North American Seasonal Fire Assessment and Outlook

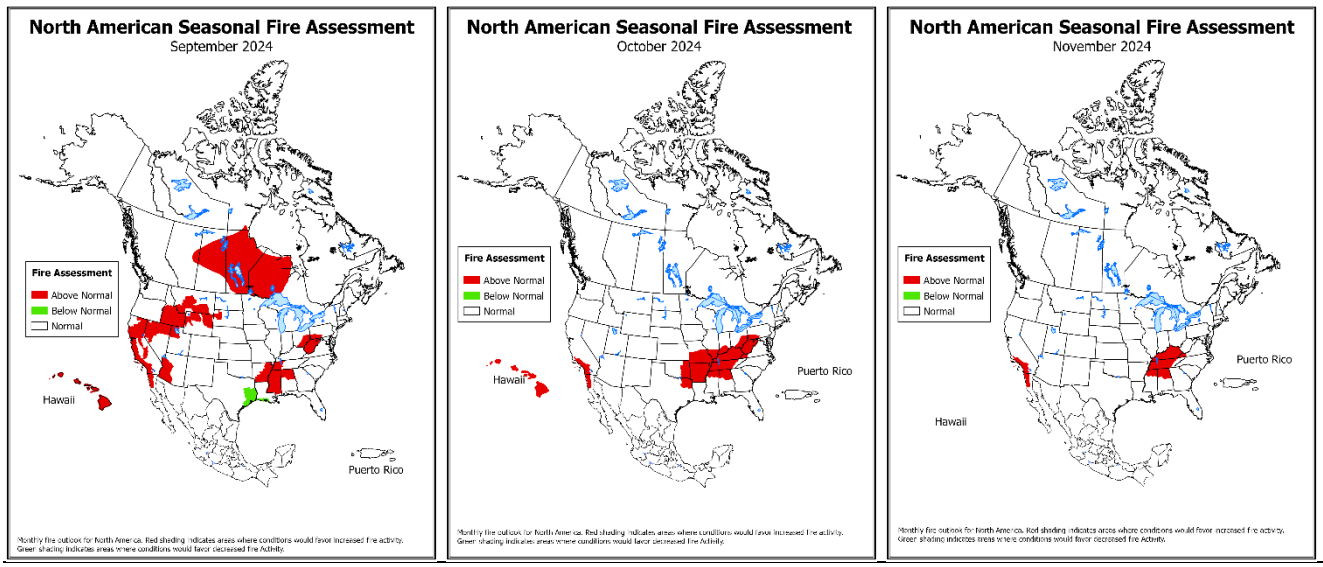
National Interagency Fire Center ● Natural Resources Canada ● Servicio Meteorológico Nacional
United States Canada Mexico

Outlook Period September through November 2024
Issued 13 September 2024

Executive Summary

Warm weather continued in much of Canada during August and early September. The highest anomalies occurred in south-central British Columbia, the Rockies of west-central Alberta, the Arctic, and along the northern Atlantic coast. In the rest of the Atlantic region, temperatures were slightly above normal in northern New Brunswick, all of Prince Edward Island, northern Nova Scotia, all of Newfoundland, and southern Labrador. Extreme east-central Newfoundland had the highest temperature anomaly in the Atlantic region. Hot weather occurred in the Arctic Circle from August 6-9, with many values of 35 C (95°F) or higher recorded. Temperatures set records even in the Arctic islands, although at much lower values than across the mainland.

Cooler than normal temperatures occurred only in the southern Saskatchewan/Manitoba border area, southern Ontario, southern Quebec along and south of the St Lawrence River west of Quebec City, and in southern Nova Scotia.



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

Dry conditions also prevailed across much of northern British Columbia, Alberta, and Saskatchewan, plus a few spots around Hudson Bay. Dry spots also included southwest and central Saskatchewan, southern Manitoba, and scattered locations across eastern Canada. Precipitation was generally less than normal in northern Ontario and Quebec. Southern regions generally received above average rainfall, with the greatest anomalies in mountainous areas of southern British Columbia and Alberta, and east of the Great Lakes. While the Northwest Territories received some rain, conditions are still very dry in much of the region, while Yukon received regular showers.

Two main rainfall events brought significant rainfall to southern parts of the western provinces, with heavy thunderstorms and upslope orographic precipitation. Tropical or subtropical moisture also poured through southern Ontario and Quebec. The remains of Hurricane Debby tracked through southern Ontario and Quebec August 9, then into the Atlantic region, following a similar trajectory to the remains of Beryl in July. About a week later, the leftovers of Hurricane Ernesto brought another rainfall event, resulting in heavy rainfall through the same regions. Toronto Pearson recorded 266% of normal August rainfall and set an all-time one-day record of 128.3 mm (about 5.1 inches) on August 17. These intense events also affected southern Quebec along the St Lawrence valley, but the heaviest rain fell west of Quebec City. Montreal recorded about 250% of normal August rainfall, and on August 10 over half of the 239 mm (9.4 inches) monthly total fell, setting a record for the highest single-day August rainfall. Rainfall in many of these areas gradually helped ease the fire situation over the month, although some active pockets continued.

While the remnants of Hurricane Debby brought some rainfall to New Brunswick, most of the province had normal to below normal rainfall and only a few spots with slightly above normal amounts. Central New Brunswick, Prince Edward Island, and most of Nova Scotia were drier than normal. Most of Newfoundland and Labrador were dry, except along the Strait of Belle Isle. The highest rainfall deficit in the Atlantic regions occurred in west-central Labrador.

Precipitation in the western US in August was above normal in northern California and along and west of the Cascades in Washington and Oregon, but below normal from southern California and southern Arizona into Nevada, the Inland Northwest, and Idaho. Above normal precipitation was observed in much of Utah to the West Slope, with mixed anomalies in Montana and Wyoming. A large area of below normal precipitation occurred from Texas into north Georgia and into the Ohio Valley, while above normal precipitation occurred along the East Coast. Temperatures in August were closer to normal for the northern two-thirds of the US but were above normal in the Southwest into much of Texas and Oklahoma. A warm and dry spell occurred across much of the West in early September, with daily record high temperatures near or above 40 C (104°F) in southern California and Arizona. However, much cooler weather and precipitation moved into the northern half of the West the second week of September.

Climate Prediction Center outlooks issued in late August show a trend toward above normal precipitation and near normal temperatures in the Northwest by October and November. However, above normal temperatures are likely for much of the rest of the US, with drier than normal conditions in the Southwest and much of the central/southern Plains. Above normal potential is likely across much of the southern two-thirds of the West in September retreating to the southern California coast and mountains in October and November. Areas of above normal potential are also forecast across portions of the Lower Mississippi Valley in September, and much of the Mid-Mississippi/Ohio/Tennessee Valleys in October, continuing across the Tennessee and southern Ohio Valleys in November. Below normal potential is forecast for southeast Texas this month.

Throughout Mexico, fire activity has been minimal recently due to the country’s rainy season, except for northern Baja California, where fires continue. The rains will continue during the September to November quarter, gradually decreasing in frequency and intensity, keeping the risk of fires low. So far this year, 7,819 forest fires have been recorded with an affected area of 1,401,064 hectares.

In June and July, precipitation and average temperatures were above normal nationally. In August, precipitation was below normal, while temperatures remained above normal. Precipitation from various weather systems contributed to the reduction of areas of drought over most of Mexico. However, a hot to very hot environment persisted, with temperatures above 40 C in portions of the northwest, north, and northeast Mexico, with areas of extreme to exceptional drought persisting in north and northeast Mexico.

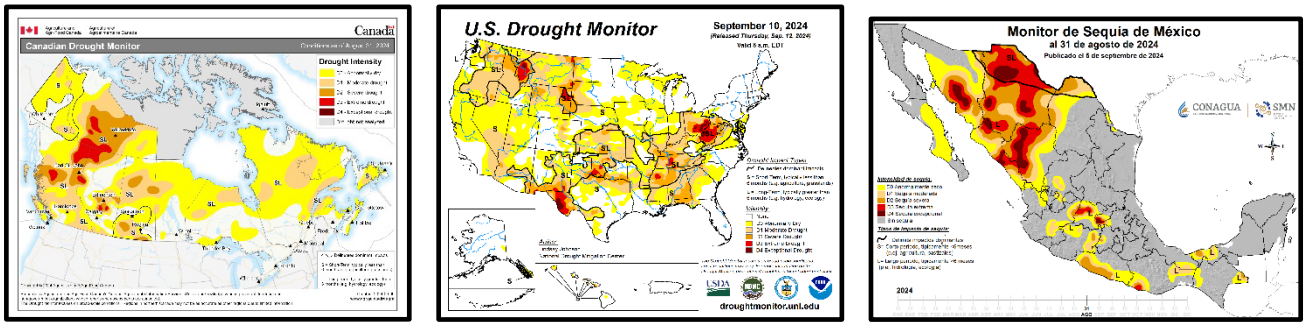
Given the current temperature and precipitation conditions, as well as current drought status and the climate forecast, it is expected that next three months will remain warm with a progressive decrease in

rainfall. As for fire potential, it will remain above normal in northern Baja California due to warm and dry conditions and normal for the rest of Mexico.

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, while cooler than average SST anomalies are found off the South America coast. A transition to La Niña is still forecast into the fall, with the Climate Prediction Center forecasting a 66% chance of La Niña developing in the September through November period, and 74% chance of La Niña persisting into the winter. A negative phase of the Pacific Decadal Oscillation (PDO) is also expected to persist into the fall. The Madden-Julian Oscillation may have increased activity in September, which 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:
Canada's overall drought area continued to expand during August, with all provinces and territories having regions that are abnormally dry or feature some level of drought. About 70% of Canada outside Nunavut, where drought is not assessed, is experiencing some level of dryness, from abnormally dry to exceptional drought. This marks an increase of about 11% from the end of July assessment.

Intense drought persists in a line through central and northeast British Columbia, northwestern Alberta, and southwest regions of the Northwest Territories, where lake levels are still low. For example, the Yellowknife area has received only 125 mm (about 5 inches) of precipitation in the past 9 months, making 2024 a contender for the area's driest year on record. Although drought is not assessed in Nunavut, dry areas reaching northeastward from the central Northwest Territories suggests drought may be prevalent through central Nunavut, although the northeastern extent is hard to gauge. Patchy severe to extreme drought has intensified or developed in central Alberta and much of Saskatchewan, with spots of moderate to severe drought in northern Manitoba and Ontario, central and northern Quebec, and a small section of south-central Newfoundland.

Drought-free regions are limited to southern Yukon, northwestern British Columbia, and the lower Fraser Valley in British Columbia, then in patchy areas in the southern Prairie Provinces, Ontario, Quebec, and the Atlantic region. A small drought-free region also exists around Ungava Bay in northern Quebec.

Despite the overall increase in drought incidence, improvements have been noted in southern and central British Columbia. The number of forest fires in southeastern British Columbia decreased rapidly through August due to increased rainfall, which was 150% to 200% of normal in some regions. Drought classes dropped by two categories in much of this area. The precipitation trend carried across the Rocky Mountains into southern and western Alberta, where relative August precipitation was very similar to

amounts in southern British Columbia. Hydrological drought is still present in southern Alberta, so more rain is needed. Precipitation then varied widely through the rest of the Prairies with improvement in some regions, such as southeast Saskatchewan, and worsening in others, such as the southwest of the province. For regions east of Manitoba, the southern areas tended to be wetter than northern areas.

Temperatures were generally near normal for the northern half of the US in August. Portions of northern California, Oregon, and Washington were slightly below normal for August, mainly due to a cool, wet pattern in the middle of August. Much of the Southwest into the southern Plains was above normal, with the Gulf Coast states slightly above normal, as well. Temperatures turned well above normal for early September in the West, while temperatures from the central and southern Plains to much of the East Coast were below normal.

Below normal precipitation was observed across much of Texas into the Southeast in August, with drier than normal conditions also spreading into the Ohio Valley and central Appalachians. Above normal precipitation occurred along the East Coast, with more mixed anomalies in the Great Lakes and central and northern Plains. Precipitation was below normal from much of southern California and southern Arizona into Nevada, Idaho, and the Inland Northwest. Above normal precipitation occurred in northern California into western Oregon and Washington, with above normal precipitation in northern Montana, Utah, and the West Slope. Precipitation was above normal in much of Alaska, except for southeast Alaska and the panhandle, which were much drier than normal. In early September, much of the US was drier than normal, although areas of above normal precipitation occurred in central/west Texas and the Lower Mississippi Valley.

Drought expanded and worsened across portions of the Northwest into the northern Rockies, northern California, and Great Basin. Abnormally dry conditions expanded across much of Nevada, Utah, Arizona, and the West Slope, while drought developed in the Lower Colorado River Valley. Drought developed and intensified in the Ohio Valley, with expansion and intensification of drought in the southern Plains to the Deep South. Drought improved east of the Appalachians, especially in Virginia and South Carolina, which had areas of severe drought removed. Currently, small areas of extreme to exceptional drought are occurring in west Texas, southwest Oklahoma, Mississippi, Tennessee, southern Ohio, West Virginia, northeast Wyoming, and western Montana.

During the second half of August, above average rainfall was recorded in the north, northeast, central-west, south, and southeast of Mexico, as well as in areas of Sonora and Sinaloa. These rains were associated with the passage of five tropical waves that moved through, with additional low-level moisture from both coasts. The passage of the first cold front of the season, which interacted with the Mexican monsoon, also had an influence.

The precipitation from these systems favored the reduction of areas with extreme to exceptional drought in Sonora, Chihuahua, Durango, and Sinaloa, with severe to extreme drought in Jalisco and Guanajuato, and with moderate to severe drought in Coahuila and Veracruz. However, a hot to very hot environment persisted across portions of Mexico, with temperatures above 40 C in portions of the northwest, north and northeast of Mexico, where areas with extreme to exceptional drought persisted. At the national level, the percentage of areas with moderate to exceptional drought was 29% as of August 31, a decrease of nearly 6% compared to August 15.

Fire Season Status:
Fires in the northern half of Saskatchewan remained active throughout August and early September, with warm, dry weather and some lightning. Stubborn fire activity continues near the junction of the British Columbia, Alberta, and Northwest Territories borders, and in west-central British Columbia. A few fires appear to be active in the central Northwest Territories. Some fires popped up occasionally in Manitoba, Ontario, and Quebec, but overall decreased with rain in southeastern British Columbia, much of Alberta, and parts of the Northwest Territories during the second half of August.

The Canadian Interagency Forest Fire Centre National Preparedness Level stayed at five from July 15 to August 22, then dropped to three on September 3. Supplementary suppression crews were acquired

from Australia, New Zealand, South Africa, Costa Rica, and Mexico, although all crews returned to their native countries by early September.

As of September 3, Canada had recorded 5,120 fires, exactly at the 10-year average, while the area burned is just under 5.1 million hectares, about 142% of the 10-year average. The area burned is in the top five on modern record keeping. While the national number of fires remains very close to the 10-year average, higher than normal numbers occurred in British Columbia, Yukon, Alberta, Saskatchewan, and New Brunswick. Area burned is above normal in British Columbia, Yukon, Alberta, the Northwest Territories, Saskatchewan, Manitoba, and Newfoundland.

Area burned in 2024 compared with the previous 10-year average is higher in all the western provinces and territories, and lower in eastern jurisdictions except Newfoundland/Labrador. Both British Columbia and the Northwest Territories have surpassed 1 million hectares burned, with the Northwest Territories the most at around 1.6 million hectares. Saskatchewan's total was approaching 850,000 hectares, and with active fire continuing in that province, the total may still approach 1 million hectares.

The presence of regions with less than normal fire numbers but high area burned indicates many of this year's fires have been large, notably in the Northwest Territories, Manitoba, and Newfoundland. For Newfoundland, the area burned is about 360% of the 15- to 30-year averages, which are roughly 20,000 hectares, making it a very active year, although most of the area burned occurred in Labrador.

New Brunswick has a small area burned but more fires than normal, indicating their fires were small. Tiny Prince Edward Island had no recorded fires, an occasional occurrence.

Occasional evacuation alerts and orders and work stoppages due to fire or smoke continued in August and early September. Some regions lost power, including part of Jasper, Alberta, which will take more time to restore after the July fire destroyed about a third of the town. As of September 10, Canada has recorded 92 evacuations affecting 52,721 people, although only one active evacuation remains, affecting 1,168 people in the Peter Ballantyne Cree Nation of Southend, Saskatchewan.

In the US, fire activity continued at a high level in early August, but gradually decreased during mid to late August, especially in the Northwest. With decreased activity the latter portion of August due to the cooler and wetter pattern in the Northwest, the National Preparedness Level was decreased from five to four (on a scale of 1-5) on August 22. However, the heat at the beginning of September coincided with two lightning events September 2 and September 7-8 to ignite numerous new fires across the Northwest and Great Basin. At the same time, the extreme heat in southern California resulted in three significant fires in the Los Angeles Basin. Due to the increase in activity, the National Preparedness Level was increased to five a second time on September 6. Year-to-date annual acres burned for the US is above the 10-year average with 2,926,116 hectares burned (7,230,589 acres), which is 128% of normal. However, the national year-to-date tally of wildfires is 36,697, and only 84% of the average number of fires.

So far this year 7,819 forest fires have been registered in 32 states across Mexico resulting in 1,401,064 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 80% of the total fires. States with the largest area burned were Guerrero, Chiapas, Oaxaca, Chihuahua, Jalisco, Michoacán, Nayarit, Durango, Quintana Roo, and Sinaloa, representing almost 83% of the national area burned. Out of the total 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 August 2024, above normal fire occurrence has been observed in western, central, eastern, southern, and southeastern Mexico. Jalisco and Mexico City are the most affected states, each more than 260 fires above average.

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 120,000 hectares above

climatology, Chiapas has burned more than 165,000 hectares and Guerrero, which remains as the state with the largest burned area, has so far burned more than 218,000 hectares.

Canada Discussion

September/October/November: With cooler and moister weather pushing into northern Canada during September, the area at highest risk of fire remains in the south. The area expected to have above normal fire activity is confined to east central Alberta eastward to western Ontario. While this area is indicated as having higher than normal expected activity, widespread intense fire is unlikely at this time of year, although the active fires in northern Saskatchewan and near the British Columbia-Alberta-Northwest Territories border may continue for a few weeks.

Currently, no signs point to significant fire activity in October as models favor a warm month but show most regions having normal to above normal precipitation. Some current large fires will likely continue into the autumn, especially in Saskatchewan and the British Columbia-Alberta-Northwest Territories border region, but activity should have dropped substantially in most regions.

Normal November dconditions are expected in Canada, which translates to little fire activity. However, grass fires could occur if the Prairies stay warm and dry. While models in the North American Multi-Model Ensemble generally point to warm conditions in the Prairies, the Canadian model favors a cold month, and precipitation predictions appear normal or have an indefinite 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.

United States Discussion

September/October/November: 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

September/October/November: With the current drought status, as well as recent temperatures and precipitation and the climate forecast, September through November will remain warm with a progressive decrease in rainfall across Mexico. As for fire potential, it will remain above normal in northern Baja California due to warm and dry conditions. In the rest of the states, fire activity remains

low due to the high moisture content of live and dead fuel due to the rainy season. However, these moisture and fuel conditions are gradually decreasing. While precipitation is forecast to continue the next three months, it will gradually decrease in frequency and intensity. Enough precipitation is expected to keep the risk of low, but fire activity could slightly intensify, and drought areas could expand due to drier and warmer than normal conditions forecast into November.

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:

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 Jimenéz, Servicio Meteorológico Nacional
Roberto Rodríguez, Servicio Meteorológico Nacional
José L. Solís Aguirre, Servicio Meteorológico Nacional