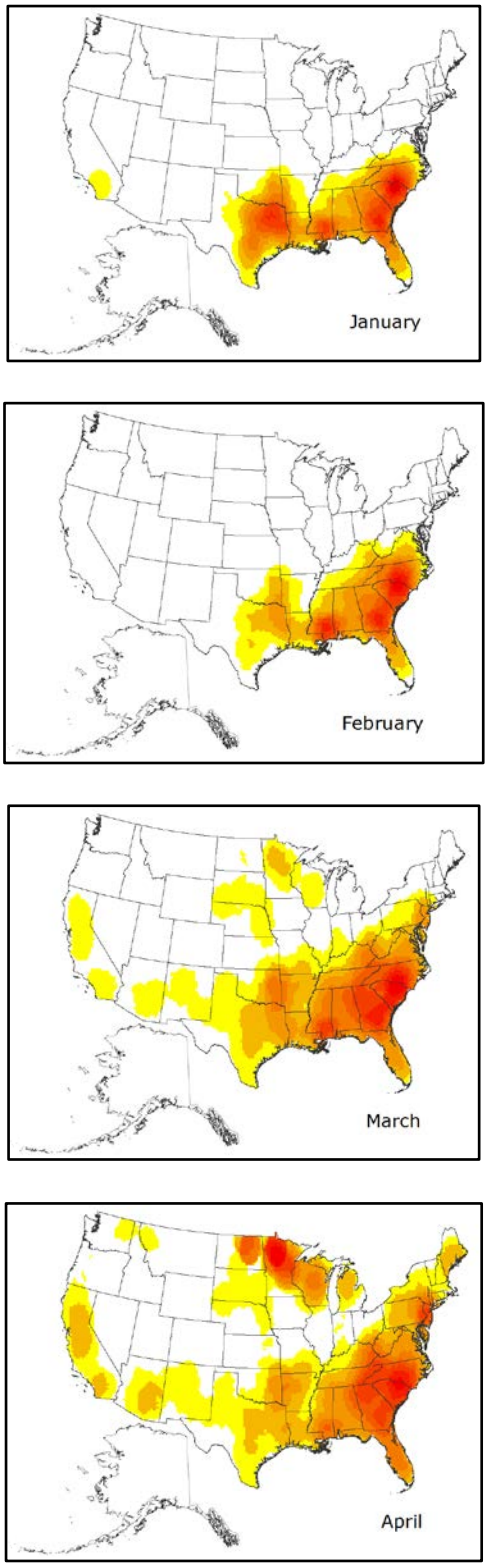
The U.S. Drought Monitor shows no drought or abnormally dry areas in Alaska. December brought warm weather which has caused the snowpack over parts of South Central and Southwest to nearly disappear. In the north, snow is covering most areas.

With incredibly low sea ice in the Arctic, specifically in the Chukchi Sea, it will be difficult to get the usual extreme cold temperatures in most of the state as the open water will moderate any cold air building in from the north and west. In addition, this will provide a moisture source that isn't normally available in the winter months to have higher than normal amounts of precipitation in those areas as well. This warmer, moist air will also allow more instability farther north, in an area that typically is very cold, dry, and stable in the winter months. Therefore, Alaska will likely be warmer than normal, with wetter than normal conditions in the north and west. Expect worldwide flow patterns to be disrupted by this lack of sea ice.

Alaska is out of fire season. The forecast for January through April is for normal fire activity.

Northwest: Normal significant wildland fire potential is expected for the Northwest through the Outlook period.

After a wet November, the region dried out in December. Precipitation was well below average for the month due to a persistent upper level ridge parked over the area. Temperatures were cooler than average at valley bottom locations and warmer than average at upper elevations. Accumulation of snow in the high country around the region transitioned from well above average to well below average in December for all areas except Washington's Olympic Peninsula.



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)

Monthly and seasonal climate suggest that temperatures are most likely to be cooler than average over the region through late winter then warming back toward average in spring. Precipitation is expected to be above average the first few months of the year as well. This outlook is in keeping with what is typically expected during “La Nina” winters.

Fire danger became too low for naturally ignited large fires in the geographic area during early autumn and is unlikely to rise again to critical levels until June or July of 2018.

Northern California and Hawaii: Normal significant wildland fire potential is expected for Northern California through the Outlook period.

The region received well below normal precipitation in December, and temperatures were generally near to slightly above average. The outlook from January through February is for near to above average precipitation and above average temperatures. Precipitation is expected to be average to slightly below average in March and April, and temperatures are expected to continue slightly above average. Typically, little to no large fire activity occurs within the region during this period. Even with precipitation at or below normal, fuel moisture values are expected to be high enough to keep fire activity relatively quiet.

Sea surface temperatures (SSTs) surrounding the Hawai’ian Islands have recently cooled to slightly below average, but dynamical forecast models expect SSTs to rebound to above average during the outlook period from January through April. Therefore, temperatures throughout the islands are expected to continue to be above average. Although historical records show quite a variation in rainfall amounts during La Niña patterns. Current short-term forecast models indicate a period of wetter than average precipitation for the region during the first week of January. Longer-range models are calling for average to above average precipitation from January through March, and near average rainfall in April. This is a time when there is little to no occurrence of large fires throughout the Hawai’ian islands.

Southern California: Normal significant wildland fire potential is expected for Southern California through the Outlook period except along the Southern California Coast where Above Normal significant wildland fire potential is expected January through April.

December 2017 will be long remembered for the strength, duration and widespread nature of offshore wind events. A strong offshore wind events began the week of Thanksgiving which continued unabated in some fashion through the middle of December. The winds were strongest on Monday, December 4th which resulted in several new large fires, including the Thomas Fire. Wind gusts were over 80 mph and many locations reported temperatures 15 degrees above normal with relative humidity readings in the single digits. Weather conditions moderated a bit later in the week, but moderate offshore winds kept fanning the flames through the second full week of the month. The Thomas Fire is over 270,000 acres, placing it second in the list of largest wildfires in state history.

Due to a strong ridge off the coast, only light precipitation occurred over the central part of the state. Most of Southern California received zero rainfall in December in what is normally one of the wettest months of the year. The dry weather has precluded greenup so far this season in all but the far northern periphery of the district from Yosemite National Park northward. Fuels are at record low moisture readings and even live fuels are critically dry over most locations of Southern California The dry fuels coupled with the strongest offshore flow in years has led to heavy initial attack and resource needs across the Geographic Area.

Long range model offer little hope of breaking the dry pattern. A weak to moderate La Niña may be partially to blame along with unfavorable Northern Atlantic Oscillation/Pacific North American Pattern indices. Nearly all available long range computer models places Southern (and most of Central) California in a well below normal precipitation category. Precipitation is expected to remain below, if not well below, normal levels through the rest of the winter. Some moderation in this pattern may occur in the spring and March may see precipitation return to closer to normal levels. But this will likely be too

late to moderate fuel conditions over Southern California. Therefore, for the first time, we are projecting large fire potential to remain above normal for the entire winter for Southern California due to dry fuels, frequent offshore wind events, and generally unfavorable weather. Central California will likely see closer to normal fire activity, but dry fuels in these areas may also result in some initial attack during warm or windy periods. Southern California's dire fuel conditions will likely necessitate a resource response throughout the winter and into spring.

Northern Rockies: Normal significant wildland fire potential is expected for the Northern Rockies through the Outlook period except across central Montana through western North Dakota where Above Normal significant wildland fire potential is expected in March and April.

Impacts from the anticipated ENSO trends across the region will be a tendency for near to below average temperatures and near to above-average precipitation (mainly over the Western PSAs) to occur. Temperature and precipitation outlooks for January and February depict a likelihood of below average temperatures with near to above average precipitation, especially in Montana. For the latter periods of March and April, near average temperatures are most likely to occur across northern Idaho and Montana. In North Dakota, below average temperatures are expected. Precipitation forecasts for March/April continue to depict near to above-average precipitation for the entire region.

Wildfire potential generally only exists for short periods over the winter and early spring in the region east of the Continental Divide when gusty drying southwest and west winds occur. Due to the pre-existing drought conditions from last spring/summer, 1000 and 100 hour fuel moistures were well below average across central/eastern Montana and western North Dakota heading into winter, when routine calculations of the indices ended. It is likely they are even drier now, as precipitation in these areas have been well below average during the past two months. Thus, during dry windy events in the eastern PSAs, the drier than average fuels and cured fine fuels will become available for combustion more quickly than average.

Northern Idaho and western Montana are "out of season" during the outlook period. Because of the La Niña conditions expected through the winter, cooler conditions with longer periods of moist northwest or cold northerly flow should keep warm, dry windy periods shorter over the eastern half of the region, with a slightly lower frequency than in other winters. It is usually the case that even the eastern areas remain out of season during the December-February period, but as snow cover melts in March, and periods of chinook flow become warmer and drier, fire potential often increases substantially then, continuing into April, before green-up occurs in May. It is worth mentioning as well that above average precipitation in the eastern areas is not as meaningful during the winter period, due to average levels being very low. Weather systems there tend to be fast-moving and absent of significant Gulf of Mexico moisture feeds. Even a few days of warm, dry southwest and west winds there will quickly evaporate whatever snow may be in place and bring rapid fuels drying.

Great Basin: Normal significant wildland fire potential is expected for the Great Basin through the Outlook period.

Temperatures were generally near to above average across the Great Basin in December. Further to the north, temperatures were closer to average. Precipitation was well below average over the southern half to two thirds of the Great Basin and was near average in the higher elevations of the central Idaho Mountains. Over the last three months, minimal precipitation has occurred over southern Nevada, southern Utah and the Arizona Strip. The early season snowpack is near average in the high elevations of Idaho and western Wyoming, but well below average for the majority of the high elevations of Utah and Nevada.

Normal large fire potential is expected for all areas of the Great Basin through April, which for this time of year translates to minimal large fire activity. The one thing to watch for April is how dry the southern areas of the Great Basin remains and if there will be an early start to the fire season. There was not a significant grass crop from 2016/17 in the south, so the main threat after a potentially dry winter would be in the higher elevations. Further north, there will likely be carryover fine fuels from 2017, and depending on how much lower elevation snowfall is received will determine how much carryover remains and

precipitation received will determine how much new growth there will be. Thinking ahead, this concern will likely be an issue as we move into May and June. Therefore, northern areas will remain Normal for large fire potential as well through April.

Southwest: Normal significant fire potential is expected across the region for January. The eastern plains of New Mexico into west Texas will see Above Normal potential in February and March with some Above Normal fire potential likely across southern Arizona and southern New Mexico by later in March into April. Elsewhere, expect Normal significant large fire potential.

Over the past month, high temperatures have been generally above average across most of the region with the warmest trends observed across the northwestern areas. More average temperatures were observed across southeastern areas. Over the past month, nearly the entire region has been much drier than average with the only areas of the region receiving above average precipitation being across far western Texas.

By mid-late September, the monsoon weakened and drier air was around much of the region through late September. A very wet period gripped much of eastern and central New Mexico during the first half of October while Arizona remained generally dry and mild. Precipitation totals for this wet period east of the divide earlier in October were impressive and in some cases record-breaking. However, the overall expectation for some-time has been for much of the fall to be warmer and drier…and that has been the case overall with very mild and dry weather intact for the past few months.

Confidence in this overall outlook is above average as La Niña-like conditions are maintaining in both the eastern and central tropical Pacific ocean and are expected to continue into the spring of 2018. As early winter arrives, expect warmer and drier than average conditions to remain intact overall for most areas. Periods of colder than average temperatures will be most likely from central New Mexico eastward into Texas. In January and February, eastern/northeastern sections of the region will begin to experience more frequent periods of average temperatures. Some areas receiving average precipitation are likely across northern through eastern New Mexico and West Texas. Areas along and east of the New Mexico central mountains will experience periods of increased dryness and will combine with above normal fuel loadings for increased large fire potential. Downslope flow ahead of cold frontal passages typically lead to one-two day large fire events east of the New Mexico central mountains in response to the well above average temperatures with very low humidities that are created during such events. This is expected to be the case for early-mid winter along and east of the New Mexico central mountain chain. Areas across the southern tier of the region will begin to see areas of Above Normal fire potential in February and March as continued dryness and mild temperatures will more than likely begin to lead to an increased threat.

Rocky Mountain: Normal significant wildland fire potential is expected in January for the region. Significant fire potential is expected to increase to Above Normal across southwestern Kansas, south central Nebraska, and southeast Colorado from February through April. Elsewhere, expect Normal significant wildland fire potential from February through April.

Warm anomalies continued from November into the first half of December, with a shift of the warmest conditions moving toward the northern portions of the region. During November and especially through the first half of December there was a very dry pattern with much of the central to southern portion of the region receiving less than 25% of average precipitation, and 0% over a large portion of western Colorado and southwest Kansas. Long range precipitation deficits are noted in spotty areas across south-central and southeastern Kansas, and also across west-southwest Colorado.

Fuels available to burn this time of year are primarily categorized by dry grass and brush in the lower elevations, especially across the eastern grasslands. Above average moisture during the 2017 spring growing season has resulted in significant fuel loading across the plains, especially in southern/western Kansas. Mountain snow-pack got off to an early start in the fall; however significant deficits have emerged from southern Wyoming through Colorado, especially in southern Colorado. This has exposed fuels that are typically under snow this time of year.

Short-medium range model forecast precipitation through early January are reflective of an active upper level northwest flow with embedded frontal systems generating snow at times, with the exception of a dry swath persisting across western Kansas into southwestern Nebraska and southeastern Colorado. The continued weak La Nina is influencing long range outlooks with an average to wetter than average regime in the northern portion of the geographic area with a cooler bias as well in the north. In the southern portion of the region, indicators favor average temperatures in combination with drier than average conditions, especially across the southern plains.

As the region continues its typically slowest time of the year in terms of large fire activity, forecast weather patterns through January point towards average large fire risk overall for the month. Lower elevations in the far southern portion of the geographic area look to be most susceptible to short duration wind driven grass/brush fires during January. Above average large fire potential is predicted for February through April as a result of pre-green conditions and increasing warm, dry, and windy periods combining with areas of moderate to heavy fuel loading across the plains of southeastern Colorado, southern and western Kansas, and southwestern Nebraska.

Eastern Area: Above Normal significant wildland fire potential is expected across southwestern Missouri from February through April. Below Normal significant wildland fire potential is expected across the lower Ohio River Valley for the outlook period. Normal significant wildland fire potential is expected in all remaining areas for the outlook period.

Thirty day soil moisture and precipitation anomalies were below average across portions of the mid-Mississippi River Valley towards the end of December. Above average precipitation and soil moisture thirty day anomalies were in place over much of the Upper Peninsula of Michigan, far northwestern Wisconsin, northwestern Minnesota, and northeastern Maine.

Below average temperatures and above average precipitation trends are forecast over much of the region through the rest of the winter into the early spring season. The exception may be western Iowa and Missouri where drier conditions may persist into the early spring.

100 and 1000 hour fuel moistures dropped below seasonal averages across portions of the western Mid-Mississippi River Valley. Otherwise, larger fuels were near seasonal average levels over the majority of the region. Energy Release Components and Canadian Build Up indices were at or below seasonal average levels at the end of December at the majority of the Eastern Area RAWS. The spring fire season may begin earlier than normal across portions of the western Mid-Mississippi River Valley if drier than normal conditions persist over this area.

Southern Area: Normal significant wildland fire potential is expected for the Southern Area in January. From February through April significant fire potential is expected to increase to above normal across portions of Texas and Oklahoma while remaining Normal elsewhere.

A warmer and drier than average pattern in the southern Plains produced an expansion and intensification of drought conditions in December. Some short-term relief may be in sight. Deeper penetrating cold winter weather and wintry precipitation is expected in January which may suppress the fire potential somewhat. Southern tier states near the Gulf Coast should continue to see overall warmer and drier than average conditions in January though some periodic intrusions of cold air may occur with the stronger Arctic surges.

Winter conditions and better chances for rain and snow across the Ohio and Tennessee River Valleys should keep fire potential average to below average for the winter months in these areas. Low humidity, gusty wind cold frontal events will continue to produce episodes of elevated to high fire risks across portions of Oklahoma, Texas, and Western Arkansas.

.

For Texas, Oklahoma, and Arkansas, the drought is expected to deepen. Fuels will be very receptive. Fire risks should trend to above average levels from February onward. Above average grass loadings will

magnify risks for large and higher rates of spread fire potential. Depending on weather pattern evolution, there is some potential for average to above average precipitation to occur across southeastern Arkansas and northern Mississippi which would further limit risks more than indicated.

Provided the La Nina episode remains the dominate feature in the tropical Pacific, rain and storm activity should be characteristically increasing east of the Mississippi River Valley and should continue to produce higher fuel moistures and a lower the risk of fire in the fire environment. Further west, above average potential is likely from the combinations of drought, warmer than average temperatures, and below average precipitation. An expected drying pattern for Florida will need to be watched in April for developing/increasing fire potential.

High dead fuel loadings left behind by hurricanes Harvey, Irma, and Maria will continue to pose unique fire danger concerns for coastal Texas, Florida, and Puerto Rico and will need to be considered should drier conditions emerge.

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) 387-505 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**