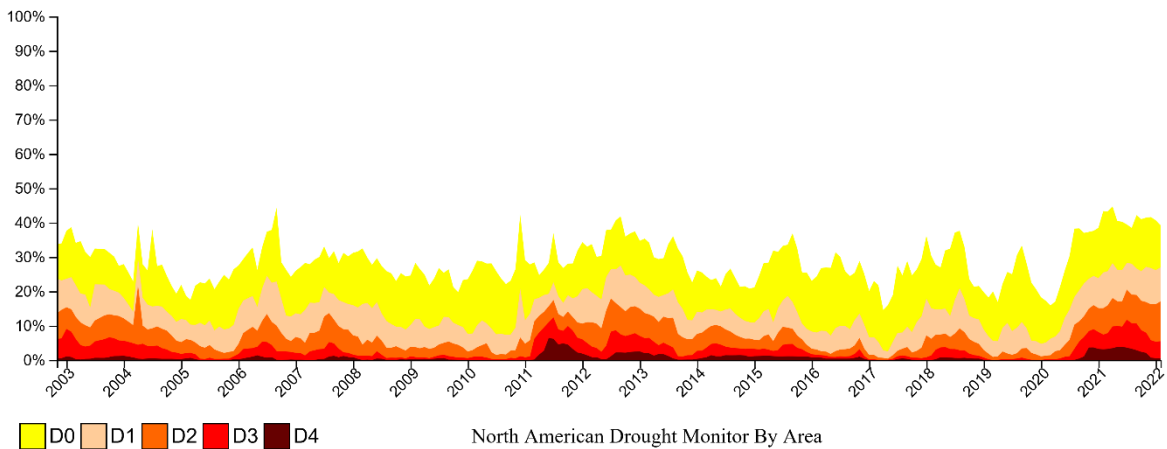
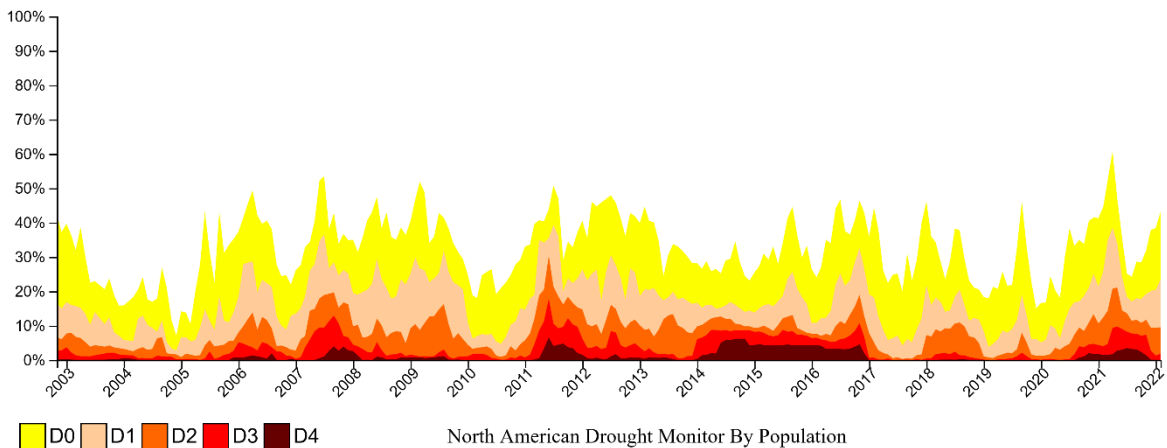


North American Drought Monitor – February 2022

At the end of February 2022, moderate to exceptional drought (D1-D4) affected 27.0% of the area and 23.5% of the population of North America. The percent area value was 0.8% more than the value for the end of January 2022. The percent population value was 3.1% more than the value for the end of January. At the end of February, 68.0% of the Columbia River Basin, 77.1% of the Rio Grande/Bravo River Basin, and 76.7% of the Great Plains were in moderate to exceptional drought, and 12.8% of the Great Lakes Basin was in moderate to severe (D1-D2) 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 Great Lakes and Rio Grande/Bravo River basins and Great Plains increased compared to the end of January. The percent area value for the Columbia River Basin decreased compared to the end of January.



Percent area of North America in drought, November 2002-February 2022.



Percent of the population of North America in drought, November 2002-February 2022.

CANADA:

National Overview

As La Niña conditions persisted in February, above-normal precipitation led to significant improvement to drought conditions across much of the country by the end of the month. Temperatures were above normal along the coasts, but more than 5 degrees colder in parts of the interior of the country. The Pacific Region received near- to slightly below-normal precipitation, but due to significant rainfall in the last 6 to 12 months, there are no concerns in the low precipitation regions. Small improvements were made to the drought in higher precipitation areas, including the southeast and central regions of the province. The Prairie Region continued to have the most significant drought in the country, but above-normal precipitation helped to improve long-term moisture conditions across most of the region. The most significant improvements were in the northern agricultural regions of Alberta and Saskatchewan as well as southern Manitoba. In contrast, southern Alberta continued to see a lack of precipitation; this, coupled with lingering long-term deficits, led to a small expansion of severe drought (D3) in this area. Central Canada received near- to above-normal precipitation in February, resulting in the region remaining drought free with the exception of a small area of southeastern Quebec. With above-normal precipitation, small improvements were made: moderate drought (D1) and abnormally dry (D0) pockets were reduced. Changes to drought across Atlantic and Northern Canada were minimal given continued significant precipitation across both regions.

At the end of the month, 16% of the country was classified as abnormally dry (D0) or in moderate to exceptional drought (D1 to D4), including 65% of the country's agricultural landscape.

Pacific Region (BC)

Despite below-normal precipitation for much of British Columbia in February, drought conditions remained relatively unchanged. Although below-normal precipitation fell in coastal regions, this area continued to have a significant moisture surplus from fall precipitation. Abnormally dry (D0) conditions and moderate drought (D1) persisted in the southern Interior, including Kamloops, Salmon Arm, Kelowna and Penticton, as long-term precipitation deficits remained. However, these conditions have improved due to significant moisture in the last 6 months; these changes include reductions of moderate drought (D1) and abnormally dry (D0) conditions. Moderate drought (D1) and abnormally dry (D0) conditions also improved across central B.C. as up to 115-150% of normal precipitation fell in the last 3 months. Moderate drought (D1) was alleviated in northeastern BC due to above-normal precipitation in the past 90 days.

At the end of the month, 8% of the Pacific region was considered abnormally dry (D0) or in moderate drought (D1), including 36% of the region's agricultural landscape.

Prairie Region (AB, SK, MB)

Although February is historically the driest month of the year across the Prairies, precipitation trended above normal this month across most of the region. Numerous precipitation events tracked across northern Alberta and southern Saskatchewan and Manitoba, resulting in up to 200% of

normal precipitation in the last 28 days. High February precipitation along with above-normal precipitation from previous months has resulted in substantial snow cover and therefore significant improvement to drought conditions. Although much of central Saskatchewan and Alberta were some of the driest areas before winter freeze-up, indices and models show significant improvements in moisture levels in these areas throughout the winter. In the last 6 months, central parts of the Prairies that were once considered to have had moderately low to exceptionally low precipitation are now showing near normal to below normal moisture levels. These vast improvements from above-normal winter precipitation led to widespread reductions to drought from Edmonton to Saskatoon, stretching toward Winnipeg. A significant portion of the extreme drought (D3) across the region was reduced, along with all but one pocket of exceptional drought (D4) near Rosetown, Saskatchewan. The remaining categories of drought (D2 and D1) were also reduced in February. Although southern Manitoba was one of the hardest hit regions in the 2021 growing season, significant improvement took place in the last 6 months. While long-term deficits from the past 1 to 2 years still remain, the severity of these impacts has reduced significantly with the much-needed winter moisture. In the last 365 days, much of southern Manitoba was only considered to have below-normal moisture.

Contrary to the significant precipitation across most of the Prairies, southern Alberta remained dry. This area had a significant lack of snow cover for most of February as well as limited precipitation: only 40-60% of normal precipitation fell in the last two months. Although a lack of snow cover isn't uncommon in this area throughout the winter, this, coupled with the lack of moisture, led to a developing concern about dry conditions in the area. As a result, extreme drought (D3) was slightly expanded toward Lethbridge and will be monitored in the upcoming months for any further degradation.

It is important to note that although much of the Prairie region received ample precipitation throughout the winter, there is still concern for moisture levels going into the 2022 growing season. Because the 2021 summer drought was so severe, water supplies were depleted, leading to low reservoirs and an impact to irrigation. Without significant runoff in the 2022 spring melt, the Prairies remain vulnerable to further water supply concerns going into the growing season.

At the end of the month, 45% of the Prairie Region was classified as abnormally dry (D0) or in moderate to exceptional drought (D1 to D4), including 90% of the region's agricultural landscape.

Central Canada (ON, QC)

Most of Central Canada received normal to above-normal precipitation in February, with some areas reporting exceptionally high precipitation. Good winter precipitation has resulted in no new abnormally dry (D0) or drought regions forming, and helped to improve the small regions that remained as either abnormally dry (D0) or in moderate drought (D1). Two small regions remained in drought as a result of longer term deficits: the northwest region of Ontario adjacent to the Manitoba border and a small area in southern Quebec. Long-term precipitation indicators as well as some hydrometric indicators show deficits in portions of northwestern Ontario. Moisture received this winter has not been enough to make up the significant deficits from the severe drought (D2) conditions of last summer. Pockets of moderate drought (D1) remained in Dryden and southwest of Thunder Bay. Abnormally dry (D0) and moderate drought (D1) conditions improved

along the southeastern border of Quebec as precipitation in February was reported at 115 to 150% of normal. Long-term precipitation deficits in this region continued, however, resulting in small pockets of moderate drought (D1) east of Montreal toward Sherbrook and the Trois-Rivieres region.

At the end of the month, 7% of the Central Region was classified as abnormally dry (D0) or in moderate drought (D1), including 22% of the region's agricultural landscape.

Atlantic Canada (NS, NL, NB, PEI)

Above-normal precipitation throughout February alleviated the one small pocket of abnormally dry (D0) conditions in the Fredericton area. In fact, moisture levels across nearly all of the Atlantic Region remained well above normal in the last 6 months. In the last two months alone, nearly all of Nova Scotia and Newfoundland received 150 to 200% of normal precipitation. This substantial precipitation has resulted in no drought throughout much of the region. However, abnormally dry (D0) conditions emerged throughout northern portions of Labrador as slightly below normal precipitation fell in the last 2 to 3 months.

For February, only 17% of the Atlantic Region was classified as abnormally dry (D0). None of the agricultural landscape had drought or abnormally dry (D0) conditions this month.

Northern Canada (YK, NWT)

Excellent streamflow and well above normal precipitation during February resulted in the Northern Region remaining drought free. Much of the Northwest Territories received precipitation of 45 to 70 mm above normal since January 1. In the southern Yukon, 115 to 150% of normal precipitation was received, improving moisture conditions throughout the region. Abnormally dry (D0) conditions emerged northeast of Yellowknife as below-normal precipitation was received during the last 3 months. Temperatures were near-normal to warmer than normal in Yukon, but it was 5 degrees colder than normal in the eastern half of Northwest Territories.

Only 2% of the Northern Region was classified as abnormally dry (D0).

UNITED STATES:

National Overview:

As of the end of February, short- and long-term drought continued to cover most of the West region of the contiguous U.S. Short-term drying also continued across parts of the central Great Plains, leading to expansion of drought and abnormal dryness in Kansas, Nebraska, South Dakota, and Iowa. Drought continued across much of Texas and Oklahoma, though some areas, particularly in central Texas, saw improved conditions. Long-term drought improved, and locally was eradicated, in parts of northern North Dakota. Short-term drought and abnormal dryness developed in portions of Florida, and in some coastal areas of South and North Carolina. Farther west, conditions improved in western North Carolina and adjacent western Virginia.

During February, temperatures in the central third of the contiguous U.S. were mostly near or below-normal. Compared to normal, the coldest areas were in northern Minnesota, where temperatures were 9 or more degrees below normal. Much of Texas, New Mexico, and Colorado saw temperatures between 3 and 6 degrees below normal, and some areas were a few degrees colder than that. Temperatures from 3 to 6 degrees above normal occurred in parts of Georgia, South Carolina, North Carolina, and Virginia. Parts of southern Idaho saw temperatures range from 6 to 12 degrees colder than normal. Elsewhere across the West, there were scattered pockets of above- and below-normal temperatures, with some areas coming in between 3 and 6 degrees warmer than normal, and a few spots finishing the month 3 to 6 degrees below normal.

During February, parts of the Midwest, especially the Ohio River Valley, saw much above normal precipitation. Parts of northern Minnesota were also wetter than normal for the month. In contrast, several areas were much drier than normal during February. After a snowy December and dry January, much drier than normal weather continued in February in the Sierra Nevada and most of California. Large portions of the West region, with some local exceptions, saw below-normal precipitation for February, with northern Utah, southern Idaho, and western Wyoming also coming in much drier than normal. Drier than normal weather occurred in parts of Louisiana, Mississippi, southern Alabama, Florida, and the Carolinas. Finally, much of central and eastern Nebraska, and much of Iowa and southern Wisconsin, had below-normal precipitation in February.

Northeast: Short- and long-term moderate and severe drought continued this month in northern New England, with a couple minor improvements in northwest Vermont and along the New Hampshire/Maine border. New England and New Jersey saw temperatures a few degrees warmer than normal for February, with the highest readings topping out about 3 degrees warmer than normal. In New York, Pennsylvania, and West Virginia, temperatures were mostly within a couple degrees of normal. Most of the Northeast region, with the exceptions of southern New Jersey and southern Maryland, received above-normal precipitation during February. The wettest areas, compared to normal, were in northern Pennsylvania, northern New York, and southwest New York. A few spots in New England also received above-normal precipitation, in some spots 2 or more inches above normal.

Southeast: Conditions varied widely across the Southeast region during February. In western North Carolina, northern Georgia, and northern Alabama, above-normal precipitation fell. Meanwhile, in most of Florida, southern Alabama, southern Georgia, and eastern portions of the Carolinas, precipitation was sparse compared to normal February values. Temperatures at or exceeding 3 degrees warmer than normal were common across South Carolina and eastern North Carolina, and in parts of Georgia. Drought and abnormal dryness improved in southern Virginia and western North Carolina. Meanwhile, drought conditions worsened in southern Alabama, southern Georgia, large swaths of Florida, central and eastern South Carolina, and eastern North Carolina.

Midwest: During February, precipitation anomalies in the Midwest occurred in three main areas. First, above-normal precipitation fell in the southeast half of Illinois, southern Lower Michigan, southeast Missouri, Indiana, and much of the Ohio River Valley region. Below-normal precipitation occurred from southern Wisconsin into northern Missouri and most of Iowa. Finally,

above-normal precipitation occurred in northern Minnesota and the Michigan Upper Peninsula. Most of the region had temperatures either near normal or colder than normal. Relative to normal, the coldest areas were in central and northern Minnesota, northwest Wisconsin, and the western Michigan Upper Peninsula. In those areas, temperatures ranged from 3 to 12 degrees below normal. Over the course of February, a few areas of drought and abnormal dryness were removed in west-central Illinois, central Lower Michigan, northeast Missouri, and from east-central to southwest Missouri. Drought or abnormally dry conditions remained or worsened from northwest Missouri and western Iowa east-northeast through the northern Michigan Lower Peninsula. A few local improvements occurred in parts of the Michigan Upper Peninsula. Finally, conditions also improved across much of northern Minnesota.

South: February brought a mixed bag of improving and degrading drought conditions to the South region. Compared to normal, the driest weather occurred in southern Louisiana, southwest Mississippi, and the northern Texas Gulf Coast. Parts of south Texas also saw below-normal precipitation. Parts of eastern Oklahoma, most of Arkansas, parts of northern Mississippi, and a small area of central Texas received above-normal precipitation. Temperatures in Mississippi were mostly within a degree or two of normal. Farther to the west, temperatures in Oklahoma and Texas were below normal, especially in the southwest two-thirds of Texas, where temperatures between 6 and 8 degrees colder than normal for February occurred. Drought or abnormal dryness still covers much of the region, except for Tennessee, northeast Mississippi, far eastern Oklahoma, northern Arkansas, and a few spots in Texas. Numerous areas of extreme drought can be found currently, especially in the Texas Panhandle and west half of Oklahoma, southern Louisiana, and a few parts of southern and western Texas. Conditions during February tended to improve in central Texas, southeast Oklahoma, and northeast Mississippi. Conditions tended to worsen in south Texas and southern Louisiana, and in a few other localized areas.

High Plains: The High Plains also saw a mix of improvements and degradations to drought and dryness conditions during February. Three areas of particularly notable precipitation anomalies occurred: very dry conditions in central and eastern Nebraska and southeast South Dakota; very dry conditions in north central Colorado, south central Wyoming, and far western Wyoming; and wetter than normal conditions in central and south central Colorado. Much of the region saw colder than normal temperatures in February. Most of Colorado was colder than normal, with many areas of central and southeast Colorado coming in between 4 and 8 degrees below normal. Eastern North Dakota was also much colder than normal for the month, with most locations seeing temperatures between 6 and 10 degrees below normal. Much of the High Plains began March in drought or abnormal dryness, with the exception of northeast South Dakota and eastern North Dakota. During February, conditions worsened in central and east central Nebraska, much of northern Kansas, southern and central South Dakota, parts of northern Wyoming, and parts of north central Colorado. Farther east in Colorado, conditions improved, particularly in northeast Colorado and the northern Front Range. Conditions also improved across much of the northern half of North Dakota.

West: Drought or abnormally dry conditions continued in February across most of the West region, with the exceptions of western Washington, far northwest Oregon, and far northwest Montana. Much drier than normal weather enveloped much of the West region during February, with a few exceptions. Northern Utah, most of California, most of Oregon (particularly the

southwest), most of Nevada, and southern Idaho were much drier than normal for February. Some areas of near- or above-normal precipitation occurred, mostly in northeast Arizona, western Washington, and parts of Montana. Temperature anomalies were a mixed bag in California, with some areas coming in as much as 4 to 6 degrees above normal, but other areas coming in near or slightly colder than normal. Temperatures were generally colder than normal in Arizona, Utah, Nevada, and Idaho, particularly in southern Idaho, where readings between 6 and 10 degrees below normal were common. Some improvements to drought conditions occurred in central Idaho, northeast Montana, and parts of west central Montana. Degradation to conditions occurred in parts of California, western Oregon, Nevada, Arizona, New Mexico, southeast Idaho, and Utah.

MEXICO:

National Overview

Climatologically, February's rainfall is lower than January's; likewise, February marks the beginning of the driest quarter of the year at the national level, although the country continues to be influenced by the passage of winter systems. Precipitation accumulations during February 2022 were concentrated over the Yucatan Peninsula, as well as in some specific regions in the northeast and along the coast of the Gulf of Mexico. These precipitation patterns were promoted by four cold fronts. During this month, the Arctic oscillation was in positive phase, so the passage of frontal systems was less frequent than the normal average of six. Despite above-average rainfall along the Gulf of Mexico coast, drier-than-normal conditions prevailed in the rest of the country, where the most significant rain deficits were observed in the northwest and along the Sierra Madre Occidental.

Precipitation varied in the two fortnights of the month. During the first fortnight, the greatest amount of precipitation accumulated in the southern part of the country and the Yucatan Peninsula. These accumulations were due to the passage of cold fronts 28 and 29, which moved over the states of the Gulf of Mexico slope and interacted with a low pressure channel, promoting intense precipitation. On the Pacific coast and in the northwest, conditions were drier than normal. In the second fortnight, the precipitation pattern changed considerably; the passage of fronts 30 and 31 (SMN numbering) led to precipitation in Tabasco and northern Chiapas where positive precipitation anomalies reached values greater than 80 mm. During this fortnight, the Yucatan Peninsula, the northern coast of the Gulf of Mexico and the northeast had drier than normal conditions; as for the northwestern portion, the negative anomalies decreased in intensity, but persisted. This change was also observed in the national average: of the 16.4 mm of precipitation recorded during the month, 12.7 mm occurred during the first fortnight, while 2.7 mm occurred in the second fortnight. At the end of the month, precipitation accumulations barely reached 25% of normal in most of the country, while along the Gulf of Mexico coast accumulations were more than 50% of normal.

Regarding temperatures, the national average was 17.0 °C, 1.0 °C below the 1991-2020 base period, which placed it among the 15 coolest Februarys on record. Guerrero recorded the highest temperature in the nation at 42.6 °C on February 23; the minimum temperature of -18.0 °C was recorded in Durango on February 15. Overall, below-average temperatures covered most of the

country throughout February, including the north and northeast and along the states of the Gulf of Mexico slope, where the temperature was less than 2.0 °C below average. On the other hand, temperatures of 1.0 °C above average covered the northwest and along the southern Pacific coast states.

According to data from the National Forestry Commission (CONAFOR), 651 forest fires have been recorded so far this year (as of March 3), affecting an area of 11,796.27 hectares. Of this area, 98.05% corresponded to herbaceous and shrub vegetation and 2.03% to trees.

At the national level, as of February 28, the area with moderate to extreme drought (D1-D3) was at 23.1%, an increase of 8.73% compared to the end of January 2022. Consequently, the area unaffected by drought decreased by 11.78% compared to the previous month, leaving an unaffected area of 33.79% at the national level. This reflects the increase in the moderate to extreme drought categories (D1- D3) in February.

However, in some regions there was a decrease in drought, such as the South Pacific region and the Yucatan Peninsula, which showed a decrease in the moderate drought category (D1). The decrease in drought in these regions is due to the passage of the cold fronts mentioned above. In the remaining regions, moderate drought (D1) increased; in the Northwest, severe drought (D2) increased, while in the North and Northeast regions severe and extreme drought (D2 and D3) increased.

Northwest or North Pacific (Baja California, Baja California Sur, Sonora, Sinaloa, Nayarit):

All states had at least 20 mm precipitation deficits, with Baja California and Sonora as the most affected. For Baja California, February 2022 was among the 15 driest Februarys on record. In terms of average temperature, Sonora, Sinaloa and Nayarit had conditions close to or cooler than average. In contrast, Baja California and Baja California Sur had warmer than average conditions; for both states, February 2022 was among the 15 warmest Februarys on record. In February, frontal systems had no influence in the northwest, so no significant precipitation was received, which was reflected in 31.5% of the region with moderate to severe drought, an increase of 8% with respect to the previous month. Only 13.7% of the region is out of drought or dryness conditions.

Northern (Chihuahua, Coahuila, Durango, Zacatecas, and San Luis Potosí):

The Northern region and the Northeast were the only regions with a 2.4% increase in extreme drought (D3). All five states had precipitation deficits of at least 10 mm, with Chihuahua and Durango reporting the most significant deficits. For Chihuahua, it was the tenth driest February on record. Most of the region had cooler than average temperatures, mainly in Chihuahua, Coahuila and Durango where deviations were around 2.0 °C below average. These conditions caused an 11.7% increase in moderate to extreme drought values (D1 to D3), which now cover 34.9% of the region, while 15.1% of the region has no drought or dryness concerns.

Northeast (Nuevo Leon and Tamaulipas):

The Northeast region, like the North region, saw an increase in the severe drought category in the last month; however, unlike the North region, the Northeast region did not have extreme drought conditions (D3) during January 2022. Extreme drought (D3) is now located north of Nuevo Leon and Tamaulipas. Precipitation patterns across the Northeast were combined; the northern portion of Nuevo Leon had drier than normal

conditions, with deficits greater than 10 mm. In contrast, southern Tamaulipas and Nuevo Leon had wetter than average conditions, with positive anomalies greater than 10 mm. Cooler than normal conditions prevailed in both states, mainly in the north of the region where monthly temperatures were about 2.0 °C cooler. In fact, it was the third coolest February on record in Tamaulipas. These conditions together caused the Northeast to have an increase in moderate to extreme drought (D1 to D3) of 12.5% with respect to the previous month, covering 17% of the region, with 3.8% in extreme drought.

Central-West (Aguascalientes, Jalisco, Guanajuato, Colima and Michoacán): In the Central-West region, drier than normal conditions prevailed, mainly in western Jalisco, where precipitation deficits were on the order of 20 mm, although dry conditions were not intense enough for any of the states to set a record in precipitation deficit for February 2022. Despite the influence of cold fronts on temperature, warmer than normal conditions dominated the Pacific coast, which includes part of the Central-West region; for Jalisco, Colima and Michoacán, February 2022 was among the 15 warmest Februarys on record, ranking as 6th, 3rd and 15th, respectively. The lack of precipitation and warm conditions caused the Central-West region to have a 20.1% increase in the moderate drought category (D1), the largest increase compared to the rest of the regions. Abnormally dry conditions cover 62.3% and only 14.1% of the region is not affected by any drought or dryness.

Central-South (Querétaro, Hidalgo, State of Mexico, Tlaxcala, Puebla, Morelos and Mexico City): Below-average rainfall was observed in the State of Mexico, Mexico City, southern Querétaro and southern Hidalgo while the rest of the region had close to average precipitation, and in some areas north of Puebla and Hidalgo, excess precipitation was received. These accumulations were associated with the passage of cold fronts that were able to influence these regions. Cooler than normal conditions prevailed in northern Querétaro, northern Hidalgo, and northern and southern Puebla, with negative anomalies of around 1.0 °C. In contrast, warmer than normal conditions prevailed in southern Mexico State, Mexico City and southern Hidalgo, where anomalies reached 1.0 °C above average. These conditions caused the Central-South region to have a 7.1% increase in moderate drought (D1), which now covers 7.4% of the region. Abnormally dry conditions cover 18.2%, and 74.3% of the region does not have any drought or dryness.

Gulf of Mexico (Veracruz and Tabasco): This region had both dry and wet conditions during February 2022. Along Veracruz, mainly drier conditions were observed, with negative anomalies on the order of 10 mm. However, there were isolated regions with positive anomalies of around 10 mm. Tabasco, on the other hand, presented wetter conditions and even had positive anomalies greater than 100 mm during the month. These accumulations were due to the passage of cold fronts and their interaction with low pressure channels that promoted torrential rains in the area, resulting in the sixth wettest February in Tabasco. Consequently, temperatures were cooler than average, mainly in northern Veracruz where temperatures were up to 2.0 °C below average, and this state recorded its second coolest February. Despite the heavy rainfall in Tabasco, the Gulf of Mexico region saw an increase in the moderate drought category (D1) from 3.7% to 14.8%, although 55.3% of the region is still free of drought or dry conditions.

South Pacific (Guerrero, Oaxaca and Chiapas): Slightly drier conditions prevailed in the states of Guerrero and Oaxaca. In contrast, Chiapas had wetter than normal conditions, with positive

anomalies greater than 100 mm in the north of the state, making it the 14th wettest February in Chiapas. The warmest temperatures were concentrated along the southern coast of these three states. Guerrero had positive temperature anomalies up to 2.0 °C above average, making it the third warmest February in Guerrero. At the end of the month, 2.7% of the region suffered from moderate drought, a slight decrease of 0.2% compared to last month. The abnormally dry area (D0) also decreased by 10% and now covers 31.9% of the region.

Yucatan Peninsula (Campeche, Quintana Roo and Yucatan): The three states of the region had wetter than average conditions, with monthly exceedances greater than 40 mm in some cases. All three states had February rains that placed them in the top ten wettest: Campeche (tenth wettest), Quintana Roo (ninth wettest) and Yucatan (sixth wettest). The abundant rainfall in the region was mainly due to the passage of four cold fronts during the month and their interaction with low pressure that promoted convection in the area. Although the cold fronts were an important influence, in general, temperatures in the region were close to average. In the case of Quintana Roo, anomalies of around 0.5 °C above average were recorded. The conditions described above caused the Yucatan Peninsula region to have a 0.7% decrease in the moderate drought category (D1), eliminating this category in the region, while abnormally dry conditions (D0) only cover 1.7% of the region; therefore, the area unaffected by drought or dryness has improved.