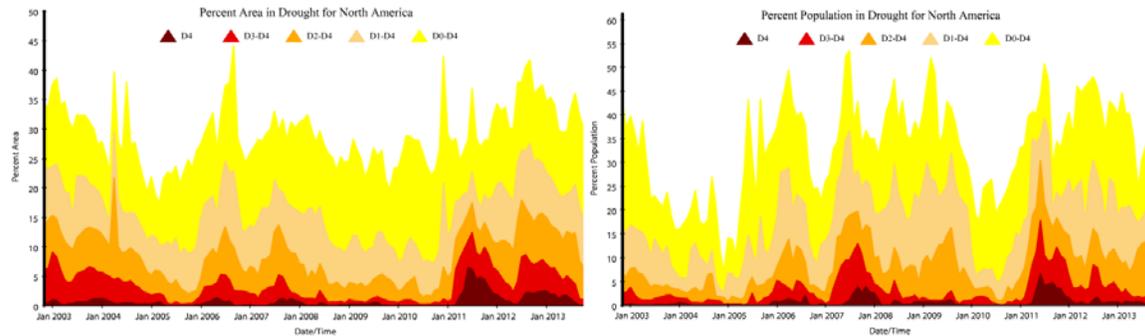


North American Drought Monitor - October 2013

At the end of October 2013, moderate to exceptional drought (D1-D4) affected approximately 14.9% of the area and 18.2% of the population of North America. These percentages are a decrease of 1.9% for area and an increase of 0.5% for population compared to the values for the end of September.



CANADA: In October the extent and severity of drought increased across Canada. In western Canada, Moderate Drought (D1) overtook areas of east-central Alberta and west central Saskatchewan, while in northern and eastern Canada Abnormally Dry (D0) classifications were expanded.

Monthly temperatures in October were near normal across the country. Northern British Columbia (BC), Alberta, northeastern Ontario, and Quebec saw temperatures that were slightly above seasonal, while southern Saskatchewan and Manitoba were below average. October rainfall was well below average at less than 50 percent of normal in many places across western Canada. That led to increased drought across the region. The Atlantic region also had below average rainfall, though there was minimal concern. Southern Ontario reported above average rainfall, over 60 mm (2.3 inches) more than expected in some places.

Most drought areas were concentrated in western Canada. In east-central Alberta and west-central Saskatchewan soil moisture reserves were well below normal, a result of limited rainfall since August. While there is still much time to eliminate the deficit before next year, concern continued about the impact to crop and pasture lands. The dry conditions also impacted fall seeding intentions in some areas. This area was classified D1 (Moderate Drought) as a result.

In north-eastern Manitoba stream flows remained lower than normal due to lack of rainfall. Since April 1 of this year, rainfall in this region has been 70 percent of normal; as a result the D0 classification continued across the region. Short-term and long-term impacts also remained, though the winter season typically brings high snowfall to northern regions and with it opportunity to recharge lakes and streams. In the northern boreal forest region, some improvement was noted in northwestern Saskatchewan. As a result the D0 classification was scaled back.

In British Columbia, additional rainfall in October improved the drought situation. The previous D1 classification in central BC was downgraded to Abnormally Dry (D0). The remaining D0 areas were maintained throughout the interior where rainfall remained about 50 percent of average over the past four months. The Queen Charlotte Islands and interior regions east of the Islands also remained classified D0.

In Quebec the D0 classification was maintained along the St. Lawrence River and in the Gaspé region because October rainfall failed to replenish moisture reserves. Impacts, however, remained minimal overall.

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- Ontario Ministry of Agriculture, Food, and Rural Affairs
- Ontario Ministry of Environment
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- La Financière agricole (Québec)
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- Saskatchewan Water Security Agency
- Saskatchewan Ministry of Environment Wildfire Management

UNITED STATES: An early-month Black Hills blizzard—devastating to livestock—headlined an active weather pattern across the north-central U.S. The October 3-5 storm, which affected a multi-state area but hit hardest and killed thousands of animals in the higher elevations of western South Dakota, was followed by two additional rain storms that hampered recovery operations.

Farther east, however, Midwestern producers had enough time between storms to harvest nearly half (47 percent) of the U.S. corn and about two-thirds (66 percent) of the soybeans during the 4-week period ending October 27. Overall U.S. harvest progress by October 27 was 59 percent for corn and 77 percent for soybeans.

Most of the Plains received enough autumn moisture to promote winter wheat emergence and establishment, leading to favorable early-season crop conditions. Nearly two-thirds (61 percent) of the U.S. wheat was rated in good to excellent condition on October 27, although pockets of dryness were a concern on the southern High Plains.

Meanwhile, dry weather returned across much of the West, following September's exceptional rainfall. Flood recovery efforts advanced in Colorado, while mild, dry conditions fostered Northwestern winter wheat growth. In addition, dry weather favored fieldwork, including cotton harvesting, in California and the Southwest.

Elsewhere, generally dry weather accompanied near- to above-normal temperatures in the Southeastern and North Atlantic States, while a single, slow-moving storm—prior to mid-month—triggered heavy rain in the Mid-Atlantic region. Southeastern fieldwork included winter wheat planting and cotton, peanut, and soybean harvesting.

The portion of the contiguous United States in drought (D1 to D4) declined during October. Drought coverage, which had stood at 41.21% on October 1, fell to barely one-third (34.70%) of the Lower 48 States by October 29. By month's end, lingering coverage of exceptional drought (D4) was limited to Nevada (5% coverage), Colorado (4%), Oklahoma (2%), and Texas (less than one-half of one percent).

Only the northeastern U.S. experienced worsening conditions during October. By October 29, short-term precipitation deficits led to moderate drought (D1) covering 45% of Massachusetts, 24% of Rhode Island, 18% of Connecticut, 4% of New York, and 1% of New Jersey.

On October 29, drought coverage in Hawaii and Alaska stood at 64 and 16%, respectively. During October, drought coverage increased less than one percentage point in Hawaii and was unchanged in Alaska, in spite of the warmest October on record in the latter state.

Historical Perspective: According to preliminary information provided by the National Climatic Data Center (NCDC), the contiguous U.S. experienced its 37th-coldest, 50th-wettest October during the 119-year period of record. The nation's average temperature of 53.6°F (12.0°C) was 0.6°F (0.3°C) above the 1901-2000 mean. Meanwhile, precipitation averaged 2.23 inches (56.6 mm) across the Lower 48 States, 106% of normal.

State temperature rankings ranged from the 11th-coldest October in Oregon to the 10th-warmest October in Delaware. In general, cool conditions dominated areas west of the Mississippi River. Meanwhile, state precipitation rankings ranged from the fourth-driest October in Rhode Island to the second-wettest October in South Dakota. Top-ten rankings for October wetness were also noted in Nebraska, North Dakota, and Wyoming. In Oregon, the wettest September on record was followed by its 11th-driest October.

Agricultural and Hydrological Highlights: By October 27, only 4% of the U.S. winter wheat was rated in very poor to poor condition, courtesy of ample topsoil moisture in most production areas. However, 14% of the Texas winter wheat was rated very poor to poor on October 27, up from 5% the previous week.

The wheat-related concerns in Texas were due to short-term dryness, but underlying long-term drought on the southern High Plains adversely affected cotton for a third consecutive year. By October 27, more than one-third of the maturing cotton crop was rated very poor to poor in Oklahoma (42%) and Texas (35%).

Rangeland and pastures also continued to suffer from the effects of long-term drought, particularly across the central and southern Plains and the Southwest. On October 27, between one-third and one-half of the rangeland and pastures were rated very poor to poor in Arizona (49%), New Mexico (47%), Nebraska (42%), Colorado (38%), and Kansas (36%). More acute drought-related problems left rangeland and pastures 100% very poor to poor in California and 60% very poor to poor in Nevada. In addition, pastures were still suffering from the aftereffects of summer rainfall deficits across parts of the Midwest, especially in Iowa (49% very poor to poor on October 27) and Wisconsin (43%).

Given the fact that California experienced back-to-back drought years in 2011-12 and 2012-13, winter precipitation will be critical in determining water availability for the summer of 2014. As the water year began on October 1, 2013, California's 154 intrastate reservoirs collectively held just 79% of their normal water volume for the date. Meanwhile, parts of the Great Basin and Southwest also entered a potential third year of drought. Farther east, water-supply issues remain a significant concern as far east as the southern Plains. For example, Austin, Texas, received an October-record 13.28 inches (337.3 mm) of rain, but continued to suffer from the effects of significant water shortages in Lakes Travis and Buchanan along the Colorado River.

MEXICO: This summer's rainfall season is coming to an end and has been wetter than expected. After the wettest September since 1941, October's rains were 4.1% above the long-term mean, ranking as the 32th wettest October for the country. At the state level, it was the 6th and 7th wettest October for Colima and Yucatan, respectively, the 2nd wettest August-October (3-month period) for Quintana Roo and Yucatan, the wettest August-October for Colima, Michoacan and Morelos, but, the 8th driest November-October (last 12 months) for Oaxaca and Tabasco.

Again this month, tropical cyclones were the biggest source of moisture – one in the Gulf of Mexico and two on the Pacific side. Precipitation from tropical storm *Karen*, which formed October 3, was enough to keep the northern of Yucatan Peninsula out of drought or dryness. *Karen* tracked to the U.S. southeast and remained until October 6. In the Pacific, tropical storm *Octave* formed on October 13 and moved toward the Baja California Peninsula, made landfall as a tropical depression in Baja California Sur, and one day later its remnants touched southern Sonora. Precipitation reports were 205.0 mm (8 in) in Loreto, B.C.S. (132% of its annual mean), and 165.0 mm (6.5 in) in Porfirio Diaz, Son, (46% of its annual mean). These rains alleviated conditions from abnormally dry (D0) and moderate drought (D1) in southern Sonora. On October 20, tropical storm *Raymond* formed in the Pacific, in southern Guerrero, and the same day reached the Saffir-Simpson's Hurricane-Three category. Despite not entering the country and keeping 200 km far off the coast, moisture associated with *Raymond* resulted in reports of 296 mm (11.6 in) from 20 - 22 October in the Acapulco area, the same area hit last month by tropical storm *Manuel*. Other smaller causes of rainfall were the jet stream and low level jet moving from the Pacific to the northeast, which brought cloudiness and rain, six tropical waves which brushed the south, and six cold fronts which reached the Gulf of Mexico states.

Because of these ocean-atmosphere patterns, the nation's percent area in moderate (D1) to exceptional drought (D4) decreased to 3.0% (0.7% less than the previous month), while the percent area from abnormally dryness (D0) to (D4) stood at 16.8% (0.6% less than the previous month). Major drought improvements occurred in southern Sonora, northern Durango and the northeastern region between Coahuila, Nuevo Leon and Tamaulipas, where D0-D1 categories were reduced or removed.

Drought is developing in Nayarit as seen in an increase in D0-D1 categories due poor rains in past two months. Other focus areas are D0 in northern Sonora and over Campeche, but these don't represent threats to agricultural interests. First reports of agricultural summer losses aren't due to drought but rather to hail, frost and floods.

The daily mean temperature ranged between 20 and 24 °C through October at the national level, which was at the upper level of mean plus two standard deviations. The monthly average of 22.7 °C (72.8 °F) was 1.7 °C above normal and ranked as the third warmest October since 1971. Six states (Campeche, Michoacan, Morelos, Nayarit, Yucatan, and Tlaxcala) together experienced the warmest October, with Nayarit recording +2.7 °C of departure. The last part of this summer has been wet and warm for almost two-thirds of the country (from central to the south and the southeast), while the colder regions were located over Sonora, Chihuahua and Coahuila.