

North American Seasonal Fire Assessment and Outlook

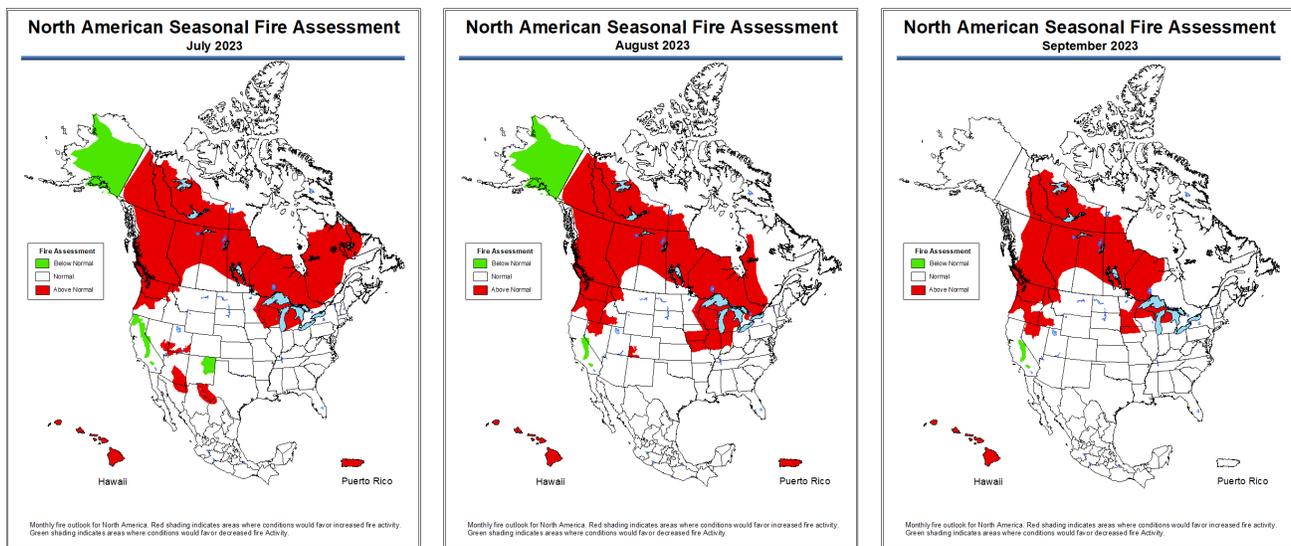
National Interagency Fire Center • Natural Resources Canada • Servicio Meteorológico Nacional
United States Canada Mexico

Outlook Period July through September 2023
Issued 12 July 2023

Executive Summary

Canada's very large area burned, among other considerations, have prompted Canadian officials to recognize 2023 as an unprecedented modern-era fire season. Natural Resources Canada considers the modern era in fire mapping as beginning in 1986, which marks the earliest records in the National Burned Area Composite. This data set, which is composed of polygons mapped from provincial, territorial, and Parks Canada fire management agencies and derivations from remote sensing imagery, is considered the most accurate burned area record spanning the recent few decades. As of late June 2023, the burned area surpassed the previous record for an entire year, which was set in 1989.

Warm and dry weather continued in most of Canada through June, although record high temperatures were more prevalent in eastern than western Canada. Temperatures were above normal in Manitoba, northwestern Ontario, and northern Quebec, with values on the east side of James Bay averaging 5°C over June means, which is substantial for late spring or summer months. Temperatures were also warm in the Prairies and Northwest Territories, with the May-June period the warmest on record in many regions west of Hudson Bay.



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

From mid-May until mid-June, an upper ridge moved east across Canada, then moved back westward across the country, then east again before finally flattening somewhat over the eastern half of the country. The final position of this ridge resulted in prolonged heat in eastern Canada during much of June, while conditions were more varied in western regions. While westward movement of ridges is often seen in the winter as Arctic air pushes southward, the movement of this ridge was notable since they rarely traverse the country this way during the summer.

With the heat, much of Canada was dry, although periodic bands of showers and thunderstorms passing through Manitoba kept fire weather and behavior indices rising and falling. In mid-June, a couple major storm systems intensified east of the Rockies and moved through central Alberta and northern Saskatchewan and Manitoba, keeping fire danger indices lower, with some recovery between major rainfall events. The accompanying cool weather did little to lower the mean monthly temperatures in these regions.

In the east, indices rose through most of June but rain in Quebec, the province with the greatest area burned thus far, became more prevalent near the end of the month, mainly south of a Lake Abitibi to Sept-Îles line. Using July 7 as a reference date, fires south of this line were generally under control or being held, while north of the line they were generally out of control. As July began, conditions remained very dry and volatile in northern Quebec, although much of the inland region east of James Bay and Hudson Bay is sparsely populated, except for hydroelectric projects and scattered communities along La Grande Rivière.

Significant fire activity remains low across the US and has only modestly increased across the US since early June. Fuels have been curing across much of the West in early July due to above normal temperatures, with the driest fuels in the Southwest and Northwest. Drought has developed or intensified across much of the Pacific Northwest, northern Rockies, Midwest, Great Lakes, and Mid-Atlantic, while drought continues across much of the central and southern Plains.

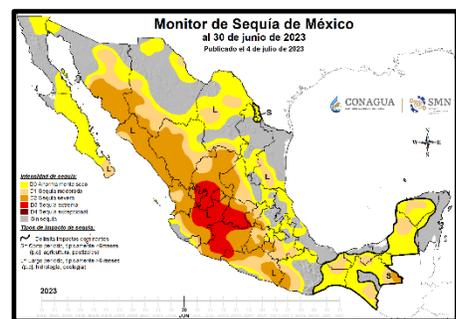
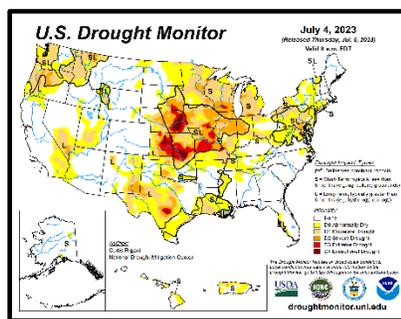
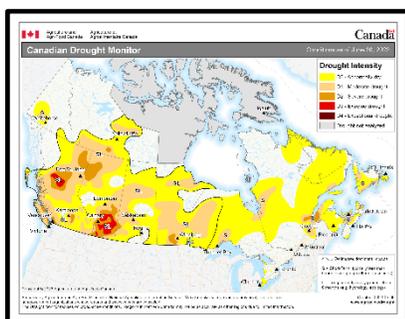
Above normal significant fire potential is forecast across much of Hawai'i, Northwest, Idaho Panhandle, and northwest Montana through September. Above normal potential is forecast for July in portions of the southern Great Basin, southeast Arizona, and west Texas, with above normal potential in far southwest Colorado in August. Above normal potential is also forecast for portions of northwest Nevada and southwest Idaho in August and September. Below normal potential is forecast for much of Alaska through August, and below normal potential is forecast for much of mountains California in July, continuing for the southern Sierra and San Bernardino Mountains into September.

Fire activity across Mexico this season has remained below normal and is decreasing due to the wet season. Fire activity is expected to remain at low levels from August to December, but some fires over Sonora, Chihuahua, and Coahuila are likely to continue during July due to the dry and warm conditions on the northern border of Mexico.

Precipitation for April and May was below normal across Mexico, except for the northeastern region where the rainfall was above normal. June was a critical month because precipitation was below normal across the country. The maximum temperature for the last quarter was slightly above normal in most of the country, except for the Baja California Peninsula where values were below normal, which contributed to diminishing the forest fire activity in the region.

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, and rapid warming continues in much of the ENSO region, especially in the central Pacific with continued anomalous warmth off the coast of South America. Above normal sea surface temperatures are observed in all ENSO regions. Most forecast guidance depicts continued warming through summer, with El Niño conditions forecast to continue into winter. The Climate Prediction Center forecasts a greater than 95% chance of El Niño conditions continuing into winter, with a 56% 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.

Drought:

Western Canada remains covered by a large expanse of abnormally dry to extreme drought. This area expanded eastward during June, and as of June 30, part of every province and territory had some level of drought. The most intense regions, with extreme drought, are in west-central British Columbia northwest of Prince George, and in southern Alberta. Patches of severe drought surround these pockets, and areas of severe drought are also present along British Columbia's south coast, straddling the northern British Columbia-Alberta border, in southern Manitoba, and southern Quebec near the mouth of the St. Lawrence River. Outside these areas, abnormally dry to moderate drought exists in a continuous swath between most of British Columbia and Manitoba, extending northeast of Yellowknife, Northwest Territories, and east across central Ontario and Quebec, then branching into all Atlantic Provinces including Labrador. Despite this, a reduction from severe drought has occurred during June in most of Nova Scotia, Prince Edward Island, and eastern New Brunswick.

Drought has increased since June across the US with nearly 27% of the country now in drought. Drought has developed and intensified across much of the Midwest, Great Lakes, and Mid-Atlantic over the past month, although recent rainfall the past week in the Great Lakes has mitigated fire potential at least temporarily. Drought has also developed across portions of the Northwest and northern Rockies. Drought continues across much of the central and southern Plains, while drought was removed from much of Florida. Drought improvement is expected through summer across much of the Plains into the Midwest and southern Great Lakes, while drought development and intensification are likely in the northern Great Lakes and west of the Cascades.

During first half of June, a precipitation deficit was observed in almost all of Mexico, except for some regions in the northeastern portion of the country and on the Yucatan Peninsula. These dry conditions were influenced by strong high pressure over Mexico, which inhibited thunderstorms and favored high temperatures across the country, generating the third heat wave of the year. Due to this heat and dryness, drought areas from May persisted into June, and extreme drought spread over the western portion of Mexico. In addition, moderate drought increased to severe in Guerrero, Oaxaca, and Chiapas. As of June 15, moderate to extreme drought covered nearly 35% of Mexico, slightly higher (1.47%) than May 31.

Fire Season Status:

Resources Canada considers modern accurate burned area records start in 1986, the earliest year in the National Burned Area Composite, which is likely the most comprehensive record of Canadian area burned. Statistics use Friday, July 7 as a reference point.

Area burned stood at 8.9 million hectares (about 22 million acres) by June 28, beating the previous modern era full year record of 7.6 million hectares set in 1989. The number of fires reached 3466. Compared to the 10-year averages for early July, fires were up about 25% and area burned was 1091% -- almost 11 times the normal, indicating many of the fires have been very large. Many of these will likely continue burning or smoldering through the summer and possibly into winter. Some provincial records have been set, such as British Columbia's largest recorded blaze, the Donnie Creek fire, at over 580,000 hectares. Quebec's fire number 218, also the largest in provincial records, has exceeded 1 million hectares. Very large fires in the hundreds of thousands of hectares have also occurred in Alberta, Saskatchewan, and the Northwest Territories. Provinces with over 1 million hectares total area burned

so far this year are Quebec (about 3.6 million hectares), Alberta, Saskatchewan, British Columbia, and the Northwest Territories. Only Manitoba and Yukon are below normal area burned for the time of year.

Not only has burned area made 2023 a remarkable year, but the number of people evacuated due to fire stood at about 155,000, higher than in any known past year, although the number of individual evacuation events is still lower than those of 2021. The number of evacuees includes people that have been moved more than once.

Canada has received suppression crews and/or equipment from 11 countries, representing six continents, through existing agreements or new temporary agreements drafted this year. Countries that have simultaneously supplied resources are the United States, Australia, New Zealand, South Africa, Chile, Costa Rica, Mexico, France, Spain, Portugal, the European Union, and South Korea. Discussions are under way with Brazil and the Dominican Republic. As of early July, about 3200 people from outside Canada were involved in suppression operations.

Significant fire activity gradually has gradually increased across the West through early July with a slight decrease across the Eastern Area the past week due to recent rainfall. Meanwhile, Alaska has had a very slow season to date with only a very modest increase in June. Currently, the driest fuels are in the Southwest and Northwest, with dry fuels over the Great Lakes moistening some due to rainfall the past two weeks. Through July 10, 25,630 fires have burned a total of 295,986 hectares (731,382 acres), 86% of average for fires and 28% of the average area burned.

So far this year 6,102 forest fires have occurred in 32 states resulting in 474,880 hectares burned. Grass and shrub layers represented 96% of the total, while timber was 4%. States with the greatest number of fires were Jalisco, State of Mexico, Mexico City, Michoacán, Puebla, Chiapas, Durango, Chihuahua, and Veracruz representing nearly 80% of the total fires. States with the largest area burned were Jalisco, Nayarit, Durango, Oaxaca, Chiapas, Chihuahua, State of Mexico, Guerrero, Sinaloa, Sonora, and Michoacán, representing almost 85% of the national area burned. Out of the total fires, 826 (13.5%) occurred in fire-sensitive ecosystems, with a burned area of 58,542 hectares representing 12% of the total area burned.

Canada Discussion

July/August/September: During July, temperatures are expected to remain above normal through much of Canada, and dry periods are expected to make regular appearances in different parts of the nation. Regions around Hudson Bay may stay the most consistently dry, while variable precipitation may make its way across other parts of the country. 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 usually have impressive rainfall totals. The July 1 seasonal wildfire potential forecast suggest much above normal conditions will continue between the western edge of the country and central Ontario, with less intense but still above normal conditions in southern British Columbia, and eastern Ontario through most of Quebec and western Labrador.

A typical late summer pattern features waning precipitation in western and central Canadian regions. Given rainfall has been light in much of the country, this could foretell increased activity in western Canada, such as southern British Columbia, where fires are usually most active in mid to late summer. The area indicated by elevated fire potential is very similar to that of July, except an increase in southern British Columbia, a reduction in northwestern British Columbia and Yukon, and the eastern edge pulling back into western Quebec near James and Hudson Bay. The segment between the eastern bound and a rough line between western Lake Superior and Hudson Bay remains with a slightly lower severity forecast – above normal but not in the “much above” category like regions west of the class division line in Ontario.

In a typical September, temperatures begin to cool with shorter day lengths, leading to better soil moisture retention. Autumn rainfall along the Pacific coast may increase later in the month. Despite this,

warm and dry conditions can continue in southern regions, and large fires burning through the summer can often continue through September and beyond. This trend is apparent in Natural Resources Canada's projection for September, where the region with much above normal forecast severity is restricted to southern British Columbia, south and central Alberta and Saskatchewan, and southern Manitoba. Above normal severity is still expected north and east of this region, extending into southern Yukon, most of the Northwest Territories, and western Ontario. This may not always translate to many new starts as lightning activity also wanes, but intense deep-burning fires may continue to be active in these regions.

United States Discussion

July/August/September: Above normal temperatures are forecast across much of the US through September, including Alaska, except for portions of the central and northern Plains, which are forecast to have equal chances of above or below normal temperatures. Precipitation is likely to be above normal across much of the Plains from north Texas into South Dakota, then westward toward Yellowstone National Park. Below normal precipitation through September is likely for portions of the Northwest and Great Lakes, as well as much of Arizona into the Four Corners due to a forecast weak North American Monsoon this summer.

Above normal significant fire potential is forecast across much of the Northwest into the Idaho Panhandle and northwest Montana as well as Hawai'i through September. Above normal potential is also forecast across portions of southern Arizona and the southern Great Basin in July, followed by above normal potential in southwest Colorado for August. Above normal potential is forecast on Puerto Rico and the US Virgin Islands through August, with above normal fire potential in northwest Nevada and southwest Idaho for August and September. Below normal potential is forecast across the California mountains and northeast New Mexico in July, with below normal potential persisting across the southern Sierra and San Bernardino Mountains into September. Below normal potential is also forecast for much of Alaska July and August.

Mexico Discussion

July/August/September: According to the seasonal climate forecasts, the probability of precipitation is expected to be below normal through September mainly in the central portion of Mexico; over San Luis Potosí, Aguascalientes, Michoacán, Guanajuato, Querétaro, Hidalgo, Tlaxcala, Puebla, State of Mexico, Mexico City, northern Guerrero, Oaxaca shores, center of Veracruz, and northeast of Zacatecas. However, many areas of Mexico are likely to have above normal precipitation in Mexico before trending below normal for August and September. Meanwhile the northwestern portion of the country is expected to be below normal, over Baja California, Sonora, Chihuahua, Sinaloa, Nayarit, and Durango. In the rest of the country none of the categories will dominate. Temperature probability is forecast to remain above normal in almost all the country.

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 September across most of the country. Some fire activity on the northern border of Mexico is likely to continue, due to the dry and warm conditions in the region.

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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