North American Seasonal Fire Assessment and Outlook

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

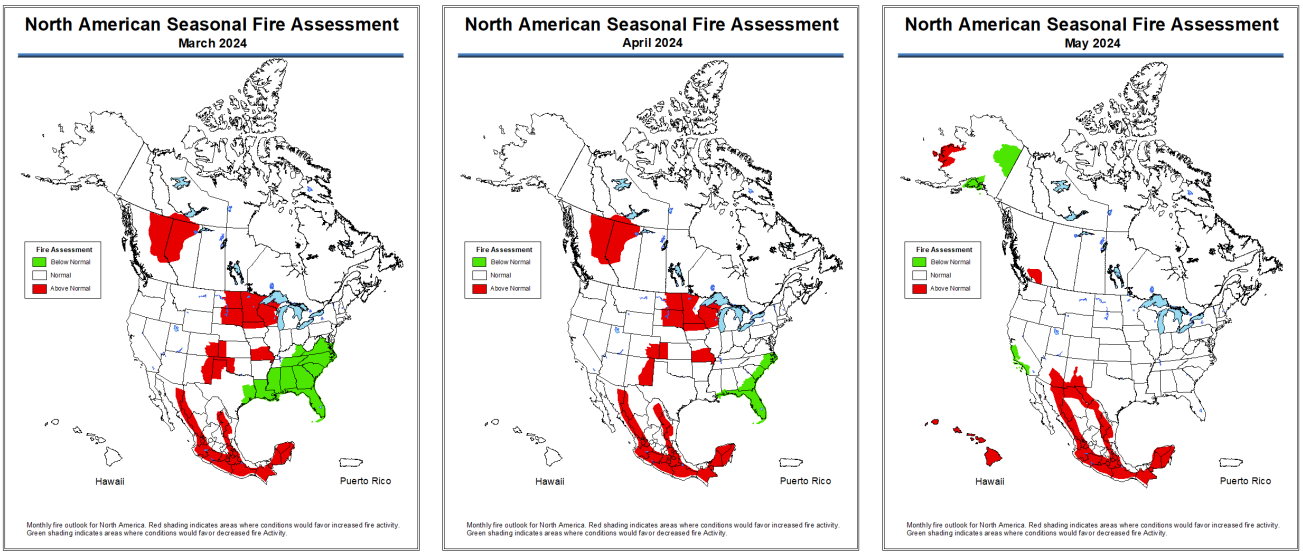
Outlook Period March through May 2024

Issued 14 March 2024

Executive Summary

Weather conditions varied widely in Canada during February and early March. Persistent high pressure areas from both the Pacific and the Arctic influenced weather, although the warmer influences were more dominant as temperatures were above normal in a large portion of the country. Western Canada had very mild temperatures in the first few days of February, followed by a few days slightly below normal. Some locations in the southern Northwest Territories were the warmest in Canada in mid-February. For example, Nahanni Butte (Yohin) hit 9.5 C on February 11, warmer than the chinook zone of southern Alberta where highs were about 5 C. The first half of February in southern Ontario was its warmest on record, and temperatures were also above normal through northern Ontario during this period. The only parts of Canada with slightly below normal temperatures during February were extreme southern Alberta and central and northwestern British Columbia.

Although an El Niño dominated the 2023-24 winter with expected warm and dry conditions in western Canada, some differences from usual El Niño winters were apparent. Less movement of Pacific storms inland into western Canada and the dominance of high pressure likely reduced wind speeds. Predominantly dry and warm conditions also affected much of eastern Canada, where cool and wet winter conditions often occur during El Niño winters, although some regions did receive heavy precipitation. An early February Atlantic storm dumped extreme snowfalls in eastern Nova Scotia with some locations receiving record 1- to 3-day totals.



Monthly fire outlook for North America for March 2024 (left), April 2024 (middle), and May 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.*

Cold and snow returned to western Canada during the last few days of February. One storm system brought heavy snowfall through central Alberta and west central Saskatchewan. Mixed precipitation fell in eastern Ontario, western Quebec, and Atlantic Canada with a strong low bringing thunderstorms,

rain, and snow. A second storm in early March dropped heavy snow from southern Alberta through western Ontario. Parts of Saskatchewan received 40 cm or more of snow, and freezing rain fell in parts of Manitoba and Ontario. These storms resulted in above normal precipitation between early February and early March in southern British Columbia, the southern Prairie Provinces, western Ontario, central Quebec, and much of Atlantic Canada.

The recent late winter storms have helped increase snowpack, although many regions still have below normal snow cover. Levels are normal or above normal in patchy areas of British Columbia, southern Alberta and Saskatchewan, northeastern Saskatchewan, southwestern and northern Manitoba, far northern Ontario, east of James Bay, and southward to the St Lawrence River east of Quebec City.

In the United States, fire activity significantly increased the latter half of February across portions of the Rocky Mountain, Eastern, and Southern Areas, with portions of the Northern Rockies Geographic Area observing an increase in activity in early March. Precipitation was generally above normal across much of the western US and below normal from the Mississippi Valley to the East Coast, with the driest conditions from the Mid and Upper Mississippi Valley to the Northeast. Temperatures were generally above normal for most of the US, except for portions of Florida, California, and Arizona. Well above normal temperatures, 6-10 C above normal, were observed across much of the Midwest in February.

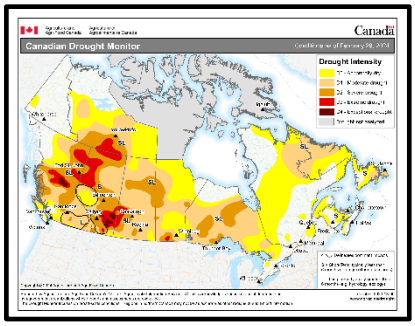
Most climate outlooks depict tendency for above normal temperatures across the northern half of the US, with near normal temperatures across the southern tier. Precipitation is likely to be below normal in the Northwest, northern Rockies and near the Rio Grande Valley, but above normal for much of the Lower/Mid-Mississippi Valley to the Mid-Atlantic and Southeast. Much of the Southern Area is forecast to have below normal significant fire potential in March, retreating to the northeast Gulf and Southeast Coasts in April. Above normal significant fire potential is forecast for portions of the central and southern High Plains in March and April, and for the Eastern Dakotas, Upper Midwest, and southern Missouri. Significant fire potential will increase to above normal in the lower elevations of the Southwest into West Texas in May, with above normal potential for the lee sides of Hawai'i and portions of southwest Alaska as well. Below normal fire potential is forecast for the central and southern California coasts in May, as well as portions of south-central and eastern Alaska.

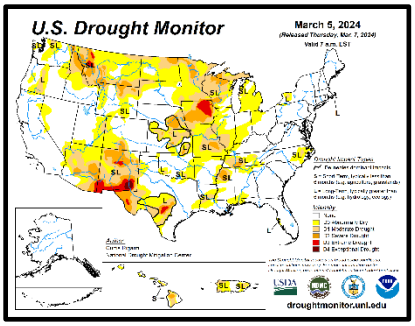
Fire activity has slowly increased across Mexico in February. Over the next three months, precipitation is expected to continue to be below normal across much of Mexico in March, with a transition to near normal conditions in April. May is expected to see above normal precipitation for the Gulf of Mexico coast. Above average maximum temperatures are forecasted the next three months in most of the country, with the highest anomalies over central and southern Mexico. Fire activity for this three month period will continue to increase with above normal fire potential in all Mexican Mountain ranges.

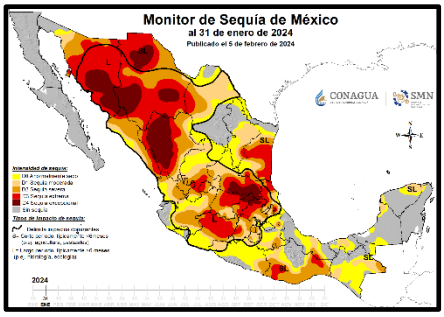
Critical Factors

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

El Niño-Southern Oscillation (ENSO):
El Niño continues in the equatorial Pacific Ocean, with the warmest sea surface temperature (SST) anomalies in the central Pacific Ocean. El Niño has also been weakening the past two months, with the active Madden Julian Oscillation (MJO) of January weakening over the past month as well. A rapid weakening of the current El Niño is forecast to continue through March, with the Climate Prediction Center (CPC) forecasting neutral El Niño-Southern Oscillation (ENSO) conditions for the April – June period. A rapid transition to La Niña is becoming increasingly likely by early summer, with CPC forecasting a 55% of La Niña for the June – August period. The MJO, Pacific Decadal Oscillation, Pacific-North American Pattern, and Arctic Oscillation are likely to influence weather and climate during the outlook period, but the transition from El Niño to ENSO neutral conditions will be the main driver.







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

Drought:
Drought has changed little since the end of January, which is unsurprising given winter precipitation is usually light except along or near the Pacific and Atlantic coasts and in mountainous terrain. Two large expanses with minimal or absent drought were present at the end of February. One area continues to lie between Lake Huron and the Atlantic Provinces. A second large drought-free area extends from northwestern British Columbia through Yukon and the northern portion of the Northwest Territories, but a small area north of the St. Elias Mountains is still abnormally dry. Drought-free patches cover coastal British Columbia north and west of Vancouver, extreme northeastern Manitoba, far northern Ontario, and the western portion of Quebec's Ungava Peninsula.

The remainder of Canada remains in some level of drought, with the most intense areas of exceptional drought still present in a broken area east of Calgary, and west of Prince George in central British Columbia. Extreme drought surrounds these regions, extending from south central Alberta into southwestern Saskatchewan, and in a broken band from central British Columbia to the Great Slave Lake area in the Northwest Territories. The remainder of the country consists of areas of abnormally dry conditions through severe drought.

Temperatures were well above normal across the central and northern Plains into the Midwestern US for February into early March, with the most extreme anomalies of greater than 8 C across portions of North Dakota and Minnesota. Above normal temperatures also extended across much of the rest of the US, while temperatures were near normal over much of California, the Great Basin, Southwest, and portions of the Southeast. Precipitation was below normal across much of the northern Plains through the Midwest into the Northeast and Mid-Atlantic. Below normal precipitation was also observed across portions of west Texas, western Oregon, Washington, and northern Idaho. Above normal precipitation fell across much of California, the Great Basin, Southwest, central Rockies, Montana, and the central High Plains. Interior Alaska recorded below normal precipitation for February, while portions of southwest Alaska were wetter than normal. Hawai'i precipitation was well below normal, with much of Kauai and the Big Island receiving less than 25% of normal precipitation for February.

A strong westerly wind event coupled with low relative humidity February 25-26 triggered a fire outbreak across the central and southern Plains from Nebraska to Texas. Several new and significant fires began during this outbreak including the Betty's Way Fire near North Platte, Nebraska, and the Smokehouse Creek and Windy Deuce Fires in the Texas Panhandle.

Drought improved in much of the Lower Mississippi and Tennessee Valleys, including areas of drought removal. Drought also improved across portions of the Southwest and eastern Montana. However, drought worsened in northern Idaho and Montana west of the Continental Divide, with drought developing and intensifying across the Upper Mississippi Valley and northern Great Lakes. An area of abnormally dry conditions has developed across eastern North Carolina due to dry conditions the past two months, but precipitation returned in early March. California remains drought free, but drought persists on the Big Island of Hawai'i with much of Hawai'i abnormally dry as well. Drought persists across Puerto Rico and the US Virgin Islands but has improved the past month.

During the first half of February 2024, three cold fronts moved over Mexico, interacting with the polar and subtropical jet streams. These resulted in the development of three winter storms, and strong prevailing winds from the north were also observed over the coast of the Gulf of Mexico. These events generated above normal precipitation in portions of western, northern, and north-central Mexico, resulting in a reduction of exceptional drought in Durango, extreme drought in Sonora, and abnormally dry conditions in Zacatecas, San Luis Potosí, Jalisco, and Colima.

High pressure aloft dominated central Mexico, which inhibited convection and favored warm and dry conditions. This system contributed to increased drought conditions in Coahuila, Nuevo León, Chiapas, and Tabasco. As of February 15, 2024, the areas of moderate to exceptional drought covered 59.86% of Mexico, slightly lower (0.59%) than on January 31.

Fire Season Status:
Fires from 2023 continue to be monitored in Alberta, British Columbia, and possibly the Northwest Territories and other jurisdictions. An occasional new fire has been reported, but impacts have been minimal. Fire Weather Index calculations remain off in the majority of Canada, although calculations remained active in early February in a few snow-free pockets of southern Alberta, southern British Columbia, and southern parts of the eastern provinces. With a period of cold and snow invading the Prairies in mid-February, the Alberta calculations returned to their winter dormancy.

Fire activity remained at low levels across the US at the beginning of February, but activity increased significantly across portions of the Rocky Mountain, Eastern, and Southern Areas the latter half of the month into early March. Portions of the Northern Rockies Geographic Area also saw an increase in fire activity in early March. The Eastern and Southern Geographic Areas increased to preparedness level 2 (on a scale of 1-5) on February 26 due to increased fire activity, with Southern Area increasing to preparedness level 3 on February 28, as dozens of large fires burned in the Southern Area at the end of February. Year-to-date annual acres burned for the US is well above the 10-year average as of March 8, near 775% of normal, but with a below average number of fires, just above 84%.

So far this year 307 forest fires have been recorded in 21 Mexican states resulting in 12,530 hectares burned. The vegetation corresponding to grass and brush was 99%, while timber was only 1%. States with the highest number of wildfires were Morelos, State of Mexico, Veracruz, Chiapas, Puebla, Tlaxcala, Michoacán, Jalisco, Hidalgo, and Oaxaca representing nearly 79% of the total fires. States with the largest area burned were Chiapas, Chihuahua, Oaxaca, Jalisco, Michoacán, State of Mexico, Tlaxcala, Puebla, Morelos, and Durango representing almost 97% of the national area burned. Out of the total fires, 81 (26%) occurred in fire-sensitive ecosystems, with a burned area of 4,658 hectares, which represents 37% of the total area burned.

Canada Discussion

March/April/May: Deep-burning fires from 2023 continue smoldering, even with snow cover, and an occasional new fire may still be reported through March. Smoldering fires in northeastern British Columbia and northwestern Alberta will continue, and above normal fire severity is expected in these regions. While most of this activity is sub-surface and in many regions below snow cover, the number of holdover fires is much higher than in most winters. A few new fires in these regions have been reported in 2024, but with little impact thus far. March will likely bring variable temperature and precipitation events, so activity, mostly smoldering, will likely be confined to these areas. The smoldering for March will continue into April. Some of this activity will likely begin to affect surface fuels with loss of snow cover. However, an expansion of the area is not forecast as climate models point to a variety of temperature and precipitation conditions in April.

Precipitation in May could be plentiful enough to keep new fire to normal levels in most areas. Probabilistic precipitation forecasts for the March-May period are evenly split between below normal, normal, and above normal in almost all regions although confidence is low to moderate. Forecast warm

temperatures across Canada may negate a slight increase in precipitation. The May area, which is solely created from the March 1 Canadian Wildland Fire Information System seasonal forecast, shows increased fire risk in the southern interior of British Columbia. This is one area where snow cover has been below normal over the winter.

United States Discussion

March/April/May: Climate Prediction Center and Predictive Services March outlooks depict above normal temperatures are likely for much of the northern half of the US and Alaska, while temperatures are likely to be near to below normal across the Southwest into the Southeast. Precipitation is likely to be above normal across much of southern California into the Great Basin and central Plains, while below normal precipitation is likely for portions of the Great Lakes and southwest Texas. By mid to late spring, above normal temperatures are likely across much of the US, except for portions of the northern and central Plains where equal chances of below or above normal temperatures are forecast. Below normal precipitation will continue across portions of the Northwest through late spring, with below normal precipitation likely to encompass much of Texas, New Mexico, and eastern Arizona.

Much of the Southern Area is forecast to have below normal significant fire potential from southeast Texas to the Southeast Coast in March, persisting across the northeast Gulf and Southeast Coasts in April. Above normal significant fire potential is forecast for portions of the eastern Dakotas, Upper Midwest, southern Missouri, and central and southern High Plains. These areas will return to normal potential in May, but potential will increase to above normal in the lower elevations of the Southwest into West Texas in May and June. Above normal potential is forecast for the lee sides of Hawai'i in May, as well as portions of southwest Alaska near the Yukon Delta. The central and southern California coast will have below normal potential in May, with portions of south-central and eastern Interior Alaska, specifically the Upper Yukon District and Kenai Peninsula, also forecast to have below normal potential in May.

Mexico Discussion

March/April/May: During the past month, rainfall was above normal mainly in central and northern Mexico, resulting in improved drought conditions here. While the drought area is highest recorded since the first half of December 2023, the area of exceptional drought has remained practically unchanged. For the next three months, precipitation is expected to remain below normal throughout March and April, beginning to improve in May with above normal anomalies along the Gulf of Mexico coast. Temperatures are expected to remain above normal across most of the country through May.

Given the current conditions of temperature, precipitation, and drought, along with the weather and climate forecast, a dry and warm quarter is expected for March through May. Forest fire activity for this period will increase with above normal fire potential forecast in all Mexican mountain ranges through May.

Additional Information

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

United States:
National Significant Wildland Fire Potential Outlook
https://www.nifc.gov/nicc-files/predictive/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:

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Ginny Marshall, Natural Resources Canada

United States: Jim Wallmann, Predictive Services, US Forest Service
Julie Osterkamp, GIS, Bureau of Land Management
Steve Larrabee, Fire Analyst, Bureau of Indian Affairs

Mexico: Martín Ibarra Ochoa, Servicio Meteorológico Nacional
Darío Rodríguez Rangel, Servicio Meteorológico Nacional
Alejandro J. García Jimenéz, Servicio Meteorológico Nacional
Roberto Rodríguez, Servicio Meteorológico Nacional
José L. Solís Aguirre, Servicio Meteorológico Nacional