

North American Drought Monitor - July 2008

CANADA: During the month of July, the drought situation continued to improve over much of Canada. Above normal precipitation continued throughout southern areas of Ontario and Quebec as well as eastern Saskatchewan and much of Manitoba. However, northern agricultural regions of Alberta and British Columbia (the Peace River region) have continued to receive well below normal precipitation. Drought conditions within this region have increased in extent and severity during July. As well, conditions throughout portions of the southern prairies started to show signs of moisture and heat stress. Water supplies continue to decline and have become a significant concern throughout south central Saskatchewan.

The Peace River region of north western Alberta and north eastern British Columbia received <40% average rainfall in July and now stands at 40-60% of normal precipitation for the growing season (since April 1). Some areas of this region have seen very little precipitation since May; the areas that did receive precipitation have been limited to under 70mm (3 inches) over that time period. Alberta Agriculture reports that in this region, crop moisture stress is well advanced and precipitation is desperately needed. Five counties (Grande Prairie, Clear Hills, Spirit River, Birch Hills and Saddle Hills) within Alberta have recently declared their areas as Agricultural Drought Disaster Areas. Low levels of precipitation throughout the growing season has resulted in poor soil moisture, water supply shortages, well below average forage production and poor crop development. The Peace River region has also been in a very high fire danger for much of the year. As a result, we have downgraded the drought classification over a larger portion of the Peace River region to a D2 – Severe Drought.

Southern British Columbia is also unusually dry, with the interior experiencing negligible to minimal rainfall amounts throughout July (<40% normal precipitation) and <60% normal precipitation over portions of the lower mainland and Vancouver Island. River levels are generally dropping across the province, but most notably throughout southern interior where river levels are generally 50-80% of median flow. As a result, we have downgraded the drought classification over a larger portion of the central interior to a D1- Moderate Drought and added new areas of southern British Columbia as D0 – Abnormally Dry.

Increased precipitation in north western and central regions of British Columbia resulted in slight improvements. Although July precipitation was above normal, the growing season (April 1 to current) and annual precipitation still shows significant deficits with the exception of the Prince George.

Dry conditions persist over a large portion of central Alberta and a small portion of west central Saskatchewan. These conditions have largely remained unchanged for the past few months. Below normal precipitation since April 1st (60-85%) has resulted in forage shortages, anticipated water shortages and some crop stress. Portions of the south are beginning to dry up as well, however at this time there are no concerns.

Well above normal July precipitation throughout central Saskatchewan has improved the soil moisture and has resulted in the removal of D0 and D1 classifications in this region from the

NADM assessment this month. Some areas in this region received more than 120mm of rain in July, close to twice the long term average, and now excess moisture is beginning to become a concern.

Hot dry weather throughout southern portions of Saskatchewan resulted in degrading conditions over much of the region. Water supply shortages have been a concern for producers throughout the growing season, and with the recent warmer temperatures and dry weather, significant shortages are beginning to appear, most notably in south central areas of the province. Although the Southwest portion of the province has had normal to above normal precipitation for the growing season (April 1 - present), recent hot dry weather has resulted in declining soil moisture and crops are showing signs of heat and moisture stress. The southeast portion of Saskatchewan, although improved significantly from earlier in the year, continues to be in a D1 moderate drought condition. Hay yields are down and shortages are occurring, crops are showing some signs of moisture stress. The showers and thunderstorms which fell across the southeast and southwest were not widespread or heavy enough to improve precipitation deficits. However, a significant number of large storms brought large hail to these regions causing considerable crop damage. Overall, topsoil moisture conditions on crop, hay and pasture land declined in all regions of Saskatchewan during the past month.

South eastern Manitoba continued to improve with near normal precipitation in July. Due to dry conditions earlier in the year, water and forage shortages are still anticipated. Pasture conditions have improved, though hay quality is down. Central areas of Manitoba received below average precipitation in July (30-40 mm below for July and now stands at 60-85% of average since April 1st).

Average to above average precipitation continues across most of eastern Manitoba, Ontario and Quebec. In fact, there was generally excessive rainfall through July in much of southern Quebec. At this time there are no concerns for drought at this time throughout this region.

Dry conditions persisted across most of the Atlantic region until late July, at which time continuous rainfall improved conditions significantly. Much of the region remains at 60-85% of normal rainfall since April 1st, however significant rains late in the month improved moisture conditions and excess moisture has even become a concern in parts of northern Nova Scotia. Southern Nova Scotia missed most of the late month precipitation and remains in a D0 (Abnormally Dry) classification. At this time there are no concerns for drought throughout this region.

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- Environment Canada
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- Ontario Ministry of Natural Resources – Low Water Response
- Saskatchewan Agriculture, Food and Rural Revitalization
- Saskatchewan Watershed Authority
- Saskatchewan Environment Fire Management & Protection Branch

UNITED STATES: Generally high pressure dominated the southern half of the country during July while the summer storm track dragged fronts and storm systems across the northern states, bringing rain to the Midwest and Northeast. The cool fronts occasionally penetrated into the Southeast, triggering scattered showers and thunderstorms, while the remnants of Hurricane Dolly brought relief from drought to parts of southern Texas and the Southwest near the end of the month. Dry weather dominated the Northwest. July was generally drier than average across eastern Puerto Rico and parts of Hawaii, and wetter than average across most of Alaska.

Regional Highlights: The showers and thunderstorms which fell across the Southeast were not widespread or heavy enough to improve the long-term precipitation deficits. Hydrological conditions remained dry and streams (both modeled and observed), lakes, and groundwater levels were low. Soil moisture continued parched (both observed as well as modeled anomalies and percentiles, root zone percentiles, and total column layer percentiles) and a greater than average percentage of the pasture and rangeland was in poor to very poor condition.

According to National Agricultural Statistics Service (NASS) reports, the percent of the pasture and range lands in many Southeastern states were little changed from June: 54 percent of the pasture and range land in South Carolina, 38 percent in Georgia, and 36 percent in North Carolina were classified in “poor” to “very poor” condition as of July 27.

In the southern Plains and Southwest, 49 percent of the pasture and range land in Texas was “poor” to “very poor”, 47 percent in Arizona, and 100 percent in California. In New Mexico the pasture and range land conditions improved from 68 percent in “poor” to “very poor” near the end of June to only 30 percent as of July 27 due to strong monsoonal flow and the remnants of Hurricane Dolly. Cloudcroft, NM, recorded their wettest month on record with 13.33 in (339 mm) of rain and Albuquerque recorded their fourth wettest July in 93 years with 3.38 in (86 mm).

Hurricane Dolly made landfall along the southern Texas coast as a category two hurricane on July 23 bringing heavy rainfall to many locations. The southernmost counties of the state received totals from 200 to 600 percent of normal for the month, and rainfall from the storm essentially eradicated almost all drought conditions in the Trans Pecos Climate division of west Texas. Hurricane Dolly also eradicated drought in the extreme southern tip of the state, but a large portion of extreme drought persisted in the south central counties, making up over 10% of the state's area. Elsewhere, rainfall was generally below normal for the month, particularly within southern Arkansas, eastern Texas and most of Louisiana, where totals ranged from 5-50% of normal. Conditions in Oklahoma improved in July through a small reduction in the spatial extent of exceptional drought that was present in the panhandle. In Arkansas, conditions remained abnormally dry in the southern and eastern portions of the state. In Mississippi, moderate drought

developed in the northern third of the state, and there was a slight expansion of moderate drought in the southwest.

Rainfall in the High Plains Region resulted in scattered areas of above average precipitation and widespread areas of well below average precipitation. Above average locations included the Nebraska Panhandle, portions of eastern Wyoming, north central South Dakota, eastern North Dakota, portions of southeastern Nebraska, and north central Kansas. Those areas had 150%-200% their normal precipitation for the month of July. The remainder of the High Plains Region experienced predominantly below average precipitation (approximately 60%) with the most extreme areas being southwestern Wyoming and the majority of Colorado (less than 50%). Roscoe, SD received 5.98 in (151.9 mm) through the month, resulting in 214% their normal precipitation for July. On the other end of both the spectrum and region were Boulder, CO and Northglenn, CO. Boulder received only 0.09 in (2.3 mm) during July, resulting in 5% of the normal for the month. Even worse was Northglenn which received no rain for the month while their normal for July is 1.71 in (43.4 mm).

In the West precipitation was a predictably mixed bag for a summer month with the notable exception of very wet conditions in New Mexico due to strong monsoonal flow and the remnants of Hurricane Dolly. Temperatures were slightly to moderately above normal except for the coastal Pacific Northwest and much of New Mexico. Portions of the Intermountain West had an extremely warm month with Denver recording their 2nd warmest July on record dating back 60 years. The final 19 days of the month in Denver equaled or exceeded 90 °F (32.2 °C) which broke their all time consecutive 90 degree day record. This record consecutive string continued into August. Cheyenne, WY, recorded just one day below normal for July. Most of Alaska had a very cool month with Anchorage recording their lowest July average maximum temperature on record and Juneau recording their second coolest July on record.

In California a lack of rainfall in early spring has severely impacted pasture growth throughout the state, and 8.7 million acres are showing a loss of 58.7 percent (average for the state) of annual forage for the year so far. Several counties are showing forage losses: up to 85 percent in Glenn County, 80 percent in Napa County, and 85 percent in Calaveras County. Supplemental feeding is taking place and many producers are reportedly selling off animals because of lack of forage and rising feed costs.

The warm and dry conditions contributed to an extremely active wildfire pattern in large parts of the West in July. The month began with a number of wildfires in 12 U.S. states, most notably California and Arizona. By the middle of the month, most fires in the Appalachians and the Southwest U.S. had been contained, but large wildfires developed across central and eastern Washington and many of the fires raging across northern California remained largely uncontained. As July came to a close, a dozen large fires continued to burn in northern and central California, while new fires sprang up in Colorado and several other western states. As of July 31st, there had been 53,769 wildland fires and more than 3.5 million acres burned so far in 2008, according to the National Interagency Fire Center. The year to date through the end of July ranked sixth in quantity of acreage burned, down from second at the end of May and third at the end of June.

Changes to Drought Depiction: Compared to the end of June, conditions by the end of July improved in central and southern New Mexico, extreme southern Texas, parts of the peninsula of Florida, areas of eastern North and South Carolina, and areas of Minnesota. Conditions deteriorated in large parts of the northern High Plains, the Deep South and Southeast, parts of Hawaii and Puerto Rico, northern California, and small parts of Nevada, and Washington state.

An expansion of exceptional drought (D4) occurred in western North Carolina as this area was the most anomalously dry in a state that had its fifth driest August-July in 115 years of records. In western Alabama and adjacent areas of northern Mississippi, where conditions had largely improved during the spring and early summer, anomalously warm and dry conditions in July led to a westward expansion of moderate (D1) and severe (D2) drought.

Drought conditions in North Dakota rapidly expanded and intensified during July. Large areas of western and central North Dakota went from D0 (abnormally dry) and D1 (moderate drought) conditions to D3 (extreme drought) in merely a month. By the end of July, the entire state was experiencing abnormally dry or drought conditions, ranging from D0 (abnormally dry) in the eastern portions to D3 (extreme) drought in the western portions.

From the southern tip of Texas to southern and central New Mexico, rainfall from Hurricane Dolly and strong monsoonal flow led to significant improvements. Drought ended in extreme southern Texas where severe (D2) and extreme (D3) drought was present at the end of June. Likewise in southern New Mexico and in far west Texas, drought ended in large parts of the region where extreme (D3) and severe (D2) drought had been present one month earlier. In California, degradation from moderate (D1A) to severe (D2A) occurred in northern and central parts of the state.

Drought severity worsened on several Hawaiian islands. At the end of the month, year-to-date rainfall totals stood at just 2.87 inches (29% of normal) in Honolulu, Oahu; and 3.09 inches (27%) in Kahului, Maui. On the Big Island, Hilo's January 1 to July 31 rainfall totaled 76.87 inches (107% of normal), although more than half (39.08 inches) of that amount fell during the first half of February. Among the changes in Hawaii were the introduction of extreme drought (D3) on eastern Oahu, where irrigation has been cut back 30%; a downgrade to severe drought (D2) on central Maui, where sugar planting has been suspended; and the expansion of moderate to severe drought (D1 to D2) on the Big Island, where detrimental impacts have been reported on pastures, livestock, and crops.

By the end of July, 28 percent of the contiguous U.S. was classified as experiencing moderate to exceptional (D1-D4) drought according to the U.S. Drought Monitor (USDM). This was unchanged from the end of June coverage. USDM statistics indicated about 59% of the Southeast under moderate to exceptional drought and 31% of the West under moderate to extreme drought.

MÉXICO: In July, accumulated precipitation was 7.78 in (197.8 mm), which is 43% above the climatology of 5.46 in (138.6 mm). The National Weather Service (SMN) classified the month as the 3rd wettest in the period 1941 – 2008.

Precipitation during the month was associated with the influence of nine tropical waves, five tropical storms – Douglas, Elida, Fausto, Genevive and Dolly – and three tropical depressions. The influence of these and low pressure systems caused very strong precipitation in most of the country, especially during the first ten days of the month.

The distribution of the precipitation extended into most regions of the country except for the northwestern region (the Peninsula of Baja California) and the state of Yucatán.

The states with the most significant anomalies were Tamaulipas with 236.5% above normal, San Luis Potosí with 168.8%, Nuevo León 149.7%, Coahuila 107.7% and Colima with 107.2%.

By contrast, the states with the most significant negative anomalies were Yucatán with 32.7% of the normal, México 11.4% and Tabasco with only 2.6%.

The heavy rain which occurred in the north and northeastern regions of the country improved in a remarkable way the D3 (extreme) drought conditions in Chihuahua and Tamaulipas, and in the latter hurricane Dolly caused some flooding and some damage to harvesting.

Other regions which improved were the drought conditions over Durango, Nayarit, Jalisco and some regions of Zacatecas. In these places, last month's depiction had D4 (exceptional drought) and D3 (extreme drought), while this month they improved to D1 (moderate drought) and D0 (abnormally dry conditions).

D1 drought conditions still remained in northern regions of the country, especially in the Peninsula of Baja California and the western part of Sonora. Other D1 regions were still present in the southern part of Chihuahua and Coahuila, northern Durango, southern Sinaloa and regions of Nayarit, Jalisco, Michoacán and a portion of Guerrero.

Additionally, in the central region of the country, in the states of Tlaxcala, Puebla and some regions of Veracruz, there were still areas with D1 drought conditions and D0.

Finally, Campeche still had an area with condition D1. This condition has persisted for some months now, since precipitation in that region has been below normal, with this month being less than half of the normal.

CONAFOR (the National Forest Commission) reported only 11 fires during the last week of the month. These fires affected an estimated area of 317 acres (119 ha), mostly covered by scrubs and grass. They were reported in Baja California.

CONAGUA (the National Water Commission) reported an increase in water level for most of the dams in all regions of Mexico. The Northwestern region increased from 39.6% to 56.2%, Central-North from 48.8% to 53.3%, Northeastern from 41.8% to 46.7%, Central from 46% to 67.5% and Southern from 48.32% to 79.9%.