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.

Fire activity remained low across the nation in March. Year to date fire statistics showed below average activity for both number of fires and acreage burned. What little occurred was focused across the Southwest, western Oregon, and the Southeast. Mountain snowpack levels were historically good as most basins reported levels greater than 130% of average across central portions of the West. Snowpack averages trended closer to average and even below average levels along the Canadian border. Snowpack deficits across Alaska continued to be manifest across the southern interior and along the Gulf coast. Diminishing drought conditions continued except along the Canadian border across the Pacific Northwest. Overall, temperatures nationwide were 3 and 10 degrees below average. Precipitation received was generally above average across the central and western states and below average in the East and along the Gulf coast. An area of drier than average conditions was observed along the Canadian border.

As the spring greenup begins to take hold across the West in April, mountain snowpack will begin to melt. Snowpack melting rates are a more important factor than snowpack levels in assessing potential fire season activity ahead. An average or slower than average melting rate can allow for a late entry of the timbered elevations into the fire season, whereas a faster melting rate will allow for high elevation fuels to become receptive to fire sooner. In 2019, an average to cooler than average spring is expected, so melting rates should be near average which could result in a delayed fire season entry in areas that have abundant snowpack. An early entry is possible along the Canadian border in areas that have a below average snowpack. In the middle and lower elevations, abundant winter and spring moisture should translate to a heavy crop of fine fuels that will become increasingly receptive to fire activity across the West from south to north in May, June, and July.

In Alaska, warmer than average temperatures should lead to an early snowpack loss and early entry into the fire season. A possibility exists that precipitation could become above average from June onward. This could lessen some of the state’s peak season fire potential during the second half of the season. After an active early start to the season, fire activity across the state should trend toward average conditions. Hawaii and Puerto Rico will continue to see slightly elevated potential early in the outlook period until the impacts of tropical weather conditions begin to be felt. The Southwestern fire season should begin to end in early July as a below average and perhaps late monsoon arrives.
Past Weather and Drought

Temperatures across the country were mostly 3 to 10 degrees below average for the majority of the month. Exceptions to this were the Deep South, the Four Corners, and Alaska where temperatures were a few degrees above average. Of note, the northern Great Plains and Montana were particularly cold as the frigid conditions persisted along and east of the Continental Divide. In these areas, temperatures were 10 to 20 degrees below average. Precipitation was near to above average across a majority of the West and Great Plains. Some deficits were observed along the Canadian border where amounts received were near 50% of average. Across the East and along the coast of the Gulf of Mexico, precipitation amounts received were well below average and observed to be in the 25%-75% of average range. Alaska’s interior received above average precipitation.

The drought across western states continued to show improvement as drought severity and coverage decreased in response to the continued wet pattern. One exception to this was along the Canadian border in Washington, Idaho, and western Montana, where drought conditions showed little change. Developing drought conditions along the New Mexico and Texas state line showed some signs of reversal with the timely onset of precipitation mid-month. Southeastern Alaska remained in drought as did portions of southern Florida and Puerto Rico.

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

Latest sea surface temperature anomalies across the equatorial Pacific Ocean indicate that the weak El Niño continues but has begun a very slow and gradual descent toward neutral conditions. Latest model forecasts show almost no change from the previous months’ forecasts. Latest consensus of model data suggests that the El Niño will persist in a very weak state through the summer months before returning to neutral conditions during the fall.

El Niño events typically result in below average snowpack across the northwestern quarter of the nation and above average snowpack across the central portion of the West. This has come to fruition in early 2019. Spring precipitation is generally near average in most areas and becomes increasingly dominated by other oceanic and atmospheric cycles that are of a shorter term. Latest outlook data for the spring and early summer months suggests a higher probability for average to slightly cooler than average conditions across the West, warmer than average conditions in the East. Average conditions are possible across the Great Plains. Precipitation outlooks suggest a possibility that many areas across the West could see above average precipitation through July. It should be noted that the term “above average” is a relative term since very little precipitation typically falls across most of the West during the summer months. So, even .50 inches of rainfall could be considered “above average” during July in some locations. Long range model data does show a higher probability for drier than average conditions across western Washington.

In Alaska, long range outlooks suggest a continuance of warmer than average conditions along with a higher probability for above average precipitation, especially across the state’s interior.

Geographic Area Forecasts

Alaska: Above Normal significant wildland fire potential is expected across south central and the southeastern interior of the state in April and May followed by a return to Normal potential for June and July. Other areas can expect Normal significant wildland fire potential during the outlook period.

The U.S. Drought Monitor shows an area of Abnormally Dry conditions in the northern panhandle and severe drought conditions in the southern Panhandle. This drought has held steady since last summer, and is expected to continue based on long range forecasts. The remainder of the state shows as average on drought products, though overall snowpack is not particularly deep anywhere except the southern slopes of the Brooks Range and the northern Interior. The area north of the Alaska Range from Delta to Tok are particularly windblown this year, with very little snow left behind.

Weather outlook maps are forecasting warmer than average conditions for all of Alaska this spring and summer, which has been typical of the last three years. This year, the ice edge is farther north than average and southerly flow patterns are prevailing, so it is very likely that the already low snowpack will melt quickly, up to a month earlier than average in some areas. Precipitation
forecasts are indicating the likelihood for higher than average precipitation across much of the state through the next 12 months.

As parts of the state become snow free, Calculations of the Canadian Forest Fire Danger Rating System will be started. Increasing temperatures will thaw the frozen ground, allowing fuels to start drying. Though ignitions are unlikely for the first few weeks, fuels in parts of south central Alaska will probably be burnable by the second half of April. Expect to see calculations starting around the first week of April. Alaska will begin to enter fire season at the beginning of April for the southernmost parts of the state.

Alaska is transitioning into fire season with a forecast of Above Normal potential expected for April and May, with a return to Normal for June and July. As snow retreats in the southernmost parts of the state, human-caused fires will start to pop up in early April, spreading into central and northern Alaska by the end of April and early May. By late May, most of the state will be snow-free, and fire activity will be on the rise, reaching its peak with more lightning starts around the summer solstice.

**Northwest:** Normal significant large fire potential is expected across the region during the outlook period except west of the Cascade crest in Washington and northwestern Oregon through June where Above Normal significant large fire potential is expected. The Above Normal conditions will expand southward into southwestern Oregon in July.

March was mostly cold but dry across the Pacific Northwest region after a February that was cold and quite wet. Snowpack for late March over the higher elevations at month's end was about 75-100% of normal across Washington and 100-158% of normal across Oregon with the highest accumulations east of the Cascades. Overall, much of Washington and northwestern Oregon have accumulated significantly less than average rainfall since the first of the year. Southwestern and eastern Oregon have been wetter than average. Outlooks through spring and summer continue to indicate warmer and drier than average to average conditions for the region, particularly west of the Cascades.

Fire danger indices remain too low for a significant risk of large, naturally ignited wildfires across the region. However, the human-caused fire activity in populated areas that occurred in March indicates potential exists for escaped prescribed fires or accidents in windy conditions during dry spells.

Several human-caused wildfires occurred in Washington and Oregon in late March during sustained dry, gusty easterly wind events. This pattern could repeat itself through April and May if sustained precipitation does not return to the dry areas discussed earlier.

**Northern California and Hawaii:** Normal significant large fire potential is expected across mainland portions of the region and Hawaii through April and May except across Hawaii where Above Normal significant large fire potential will exist. Above normal significant large fire potential in June and July across Hawaii, in the foothills and lower mountains surrounding the Sacramento Valley and the Bay Area while Normal significant wildland large fire potential is expected elsewhere.

The region has received well above normal precipitation since January 1. Most of the winter storms this season were accompanied by average to lower than average snow levels, and this has led to snow pack water content readings at more than 150% of the normal seasonal maximum. Frequent wet weather systems are expected to continue to affect the region at least through early April, followed by a gradual trend toward average rainfall amounts and intervals. The snow pack is expected to reach its maximum snow water content, at a well above the average value, during the second week of April, which is a week or so later than usual. The current outlook calls for warmer and drier than average conditions starting in late April. Considering the ground water already in place and the snowmelt runoff that will occur, another fire season will start with well above normal brush growth and another robust fine fuel crop, even if rainfall trends toward average or below average late in the spring. The above average fine fuel crop will likely cure out by late May to mid-June in the lower elevations of the Bay Area, Sacramento Valley, and Mid Coast areas. Additionally, in mid-February a significant heavy snow event in the northern Sacramento Valley caused extensive damage to plants and trees of all sizes, leading to a large amount of dead and down fuels that will enhance the potential of significant wildfires starting in June.
Typically, wildfire activity is minimal through April. Although low elevation grass fires increase in May, they do not typically grow to significant sizes. Significant fire potential will remain Normal, or minimal, through May. Due to the down and dead fuel loading in the northern Sacramento Valley and the expected curing of a robust fine fuel and brush crop at lower elevations, the Bay Area, Sacramento Valley, and Mid Coast PSAs (except the Mendocino NF) have Above Normal significant fire potential in June and July. All other areas will continue to have Normal significant fire potential in June. However, the higher elevations will likely be on the quiet side of the normal range in June, and that will continue into July, due to the time it takes for the snow pack to melt. Since it is typical for large fire activity to increase at higher elevations in July, the northwest mountains and northern Sierra have Below Normal significant fire potential in July. All other areas remain Normal.

Sea surface temperatures (SSTs) surrounding the Hawaiian Islands are near to slightly cooler than normal. Rainfall was below normal throughout the region in March, which is typical during an El Niño event. El Niño conditions are expected to continue in the equatorial Pacific into the early part of summer, and this will likely lead to a continuation of dry conditions. Fuel loading remains above normal, and wildfire activity has been above normal recently. Therefore, significant fire potential will be Above Normal from April through July.

**Southern California:** Normal significant large fire potential is expected across the region during the outlook period except in the foothills and coastal mountains in June and July when Above Normal significant large fire potential is expected. Below Normal significant wildland fire potential is expected in the southern Sierra in July.

Cool, rainy weather continued across the district for a majority of March. However, for the first time during 2019 calendar year, above normal temperatures occurred during the third weekend of the month. This was only a brief interruption as there were far more days of below normal temperatures than average during the past 4 weeks. Precipitation generally remained well above 100% of normal over the northern 2/3rds of the state while Southern California saw rainfall start to tail off toward the end of the month. Overall, the weather over the past month was benign with respect to wildfires.

Live fuels, particularly seasonal grasses continued to flourish in the cool, damp weather. Much of Southern California is in the midst of a “superbloom”, and it will be several more weeks before seasonal grasses cure out. Heavier fuels should retain too much moisture to allow for fire growth in April, but toward the end of May and into June, the combination of a heavy, cured grass crop along with the poor condition of heavier vegetation (drought killed oaks along the central coast/bug kill timber in the Sierra Foothills) should allow large fire potential to climb to above normal in the inland valleys and lower foothills before spreading into the higher elevations of the Sierra Foothills. However, the high alpine areas of the Sierras will likely continue to see below normal large fire potential well into summer.

Most long-term guidance continues to indicate a normal to slightly above normal amount of precipitation as the “rainy season” draws to a close. This may be an active summer monsoon season across the Southwest, but with prevalent southwesternly flow aloft, the bulk of the thunderstorm, activity may remain east of the district. Temperatures should average near normal. Offshore wind events will likely remain at a near to slightly below normal rate of occurrence.

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

Following one of the coldest and snowiest winters in the record books since 1936 in the eastern Areas, much of the region saw a continuation of the conditions during March. Primarily this was confined to Montana and North Dakota, where three sequential Arctic outbreaks on three weekends in a row kept conditions bitterly cold during what is ordinarily a transition to pre-green up lower elevation snowmelt. Overall, temperatures for the past month averaged 15 to 25 degrees below average. West of the Bitterroot Divide, temperatures were slightly closer to seasonal averages, about 10 to 15 degrees below average for the month.
Some of the driest areas continue to linger from last summer including the panhandle of Idaho and along the Bitterroot Divide across southwestern Montana. Elsewhere, snowpack continued to deepen in March, especially along and adjacent to the Continental Divide in west central Montana and near Yellowstone National Park. By the first day of spring on March 20, Snow Water Equivalent (SWE) in each of the watershed basin was still between 90% and 110% of average.

During the last two weeks of March, a high amplitude ridge of higher pressure built over the region and into southern Canada. Because there was still significant snow cover, temperatures remained somewhat below average but considerably moderated. This allowed a gradual melting to occur along with nuisance flooding in the lowlands. Thereafter, the month closed out with weak southwest flow aloft and temperatures slightly below average.

Seasonal temperature outlooks depict the probability for above average temperatures in the western half of the region, including the month of April, which could lead to a faster spring snowmelt in the western areas. Cooler than average probabilities are shown in the outlooks for the eastern half of the geographic area for the remainder of spring, but near average this summer. In terms of precipitation, the long-term outlooks all suggest above average precipitation for the southern half of the region this spring, and in the Idaho/Montana areas this summer. Considering that summertime is the convective weather season, this may suggest a higher number of thunderstorm days and more lightning strikes and wind outflow.

Snow cover is diminishing over the lower elevations in the western areas, and in central-eastern Montana. As fuels become more exposed to the free air, drier and warmer periods in periodic wind events in the lee of the Rockies during the pre-greenup month of April often elevates fire potential, but adequate winter precipitation should keep Normal significant wildland fire potential there for the period. Drying fuels in the western areas may be subject to a slightly faster snowmelt during April and May due to warmer than average temperatures, but this should be offset by near-average precipitation. Snow cover is diminishing over the lower elevations in the western areas, and in central-eastern Montana. As fuels become more exposed to the free air, drier and warmer periods in periodic wind events in the lee of the Rockies during the pre-greenup month of April often elevates fire potential, but adequate winter precipitation should keep Normal significant wildland fire potential there for the period. Drying fuels in the western areas may be subject to a slightly faster snowmelt during April and May due to warmer than average temperatures, but this should be offset by near-average precipitation. There are no areas of drought in the Northern Rockies currently, but the Idaho Panhandle and northwestern Montana continue to see dry soil moisture anomalies that have carried over from the summer of 2018 and this will need to be monitored closely.

Typically, during April in El Niño winters, the region can see enhanced plains pre-greenup fire potential caused by more frequent and extended dry windy chinook flow periods. This appears unlikely this year until later in April, and the absence of drought conditions there combined with above average precipitation for most of this region during the past 90 days will help limit significant fire potential. Through much of May and June, greenup conditions will continue region-wide, with live and dead fuel moistures remaining near normal levels. The soil moisture anomalies in northern Idaho and northwestern Montana will need to be closely watched with the long-term trend of dryness. Based on the temperature and precipitation outlooks for May and June, Normal significant wildland fire potential is anticipated across the region as fuels will still be transitioning to drier levels. In July, higher elevation fuels in the western Areas will be curing but the long term outlooks suggesting near to above average precipitation warrant Normal significant wildland fire potential region-wide.

**Great Basin:** Normal significant large fire potential is expected across the region during the outlook period except across the southern portion of the region in May and June when Above Normal significant wildland fire potential is expected.

The majority of the Great Basin is at or above average for precipitation over the past 2-3 months, with the exception of below average across parts of southern and eastern Idaho into western Wyoming. The storm track this winter has favored southern areas, with most areas across Nevada, Utah, and parts of the Arizona Strip reporting well above average precipitation. Snowpack is 140-200% of average in the higher elevations of Nevada and Utah. Even though conditions have not been as wet further north, snowpack across Idaho and Wyoming is near average. There have been several cold, low elevation snowfalls this winter and spring across the northern half of Nevada and Utah. This likely will compact some of the carryover fuels from the last 2 years, which could reduce fuel loading going into the fire season. Spring outlooks call for continued wet conditions across the northern 2/3 of the Great Basin, which could last into
the summer. This should allow for new fine fuel growth. However, if we do lose a significant amount of carryover fuels, loading will be lower than what has been observed recently. This may keep things quiet across many areas of the Great Basin that have seen well above average fire activity the last few years. This pattern will need to be monitored closely as some areas could experience below normal activity in June/July if the wetness is long lived. Southern areas of the Great Basin will likely see more fine fuel growth compared to the last 2 years because of the wet spring. This may raise fire concerns early in the season across southern areas. However, this will be dependent on how long the wet weather in the south lingers.

The unusually wet winter is expected to lead to an above average grass crop across southern Nevada and southern Utah and parts of the Arizona Strip. With a transition to warmer and drier conditions the region beginning in April, vegetation will begin to dry and cure, with above average fuel loading expected to be available by May and June. With this in mind, above average fire activity is expected across the southern part of the Great Basin by late May and early June. The length of the drier conditions will likely determine the potential for fire activity in the south, and there are still some questions if wet weather will quickly return with the summer monsoon. As a result, confidence is still low to moderate in this outlook. Further north, an early fire season is not anticipated as wet weather is expected to periodically impact the northern 2/3 of the Great Basin through at least May. Periodic wet conditions may continue into June and July, which could further limit the fire potential in the north. Currently, Normal significant wildland fire potential is expected across the northern areas; however, if wet conditions persist into summer then some areas of Below Normal may be needed in June and July for these areas.

**Southwest:** Normal significant large fire potential is expected across the region during the outlook period except in May and June across northern areas where Below Normal significant wildland fire potential is expected, and in June across portions of southern Arizona where Above Normal significant wildland fire potential is expected.

Since Christmas, average high temperatures have been near to slightly below average along and east of the New Mexico central mountains while most of the remainder of the region has seen below average temperatures that were 2-6 degrees below average. The region has seen above average precipitation across the northwestern half of the region over the past 90 days. Most of the southeastern portion of the region has experienced precipitation between 20-70% of average.

Although the weather pattern has been more moist and active over the past 4-5 months, the southeastern half of New Mexico into west Texas has received below average precipitation overall from late fall into early spring. Over the past month, these areas have begun to receive some precipitation as return moisture from the Gulf of Mexico has begun to occur. El Niño has seen a resurgence over the past month and is expected to continue to intensify and remain strong into at least the early to mid-summer months. Historically, this points towards a higher frequency of below average to average high temperatures and a higher likelihood of areas of above average precipitation area-wide, especially along and east of the Continental Divide as spring evolves due to a more active storm track. Further west, expect high temperatures to oscillate between average and above average overall, especially in May and June. Drier than average conditions are expected overall compared to areas further east which may be more moist.

The mid to late spring period has increased potential for moisture to be drawn west northwestward to be increasingly positioned west of the divide region. This will tamper down significant large fire potential to Below Normal for most areas along and east of the divide region this spring into early summer as greenup takes hold. However, it will also bring the potential for some lightning along and west of the divide, which could eventually lead to areas of increased large fire potential primarily in the lower to mid elevations of Arizona, as these areas will dry out the most by mid-late spring.

Monsoonal coverage and timing is difficult to detect months out, but preliminary indications suggest that the monsoonal onset could be slightly delayed this summer and focused more east of the divide than usual.

**Rocky Mountain:** Normal significant wildland large fire potential is expected across the region during the outlook period except across the mountains of southwestern Colorado May through July where Below Normal significant wildland large fire potential is expected.
No persistent warm and dry episodes have occurred during the latter portion of the winter into early spring across the region, although portions of Wyoming show some short term and long-term precipitation deficits mainly in the southwest. The Drought Mitigation Center depicts Moderate drought ratings across the far southern portion of Colorado and across the southwestern corner of Wyoming as trends continue to show diminishing drought severity the last several months. Mountain snowpack as of late March is near average across western and northern Wyoming into the Black Hills of South Dakota with above average snowpack across Colorado, especially in the central to southwest.

Snow cover and/or frozen precipitation this time of year limits the utility of ERC readings from RAWs sites across the geographic area, and snowpack as of late March was average to above average. Areas of heavy fuel loading across the eastern plains have shown substantial reduction due to compaction from snowfall during the latter portion of winter into early spring.

Short term model forecast precipitation during the latter portion of March into the first half of April indicates average to above average amounts in a generally cooler than average regime in between short duration warm/dry/breezy periods. The consensus of long range weather forecasts indicate an average to wetter than average tendency during the outlook period April through July. Average temperatures are expected overall across the eastern plains in April and May where cooler than average conditions are expected.

The combination of recent cool and wet trends so far in 2019 and average to wetter/cooler than average long range predictions into the first half of summer indicate an average large fire risk across the region April through July, with below average risk in the mountains of central to southern COLORADO May through July. In addition to the recent and forecast wet trends, heavy snowpack in the central to southern Colorado mountains is projected to minimize large fire risk during the spring months, and subsequently help to delay the onset of core fire season. Historic fire data shows an upward trend in fire activity frequently occurs in late May across southern Colorado. In June, activity expands across the rest of the state most years. This year, it may be delayed due to the aforementioned factors. Increases in June occur to a lesser extent from northeast Wyoming into the Black Hills of SD. Further to the east, fire history shows a spike in pre-green fire activity lingering in April (especially first half of the month) across the eastern plains and to a lesser extent into the Colorado Front Range as seasonal warming trends combine with windy periods. In the long range, fire activity in July has a tendency to increase compared to June across western Colorado, Wyoming, and western South Dakota and northwestern Nebraska; conversely, decreasing trends are often the case in July across the Front Range in southern Colorado.

**Eastern Area:** Below Normal significant large fire potential is across the southern portion of the region in April while Normal significant wildland fire potential is expected elsewhere during the outlook period.

30 to 90 day soil moisture and precipitation anomalies were near to well above average across the majority of the Eastern Area towards the end of March. Some short term drying occurred over portions of the eastern states during the second half of the month.

Colder than average conditions are forecasted over much of the region for April with wetter than average trends expected across the Ohio Valley into the Appalachians. Some drying may develop in April across the Upper Mississippi Valley. Warmer than average conditions are then expected across much of the region from May into July. Wetter than average trends may affect portions of the Mississippi Valley May into June with drier than average conditions possible over parts of the eastern states June into July.

100 and 1000 hour fuel moistures as well as Energy Release Components or Canadian Build-Up Indices were near average levels respectively towards the end of March over the majority of the Eastern Area. Fire danger indices had begun increasing to above seasonal average levels trending up towards the end of March across parts of the central Mid-Atlantic States up into western New York. The spring 2019 fire season may begin later than normal across parts of the Eastern Area if the forecast colder and wetter conditions persist into April.
Near to Below Normal fire potential is expected across the majority of the Eastern Area through the spring. However, Above Normal potential may develop over parts of the Upper Mississippi Valley in April and across parts of the eastern states in the summer season.

**Southern Area:** Below Normal significant wildland fire potential is expected across northern and western portions of the outlook area in April and May. Above Normal significant wildland fire potential is expected across southern portions of Puerto Rico and Below Normal potential is expected across the island in April. Areas not mentioned above can expect Normal significant wildland fire potential during the outlook period.

With the exceptions of southern Texas and southern Georgia, the region is mostly drought-free. Some portions of southern Puerto Rico continue to exhibit an elevated potential for large fire development should a triggering event occur. Conditions across the island will return to normal by May as a moistening easterly flow develops ahead of the tropical season.

With El Niño expected to persist through the summer months, weather patterns promoting wetter than average conditions will continue across western portions of the outlook area while patterns promoting drier than average conditions are expected to continue across southwestern portions of the area. While below average precipitation is expected in the southeastern areas, the frequency of precipitation should prevent fuels from reaching critical levels.

**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)