

North American Seasonal Fire Assessment and Outlook

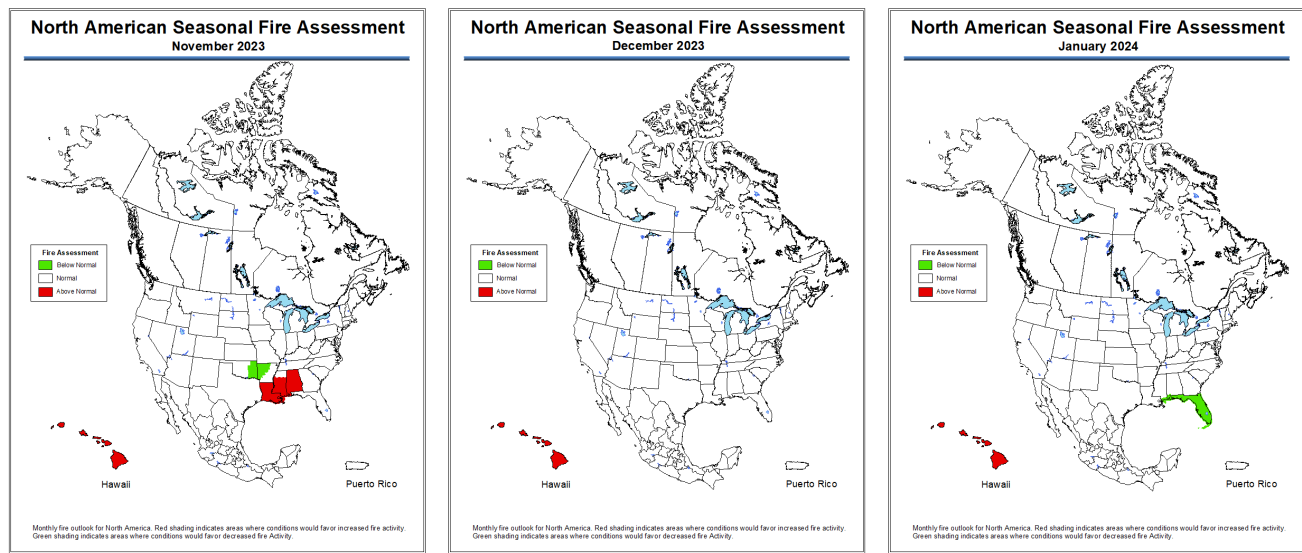
National Interagency Fire Center • Natural Resources Canada • Servicio Meteorológico Nacional
United States Canada Mexico

Outlook Period November 2023 through January 2024
Issued 14 November 2023

Executive Summary

Warm and dry weather continued in most of Canada through the first half of October, prolonging active fire in northern Alberta, the southern Northwest Territories, and parts of British Columbia. Fire activity was also present at the beginning of October around James Bay, although hotspots tapered off rapidly as wet weather moved through the region October 2-3. Above normal temperatures and continuing drought in late September and early October drove these late season fire events. Record highs were recorded in many western regions over the Canadian Thanksgiving weekend (October 7-9).

Cold air and snow invaded western Canada in late October, and this transition from summer to winter conditions helped impede 2023 fire activity. The weather pattern change also resulted in slightly below normal temperatures for the month of October in the southern Prairies, and near normal temperatures in central and northern regions, despite a warmer than normal first half of the month. Cool weather also invaded eastern Canada in late October and early November. Slightly above normal temperatures prevailed in regions east of the Ontario/Quebec border with slightly cooler than normal conditions recorded in Ontario.



Monthly fire outlook for North America for November 2023 (left), December 2023 (middle), and January 2024 (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.*

Although southern parts of British Columbia, Alberta, and Saskatchewan were wet during October, the amount of precipitation probably will not affect drought in a significant way. Snow that accumulated in southern Alberta has melted with a return to seasonal or above seasonal temperatures. Moist regions during October also include north central Alberta and a band from southeastern Manitoba to the Atlantic coast, passing north of the Great Lakes. Central Alberta remained dry in September and October, a reversal from its wet summer when most of western Canada remained dry.

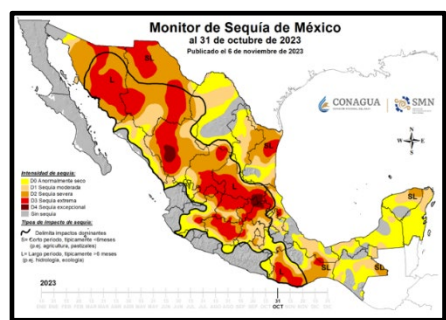
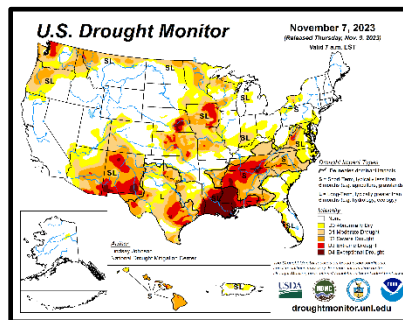
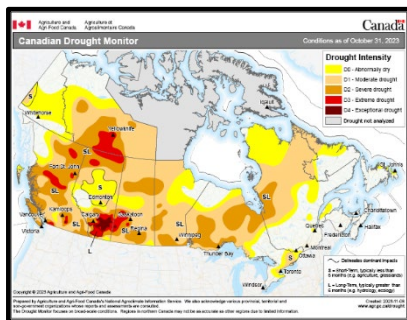
Cooler conditions in the central and eastern Prairies will help prolong snow cover in those regions, leaving southern British Columbia, southern Alberta, southwestern Saskatchewan, southern Ontario and Quebec, and most of the Atlantic Provinces snow-free in early November.

Significant fire activity generally decreased through October as the national preparedness level dropped from two to one October 13. However, very dry and occasionally windy conditions at the end of the month from California into the greater Four Corners area resulted in a brief uptick in activity across California, the Southwest, and southern Colorado. Moderate initial attack and periodic large fires continued in the Southern Area as well, mainly in the Deep South and southern Appalachians. Above normal significant fire potential is forecast across Hawai'i, Louisiana, much of Mississippi, and all of Alabama during November. Normal potential is forecast across the contiguous US in December, but above normal potential is forecast to continue in Hawai'i, where it will continue through January. Below normal potential is also likely from the central Gulf Coast through Florida in January as confidence is high for above normal precipitation this winter.

Fire activity remained at low levels with most fires scattered near the northern border of Mexico. While much of Mexico remained warmer and drier than normal during August and September, Pacific basin hurricanes contributed to diminishing drought areas across the western coast from Nayarit to Guerrero during October, including the rapid intensification of Hurricane Otis, which made landfall as a category five on October 25 near Acapulco. While generally warmer and drier than normal conditions are likely for much of Mexico, fire potential is expected to remain near normal from November to January, which is typically at low levels this time of year. Of note, with 984,659 hectares burned in 2023, a new record for annual burned area has been set for 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 the warmest sea surface temperature (SST) anomalies in the eastern equatorial Pacific Ocean. SSTs are consistent with a moderate to strong 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 strong El Niño likely this 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:

Some improvement in drought has occurred but much of Canada is still in various levels of dryness. A general reduction of drought has been noted across the Prairies and western parts of the Yukon/Northwest Territories, although drought is creeping back into central Alberta, where plentiful summer rain fell. A small area remains drought-free in the Jasper-Edson-Grande Cache region on the eastern slopes of the Rocky Mountains. A slight increase in short-term drought occurred in southern Ontario, with abnormally dry pockets forming in parts of Quebec and eastern Newfoundland. Moderate

Drought now affects northern Quebec and Labrador, including all of Torngat Mountains National Park. An increase in drought severity has also been noted in central British Columbia.

The driest areas, which are experiencing exceptional drought, continue southeast of Kamloops, British Columbia, southeast of Calgary, Alberta, and around Leader in southwestern Saskatchewan. Patches of extreme drought surround these areas and are also present in southern British Columbia roughly between Langley and Chilliwack, in central and northeastern British Columbia, extreme northern Alberta, and the southern Northwest Territories between Yellowknife and Fort Smith. Extreme drought in southern Manitoba has been reduced to severe, which is also present in patches in western and northern parts of the province. Extreme drought has also been reduced to severe around James Bay. Information is not provided for Nunavut, but moderate drought still likely crosses the Northwest Territories/Nunavut border southeast of Great Bear Lake, and likely extends southeast around Hudson Bay.

With these changes, the largest expanse with minimal or absent drought continues to lie between southern Ontario east of Lake Huron and the Atlantic Provinces. A few small drought-free patches also lie in northwestern British Columbia and extreme southern Yukon, west central Alberta, northeastern Manitoba and northwestern Ontario, and the far northwestern tip of Quebec's Ungava Peninsula.

In the US, extreme to exceptional drought continued across much of the Lower Mississippi Valley with a degradation of drought by multiple classes across the Tennessee Valley, and drought also expanded into much of the Ohio Valley and southern Appalachians. Drought continued across much of the Southwest, with intensification of drought mainly observed across central Arizona into northern New Mexico.

Drought continued in the Pacific Northwest into northern Idaho and northern Montana, but some modest improvement was observed, mainly across portions of western Oregon and northern Montana. The above normal rainfall across much of Texas into portions of Oklahoma the latter half of the month resulted in an improvement of drought, but drought continues to persist, with extreme to exceptional drought continuing over portions of central and north Texas.

The second half of October had above normal rainfall in southern Baja California, Guerrero, Chiapas, and the western coast of Mexico due to tropical cyclones Norma, Otis, and Pilar. Cold frontal passages through northern and eastern Mexico also resulted in areas of above normal precipitation. This helped decrease the extent of severe and extreme drought (D2 and D3) over Sinaloa, Durango, Zacatecas, Nayarit, Jalisco, Guanajuato, Michoacán, Guerrero, Veracruz, Tamaulipas, and Nuevo León. Regions with below normal precipitation maintained the severe and extreme drought (D2 and D3). Through October 31, 2023, moderate to exceptional drought area (D1 to D4) was 59% nationally, 7% lower than October 15.

Fire Season Status:

Fires remained active in parts of British Columbia and northern Alberta during the first half of October, and in the southern Northwest Territories during the first few days of the month. Some fires were active around James Bay in Ontario and Quebec as October began, but hotspots disappeared quickly as adequate precipitation fell in that region during the month. Many hotspots on the Canadian Wildfire Information System (CWFIS) now likely represent agricultural or slash pile burning, with some wildfires likely generating a few heat signatures.

As of November 2, Canada has recorded 6623 fires burning a little over 18.4 million hectares. These numbers have been provided by the provinces and territories via the Canadian Interagency Forest Fire Centre (CIFFC). This number will be updated over the winter as improved mapping of large fires becomes available.

Fire weather index calculations have shut down in most of the Prairie Provinces with cold weather and snow over the last few days of October. Indices are also gradually shutting down in northern Ontario

and Quebec, although southern parts of these provinces and the Atlantic region have had mixed precipitation and warm-enough temperatures that snow cover has not remained. Snow in northern British Columbia is also accumulating, gradually ending fire weather calculations, although southern and coastal regions will continue calculating. This has created a large area from Yukon and the Northwest Territories, through northeastern British Columbia and the Prairie Provinces, and into western Ontario and northern Quebec where calculations have stopped.

A resurgence of warm weather in southern Alberta and southwestern Saskatchewan may result in calculations restarting in some regions as the late October snowfall has melted and significant precipitation is unlikely over the next few weeks.

Significant fire activity generally decreased again during October, with the national preparedness level dropping from two to one on October 13. Southern Area continued to have the most fire activity, including moderate initial attack and large fires, throughout the month. Early and late October precipitation events in the northwestern US continued to slow significant fire activity, with most large fires now contained. Periodic dry and windy conditions also increased fire activity in California, the Southwest, and southern Colorado onto the Plains. Year-to-date acres burned for the US remains well below the 10-year average at just over 38%, with a near average number of fires as well.

So far this year 7,228 forest fires have been registered in 32 states resulting in 984,659 hectares burned. The vegetation corresponding to herbaceous and shrub layers was 97%, 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 79% 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. Out of the total fires, 1,047 (14%) occurred in fire-sensitive ecosystems, with a burned area of 110,801 hectares, which represents 11% of the total area burned.

Canada Discussion

November/December/January: 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 in October in this region has reduced this possibility. A dry September and October in central Alberta has allowed return of short-term drought, but vegetation is likely moist or green enough from plentiful summer rainfall to minimize fire risk.

All models used in the North American Multi-Model Ensemble point to normal or above normal temperatures everywhere in Canada. Forecast precipitation amounts are high in eastern Canada with a dry or absent signal in western and central Canada. Dry areas could be at risk for grass fires in southern parts of western Canada if temperatures remain above normal and snow does not accumulate, but confidence is low enough that no regions will be depicted as having above normal activity.

Mixed temperature and precipitation signals make for a difficult January forecast. Continued warm and dry weather could increase the risk for grass fires in southwestern Canada but a high degree of uncertainty exists, so low confidence exists in predicting areas with potential fire activity.

United States Discussion

November/December/January: 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 into the winter, and possibly extending through the Southwest, Four Corners, and Mid-Atlantic for portions of the winter. The greatest chance for above normal precipitation is across the Southeast and much of Florida. Above normal temperatures are likely across much of the West into the

southern Plains and Southeast in November. Above normal temperatures are forecast for the winter across much of the northern half of the US, with near normal temperatures likely across the southern Plains into portions of the Southeast. 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 across Hawai'i, Louisiana, Alabama, and much of Mississippi during November. Above normal potential will continue across the Hawai'ian Islands through January due to periods of enhanced trade winds with ongoing drought. However, the rest of the US is forecast to have near normal significant fire potential in December. Portions of the Great Basin, Southwest, and southern and central High Plains could see brief increases of fire potential during dry and windy episodes into winter. Below normal potential is likely from the central Gulf Coast through Florida in January as confidence is high for above normal precipitation this winter due to the ongoing El Niño. The pattern switch for Southern Area is likely to happen during December and perhaps late November.

Mexico Discussion

November/December/January: According to the IRI Seasonal Climate Forecast, the probability of precipitation will be above normal for the outlook period in Nuevo León, Aguascalientes, Colima, Michoacán, Guanajuato, Guerrero, State of Mexico, Morelos and Mexico City, also in parts of Coahuila, Tamaulipas, Zacatecas, San Luis Potosí, Jalisco, Oaxaca, and Chiapas. Precipitation will likely be below the normal in Baja California, Sonora, and parts of Chihuahua, Veracruz, Tabasco, and Campeche. Above normal temperatures are likely to continue for most of Mexico except for possibly in portions of western and northwest Mexico. Given the recent temperature, precipitation, and drought trends across the country, along with the precipitation and temperature forecast, typical wildfire potential is expected for Mexico from November 2023 to January 2024, with warmer than normal conditions and an increasingly drier pattern.

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.

Acknowledgements

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