

Water Availability and Drought Conditions Report

JUNE 2020

Executive Summary

- This Water Availability and Drought Conditions Report provides an update on conditions throughout Manitoba for June 2020.
- Precipitation conditions over the past month, three month, and twelve month periods are as follows:
 - During June, most of Manitoba observed normal (85 to 115 % of median) to above normal (> 115 %) precipitation conditions. Some regions of moderately dry (60 to 85 %) conditions were observed in the Interlake and along the United States border in central and southwestern agro-Manitoba.
 - Over the past three months (April, May, June), most of agro-Manitoba observed moderately to severely (40 to 60 %) dry conditions with normal to above normal precipitation in parts of southwest, northwest and eastern agro-Manitoba. In northern Manitoba, conditions were generally normal, with a region of moderately dry conditions centered over Churchill.
 - Over the past 12 months, most of the northwest and Interlake regions observed moderately dry precipitation conditions while conditions across the remainder of agro-Manitoba were generally normal to above normal. In northern Manitoba, conditions were normal.
- As of July 6, 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 Boyne and Qu'Appelle Rivers and much below normal (< 10th percentile) conditions on Lake Manitoba.
- As of the end of June 2020, most groundwater levels from indicator aquifers were in the normal (25th – 75th percentile) range. The Interlake benefitted from recent rainfall and the Interlake carbonate and Assiniboine Delta aquifers were in the above normal (75th – 90th percentile) range, while the sand and gravel in the Steinbach area shifted to the below normal range (21st percentile).
- The June 30, 2020 Canadian Drought Monitor assessment showed a reduction in intensity and geographic extent of drought conditions as compared to the May 31, 2020 assessment, particularly in northwestern agro-Manitoba and parts of the Interlake. Regions of abnormally dry conditions (D0) were observed along the U.S. border in southwestern and central Manitoba, extending northeastward towards Teulon. A small region of moderate drought conditions (D1) was centered over Killarney.
- Reservoirs are generally at or close to full supply levels after spring runoff. There are currently no concerns over reservoir water supplies.
- As of July 5, 2020, the majority of the southern region of agro-Manitoba was experiencing optimal to wet soil moisture conditions at 0 - 120 cm depth. Areas near Birch River, Menisino, and Pierson showed dry to very dry conditions.
- Recent rains and warm weather continued to improve pasture and forage land. In the Interlake, although forage shortages are still anticipated, the outlook has improved quite dramatically.

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.

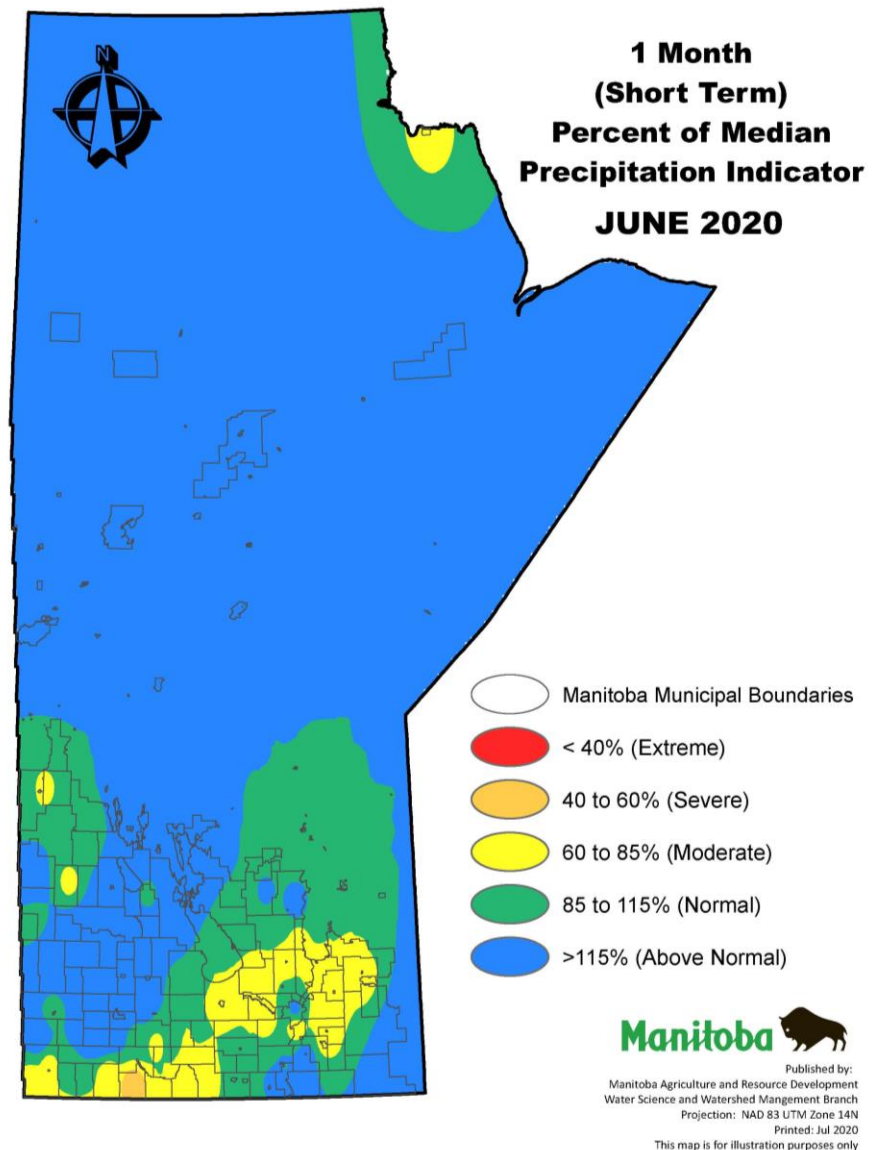


Figure 1: One month (short term) per cent of median precipitation indicator.

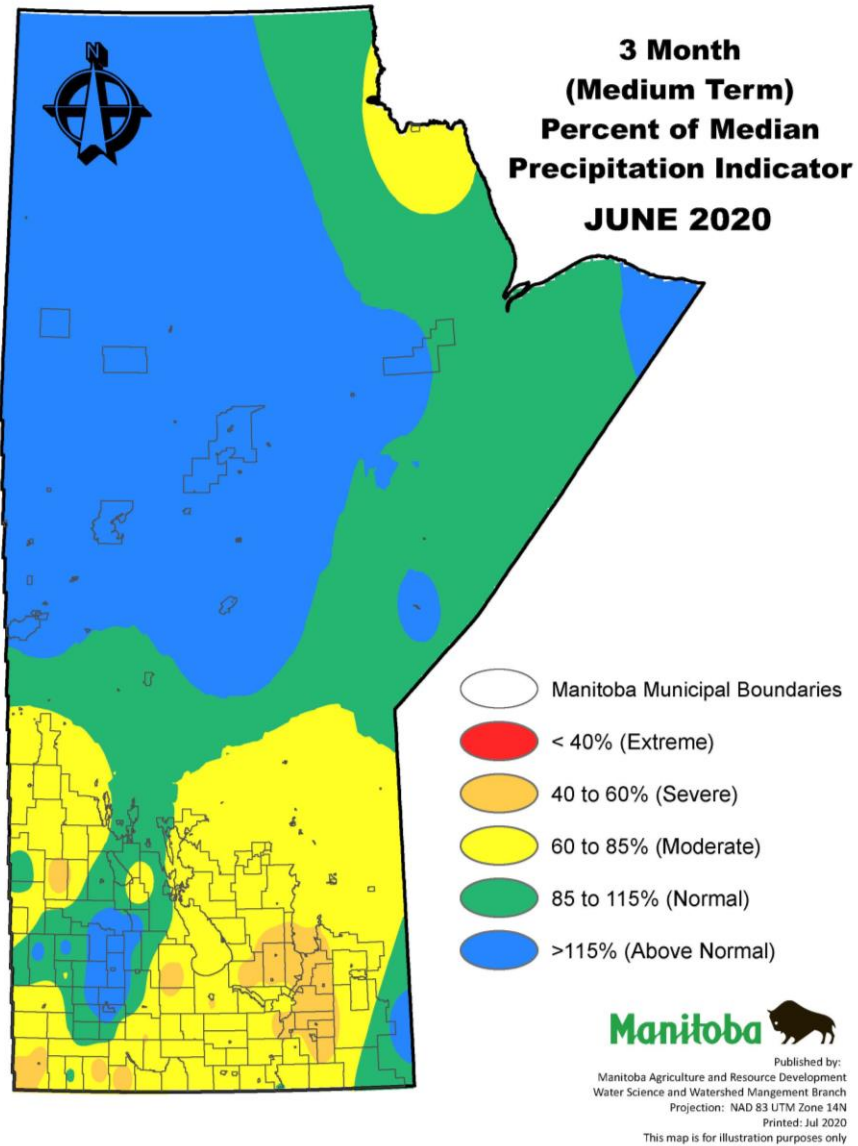


Figure 2: Three month (medium term) per cent of median precipitation indicator.

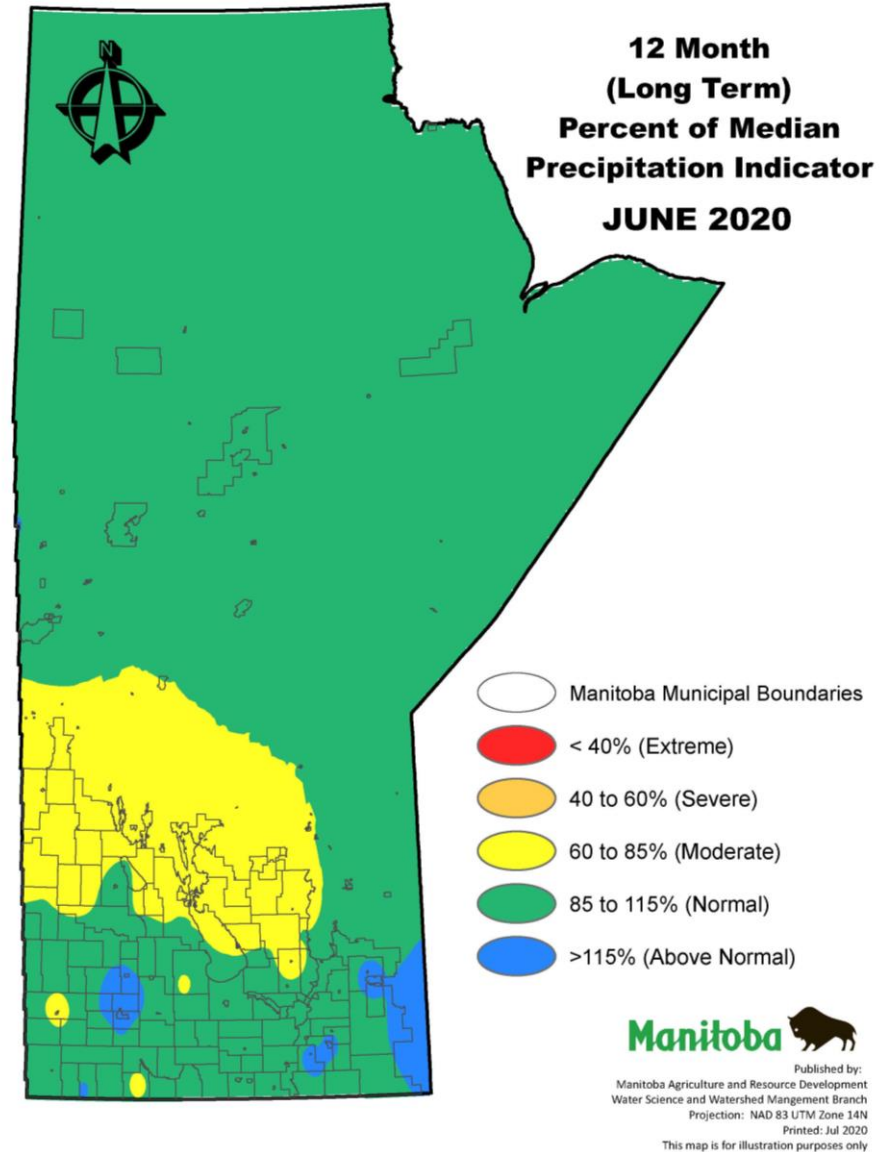


Figure 3: Twelve month (long term) per cent of median precipitation indicator.

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 July 6, 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.

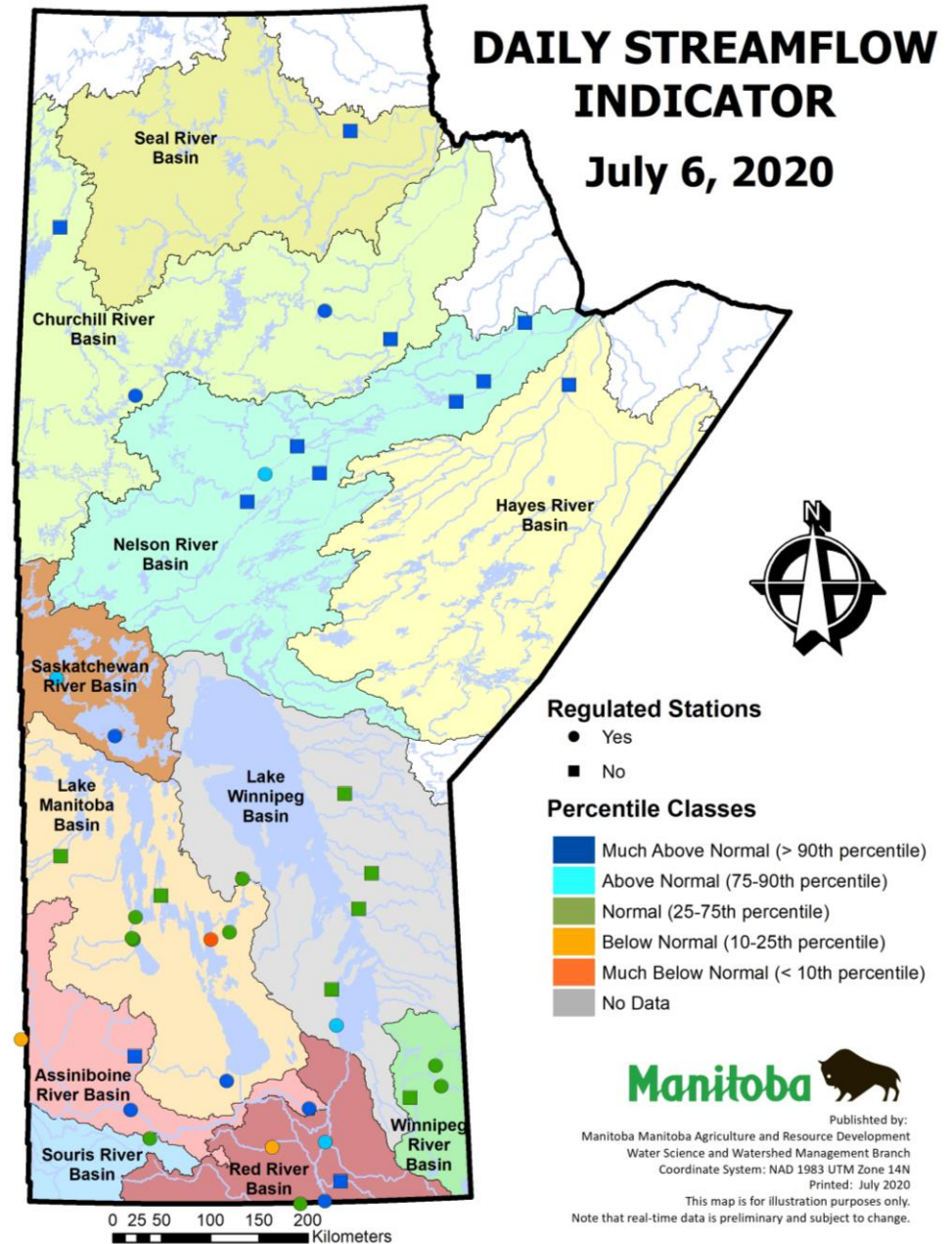


Figure 4: Daily streamflow and lake level indicator for July 6, 2020.

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.

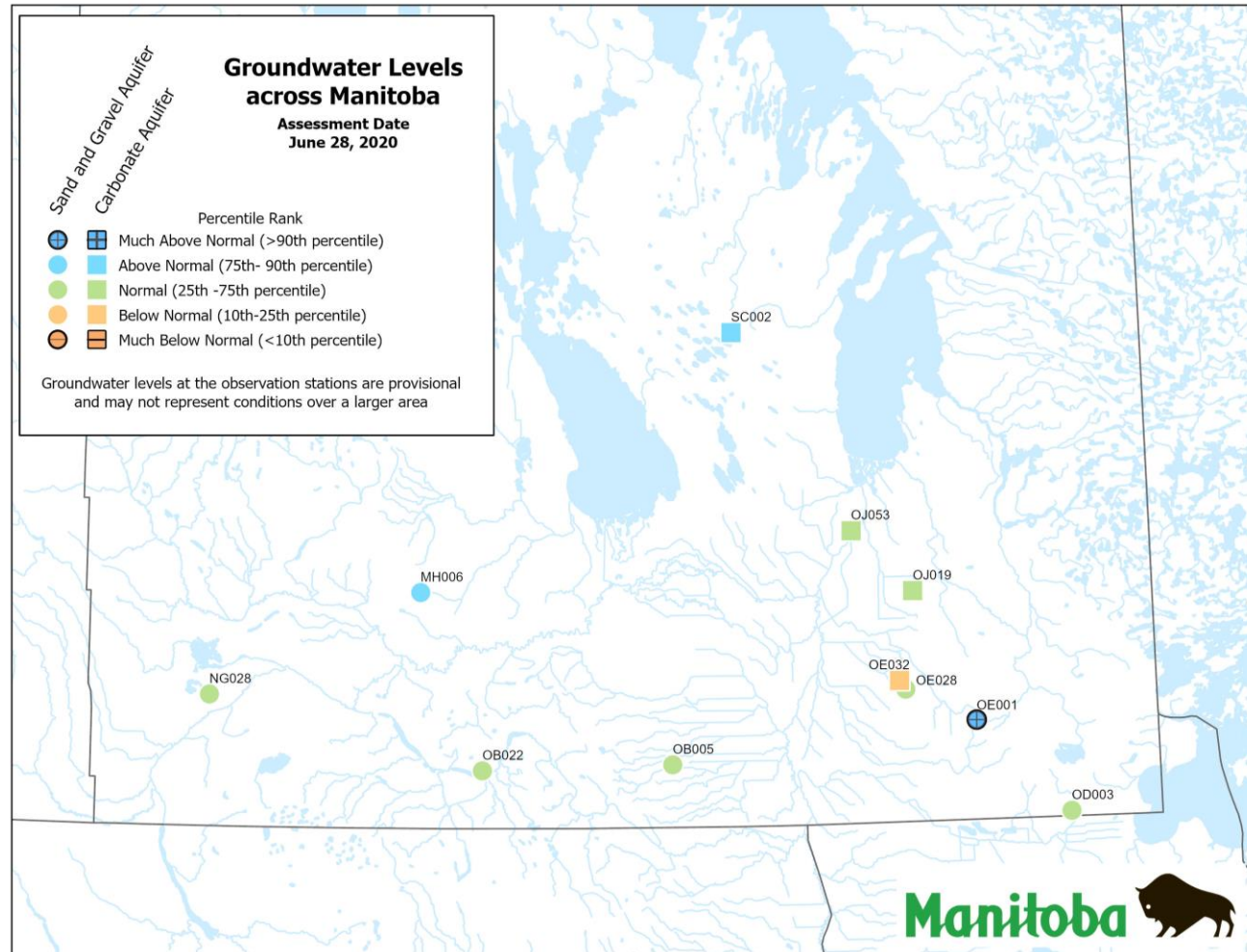


Figure 5: Groundwater indicator on June 28, 2020 for select groundwater monitoring sites.

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).

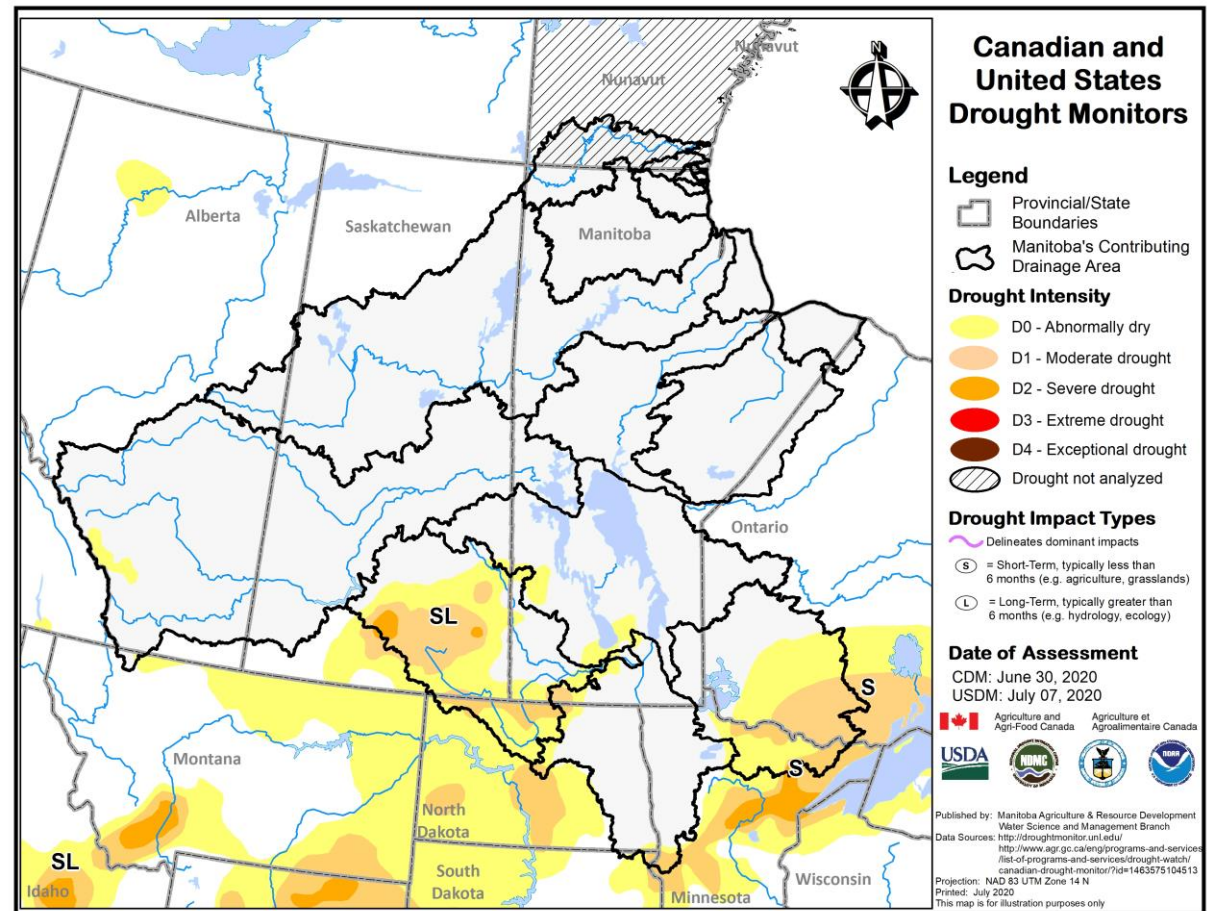


Figure 6: Canadian and United States Drought Monitors' classification of short-term (S) and long-term (L) drought conditions assessed as of June 30, 2020.

Water Availability

Reservoir Conditions

Most reservoirs are at or near full supply level (Table 1) and there are no concerns over reservoir water supplies at this time.

Table 1: Water Supply Reservoir Levels and Storages – July 5, 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	1402.79	July 5, 2020	0.29	300,000	303,480	101%
Lake Wahtopanah (Rivers)*	Rivers	1,536	1542.06	July 5, 2020	6.06	24,500	37,153	152%
Minnewasta (Morden)*	Morden	1,082	1081.75	July 5, 2020	-0.25	3,150	3,106	99%
Stephenfield*	Carman, Pembina Valley Water Co-op	972	972.15	July 5, 2020	0.15	3,810	3,879	102%
Vermilion*	Dauphin	1,274	1274.76	July 5, 2020	0.76	2,600	2,778	107%
Goudney (Pilot Mound)*		1,482	1482.30	July 5, 2020	0.30	450	465	103%
Jackson Lake*		1,174	1173.64	July 5, 2020	-0.36	2,990	2,900	97%
Manitou (Mary Jane)*		1,537	1537.01	July 5, 2020	0.01	1,150	1,150	100%
Turtlehead (Deloraine)*	Deloraine	1,772	1771.97	July 5, 2020	-0.03	1,400	1,399	100%
Kenton Reservoir		1,448	1447.83	July 5, 2020	-0.17	600	588	98%
Killarney Lake		1,615	1615.63	June 8, 2020	0.63	7,360	7,648	104%
Lake Irwin		1,178	1178.26	July 1, 2020	0.26	3,800	3,967	104%
Elgin		1,532	1532.06	March 9, 2020	0.06	520	524	101%
St. Malo		840	841.15	April 12, 2020	1.15	1,770	1,960	111%
Minnedosa		1,682	1685.64	July 5, 2020	3.64	1,688	2,750	163%
Boissevain	Boissevain	1,697	1697.81	June 8, 2020	0.81	505	578	114%

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 Crop Report Issue 10 (published on July 7, 2020) are provided in Table 2.

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

Region	General Dugout Condition
Eastern	Livestock water supply was adequate in the area and dugouts were full (Issue 9: June 30, 2020)
Interlake	Livestock water supplies are currently adequate.
Southwest	Dugouts are full.
Central	Water supplies continue to be plentiful for cattle on pasture.
Northwest	Livestock water supply remains adequate.

Soil Moisture

Manitoba Agriculture and Resource Development's mapping shows the soil moisture conditions for the top 120 cm on July 5, 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).

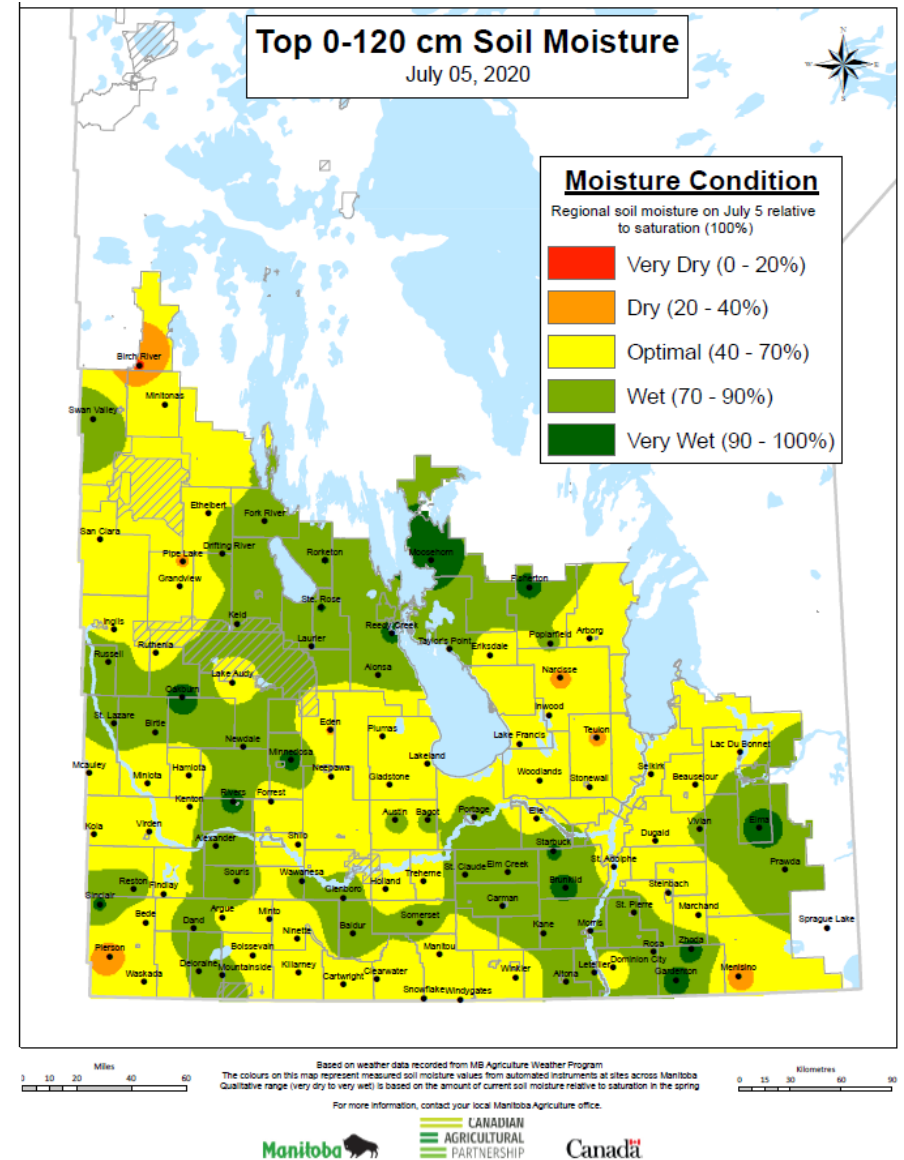


Figure 7: Manitoba Agriculture and Resource Development's July 5, 2020 mapping of soil moisture conditions in the top 0 – 120 cm.

Wildland Fires

As of July 8, 2020, Conservation and Climate's Wildfire Program reported 79 wildfires, burning a total area of 45,348 hectares. Most of the burned area occurred in the eastern western regions.

Natural Resources Canada mapping of Fire Danger as of July 7, 2020 was low to moderate across most of Manitoba, with some regions of high risk along the northeastern Ontario border.

Five municipalities had burning restrictions in place as of July 8, 2020.

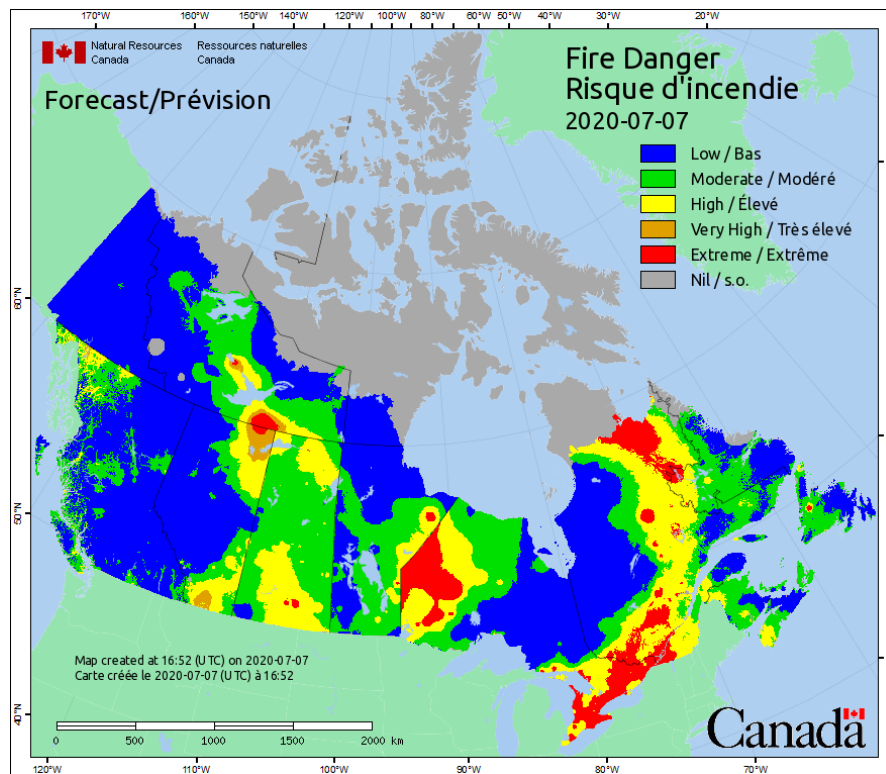


Figure 8: Fire danger mapping by Natural Resources Canada.

Impacts due to Dry Conditions

Hay and forage yields have been below normal to date, rains are expected to improve hay and pasture regrowth for a second cut in most of the province.

There were earlier reports in the growing season that forage availability in the Interlake region continued to be a concern for those impacted most severely by dry conditions in the last two to three years. However, recent reports indicate that while shortages are still anticipated, the outlook has improved quite dramatically.

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

For further information, please contact:

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Manitoba Infrastructure - Reservoir level information:

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

Environment and Climate Change Canada:

Flow and lake level information:

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

Canadian Drought Monitor: <http://www.agr.gc.ca/drought>

United States Drought Monitor: <https://droughtmonitor.unl.edu/>