National Significant Wildland Fire Potential Outlook
Predictive Services
National Interagency Fire Center

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Outlook Period – September, October, November, and December 2020

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.

A dramatic increase in fire activity was observed across the West in August as several multi-day heat and lightning events primed and ignited fuels that had become critically dry. Wind events, while not frequent, were impactful. Among the hardest hit states was California where several hundred wildfires were ignited by a multi-day lightning event. Other states greatly impacted by the increase in activity were Oregon, Colorado, and Arizona—which experienced an untimely pause in the seasonal monsoon. The Great Basin remained active as did West Texas. By mid-month, the Northern Rockies had increased initial attack and large fire activity. Generally, most areas across the West received less than 25% of average precipitation in August. The precipitation received was mostly associated with thunderstorms and provided little benefit. Temperatures were generally 2-4°F above normal.

North American Monsoonal activity diminished across the Southwest in early to mid-August but showed a slight resurgence late in the month. Areas that had largely exited the fire season by late July reentered it. Significant fire activity redeveloped across Arizona. Western Colorado also experienced an increase in activity as well.

A continuation of peak season activity into September is expected across much of the West as drought conditions continue to take hold. Most western regions will experience areas of above normal significant large fire potential as shown on the maps to the left. By mid-month, however, the seasonal transition to fall will begin. Cold fronts bringing winds but also precipitation will begin providing relief to the critically dry fuels. Fire activity will begin to diminish as fuel moistures begin to recover. As the days get shorter, overnight humidity recoveries will become greater. This will add further relief to fuels, especially the finer fuels.

Following a brief pause in activity in California and a cessation of seasonal activity elsewhere across the West, large fire potential is expected to increase in October and November in wind prone areas across the state. The expectation of drier than average conditions and a higher probability of more frequent Foehn Wind events suggests that significant large fire potential will be elevated until winter sets in during December. The fall fire season across the East is expected to be near average but above average across much of the Southern Area due to drier than average conditions associated with a developing La Niña.
**Past Weather and Drought**

Observances in weather patterns in August across the West showed prolonged periods of upper-level ridge events and moist low-pressure trough events in the East that were coupled with tropical activity. In western areas, the long-duration ridge events promoted overall warmer and much drier than average during the peak month of the western fire season. As a result, fuels became critically dry and receptive to fire activity. The ridge also suppressed monsoonal activity across the Southwest which allowed for the region to experience a much longer than average season, especially across Arizona. The overall cooler and wetter than average conditions reported across the East were exacerbated by Hurricane Laura, which made landfall the night of August 26 as a category four storm along the southern coast of Louisiana.

Precipitation amounts west of the Continental Divide were generally less than 25% of average with some locations across California, the Pacific Northwest, West Texas, and the Great Basin reporting less than 5% of average precipitation for the month. In the East, rainfall amounts were generally slightly above average except across the Upper Midwest, Great Lakes region, and New England where amounts received were less than 75% of average. Areas that received less than average precipitation were generally two to four degrees above average while the areas that were below average were generally three to six degrees below average.

Large portions of the West experienced drought during August. Areas of the most intense activity were the Four Corner states, West Texas, Nevada, northern California, and the Oregon where pockets of extreme drought were observed at month’s end. The most rapid increases in and expansion of drought was across Arizona, West Texas, southern Nevada, and northern Colorado where two to three drought classes were crossed. Drought improvement was observed across portions of the central Great Plains, the East, and along the northern Gulf Coast.

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

ENSO-neutral conditions continued in August with near-to-below average sea surface temperatures (SSTs) in the equatorial east-central and eastern Pacific Ocean. The Climate Predictor Center (CPC) forecasts ENSO-neutral conditions continuing through the summer, and a 50-55% chance of La Niña conditions developing in late September and October, continuing through the winter. Impacts of the developing weak event may have a significant impact on the fall fire season in California by producing a continuance of drier than average conditions along with a possible higher frequency of wind events. Drier than average conditions may also develop across the Southeast.

Geographic Area Forecasts

Alaska: Normal wildfire potential is expected for the remainder of Alaska’s 2020 fire season. The forecast of “normal” wildfire potential is somewhat deceptive, as there is typically no wildfire action in Alaska during this time, especially after early September. For the purposes of this discussion, the word normal is almost synonymous with little to no wildfire potential.

The summer of 2020 was rather wet over much of Alaska. There had been some drought issues in south-central Alaska and in the Southeast Panhandle last year, but the precipitation over the winter, spring, and into the summer has erased the issue of drought.

With sub-surface fuels rather wet and unready to support wildfire behavior, any wildfires in September should be confined to surface fuels after a few days of drying and will not be overly resistant to control. Weather in Alaska in September and the remainder of the year is typically quite unfavorable for supporting wildfire potential due to wet and cool conditions. The winter’s permanent snowpack is typically established over the burnable elevations of Alaska’s Interior in October, and in south-central Alaska in November.

Northwest: An above average risk of large fires is expected in central Oregon, southwest Oregon, and central Washington through September. By October, large fire potential will fall back to normal across the geographic area as wetter, cooler weather sets in for autumn.

Precipitation totals were well below normal for majority of the northwest geographic area in August. A frontal weather system around August 21 brought some precipitation to western Washington and sections of western Oregon. However, precipitation deficits remained acute in central Washington, central Oregon, and most of southwest Oregon where drought conditions worsened. Temperatures for August were above average despite a cool start to the month. Temperatures warmed well above average during a hot spell in the middle of the month.

August began with fire danger indices at or below average due to the cool spell that affected most of the geographic area. Fire danger climbed steadily as temperatures warmed and relative humidity decreased. By the middle of the month, the hot, dry spell resulted in energy release components above average across the Northwest with some values well above average in several areas.
predictive service areas (PSAs). 1000-hour dead fuel moisture fell below average in all PSAs with some of the proportionally driest values in PSAs NW02 and NW08.

The numbers of fires and acreage burned remained below average for the geographic area for the first week of August. However, a very warm and dry spell in mid-August boosted fire danger above average. The onset of several days of lightning brought scores of fire starts mainly in central and eastern Oregon and also central Washington. Over a dozen large fires resulted with the subsequent deployment of Type III, Type II, and Type I incident management teams. The geographic area elevated to preparedness level (PL) 4 in response to the increased firefighting resource demand after remaining at PL 2 for June and July. Overall, the number of fires and acreage burned for August 2020 is likely to be above average.

Outlooks from the Climate Prediction Center (CPC) are indicating continued warm and probably dry weather for the Pacific Northwest through September. After that, long-range forecasts indicate a transition to La Niña conditions, which typically lead to wetter and cooler conditions than normal for the Pacific Northwest in autumn and winter.

**Northern California and Hawai’i:** Above normal large fire potential is expected across all areas in northern California in September with central and northern California and the Bay Area remaining above average in October. All of northern California is expected to have normal large fire potential in November and December. In Hawai’i, above normal large fire potential is forecast for large portions of the islands from the Big Island to Oahu in September and October. Large fire potential will likely return to normal in November and December.

Fuels, both live and dead, of all size classes and at all elevations throughout North Ops are near or drier than average for early September, which is when fuels typically start to moderate from their most extreme levels. An active thunderstorm pattern from the middle of July through August produced very light rain in many areas, with only a few spots receiving heavy rain. The outlook calls for warmer and drier than normal conditions through December. There are no reliable sources to determine when the season-ending rain event will arrive, but in recent years it has been in November more often than in October. Even intermittent light rainfall, totaling below normal monthly amounts, will be sufficient to bring the active fire season to a close once we reach late October. Without occasional light rainfall, above normal significant fire potential, as seen in the October map, would be extended.

In September we see a transition from the lightning threat, which has been common in August, to the north-northeast and offshore wind threats. Due to these potential weather triggers and the expectation of very dry fuels, all areas have above normal significant fire potential in September. In October, the focus for above normal significant fire potential is in those areas with abundant cured fine fuels and that are vulnerable to north-northeast and offshore winds, from the Western Cascade-Sierra slopes to the coast from near Ukiah and southward.

Sea surface temperatures (SSTs) surrounding the Hawai’ian Islands are slightly warmer than normal, and this is expected to continue through December, leading to above average temperatures in the region. Rainfall was well below average across the islands in August, leading to an expansion and intensification of drought, as shown in the US Drought Monitor. ENSO-neutral conditions continue in the equatorial Pacific, but by late fall and winter a weak La Niña pattern is expected to develop. The general outlook is for the warm and dry pattern to continue into October, followed by a switch toward wetter weather during the late fall and winter.

**Southern California:** Normal large fire potential is expected across the region. However, above normal large fire potential is expected for the Transverse and Peninsular Ranges and westward to the through November.

A trough over the Pacific Northwest and a high pressure area over Texas allowed for below normal temperatures to occur the first eleven days of the month. As the high pressure area migrated west to be positioned over Arizona mid-month, the first prolonged heatwave occurred and persisted through August
24. Between August 14 and August 19, many locations recorded record heat. The strong high moved back to the east bringing near normal temperatures to the region after August 25.

An area of low pressure off the central California Coast brought daily isolated afternoon thunderstorms to the Sierra Crest August 7 through August 11. The remnants of Hurricane Elida brought isolated showers and thunderstorms to the southern half of central California on August 13. The first seasonal intrusion of monsoonal thunderstorm activity occurred August 14-24. Moisture from the remnants of Hurricane Fausto brought numerous thunderstorms to the Central Coast August 15-16. Most locations received well below average rainfall for August, but some mountain locations and much of the Central Coast received well above average rainfall. The deserts bordering Nevada and Arizona were abnormally dry. There were no significant changes in the drought situation this month. The 1000-hour dead fuel moisture levels decreased to below the 3rd percentile at many reporting sites. Even though there was quite a bit of shower and thunderstorm activity across the region during the latter half of August, the 100-hour dead fuel moisture levels remained quite low. between the 10th and 3rd percentiles. Live fuel moisture levels also became low generally ranging between 60% and 80%. Some of the old growth fuel moisture levels were between 50% and 60%. These values were near normal for this time of year.

SSTs warmed significantly along the West Coast during August. This warming of the water off the West Coast caused the area of high pressure over the southwestern states to remain stronger than normal during the month and should remain so through the middle part of September. Thus, expect above normal temperatures and periods of monsoonal storm activity during the period.

SSTs in the Gulf of Alaska are still well above normal, but they are starting to cool. As a result, a dominant high is expected to form off the California Coast from mid-September lingering into November. This high pressure is expected to force troughs inland into the Pacific Northwest. Some of the troughs will track to the southeast across the Great Basin bringing an above normal amount of Santa Ana Wind events to Southern California. The high pressure off the California Coast is also expected to maintain above normal temperatures across the region into the mid-November. This high as well as below normal sea surface temperatures across the Equatorial Pacific will cause rainfall to be below into the middle of November. As sea surface temperatures in the Gulf of Alaska cool, the dominant high off the California Coast will weaken and shift westward, allowing troughs to move further south into California from the middle of November through December. Temperatures will cool to near normal and there will most likely be enough rainfall to bring a near normal threat for large fire to the entire area.

**Northern Rockies:** Fire potential will return to normal across northern Idaho and Montana in September with normal conditions continuing through December for the entire Northern Rockies geographic area (NRGA). Much of the NRGA has little to no average fire potential in November and December.

Precipitation during August was below average over most of the NRGA except along the eastern North Dakota border where it was above average. It was also slightly above average in some areas along the southern Montana border on the farthest northern periphery of the Four-Corners High where monsoonal moisture resulted in wet thunderstorms. Mean temperatures during the preceding month were within 2°F of average with little warmer-than-average temperatures in north-central Idaho and most of Montana. Slightly cooler-than-average temperatures did develop in northeast Montana and western North Dakota as well as much of the southern half of North Dakota. However, a relatively mild start to summer transitioned in mid-August to well above average temperatures with the amplification of the Four Corners High. This heat wave peaked from August 16-19 with record-breaking high temperatures across the NRGA, including record warm overnight low temperatures. The small drought areas in southwest and southeast Montana did not increase in intensity, remaining at a moderate level. Similarly, in south-central North Dakota, an area of short-term drought remains, surrounded by abnormally dry conditions in western North Dakota and southeast Montana.

In all PSAs except eastern North Dakota, ERCs are between the 90th and 97th percentiles. Dead fuel moisture values are generally below average with the driest in the eastern PSAs, southwest Montana, and northwest Montana into north Idaho. In these areas, 1000-hour and in some cases 100-hour dead fuel moisture values are at record lows for this time of year. Fine fuel curing is largely complete in the lower
elevations of the western PSAs and the plains of central and eastern Montana and will support fire spread. Fine fuel curing is also underway in middle elevations of the western PSAs, especially on south and west aspects and in western North Dakota. Live fuel moistures in timbered areas are generally near average in the western PSAs, reflecting an absence of significant drought status.

Although the Four Corners High is not anticipated to be as amplified over the coming weeks, warmer and drier weather is still anticipated at times. However, short-term forecasts indicate cooler and moist conditions from enhanced troughing the first week in September. Thereafter, long-range outlooks transition in October to a more widespread cooler and wetter signal for the NRGA, possibly because of the potential development of a weak La Niña, which would persist through the fall into winter.

The first week of September is forecast to be unsettled with a series of Canadian/Pacific troughs, interspersed with dry, breezy winds. CPC outlooks for the first week of September have also shifted toward cooler and wetter temperature and precipitation probabilities, centered on Montana and North Dakota. That should slow fire season in the Northern Rockies, following an active late August, and it will be difficult for fire potential to rebound as days become shorter. There could still be periods of enhanced fire potential with dry cold fronts and gusty winds, but overall, fire potential will gradually return to normal. During the latter half of September, significant cooling and wetting rainfall from stratiform precipitation with a multi-day period of high relative humidity increases rapidly. Longer nights and stronger valley inversions lead to much shorter potential daily burn periods with limited periods for fuel curing. Across the Plains, thunderstorm activity tends to become less frequent during September, and largely absent in October. Upper-level trough passages producing warm, dry and windy periods are a typical early fall occurrence when fine fuels are fully cured. September, in drier years, can be very critical in the central and eastern Montana plains when dry upper-level trough passage frequency increases, which is enhanced in La Niña periods. In October, significant fire potential is infrequent in all but the driest years in the western PSAs. CPC seasonal outlooks depict near to above-average precipitation for the September-November period for the NRGA, which would suggest at least an average frequency of low-pressure trough passages in October.

**Great Basin:** Above normal large fire potential is expected to last through September over much of the Great Basin. Fire potential should gradually lower later in September into October across the region with normal conditions expected heading into the winter. There will be periods of increased fire potential through the fall/winter after dry periods in the areas of Nevada/Utah where fine fuel loading is above normal.

Temperatures across the Great Basin have been above normal over the past 30 days, as stronger high pressure has been dominant. Precipitation over the last 30 days has been well below normal across most of the Great Basin, and only near or slightly above normal over parts of the Sierra Front into northwest Nevada due to thunderstorm activity. Otherwise, the Southwest Monsoon did not materialize, and this kept the Great Basin much hotter and drier than normal. Precipitation since October 1, 2019 has been below normal across all but the far southern portions of Nevada into northwest Arizona and far southwest Utah, which is 130-200% of normal, accounting for wetter weather in winter and spring. Precipitation was just above normal across parts of Idaho into Wyoming, and below normal across the rest of the Great Basin. Severe to extreme drought continues over much of Nevada, Utah, and the Arizona Strip due to the abnormally dry July and August conditions. Shorter term moderate drought is occurring over a small portion of south-central Idaho due to recent dry conditions. These drought areas are expected to persist through the summer and into the fall.

Fine fuel loading is still 100-300% of normal across parts of Nevada, Utah, the Arizona Strip, and southern Idaho with patchy higher fuel loadings across parts of southern Utah and Idaho. Most of the higher fuel loadings over the northern half of the Great Basin are due to dead carryover fuels. New fine fuel growth was patchy and low in many areas over the northern half of the Basin. Southern areas of the Great Basin have seen new fine fuel growth due to a wetter winter and spring in the far south. Hot weather occurred periodically throughout July and August with periods of record heat, along with breezy winds at times. Fuels have been rapidly drying across the entire Basin through August. Thunderstorm frequency increased the last half of August, but precipitation was spotty, and also brought
periods of gusty winds. Drier weather is expected to return during at least the first half of September. Cold fronts are also forecast to begin dropping south into the northern half of the Great Basin bringing periods of cooler temperatures, but also stronger winds.

Steady fire activity should continue across the northern and eastern half of the Great Basin throughout mid-September as lightning periodically impacts the southern and eastern half of the region and cold fronts dropping down from the north bring more wind to the Great Basin, especially the northern half to two-thirds of the region. Activity should then gradually decrease later in the month through October as cooler weather and shorter burn periods return. Live fuel moisture in piñon-juniper and higher-elevation timber are still very dry, and this is where fires will likely continue emerging along with grassy areas on windy days. The carryover fine fuels from 2019 will still be a concern for fire starts in Nevada and Utah as we head into the fall.

**Southwest:** Above average significant large fire potential is expected in the northern half to two-thirds of Arizona into northwest New Mexico through September. Normal conditions are expected elsewhere and across the geographic area October through December. However, due to the ongoing drought and forecast warmer and drier than normal conditions, lingering significant fire potential may continue into October across the region.

Over the last one to two months, average high temperatures have been 6-8°F above normal across nearly all of Arizona and much of the southern half of New Mexico. Much of northern Arizona, the Four Corners, southwest Arizona, and southwest Texas have had well below normal precipitation due to a weak monsoon. The upper level high center has been mostly anchored over the Southwest Area. The wettest areas of the region have been along and near parts of the New Mexico central mountain chain into the far northeastern plains.

Oceanic conditions are already shifting and will be into a weak to moderate La Niña heading into September and the coming fall. Overall, this type of setup leads to normal to above normal temperatures with the monsoon likely continuing to struggle into early September. Backdoor cold frontal passages will become more likely and regular as September arrives with some brief respite from the warmer than normal conditions from these fronts. However, below normal precipitation is still expected overall for the month of September and likely through most of the fall. The fall period will likely be warmer than normal with below normal precipitation, although a brief wetter period during September or October is also anticipated.

**Rocky Mountain:** Above average significant large fire potential is predicted in September across much of Colorado from the Front Range westward into southern and central Wyoming. Long range forecasts from CPC indicate a warming and drying trend persisting through the fall in Colorado and Kansas, which will likely lead to above average significant large fire potential in southeast Colorado and southern Kansas with short duration wind driven fire activity anticipated.

Overall, this summer temperatures have been above average, especially during August, with the strongest anomalies in central to southern Colorado. In July, moderate rainfall deficits emerged in west-northwest and north-central Colorado into southwest, south-central, and central Wyoming. Additionally, in August, the rainfall deficits intensified in these areas while expanding across a larger portion of Colorado, eastern Kansas, southeast Nebraska, and to a lesser degree portions of northern and eastern Wyoming. The US Drought Monitor has “Moderate” drought in central to northeast Colorado and far northwest Colorado with “Severe” to “Extreme” categories across the remainder of the state. “Severe” to “Extreme” drought is also across much of central to north-central Wyoming.

The most recent soil moisture calculations show large deficits over Colorado, especially south-central to east-central portions of the state. Otherwise, deficits are also notable across southern Wyoming, west-southwest Nebraska, and far western Kansas. Seasonal (May-September, 2000-2019) ERC percentile values are highest over northern Colorado into south-central and central Wyoming with most RAWS above historical maximums for this time of year and above the 97th percentiles for the full period of record. Elsewhere across Wyoming, Colorado, and the Black Hills, ERC values are not as high, but still above the 90th percentile, except for southwest Colorado, which is below the 90th (still near seasonal maximums).
ERC statewide values for South Dakota (not including the Black Hills) and Kansas are well below the 90th percentiles, with statewide Nebraska values above the 90th percentiles.

For the latter portion of August into the first half of September, an upper-level pattern shift is forecast with northwesterly flow aloft bringing cooler, but dry and occasionally windy conditions across the Rocky Mountain Area (RMA). CPC long range forecasts show drier and warmer than average conditions in September across most of the RMA, then during the fall shifting mainly southward across Colorado and Kansas. Otherwise, consistent with a La Niña driven atmospheric pattern, expectations are for wetter than average conditions emerging in far northern portions of the RMA by late fall or early winter.

**Eastern Area:** Near normal fire potential is expected over much of the Eastern Area through the fall fire season. Elevated fire potential may develop over parts of the eastern tier later this fall if forecast drier than normal conditions develop.

30-day soil moisture and precipitation anomalies were near to above normal across much of the Eastern Area towards the end of August. Some medium range drying and drought remained in place across parts of Iowa, northern Illinois and Indiana, the southern Great Lakes, central and western Pennsylvania, western New York and eastern New England.

Warmer temperatures conditions are forecast over the eastern tier in September and over much of the Eastern Area in October. Cooler than normal conditions are forecast across the Eastern Area November into December. Drier than normal conditions are forecast over the eastern tier in October and the southern and eastern tiers in November. Wetter than normal conditions are expected across parts of the Great Lakes October into November. Near to above normal fire danger index levels were indicated across the majority of the Eastern Area. Some above normal indices were indicated over drier portions noted above.

**Southern Area:** Above average significant fire potential is expected across portions of central Texas and western Oklahoma with below average significant fire potential along the Gulf Coast in September. Most of the Southern Area is expected to have above average significant fire potential in October and November with much of the area returning to normal in December except of portion of Texas and Oklahoma where above average significant fire potential is forecast.

Short and evolving longer term drought conditions continue for the western Southern Area with drier conditions developing in August farther east into central and eastern Texas. Dry fine fuels and lowering fuels moistures in the larger live fuels are allowing crown fire to develop. Pending any rain from a tropical event, we expect overall drier fuel conditions to persist. Fuel moistures for much of the rest of the Southern Area continue to trend at mostly above to well above average levels with robust green conditions and healthy vegetative states. The current drought outlook through November is still indicating drought expansion from west Texas into central and even eastern Texas. Otherwise, significant drought development is not expected across the rest of the Southern Area through November.

Fire activity significantly increased across Texas in August with resources in much higher and continuing demand. More typical seasonally driven below to near average activity was observed east to the Mississippi River Valley. Except for Texas, Southern Area fire activity during August trended below to well below average ranges and is a result of the humid weather and above average near daily pattern of showers and thunderstorms. There is a lot of complexity with the evolving fall fire season due to an expected and continued well above average and impactful tropical season, a developing La Niña episode, which should be producing drier weather patterns, and current well above average fuel moistures across a large part of the South.

The tropical Pacific continued its cooling trend during August and with a positive trending Southern Oscillation Index (SOI), a developing weak La Niña through the rest of the year appears likely. Both CPC and Australia’s Bureau of Meteorology still have a “La Niña Watch” in effect for this likelihood. The cooling and below average trending tropical Pacific waters should continue to produce heightened humid conditions and rain activity and increased chances for tropical development for the rest of summer and possibly early fall. However, an evolving fall pattern leading to warmer and drier than average weather will
likely result in a broader drying trend in fuels and fall leaf drop. These will be indicators for the development of an above average fall fire risk season. Peaking Atlantic tropical activity (September/October) within a still developing cooling of the tropical pacific, along with the warmer conditions may complicate the timing of the drying and likely delaying and lengthening the typical leaf drop season. In addition, any significant landfalling activity or near coast tropical tracks, which could further amplify outflow subsidence and fuel drying would change the depicted September and October outlooks. Through November and December, anticipated cooler weather dipping down into the Ohio and Tennessee Valleys should return potential to seasonal averages. For western Oklahoma and particularly central and west Texas, an overall drier and warmer than average pattern should be the trend for the rest of the year and consequently CPC is indicating an expansion of drought is likely for these states.

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