

North American Drought Monitor - March 2008

CANADA: Drought conditions throughout much of Canada remained relatively unchanged since the last report. Near-record winter snowfall throughout southern Ontario has resulted in vastly improved water supplies and moisture conditions. As a result, the remaining D0 (abnormally dry) classification has been removed from this region. On the other hand, much of western Canada has received well below normal precipitation during the winter season and remains in a D1-D2 (moderate to severe drought) classification. Slight improvements were made in western Manitoba; however, the southern interior of British Columbia has degraded and slipped back into a D1 (moderate drought) classification. Cool early-spring weather resulted in a very slow-melting snow pack over much of the West, which has significantly limited runoff. This has resulted in very limited recharge of agricultural water supplies in both dugouts and reservoirs in the prairie region.

Much of British Columbia produced near normal snow packs during the 2007/08 winter. Basin snow water indices range from 90% of normal in the interior, to near 125% of normal along the coast and in the Peace River basin. As a result, the British Columbia River Forecast Centre is forecasting near-normal spring runoff in most river basins. The snow conditions provide a very positive outlook for water-supply conditions for most of the province, with respect to community water supply, stream flows, and groundwater and aquifer recharge. Snow conditions in the southern interior basins improved following heavy snow fall during March; however, this region continue to experience below normal snow packs and diminished spring runoff is forecasted. This region has potential to develop water-supply challenges during the summer. As a result of a dry fall period, below normal snow pack and low water flows, the southeastern region of the province has been classified as D0-D1 (abnormal dryness or moderate drought).

Winter precipitation has generally been below normal for much of the southern prairies, including the majority of the agricultural area. Small pockets of near-normal precipitation occurred in west-central and northern Saskatchewan and central Manitoba agricultural areas. In general, northern regions had average to above-average winter precipitation. This, combined with a wet fall, especially in Saskatchewan, created the potential for high spring runoff. The area of greatest concern remains southern and central regions of Alberta, Saskatchewan, and southwest Manitoba, where winter precipitation has been far below normal. Winter period precipitation percent of normal values in these areas include: Calgary 76%, Brooks 30%, Medicine Hat 77%, Swift Current 65%, Coronach 59%, Kindersley 61%, Outlook 55%, Saskatoon 55%, Val Marie 20%, Maple Creek 52%, Assiniboia 40%, Melita 40%, and Morden 50%. Well-below-normal winter snow combined with dry soil moisture conditions across the south at freeze up and reduced snow pack due to early January thawing temperatures has resulted in a very low runoff and a real concern for water supplies for the upcoming growing season. It is anticipated that the near-normal snow pack in the Rockies will supply adequate water to southern Alberta reservoirs; however, dugouts and other surface water supplies throughout the southern prairies will not recover. Overall runoff in the region not feed by mountain stream flow has been marginal and reservoirs and dugouts are at low levels.

Water-supply shortages are a major concern at this time. As a result of these conditions, few modifications have been made to the map from previous months. The D1 (moderate drought) in southwest Saskatchewan has been expanded slightly north and to the east. The D1 (moderate drought) in southwest Manitoba was reduced slightly. In Alberta there has been significantly lower than normal snow accumulations; however, the winter period is also the dry season and this area can recover quickly as a result of a few spring storm events. As a result, the D2 (severe drought) in central Alberta was removed. This region will be closely monitored in upcoming months; if precipitation is not received and conditions do not improve this area will quickly slip back into a severe drought classification.

Large winter storms continually dumped snow throughout much of central Canada during March. An intense storm event passed through the region on March 7-10, dumping large amounts of snow and paralyzing travel throughout the region. Roofs collapsing under the weight of snow have killed four people in Quebec, destroyed homes, and forced sometimes-numerous school and business evacuations. Ottawa recorded over 50 centimeters of heavy wet snow, while southern regions received between 25-35 centimeters. Many portions of Ontario, including Ottawa, are nearing record annual snowfall totals, with snow still likely to come in April. As of the end of March, Quebec City had already set a new record of 460 centimeters. As spring approaches, concern for flooding has replaced any concern for drought in the region.

At this time there are no concerns for drought in Atlantic Canada. Some regions have received below-normal precipitation for the winter period, including northern Nova Scotia, portions of Prince Edward Island, and southern portions of the island of Newfoundland. However, at this time there are no impacts of low winter precipitation.

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UNITED STATES: During March, drought coverage and intensity continued to decrease in much of the Southeast. Specifically, exceptional drought (D4) was removed from the Southeast for the first time since May 2007. In addition, extreme drought (D3) was eliminated from interior southern Florida. Significant improvements were also noted

in the West, where cool weather in March permitted little snow to melt and buoyed expectations of abundant spring and summer runoff. In particular, severe drought (D2) was removed from the lower Colorado Valley, southeastern California, and parts of the Great Basin. Another area of improvement covered central Texas, where heavy rain permitted some two-category improvements from severe drought to abnormal dryness (D2 to D0). In contrast, conditions worsened in much of southern and western Texas, and southern and eastern New Mexico, resulting in an expansion of moderate, severe, and extreme drought (D1, D2, and D3). Another area of deterioration was western North Dakota and neighboring areas, where severe to extreme drought (D2 to D3) expanded.

Agricultural and Hydrological Highlights: By March 30, the percentage of winter wheat rated (by the U.S. Department of Agriculture) very poor to poor included 20% in Kansas, 21% in Oklahoma, 32% in Colorado, 47% in Texas. In Texas alone, the year-to-date wildfire coverage surpassed 900,000 acres (surpassed 370,000 hectares) by the end of March, more than seven times the state total of 121,964 acres (49,357 hectares) during all of 2007. Farther west, it was the second-driest March on record in locations such as Chama, New Mexico (0.17 inch [4.3 mm], behind only 0.04 inch [1.0 mm] in 1997); Red Bluff, California (0.07 inch [1.8 mm], behind only 0.01 inch [0.3 mm] in 1956); and Bakersfield, California (a trace of rain, tied with 1956). Only 0.04 inch (1.0 mm) fell in Flagstaff, Arizona, the third-lowest March total behind a trace in 1972 and 0.03 inch in 1997.

Although many Southeastern lakes continued to rise, lower-than-normal water levels reflected the effects of large precipitation deficits during the last year. By the end of March, for example, the surface elevation of northern Georgia's Lake Lanier stood at 1056.62 feet (322.05 meters) above sea level, up 5.83 feet (1.78 meters) from the record low established on December 26, 2007, but more than 13 feet (more than 4 meters) below the average level for this time of year. Similarly, the average surface elevation of southern Florida's Lake Okeechobee stood at 10.28 feet (3.13 meters) on April 2. That level was just 1.46 feet (0.44 meter) above the record low established in July 2007 and more than 4 feet (1.22 meters) below the historical average for this time of year.

Meanwhile, Western water-supply prospects for the spring and summer of 2008 remained favorable, despite a very dry March from California into the Southwest. Unlike 2004 and 2007, when March warmth prematurely melted Western snow packs, unusually cool weather prevailed in March 2008. Nevertheless, effects of chronic Western drought over the last decade were still apparent in reservoir storage, which was below average for this time of year in nine of the eleven Western States. Exceptions were Arizona, with above-average storage, and Colorado, with near-average storage.

Historical Perspective: According to preliminary information provided by the National Climatic Data Center, it was the 35th-wettest March during the 114-year period of record, mainly on the strength of an exceptionally wet band stretching from central Texas into the Northeast. It was the second-wettest March on record in Missouri, and among the ten wettest in Oklahoma, Arkansas, Illinois, Indiana, Ohio, Pennsylvania, and New York. In contrast, it was the fourth-driest March in California, fifth-driest March in Arizona, and

ninth-driest March in New Mexico. Overall, precipitation averaged 2.6 inches (65 mm) across the Lower 48 States, 0.2 inch (4 mm) above the 1901-2000 mean.

For the first six months of the Western water year, which began on October 1, 2007, rankings ranged from the 28th-driest October-March period on record in New Mexico to the 19th-wettest such period in Wyoming. Elsewhere in the West, it was the 34th-driest October to March in California, but the 34th-wettest such period in Idaho. Farther east, North Dakota also experienced a very dry October-March period. In fact, North Dakota had its third-driest October-March period; only 1990-91 and 1963-64 were drier.

Despite recent improvement in the Southeastern drought situation, North Carolina completed its driest April-March period on record. An average of 36.87 inches (936.5 mm) fell across North Carolina from April 2007 – March 2008, 12.70 inches (322.6 mm) below the 20th-century mean. North Carolina's previous driest such period was April 1930 – March 1931, when 37.74 inches (958.6 mm) fell.

MEXICO: The National Weather Service (SMN) placed the month as the fourth-driest March during the 1941-2008 period of record, and as the 11th-warmest March for the period 1971-2007. Precipitation at a national level was 7.9mm (0.31 in), which was only 52% of the monthly normal of 15.2mm (or 0.60 in). This lack of rain was associated with the passage of six cold fronts as well as with low-pressure systems and jet streams. Most of the rain fell in the central-gulf and southeast regions of the country, especially the Peninsula of Yucatán.

The states with precipitation over the normal were: Campeche 57% above normal, Yucatán 51% and Quintana Roo 44%.

Those with precipitation less than 10% of the normal were: Jalisco 1.4% of normal, Durango 1.6%, Guanajuato, 2.1%, Baja California 2.2%, Sonora 3.9%, Guerrero 5.0% and Nayarit 8.9%. No rain fell during March in Aguascalientes, Baja California Sur, Colima, Michoacán, and Morelos.

The peninsula of Baja California continued with conditions ranging from abnormal dryness to severe drought (D0 to D2), which have been persistent during the last 3 months. In the northern and northeastern part of the country, D0 conditions (abnormal dryness) expanded and covered most of Sonora, Chihuahua, the western Coahuila and northern Durango. In this region, according to the committee of agriculture and fruits of Durango, the lack of water has killed an estimated of 7 to 10% of the cattle.

Along the Rio Bravo in Chihuahua, moderate drought (D1) developed during the month.

Moderate drought (D1) that was present last month over the central-west territory increased to the east into the states of Nuevo León and Tamaulipas; this was a consequence of the increase of temperature and lack of rain in the region.

An area with extreme drought conditions (D3) developed in the Rio Bravo basin, in the region between Coahuila, Nuevo León, and Tamaulipas, due to high temperatures and lack of rain. Heat and drought had an effect on the local vegetation, and as a consequence, some fires were reported. Severe drought conditions (D2) also increased their coverage in the region.

In the west of the country, an area with D3 (extreme drought) conditions remained; however, the severe drought (D2) area was modified in its geographical distribution. Last month, severe drought was mainly in the Chapala basin; this month it shifted to the northwest, to Nayarit (Río Santiago basin), southern Sinaloa, and parts of Durango.

A strip with D0 conditions that borders the Sierra Madre Oriental and extends to southern Oaxaca had some small changes in its geographical distribution compared to February.

The southeastern part of the country showed no changes in the intensity and distribution of drought conditions D0 and D1 (abnormal dryness and moderate drought); this situation has prevailed since January. Most of the peninsula of Yucatan has almost completely recovered from condition D2 (severe drought) to normal, except for some areas in the east where condition D1 (moderate drought) remains.

CONAFOR reported 1,779 fires during March; these affected an estimated of 22,408 hectares (55,371 acres), mainly covered by grass, scrubs, and shrubs, and to a lesser extent wooded areas. The states affected by these fires were Guerrero, Oaxaca, México, Coahuila, Michoacán, San Luis Potosí, Nuevo León, Tamaulipas, Chihuahua, and Jalisco.

CONAGUA reported a decrease in water volume in most of the dams all over the country; for the northwest region storage decreased from 64.7 to 55.5% of capacity, in the central-north from 69.5 to 64.8%, in the northeast from 57.9 to 54.9%, in the central region from 72 to 62.9%, and in the south region from 52.7 to 39.9%.