

Water Availability and Drought Conditions Report

AUGUST 2020

Executive Summary

- This Water Availability and Drought Conditions Report provides an update on conditions throughout Manitoba for August 2020.
- Precipitation conditions over the past month, three month, and twelve month periods are as follows:
 - During August, large regions of moderately (60 to 85 % of median) to extremely (< 40 %) dry conditions were observed throughout the Interlake and in the central and southwest regions, while the remainder of agri-Manitoba observed normal (85 – 115 %) to above normal (> 115 %) precipitation. Northern Manitoba observed normal to above normal precipitation except for a region surrounding Churchill that was moderately dry.
 - Over the past three months (June, July, August), much of agri-Manitoba observed normal or above normal rainfall amounts. However, regions of moderately dry conditions were observed in parts of the Interlake, central, and southwest regions. In northern Manitoba, conditions were above normal.
 - Over the past 12 months, much of the northwest and Interlake regions observed moderately dry precipitation conditions, while conditions across the remainder of agri-Manitoba and in northern Manitoba were generally normal to above normal.
- As of August 31, 2020, streamflows and lake levels across Manitoba were generally normal (25th – 75th percentile) to much above normal (> 90th percentile). Below normal (10th – 25th percentile) conditions were observed on the Qu'Appelle River and the Icelandic River, and much below normal (< 10th percentile) conditions on Lake Manitoba.
- At the end of August 2020, water levels from indicator wells that do not show nearby pumping influence ranged from normal (25th – 75th percentile) to much above normal (> 90th percentile).
- The August 31, 2020 Canadian Drought Monitor assessment showed abnormally dry conditions (D0) extending across most of agri-Manitoba, including the southwest, northwest, Interlake and central regions. A region of moderate drought (D1) conditions was located in the south Interlake.
- Reservoirs are generally at or close to full supply levels and there are currently no concerns over reservoir water supplies. Dugout water levels and quality are poor in some regions.
- As of August 30, 2020, the majority of agri-Manitoba was experiencing optimal to wet soil moisture conditions at 0 - 120 cm depth. However, the regions surrounding Birch River, Pipe Lake, Eden, Alonsa, Forrest, Virden, Shilo, Pierson, Treherne, Winkler, Moosehorn, Eriksdale, Narcisse, Lake Francis, Marchand and Menisino showed dry to very dry conditions.
- Late-season dryness together with high heat has prompted premature ripening in some soybean and corn fields where soil moisture was inadequate. Due to dry conditions, forage shortages are anticipated in some regions. The [Manitoba Hay Listing](#) service is available to assist farmers in searching for or making available sources of livestock feed.

Drought Indicators

Precipitation Indicator

Precipitation is assessed to determine the severity of meteorological dryness and is an indirect measurement of agricultural dryness.

Three precipitation indicators are calculated to represent short term (one month; Figure 1), medium term (three months; Figure 2) and long term (12 months; Figure 3) conditions. The indicators compare current monthly precipitation totals to historical data to calculate the per cent of median precipitation that occurred over the past one, three or twelve months. Historical medians are computed from 45 years of data (1971 – 2015).

Due to large distances between meteorological stations in northern Manitoba, the interpolated contours in this region are based on limited observations and should be interpreted with caution.

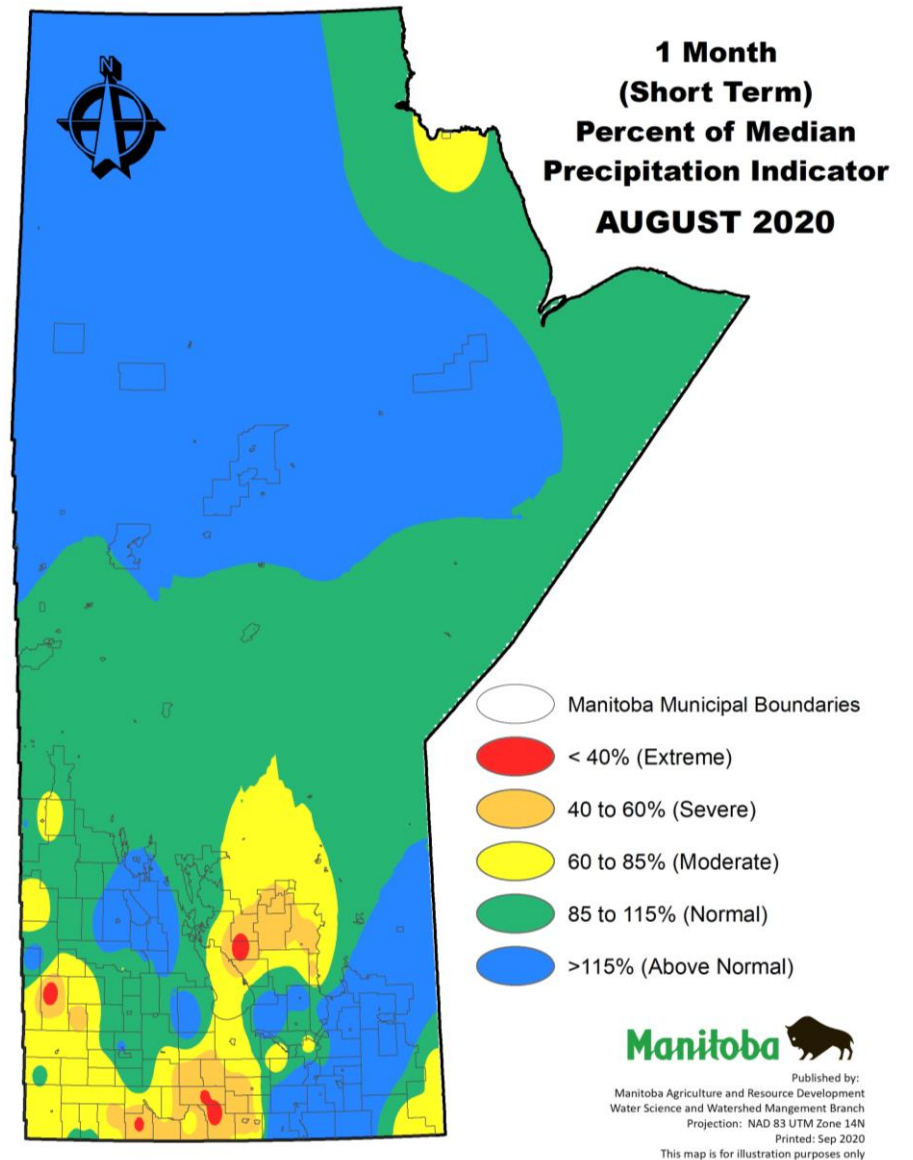


Figure 1: One month (short term) per cent of median precipitation indicator.

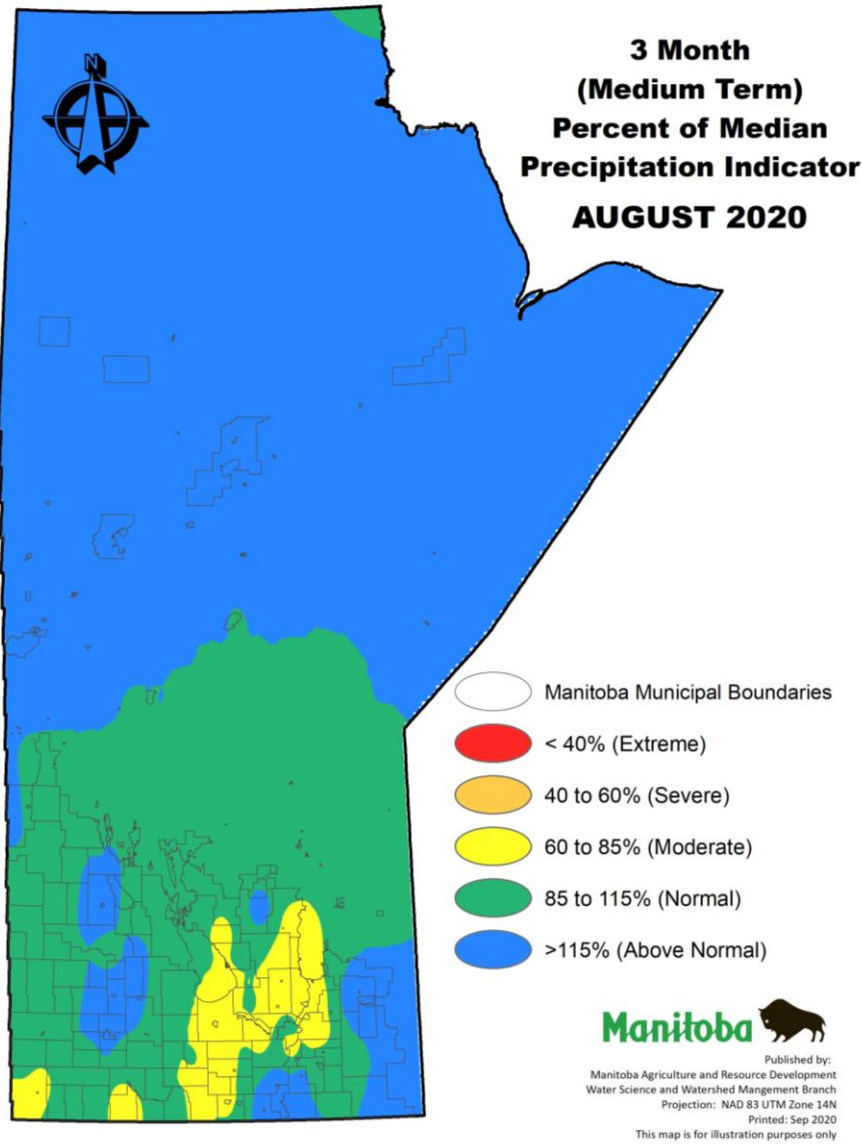


Figure 2: Three month (medium term) per cent of median precipitation indicator.

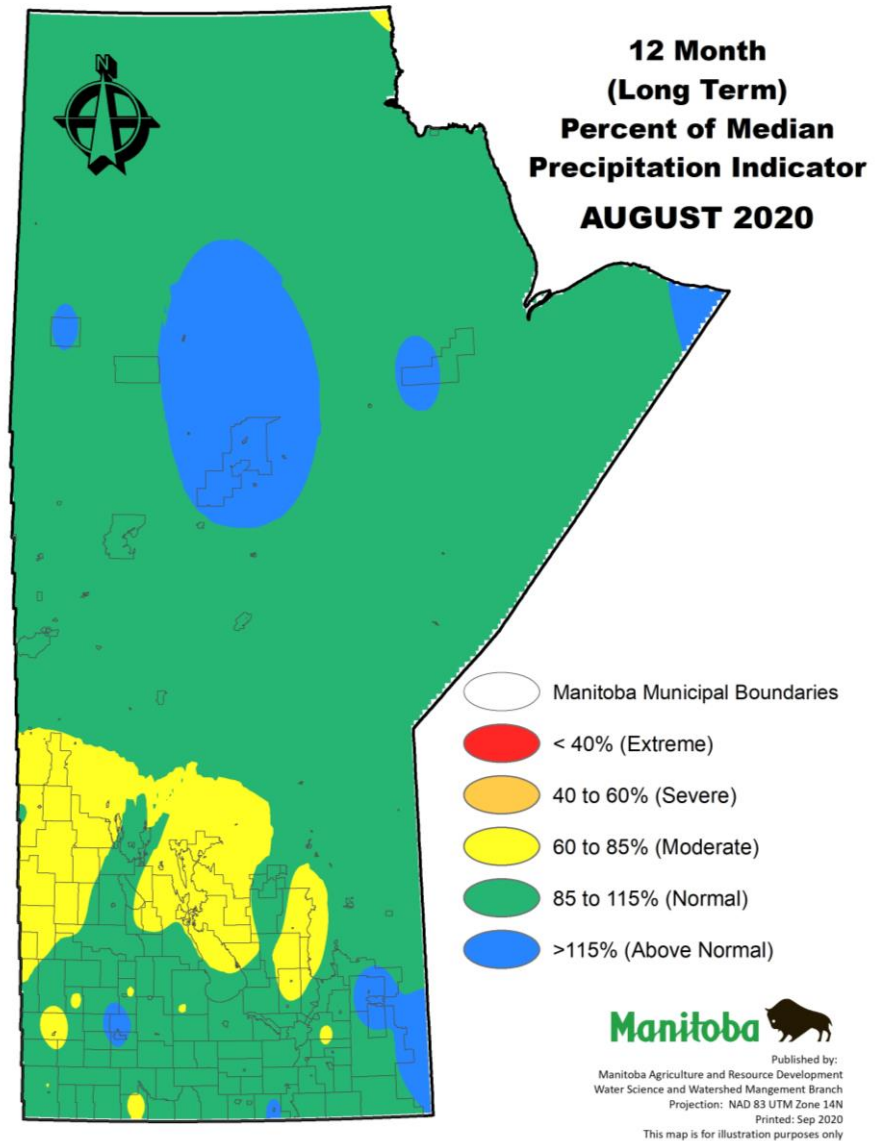


Figure 3: Twelve month (long term) per cent of median precipitation indicator.

Streamflow & Lake Level Indicator

The streamflow and lake level indicator is based on average daily flows and levels compared to historical values for that particular day.

This indicator is used to determine the severity of hydrological dryness in a watershed and is summarized on Figure 4, representing hydrological conditions for August 31, 2020.

Streamflow and lake level percentile plots for all of the rivers and lakes included on Figure 4 are available on the [Manitoba Drought Monitor website](#) under the *Drought Indicator Map* tab.

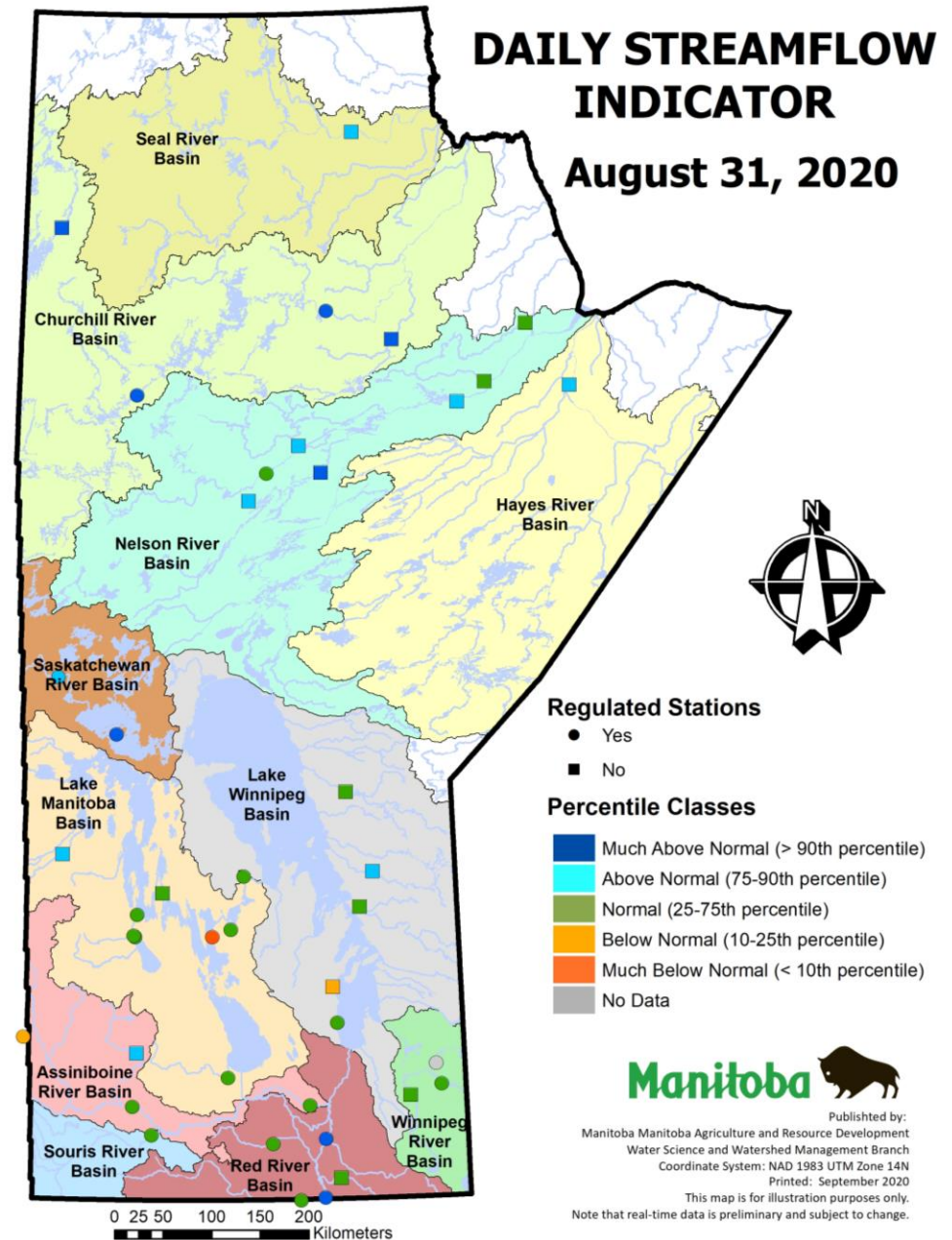


Figure 4: Daily streamflow and lake level indicator for August 31, 2020.

Groundwater Indicator

Water level responses to precipitation fluctuations in most aquifers lag considerably behind surface water responses, so even prolonged periods of below normal precipitation may not have a significant negative effect on groundwater levels. Most aquifers also store very large quantities of groundwater and can continue to provide water during extended periods of dry weather. Consequently, the major concern regarding groundwater and dry periods relates to water levels in shallow wells. As the water table drops, there is less available drawdown in shallow wells and some wells may 'go dry', even in short-term drought conditions.

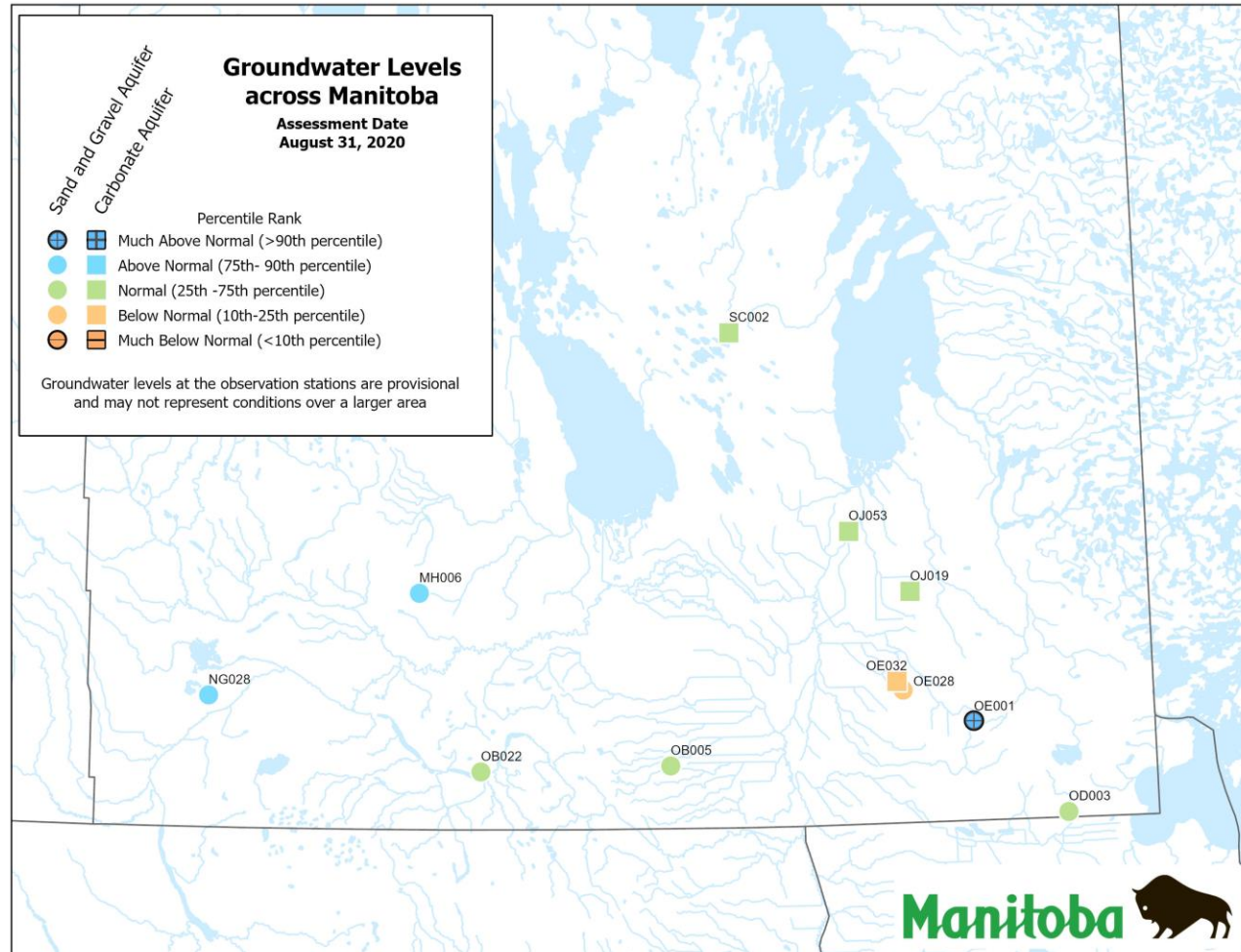


Figure 5: Groundwater indicator on August 31, 2020 for select groundwater monitoring sites.

Canada and United States Drought Monitors

The Canadian Drought Monitor and the United States Drought Monitor map the extent and intensity of drought conditions across Canada and the continental U.S.A.

Drought Monitor assessments are based on a suite of drought indicators, impacts data and local reports as interpreted by federal, provincial/state and academic scientists.

The Canadian and United States Drought Monitor maps use the following classification system:

- D0 (Abnormally Dry) – represents an event that occurs every 3 to 5 years;
- D1 (Moderate Drought) – 5 to 10 year event;
- D2 (Severe Drought) – 10 to 20 year event;
- D3 (Extreme Drought) – 20 to 50 year event; and
- D4 (Exceptional Drought) – 50+ year event.

Additionally, the map indicates the duration of drought as either short-term (S; less than 6 months) or long-term (L; more than 6 months) (Figure 6).

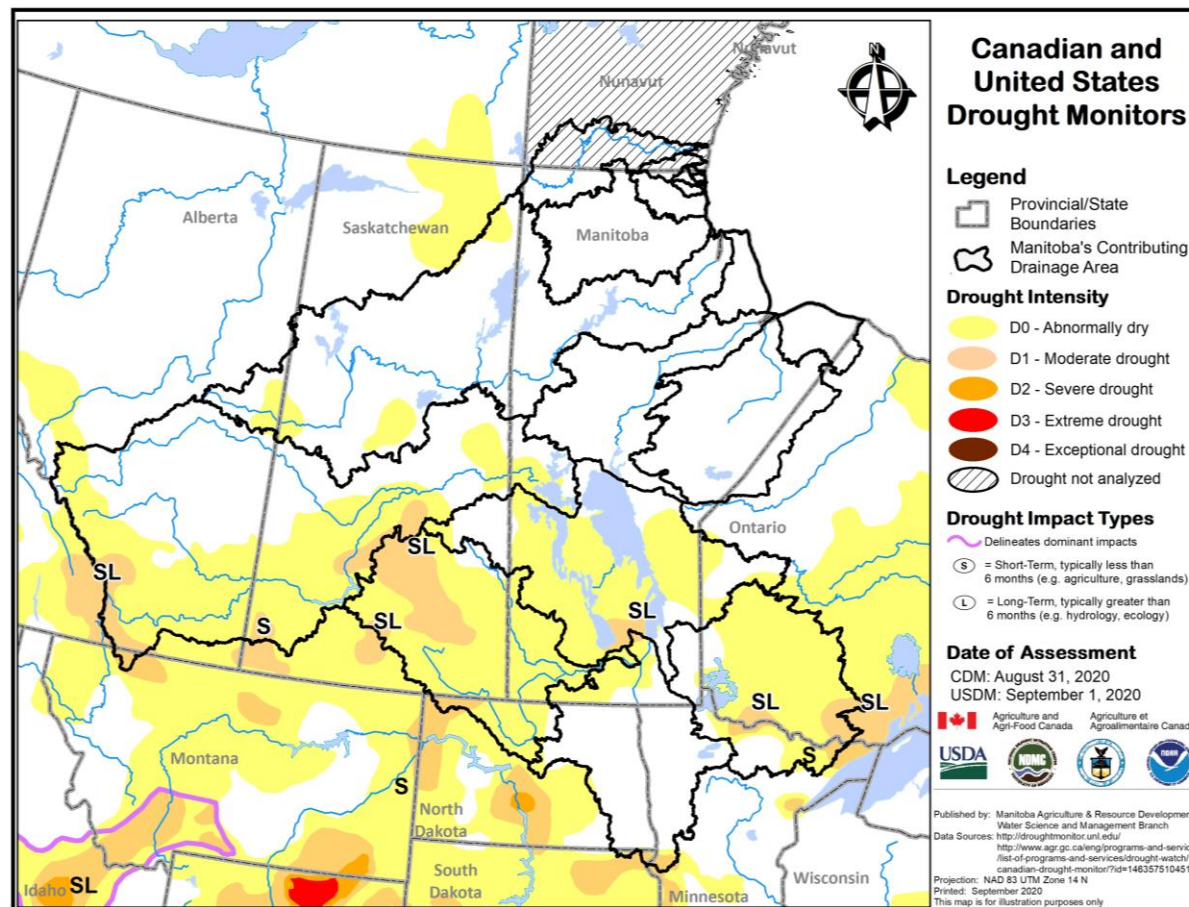


Figure 6: Canadian and United States Drought Monitors' classification of short-term (S) and long-term (L) drought conditions assessed as of August 31, 2020.

Water Availability

Reservoir Conditions

Table 1: Water Supply Reservoir Levels and Storages – September 1, 2020 (Southern and Western Manitoba).

Lake or Reservoir	Community or Co-ops Supplied	Target Level (feet)	Latest Observed Level (feet)	Observed date	Supply Status (Recent - Target) (feet)	Storage at Target Level (acre-feet)	Storage at Observed Level (acre-feet)	Supply Status (observed storage/target storage) (%)
Lake of the Prairies (Shellmouth) ^{1*}	Brandon, Portage, Cartier Regional Water Co-op	1,402.5 ¹	1402.78	September 1, 2020	0.28	300,000	303,414	101%
Lake Wahtoppanah (Rivers)*	Rivers	1,536	1535.53	September 1, 2020	-0.47	24,500	23,988	98%
Minnewasta (Morden)*	Morden	1,082	1080.16	September 1, 2020	-1.84	3,150	2,846	90%
Stephenfield*	Carman, Pembina Valley Water Co-op	972	970.40	September 1, 2020	-1.60	3,810	3,066	80%
Vermilion*	Dauphin	1,274	1272.81	September 1, 2020	-1.19	2,600	2,289	88%
Goudney (Pilot Mound)*		1,482	1482.09	September 1, 2020	0.09	450	455	101%
Jackson Lake*		1,174	1172.06	September 1, 2020	-1.94	2,990	2,506	84%
Manitou (Mary Jane)*		1,537	1536.21	September 1, 2020	-0.79	1,150	1,079	94%
Turtlehead (Deloraine)*	Deloraine	1,772	1771.12	September 1, 2020	-0.88	1,400	1,356	97%
Lake Irwin*		1,178	1177.67	September 1, 2020	-0.33	3,800	3,604	95%
Minnedosa*		1,682	1682.91	September 1, 2020	0.91	1,688	1,938	115%
Kenton Reservoir		1,448	1447.83	July 5, 2020	-0.17	600	588	98%
Killarney Lake		1,615	1615.16	July 27, 2020	0.16	7,360	7,433	101%
Elgin		1,532	1531.04	August 18, 2020	-0.96	520	453	87%
St. Malo		840	840.16	August 10, 2020	0.16	1,770	1,796	101%
Boissevain	Boissevain	1,697	1696.98	August 18, 2020	-0.02	505	504	100%

¹ Summer target level and storage; * Real-time water level gauge.

On Farm Water Supply

Farm water supply updates from Manitoba Agriculture and Resource Development’s most recent Crop Report (Issue 18 - published on September 1, 2020) are provided in Table 2. Supplementary information from Issue 17 (August 25, 2020) is provided.

Table 2: On Farm Water Supply (Dugout) Conditions.

Region	General Dugout Condition
Eastern	Livestock water supply was rated as adequate. The status of dugouts had improved. Dugouts in lower rainfall areas were at least partially refilled because of recent rainfall (September 1, 2020).
Interlake	Sloughs are dry for the most part (September 1, 2020). Livestock water is adequate for most. A few isolated reports of water being hauled (August 25, 2020).
Southwest	Dugouts are at 70 % capacity (September 1, 2020).
Central	Water sources on pasture are generally adequate (September 1, 2020). Some reports of producers hauling water due to dugouts drying up and water quality in dugouts is poor (August 25, 2020)
Northwest	In the Westlake area, pastures and water supplies are very poor. In other areas, water for livestock is adequate (September 1, 2020). Water quality is a concern where levels are lower (August 25, 2020).

Soil Moisture

Manitoba Agriculture and Resource Development’s mapping shows the soil moisture conditions for the top 120 cm on August 30, 2020.

Soil moisture levels are rated as follows: < 20 % Very Dry, 20 – 40 % Dry; 40 – 70 % Optimal; 70 – 90 % Wet and >90 % Very Wet in relation to the soil saturation level (maximum recorded at that station).

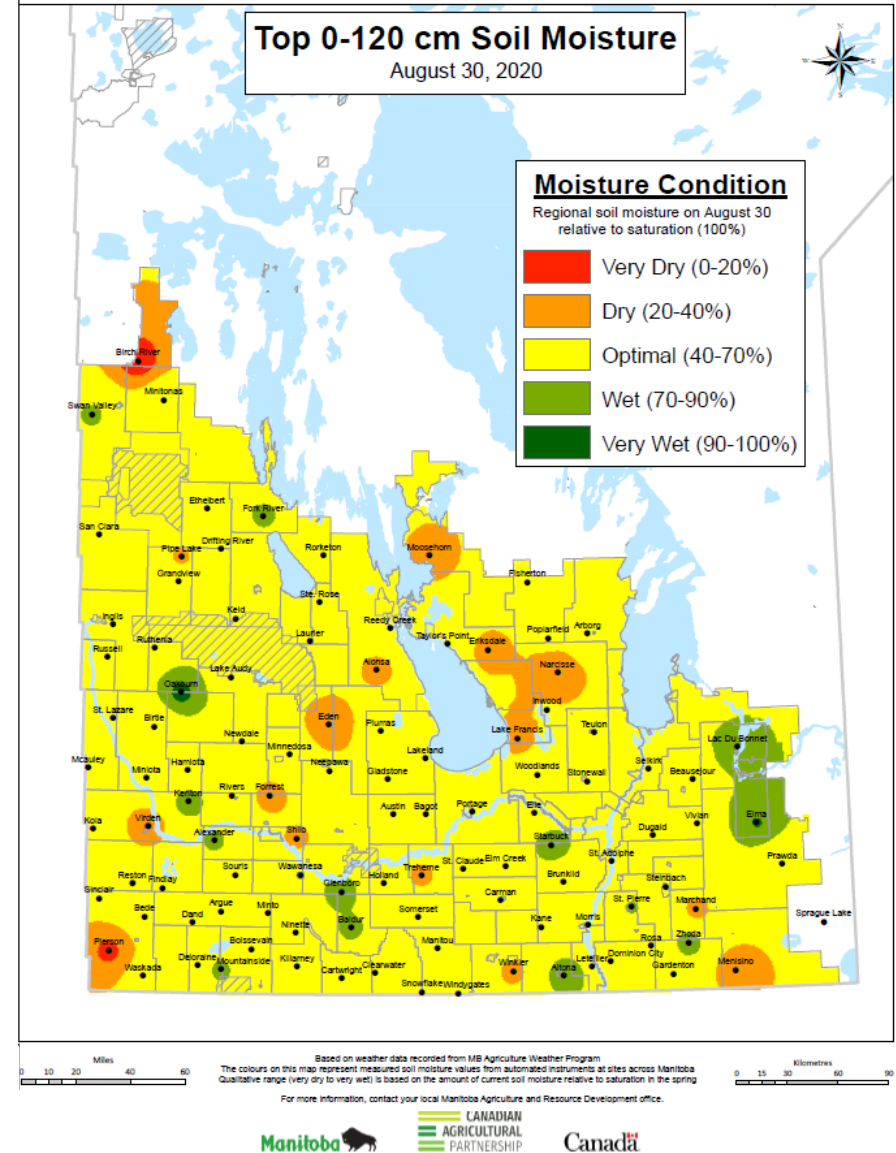


Figure 7: Manitoba Agriculture and Resource Development’s August 30, 2020 mapping of soil moisture conditions in the top 0 – 120 cm.

Wildland Fires

As of August 31, 2020, Conservation and Climate's Wildfire Program reported 144 wildfires this year, burning a total area of 49,525 hectares to date. Most of the burned area occurred in the eastern and western regions. There has been minimal wildfire activity in the last month and a significant increase in wildfire activity is not anticipated.

Natural Resources Canada mapping of Fire Danger as of August 31, 2020 showed wildfire danger was low across the province. Six municipalities had burning restrictions in place as of September 1, 2020.

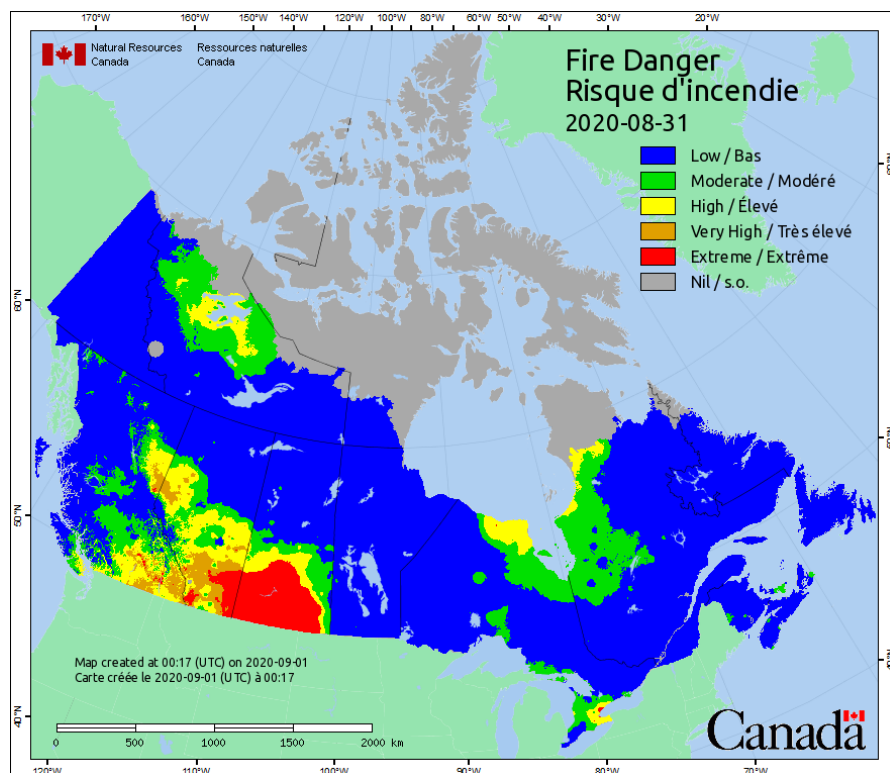


Figure 8: Fire Danger mapping by Natural Resources Canada.

Impacts due to Dry Conditions

Harvest is underway across agri-Manitoba. Please see the weekly [Crop Reports](#) for details on harvest progress and yields.

Late-season dryness together with high heat has prompted premature ripening in some soybean and corn fields where soil moisture was inadequate. In the eastern region, some producers were disappointed with their initial canola yields, attributing them to hot dry conditions during flowering and initial pod set. In the Interlake, agronomists reported aborted canola pods due to heat and drought stress.

Crop Report Issue 18 reported that forage shortages are anticipated due to dry conditions, particularly in parts of the Interlake, northwest and eastern regions. The [Manitoba Hay Listing](#) service is available to assist farmers in searching for or making available sources of livestock feed.

Past reports, drought mapping and other information and resources are available on the [Manitoba Drought Monitor](#) website.

For further information, please contact:

Carly Delavau, Ph.D, P.Eng.
Water Supply and Drought Management Engineer
Surface Water Management Section, Water Science and Watershed Management Branch, Manitoba Agriculture and Resource Development
Box 14, 200 Saulteaux Crescent, Winnipeg, Manitoba R3J 3W3
Ph. (204) 806-4557, Fax (204) 945-7419
E-mail : Carly.Delavau@gov.mb.ca

Acknowledgements

This report was prepared with information from the following sources which are gratefully acknowledged:

Manitoba Infrastructure - Reservoir level information:

<https://www.gov.mb.ca/mit/floodinfo/index.html>

Manitoba Conservation and Climate's Fire Program:

<https://www.gov.mb.ca/sd/fire/>

Manitoba Agriculture and Resource Development:

Crop Reports:

<http://www.gov.mb.ca/agriculture/crops/seasonal-reports/crop-report-archive/index.html>

Topsoil moisture conditions:

<https://www.gov.mb.ca/agriculture/weather/weather-conditions-and-reports.html>

Environment and Climate Change Canada:

Flow and lake level information:

http://www.wateroffice.ec.gc.ca/index_e.html

Agriculture and Agri-Food Canada:

Canadian Drought Monitor:

<https://www.agr.gc.ca/eng/agriculture-and-climate/drought-watch>

United States Drought Monitor:

<https://droughtmonitor.unl.edu/>