North American Seasonal Fire Assessment and Outlook

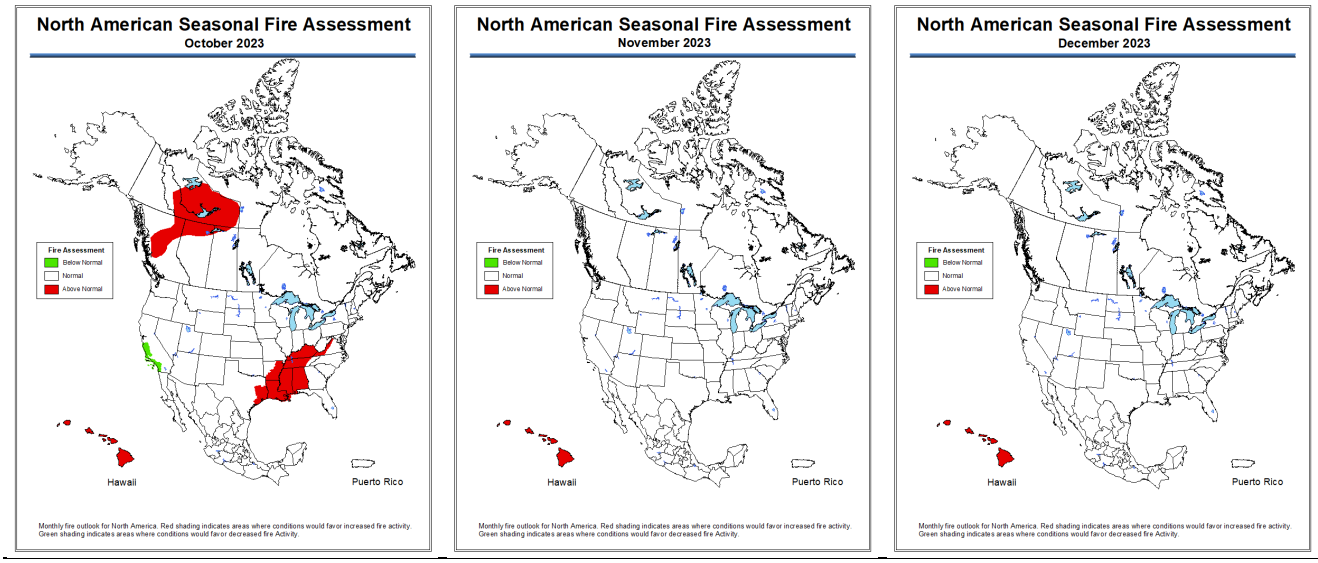
National Interagency Fire Center ● Natural Resources Canada ● Servicio Meteorológico Nacional
United States Canada Mexico

Outlook Period October through December 2023
Issued 13 October 2023

Executive Summary

Warm, dry, and occasionally windy weather continued in most of Canada through September, leading to bursts of rapid fire growth. Large blazes continued in northern British Columbia and Alberta, central Saskatchewan, the Northwest Territories, and on the Ontario and Quebec sides of James Bay. According to the Canadian Interagency Forest Fire Centre, burned area is about 18.4 million hectares as of early October and increasing slowly. The number of fires has continued rising as well, with contributions from late season lightning and pervasive drought in much of Canada. Mid-level forest floor moisture represented by the Duff Moisture Code indicates shrinking potential for lightning starts, but they are still possible in northeastern British Columbia, central and northern Alberta, the southern Northwest Territories, and central and western Saskatchewan. Smoke occasionally has been carried into various parts of Canada and the US.

Much of Canada recorded above normal temperatures through late September, with a few areas continuing to have well above normal warmth in early October. Record highs were recorded in many western regions over the Canadian Thanksgiving (October 7-9) weekend. The only area showing near normal values over the past month were extreme western coastal areas.



Monthly fire outlook for North America for October 2023 (left), November 2023 (middle), and December 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.*

Cloud cover has increased in parts of Canada over mid-summer, but inland precipitation amounts are light and not alleviating drought in many regions. Coastal rainfall has increased as expected at this time of year. Scattered pockets of near to above normal precipitation over the past month have been limited to southern and coastal British Columbia, the southern Rockies, and scattered locations along the 60th parallel in northern Alberta. Between September 24 and 26, significant rain fell in northeastern British Columbia, northwestern Alberta, and the Northwest Territories west and east of Great Slave Lake, while

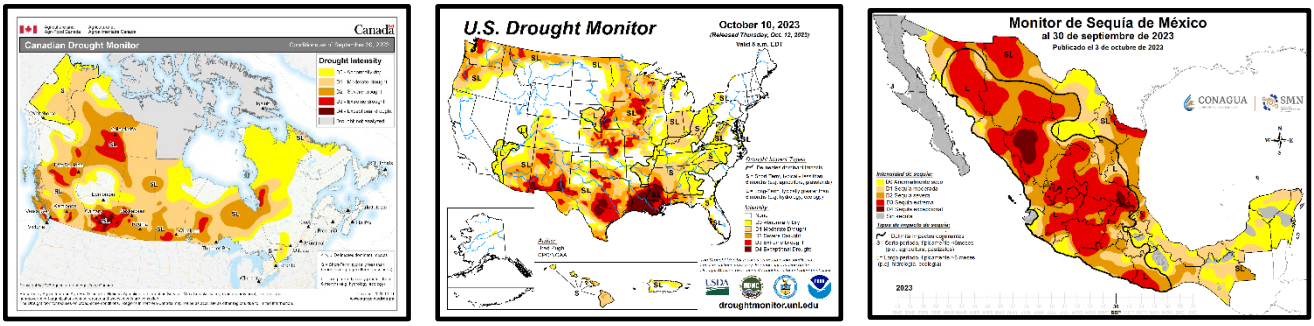
the South Slave Lake region stayed mostly dry. Near to above normal rainfall has also been noted parts of northwestern and southeastern Saskatchewan, southern and north central Manitoba, central portions of the Ontario/Quebec border, and central and eastern Quebec through the Atlantic Provinces. Inland areas on the island of Newfoundland remained drier than normal. Precipitation has been turning to snow in northern parts of the Territories and extreme northern Quebec, gradually shutting down fire weather calculations for the winter in these areas. This trend will gradually spread south over the next few weeks as temperatures continue cooling and snow cover accumulates in some areas.

Significant fire activity decreased through September, with the national preparedness level decreasing from four to three (scale one to five) September 6, and from three to two September 25. Significant fire activity decreased across all geographic areas during September into early October, although portions of the Southern Area continue to have elevated initial attack and large fire activity. Above normal significant fire potential is forecast from southeast Texas through the Lower Mississippi, Ohio, and Tennessee Valleys into Alabama and western Virginia during October. Above normal potential will continue across the Hawai'ian Islands, especially lee sides, through December as drought is likely to expand and intensify with stronger than normal trade winds. Below normal significant fire potential is forecast for coastal southern and central California in October before returning to normal in November. Offshore wind events are likely to be near to below normal in frequency for the West Coast, including California.

Fire activity continues at low levels in Mexico despite below-normal rainfall in the last quarter, which contributed to an increase of the drought area across the country. Several weather systems have affected the country, but strong high pressure aloft led to a warm and dry conditions. The climate outlook for October-November-December remains warm with mixed precipitation signals. Through September 28, a total of 70,091 forest fires have occurred with 924,249 hectares burned. Fire potential is expected to remain near normal through December, which is typically at low levels this time of year.

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 the warmest sea surface temperature (SST) anomalies in the eastern equatorial Pacific Ocean. SSTs are consistent with a moderate El Niño, and atmosphere responses to El Niño are being observed. The Climate Prediction Center forecasts El Niño conditions continuing through winter into spring, with a chance of a strong El Niño still possible this fall and winter. 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:

Few areas in Canada are escaping drought. The largest expanse of minimal to no drought continues to lie between southern Ontario and the Atlantic Provinces, although small patches south and north of Lake Ontario are now showing abnormally dry conditions. Embedded in the northern area are small

areas of moderate drought around and northeast of Toronto and between Ottawa and Algonquin Provincial Park. Drought in Labrador is less extensive than last month, but the eastern part is still abnormally dry, and moderate drought is affecting the northern coast, ending about halfway into Torngat Mountains National Park. A few small drought-free patches also lie in northwestern British Columbia, parts of southeastern and western Yukon, central Alberta, northeastern Manitoba and northwestern Ontario, and the far northwestern tip of Ungava Peninsula in northern Quebec.

Various levels of drought continue to affect the rest of Canada, with the most intense areas experiencing exceptional drought southeast of Kamloops, British Columbia, and southeast of Calgary, Alberta. A small patch of exceptional drought has appeared around Leader in southwestern Saskatchewan. Patches of extreme drought surround these areas and are also present in south coastal, central, and northeastern British Columbia, extreme northern Alberta and the southern Northwest Territories between Yellowknife and Fort Smith, southern Manitoba, and along the southeast portion of James Bay in Quebec. Information is not provided for Nunavut, but severe drought still likely crosses the Northwest Territories/Nunavut border southeast of Great Bear Lake, with lesser categories to the north and south of this band.

These conditions represent little change since the end of August. The exceptional drought region in southern Alberta expanded and the small area east of this region in southwestern Saskatchewan has transitioned from extreme to exceptional drought. Extreme drought has expanded in the southern Northwest Territories and adjacent regions in northern Alberta, and abnormally dry conditions have appeared across northern Manitoba while moderate drought has developed in the entire western region of that province. The abnormally dry and moderate drought patches around Lake Ontario are new, while levels have improved slightly in northern Ontario north of Lake Nipigon. The abnormally dry extent has shrunk in southern Labrador, but moderate drought has grown in northern Labrador.

In the US, near to well above normal temperatures and below normal rainfall continued from the Lower Mississippi Valley through the much of the southern Plains and into the Upper Mississippi Valley. Well below normal rainfall was also observed in the much of the Southeast through the Ohio Valley, and Great Lakes. However, a late September slow moving storm provided widespread wetting rain across much of the Upper/Mid-Mississippi Valley, southern Great Lakes, Ohio Valley, and portions of the Ozarks, ArkLaTex, central and east Texas, and Lower Mississippi Valley. Heavy rain fell along portions of the East Coast due to tropical cyclones or remnants of them leading to a mosaic of above and below normal rainfall, and a record setting rainfall was observed in New York City September 29. South and west Texas through the Four Corners mostly received below normal rainfall, while mostly above normal rainfall was observed in the Pacific Northwest, Great Basin, Desert Southwest, and northern Rockies onto the Plains. However, portions of the Intermountain West and much of central California had below normal precipitation.

Drought continued with some exacerbation in the Pacific Northwest before the late month atmospheric river event. While this will help drought conditions, moderate to extreme drought still spans large swaths of Oregon, Washington, north Idaho, and northern Montana. Drought also degraded by multiple classes in the Lower Mississippi Valley, with an introduction of drought in the Ohio Valley. Extreme to exceptional drought now spans much of east and central Texas through the Lower Mississippi Valley onto the central Gulf Coast. Drought also continued and intensified across much of the Southwest, especially southern Arizona and New Mexico.

Below normal precipitation was observed across Mexico during the latter half of September, despite the influence of a tropical wave and two cold fronts. Severe to extreme drought (D2 to D3) increased in the northwest, northeast, central, and southern Mexico. In addition, exceptional drought (D4) surged in parts of Durango, San Luis Potosí, Querétaro, and Hidalgo. As of September 30, moderate to exceptional drought covered nearly 75% of the country, an increase of almost 8% since September 15.

Fire Season Status:

During September, wind-driven fire growth led to increasing area burned in Canada between northern British Columbia and Manitoba, the Northwest Territories, and around James Bay. Notable events occurred between September 8-12 and September 21-23 in western Canada, and September 26-October 1 in the James Bay region while activity slowed in western Canada. Rainfall between September 24 and 26 has reduced but not eliminated fire activity in northeastern British Columbia, northern Alberta, and the Northwest Territories.

Lightning and human activity have led to new fire starts, which have totaled a little over 300 since the last North American Seasonal Forecast Assessment Outlook from early September, and a total of over 6500 to date. Area burned has increased by about 1 million hectares in the same period for a total of about 18.4 million hectares as of October 6. The area burned total will continue to fluctuate as improved fire mapping is completed. Smoke from the continued fire activity has at times drifted east over the Atlantic Ocean then circulated southeast across much of the eastern US, including Florida, with smoke from fires between east Texas and North Carolina contributing to concentrations.

Extensive cloud cover is obscuring some fire regions, so hotspot counts are smaller than in late September and the first few days of October, but active fire remains in many areas. With a large high pressure area and summerlike temperatures in western Canada, some fires have showed renewed activity over the Canadian Thanksgiving weekend (October 7-9).

The Canadian Interagency Forest Fire Centre‘s situation reporting frequency dropped from daily to weekly after September 15 and Canada’s National Preparedness Level dropped from four to three as of Wednesday, September 27, then to one as of October 6. Evacuation alerts and orders continued in September but at a much lower rate than earlier in the summer. A few examples are the British Columbia areas of Peachland on September 18, Clowhom Lake in the south coastal area, and the Cariboo region in the central portion of the province. International suppression crews have gradually left Canada with the season gradually slowing. South African crews departed from British Columbia about September 22, although some Mexican and American resources were still active into early October before departing.

Significant fire activity generally decreased during September as the national preparedness level dropped from four to three September 7 and from three to two September 25. Rainfall at the end of August and beginning of September across northern California and the northern Intermountain West caused a step down in fire activity, and a season ending rain event along and west of the Cascades from northwest California through western Washington occurred the last week of September. However, active large fires continued in western Washington and northwest California between the two rainfall events, with continued elevated initial attack and large fire activity in Southern Area. However, recent rainfall across much of central and east Texas into Louisiana and Oklahoma has resulted in a decrease in fire activity there. Year-to-date acres burned for the US remains well below the 10-year average at just under 40%, with a slightly below average number of fires as well, about 97% of average..

So far this year 7,091 forest fires have been registered in 32 states resulting in 924,549 hectares burned. Grass and brush represented 97% of the area burned, while timber was 3%. States with the highest number of fires were Jalisco, State of Mexico, Mexico City, Michoacán, Chihuahua, Chiapas, Puebla, Durango, Veracruz, and Guerrero, representing nearly 80% of the total fires. States with the largest area burned were Jalisco, Chihuahua, Nayarit, Durango, Guerrero, Sonora, Chiapas, Oaxaca, Sinaloa, and Tabasco, representing almost 83% of the national area burned. Of the total number of fires, 1,019 (14%) occurred in fire-sensitive ecosystems, with a burned area of 95,669 hectares, representing 10% of the total area burned.

Canada Discussion

October/November/December: A large high pressure area sitting over the western Hudson Bay area appears to dominate weather in much of Canada through mid-October. This will keep conditions warm and dry in the western half of the country and drive cooler air south into eastern Ontario and Quebec.

This will also help prolong the widespread drought affecting much of Canada, suggesting existing fire activity will continue in some regions, but with less ferocity than during summer. The most likely area for continued burning remains from British Columbia through the northern parts of Alberta and the southern Northwest Territories. New starts are possible here and in other regions, but at a much slower pace, with lightning activity absent in much of the drier areas.

A warm November is generally predicted for most of Canada. Dry conditions coupled with this warmth would increase the risk of grass fires in the southern Prairies, but normal to above normal precipitation may affect the southern Prairies and reduce this possibility. Precipitation accumulations may still be small at this time of year, but even small amounts would prevent much new surface fire with the short daylight period and cool temperatures. Existing large and deep-burning fires in forest areas may still show brief active periods or may continue smoldering beneath the surface.

December looks much like November, although precipitation in the west may affect different regions. This would not make much difference to the fire season, but continued warmth and a possible dry month in the southern Prairies may increase the risk of grass fire; however, this risk does not seem large enough to warrant depiction on graphic products.

United States Discussion

October/November/December: Climate Prediction Center and Predictive Services monthly and seasonal outlooks depict likely below normal precipitation and above normal temperatures for the northwestern US into winter. Above normal precipitation is likely from the southern Plains through the Southeast and possibly extending through the Southwest, Four Corners, and Mid-Atlantic during fall and into winter. Above normal temperatures are likely on the East and West Coasts through October. However, there is greater forecast uncertainty than typical for El Niño due to other climate, teleconnection, and ocean temperature patterns that do not often coincide with El Niño leading to a lack of previous events to predict from.

Above normal significant fire potential is forecast from southeast Texas through the Lower Mississippi, Ohio, and Tennessee Valleys into Alabama and western Virginia during October. Above normal potential could extend into November across these and adjacent areas, but there remains significant forecast uncertainty. Above normal potential will continue across the Hawai'ian Islands, especially lee sides, through December as drought is likely to expand and intensify with stronger than normal trade winds and a drier than normal wet season forecast. Below normal significant fire potential is forecast for coastal southern and central California in October before returning to normal in November. Offshore wind events are likely to be near to below normal in frequency for the West Coast, including California, and El Niño increases the chances of widespread precipitation in California before strong offshore wind events.

Mexico Discussion

October/November/December: Above normal precipitation is forecast in Nuevo León, Aguascalientes, Colima, Michoacán, Guanajuato, Guerrero, State of Mexico, Morelos, and Mexico City, as well as in parts of Coahuila, Tamaulipas, Zacatecas, San Luis Potosí, Jalisco, Oaxaca, and Chiapas. Below normal precipitation is expected in the Baja California Peninsula and Sonora, as well as parts of Chihuahua, Veracruz, Tabasco, and Campeche. Equal chances of above and below normal precipitation is forecast across the rest of the country. Temperatures are forecast to be above normal for almost all of Mexico through December.

Given the recent temperature, precipitation, and drought trend across the country, along with the precipitation and temperature forecast, fire potential is expected to be low (i.e., near normal) October through December, due to a mixed precipitation outlook.

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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