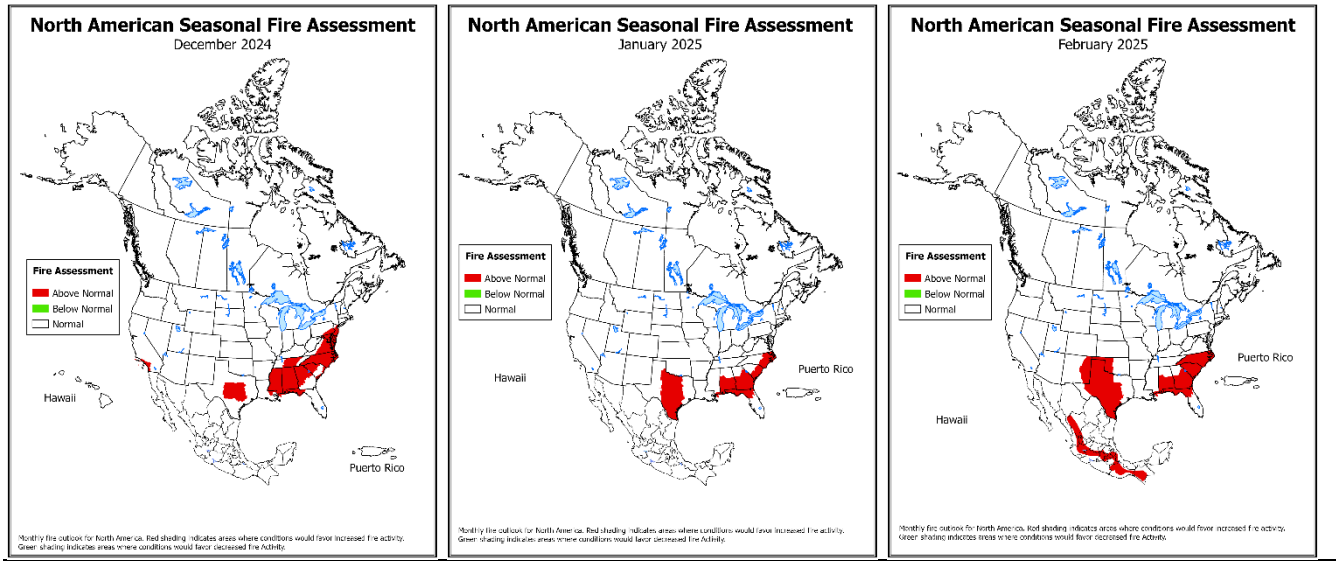
North American Seasonal Fire Assessment and Outlook

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

Outlook Period December 2024 through February 2025
Issued 13 December 2024

Executive Summary

Following a warm first couple weeks of November, winter crept into western Canada during the latter half of the month, which is a normal occurrence at that time of year. The influx of colder air dragged monthly mean temperatures below normal for November in southern Yukon, the southwestern Northwest Territories, much of Alberta, southern Saskatchewan, and southwest Manitoba. The weather change increased precipitation and November precipitation was generally above normal in western regions excluding coastal and some southern interior British Columbia locations, the Rocky Mountains, far northwestern Alberta, and spotty areas between northern Saskatchewan and northern Manitoba. Snow depth is above normal in the central Prairies, much of Yukon, the southern Northwest Territories, and in a band through Great Bear Lake and eastern Great Slave Lake. Snow depth is lacking in eastern Manitoba and in small patches of the southern Northwest Territories and along its border with Nunavut.



Monthly fire outlook for North America for December 2024 (left), January 2024 (middle), and February 2025 (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.*

Eastern Canada had warm temperatures persist through much of November. The highest anomalies occurred in northern regions, with northeast Manitoba and northwest Ontario up to 7 C warmer than normal. Temperature anomalies up to 6 C were recorded in the northern section of Quebec's Ungava Peninsula, and 5 C in spots along the eastern Hudson Bay coast and southern Ungava Peninsula. While the whole Atlantic region was above normal, the greatest anomalies of about 4 C occurred in Newfoundland and Labrador. Some localities in northern New Brunswick recorded the warmest November on record.

Precipitation amounts during November in eastern Canada were mixed, producing a mottled pattern of dry and wet areas. Amounts through November were generally below normal in southern Ontario east of Lake Huron, southern Quebec, and the southern Atlantic Provinces. Monthly totals ranged from 50% of normal in southern Nova Scotia to 160% of normal in parts of Prince Edward Island. Extreme wetness

occurred through eastern Newfoundland and along the Labrador coast. Bonavista in east central coastal Newfoundland recorded its wettest ever month at just under 350 mm, and some regions had their first month of above normal precipitation since spring. During this stormy period, two weak late-season tornadoes were reported in central New Brunswick.

Dry spots are present in central Quebec, with the area east of James Bay is one of the most fire-prone in Quebec, and western Labrador. Dry conditions plaguing the northeast US and southern Atlantic Provinces continued, with November being dry in most of southern Nova Scotia and western New Brunswick. Small area of western Newfoundland and central and western Labrador were also dry.

In eastern Canada, snow began accumulating close to the end of the month in regions away from the Atlantic Coast, where precipitation mainly fell as rain. Snowfall remained generally below normal, although total precipitation outside the dry areas was close to normal. Generally, snow depth is lacking in eastern Canada except in northeastern Ontario, patches around the Great Lakes, and a lobe of Quebec south of James Bay. Snow depth is above normal north of the Great Lakes, but generally not as far west as the Manitoba border, in southern Quebec, and much of New Brunswick. Snow squalls around the large Manitoba lakes and the Great Lakes have likely contributed locally heavy amounts.

Precipitation across the US varied in November, with well above normal precipitation recorded on much of the Plains, Mid and Upper Mississippi Valley, and northern California. Above normal precipitation was also observed across much of the Northwest, central California, and Lower Mississippi Valley. The Lower Colorado River Valley and southern California had well below normal precipitation in November, with below normal precipitation also observed along much of the East Coast, South Texas, and Wyoming. Temperatures in November were above normal from the Plains to the East Coast, but below normal across much of California to the Greater Four Corners. Much of the US was drier than normal to start December, with the only areas of above normal precipitation in portions of the Deep South, northern Plains, and on the southern and eastern shores of the Great Lakes. Temperatures were below normal in the eastern US and above normal in the West.

Climate Prediction Center outlooks issued in late November depict above normal temperatures are likely from across the southern half of the western US into the southern Plains to the Appalachians and East Coast. Precipitation is likely to be above normal in northwestern US and Great Lakes, but below normal from the Southwest through the southern Plains into the Southeast. Above normal significant fire potential is forecast across portions of central Texas in December expanding across much of the southern Plains by February. Above normal potential forecast across much of the Deep South to Mid-Atlantic in December will migrate more to the northeast Gulf and southeast Atlantic coasts. Above normal significant fire potential is also forecast across the southern California coast for December.

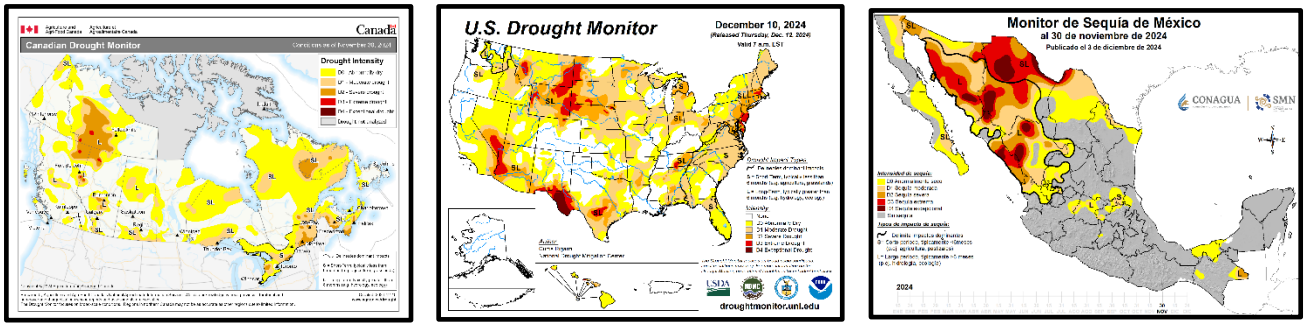
Forest fire activity in Mexico continues at low levels, as is common for this time of year. For the months of October and November precipitation was below normal nationally, while in September precipitation was above normal. The average temperature was above normal during all three months. The weather outlook for the December through February quarter is forecast to be warm and dry. Forest fire activity is expected to remain within normal national levels during the months of December and January, but above normal activity is expected in portions of Mexico in February, mainly in the southern region of the Sierra Madre Occidental and Sierra Madre Oriental, on the Sierra Madre del Sur, and in the highlands of Chiapas.

Critical Factors

The critical factors influencing significant fire potential for this outlook period are global climate patterns related to sea surface temperatures, particularly in the Pacific Ocean, and large scale, longer-term soil moisture deficits:

El Niño-Southern Oscillation:
El Niño-Southern Oscillation (ENSO) neutral conditions persist in the equatorial Pacific Ocean. Sea surface temperature (SST) anomalies in the central equatorial Pacific are near to slightly below average,

with SSTs slightly above average along the South American coast. A transition to La Niña is still likely in December, although chances have decreased, with the Climate Prediction Center forecasting a 57% chance of La Niña developing by the end of the year. La Niña is then expected to persist into March, assuming it develops. A strongly negative phase of the Pacific Decadal Oscillation (PDO) is also expected to persist through the winter. The Madden-Julian Oscillation (MJO) has also been active the past month, with another pulse moving through the Indian Ocean the last two weeks. The MJO is expected to remain active through mid-December as it slowly moves into the western Pacific, with impacts possibly lasting through much of the month. From January through March, the developing La Niña and negative PDO are expected to be the main drivers of this outlook. Active MJO periods remain possible through the winter, but their location and intensity are difficult to forecast more than two to three weeks in advance.



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:
Dry patches are still present in all of Canada's provinces and territories as of November 30. While drought in Nunavut is not assessed, small abnormally dry patches along the Northwest Territories/Nunavut border suggest dry areas are likely present in western Nunavut, as well.

Portions of Canada, including much of British Columbia, have shown improvement. The dry region surrounding the juncture of the British Columbia, Alberta, and Northwest Territories borders still exists, but the area in extreme drought is minimal, with moderate to severe drought now dominating. Reduction in levels has also occurred in southern British Columbia. In central and northern Saskatchewan, central and southern Manitoba, and western Ontario, severe drought patches have been reduced to moderate drought or abnormally dry. Northern Nova Scotia, Prince Edward Island, and western Newfoundland feature patches of abnormally dry and moderate drought, with conditions improving since October when extensive moderate drought covered these regions. December snow squalls in parts of Manitoba and Ontario may further reduce drought in local areas.

However, some areas had drought intensification in the past month. Southern Ontario has developed small patches of severe drought north of Lakes Erie and Ontario. Levels have increased to severe in western Labrador, western New Brunswick, and southern Nova Scotia, as well.

Above normal temperatures were observed across much of the Plains to the East Coast in November, with temperatures averaging as much as 10 degrees above normal in the Deep South. Well above normal temperatures were also observed in the Northeast for the first two-thirds of the month before a cooler period began November 21 that continued into early December. Temperatures were below normal across much of California into the central and southern Rockies, but averaged close to normal for the Northwest and northern Rockies. December started with the reverse of what was observed in December, with below normal temperatures in the eastern US and above normal temperatures in the West.

Well above normal precipitation fell across much of the Plains, mainly from the Texas Panhandle and Oklahoma north and east into North Dakota and the Mid and Upper Mississippi Valley. Well above normal precipitation was also observed across northern California, mainly due to a strong and long-lasting atmospheric river November 19-23. Precipitation was also above normal in much of the

Northwest, central California, the Lower Mississippi Valley, and Ohio Valley, with smaller areas of above normal precipitation in southeast Georgia, southern South Carolina, and east-central Nevada. Well below normal precipitation was observed in the Lower Colorado River Valley. Much of the East Coast observed below normal precipitation for November, with areas of well below normal precipitation in Florida. Much of the Northeast was well below normal, as well, until a strong Nor'easter November 21-23 brought widespread heavy precipitation. However, portions of the Mid-Atlantic region and North Carolina only received lighter precipitation from this storm. Cold air across the Great Lakes at the end of the month brought heavy lake effect snow to the Great Lakes, which continued into early December.

Drought expanded and intensified across much of the Mid-Atlantic region and southern New England due to the continued dry weather the first three weeks of November. Small areas of drought also developed in portions of the Carolinas and northeast Florida, while drought intensified in the Lower Colorado River Valley. However, drought improved across much of the Northwest, Plains, and Mississippi Valley over the past month, with the most significant reduction in drought noted over portions of Oklahoma, southwest Missouri, and northwest Arkansas. However, drought persisted in portions of South and West Texas. At the end of November areas of extreme to exceptional drought were observed across portions of West Texas, central Texas, southern New Mexico, western Arizona, far southern Nevada, western Montana, the northern High Plains, southeast Ohio, Massachusetts, and southern New Jersey. Very small areas of extreme drought continue in portions of Tennessee and Alabama, as well.

During the second half of October above normal precipitation was recorded in areas of the Gulf of Mexico slope, mainly in southern of Veracruz, northern Oaxaca, Tabasco, and the coast of Quintana Roo. These rains were caused by the movement of Tropical Storm Nadine interacting with low pressure over the eastern portion of the country, with some of the rain extremely heavy. In addition, there were three frontal systems and three tropical waves that brought additional precipitation. The rain contributed resulted in the elimination of moderate drought in Tabasco and to reduce the abnormally dry conditions in northern Oaxaca, Chiapas, and southern Veracruz.

However, the presence of strong upper-level high pressure resulted in a scarcity of rain in the northern and northwestern states, where very hot temperatures were recorded, exceeding above 40 C in places. In these regions, the coverage with moderate to exceptional drought increased slightly. The percentage of areas with moderate to exceptional drought across at the end of November was 31.65%, higher than that recorded in the first half of November.

Fire Season Status:
Fire weather calculations have shut down in most of Canada for the winter. The final Canadian Wildland Fire Information System situation report posted November 20 shows the nation recorded 5,686 fires and just under 5.4 million hectares burned. While the fire season started earlier than normal in some jurisdictions (February in Alberta and early March in Quebec), fire activity levels remained close to normal until July. At that time, activity increased rapidly and continued through the first half of September before quickly slowing. The area burned in 2024 is the fourth highest in modern records (since 1980.) According to the Canadian Interagency Forest Fire Centre, British Columbia had the most wildfires in 2024 (1,687), followed by Alberta (1,224). Area burned reached at least one million hectares in the Northwest Territories (1.69 million) and British Columbia (1.07 million). Area burned was above the 10-year average in British Columbia, Yukon, Alberta, Northwest Territories, Saskatchewan, and Newfoundland/Labrador. The area burned values may change as provinces and territories continue mapping their respective fires.

Fire activity continued to slowly decrease in November across the US, with the National Preparedness Level falling to one (on a scale of 1-5) November 13. However, portions of the Eastern Area remained active into late November, especially across the Mid-Atlantic and southern New England. Southern California also observed a brief spike in activity at the beginning of November and beginning of December due to Santa Ana wind events, while all other geographic areas followed the national trend. Year-to-date annual acres burned for the US is above the 10-year average at 125% of normal with

3,441,502 hectares burned (8,503,953 acres), with a slightly below average year-to-date tally of wildfires of 54,769, near 96%.

So far this year 7,934 forest fires have been registered in 32 states across Mexico resulting in 1,643,621 hectares burned. The vegetation burned corresponding to grass and brush was 95%, while timber was 5%. States with the highest number of wildfires were the State of Mexico, Mexico City, Jalisco, Michoacán, Chihuahua, Chiapas, Puebla, Durango, Guerrero, and Oaxaca, 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 83% of the national area burned. Out of the total fires, 1,247 (16%) occurred in fire-sensitive ecosystems, with a burned area of 259,466 hectares, which represents 16% of the total area burned.

From January to December, positive fire anomalies were recorded in western, central, eastern, southern, and southeastern Mexico. Jalisco and Mexico City were the most affected states, with more than 260 fires above average each. In terms of hectares burned, most of the country had positive anomalies, with the states on Mexico's southern Pacific slope the most affected. Oaxaca burned more than 135,000 hectares above its climatology, Chiapas more than 165,000 hectares, and Guerrero, which was the state with the largest burned area, has so far burned more than 386,000 hectares.

Canada Discussion

December/January/February: Snow cover in many areas has removed grass fire potential for December, although southwestern Alberta has been warm enough that the ground is mainly bare. Moisture from snow melt, plus a forecast of variable conditions through the remainder of December suggests this region would likely not sustain notable fire activity.

January should be a normal winter month with minimal fire activity in most of Canada. While a fully-developed La Niña has yet to develop, neutral conditions would likely feature variable conditions in much of Canada with the clash of maritime and Arctic air favoring enough cold temperatures and precipitation to preclude fire activity. The most likely region to sustain any fire would be the southwestern Alberta grasslands.

February should be a normal winter month with minimal fire activity. Models favor Arctic air dominating much of Canada, locking in snow cover and cooler than normal temperatures.

United States Discussion

December/January/February: A weak La Niña is still forecast to develop over the next month and affect the weather pattern over the winter. Climate Prediction Center and Predictive Services outlooks continue to indicate temperatures and precipitation consistent with La Niña with drier and warmer conditions across the southern tier of the US. Cooler than normal conditions are likely from the Northwest to the northern Plains, while above normal precipitation is likely in the Northwest, Great Lakes, and Ohio Valley through the winter.

For December, above normal significant fire potential is forecast in southern California, central Texas, the Deep South, Mid-Atlantic, and portions of the Southeast. Above normal potential will expand across much of the southern Plains in January and February, with a greater likelihood of fire-effective strong wind events due to La Niña. Above normal potential will continue across the northeast Gulf Coast and along the Southeast coast into January as well. This area in the Southeast will expand during February westward into Mississippi and across all the Carolinas. The rest of the US is forecast to have normal, or very low potential this winter, although brief periods of elevated potential are possible on portions of the central Plains during wind events.

Mexico Discussion

December/January/February: During the winter, rainfall and temperature drops caused by cold fronts will be intermittent and will determine the moisture available for live and dead fuel. However, the prevailing dry and warm environment will contribute to moisture loss and will possibly be more rapid because of La Niña in combination with the negative PDO and positive PNA phases. These effects are reflected in the dry and warm weather outlook for this quarter, even though the forecast for La Niña indicates that it will be a weak and short-lived phase.

Overall, the weather outlook for the next three months is warm and dry. Seasonal forecast models indicate the probability of precipitation will be below normal in most of the country, with the exception of Quintana Roo, which will be above normal, and none of the categories dominate the rest of the Yucatan Peninsula. Models indicate temperature will likely be above normal across most of the Mexican Republic.

Given the current conditions of temperature, precipitation, and drought, combined with climatological forecast, it is expected that forest fire activity for the months of December and January will remain within the normal range, with low activity. However, for the month of February, forest fire activity will increase to above normal in the mountainous regions of the Mexican Republic.

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.

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Canada: Richard Carr, Natural Resources Canada
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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
José L. Solís Aguirre, Servicio Meteorológico Nacional