

North American Seasonal Fire Assessment and Outlook

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

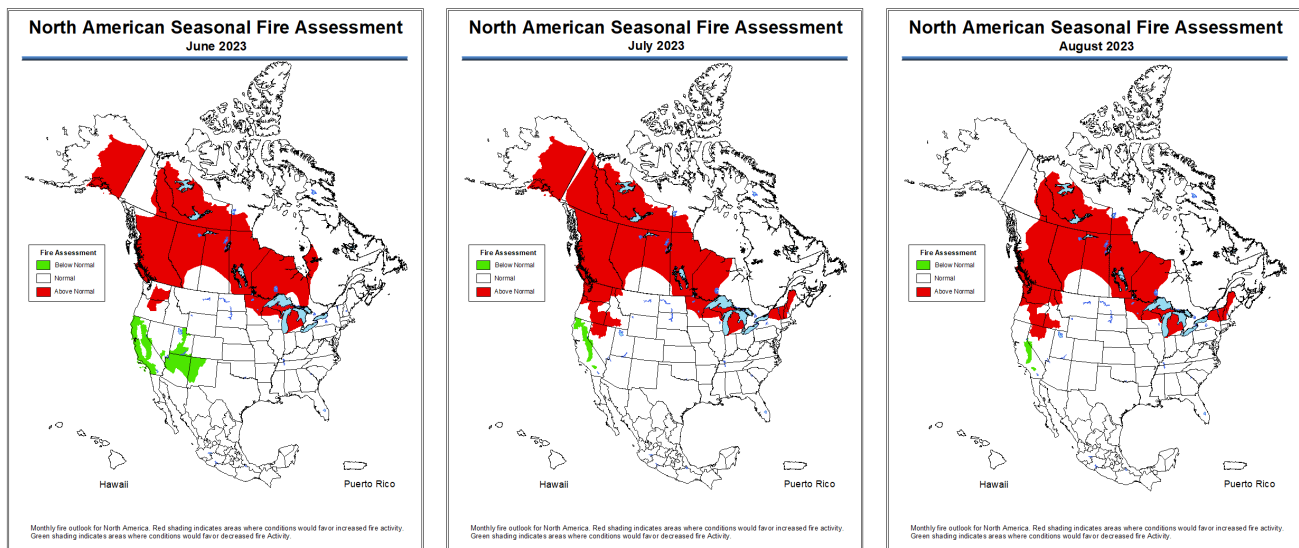
Outlook Period June through August 2023

Issued 13 June 2023

Executive Summary

An unprecedented start to the wildfire season in Canada continues, with numerous large wildfires in almost every province. A persistent upper ridge wandered back and forth across Canada in May and early June. Westward movement of such a feature is unusual in the interior of Canada during late spring and summer. This resulted in many record high temperatures in various regions of the country, as temperatures fluctuated between normal and above normal. On the subsident eastern side of these ridges, Arctic surface high pressure areas moved south regularly through May and early June. These bring very dry air and often create sharp pressure gradients, generating stronger winds around the periphery. Leading edges brought bands of showers or thunderstorms, while occasional weak troughs also generated thundershowers in most areas but little sustained rainfall. The exception has been Manitoba, where a stream of moisture has been very persistent during late spring, although the extreme north and southern third of that province remained dry until early June. The area burned increased in early June with a huge number of lightning starts in Ontario and Quebec.

The weather pattern during May and early June at times appeared typical for La Niña, which faded by mid-winter, and at other times of El Niño, which is officially developed in the past week. The march of Arctic air masses into Canada follows a La Niña pattern, but the heat is more typical of an El Niño spring.



Monthly fire outlook for North America for June 2023 (left), July 2023 (middle), and August 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.*

Significant fire activity only modestly increased across the US, with the Eastern Area observing a bigger increase and the Southern Area observing decreasing activity the exceptions. The driest fuels were in portions of the Great Lakes, with portions of the Northwest and Idaho Panhandle abnormally dry as well. Drought reduction continued across portions of the West in May, but drought continues across

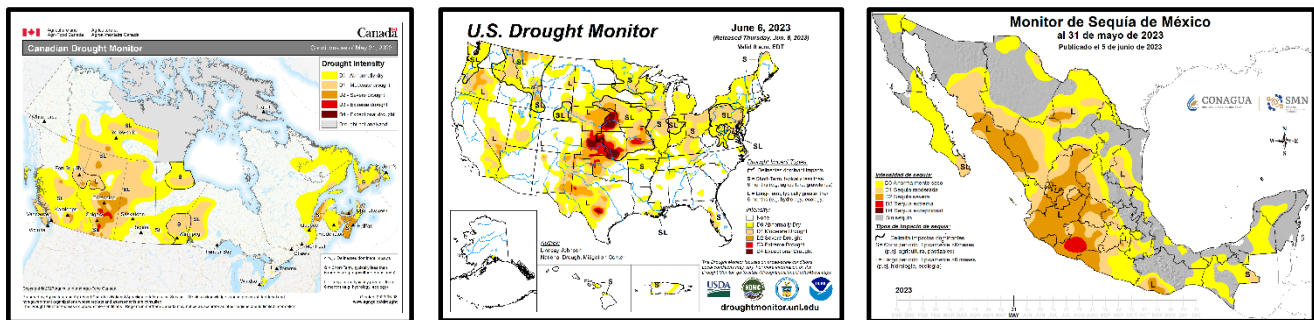
much of the central and southern Plains, while drought development was observed in the Great Lakes, Ohio Valley, and Mid-Atlantic.

Below normal significant fire potential is forecast across much of the southwestern US in June, with below normal potential forecast to continue across the Sierra and northwest California mountains in July, and southern Sierra in August. Above normal potential is forecast across portions of the Inland Northwest in June, expanding across much of Washington and portions of Oregon, Nevada, Idaho, and Montana in July and August. Above normal potential is forecast for much of the Alaskan Interior and south-central Alaska through July, with above normal potential in the northern Great Lakes in June expanding into the Adirondack Mountains of New York and northern New England for July and August.

Precipitation for March, April, and May was near normal across much of Mexico, except for the Yucatan Peninsula and Chiapas, where the rainfall was below normal. The maximum temperature for the last quarter was slightly above normal in most of the country, except for Baja California Peninsula, Sonora, Chihuahua, and some regions in Puebla and Guerrero, where values were below normal. Fire activity was below normal the last quarter across Mexico and activity continues to decrease as the wet season commences. The forecast for the next few months is that activity remains low from July to December. The climate outlook for June-July-August is warm, and moisture will remain below the normal range for June and August, and above the normal range for July.

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 has developed in the equatorial Pacific Ocean the past month, with rapid warming continuing in much of the ENSO region. Most forecast guidance depicts continued warming through summer, with El Niño forecast to continue through the summer, and the Climate Prediction Center forecasting a 95% chance of El Niño conditions continuing into winter. Other teleconnection patterns, such as the Madden Julian Oscillation (MJO), Pacific Decadal Oscillation, and Pacific-North American Pattern are likely to influence weather and climate during the outlook period. The MJO has been very active this spring, with activity forecast to continue through mid-June before weakening.

Drought:

A large expanse of abnormally dry to severe drought conditions remains in western Canada. The overall portion of western Canada displaying drought has not changed much since the end of February, with various drought categories still existing across most of British Columbia, Alberta, and Saskatchewan. An area of drought extends eastward across southern Manitoba into western Ontario has broadened and intensified and now extends across much of northern Manitoba to Hudson Bay. In central British Columbia, the reduction of drought was temporary as drought is now expanding northward into the center of the province. Two areas of extreme drought have developed in Alberta; one south of Edmonton and the other south of Calgary. A northern extension of the western Canadian drought area still reaches across the central Northwest Territories to the Nunavut border southeast of Great Bear Lake. In general, drought has intensified in much of this large region.

A second major drought area developed or expanded by the end of May in eastern Canada, reaching from the southern Ontario and Quebec border along the St Lawrence River area then broadening eastward to cover the Atlantic Provinces. While most of this area is abnormally dry, patches of moderate and severe drought are present. During the first few days of June, a substantial rain crossed Nova Scotia and has likely altered the makeup of this drought region. Also, ongoing dry conditions in western Quebec and eastern Ontario may result in drought status if current dry conditions continue well into June.

Drought improved across portions of the Great Basin and Oregon last month, with less than 20% of the West remaining in drought, and severe drought persisting in portions of central Oregon and northwest Montana. Drought also improved across much of the Plains and Florida, with the area of extreme to exceptional drought confined to portions of Kansas and Nebraska and small portions of Missouri, Oklahoma, and Texas. However, hot and dry conditions at the end of the month over the northeastern US resulted in drought development in portions of the Great Lakes, Ohio Valley, and Mid-Atlantic. Drought improvement is expected through summer across much of the Plains and northwest Montana, while drought development and intensification are likely through June in the southern Great Lakes and Ohio Valley preceding improvement in late summer.

In the second half of May 2023 above normal precipitation was observed over the northern and northeast regions of Mexico, due to the passage of three cold fronts and their interaction with the subtropical jet stream. Further, incoming moisture from both Atlantic and Pacific basins produced rainfall across most of Mexico. These conditions helped to reduce the drought from severe to moderate in Coahuila, Nuevo León, Durango, Zacatecas, San Luis Potosí, Morelos, and Tlaxcala. On the other hand, severe drought increased across Jalisco and Sinaloa, while moderate drought increased over Chiapas, Campeche, and Yucatán. As of May 31, moderate to extreme drought covered just over 33% of the country, which represents an 11% reduction since May 15.

Fire Season Status:

Fire activity increased at a record pace through May and June after an inauspicious start. This represents the earliest 3 million hectares or more has burned in a season. Activity began in Alberta in early May during a period featuring hot temperatures and incessant southeast winds that persisted for several days and nights. This pattern also affected northeastern British Columbia and western Saskatchewan, where large fires quickly ignited. Activity gradually moved north with large fires starting in northern Alberta and the Northwest Territories. While many of the early season blazes were human-caused, weak troughs allowed convective development, with lightning igniting additional fires during other periods in May. Quebec sustained 128 fire starts on June 3 alone. Most of these were likely lightning-caused, and this burst of activity once again accelerated the increase of area burned.

By late May, the total area burned passed the annual average for an entire season, and now is among the busiest fire seasons experienced in the past ten years even though several months of prime fire season lie ahead. The total area burned in early June is now well past the halfway mark to the previous record-holding year of 1989, when about 7.5 million hectares burned.

With likely over 100,000 people affected by evacuation orders so far this year, an estimated 27,643 people remain evacuated across the country due to wildland fires as of June 8. This figure includes 4,334 in Alberta, 1,165 in Saskatchewan, 1,039 in British Columbia, 405 in the Northwest Territories, 10,927 in Nova Scotia, and 9,773 in Quebec. Heavy rain recently crossed Nova Scotia and some or all evacuees have been allowed to return home, although some have lost their dwellings.

The National Preparedness Level (NPL) has been at 5 since May 11, the earliest NPL 5 on record. This quickly exhausted most available Canadian suppression resources, thus aid from Canadian Armed Forces and international partners has been heavily utilized. The Canadian government has approved aid requests from Alberta, Nova Scotia, and Quebec and has agreed to send Canadian Armed Forces troops. Suppression crews have been supplied by the United States, Australia, New Zealand, and South Africa. Additional crews are being arranged from Costa Rica and Mexico via existing agreements, and through temporary agreements with other countries including France, Portugal, and Spain.

Significant fire activity gradually decreased in the Southern Area, while the Eastern Area increased in activity due to the hot temperatures at the end of May. Much of the rest of the US observed a modest increase in fire activity with few significant fires. Currently, portions of the Great Lakes have historically dry fuels for early June, with fuels also abnormally dry in portions of the Northwest into the Idaho Panhandle. Through June 12, 20,206 fires have burned a total of 254,435 hectares (628,710 acres), 86% of average for fires and 52% of the average area burned.

So far this year 4,832 fires have occurred in 32 states resulting in 368,817 hectares burned. The vegetation corresponding to grass and brush was 95%, while timber was 5%. States with the greatest number of fires were Jalisco, Mexico City, Michoacán, Puebla, Chiapas, Chihuahua, State of Mexico, Guerrero, Sonora, and Michoacán representing nearly 83% of the total fires. States with the largest area burned were Jalisco, Nayarit, Durango, Oaxaca, Chiapas, Chihuahua, State of Mexico, Guerrero, Sonora, and Michoacán, representing almost 86% of the national area burned. Out of the total fires, 661 (14%) occurred in fire-sensitive ecosystems, with a burned area of 42,713 hectares, representing 12% of the total area burned.

Canada Discussion

June/July/August: Dry and warm conditions continue in most of Canada. Above normal fire potential will affect regions from British Columbia to western Quebec. Conditions are expected to remain warmest and driest in central Canada between Manitoba and western Quebec.

A developing El Niño may result in more regular rainfall and moderate temperatures, slowing the pace of the fire season during July. While temperatures are expected to remain above normal through much of Canada, regular precipitation may make its way across the country. This would leave dry conditions in Yukon and the Northwest Territories, which is typical for Canadian El Niño summer months. Fire activity could remain high in central and western Canada, with warm temperatures and ongoing drought that will be hard to eliminate in all regions, especially in the north where even wet months do not have impressive rainfall totals. The area in eastern Canada with high fire potential is truncated a bit, with the eastern extent expected to lie in the middle of Ontario. Uncertainty exists regarding the influence of El Niño on the large-scale pattern and if or when improved conditions materialize across Canada.

A typical late summer pattern is for precipitation to begin tapering off in western and central Canadian regions. Fire activity often increases, especially in far western Canada such as southern British Columbia. The area indicated by elevated fire potential is very similar to that of July, except a reduction in northwestern British Columbia.

United States Discussion

June/July/August: Above normal temperatures are forecast across much of the West, southern Plains, and Gulf and East Coasts through August. Below normal precipitation is forecast in the northwestern US and across the Southwest into the Four Corners this summer. Precipitation is forecast to be above normal from the Lower and Mid-Mississippi Valley to the East Coast this summer, but very dry conditions are likely to continue in the Great Lakes through June before improvement late in the summer. Alaska is forecast to have above normal temperatures through August, with below normal precipitation along the south coast and above normal precipitation for the North Slope.

Above normal significant fire potential is forecast across the northern Great Lakes in June, expanding into the Adirondack Mountains of New York and northern New England in July and August. Above normal potential is also forecast across the Columbia Basin and north-central Oregon in June before expanding across all of Washington, much of eastern Oregon, and portions of Montana, Idaho, and Nevada for July and August. Below normal potential is forecast across much of California, the Southwest, and higher elevations of the southern Great Basin. Below normal potential is forecast to

continue in the Sierra, northwest California, and San Bernadino Mountains in July, with only the southern Sierra and San Bernadino Mountains remaining below normal in August. For Alaska, above normal significant fire potential is forecast across the central and eastern Interior and south-central Alaska late June into July before returning to normal in August.

Mexico Discussion

June/July/August: Above normal precipitation is forecast in June across southern Mexico, with below normal precipitation forecast for much of central and northern Mexico. Temperatures will be above normal in north-central Mexico in June with near to below normal temperatures elsewhere. In July and August, temperatures will be above normal for central and eastern Mexico with near to below normal temperatures elsewhere. Precipitation is forecast to be above normal in northwest Mexico and below normal in the northeast for July and August, while southern Mexico is forecast to have above normal precipitation in July before trending below normal in August.

Given the recent temperature, precipitation, and drought trends across the country, along with the precipitation and temperature forecast, the fire potential is expected to be slightly below normal June through August in almost all 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.

Acknowledgements

Contributions to this document were made by:

Canada: Richard Carr, Natural Resources Canada
Ginny Marshall, Natural Resources Canada

United States: Nick Nauslar, Predictive Services, Bureau of Land Management
Jim Wallmann, Predictive Services, US Forest Service
Julie Osterkamp, GIS, Bureau of Land Management

Mexico: Martín Ibarra, Servicio Meteorológico Nacional
Dario Rodríguez, Servicio Meteorológico Nacional

Alejandro J. Garcia Jimenez, Servicio Meteorológico Nacional
Jose L. Solis Aguirre, Servicio Meteorológico Nacional