

# Water Availability and Drought Conditions Report

MAY 2023

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## Executive Summary

- This Water Availability and Drought Conditions Report provides an update on conditions throughout Manitoba for May 2023.
- Precipitation conditions over the past month, three month, and twelve month periods are as follows:
  - During May 2023, most of southern Manitoba experienced severely dry (40 – 60 % of median) to extremely dry (<40 %) precipitation conditions, with the lowest precipitation amounts in the central and eastern regions and wetter conditions in the west where pockets of normal (85 – 115 %) to above normal (>115 %) conditions were observed. In northern Manitoba conditions generally ranged from moderately dry (60 – 85 %) to severely dry, with normal to above normal conditions surrounding Thompson and The Pas.
  - Over the past three months (March, April, May), southern Manitoba experienced moderately to extremely dry precipitation conditions except for a few pockets of normal or above normal conditions in the southwest and southeast. Conditions in northern Manitoba also ranged from moderately to extremely dry, except for a region of normal conditions surrounding Thompson.
  - Over the past 12 months, southern Manitoba observed moderately dry to normal precipitation conditions. In northern Manitoba conditions ranged from moderately dry in the south to normal in the north, with a region of severely dry conditions surrounding The Pas.
- As of May 31, 2023, most rivers and lakes across Manitoba were classified as normal (25<sup>th</sup> – 75<sup>th</sup> percentile) to much above normal (>90<sup>th</sup>), except for the Bloodvein, Saskatchewan, Limestone, and Cochrane rivers, and Round and Weaver lakes which were all classified as below normal (10<sup>th</sup> – 25<sup>th</sup> percentile).
- The May 31, 2023 Canadian Drought Monitor assessment showed an increase in the extent of abnormally dry (D0) and moderate drought (D1) conditions across Manitoba. Almost all of agri-Manitoba is classified as D0, with regions of D1 surrounding with City of Brandon, throughout the Interlake, and extending eastward towards the Ontario border. In northern Manitoba, D0 conditions extended from the Saskatchewan border northwest to Hudson Bay, with D1 conditions to the east of Southern Indian Lake.
- Provincial water supply reservoirs are close to or above full supply levels and there are currently no concerns over reservoir water supplies.
- On-farm water supplies are currently classified as sufficient across all regions.
- As of June 6, 2023, a total of 6,446 hectares have been burned during the 2023 wildfire season, primarily in the eastern and northern regions. At the time this report was published, no provincial burning or travel restrictions were in place due to wildfire activity; however, thirteen municipalities had burning restrictions in place.

# 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.

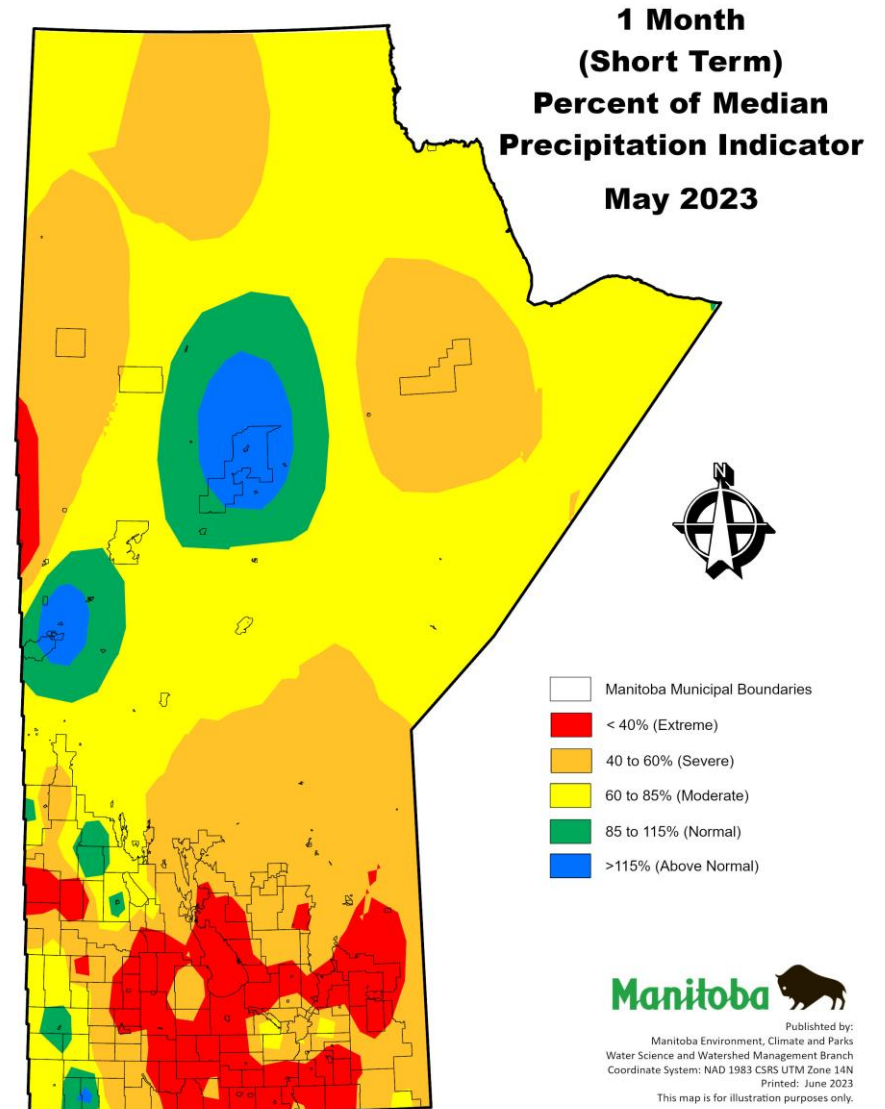


Figure 1: One month (short term) per cent of median precipitation indicator.

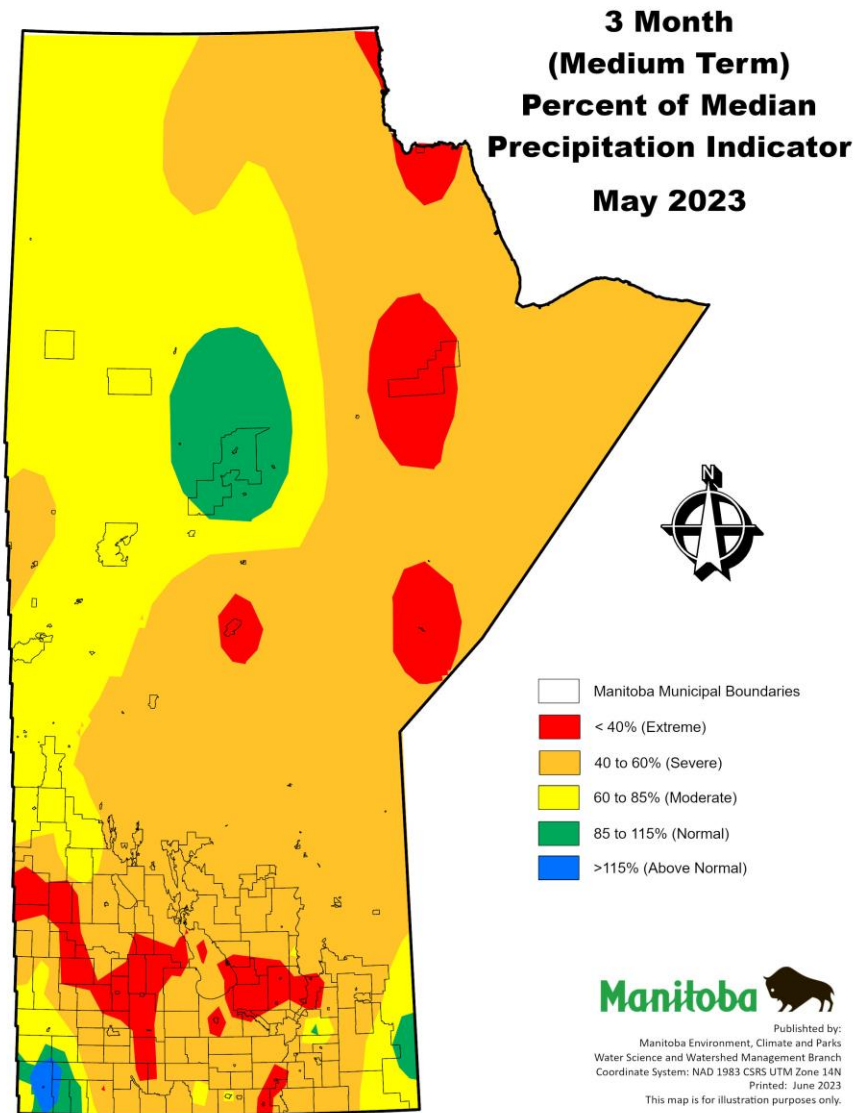


Figure 2: Three month (medium term) per cent of median precipitation indicator.

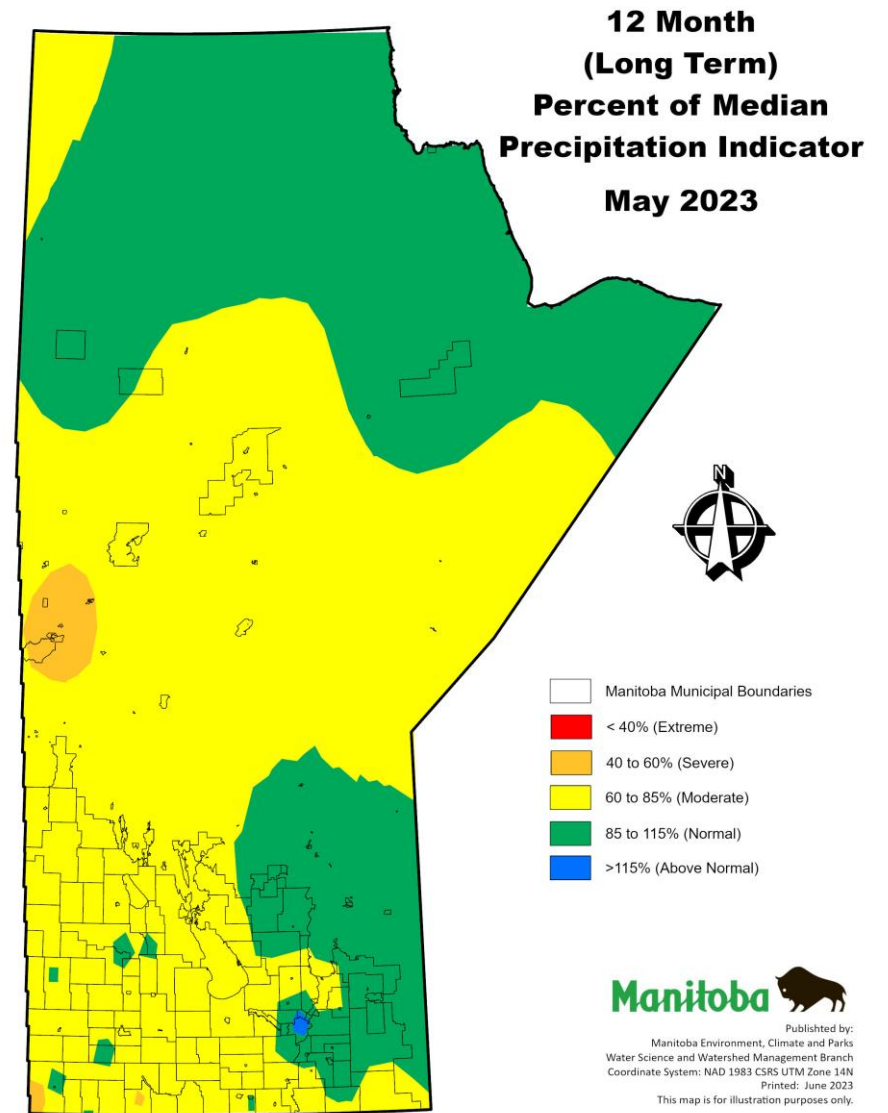


Figure 3: Twelve month (long term) per cent of median precipitation indicator.

### 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 May 31, 2023.

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.

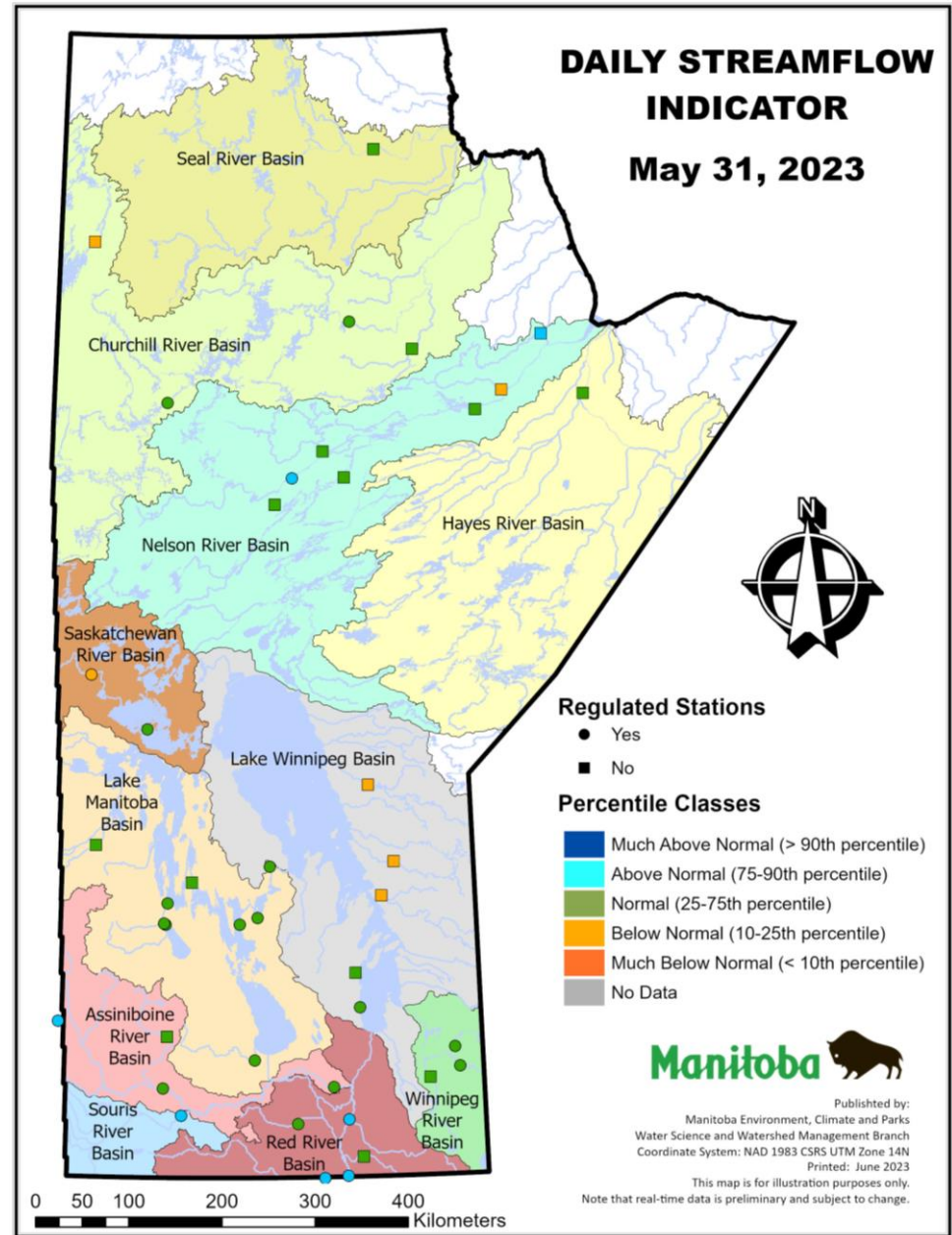


Figure 4: Daily streamflow and lake level indicator for May 31, 2023.



## 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 5).

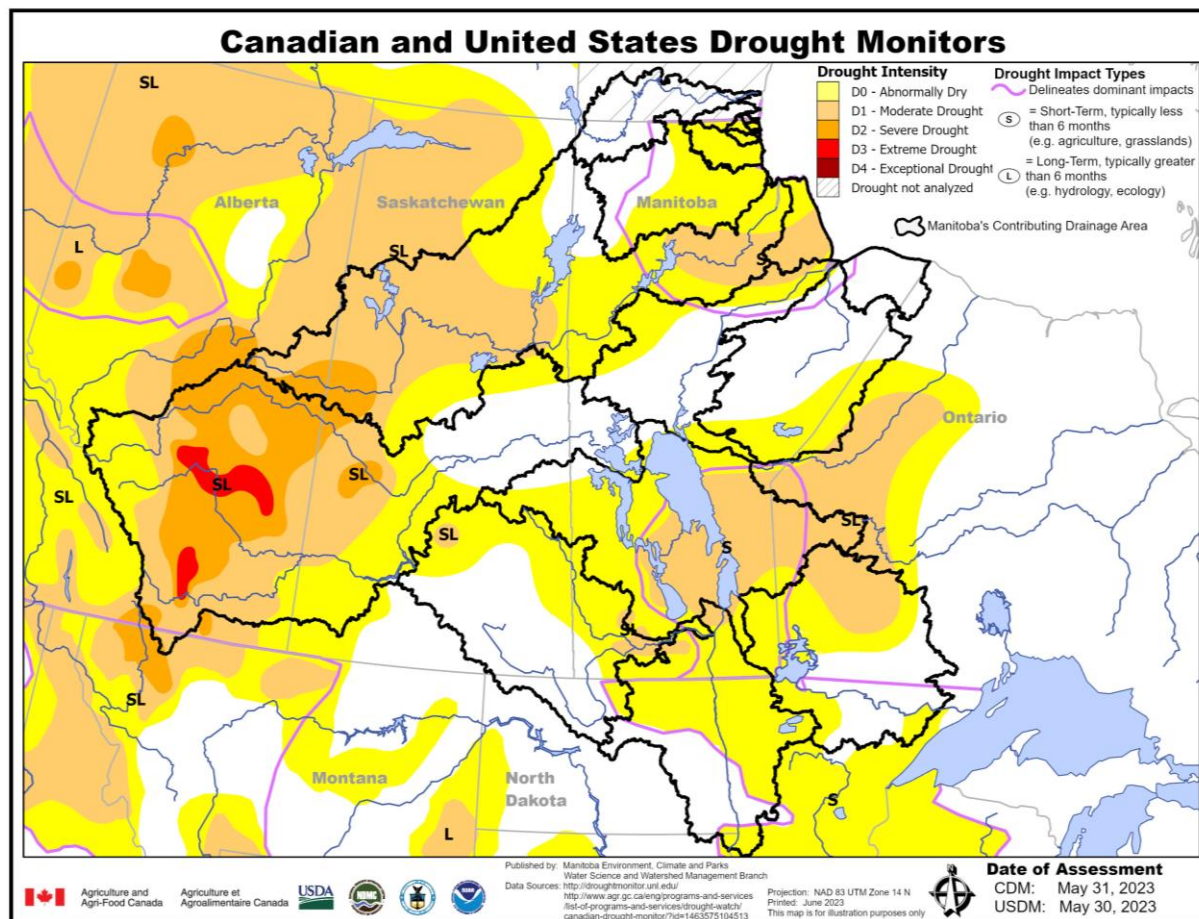


Figure 5: Canadian and United States Drought Monitors' classification of short-term (S) and long-term (L) drought conditions assessed as of May 31, 2023.

# Water Availability

## Reservoir Conditions

Table 1: Water Supply Reservoir Levels and Storages – June 1, 2023 (Southern and Western Manitoba).

Water Supply Reservoir Levels and Storages - June 1, 2023								
Lake or Reservoir	Community 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)* <sup>1</sup>	Brandon, Portage, Cartier Regional Water Co-op	1,402.5	1402.95	June 1, 2023	+0.45	300,000	305,377	102%
Lake Wahtopannah (Rivers)*	Rivers	1,536	1536.96	June 1, 2023	+0.96	24,500	26,671	109%
Minnewasta (Morden)*	Morden	1,082	1082.18	June 1, 2023	+0.18	3,150	3,178	101%
Stephenfield*	Carman, Pembina Valley Water Co-op	972	972.37	June 1, 2023	+0.37	3,810	3,985	105%
Vermilion*	Dauphin	1,274	1274.51	June 1, 2023	+0.51	2,600	2,720	105%
Goudney (Pilot Mound)*		1,482	1482.61	June 1, 2023	+0.61	450	481	107%
Jackson Lake*		1,174	1173.43	June 1, 2023	-0.57	2,990	2,846	95%
Manitou (Mary Jane)*		1,537	1537.01	June 1, 2023	+0.01	1,150	1,150	100%
Turtlehead (Deloraine)*	Deloraine	1,772	1772.15	June 1, 2023	+0.15	1,400	1,416	101%
Lake Irwin*		1,178	1177.90	June 1, 2023	-0.10	3,800	3,737	98%
Minnedosa*		1,682	1682.34	June 1, 2023	+0.34	1,688	1,778	105%
Boissevain*	Boissevain	1,697	1698.60	June 1, 2023	+1.60	505	643	127%
Elgin*		1,532	1532.61	June 1, 2023	+0.61	520	563	108%
St. Malo*		840	841.02	May 15, 2023	+1.02	1,770	1,939	110%
Kenton Reservoir		1,448	1447.97	May 11, 2023	-0.03	600	598	100%
Killarney Lake		1,615	1616.10	May 12, 2023	+1.10	7,360	7,868	107%

<sup>1</sup> Summer target level and storage  
 \* Real-time water level gauge

### On Farm Water Supply

On farm water supply updates from Manitoba Agriculture’s Crop Report Issue 4 (June 6, 2023) are provided in **Error! Not a valid bookmark self-reference..**

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

Region	General Dugout Condition
Eastern	Water in dugouts is classified as adequate and dugouts are estimated to be 80 - 90% full. Anecdotal observations from Crop Report Issue 2 suggest that ground water levels appear to be dropping in some regions.
Interlake	
Southwest	
Central	
Northwest	

### Soil Moisture

A regional representation of soil moisture conditions for the top 120 cm relative to the field capacity is shown for June 4, 2023.

The colours on the map represent measured soil moisture values from automated instruments at sites across Manitoba. Qualitative range (very dry to very wet) is based on the amount of current soil moisture relative to field capacity. Field Capacity is defined as the maximum amount of moisture the soil can hold when drainage due to gravity stops.

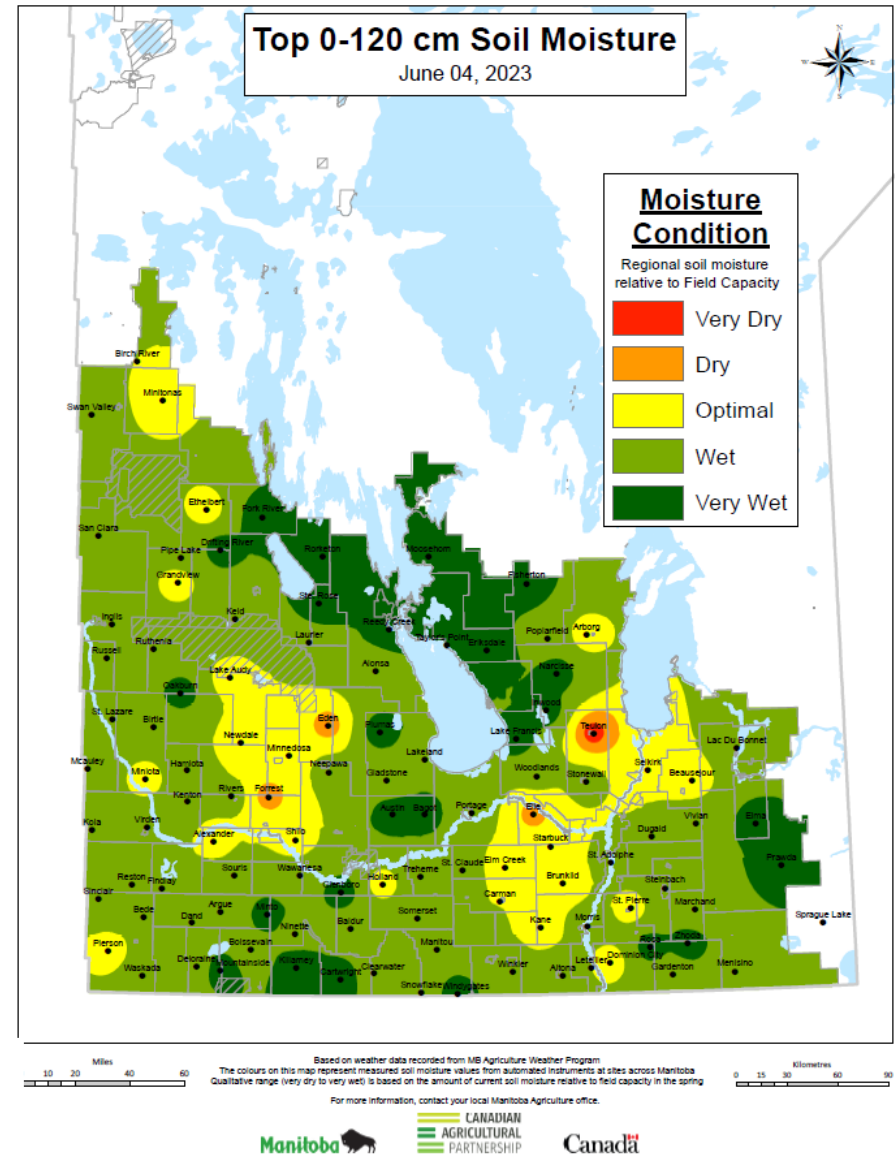


Figure 6: Manitoba Agriculture’s June 4, 2023 mapping of soil moisture conditions in the top 0 – 120 cm.

## Wildland Fires

As of June 6, 2023, a total of 6,446 hectares have been burned, primarily in the eastern and northern regions. The Manitoba Wildfire Service advised that wildfire danger was moderate for the southern half of the province and mainly low for the northern half of the province (Figure 7).

As of June 6, 2023, there were no provincial fire or travel restrictions in place. Thirteen municipalities had burning restrictions implemented.

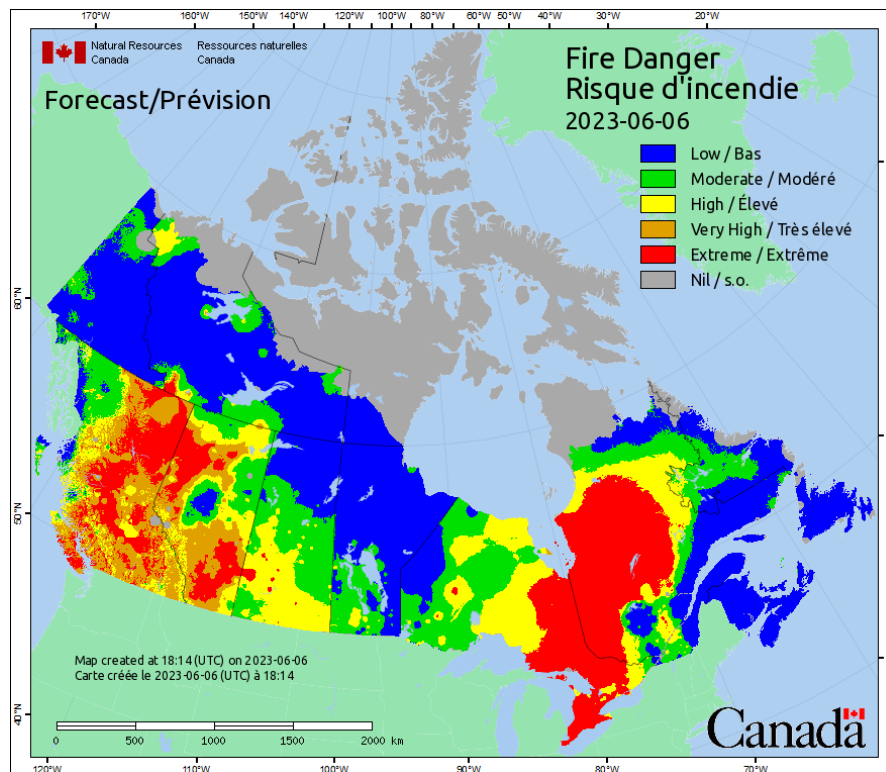


Figure 7: Fire Danger mapping by Natural Resources Canada.

## Impacts due to Dry Conditions

Towards the end of May, an active fire approximately two to three kilometers south of the Incorporated Community of Cross Lake and Pimicikamak Cree Nation resulted in the local decision to begin evacuation of some community members. However, members were able to return to the community due to favourable changes in weather conditions. Provincial Level 1 Fire and Travel restrictions were put into place on May 26 in the southeast portion of the province (Zone 1) due to high to extreme fire danger levels, but have since been lifted.

As of June 6, 2023, provincial seeding progress was at about 97 % completion, just slightly ahead of the 5-year average. Crops have shown rapid development and remain in good condition except for some later seeded fields demonstrating uneven emergence due to topsoil dryness. In some regions crops had to be planted deeper than normal where soil moisture was lacking. There are concerns that the hot, dry weather may make seedlings less able to withstand insect damage.

Pasture conditions are fair but rainfall is needed as current heat conditions will be hard on regrowth. Some areas received well needed rain that will boost pasture and hay growth.

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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## Acknowledgements

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

### **Manitoba Transportation and Infrastructure:**

Reservoir level information:

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

### **Manitoba Wildfire Service:**

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

### **Manitoba Agriculture:**

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](http://www.wateroffice.ec.gc.ca/index_e.html)

### **Agriculture and Agri-Food Canada:**

Canadian Drought Monitor:

<https://agriculture.canada.ca/en/agriculture-and-environment/drought-watch-and-agroclimate/canadian-drought-monitor>

### **United States Drought Monitor:**

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