

North American Seasonal Fire Assessment and Outlook

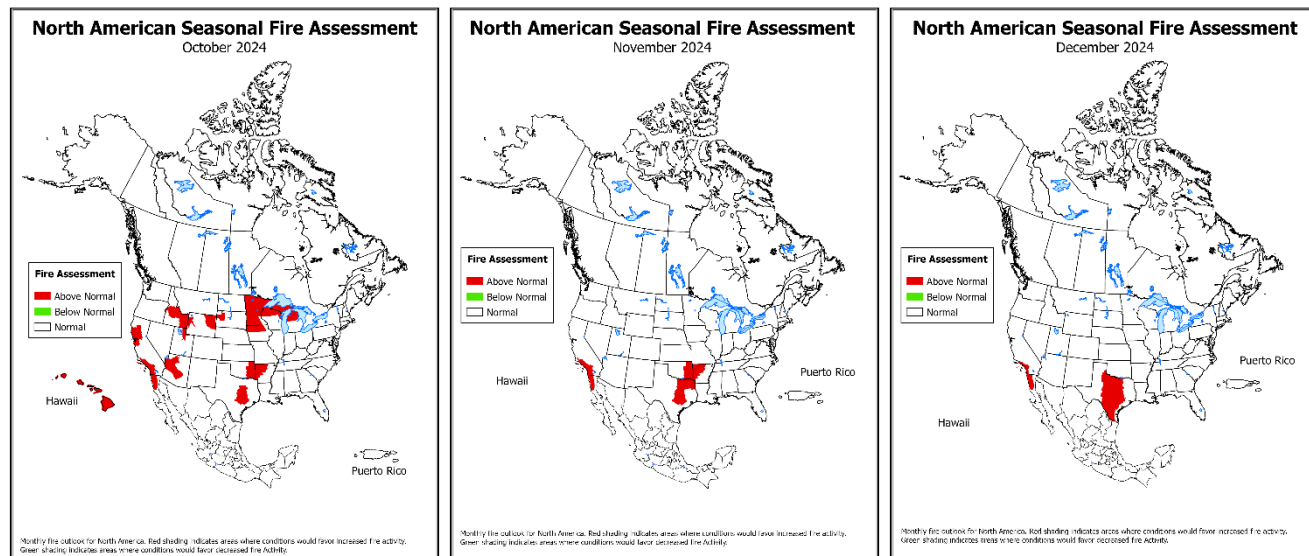
National Interagency Fire Center • Natural Resources Canada • Servicio Meteorológico Nacional
United States Canada Mexico

Outlook Period October through December 2024
Issued 15 October 2024

Executive Summary

Hot weather the first week of September in western Canada shifted eastward the second week as upper-level troughs moved inland from the Pacific Ocean. While cooling to normal values in western Canada, temperatures stayed slightly above normal in many regions. The highest anomalies occurred north of the grasslands/boreal forest juncture, and in part of the southern interior of British Columbia.

Heavy rainfall occurred along the southern Alberta/Saskatchewan border, a sliver of southern Manitoba, a chunk of northern Manitoba, and in west central British Columbia. Dry conditions continued from southern British Columbia into west central and northeastern Alberta, and in spotty areas of central Saskatchewan and Manitoba. Strong thunderstorms occurred in central Canada due to systems moving north out of the USA, giving heavy downpours, hail, and tornado watches or warnings for several days in mid-September. While thunderstorms are not rare in September, the strength of these events appears unusual for the time of year.



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

In eastern Canada, a few cool and wet days in early September transitioned into an extended warm and dry period under a persistent high-pressure area. This trend encompassed Ontario, Quebec, and the Atlantic region, with above normal temperatures everywhere except portions of Prince Edward Island, central and western Nova Scotia, and southwestern Newfoundland. The greatest temperature anomalies occurred in northern regions; up to 5 C in northwestern Ontario. Quebec's warmest anomalies occurred north of a rough Val d'Or – Saguenay line. A few record highs were set in eastern regions at various times. Mid-month records in northern regions were noteworthy for the latitude. For example, Kuujuaq, close to the coast of Ungava Bay, exceeded 15 C for nine days straight, setting a

record for extended warmth at this time of year. Along eastern Hudson Bay, overnight lows of 18 C on September 20-21 occurred as far north as Kuujuarapik.

Rainfall was scarce in many eastern regions, producing a mottled pattern in Ontario, with dry conditions in parts of the northwest, around the Great Lakes, and in the south, a turnaround from the extreme rainfall earlier in the summer. Thunder Bay only got 8% of its usual September rainfall based on the 1971-2000 normal. The only regions with above normal September rainfall were around Red Lake and in spots along the central and northern Ontario/Quebec border. This latter band of enhanced rainfall continued in a narrowing line northeast through Quebec and into northern Labrador. Monthly totals in the band were close to normal, with some tiny pockets in far west and east of this region having above normal amounts.

In the Atlantic region, heavy rain fell September 6-9 in southern parts of the Atlantic region, and a second system near the end of the month produced modest rainfall, but not enough to produce a wetter than normal month. September was the driest on record in L'Anse-au-Loup, near the extreme southeast Quebec/Labrador border, the second driest in Happy Valley/Goose Bay, and the third driest in Corner Brook. Western New Brunswick recorded less than 25% of its normal September rainfall, while heavier amounts fell to the east, but only the eastern coastal regions reached normal amounts. Most of Prince Edward Island, and Nova Scotia except the southeast, was also dry.

Atlantic Canada's dry airmass resulted in minimal lightning counts in southern regions, continuing a trend towards a record low annual count, while Labrador, in the north, had high lightning activity. Labrador had 250% of normal annual lightning, the second highest annual count to date, and 117% of the monthly normal which is the 8th highest September count.

Temperatures were generally above normal for much of the US for September into the first half of October but were near normal in the Southeast. Precipitation in the western US in September was below normal in much of southern California into the Southwest, west of the Divide, central/southern Great Basin, and near and west of the Cascades. Precipitation was also below normal in much of Wyoming into the Great Lakes and Northeast. Precipitation was above normal in portions of western Nevada and southeast Oregon into central Montana. Precipitation was well above normal in the Southeast, especially Georgia into the southern Appalachians, primarily due to Hurricane Helene. In early October, well below normal precipitation occurred with anomalous warmth in the West, with many areas receiving no precipitation the first two weeks of the month.

Climate Prediction Center and Predictive Services outlooks issued in late September depict above normal temperatures are likely across the southern half of the West into much of the eastern half of the US October through December. Precipitation is likely to be below normal across much of the Southwest into the southern Plains, with above normal precipitation likely in the Northwest, Great Lakes, and Northeast. Above normal potential is likely across portions of the West in October before returning to normal in November, but portions of southern California will have above normal potential through December. Above normal potential is also forecast across the Upper Mississippi Valley and Upper Great Lakes in October, with above normal potential in portions of Texas, Oklahoma, and Arkansas October and November. Above normal potential is forecast for much of central Texas in December.

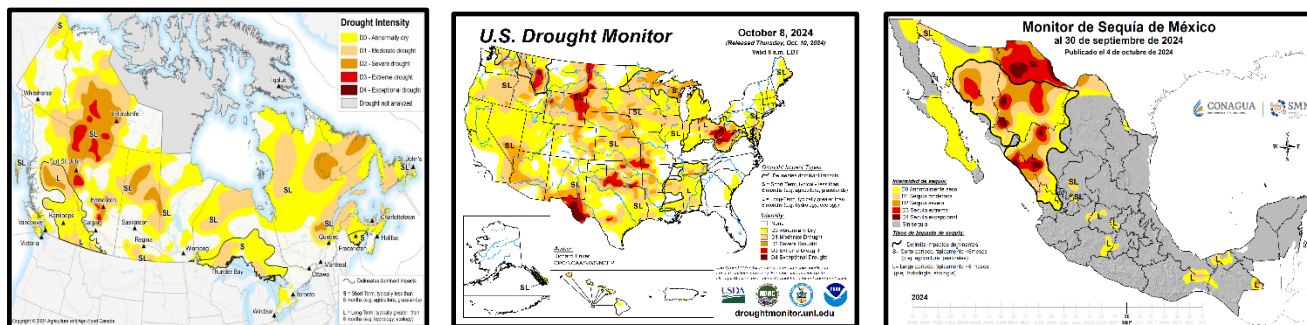
So far this year Mexico has had an above average number of fires and with the highest number of hectares burned for the second consecutive year. Forest fire activity in Mexico is currently at its lowest. Although the rainy season is coming to an end, fuels remain moist. However, this moisture will gradually be lost, possibly at a faster rate due to La Niña effects in combination with the negative Pacific Decadal Oscillation, which is reflected in the dry and warm weather outlook. In recent weeks, some fires have occurred in Baja California and Chihuahua, the most severe being one reported in Chínipas, Chihuahua, which has been active for more than a week and has consumed more than 400 hectares. From December onwards, forest fire activity is expected to increase gradually.

Critical Factors

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

El Niño-Southern Oscillation:

El Niño-Southern Oscillation (ENSO) neutral conditions are present in the equatorial Pacific Ocean. Sea surface temperature (SST) anomalies in the central equatorial Pacific are near average but trending cooler, with near average SST anomalies found off the South America coast. A transition to La Niña is still forecast into the fall, with the Climate Prediction Center forecasting a 71% chance of La Niña developing in the October through December period, and La Niña is expected to persist through winter. A negative phase of the Pacific Decadal Oscillation (PDO) is also expected to persist into the winter. The Madden-Julian Oscillation has increased in activity the past two weeks and could also affect the pattern. However, the developing La Niña and negative PDO are expected to be the main drivers of this outlook.



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 is present in all of Canada's provinces and territories as of September 30. Some areas have shown improvement, such as central British Columbia, where extreme drought has moderated to severe, and the large patch of extreme drought at the juncture of the British Columbia, Alberta, and Northwest Territories border has broken up. Drought has been eliminated or its intensity reduced along coastal and southern British Columbia respectively, and drought areas have broken or disappeared in the southern Prairie Provinces and Yukon. The remainder of the Prairies and Northwest Territories still feature drought of various classes, but the locations have shifted slightly over the past month.

While improvements have been noted in parts of western Canada, persistent high pressure in eastern Canada over the majority of September has led to drought expansion north of the Great Lakes, in northern Quebec, and most of the Atlantic Provinces. Moderate drought has expanded west of James Bay towards the Manitoba border and appeared along the north shore of Lake Superior. Moderate drought areas have also expanded across much of Quebec, although the region along the Ontario border and east to Quebec City remain drought-free. Patches of severe drought have emerged north of Quebec City and through central Labrador. Areas of abnormally dry or moderate drought cover all of New Brunswick, Prince Edward Island, and the island of Newfoundland. Nova Scotia has fared better with abnormally dry conditions at the southern tip, and abnormally dry to moderate drought north of Halifax and across Cape Breton Island.

Current implications for the fire season are minimal since most activity has waned. However, smoldering fires may still occur in a few areas of the driest regions. Grass fires are possible in the southern Prairies, but drought has lessened in much of this region and possible precipitation in mid-October may further reduce this risk. While much of Canada is dry, it is too early to speculate on drought impacts on spring fire activity in 2025.

Temperatures were above normal for much of the West into the northern Plains and Great Lakes in September. Near normal temperatures were observed in the southern Plains, Southeast, and Mid-Atlantic, as well as along the immediate California coast. A heat wave was observed across the West

at the beginning of September, followed by cooler than average temperatures mid-month. Another heat wave occurred across the West late in the month focused on California, the Southwest, and northern Plains, where numerous daily record highs were set. This latter heat wave produced exceptional readings for so late in the season, with Phoenix, Arizona reaching 117°F September 28, setting a new monthly record, and Rapid City, South Dakota hitting 100°F the following day. The heat wave continued in the Southwest into mid-October with Phoenix continuing a streak of 21 consecutive daily high temperatures through October 14. The rest of the West was well above normal into mid-October, as well.

Below normal precipitation was observed across much of California and the Northwest, although very localized areas of above normal precipitation occurred in both northern and southern California. Below normal precipitation was also observed across much of the Southwest, southern Great Basin, Rockies, northern Plains, Great Lakes, and Northeast. Much of the Upper Mississippi Valley was exceptionally dry, with many areas receiving less than 25% of normal rainfall into early October. Above normal precipitation was observed in northwest Nevada, southeast Oregon, northern Idaho, central Montana, and portions of central Texas. Above normal precipitation also fell from the Ohio Valley into the Southeast, focused on the latter half of the month when exceptional amounts of rain fell near the Big Bend of Florida, Georgia, and across the southern Appalachians due to Hurricane Helene. Widespread rainfall totals over 5 inches were observed in this area, with totals of one to two feet in the southern Appalachians, including over 30 inches in a 48-hour period in Busick, North Carolina. Widespread catastrophic flooding occurred in the southern Appalachians due to the historic rainfall.

Drought improved slightly in the Northwest during September. However, drought expanded and worsened in much of the northern Plains into the Great Lakes. Drought also expanded and worsened in the Lower Colorado River Valley and portions of Nebraska and the southern Plains. Drought persisted in much of the Northwest and northern Rockies. However, drought improved over portions of the Lower Mississippi Valley into Mississippi and Alabama. Drought worsened in the Appalachians through much of September before the extreme rainfall from Hurricane Helene resulted in drought removal from the southern Appalachians. Extreme to exceptional drought expanded overall, covering portions of West Virginia, southern Ohio, west Texas, the Oklahoma/Texas border, western Montana, and northern High Plains. Extreme to exceptional drought now covers nearly 4% of the US as of October 8.

During the second half of September, positive precipitation anomalies were observed in portions of southern Tamaulipas, and over the central-western, central-southern, southern, and southeastern regions of the country. The southern Pacific slope stood out, with rainfall more than 250 mm in the states of Michoacán, Guerrero, and Oaxaca. The heavy rain was caused by Hurricanes John and Helene interacting with the monsoon trough, and the presence of other low-pressure systems in the interior of the country. Three tropical waves moving through the country also contributed to the heavy rainfall.

The rainfall resulted in the reduction of areas with extreme and severe drought to non-drought conditions over southeast Oaxaca and Guerrero, respectively. It also resulted in the removal of moderate drought and abnormally dry conditions from the states of Jalisco, Guanajuato, Querétaro, Michoacán, and the State of Mexico.

On the other hand, the continued temperatures above 40 C over the northwestern, northern, and northeastern states favored the persistence of areas with extreme to exceptional drought in Sonora, Chihuahua, Durango, and Sinaloa. The percentage of Mexico with moderate to exceptional drought was just over 23% for the second half of September, higher than what was calculated as of September 15.

Fire Season Status:

Fire activity generally slowed after an active early September. Later in the month, only sporadic events occurred, such as a Washington State fire in the US that briefly threatened Grand Forks, British Columbia. Stubborn fires remain near the junction of the British Columbia, Alberta, and Northwest Territories borders, and in west-central British Columbia, but activity on these is low.

The Canadian Interagency Forest Fire Centre compiled the last 2024 national situation report on September 25. As of that date, Canada had recorded 5,374 fires, almost exactly at the 10-year average, while area burned is just over 5.3 million hectares, about 109% of the 10-year average. The 2023 fire season has skewed the area burned averages. A comparison using the 10-year average from 2013-2022 shows the 2024 area burned at about 193% of that 10-year average. While some fires continue to smolder, new starts are likely to be minimal, as are contributions to area burned.

In the US, fire activity escalated significantly at the beginning of September, with the National Preparedness Level returning to five (on a scale of 1-5) September 6 due to another significant round of lightning September 1-3 in the Northwest and northern Great Basin. Fire activity then significantly moderated the latter half of September, with the National Preparedness Level was decreasing to four September 20 and three September 26. However, a very warm and dry start to October resulted in an increase in fire activity and the National Preparedness Level was increased to four October 3 and five on October 8. Fire activity continued at elevated but somewhat reduced levels compared to August in the Northwest and Great Basin geographic areas, with an increase in activity in California and the Eastern and Southern areas. Year-to-date annual acres burned for the US as of October 15 is above the 10-year average at 125% of normal, but the national year-to-date tally of wildfires remains below average, near 87%.

So far this year 7,807 forest fires have been registered in 32 states across Mexico resulting in 1,439,357 hectares burned. The vegetation corresponding to grass and brush was 95%, while timber was 5%. States with the highest number of wildfires were State of Mexico, Mexico City, Jalisco, Michoacán, Chihuahua, Chiapas, Puebla, Durango, Oaxaca, and Guerrero. Representing nearly 79% of the total fires. States with the largest area burned were Guerrero, Chiapas, Oaxaca, Chihuahua, Jalisco, Michoacán, Nayarit, Durango, Quintana Roo, Durango, and State of Mexico, representing almost 82% of the national area burned. Out of the total number of fires, 1,156 (15%) occurred in fire-sensitive ecosystems, with a burned area of 194,356 hectares, which represents 14% of the total area burned.

From January to September, positive fire anomalies have been recorded in western, central, eastern, southern, and southeastern Mexico. Jalisco and Mexico City are the most affected states, with more than 260 fires above average for each area. In terms of hectares burned, most of the country has positive anomalies, with the states on Mexico's southern Pacific slope being the most affected. Oaxaca has burned more than 119,000 hectares above its climatology, Chiapas has burned more than 165,000 hectares, and Guerrero, which is the state with the largest burned area, has so far burned more than 220,000 hectares.

Canada Discussion

October/November/December: In October, forecast models favor a warm month but show most regions having normal to above normal precipitation. The exception is the extreme southern Prairies as summerlike conditions continue to occur sporadically with some wind events and little precipitation. Grass fires may occur in this region but possible increased precipitation later in the month may reduce fire risk, especially in Manitoba where precipitation may be more concentrated. Some large fires in forested regions will likely continue, especially around the British Columbia/Alberta/Northwest Territories border, but activity has dropped substantially in most regions over the past month.

Normal November conditions are expected in Canada, which translates to little fire activity. However, grass fires could occur if the Prairies stay warm and dry. While the North American Multi-Model Ensemble generally points to warm conditions in the Prairies, the Canadian model favors a cold month, while precipitation predictions appear normal or have a mixed signal. At this time of year, even a modest amount of precipitation prevents much fire activity with long, cool nights and short, cool days reducing active burning periods.

Models generally favor a warm month with widespread precipitation. In western Canada, where conditions are usually drier than the east, most of this would fall as snow except in coastal regions. This would result in little fire activity, normal for a Canadian December.

United States Discussion

October/November/December: Climate Prediction Center and Predictive Services outlooks issued in late August depict above normal temperatures are likely across much of the Intermountain West into the Plains, with below normal temperatures likely in the Mid-Atlantic for September. Precipitation in September is likely to be above normal along the Pacific Northwest coast and from Texas to the Southeast, while below normal precipitation is likely in much of the Intermountain West, northern Plains, and Great Lakes. For October and November, above normal temperatures are likely across much of the US except in the Pacific Northwest and along the immediate West Coast. Below normal precipitation is forecast for much of the southern half of the West into the central and southern Plains, with above normal precipitation likely for the Northwest and along the East Coast.

Above normal significant fire potential is forecast for much of California, the northern half of the Great Basin, and portions of southern Montana into northern Wyoming in September. Above normal potential is also forecast in western Arizona, the Lower Mississippi Valley, Upper Ohio Valley, and lee sides of Hawai'i in September. For southeast Texas and the southwest Louisiana coast, below normal fire potential is forecast in September. In October, much of the West will return to normal potential except for the southern California coast and mountains, which will remain above normal along with Hawai'i. Above normal potential is also forecast in much of eastern Oklahoma and northeast Texas into the Ohio and Tennessee Valleys in October. Above normal potential will continue across the Tennessee Valley into Kentucky in November, with above normal potential continuing for the southern California coast and mountains.

Mexico Discussion

October/November/December: The climate outlook for the October to December quarter is warm and dry. Forest fire activity for this quarter will remain above normal in northern Baja California, due to the persistent dry and warm conditions in this region. According to forecast models, the probability of precipitation will be above normal in southeastern Mexico. Below normal conditions are expected in the northwest, north, northeast, west, and north-central states of the country, with the highest probabilities of below normal precipitation in Sonora, Chihuahua, and Sinaloa. In the rest of the states, none of the categories is preferred.

Given the current temperature and precipitation conditions, as well as the behavior of the drought, and the climatological forecast, forest fire activity through December is expected to remain above normal in northern Baja California due to the continued dry and warm season in this region. In the rest of the states, activity will remain low due to the high moisture content of live and dead fuel, although moisture is expected to gradually decrease, and could decrease a little faster due to the dry and warm conditions forecast this quarter.

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:

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

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