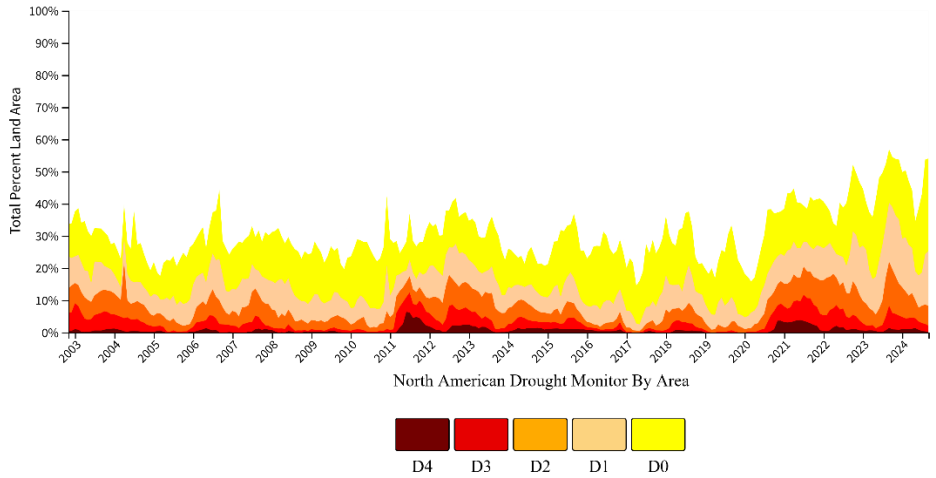
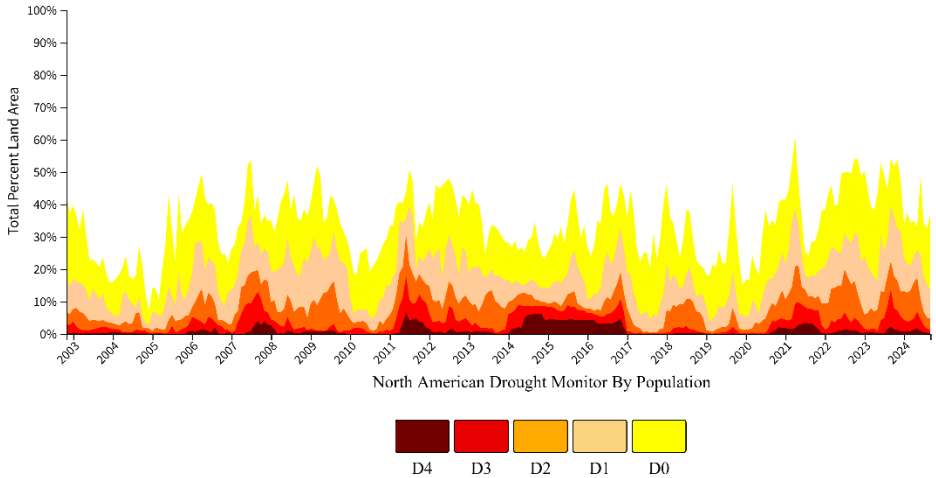
North American Drought Monitor – September 2024

At the end of September 2024, moderate to exceptional drought (D1-D4) affected 25.3% of the area and 13.5% of the population of North America. The percent area value was 0.9% greater than the value for the end of August 2024. The percent population value was 1.7% less than the value for the end of August. At the end of September, 45.4% of the Rio Grande/Bravo River Basin and 57.3% of the Columbia River Basin were in moderate to exceptional drought, 32.1% of the Great Plains was in moderate to extreme drought, and 29.1% of the Great Lakes Basin was in moderate to severe drought. The North American Great Plains extends across the United States and into adjacent parts of northeast Mexico and the southern Prairies of Canada. The percent area values for the Columbia River and Great Lakes basins increased compared to the end of August. The percent area value for the Rio Grande/Bravo River basin decreased compared to the end of August. The percent area value for the Great Plains did not change.



Percent area of North America in drought, November 2002-September 2024.



Percent of the population of North America in drought, November 2002-September 2024.

CANADA:

National Overview

Much of the country received well below normal precipitation through September, particularly in Eastern Canada, with two significant exceptions: central British Columbia and the southwestern Prairies where precipitation was above normal this month. Multiple atmospheric rivers passed through British Columbia, and several storm systems impacted eastern Alberta and western Saskatchewan. Significantly dry conditions persisted across northern Prairies extending into Ontario, Quebec, and the Atlantic region. Drought patterns generally mirrored this precipitation distribution, with drought improving across British Columbia and much of the Prairie Region, emergent drought conditions across southern Ontario and Quebec and drought expansion in the Atlantic region. Extreme Drought (D3) reduced slightly in southern NWT, the Peace Region of BC, and Alberta as a result of significant precipitation and improved moisture conditions. Mean monthly temperatures were generally 3 to 5 degrees warmer than normal across Western Canada and northwestern Ontario. While temperatures were less than 3 degrees above normal in Eastern Canada.

At the end of the month, 65% of the country was classified as Abnormally Dry (D0) or in Moderate to Extreme Drought (D1 to D3), including 46% of the country's agricultural landscape.

Pacific Region (BC)

In September, precipitation varied significantly in British Columbia, with areas in the Northeast, Southeast, and on Vancouver Island recording less than 60% of normal precipitation. Parts of coastal British Columbia and the central interior received well above-normal precipitation, with more than 125 mm of accumulated precipitation this month. The southeast was the driest region of the province, with Kelowna and Cranbrook recording only 25% and 32% of normal precipitation, respectively.

An intense atmospheric river delivered heavy precipitation to coastal British Columbia with significant rainfall extending into the southern interior. This precipitation led to the removal of Abnormally Dry (D0) to Severe Drought (D2) across the central and northern coast, with the exception of Haidai Gwaii. The southern interior saw similar improvements to drought conditions. Further southwest, the Lower Mainland and much of southeastern British Columbia saw Abnormally Dry (D0) to Moderate Drought (D1) conditions improve as recent rainfall alleviated precipitation deficits and replenished surface and groundwater supplies, with wells in portions of the Okanagan Valley returning to normal. In the northeast and the Peace Region, slight improvements were seen, with a reduction in Extreme Drought (D3), but recent rainfall was not enough to fully alleviate the nearly 450 mm long-term precipitation deficits and critically low reservoir levels. Drought conditions persist in the northeast due to ongoing precipitation deficits and low reservoir levels, leaving Abnormally Dry (D0) to Severe Drought (D2) conditions there largely unchanged.

At the end of the month, 71% of the Pacific Region was classified as Abnormally Dry (D0) or in Moderate to Extreme Drought (D1 to D3), including 84% of the region's agricultural landscape.

Prairie Region (AB, SK, MB)

Conditions across much of the southern Prairies continued to improve in September, however warmer than normal temperatures and declining surface water storage resulted in continued drought concerns in some regions. A large area along the border of Alberta and Saskatchewan as well as pockets of southeastern Manitoba received more than 115% of normal precipitation this month providing significant rechange to systems that have been in drought for several years. Western and northern parts of Alberta and also pockets of Saskatchewan and Manitoba were drier than normal, recording less than 60% of normal precipitation. In Manitoba, southern Saskatchewan and southern Alberta drought conditions improved. However, northern Alberta and northern Saskatchewan experienced a slight expansion of Abnormally Dry (D0) to Severe Drought (D2) conditions this month.

Weather across Alberta was variable this month, with northern and western Alberta receiving less than 60% of normal precipitation while eastern and southern Alberta received more than 115% of normal precipitation. Alberta experienced high temperatures in September, with many communities recording their top 10 warmest temperatures on record. Southern Alberta experienced an overall improvement in drought conditions, leading to the removal of Abnormally Dry (D0) areas in the southeast and a reduction of Abnormally Dry (D0) to Moderate Drought (D1) in the southwest. While most of eastern Alberta received much-needed rainfall that improved soil moisture, southwestern Alberta missed out on this precipitation. Drought conditions in central Alberta remained largely unchanged due to a lack of precipitation to improve surface soil moisture conditions. Minor adjustments were made to Severe (D2) and Extreme (D3) drought areas, including the removal of the D3 pocket around Stettler and the emergence of a new D3 pocket west of Edmonton. Drought conditions in the northwest saw minor adjustments, including slight changes to Extreme Drought (D3) areas. In northern Alberta, Abnormally Dry (D0) conditions expanded, while further south, Extreme Drought (D3) around Grande Prairie also expanded slightly. Alberta received increased precipitation at the end of the month; however, this delayed harvest progress across much of the province and only improved soil moisture in some areas, particularly southeastern Alberta. Despite improved soil moisture through many parts of the province, 36 water basins have water shortage advisories, including in the northwest, central, southwest and southern regions of the province.

September brought well above normal precipitation to western regions of Saskatchewan and near normal or below normal precipitation in eastern regions. Most of western Saskatchewan received precipitation ranging from 150% to more than 200% of normal, while areas in the east central portion of the province received less than 85% of normal precipitation. Temperatures were generally 3 to 5 degrees above normal across the province this month. Southern Saskatchewan saw improvements in drought severity and extent, as recent above-normal precipitation across western parts of the province alleviated precipitation deficits and helped recharge soil moisture and pastures for fall grazing. This led to the removal of Severe drought (D2) around Swift Current and the overall reduction of Abnormally Dry (D0) to

Moderate Drought (D1) conditions across southern Saskatchewan. In east-central Saskatchewan, Abnormally Dry (D0) and Moderate Drought (D1) conditions expanded, with a new Moderate Drought (D1) pocket emerging near Melfort. More precipitation is needed to alleviate topsoil moisture shortages and improve livestock water supply in southwest and east-central regions. Northern Saskatchewan also saw an expansion of Abnormally Dry (D0) to Severe Drought (D2), largely due to increasing precipitation deficits and low water flows.

September precipitation in Manitoba continued to be variable, with central Manitoba receiving less than 60% of normal precipitation, while the southeast region received over 200% of normal precipitation. Mean monthly temperatures were 3 to 5 degrees warmer than normal across the province. Abnormally Dry (D0) conditions slightly expanded across southern Manitoba, while in central and northern Manitoba conditions improved. Southwestern Manitoba received less than 85% of normal precipitation, while mid-month storms brought over 200 mm to southeastern Manitoba, leading to most areas receiving more than 150% of normal by month's end. In southern Manitoba, drought conditions varied. Most of the southeast remained drought-free due to high precipitation, resulting in standing water and significant harvest delays. However, Abnormally Dry (D0) conditions expanded in southwestern Manitoba towards Dauphin due to short-term precipitation deficits, and the southern Interlake region also saw Abnormally Dry (D0) conditions emerge due to precipitation deficits and low soil moisture.

At the end of the month, 58% of the Prairie Region was classified as Abnormally Dry (D0) or in Moderate to Severe Drought (D1 to D2), including 42% of the region’s agricultural landscape.

Central Region (ON, QC)

Southern Ontario and Quebec experienced drier-than-normal conditions in September, a departure from the trend of wetter conditions over the past 3 months. Parts of northwestern Ontario, southern Ontario and Quebec received less than 60% of normal precipitation, while only a few pockets of the Central Region recorded between 85% and 150% of normal precipitation. Mean monthly temperatures were near normal across the Central Region.

Parts of Southern Ontario received less than 40% of normal precipitation, which led to the addition of Abnormally Dry (D0) conditions due to short-term precipitation deficits. Northwestern Ontario also saw worsening drought, with Abnormally Dry (D0) conditions expanding south of Hudson Bay and a pocket of Moderate Drought (D1) forming around Thunder Bay. Similarly, Quebec faced worsening drought, with Moderate Drought (D1) added in northern Quebec and Moderate (D1) to Severe Drought (D2) expanding in the south. A Severe Drought (D2) pocket emerged east of the St. Lawrence Seaway, and drought conditions expanded across the Gaspé Peninsula in southeast Quebec.

At the end of the month, 72% of the Central Region was classified as being in Abnormally Dry (D0) or in Severe Drought (D2), including 33% of the region’s agricultural landscape.

Atlantic Region (NS, NL, NB, PEI)

Most of the Atlantic Region saw drier-than-normal conditions in September, with less than 60% of normal precipitation, except for southeastern Nova Scotia, which had between 85% and 150% of normal precipitation. Southern New Brunswick, southern Newfoundland, and parts of Labrador received less than 40% of normal precipitation, with western New Brunswick experiencing 17 days without precipitation. Woodstock had its 4th driest September, and Fredericton recorded its 6th driest, with only 31% of normal precipitation. Despite dry conditions, mean monthly temperatures were near normal across the region.

Due to increasing precipitation deficits, Abnormally Dry (D0) conditions expanded across the Maritimes, with Moderate Drought (D1) pockets developing around northern New Brunswick and Prince Edward Island (PEI). PEI is particularly dry, with limited precipitation, dry soil, and rising concerns about late-season wildfires. In Newfoundland, drought conditions also worsened, with Abnormally Dry (D0) expanded to cover the entire island and pockets of Moderate Drought (D1) conditions added
in central and eastern areas of the island that received less than 40% of normal precipitation. In Labrador, drought also intensified as Abnormally Dry (D0) to Severe Drought (D2) conditions spread, with two Severe Drought (D2) pockets forming near Labrador City and Happy Valley-Goose Bay due to continued short and long-term precipitation deficits.

At the end of the month, 94% of the Atlantic Region was classified as Abnormally Dry (D0) or in Severe Drought (D2), including 86% of the region's agricultural landscape.

Northern Region (YK, NWT)

In September, precipitation remained below normal for much of the North especially throughout southwestern portions of the Northwest Territories. Eastern regions received above normal precipitation improving drought conditions. Temperatures were warmer than normal, with the northernmost areas of the Northwest Territories and the Yukon recording the warmest temperatures.

Drought conditions improved across large portions of the Northern region, although the southwestern portions of the Northwest Territories continued to be in Severe (D2) and Extreme (D3) drought. The majority of the Yukon saw improvements in drought conditions this month, with the removal of swaths of Abnormally Dry (D0) conditions from across the central Yukon and Moderate Drought (D1) conditions were removed in the northeastern Yukon. However, southern Yukon saw drought conditions slightly worsen, with the addition of Moderate Drought (D1) conditions in the southeast due to growing short-term precipitation deficits and low stream flows. Drought conditions across the Northwest Territories improved with the reduction of the extent of Abnormally Dry (D0) to Severe Drought (D2) and the removal of parts of Extreme Drought (D3). Significant reductions in Extreme Drought (D3) occurred along the NWT-Alberta border as near-normal precipitation helped alleviate some deficits. Nevertheless, Extreme Drought (D3) persisted around Fort Liard, Hay River, and Fort Simpson.

At the end of the month, 51% of the Northern Region was classified as Abnormally Dry (D0) or in Moderate to Extreme Drought (D1 to D3).

UNITED STATES:

National Overview

The upper-level atmospheric circulation over the contiguous United States (CONUS) during September 2024 was characterized by several moving parts. High pressure ridging dominated the western CONUS during the first part of the month, shifted to the eastern CONUS at mid-month, then migrated from the west to the east during the last week of September. Pacific Weather systems (short-wave troughs and closed lows) were deflected into Canada by the western ridge and settled over the eastern CONUS early in the month, then favored the West when the ridge shifted eastward. A cutoff low became entrenched over the eastern CONUS as the month ended. To complicate matters, the CONUS was battered by several tropical systems. Hurricane Francine struck the central Gulf of Mexico coast on September 11, Potential Tropical Cyclone 8 brought rain to the Carolina and Mid-Atlantic coast at mid-month, and Hurricane Helene brought heavy rain and devastation to the Southeast as the month ended. The troughs and upper-level lows sent cold fronts sweeping across the country, which generated areas of rain. Each of the tropical systems interacted with the frontal systems, becoming entwined and absorbed into them and enhancing precipitation. This was especially the case with Hurricane Helene. Heavy rain was generated by the tropical system itself. Helene weakened to tropical storm strength by the time it reached the Carolinas, but precipitation was enhanced by its interaction with a cold front in the area and by orographic intensification as its easterly winds bumped up against the southern Appalachians. The result was record rainfall and catastrophic flooding in the southern Appalachians which, coincidentally, ended a rapidly developing flash drought in the area.

When averaged over the month, the upper-level circulation consisted of a ridge across the central CONUS with troughs along the West Coast and in the East. The ridges brought above-normal temperatures with them. Ridging tended to dominate the circulation for much of the month, so monthly temperatures were warmer than average for most of the CONUS. Troughing in the East, especially in the Southeast during the last week, and rains associated with the fronts and tropical systems, contributed to monthly temperatures that were near to slightly below normal in the South to Mid-Atlantic Coast. The dominant ridging also acted to inhibit precipitation. The month was wetter than normal in parts of the West due to fronts and upper-level troughs, and in the Southeast due to fronts, upper-level troughing, and tropical systems. But much of the West, Great Plains, and Great Lakes to Northeast had a drier-than-normal September. The month had a mixed precipitation anomaly pattern in Alaska, Hawaii, and Puerto Rico and the U.S. Virgin Islands. Anomalous high pressure kept temperatures warmer than normal in the Caribbean territories and tended to help drier-than-normal conditions to dominate there and in Hawaii.

Francine's rains brought above-normal precipitation to the Lower Mississippi Valley and eastern Gulf area by mid-month, but very dry conditions were developing from eastern Tennessee to South Carolina in late August and September, with flash drought expanding

across the Southeast. As mentioned earlier, Helene's rains at the end of the month ended flash drought in the Carolinas. The anomalously hot conditions in the Upper Midwest during September increased evapotranspiration which, when combined with much drier-than-normal conditions, caused flash drought conditions to expand in the western Great Lakes and Upper Mississippi Valley by the end of September.

The dry conditions in September resulted in expansion or intensification of drought and abnormal dryness across much of the Midwest and parts of the Northeast, Great Plains, and West. But the above-normal precipitation from the Lower Mississippi Valley to central Appalachians, and in parts of the West, southern Plains, and Hawaii, contracted or reduced the intensity of drought and abnormal dryness compared to the end of August. Drought expansion exceeded contraction with the U.S. Drought Monitor (USDM)-based national moderate-to-exceptional drought footprint across the CONUS increasing from 30.0% at the end of August to 31.5% at the end of September (from 25.2% to 26.4% for the 50 states and Puerto Rico). According to the Palmer Drought Index, which goes back to the beginning of the 20th century, about 27.8% of the CONUS was in moderate to extreme drought at the end of September, which is more than the value at the end of August.

According to data from the NOAA (National Oceanic and Atmospheric Administration) National Centers for Environmental Information (NCEI), the CONUS average temperature during September 2024 was 68.6 °F (20.3 °C), which is 3.8 °F (2.11 °C) above average and ranked as the second warmest September in the 1895-2024 record. Five states in the west and north -- Arizona, Wyoming, North Dakota, South Dakota, and Minnesota -- each had the warmest September on record. The September precipitation total for the CONUS was 2.23 inches (56.6 mm), 0.26 inch (6.6 mm) below average, ranking in the driest third of the historical record (40th driest out of 130 years). But this national rank hid precipitation extremes that occurred on the state level. Iowa, Nebraska, and Minnesota each had the driest September on record; Michigan, Delaware, and New Jersey each ranked third driest; Connecticut was fifth driest; Wisconsin had the sixth driest September; Maine seventh driest; and South Dakota ninth driest. At the other end of the spectrum, Tennessee had the fourth wettest September, Georgia and Kentucky fifth wettest, and North Carolina ninth wettest. The combination of extreme heat and dryness gave Minnesota the driest September SPEI (Standardized Precipitation Evapotranspiration Index) in the 130-year record. At longer time scales, California had the driest July-September 3-month SPEI, Nevada had the driest May-September 5-month SPEI, and Arizona had the driest SPEI at the 2-, 3-, 4-, 5-, and 6-month time scales.

Drought Impacts

Numerous large wildfires burned across the western CONUS with a few developing in the Plains, South, and Mid-Atlantic states. Groundwater was low over large parts of the West, southern to central Plains, and Midwest to central Appalachians. Soils were dry across much of the West, Plains, Midwest, and central Appalachians, and in parts of the Northeast based on several indicators. U.S. Department of Agriculture (USDA) statistics indicated that 45% of the nation’s topsoil and 48% of the subsoil were short or very short of moisture (dry or very dry) as of September 29. USGS data show that monthly streamflow was quite low in parts of the West, central Plains, Midwest, and coastal Northeast. According to National

Drought Mitigation Center Condition Monitoring Observer Report maps, drought impacts reported by people experiencing drought were centered in the central Appalachians to Tennessee River Valley, and in parts of the Plains.

NCEI statistics reveal that the Primary Corn and Soybean agricultural belt had the 29th driest and 14th warmest September, regionwide, in the 1895-2024 record. March-September 2024 ranked as the seventh warmest and 23rd wettest March-September growing season, regionwide, in the historical record. According to the USDA, as of October 1, 2024, drought affected approximately 28% of barley production, 27% of corn production, 25% of cotton production, 33% of sorghum production, 26% of soybean production, 22% of spring wheat production, 44% of winter wheat production, 34% of hay acreage, 31% of the cattle inventory, 19% of the milk cow inventory, and 30% of the sheep inventory. Based on September 29 USDA statistics, 12% of the corn crop, 11% of the soybean crop, and 43% of the pasture and rangeland were in poor to very poor condition.

Northeast: Dry conditions expanded moderate drought in northern and eastern parts of the Northeast region, with moderate (D1) to exceptional (D4) drought continuing in southwestern parts (especially West Virginia). For the region as a whole, the drought area expanded, going from 15.8% at the end of August to 19.3% at the end of September. West Virginia set a new maximum drought intensity record on September 24 when exceptional drought affected 16.6% of the state, based on USDM data.

Southeast: Rain from a cold front and Hurricane Helene dramatically decreased drought in the Southeast this month, with the drought area going from 29.0% at the end of August to 5.7% at the end of September. Moderate or severe (D2) drought remained in parts of Virginia and Alabama.

Great Plains (High Plains region and South region): In the Great Plains, moderate to extreme (D3) drought covered about 43.9% of the central to northern Plains (High Plains region), which is a big jump compared to last month, and moderate to exceptional drought covered 42.1% of the southern Plains, which is a little more than last month. The Lower Mississippi River Valley experienced a huge decrease in the drought area, going from 43.7% at the end of August to 19.3% at the end of September. Drought contracted its area in Tennessee this month, shrinking from 59.7% at the end of August to 18.9% at the end of September. Taken together, the southern Plains, Lower Mississippi Valley, and Tennessee (South region) saw the moderate to exceptional drought area decrease from 38.7% at the end of August to 34.2% at the end of September. Oklahoma set a new drought duration record at the end of September. According to USDM statistics, Oklahoma has experienced moderate or worse drought for 271 weeks, beginning on July 30, 2019. Texas set a new drought duration record at the end of September. According to USDM statistics, at least part of Texas has experienced moderate or worse drought for 280 weeks, beginning on May 28, 2019. The Rio Grande River Basin has experienced persistent abnormal heat and dryness for much of the last six years. The Texas Trans Pecos part of the Rio Grande Basin had a record-dry SPEI at the 30-, 36-, and 48-month time scales.

Midwest: In the Midwest, moderate to severe drought developed in the Upper Midwest while moderate to exceptional drought continued in southeastern Ohio. The Midwest drought

area more than doubled, increasing from 11.7% at the end of August to 28.2% at the end of September. Ohio set a new maximum drought intensity record on September 24 when exceptional drought affected 12.6% of the state.

West: In the West, moderate to exceptional drought covered about 56.3% of the Pacific Northwest, which is more than last month, and moderate to extreme drought affected about 28.5% of the Southwest (Four Corners states), which is also more than last month. For the West as a whole, the percent area experiencing moderate to exceptional drought, according to USDM statistics, increased from 35.8% at the end of August to 37.4% at the end of September. The most severe drought in the West was in western Montana, eastern Montana and Wyoming, and southern New Mexico. Based on the Palmer Drought Index, the drought area across the West as a whole rose from 34.3% at the end of August to 43.8% at the end of September. Westwide, September 2024 ranked as the 18th driest and second warmest September in the 1895-2024 record, April-September ranked 14th driest and third warmest, and the last 12 months ranked as the 48th driest and fourth warmest October-September. New Mexico set a new drought duration record at the end of September. According to USDM statistics, New Mexico has experienced moderate or worse drought for 363 weeks, beginning on October 24, 2017.

Alaska, Hawaii, and Puerto Rico: Moderate to severe drought shrank in Hawaii, going from 21.1% of the state at the end of August to 16.4% at the end of September. Moderate drought ended in Alaska this month but abnormal dryness (D0) persisted in the Alaska panhandle, covering about 2.6% of the state at the end of September. A small (3.0%) area of abnormal dryness developed on Puerto Rico.

MEXICO:

National overview

Tropical Storm Francine (active near the country's east coast from September 9-10) and Hurricane Helene (September 24-25), both in the Atlantic basin, in addition to Tropical Storm Ileana (September 12-15) and Hurricane John (September 22-28), the latter two on the Pacific side, were the main meteorological events that contributed the greatest amount of rainfall during the month. In addition to the aforementioned weather systems, five tropical waves approached the south of the country, as well as three frontal systems that also had a considerable contribution of humidity. Overall, monthly rainfall was above average for large portions of the Mexican South Pacific, Central-South, parts of the northeast and to a lesser extent the north of the Yucatan Peninsula; however, a weak Mexican monsoon continues to be observed in the northwest of the country and the only rains of note were those of Tropical Storm Ileana. Therefore, large areas of the North Pacific and Northwest, as well as portions of the Gulf of Mexico and the Southeast, had below-average rainfall on a monthly basis. Combining the excess rainfall from areas affected by tropical cyclones with areas with low levels of precipitation resulted in a national rainfall of 145.4 mm (5.72 inches), which placed it as the 40th wettest September, very close to the average for the month (1991-2020) of 140.4 mm (5.53 inches); that is, only 3.6% above average. On the other hand, despite the meteorological events that have left significant precipitation, temperatures continued to be

warm in most of the country, with the exception of portions of the central-western part and the Baja California Peninsula. The average national average mean temperature in September 2024 was 25.7 °C (78.3 °F), 1.9 °C (3.4 °F) above the September 1991-2020 average (23.8 °C) (74.8 °F) and ranked as the second warmest September on record. September 2024 was the warmest September for Campeche, Jalisco and Tabasco, as well as the second warmest September for Durango, Guerrero, Estado de México, Morelos, Querétaro, Sinaloa, Veracruz, Yucatán and Zacatecas.

September 2024 has been the wettest September in Guerrero and Morelos, the second wettest September in Michoacán and the third wettest in Colima; on the contrary, it was the second driest September in Sonora. In the last three months, from July to September, Michoacán and Morelos again reached their wettest period, along with Guerrero and Jalisco with their third wettest period; conversely, Chihuahua recorded its sixth driest period from July to September. In the last six months (April-September), Michoacán, Morelos and Yucatán have recorded their second wettest period, while it was the seventh driest period in Baja California Sur and the fourth driest in Chihuahua. In the last three months, the national drought footprint has contracted by 31.56% at the national level, going from 54.71% in moderate to exceptional (D1- D4) drought on June 30 to 23.15% in the same categories on September 30. The Central-West is the region with the greatest recovery in terms of areas with drought, which went from 86.9% in moderate to exceptional drought (D1-D4) on June 30, to only 1.7% in moderate drought (D1) on September 30. The Central-South recovered by 61.9% going from 63% in moderate to extreme (D1-D3) to 1.1% in moderate drought (D1) on September 30. Only the Northwest had a minimal reduction of only 4.3%, falling from 40.7% in moderate to exceptional drought (D1-D4) to 36.4% in the same drought categories, reflecting a weak monsoon in northwestern Mexico.

It was the second warmest summer at the national level based on the data from July to September 2024. In this period, the national average temperature reached 26.3 °C (79.3 °F), which was 1.9 °C (3.4 °F) above the three-month average of 24.4 °C (75.9 °F) in the base period 1991-2020. The warmest summer was July to September 2023 with a national average temperature of 27.0 °C (80.6 °F).

In September, ten fires were reported in the states of Chihuahua, Baja California, Baja California Sur and Veracruz, most of them due to unknown causes or to trash burning, which together burned an area of 1413 hectares (3491.6 acres). The largest fire occurred in Tecate, Baja California, from September 7 to 9, leaving ranch houses with total losses and dozens of animals with burns, some of them fatal, in addition to burning some 662.2 hectares (1537.5 acres) and causing poor air quality in the Tijuana area. According to data from the National Forestry Commission (CONAFOR), the area burned by forest fires from January 1 to October 3 amounted to 1,439,256.7 hectares (3,556,480.8 acres) nationwide. This is the highest annual figure, surpassing the 1,047,493 hectares (2,588,411.573 acres) that burned in the entire year of 2023.

According to data from the National Water Commission, the storage deficit in the country's main 210 dams is 10% as of October 1; 58 dams have less than 50% storage, almost all of them located from the Center-West to the Northwest. Due to the rains caused by Hurricane

John, dams in the state of Guerrero are at maximum capacity, in Oaxaca they are at 80% and those in Michoacán reached 78%.

The rains have benefited the recovery of the country's dam levels, but have also caused delays in corn harvesting for the spring-summer 2024 season such as in El Bajío (Central-West region), where harvesting is expected to resume in the first week of October. Low rainfall and high temperatures have delayed harvesting by 7 to 10 days in Chihuahua and Durango. Water stress can negatively affect yields and bean quality, such as in the case of beans that are in the pod-filling stage. Due to the impacts of the 2023 drought, Mexico must rely on imported beans because domestic production is on a downward trend that worsened in 2023 due to the effects of the long-term drought that extended into this year. Although bean production recovered by more than 40% after the drastic declines of 2022 and 2023, this year's bean production is still insufficient for domestic demand.

Northwest-North Pacific (Baja California, Baja California Sur, Sonora, Sinaloa and Nayarit): Tropical Storm Ileana left more than 240 mm (9.45 inches) of rainfall in norther Sinaloa and around 150 mm (5.91 inches) in the extreme south of Baja California Sur. The rest of the states in the region received less than 50 mm (1.97 in) in the entire month. This represented above-average rainfall around the track of the tropical storm, but the rest of the region resulted in deficits greater than 40 mm (1.57 in) during the month. It was the second driest September and the ninth driest period from July to September in Sonora. Only the Baja California Peninsula had cooler-than-average temperatures, the rest of the states had warmer-than-average temperatures. Sonora and Sinaloa recorded their third and second warmest September, respectively. The region experienced a 7.7% increase in drought area in the last month, going from 28.7% to 36.4%, in both cases in moderate to exceptional drought categories (D1-D4).

Northern (Chihuahua, Coahuila, Durango, Zacatecas and San Luis Potosí): Most of Coahuila, eastern Chihuahua and portions of Zacatecas received above-average rainfall for the month; in Coahuila monthly rainfall accumulations approached 300 mm (11.81 in), while the rest of the region received amounts less than 150 mm (5.91 inches) that left deficits greater than 40 mm (1.57 in), mainly in Durango and western Chihuahua. Only western Chihuahua and southern Durango had temperatures near or below average, the rest had above-average temperatures. It was the sixth driest period from July to September and the fourth driest 6-month period in Chihuahua. Durango recorded its second warmest September, while it was the fourth warmest September in Chihuahua. The area with drought in the Northern region decreased by only 12.4% in the last month, going from 56.6% at the end of August to 44.2% at the end of September, in both cases, in moderate to exceptional drought (D1-D4).

Northeast (Nuevo Leon and Tamaulipas): Northern Nuevo Leon and parts of Tamaulipas received above-average rainfall; in the case of Tamaulipas, the highest accumulations exceeded 400 mm (15.75 in) in the month. Most of Nuevo Leon had below-average rainfall, with deficits greater than 80 mm (3.15 in), while in southern Tamaulipas, deficits were around 40 mm (1.57 in). Much of the rainfall in northern Tamaulipas was due to the proximity of Hurricane Francine, which left more than 230 mm (9.06 in) in the Matamoros region on September 9-10. Averaging the rainfall values of areas with surpluses and deficits,

both states had September rainfall near the average, as the 40th and 44th wettest September for Tamaulipas and Nuevo Leon, respectively. Only northern Nuevo Leon had temperatures near average and the rest of the region experienced a month with warmer-than-normal temperatures. It was the sixth warmest September in Tamaulipas and the tenth warmest in Nuevo Leon. Despite the near-average rainfall, this region did not experience any change in drought conditions, and remains with abnormally dry conditions (D0) in only 1.4% of the region.

Central-West (Aguascalientes, Jalisco, Guanajuato, Colima and Michoacán): The final part of Hurricane John's path reached the coasts of Michoacán and Colima, leaving a wide area from the coast to the Balsas Depression with accumulations greater than 800 mm (31.50 in) at the end of the month, which represented moisture surpluses greater than 300 mm (11.81 in). The rest of the region received less than 300 mm (11.81 in) throughout the month, which meant below-average rainfall in most of Jalisco and Guanajuato. Despite the rains from Hurricane John, temperatures at the end of the month were above average for most of the states in the region, with the exception of coastal Jalisco. It was the third rainiest September in Colima and the second rainiest in Michoacán. It was also the sixth warmest September in Colima and the fifth warmest in Michoacán. The rest of the states had both rainfall and temperature rankings in the middle part of the historical distribution for the month. This region saw the greatest contraction of drought footprint in comparison with the rest of the regions of the country, ranging from 15.7% with moderate to extreme drought (D1-D3) on August 31 to 1.7% in moderate drought (D1); the reduction was 14%.

Central-South (Querétaro, Hidalgo, State of Mexico, Tlaxcala, Puebla, Morelos and Mexico City): This was the region with the second largest drought contraction in the last month, going from 15.7% in moderate to extreme drought (D1-D3) to only 1.1% with moderate drought (D1). The remnants and cloud bands from Hurricane John reached the highlands and moved into the Central-South. Only Querétaro and northern Hidalgo received below-average rainfall; portions of the State of Mexico, Morelos and Puebla received rainfall amounts greater than 600 mm (23.62 in), which meant surpluses greater than 100 mm (3.94 in) for the month. It was the seventh wettest September in the State of Mexico and the wettest September in Morelos. Monthly temperatures continued to be warmer than average, as in most of the country. It was the third warmest September in Mexico City and Hidalgo, and the second warmest in the State of Mexico.

Thanks to the September rains and an appropriate water use policy, the level of the three Cutzamala System dams (El Bosque, Valle de Bravo, and Villa Victoria), which supply approximately 25% of the water consumed in the Valley of Mexico, increased. On September 2, the average storage was 45.66%; on September 14, it increased to 51.90% and on September 30, it was at 60.50%. A similar situation was observed in the Zumpango Lagoon, which had been at its lowest levels in mid-July of this year; since that date, the level increased 10 times as of September 30.

Gulf of Mexico (Veracruz and Tabasco): Although rainfall remained constant in the two Gulf of Mexico states, it was below average, while temperatures were warmer than average. At the end of the month, drought coverage remained at 2.4% of the region, mainly in moderate and severe drought (D1 and D2). It was the 17th driest September in Tabasco and

the 30th driest in Veracruz; the second warmest September in Veracruz and the warmest September in Tabasco.

South Pacific (Guerrero, Oaxaca and Chiapas): This was the main region affected by Hurricane John, which remained active from September 22 to 28. During this period, accumulated rainfall exceeded 1,400 mm (55.12 in) in the Acapulco region; in other words, practically the same amount of annual rainfall in only seven days. The coast of Oaxaca received accumulated rainfall of more than 800 mm (31.50 in), which translated into excess rainfall of more than 300 mm (11.81 in). This cyclone left a trail of wetter-than-average conditions in western Oaxaca and Guerrero, but had no influence on the state of Chiapas, which experienced below-average monthly rainfall. It was the rainiest September in Guerrero and the 17th wettest in Oaxaca; for Chiapas it was the 32nd driest September. September rains also helped Guerrero to record its third wettest July-September period. In all three states in the region, September temperatures were warmer than average. It was the second warmest September in Guerrero, the third warmest in Chiapas, and the 12th warmest in Oaxaca. Guerrero is now free of dryness or drought conditions, while only 3.2% of Oaxaca has moderate drought (D1), in addition to 2.5% moderate drought (D1) and 1.1% severe drought (D2) in Chiapas.

Peninsula of Yucatán (Campeche, Quintana Roo and Yucatán): The northeastern portion of the Peninsula received rainfall around 240 mm (9.45 in) due to the path of Hurricane Helene between September 24-25; Helene and the advance of 5 tropical waves throughout the month kept the region with surplus moisture and therefore no drought or dry conditions. Temperatures were warmer than average throughout the region, with Campeche recording its warmest September, Yucatán with their second warmest, and Quintana Roo its sixth warmest September on record.