North American Seasonal Fire Assessment and Outlook

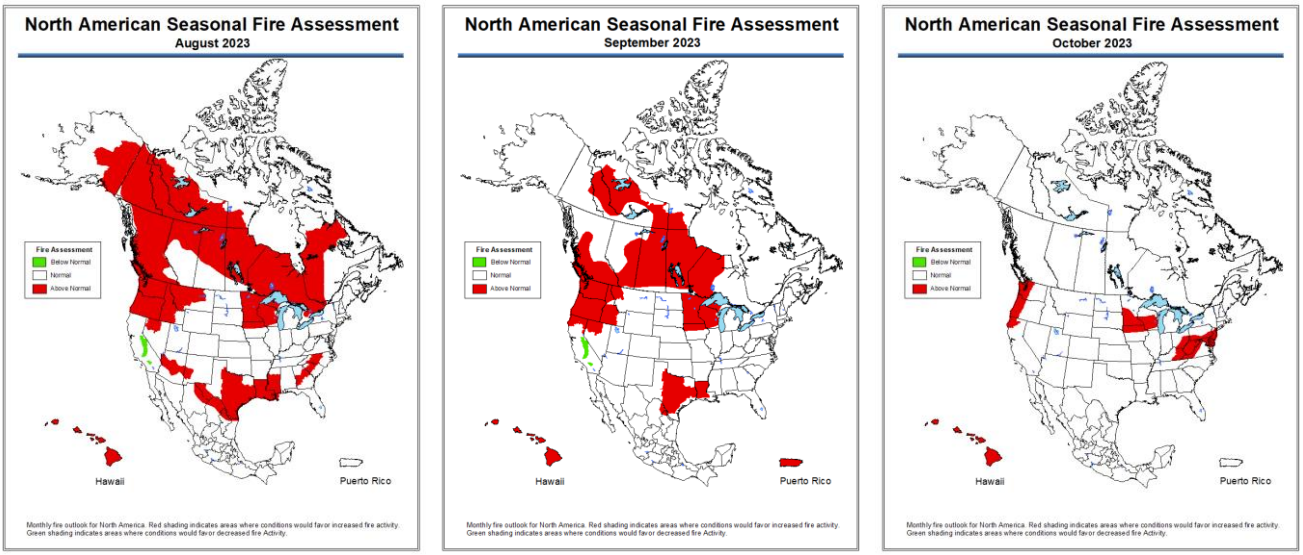
National Interagency Fire Center ● Natural Resources Canada ● Servicio Meteorológico Nacional
United States Canada Mexico

Outlook Period August through October 2023
Issued 11 August 2023

Executive Summary

Drought and above normal temperatures in much of Canada during July have contributed to ongoing fire activity. Areas with above normal rainfall include southern Ontario, parts of southern Quebec, and the southern part of the Atlantic Provinces, with Newfoundland remaining dry. Above normal rainfall has also occurred in portions of northwestern Alberta, along the western and eastern Hudson Bay coasts, and small areas in central British Columbia.

During much of early July, a big low pressure area trundled around the Hudson Bay area, gradually decreasing fire activity in parts of Manitoba, Ontario, and Quebec. Fires on the Quebec side of James Bay did not receive much rain until July 17-18, when the low finally started moving northeast. Since then, other storm systems over Hudson Bay have kept western Quebec shrouded in cloud, so hotspots from satellite thermal instruments have rarely been visible. Large fires in that area are likely still burning, but not as intensely as earlier in the summer. Rain in central Alberta and British Columbia during mid-July temporarily reduced fire danger and activity in those regions, while southern British Columbia, the southern Prairies, and the Territories remained generally dry.



Monthly fire outlook for North America for August 2023 (left), September 2023 (middle), and October 2023 (right). Red shading indicates areas where conditions would favor increased fire activity. Green shading indicates areas where conditions would favor decreased fire activity. *Click on each image to see larger versions.*

Warm temperatures dominated much of Canada during July, although parts of the Prairies and western Ontario came out slightly cooler than normal. The greatest heat anomalies occurred in the far north, greater than 5°C above normal in the northern Northwest Territories and Yukon, with many daily maximum temperatures set in parts of British Columbia, Yukon, and the Northwest Territories during early July. The highest measured in the Northwest Territories was 37.9°C (about 100°F) at Normal Wells Climate Station (~65°N 127°W) and 37.4°C (99°F) at Fort Good Hope (~66°N 128°W) on July 8. This marked the highest recorded northern hemisphere temperature at this latitude. Some record highs

were set in Atlantic Canada in early July, but these were not as widespread nor dramatic as those set in the far north.

Significant fire activity increased through July, especially during the latter half of the month into early August as the national preparedness level increased from two to three (scale one to five) on July 21. Significant fire activity has been greatest in the Southwest, Northwest, and Northern Rockies Geographic Areas, while Alaska and the Great Basin have multiple incident management team fires. The Southern Area has seen an increase in significant fires as well, mainly in Texas, Louisiana, and Mississippi. Drought has developed or intensified across much of the Pacific Northwest, Southwest, Texas, and Lower Mississippi Valley, while drought continues continued, but has improved across much of the central Plains.

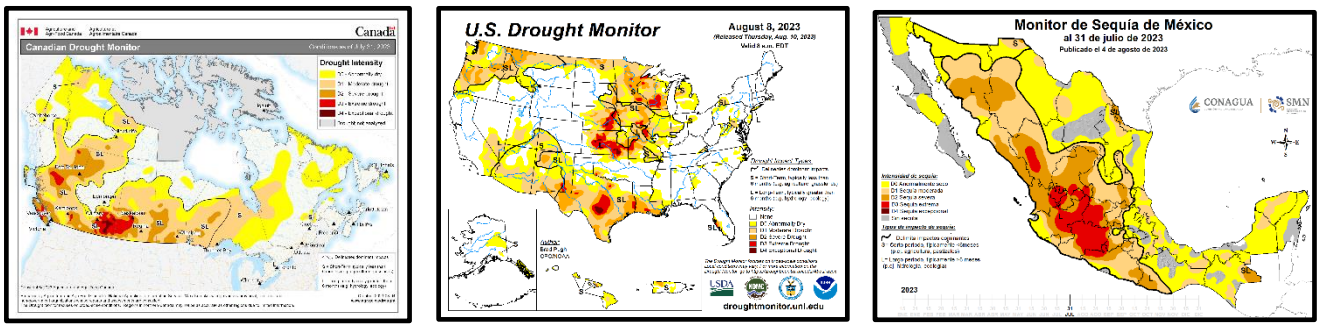
Above normal significant fire potential is forecast across much of Hawai'i and the western Great Lakes through October, with above normal potential for much of the Northwest, Idaho, western Montana, northwest Nevada, Texas, and the Lower Mississippi Valley through September. Above normal potential is forecast for much of the central and eastern Alaska Interior in August along with central Arizona and western New Mexico. Above normal potential will likely continue west of the Cascades from Washington to northwest California in October. Below normal potential is forecast for much of the southern Sierra and San Bernardino Mountains into September.

Precipitation in the April-May-June quarter was below the normal nationally across Mexico, mainly in June, when a high-pressure system inhibited shower and thunderstorms development and favored high temperatures. The hot and dry conditions mostly improved in July. Temperatures were slightly above normal across most of the country, except for Sonora and the Baja California Peninsula, where the values were below normal, a factor that contributed to diminishing the forest fire activity in the region.

Given the recent temperature, precipitation, and drought trend across the country, along with the precipitation and temperature forecast, the fire potential is expected to be below the normal through October. Some fire activity is not ruled out during August and September over Chihuahua, Coahuila, Nuevo León, and Tamaulipas due to the dry and warm conditions on the northern border of Mexico.

Critical Factors

The critical factors influencing significant fire potential for this outlook period are:



Left: Canadian Drought Monitor from *Agriculture and Agri-Food Canada.* **Middle:** United States Drought Monitor. **Right:** Mexican Drought Monitor from *CONAGUA-Servicio Meteorológico Nacional.*

El Niño-Southern Oscillation (ENSO):

El Niño continues in the equatorial Pacific Ocean, with warmest sea surface temperature (SST) anomalies in the eastern equatorial Pacific Ocean. SSTs are consistent with a weak El Niño, and atmosphere responses to El Niño are being observed. The Climate Prediction Center forecasts a greater than 90% chance of El Niño conditions continuing through winter, with about a 50/50 chance of a strong El Niño developing this fall. Other teleconnection patterns, such as the Madden Julian Oscillation (MJO), Pacific Decadal Oscillation, and Pacific-North American Pattern may influence

weather and climate during the outlook period, but El Niño will be the main driver through the outlook period.

Drought:
A large expanse of abnormally dry to exceptional drought remains in western Canada, with this dry area reaching eastward across James Bay into west-central Quebec. Abnormally dry conditions are also present in much of Labrador, extreme southeastern Quebec, and in southeastern Newfoundland. The most intense drought exists in south central Alberta, where exceptional drought is present. Extreme drought has expanded into southwestern Saskatchewan north of the Cypress Hills and southwest of Saskatoon and remains in areas of British Columbia northwest of Prince George, central Vancouver Island, and the southern interior between Kamloops and Kelowna. Abnormally dry conditions and moderate drought regions have expanded into northern Yukon and northern Northwest Territories. Drought is less extensive in eastern Canada than earlier in the summer.

Record breaking heat continued over the southwestern US into Texas through July as the North American Monsoon has been delayed and weaker than normal. This led to near daily isolated to scattered mixed wet and dry thunderstorms across the Southwest, with occasional expansion through the Four Corners, Great Basin, and central Rockies. Upper low passages also produced occasional periods of isolated to scattered thunderstorms across the Inland Northwest through the northern Rockies, including multiple rounds of nocturnal thunderstorms. Precipitation was well below normal and temperatures above normal across most of the West in July. Record heat examples included El Paso having more than six consecutive weeks above 38 C (100°F), and Phoenix with 30 straight days over 43 C (110°F.) However, one surge of moisture brought areas of moderate to heavy precipitation in portions of the central and northern Rockies.

Mostly warmer than normal temperatures spread along the Gulf and East Coasts, with near to below normal temperatures across much of the Plains into the Midwest and Southeast. Above normal rainfall was observed across much of the southern and central Plains. Above normal rainfall was observed in much of Michigan, but mostly below normal rainfall was observed from the northern High Plains into the western Great Lakes and Upper Midwest. Parts of Texas into the Lower Mississippi Valley are nearing flash drought conditions, with accelerating drought in parts of south, west, and central Texas. Alaska had a cool and wet start to July, but warming temperatures, less frequent rainfall periods, and widespread lightning led to dozens of new fires in late July across the Interior, including several large wildfires. Tropical Storm Calvin brought heavy rainfall to the windward portions of the Big Island and Maui but left little precipitation across the leeward sides with drought generally increasing across the islands.

In the first half of July 2023, precipitation was above normal in northern, western, and central portions of Mexico, as well as the Yucatan Peninsula. The rainfall was associated with Hurricane Beatriz, low pressure that evolved into Hurricane Calvin, the establishment of the North American Monsoon, and the presence of five tropical waves. This rainfall helped to reduce some areas from severe to moderate drought mainly in the northern states. However, there was an increase in abnormally dry conditions to moderate drought across the coasts of the Gulf of Mexico, the Yucatan Peninsula, and western Mexico, while extreme drought remained unchanged over the central and western portions of the country. As of July 31, moderate to extreme drought covered 49% of the country, a more than 7% increase since June 30.

Fire Season Status:
The very large area burned in Canada continues to grow, although at a slower pace than earlier periods in the season. With rain helping reduce activity in some parts of the country, this growth will likely continue to accumulate at a moderate pace. As of August 8, area burned stood at 13.3 million hectares (about 33 million acres), nearly 7.5 times normal for the time of year. The number of fires reached about 5560 to date, about 132% of the 10-year average to date (4220 fires). This indicates many large fires have occurred and are still going, and some will likely continue through the summer and possibly into the winter of 2023-24. The Quebec 218 fire is the largest as of August 1, at slightly over 1.2 million hectares. Very large fires in the hundreds of thousands of hectares have also occurred in Alberta,

Saskatchewan, and the Northwest Territories. Provinces having over 1 million hectares total area burned so far this year are Quebec (over 5 million hectares), Alberta, Saskatchewan, British Columbia, and the Northwest Territories. The Quebec area burned to date exceeds the largest national total seasonal area burned for all of Canada for any year since 1995. Only Manitoba, Yukon, and Prince Edward Island are below normal area burned for the time of year.

Many new lightning fires started in British Columbia over the July 8-9 weekend and the few days afterwards, and serious fires started in southern regions later in July. A large fire spread from Washington state into the Osoyoos region during the latter days of the month. Other areas that remained very active at the beginning of August include Yukon, with numerous recent starts, the Northwest Territories, and northern Alberta and Saskatchewan. New fires are still occurring in other provinces, but in manageable numbers and sizes.

Smoke from western Canada fires drifted occasionally into the north-central US during July, with lesser amounts transported to various parts of the country. This brought another round of media inquiries from people, especially in the northern US, asking about Canadian fire activity and sources of the smoke.

Significant fire activity increased in July, especially during the latter half as the national preparedness level increased from two to three (scale one to five) on July 21. Much of the significant fire activity was in the Southwest Geographic Area, but the Northern Rockies and Northwest Geographic Areas have multiple long-duration incident management team wildfires on the landscape. Initial attack increased across much of the West throughout July, including in Southern Area late in the month, with new large wildfires also emerging. Alaska had its slowest season on record until the last week of July when dozens of new wildfires, including several large wildfires, ignited due to prolific lightning and moderately receptive fuels. In addition, numerous destructive fires emerged across Hawai'i August 7-9 due to a strong and dry wind event as Hurricane Dora passed to the south, with 55 fatalities reported as of this report. Year-to-date acres burned for the US is well below the 10-year average at 36%, with a below average number of fires as well, at about 90% of average.

So far this year 6,440 forest fires have been registered in 32 states resulting in 733,505 hectares burned. Grass and shrub layers represented 97% of the total, while timber was 3%. States with the highest number of fires were Jalisco, State of Mexico, Mexico City, Michoacán, Puebla, Chiapas, Durango, Chihuahua, Veracruz, and Oaxaca, representing nearly 82% of the total fires. States with the largest area burned were Jalisco, Nayarit, Durango, Oaxaca, Chiapas, Chihuahua, Guerrero, Sinaloa, Sonora, Michoacán, and Zacatecas, representing almost 84% of the national area burned. Out of the total fires, 895 (14%) occurred in fire-sensitive ecosystems, with a burned area of 66,912 hectares, which represents 9% of the total area burned.

Canada Discussion

August/September/October: The current drought level and forecast of warm temperatures and lack of widespread rainfall in many areas in August suggests the area indicated by elevated fire potential will still cover much of Canada. This region stretches from British Columbia and Yukon eastward to western and northern Quebec. Although this area is large, the expected intensity of fire activity appears less in the August seasonal forecast compared to previous forecasts, which may indicate new fire starts will be reduced from previous expectations, or fire sizes may remain smaller. Large existing fires will likely continue in many regions, although weather systems will likely continue reducing fire activity and new starts over the month.

In a typical September, temperatures begin to cool with shorter day lengths while soil and vegetation retain moisture better. Warm and dry conditions may continue in southern regions, and large fires burning through the summer in many Canadian regions can often continue through September and beyond. Natural Resources Canada's projection for September is for above normal severity across southern British Columbia, southern and eastern Alberta, Saskatchewan, Manitoba, western Ontario, and the central and eastern Northwest Territories. The northern part of this region will likely feature

large fires continuing to burn or smolder, but few new starts. With the drought level in the southern Prairies, the potential for grass fires increases as grass cures due to dryness or occasional freezing later in the month as overnight minimum temperatures drop.

Ongoing drought in much of Canada will likely allow many large fires to continue burning or smoldering into autumn, although the number of new starts will likely be normal for the time of year. With severe to exceptional drought scattered through the southern Prairie Provinces, the potential for grass fires could exist, although long-term forecasts suggest above normal precipitation could occur during October through at least some of this region, so no areas are expected to have above normal fire potential during October.

United States Discussion

August/September/October: Climate Prediction Center and Predictive Services monthly and seasonal outlooks depict likely above normal temperatures for the West, South, and East Coast into fall. Below normal precipitation is likely for the Southwest and likely into the broader Four Corners region as the North American Monsoon should continue to be below average this summer. Below normal precipitation is also forecast in portions of the Pacific Northwest, northern Rockies, and perhaps the western Great Lakes and Upper Midwest. Short-term below normal rainfall is likely for portions of the Southeast and Texas, but above normal rainfall is forecast from eastern portions of the Plains into the Southeast and Ohio Valley late summer into fall.

Above normal significant fire potential is expected across the Northwest, Idaho, northwest Nevada, and western and central Montana through August. Above normal potential will retreat into northwest Montana in September, persist across the Northwest, most of Idaho, northwest Nevada, and expand into far northern California during September. These areas are forecast to return to near normal potential in October, except along and west of the Cascades when the offshore wind season coincides with continued warmer and drier than normal conditions. Below normal significant fire potential should continue in the southern Sierra and San Bernardino Mountains through September.

Areas along and near the Mogollon Rim from Arizona into west-central New Mexico will have above normal significant fire potential through August due to the weaker than normal monsoon. Continued above normal temperatures and below normal rainfall leading to flash drought conditions will lead to above normal significant fire potential across wide swaths of Texas through the Lower Mississippi Valley into September. Above normal potential is also likely from central Georgia through the interior Carolinas in August.

Much of the western Great Lakes and Upper Midwest and Mississippi Valley are likely to have above normal significant fire potential through September with areas of above normal potential retained into October. Above normal potential is forecast for portions of the central Appalachians into Mid-Atlantic during October during their fall fire season window. Lee sides of Hawai'i are expected to have above normal potential through October, with above normal potential expanding eventually to much of the island chain by fall. Alaska is forecast to have near normal significant fire potential, except August will have above normal activity in the eastern Interior and Copper Basin.

Mexico Discussion

August/September/October: Precipitation probability will be above average in Chiapas (northwest), Tabasco, Veracruz (south), Oaxaca, Guerrero, Michoacán, Colima, Jalisco, Zacatecas (north), Coahuila (southwest), Nuevo León, and Tamaulipas (center). Below normal precipitation is forecast for Baja California, San Luis Potosí (southwest), and Tamaulipas (north) while equal chances of above or below normal precipitation is forecast for the rest of the country. Temperatures are forecast to be above normal in almost all of Mexico through October.

Due to the recent temperature, precipitation, and drought trend across the country, along with the precipitation and temperature forecast, the fire potential is expected to be below the normal through October across Mexico. However, some fire activity is not ruled out during August and September over Chihuahua, Coahuila, Nuevo León, and Tamaulipas due to the dry and warm conditions along the northern border of Mexico.

Additional Information

Additional and supplemental information for this outlook can be obtained at:

United States:
National Significant Wildland Fire Potential Outlook
http://www.predictiveservices.nifc.gov/outlooks/monthly_seasonal_outlook.pdf

Canada:
Canadian Wildland Fire Information System
http://cwfis.cfs.nrcan.gc.ca/home

Mexico:
Servicio Meteorológico Nacional
https://smn.conagua.gob.mx/es/observando-el-tiempo/monitoreo-atmosferico-ambiental

Outlook Objective

The North American Seasonal Fire Assessment and Outlook is a general discussion of conditions that will affect the occurrence of wildland fires across Canada, the United States, and Mexico. Wildland fire is a natural part of many ecosystems across North America. This document provides a broad assessment of those factors that will contribute to an increase or decrease of seasonal fire activity. The objective is to assist wildland fire managers prepare for the potential variations in a typical fire season. It is not intended as a prediction of where and when wildland fires will occur nor is it intended to suggest any area is safe from the hazards of wildfire.

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