



National Significant Wildland Fire Potential Outlook

Predictive Services
National Interagency Fire Center



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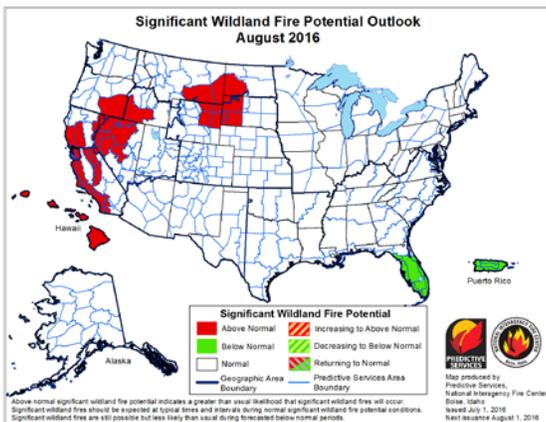
Outlook Period – July, August and September through October, 2016

Executive Summary

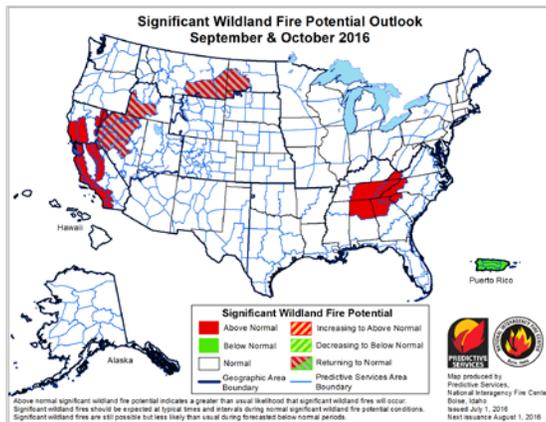
The significant wildland fire potential forecasts included in this outlook represent the cumulative forecasts of the ten Geographic Area Predictive Services units and the National Predictive Services unit.



During late June and July significant wildland fire potential usually transitions from the Southwest and southern California northward into the remainder of the western United States. The timing of this transition should be near normal; however, some areas will experience an increased potential for significant fires due in large part to high fine fuel loading. These areas include the northern and western Great Basin, northern California and some of the finer fuel regime areas of Montana, Wyoming and the Dakotas. Additionally the Southwest will continue to see elevated significant wildland fire potential through July as monsoonal rainfall may not be as consistent as usual. Southern California also will continue to have elevated significant fire potential throughout the period driven by long term drought and vegetation mortality. Alaska fire potential will remain near normal with the northern portions of the state below normal. Alaska usually begins to transition to late season conditions in July and August.



The same heavy fine fuel crops that are driving the above normal forecast for July will continue to present above normal potential into August. Forecasted normal conditions in the higher elevations for August, however, mean that a number of significant wildland fires are likely to develop in these areas throughout the West. Fire season in the western U.S. is typically at its peak in July and August and this year should be no different with the potential for significant fires across the spectrum of fuel regimes all indicating at least normal levels of fire activity.



In September and October the northern tier of states should see a rapid return to normal wildfire potential. The focus for activity should transition to California. Long term drought is expected to remain in place and fall conditions typically bring an increase in offshore wind events that often drive fire activity for the state.

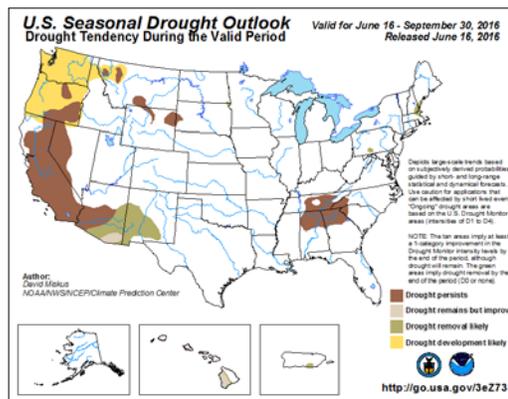
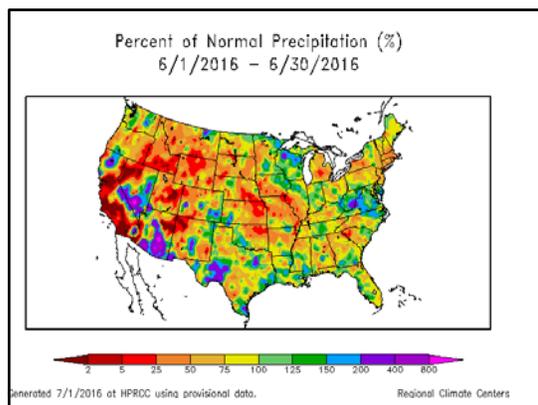
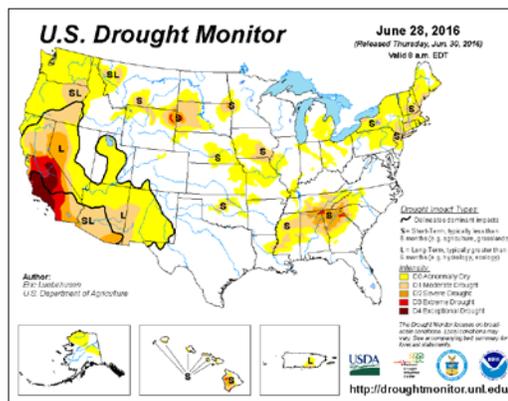
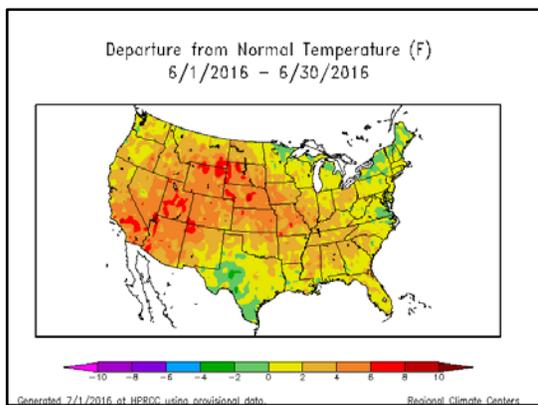
Past Weather and Drought

The typical summer ridge in the western U.S. struggled to setup as strong lows from the Gulf of Alaska traversed the U.S.-Canadian border through the month. While summer heat did manage to develop in the West, the South suffered through heat and flood as several rain events caused excessive rain across parts of the south central and southeastern states. The northern Plains to New England remained relatively mild under a persistent trough anchored over eastern Canada.

Temperatures for June were above normal for most of the country with the worst conditions over the Southwest, the Great Basin and the Plains where some areas were as much as eight to ten degree above normal. Pockets of cooler-than-normal weather occurred in Texas and New England.

Most of the region that suffered the high temperatures also experienced very low precipitation for the month. Much of the Southwest and Interior West received less than 25 percent of normal rainfall. Some areas of the West—western Nevada, central Arizona, northern California and parts of Texas—received much above normal precipitation, as much as four to eight times normal. The upper Midwest and the Mid-Atlantic states also had above normal precipitation.

Long-term drought continued in the West with severe to exceptional drought across central and southern California and western Nevada, and developing pockets of severe drought near the Blackhills and the southern Appalachians.



Left: Departure from Normal Temperature (top) and Percent of Normal Precipitation (bottom) (from High Plains Regional Climate Center). Right: U.S. Drought Monitor (top) and Drought Outlook (bottom) (from National Drought Mitigation Center and the Climate Prediction Center)

Weather and Climate Outlooks

El Niño-Southern Oscillation (ENSO) conditions are neutral. The latest trends of sea surface temperatures in the equatorial Pacific indicate continued cooling, approaching weak La Niña conditions by the fall.

Fuel Conditions and Fire Season Timing

Robust fine fuel crops will continue to drive the significant fire potential across the Southwest, the Great Basin, the northern Plains and California. These fine fuel crops will lead to periods of increased fire activity, larger fires and more rapid rates of spread throughout fire season especially when associated with dry and windy periods. Fire activity began in May and June across the Southwest and is likely to continue until the monsoon begins, which may be later and less consistent than usual.

In Alaska moisture across the southern portion of the state kept fuels moist enough to mitigate any concerns for long term fire potential even though occasional short term fires have occurred. The moist fuels do not extend into the northern half of the state and seasonally dry fuel conditions will lead to the potential for a number of significant fires continuing into July as would normally be expected.

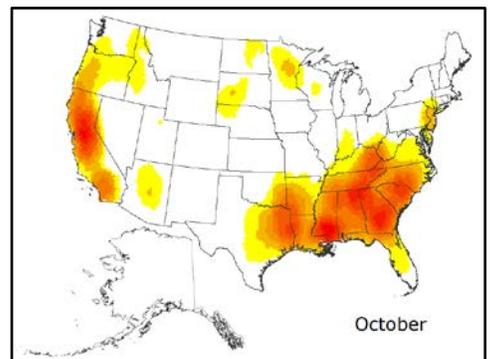
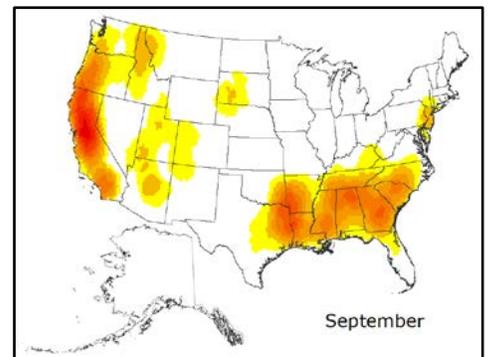
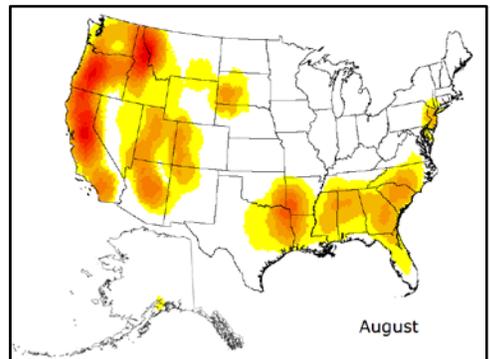
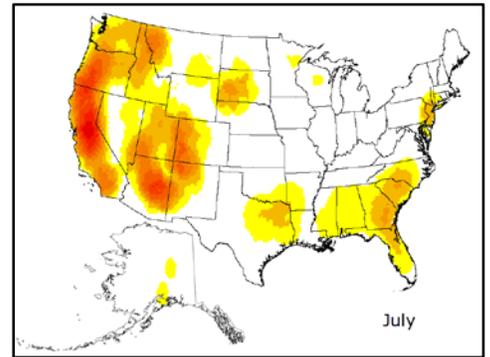
High elevation and timbered areas of the western U.S., especially the northwestern quarter of the country still have enough fuel moisture in place to limit potential in the early July. As seasonal hot and dry conditions return, fuels will dry and normal fire activity will begin in all of these areas. Fine fuel crops may be robust in these fuel types also and would present the potential for rapid rates of spread under the right circumstances.

The outliers continue to be southern and central California where long term drought has led to severe tree mortality, especially in timber ecosystems. Remaining live vegetation is severely stressed and ongoing precipitation deficits have limited live fuel moisture. This condition will lead to continuous elevated potential for significant fires throughout the outlook period. Fine fuels in these ecosystems benefitted from well-timed spring precipitation to establish a more continuous fuel bed than in previous summers. This will increase the chances of more rapid rates of spread and larger fires, especially when associated with favorable topography or during dry and windy periods.

Geographic Area Forecasts

Alaska: Normal significant wildland fire potential is expected for Alaska through the Outlook period, except below normal significant fire potential across the southern half of the state in July.

Most of Alaska received normal to above normal precipitation in June. A band along the northern Interior and northwestern Alaska, however, missed much of the precipitation and remains dry. Conditions are expected to be warmer-than-normal through the fall



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)

for the state. Precipitation is expected to be near normal for most of the state except the western sections where above normal rainfall is forecast.

The Canadian Forest Fire Danger Rating system indicates that deeper fuels are not particularly dry this season. The driest areas are in the Yukon Flats in the northeastern Interior, and a few stations in the southeastern Interior, where indices are in the Very High range. Fine fuels have been fluctuating significantly with passing precipitation events and have not been above High very consistently this summer. The peak of the Alaska fire season is in June, which has been relatively quiet this year. Lack of fire on the ground entering July suggests it is unlikely there will be a large number of acres burned.

Northwest: Above normal significant fire potential will be present in southeastern Oregon for July and August, with normal significant wildland fire potential is expected for the Northwest Geographic Area for the remainder of the Area throughout the Outlook period.

Temperatures rose well above average in the first week of June in the Northwest. Cooling followed as a series of Pacific frontal systems lowered temperatures for the remainder of the month. Precipitation was near to above normal with snow reported on mountain passes in the Cascades. Some areas surpassed June's normal rainfall totals while other areas remained dry. The last few days of the month brought clearing and drying.

The heat wave of early June brought unusually dry conditions and an early rise in fire danger across to just about all the geographic area. Several fire management units in southern Oregon declared fire season by the first of the month. Fortunately, fuel moisture moderated back to seasonal normal after the bout of cooler, wetter weather in the middle of June. Significant fires were reported in central Washington and central and eastern Oregon in early June when lightning resulted in multiple ignitions after the hot spell. However, the subsequent downturn in fire danger after the first week of June diminished large fire potential, despite continued lightning. The region is poised to begin July with fire danger near normal levels for that date.

Climate outlooks from NOAA and other sources suggest that generally warmer-than-normal conditions are likely through July with fire danger rising to normal or above normal levels, especially in southeastern Oregon. That area is expected to be most susceptible to large fire outbreaks from lightning. However, temperatures are expected to be limited in August and September, especially west side of the Cascades. La Niña conditions are expected to put a damper on large fire potential in late fire season. Much will depend on lightning frequency and intensity over Oregon in July.

Northern California and Hawaii: Above normal significant wildland fire potential is expected to develop across especially the finer fuel portions of Northern California and continue through the Outlook period. Above normal significant wildland fire potential is expected in Hawaii for August.

Above normal precipitation over much of the region since fall provided relief from long-term drought conditions. Fuel moisture, in both live and dead fuels, at mid and upper elevations is higher than last year at this time. However, the rainfall produced an above normal fine fuel crop below 3000 ft. These fuels are already cured, especially from Mendocino and Shasta Counties southward. Valleys and foothills in the East Side PSA also have seen an above normal fine fuel crop. These fuels will gradually cure in July. Typical summer afternoon winds will combine with the abundant continuous cured fine fuels to rapidly spread any ignitions that occur there.

Little to no rainfall is expected from July through September. October is expected to be drier-than-normal. Temperatures will generally be above normal during this time. Lightning amounts are expected to be near or possibly below normal this fire season. The North Ops region is entering the time when large-scale wind events become less common. Wind events tend to increase in frequency in late August or September. Slope and local diurnal wind patterns will be the main spread agent for any fires in July and August.

Areas west of the Cascade-Sierra crest and below 3000 feet from Mendocino and Shasta Counties southward will see significant fire potential increase to Above Normal in July, and remain Above Normal in the August-October timeframe. Valleys and foothills east of the crest will also increase to Above Normal in July and remain that way through October. The remainder of the region is expected to see normal significant fire potential.

El Niño has ended and normal rainfall patterns have returned to Hawaii. However, the typical dry season is beginning and only occasional light rainfall can be expected through August. Recent rainfall has lowered the Keetch-Byram Drought Index (KBDI) to below normal for this time of year, but it is following the usual upward trend and it will likely climb to above critical values in August. Therefore, normal fire activity is expected in July, but above normal fire activity is likely in August. The possible development of La Niña by September and the usual beginning of the rainy season in October will likely lead to fire activity diminishing to Normal for September to October.

Southern California: Above normal potential is expected for much of Southern California through October.

Fire activity spiked during the second half of June as hot and dry weather developed across the region. A strong ridge brought record high temperatures to the area around mid-month and several large fires broke out in response to the extreme weather conditions. The San Gabriel complex, as well as numerous smaller fires, grew rapidly chewing through exceedingly dry vegetation. Fuel moisture, which was running a bit below average, plummeted in the dead fuels from Kern County southward. Current conditions in the field with both live and dead fuels are more in line with readings seen in August or early September. Fuel conditions are expected to continue to support large fires as all fuel types will readily accept flame. There is also a growing dead fuel component across a wide swath of the region. There is a mass die-off of vegetation, especially in the Sierras where an estimated 66 million trees are dead or are dying due to the drought and an outbreak of the bark beetle.

The weather pattern this summer strikes quite a contrast to conditions seen at this time last year. The monsoonal flow should be closer to normal with far fewer thunderstorm days expected. However, along with less moisture comes a higher risk of dry lightning. Identifying days of dry lightning will be the primary challenge this season as fuel conditions are such that any ignition source will be extremely efficient in triggering a new start.

Northern Rockies: Normal significant wildland fire potential is expected for the Northern Rockies Geographic Area for the Outlook period, except above normal potential in portions of eastern Montana and North Dakota.

Changes in the global circulation patterns contributed to normal to above normal temperatures across the Area. While precipitation was below average for the month, especially in southeastern Montana, the timely passage of a wet system at month's end provided relief to the fuels across northern Idaho and western Montana. North central and northeastern Montana were plagued by repeated severe thunderstorm events, but the rain and hail received kept these areas average to above average on the precipitation for the month.

Heading into the heart of fire season, an overall ridging pattern is expected across the western United States. Occasionally the ridge of high pressure is expected to amplify over the region leading to very warm and dry episodes. The overall pattern, however, is for the ridge to be slightly flatter over the Northern Rockies Area into September. Potential impacts include an increase in the frequency of dry frontal passages, especially over the northern Plains. Positive impacts might include less frequent monsoonal lightning and shorter duration high heat episodes. That said, the region should still get its share of lightning activity with storms moving in from the west (the Pacific). These types of storms tend to be wetter, on average, than the monsoonal storms that come up from the South.

Entering July, fine fuels have cured and are now able to support fire activity. Large fuels are dry but not yet critically dry. Based on current projections, these fuels should become critically dry by mid-late July in

areas along and West of the Continental Divide. In the pockets of larger fuels across southeastern Montana, the threshold should be reached by the first week of July.

Southeastern Montana has already seen large fire activity and will continue to experience it at least through mid-August when shifting wind directions push more humid air into the region. A normal transition into the core of the fire season is expected in July as the focus of the activity shifts west into south central Montana, then into Western Montana, and finally into northern Idaho by late July. Because of the very warm, dry June and the much drier fuels, large fire potential there will be above normal into August. A busy and active August to early September is expected over northern Idaho and western and central Montana. Long range data suggest that western half of the region might remain active into late September. While this is slightly later than normal, it is not unusual. It appears that the entire region will be out of season by October.

Great Basin: Significant wildland fire potential is expected to continue above normal for the southwestern portions of the Great Basin in early July and return to normal by the end of the month. Northwestern portions of the Area will become above normal in July and August and return to normal in September or October.

A cool and wet spring across the northern half of the Great Basin continued with wet weather lingering into the first half of June in some areas, keeping fire potential low in the spring. However, an above average grass crop emerged. Grasses were cured by late June at most elevations, and the live fuel moisture decreased significantly in the early summer heat. Energy Release Component (ERC) increased rapidly across the Area and is now near normal for the time of year but should increase to above normal in the coming weeks. Drought conditions have improved significantly across most of Nevada but moderate to severe drought continues in the Sierra and over the western half of the state.

July will likely see a constant shift between periods of hot weather with showers and thunderstorms and periods of windy and drier weather, especially over western and northern Great Basin. This will keep fire potential above normal for the month. Above normal fire potential will likely remain over southern Nevada into southwestern Utah through the first half of July until more regular monsoon moisture brings rainfall to the region. The wettest month of the monsoon may be July, and it may weaken somewhat in August, with a potential to see drier-than-normal weather across Nevada into Utah. Therefore fire activity is expected remain above normal over the north and west throughout August. Above normal fire potential will likely continue into September as fall systems bring stronger winds to the Area. Fire activity is expected to return to normal by October.

Southwest: An area of above normal significant fire potential is expected during July in Arizona before returning to normal by then end of the month. Normal significant wildland fire potential is expected for the Southwest for the rest of the period.

Over the past 30 days temperatures have generally been above average across the northwestern portion of the Area while only far southeastern sections remained near to below average. Precipitation amounts have been the highest across south central and northeastern New Mexico as well as some areas of southeastern and east central Arizona.

For July, the monsoonal weather pattern is expected to become entrenched and active over the region. The effects of an early moisture surge in June could be negated by a drier period during the first week of July west of the divide. However, it is more likely that this will be just a temporary condition and the summer monsoon will reestablish by the second or third weeks of the month. Eventually, a drier mid to late fall period is likely to evolve for many areas of the region.

Rocky Mountain: Normal significant wildland fire potential is expected for the Rocky Mountain Geographic Area for the Outlook period, except above normal potential in portions of eastern Wyoming and South Dakota.

The Area experienced above average temperatures during the month of June, especially in the north. Precipitation deficits were most notable west of the continental divide with values less than 50 percent of average while precipitation east of the divide was near average overall. Live fuel moistures are not supportive of large fire growth in the higher elevations; however, grasses in the foothills and lower elevations as well as Pinyon-Juniper fuel regimes have begun and will continue to become more available to burn as curing progresses.

Fire season was delayed this year by a wet spring, especially east of the continental divide in Colorado. However, dry and very warm conditions in the second half of June returned fire potential to seasonal conditions across the Area, with trends moving into the above average range for northeastern Wyoming and western South Dakota. Longer range predictors maintain average temperature and precipitation regimes through August with the possibility of a drier and warmer than average fall. The typical northward progression of fire season is anticipated the remainder of summer and near average significant fire activity is forecast for the Area during July and August, except for above average potential in northeastern Wyoming and western South Dakota where ERCs are trending near the 90th percentile. For late August through October, expectations are for near to above average fire potential. Abundant grass fuels from previous growing seasons and recent moisture may contribute to an increase in ignition and total acres burned overall for the Area during the July through October period compared to the very slow 2015 season.

Eastern Area: Normal significant wildland fire potential is expected over the Eastern Area through the Outlook period.

Soil moisture and precipitation were below normal across portions of the eastern Great Lakes, Mid-Mississippi Valley, northeastern Mid-Atlantic States and New England toward the end of June. Near to above normal precipitation and positive soil moisture anomalies were in place over the rest of the Eastern Area. Fuel moistures were below normal over portions of the northeastern half of the Mid-Atlantic States and New England toward the end of June as medium range drying occurred through the month.

Warmer-than-normal conditions overall are forecast over much of the Eastern Area through the summer. Drier-than-normal precipitation trends are expected over much of the southern tier of the Eastern Area into September. Drier-than-normal conditions are expected to spread northeastward into New England in September. Cooler-than-normal trends may develop in October across the central portion of the Eastern Area. The fall fire season may begin earlier than normal across portions of the southern and eastern tiers of the Eastern Area if drier-than-normal precipitation trends develop. Near normal fire potential is expected this summer over the majority of the Eastern Area.

Southern Area: Below normal significant wildland fire potential will be present across portion of Texas, Florida and Puerto Rico through July before returning to normal in Texas in August and Florida in September. For the remainder of the Outlook period dryness will increase fall fire potential across the Appalachian States.

Short term dryness levels have increased from June for the interior southeastern states. Pending significant periods of summer thunderstorms, expect this trend to be the harbinger of the increasingly drier pattern which will eventually become more apparent within the Southern Area in the coming months. While recurring periods of rain activity during July should be expected, the isolated to scattered nature of the rain activity and the highly variable amounts of rain will allow the fine and medium fuel moistures to fluctuate widely. As in past years, any prolonged or especially intense drying from tropical system subsidence could result in regional amplification of fire potential. Puerto Rico will likely remain in moist conditions as an elevated Atlantic tropic development pattern will likely influence an area from the Gulf of Mexico east to the northeastern Caribbean Sea.

Expect a continued cooling and eventual emergence of a more La Niña looking episode by the last few months of the year. In addition, as the ENSO state evolves, the tropical development threat increases for the core of the season and could be a huge wild card in terms of high rain fall into the South. Any

landfalls or coastal approaches would necessarily alter any emerging drier fuel moisture picture. La Niña will eventually produce drier and warmer-than-average weather and higher wildfire threats for the Southern area.

Expect to see continued overall low to average fire potential and mostly light daily fire activity through the summer as dryness continues to evolve into the Fall. For the northwest region of the Area to the Southern Appalachians, persistent below average rainfall continues the drying conditions and will be the primary concern. However, at least through July, a progressive weather pattern and typical humid summertime condition should keep the occurrence of above average fire activity in check. After this time, an above average temperature and trending drier rain outlook should be expected to produce a higher risk wild fire environment for the Southeast leading into the fall leaf drop period.

Outlook Objectives

The National Significant Wildland Fire Potential Outlook is intended as a decision support tool for wildland fire managers, providing an assessment of current weather and fuels conditions and how these will evolve in the next four months. The objective is to assist fire managers in making proactive decisions that will improve protection of life, property and natural resources, increase fire fighter safety and effectiveness, and reduce firefighting costs.

For questions about this outlook, please contact the National Interagency Fire Center at (208) 387-505 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>