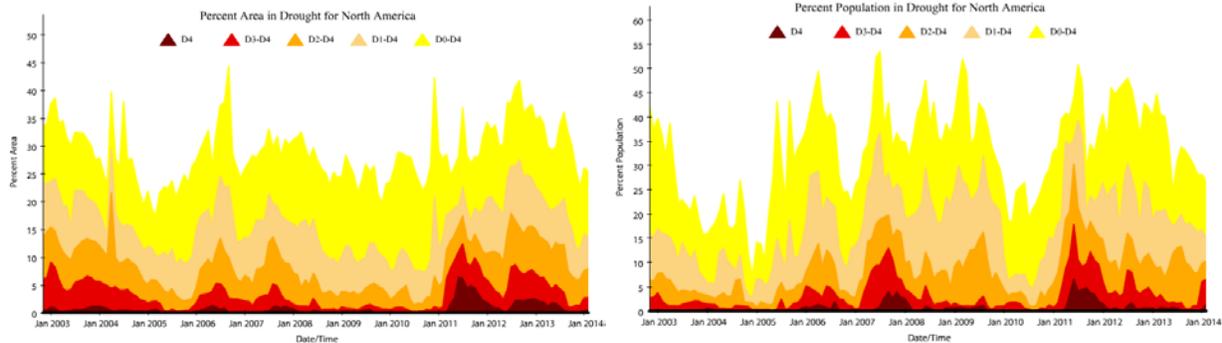


## North American Drought Monitor – February 2014

At the end of February 2014, moderate to exceptional drought (D1-D4) affected approximately 13.8% of the area and 15.3% of the population of North America. These percentages are a decrease of 0.3% for area and 1.4% for population compared to the values for the end of January 2014.



**CANADA:** With the exception of southern British Columbia and the Atlantic region, February saw below-average precipitation across much of Canada, with central Alberta and southern Manitoba experiencing especially dry weather. February was also an exceptionally cold month across the country, with British Columbia, the Prairie region, and northwestern Ontario experiencing temperatures 6-10 degrees Celsius below-normal. The cold temperatures have increase the depth of frost and will reduce infiltration of spring melt and reduce the potential for soil moisture recharge in many regions. Drought conditions worsened in the southern interior of British Columbia but were relatively stable elsewhere. Much of the precipitation across Canada fell as snow, and therefore has not resulted in immediate improvements to soil moisture or water supplies.

The drought conditions in southern British Columbia became more severe in February, with Moderate (D1) and Severe (D2) drought developing in the southern Okanagan Valley. This is due to a winter season precipitation deficit in the area and low stream flows, compounded by frozen soil that has prevented soil moisture recharge. The southwest area also remained dry, with D1 drought surrounded by a large area of Abnormally Dry (D0) conditions. The snowpack in southwest British Columbia was the driest it is has been since 2005, at 25 to 50 per cent below average. This indicates that there will be below-normal spring runoff, potentially leading to increasingly dry conditions. An area in the northwest portion of the province continued to receive below normal precipitation and resulted in an Abnormally Dry classification.

Across the Prairie region, drought conditions remained much the same from January. Central Alberta remained Abnormally Dry, with dryness now stretching north of the North Saskatchewan River. A large area between Edmonton and Calgary received more than 40 per cent less precipitation than normal. Interestingly, the snowpack in western Alberta is estimated to contain more than 200mm water equivalent; an amount so high that it only occurs once every 50 years on average. This snow pack will result in increased stream flow and water availability during spring runoff. However, in the eastern part of the province, the snowpack is below-normal. Warm, dry winds have swept across the southern portion of Alberta in the past few

months, melting snow and exposing soil. With the soil exposed, extreme low temperatures as dried the soil further. Soil moisture in east and central Alberta is very low, with an area east of Edmonton experiencing low levels only seen once every 50 years on average. In Saskatchewan, the dry conditions in the north improved significantly. The D0 conditions in northern Manitoba improved as well, but it remained dry in the southern and Interlake areas of the province due to a lack of precipitation and little snow cover.

The Central region saw an increase of Abnormally Dry conditions. In Ontario, D0 conditions in the north stretched down into the northern agricultural areas, while in Quebec, D0 conditions developed west of the St. Lawrence River between Montreal and Quebec. These areas of Ontario and Quebec received well below-average precipitation during February. The Atlantic region received above-average precipitation in February and remained free of any drought conditions.

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- Manitoba Water Stewardship
- Nova Scotia Department of Agriculture
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- Ontario Ministry of Agriculture, Food, and Rural Affairs
- Ontario Ministry of Environment
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- Saskatchewan Water Security Agency
- Saskatchewan Ministry of Environment Wildfire Management

**UNITED STATES:** According to the U.S. Drought Monitor (USDM), the portion of the contiguous United States in drought (D1 to D4) on March 4, 2014 was 36 percent which is a decrease from 38 percent coverage at the beginning of February. This decrease in drought coverage during the past month occurred mostly across the Pacific Northwest and lower Mississippi Valley. The persistent ridge of high pressure that resulted in unseasonably dry weather this winter along the West Coast shifted north to Alaska during late February. This pattern change allowed low pressure systems from the Pacific to enter the western United States. However, the much-needed precipitation resulted in only modest drought improvement across northern California and the Pacific Northwest. As of March 4, the USDM designated two-thirds of California with extreme to exceptional drought (D3-D4). Long-term drought continued to affect much of the Great Basin, Southwest, and central/southern Great Plains. The eastern U.S.

remained drought-free. Meanwhile, drought coverage continued to decline across Hawaii with much of the drought limited to the Big Island.

**Historical Perspective:** According to the National Climatic Data Center, the contiguous U.S. had an average temperature of 32.2 degrees F, 1.6 degrees F below average, and the 37<sup>th</sup> coldest on record. The relatively cold February is consistent with the 2013-14 winter which was 1 degree F below the 20<sup>th</sup> century average. The national precipitation (2.12 inches) ranked in the middle of the 120-year period of record. Arizona, New Mexico, and Oklahoma (Montana and Wyoming) recorded a top ten dry (wet) February.

**Agricultural and Hydrological Highlights:** A low snowpack remained a major concern for the Sierra Mountains of California where snow-water equivalent values were running below 50 percent of normal by early March. According to the USDA fieldwork summary, the precipitation at the end of February improved conditions for small grains, wheat, and alfalfa. Farther east, below-average precipitation continued to negatively affect prospects for winter wheat across the southern Great Plains. As of March 2, 31 (15) percent of the winter wheat in Oklahoma (Texas) was rated in good to excellent condition. These ratings are a 4 to 5 percent decrease from a month ago.

**MEXICO:** The circulation associated with a North Atlantic high favored warm temperatures and cloudless skies from the Yucatán Peninsula to the Gulf of Mexico basin. These dry conditions and warm temperatures made February 2014 as the third warmest since 1971 and the driest February since 1941 (matched with February 1996). At the national level, only 6.0 mm of precipitation was observed which is a deficit of 12.4 mm with respect to February's long-term mean, according to preliminary information from the Mexican Weather Service.

Only some regions of Nuevo Leon, Tamaulipas, Chiapas, Campeche, Yucatan and Quintana Roo received above normal precipitation, while the rest of the country received little or no precipitation. The dryness was evident when eleven states were located in the top ten driest for February: Hidalgo (10°), San Luis Potosi, Sinaloa and Sonora (9°), Chihuahua (8°), Oaxaca and Tabasco (6°), Veracruz (5°), Puebla (2°), while Jalisco and Morelos experienced its driest February since 1941. As a response to the low rainfall, the severe drought (D2) downgraded to severe (D3) in northern Baja California and Chihuahua, with both medium and long-term impacts. These regions remained free out of the extreme drought since October 2007 (for Baja California) and August 2012 (for Chihuahua). In Sinaloa and Baja California Sur abnormally dry conditions (D0) expanded as a response to low precipitation over the past two months, a similar condition was observed in the south of the country (Oaxaca, Michoacán, and Guerrero).

February was very warm for the entire country with a mean temperature of 18.8 °C which was 1.2 °C above the normal (1971-2000). As a result, the country experienced its third warmest February since 1971, just behind February 2006 (19.2 °C, the warmest) and in 1995 (18.8 °C, the second warmest). The air masses behind frontal systems continued to be fast-moving and with little decrease in temperature. All three parameters of the temperature were always placed in the upper range of the mean plus two standard deviations. February 2014 was the warmest in four states in the north (Baja California, Baja California Sur, Durango and Sonora), three states in the

south (Campeche, Quintana Roo and Tabasco) and a state in the center of the country (Morelos), while seven states in the center of the country reached its second warmest February (Colima, Federal District, Hidalgo, Oaxaca, Puebla, Queretaro and Tlaxcala) and two more in the north of the country (Chihuahua, and Zacatecas).