Hydrologic Forecast Centre

Manitoba Transportation and Infrastructure

Winnipeg, Manitoba

MARCH FLOOD OUTLOOK

March 24, 2025

Executive Summary

The March Outlook Report prepared by the Hydrologic Forecast Centre (HFC) of Manitoba Transportation and Infrastructure indicates low to moderate risk of spring flooding along Manitoba rivers and lakes. Water levels are expected to remain below dikes and community or individual flood protection levels at all locations where there are dikes and community or individual flood protection works. The risk of spring flooding could change depending on weather conditions, including amount of precipitation throughout the remainder of the spring.

Most major Manitoba lakes are currently tracking normal to below normal levels for this time of the year and are within their operating ranges. Levels on most Manitoba lakes are expected to be within their normal operating ranges after the spring runoff.

Soil Moisture Conditions at Freeze-up:

Soil moisture at the time of freeze-up is one of the major factors that affects spring runoff potential and flood risk. Soil moisture at freeze-up is generally near normal to below normal for most Manitoba basins, except for portions of the Red River basin in Manitoba and the United States, which have above normal to well above normal soil moisture, and portions of northwestern Manitoba, which have well below normal soil moisture conditions at this time. Normal to below normal soil moisture levels thus far indicate a potential for near normal to below normal spring runoff within these river basins; however, the extent of spring runoff is still largely dependent on future weather conditions, including the amount of winter and spring precipitation, as well as snow melt conditions.

Winter Precipitation:

Most watersheds in Manitoba and Saskatchewan have received precipitation levels ranging from normal to well above normal from November to March with a significant portion of precipitation in the southern Manitoba basins coming as rain in November without contributing to winter snow accumulation. In the United States portion of the Red River basin, precipitation ranged from below normal to above normal during this period. Meanwhile, precipitation in the United States portion of the Souris River basin was generally normal to below normal.

Snow Water Equivalent (SWE):

Snow Water Equivalent (SWE) is the measure of the amount of water content in the snow. SWE measurements collected from March 17 to 20 indicate a range from 0 mm to 169 mm (0 to 6.7 inches) SWE across Manitoba watersheds. The highest snow water content, up to 169 mm (6.7 inches), was measured in western Manitoba including areas near the Duck Mountain and Riding Mountain National Park. Northern Manitoba also has a high snow accumulation, with SWE measurements ranging from 81 to 151 mm (3.2 to 5.9 inches). The Shellmouth Reservoir basin has an average SWE value of approximately 69 mm (2.7 inches). The Interlake region has SWE values in the order of 17 to 63 mm (0.7 to 2.5 inches). Most of southern Manitoba, including the Red River basin in the U.S., has very little snow left due to warmer temperatures in early to mid-March.

Base Flows and Levels:

Base flows and levels indicate the amount of water available in the system prior to the spring runoff. Higher base flows may indicate higher soil saturation levels and increased potentials for spring runoff. In southern Manitoba, the Red River is already starting to be affected by spring runoff. Otherwise, base flows and levels range generally from normal to above normal in most southern Manitoba basins and normal to below normal in central and northern Manitoba basins.

Soil Frost Depth:

Soil frost depth across most of Manitoba is shallower than normal due to recent warmer temperatures in early to mid-March. Frost depth is influenced by winter temperatures and the insulating effect of snow cover. Generally, when frost is deeper than normal, it takes longer to thaw, reducing the soil's ability to absorb water and leading to increased surface runoff. In contrast, shallower than normal frost depths allow the soil to absorb more meltwater, which can reduce overland flooding.

Future Weather:

Short term weather forecast by Environment and Climate Change Canada indicates that there is less than a 50% chance of receiving more than 25 mm precipitation between March 21 and April 5, 2025, for most Manitoba basins. The long-term precipitation outlook for April, May and June, issued in March by the International Research Institute (IRI) at the Columbia Climate School, indicates equal chances of above normal, below normal or near normal precipitation for the majority of Manitoba's basins, with a slight chance of above normal precipitation in southwestern and southeastern Manitoba. The IRI outlook also indicates higher chances of above normal temperature for all Manitoba basins for April, May and June.

Flood Outlook:

The preliminary spring flood outlook based on current basin conditions and future weather condition scenarios shows the risk of significant flooding is low for many Manitoba basins, including the Red, Pembina, Rat, Roseau, Saskatchewan, Winnipeg and Churchill rivers. The risk of significant flooding is moderate for the Assiniboine (from Russell to Brandon), Souris, Qu'Appelle, Fisher and Icelandic rivers. A moderate flood risk is issued for regions where water may exceed the riverbank under an unfavourable future weather scenario. As in most years, there is a risk of ice jam induced flooding for the Icelandic and Fisher Rivers. The province's practice is to plan and prepare for the unfavourable future weather condition scenario, which is a weather scenario that would have a 1-in-10 chance of occurring from now until the spring runoff.

The magnitude of the spring runoff on Manitoba's rivers is still very dependent on weather conditions from now until the spring melt and during the spring melt period. The runoff potential is significantly affected by the amount of additional snow and spring rains, frost depth at the time of runoff, timing and rate of spring thaw. A late thaw and spring rainstorms could result in a rapid snow melt that increases overland flooding and flows on tributary streams and larger rivers.

Water Control Structures Operations:

The Red River Floodway is not expected to be operated under normal and favourable weather conditions. If unfavourable weather occurs and higher flows are experienced, the Floodway will be operated to reduce water levels within the City of Winnipeg. The Portage Diversion is expected to be operated under unfavourable weather conditions. Also, under normal conditions, minimal operation of the Portage Diversion may be necessary to mitigate ice related water level rises on the lower Assiniboine River (from Portage to Winnipeg). The Shellmouth Reservoir is being operated in consultation with the Shellmouth

Liaison Committee members in order to reduce the risk of flooding downstream on the Assiniboine River, while also providing sufficient storage for water supply and recreation.

Preparations:

The Manitoba government, local authorities and First Nations communities are continuing to prepare for spring flooding. This includes ice cutting and breaking this spring on the Red River, Icelandic River and the Fisher River, reviewing of existing emergency plans, information sharing, and preparation of resources used in flood response.

Contents

Soil Moisture Conditions

A number of different tools have been used to determine the soil moisture at freeze-up. The most common method, which has been used for years, is the Manitoba's MANAPI model, which is expressed by the API (Antecedent Precipitation Index) method. The MANAPI model indicates the degree of saturation in the soil. This method uses the recorded precipitation at a large number of meteorological stations throughout various basins to calculate the amount of water from summer and fall rain that remains in the soil layer and has yet to contribute to runoff. Figure 1 shows the API map for the fall of 2024 expressed in percent of normal.

The API model results indicate that soil moisture was near normal to below normal for most Manitoba basins at the end of October. However, portions of the Red River basin in southern Manitoba (south of Winnipeg) and the United States show above normal to well above normal soil moisture. The API model indicates soil moisture is well below normal in portions of northwestern Manitoba, including areas near The Pas.

The National Weather Service Climate Prediction Center, through its soil moisture monitoring and modelling works, indicates that the Souris River basin in the United States is experiencing below normal soil moisture. In contrast, the northern portion of the Red River basin in the United States shows above-normal soil moisture and the southern portion remains near normal (Figure 2).

In summary, soil moisture in most Manitoba basins and the United States portion of the Red River basin is near normal to below normal, with the exception of some localized areas south of Winnipeg and in the northern portion of the Red River basin in the United States, which have above normal soil moisture levels. Additionally, some areas in northwestern Manitoba are experiencing well below normal soil moisture levels.

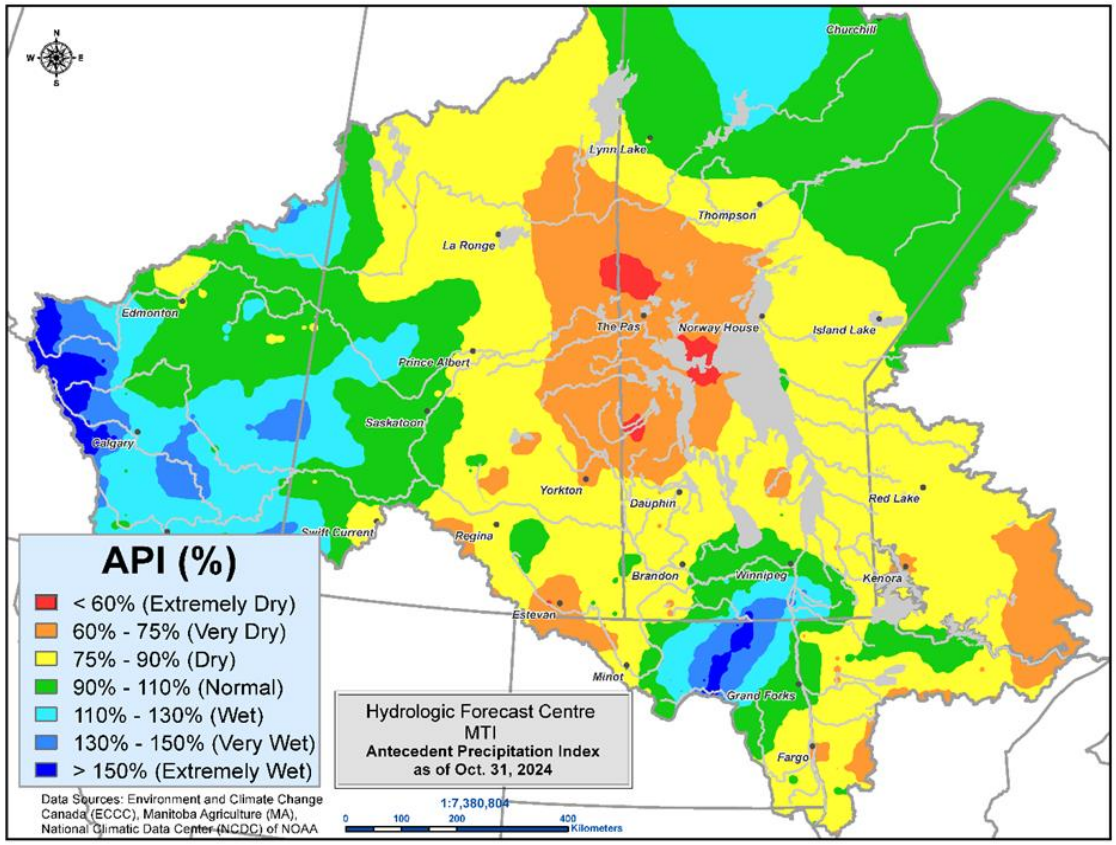

Figure 1 – Soil moisture expressed as Antecedent Precipitation Index (API) for the fall of 2024.

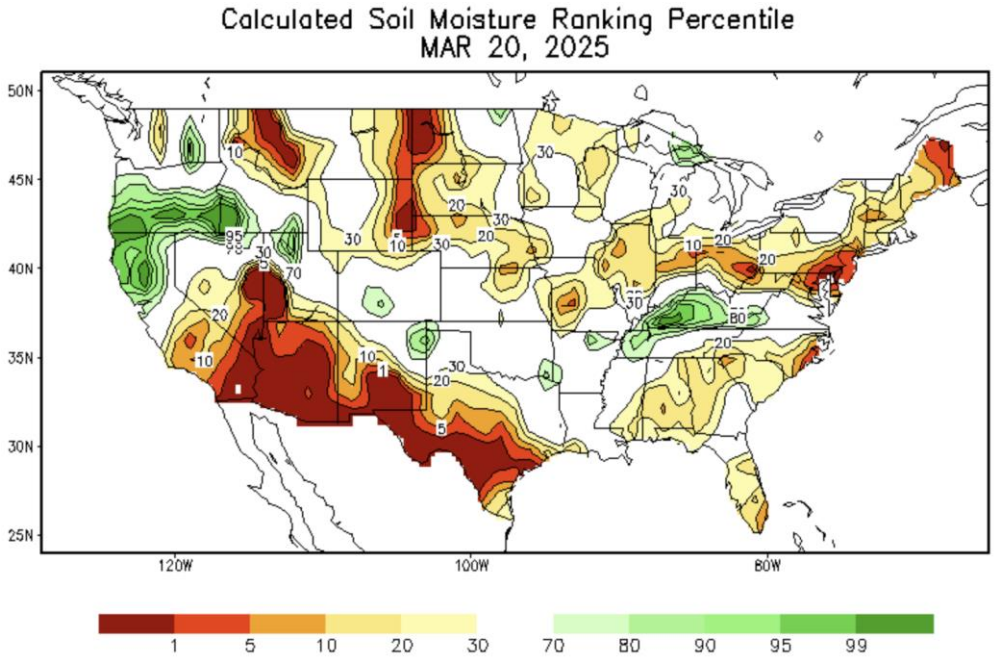

Figure 2 – Calculated soil moisture ranking percentile as of March 20, 2025, from the National Weather Service.

Winter Precipitation

Precipitation from November to March has generally been normal to well above normal (normal to extremely wet conditions) across much of Manitoba and Saskatchewan. Similarly, in the United States portion of the Red River basin, precipitation ranged from below normal to above normal during this time. However, in the United States portion of the Souris River basin, precipitation during this period was normal to below normal (Figure 3). Significant portion of November precipitation in southern Manitoba basins came as a rain without contributing to winter snow accumulation.

The cumulative precipitation amounts across Manitoba, Saskatchewan, and the United States portions of the Red River and Souris River basins show significant variation. Most parts of Manitoba and the Lake of the Woods basin in Ontario have received 110 mm to 160 mm (4.3 to 6.3 inches) of precipitation. Most parts of Saskatchewan and the United States portion of the Red River basin received 75 mm to 130 mm (3.0 to 5.1 inches), with some localized areas (including the Souris River basin in the United States) receiving below 60 mm to 75 mm (2.4 to 3.0 inches) (Figure 4).

Most areas of Manitoba and Saskatchewan, as well as the United States portion of the Red River basin, have received precipitation above the 60th percentile. In other words, historical records indicate that precipitation has been higher than the current record for 40% of the time. Some parts of central and northern Manitoba have received precipitation between 80th to 95th percentiles. The United States portion of the Souris River basin has received precipitation between the 20th and 60th percentiles (Figure 5).

As shown in Figure 6, recorded winter precipitation as of March 21, 2025, indicates that most parts of Manitoba, Saskatchewan, and the United States portion of the Red River basin have accumulated approximately 10 to 40 mm (0.4 to 1.6 inches) more precipitation than normal for this time of the year. Some localized areas in central Manitoba, including the Interlake region, received 40 mm (1.6 inches) more precipitation than normal for this time of the year. The United States portion of the Souris River basin has received in the order of 10 to 25 mm less precipitation than the historic normal for this time of the year.

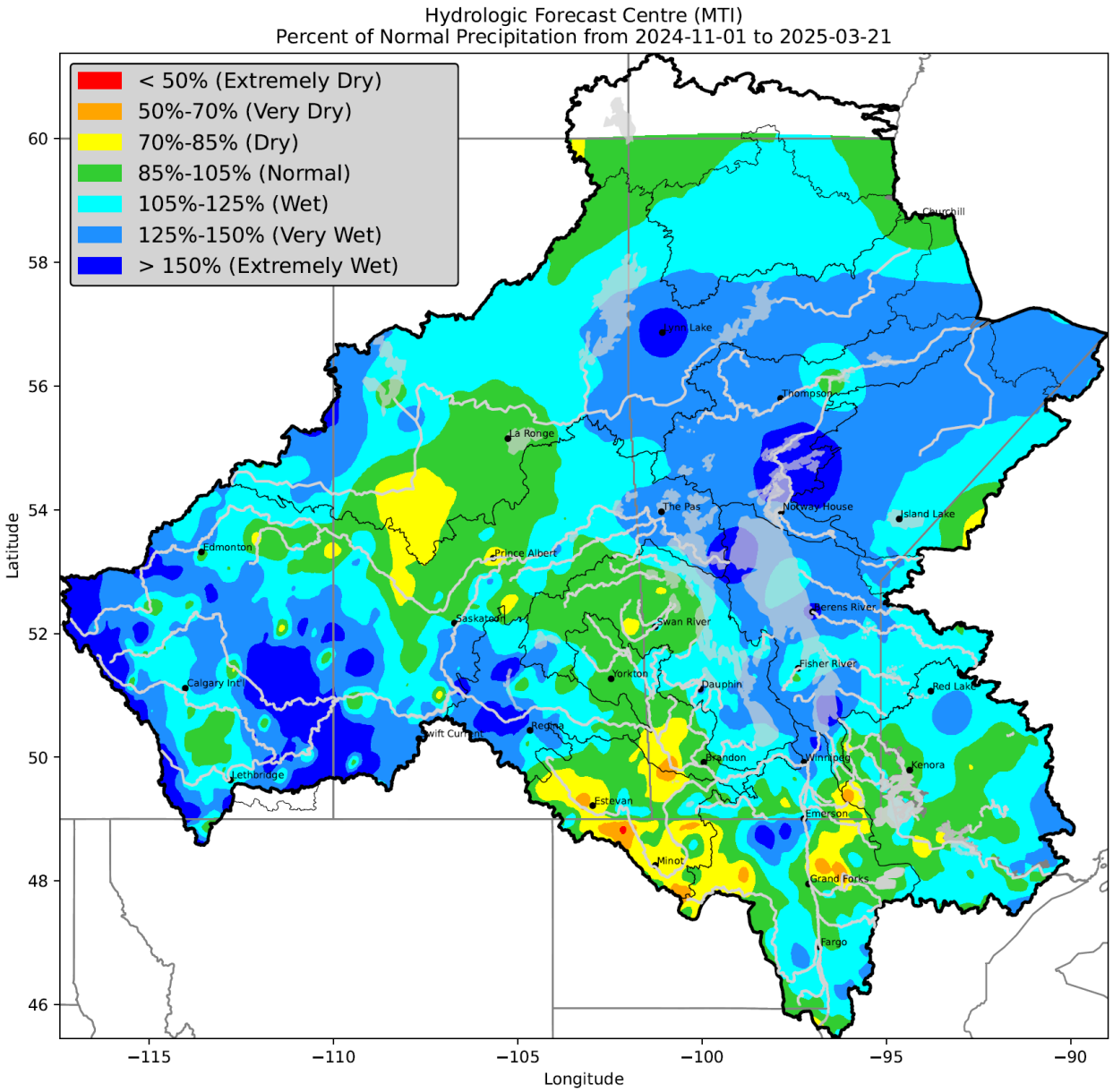

Figure 3 – Percent of normal precipitation from November 1, 2024 to March 21, 2025.

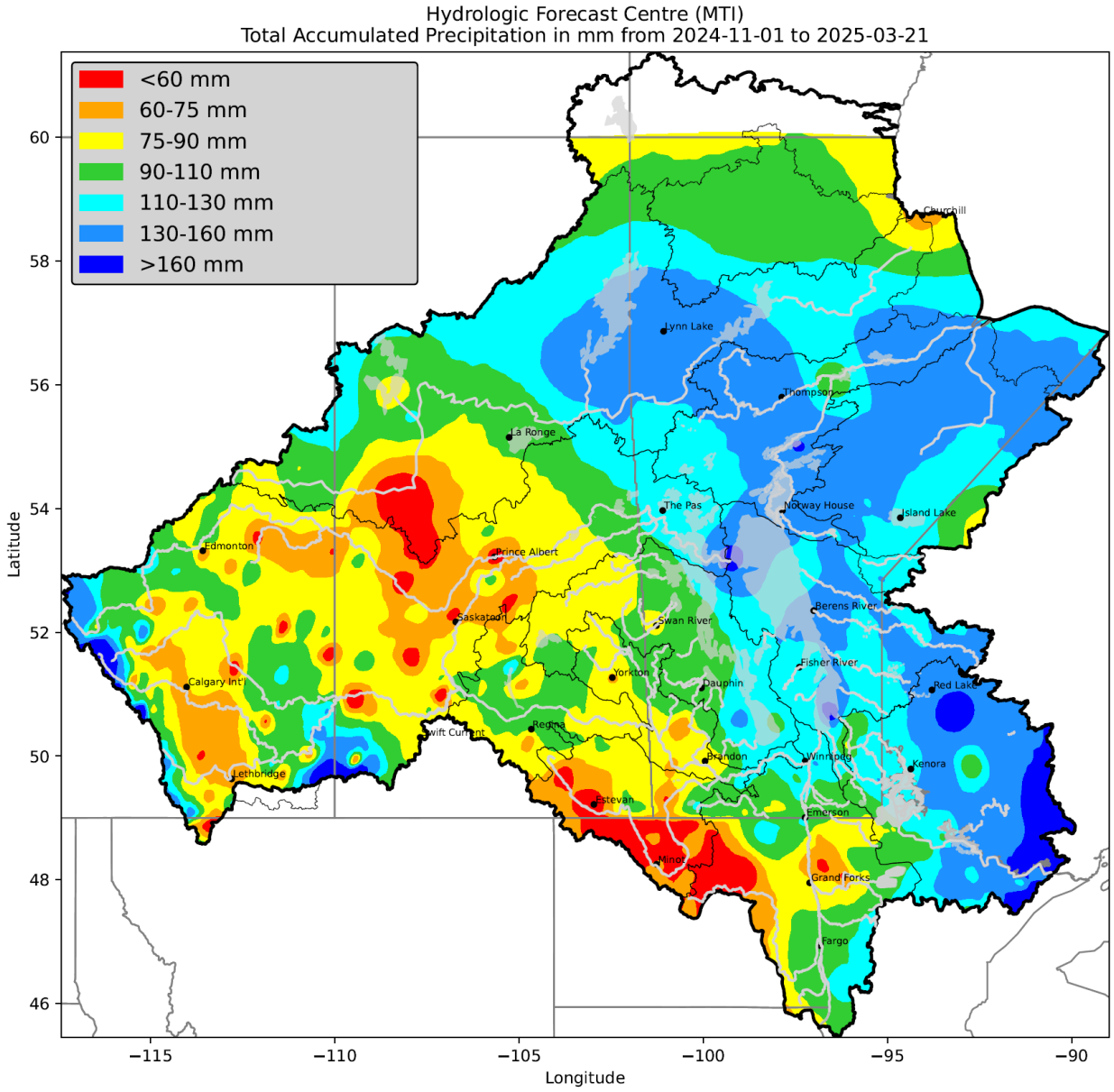

Figure 4 – Cumulative precipitation in mm from November 1, 2024 to March 21, 2025.

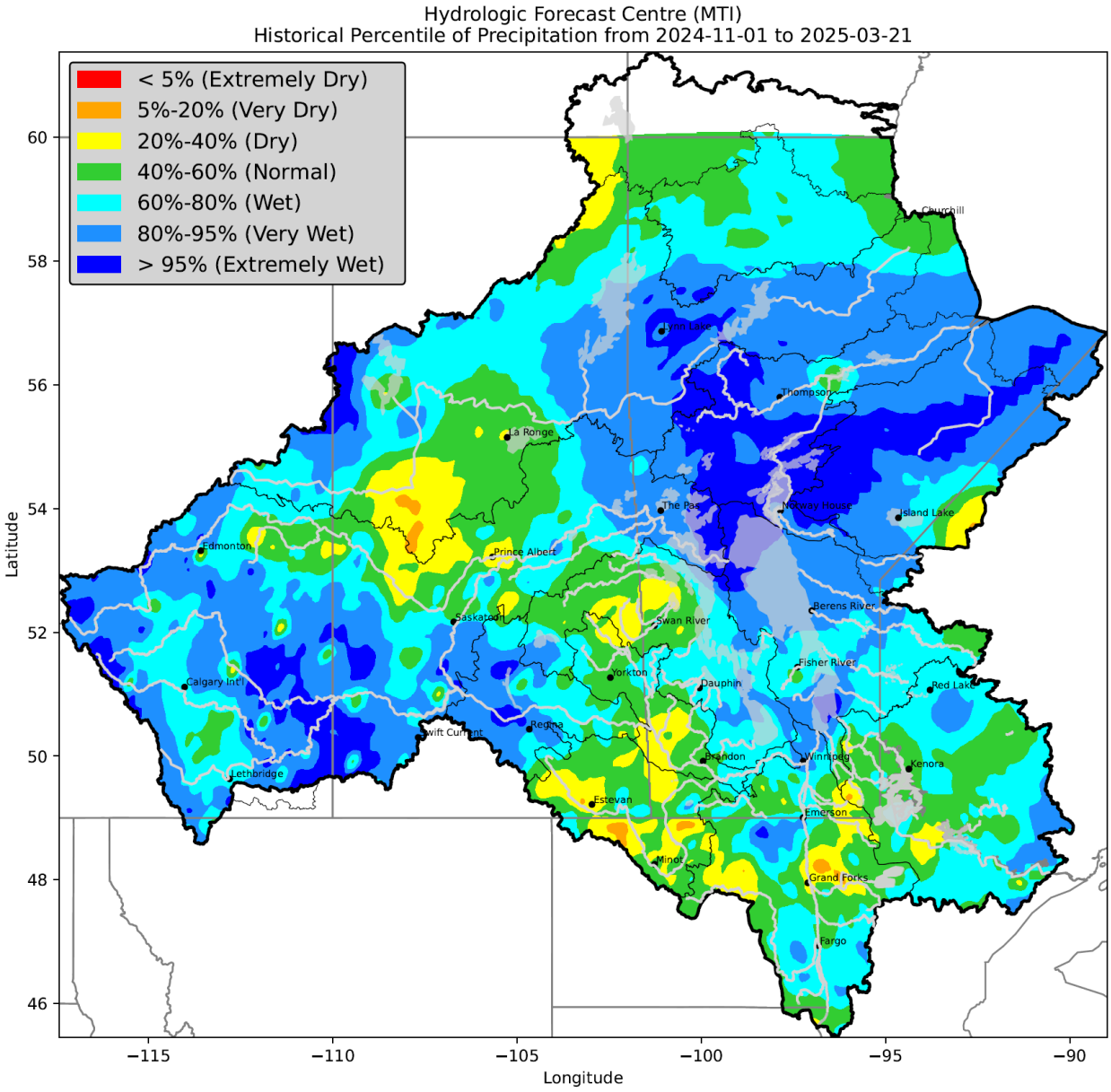

Figure 5 – Percent ranking of precipitation from November 1, 2024 to March 21, 2025, compared to historic record.

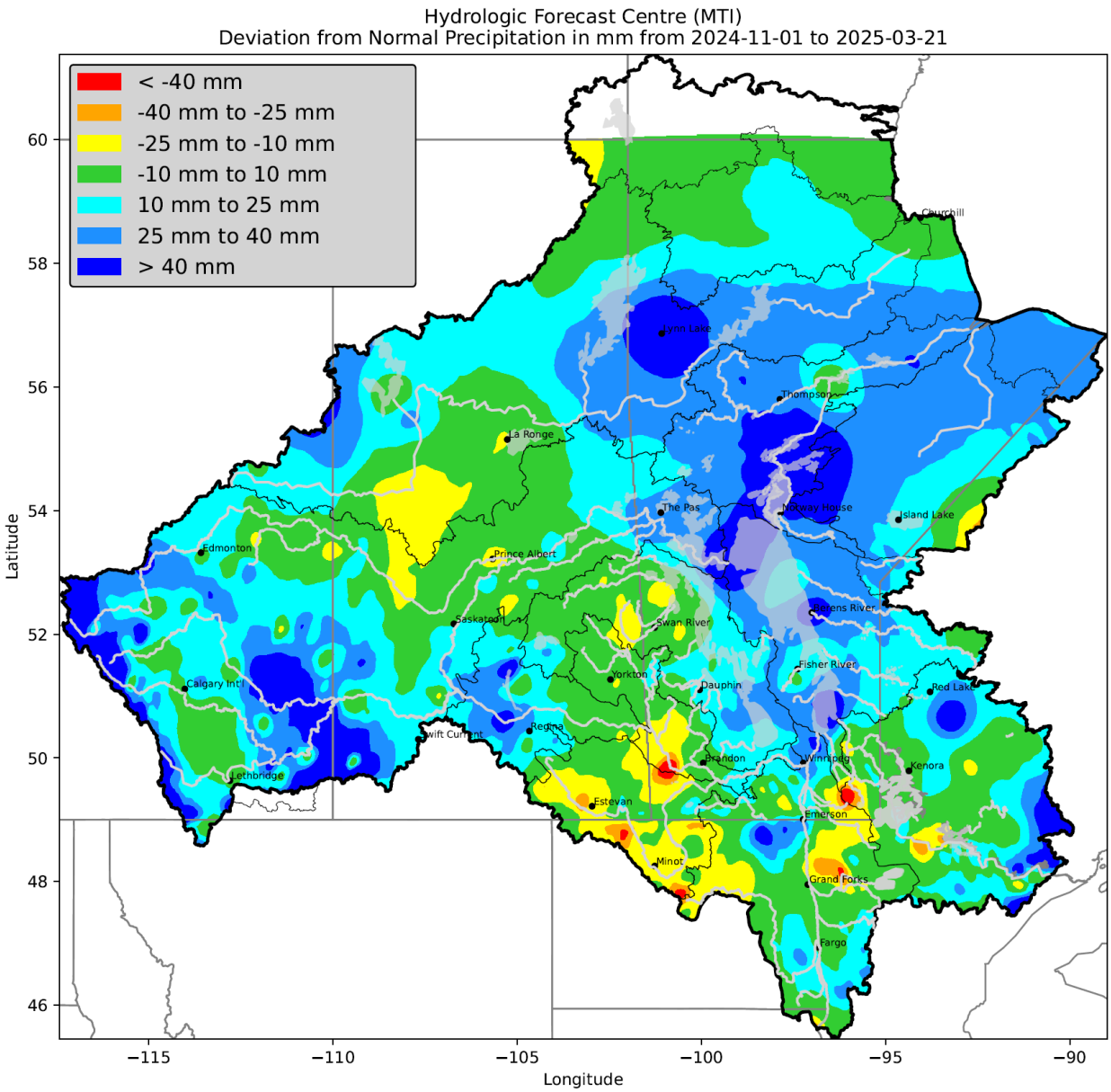

Figure 6 – Precipitation from November 1, 2024 to March 21, 2025, deviation from normal (mm).

Snow Water Content

Snow Water Equivalent (SWE) is the measure of the amount of water content in the snow. SWE estimates obtained from March field measurements range from 0 mm to 169 mm (0 to 6.7 inches) across Manitoba watersheds (Figure 7). The highest snow water content, up to 169 mm (6.7 inches), is measured in western Manitoba including areas near the Duck Mountain Provincial Park and Riding Mountain National Park. Northern Manitoba, including The Pas and Flin Flon, is also recording high SWE measurements. These areas have recorded SWE values ranging from 81 to 151 mm (3.2 to 5.9 inches). The Shellmouth Reservoir basin has an average SWE value of approximately 69 mm (2.7 inches). The Interlake region has SWE values in the order of 17 to 63 mm (0.7 to 2.5 inches). There is currently very little snow remaining in most of southern Manitoba and throughout the Red and Souris River basins in the U.S.

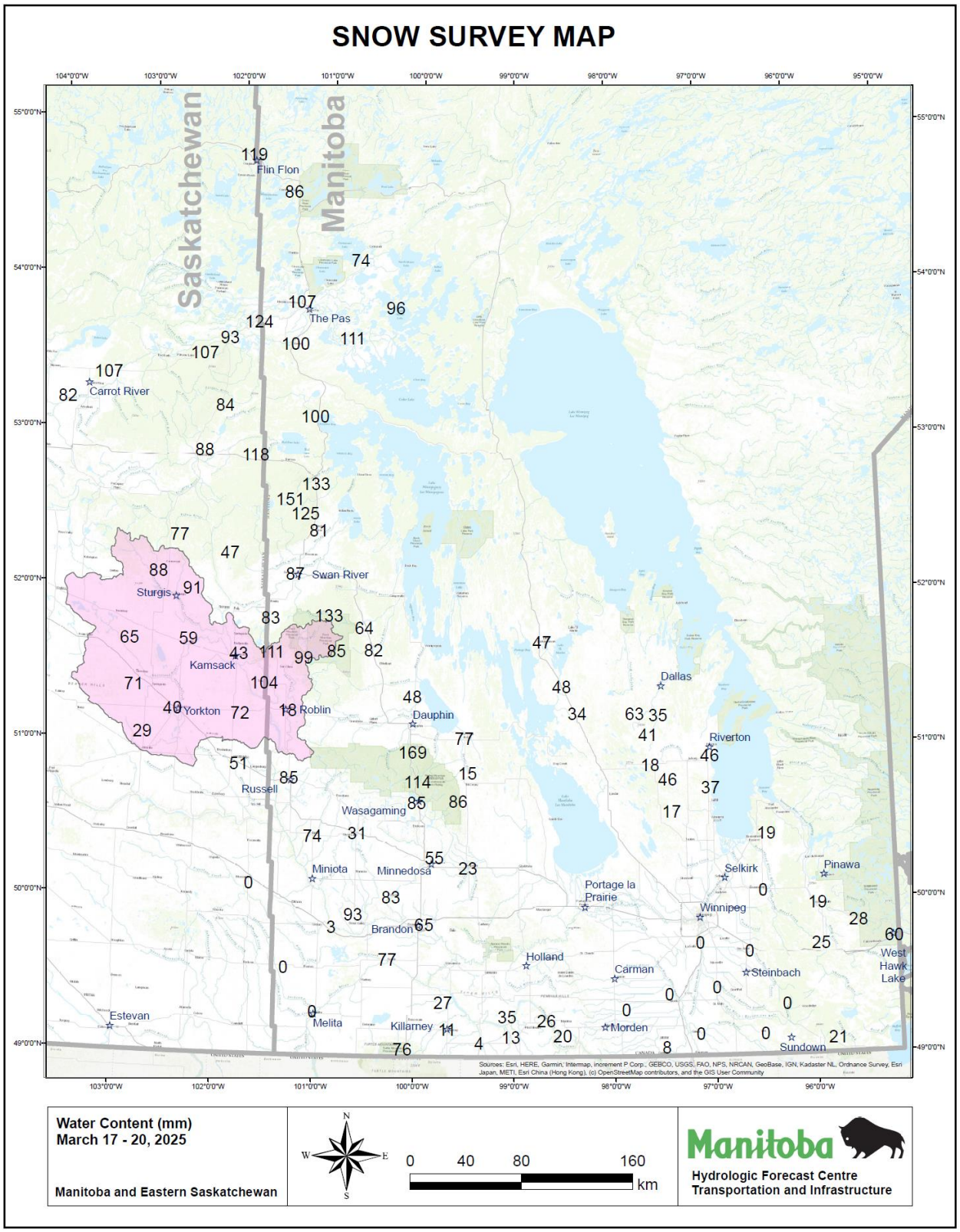

Figure 7 – Snow Water Equivalent (SWE) in mm from field measurements conducted in March 2025.

Base Flows and Level Conditions

Base flows and levels indicate the amount of water available in the system prior to the spring runoff. Higher base flows may indicate higher soil saturation levels and increased potentials for spring runoff. As of March 21, 2025, base flows and levels range from normal to well above normal in southern Manitoba basins and normal to below normal in central and northern Manitoba basins (Figure 8). Much of winter snow accumulation in southern Manitoba basins, including the Red River basin in the U.S., has already melted as a result of warmer temperatures in early to mid-March. This has contributed to rising water levels along the Red River.

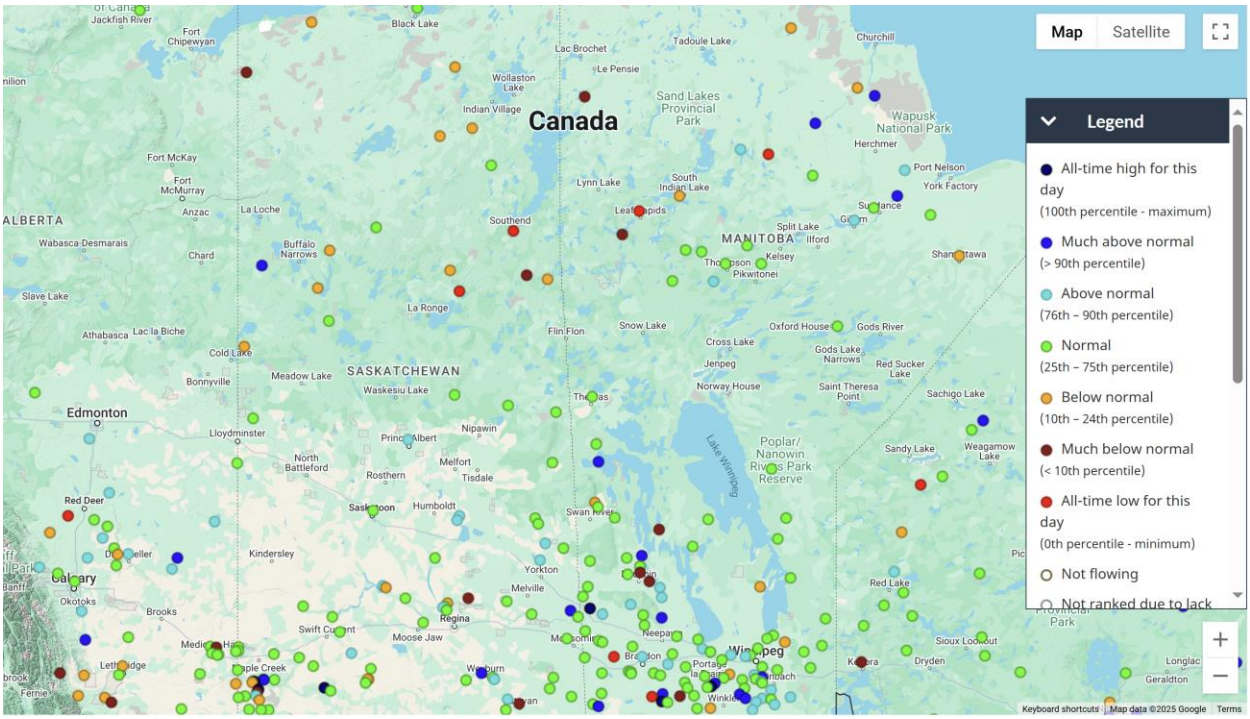

Figure 8 – Base flows and level conditions as of March 21, 2025 (Note: Flows and levels readings at some locations could be ice affected and may not show the actual flows and levels).

Soil Frost Depth

Soil frost depth is dependent on winter temperatures and the amount of snow cover insulation. While frost depth varies across watersheds, it is generally shallower than normal due to recent warmer temperatures in early to mid-March throughout most of Manitoba. Generally, deeper than normal frost depth takes longer to thaw which means the soil absorbs less water and contributes to increased surface runoff; whereas

shallower than normal frost depth means the soil can absorb more melting surface water and can potentially decrease the amount of runoff that can lead to overland flooding. Figure 9 shows comparative measurements of frost depth at various locations across the province.

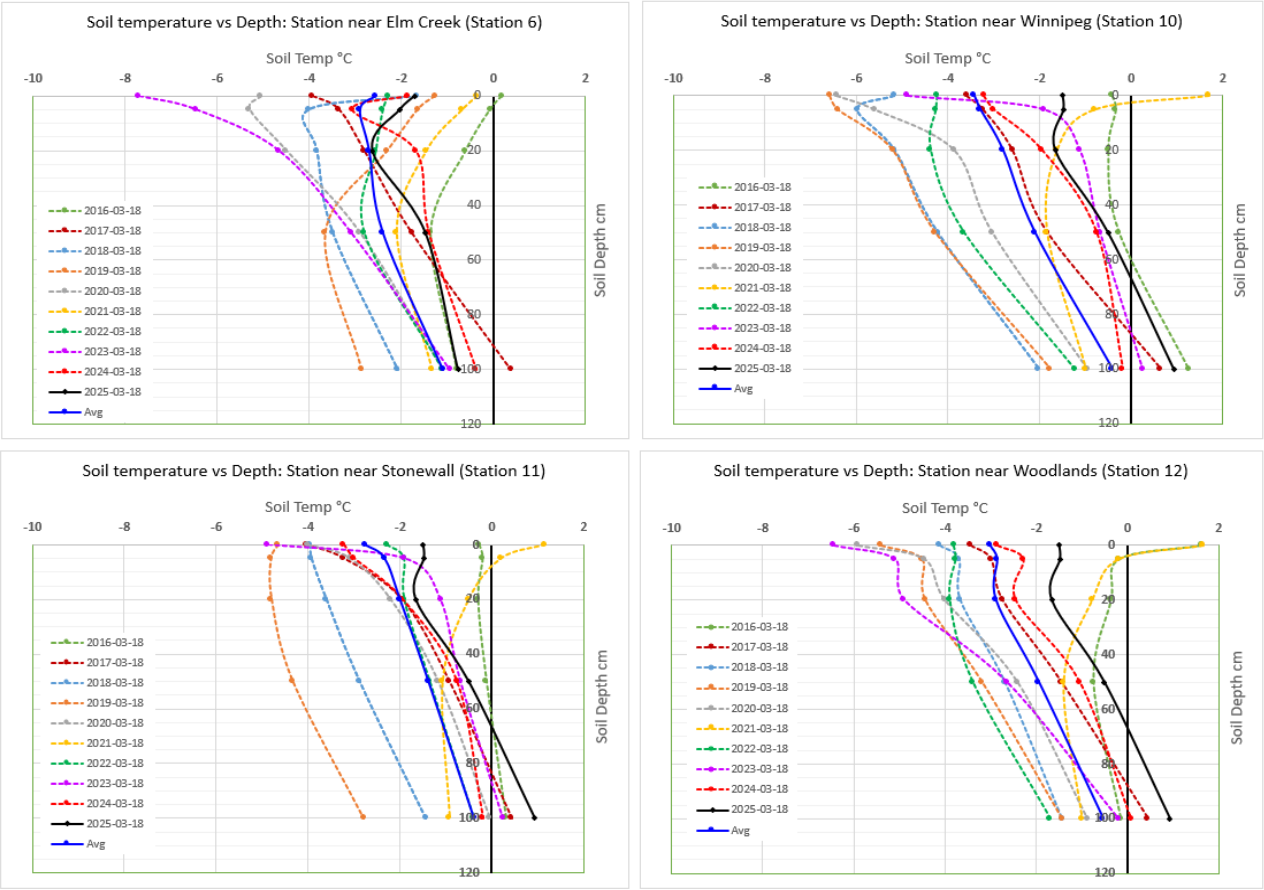

Figure 9 – Frost depth in centimeters at various locations across the province (from 2016 to 2025).

Future Weather Outlook

The short-term weather forecast shows no significant precipitation in the next seven days and less than 50% chance of receiving more than 25 mm precipitation by April 5, 2025 for most Manitoba basins (Figure 10). Most parts of the province could receive 10 to 25 mm of precipitation in the next sixteen days (Figure 11), while the southern Manitoba could see up to 40 mm of precipitation. The normal precipitation for March in Manitoba basins ranges from 20 to 25 mm. The long-term precipitation outlook for April, May and June, issued in March by the International Research Institute (IRI) at the Columbia Climate School, indicates equal chances of above normal, below normal or near normal precipitation for the majority of Manitoba's

basins, with a slight chance of above normal precipitation in southwestern and southeastern Manitoba (Figure 12). The IRI outlook also indicates higher chances of above normal temperature for all Manitoba basins for April, May and June (Figures 13).

The United States National Weather Service Climate Prediction Center's outlook issued on March 20th, 2025 forecasts equal chances of above normal, below normal or near normal precipitation within the United States portion of the Red and Souris River basins from April through June (Figure 14).

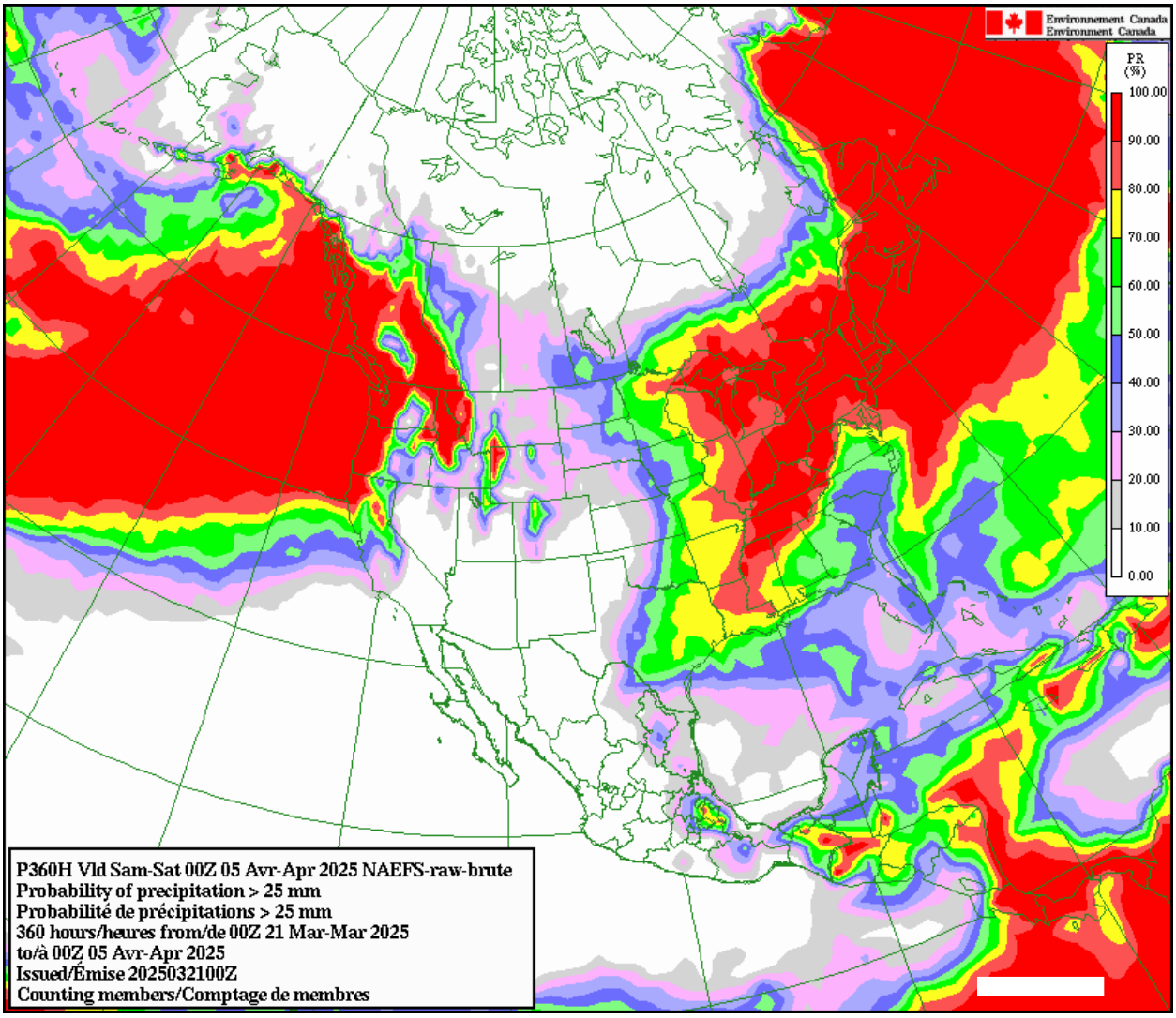

Figure 10 – Short term precipitation forecast between March 21st and April 5th.

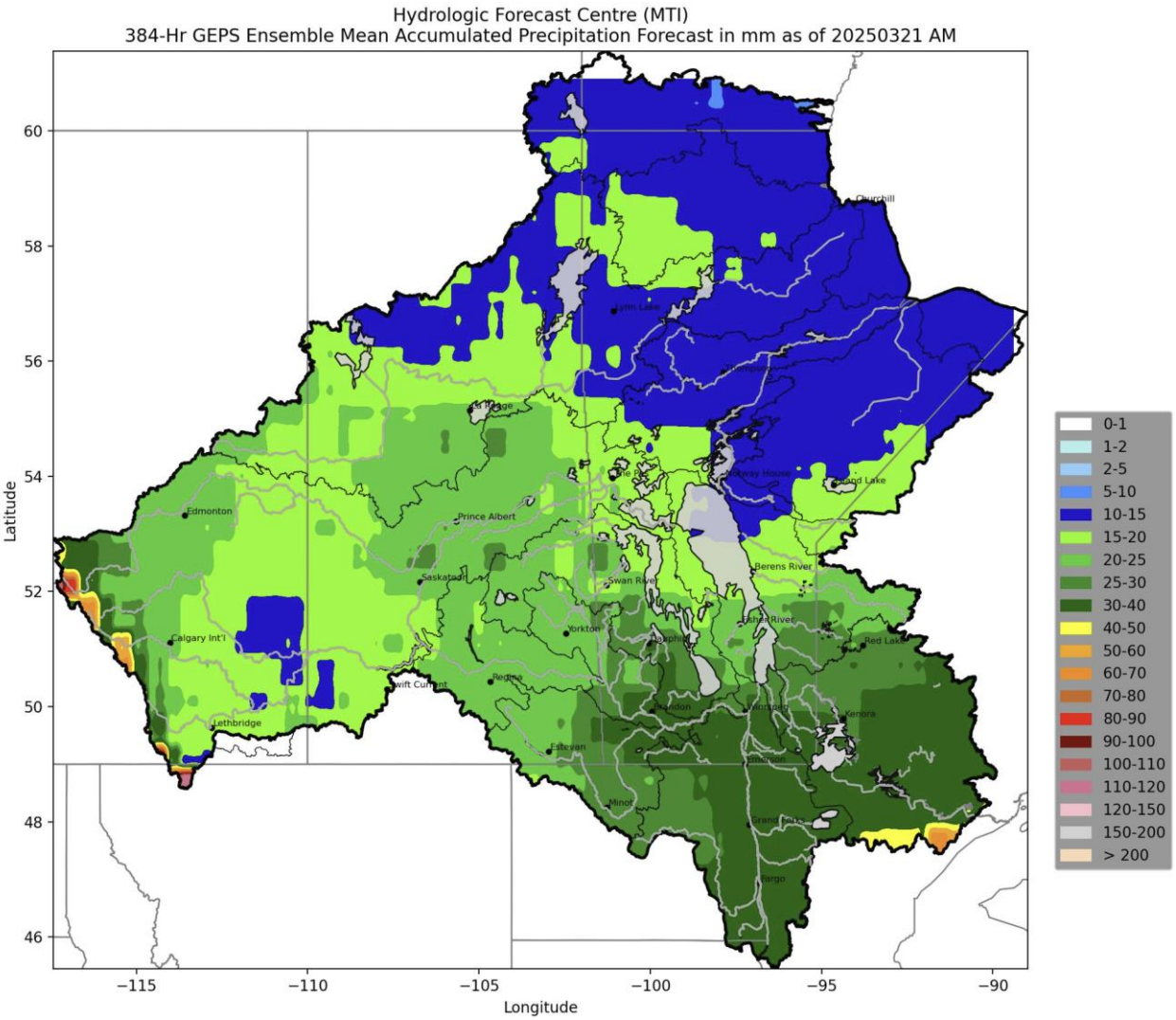

Figure 11 – Ensemble Mean Accumulated Precipitation from Environment and Climate Change Canada for the time period between March 21 and April 5, 2025.

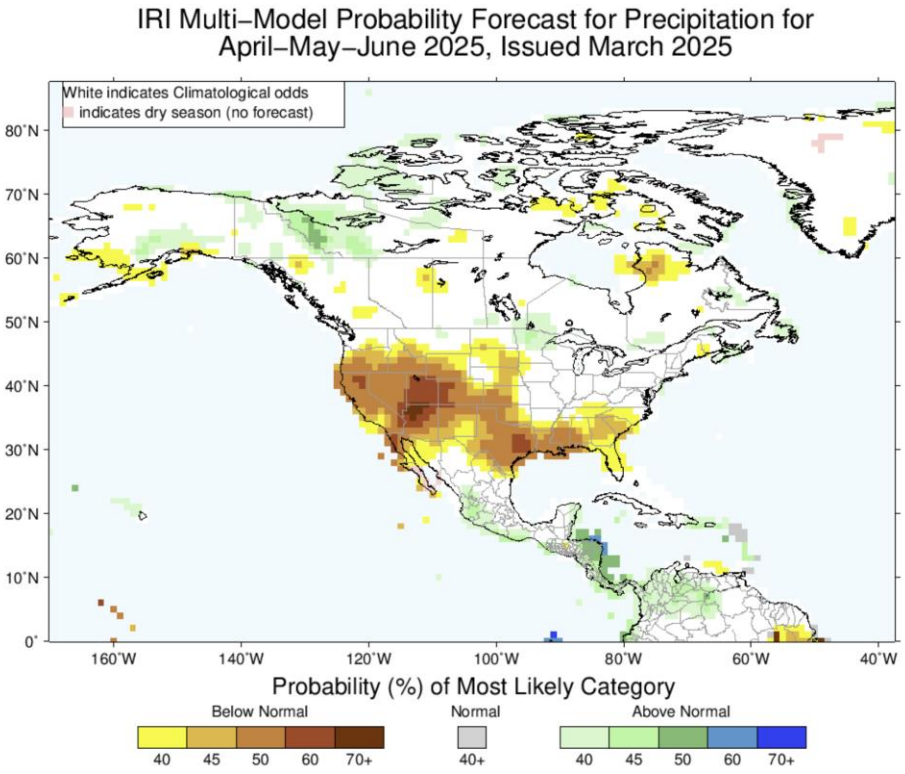

Figure 12 – IRI Multi-Model Probability Forecast for Precipitation for April-May-June 2025, issued March 15th, 2025.

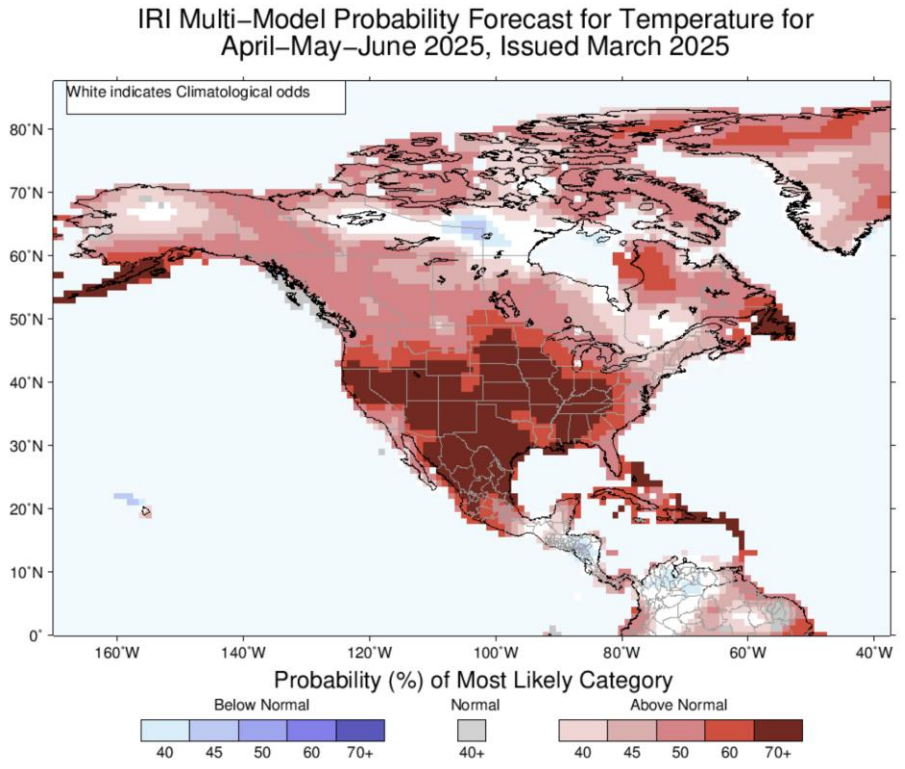

Figure 13 – IRI Multi-Model Probability Forecast for Temperature for April-May-June 2025, issued March 15th, 2025.

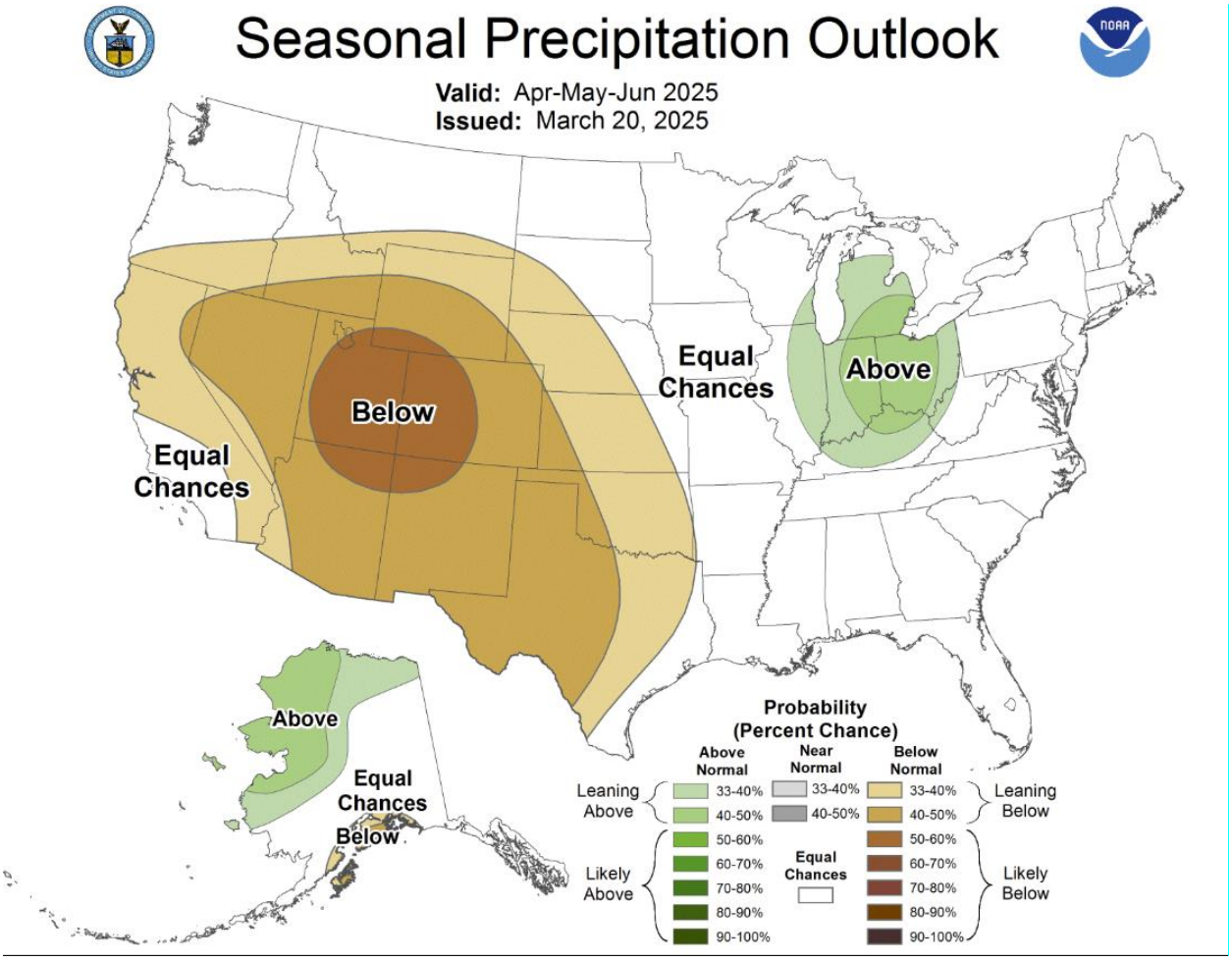

Figure 14 – National Weather Service Climate Prediction Center's Precipitation Outlook for Apr-May-June 2025.

Current Lake Level and River Flow Conditions

Current river flow conditions:

- Red River: flows along the Red River, including the Roseau River tributary, rose very slightly over the past week due to warmer temperatures but have now flattened out as the weather is cooler. A very gradual snowmelt is expected to continue over the next few weeks as temperatures will fluctuate around 0 degrees Celsius. Current flows are slightly above normal for this time of year due to last week's early snowmelt.

- Assiniboine River: Assiniboine River flows near normal to slightly above normal for this time of year. This is primarily due to the sustained release of 300 to 700 cubic feet per second from the Shellmouth Dam since mid December.
- The following rivers are experiencing near normal flows for this time of year: Fairford River, Fisher River, Dauphin River, Saskatchewan River, and Winnipeg River.
- The following rivers are experiencing below normal flows for this time of year: Souris River, Qu'Appelle River, Pembina River, Icelandic River, and Waterhen River
- The Churchill River flow is tracking well below normal for this time of the year (less than 5th percentile).

Table 1 summarizes flows at main rivers at selected locations as of March 20, 2025.

Current lake water levels:

- All Manitoba lakes including Lake Winnipeg and Lake Manitoba are within their respective operating ranges heading into the spring runoff.
- Lake Manitoba, Lake Winnipeg, Lake Winnipegosis, and Lake Wahtopanah are below normal for this time of year.
- Lake St. Martin and Dauphin Lake are experiencing near normal water levels for this time of year.
- Lake Minnewasta is tracking above normal water levels for this time of year:

Table 2 summarizes levels at major lakes as of March 20, 2025.

Table 1. Flows for main rivers at selected locations as of March 20, 2025.

*****Note – The Assiniboine River flows and levels are regulated by the operation of Shellmouth Dam.*

*** Note – The Red River Level at James Avenue is measured in relative to the long term mean winter ice level at James Avenue, which is 727.57 feet geodetic or 0 ft James.*

River	Location	Most Recent Flow/Level (Mar 20, 2025)	Minimum Flow/Level	10th Percentile	Normal Flow/Level	90th Percentile	Maximum Flow/Level	Last year when Flow/Level was lower than today	Period of Record
Red River	Emerson	5,085 cfs	0 cfs (1937)	1,130 cfs	3,360 cfs	14,320 cfs	25,144 cfs (2010)	4,450 cfs (2023)	112 years
	Ste. Agathe	5,968 cfs	276 cfs (1977)	1,050 cfs	2,840 cfs	16,280 cfs	33,373 cfs (2016)	3,991 cfs (2020)	64 years
	James Avenue (level)	2.5 ft	-1.7 ft (1977)	-.3 ft	2.1 ft	9.3 ft	15.9 ft (2016)	0.8 ft (2019)	54 years
	Selkirk	7,848 cfs	1,727 cfs (2014)	2,360 cfs	6,390 cfs	18,490 cfs	57,210 cfs (2016)	5,262 cfs (2020)	17 years
Assiniboine River	Russell	700 cfs	21 cfs (1963)	80 cfs	440 cfs	1,150 cfs	1,589 cfs (2007)	153 cfs (2023)	112 years
	Brandon	784 cfs	35 cfs (1940)	280 cfs	790 cfs	1,740 cfs	4,450 cfs (2016)	403 cfs (2024)	112 years
	Holland	803 cfs	100 cfs (1963)	400 cfs	1,020 cfs	2,080 cfs	4,626 cfs (2016)	583 cfs (2021)	64 years
	Headingley	1,201 cfs	84 cfs (1962)	480 cfs	970 cfs	1,840 cfs	4,768 cfs (2016)	872 cfs (2024)	112 years
Shellmouth Dam	Outflow	683 cfs	32 cfs (2012)	50 cfs	390 cfs	1,150 cfs	1,697 cfs (2007)	101 cfs (2023)	56 years
Souris River	Wawanesa	27 cfs	0 cfs (1963)	10 cfs	60 cfs	490 cfs	2,380 cfs (1966)	6 cfs (2023)	112 years
Qu'Appelle River	Welby	83 cfs	9 cfs (1978)	40 cfs	140 cfs	490 cfs	1,459 cfs (2015)	52 cfs (2022)	82 years
Fairford River	Fairford	1,836 cfs	49 cfs (1965)	650 cfs	2,490 cfs	6,240 cfs	12,713 cfs (2012)	593 cfs (2022)	70 years
Waterhen River	Waterhen	5 cfs	0 cfs (1965)	10 cfs	590 cfs	3,290 cfs	7,981 cfs (2012)	1 cfs (2004)	74 years
Dauphin River	Dauphin	1,813 cfs	68 cfs (1977)	370 cfs	2,120 cfs	5,970 cfs	9,782 cfs (2012)	268 cfs (2022)	48 years
Saskatchewan River	The Pas	13,425 cfs	2,288 cfs (1937)	8,450 cfs	15,340 cfs	21,040 cfs	23,273 cfs (2017)	8,511 cfs (2024)	112 years
Fisher River	Dallas	8 cfs	1 cfs (1963)	0 cfs	10 cfs	100 cfs	388 cfs (2015)	28 cfs (2021)	65 years
Winnipeg River	Lac du Bonnet (level)	836.3 ft	820.2 ft (1949)	836.2 ft	836.4 ft	836.5 ft	836.9 ft (1972)	836.2 ft (2021)	83 years

Table 2: Lake levels, and corresponding operation ranges as of March 20, 2025.

**Levels on these lakes are managed by operation of dam structures.*

Lakes	Current Level in ft (Mar 20, 2025)	Change from last week (ft)	Operating Range or Long Term Avg. (ft)	Normal Level for Mar 20 (ft)	Last time level was equal or higher than the current level	Historical Comparison
Lake Manitoba*	811.2	0.0	810.5 - 812.5	811.7	811.3 (2024)	*Historic water level for this time of year is above the current level 90% of the time*
Lake Winnipeg*	712.5	0.0	711 - 715	713.3	713.6 (2023)	*Historic water level for this time of year is above the current level 75% of the time*
Lake St. Martin*	799.2	0.0	797 - 800	799.3	800.7 (2023)	*Historic water level for this time of year is above the current level 50% of the time*
Lake Winnipegosis	830.2	0.0	831.0	830.7	831.0 (2023)	*Historic water level for this time of year is above the current level 65% of the time*
Dauphin Lake*	854.2	0.0	853.0 - 854.8	854.1	854.6 (2024)	*Historic water level for this time of year is above the current level 40% of the time*
Shellmouth Reservoir*	1388.7	-0.8	1386 - 1400	1394.0	1396.5 (2024)	*Historic water level for this time of year is above the current level 85% of the time*
Lake Wahtopanah near Rivers*	1532.8	-0.2	1533.9	1533.9	1535.3 (2024)	*Historic water level for this time of year is above the current level 70% of the time*
Lake Minnewasta	1082.1	-0.1	1078.5	1078.5	1082.5 (2017)	*Historic water level for this time of year is above the current level 15% of the time*

River Ice Conditions and Ice Jamming[1]

The province has collected ice thickness measurements along the Red River. Normal ice thickness at this time of the year varies based on factors such as air temperature since freeze up, the amount of flow in the river, and the location along the river. Typically, normal ice thickness for this time of the year ranges from 46 cm (18 inches) to 76 cm (30 inches). Measurements taken from Netley Creek to Goldeye Creek show an average ice thickness of approximately 68 cm (27 inches), while measurements from Goldeye Creek to McIvor Lane show an average ice thickness of approximately 64 cm (25 inches). On average, this year's ice is thicker than last year's at this time, when the average ice thickness was 53 cm (21 inches) (Figure 15).

Spring weather influences the timing and rate of river ice deterioration and will play a significant role in determining ice strength at break-up. However, with ice cutting and breaking activities completed on the Red River and Icelandic River, the likelihood of ice jamming and associated flooding along the lower Red River and Icelandic River is expected to be reduced. Ice cutting and breaking is expected to be completed along the Fisher River on March 28.

Localized flooding can occur when and where ice jams develop, even with below average river flows. As in most years, there is a risk of ice jam induced flooding on rivers that are historically affected by ice jamming including the Saskatchewan, Carrot, Assiniboine, Swan and Fisher Rivers. The chances of localized flooding due to snow and ice blockages in drains, ditches and small streams during the early part of the runoff period will depend on the nature of the spring breakup and rate of melt.

[1] See Appendix A for 'Ice Jam' definition

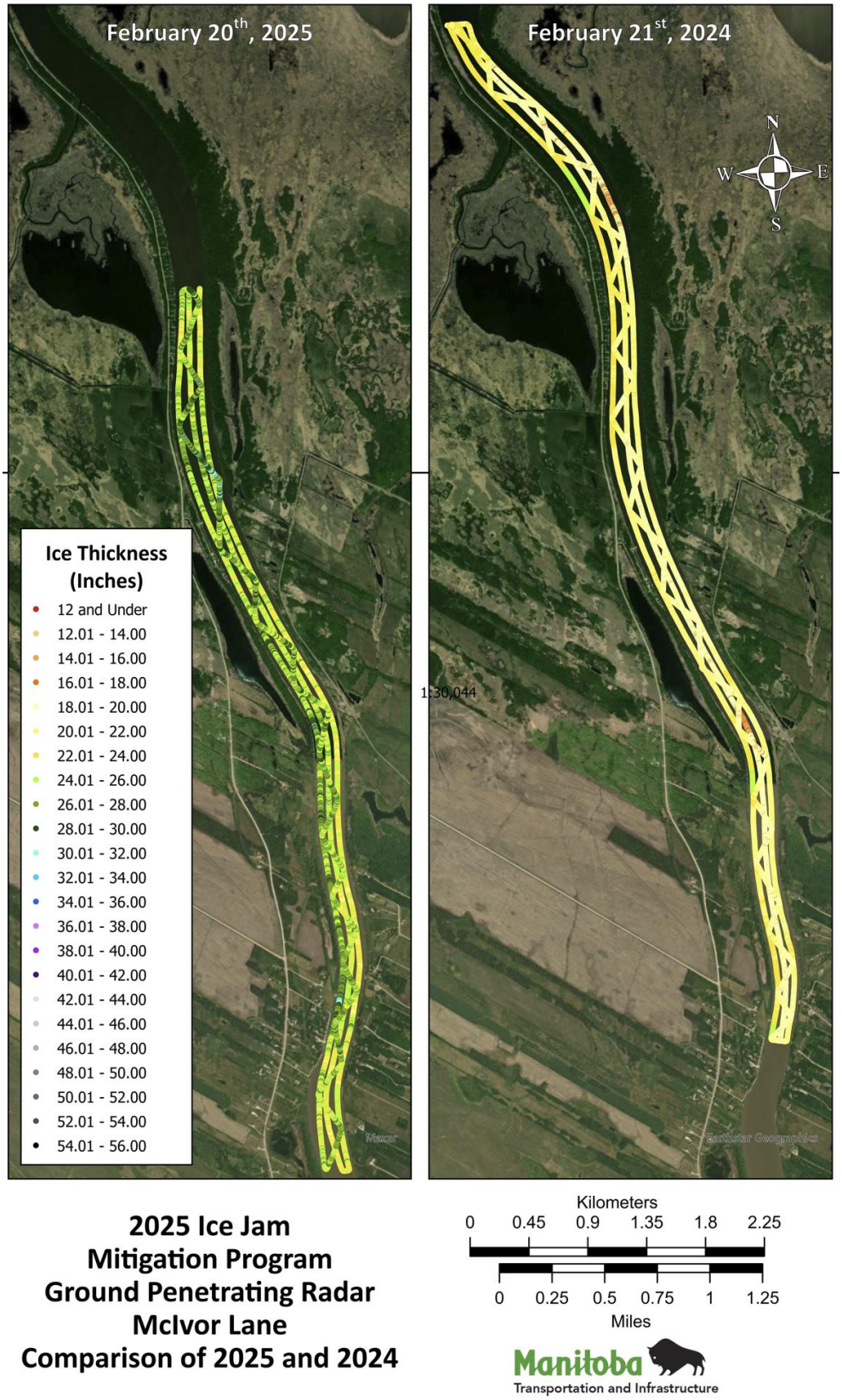

Figure 15 – Ice Thickness Measurements (inches) based on Ground Penetrating Radar: Red River (2024 vs. 2025).

Flood Outlook[2]

Spring flood outlooks provide estimates of peak river flows and lake water levels that are based on current basin conditions, and three possible future weather scenarios. These weather scenarios are favourable, normal, and unfavourable. These scenarios correspond to three different probabilities of occurrence: lower decile, median, and upper decile. The province's practice is to plan and prepare for the unfavourable (upper decile) future weather conditions. For further information, see Appendix A: Definitions.

The risk of spring flooding is defined by three categories: major spring flooding risk, moderate spring flooding risk, and low (minor) spring flooding risk. Major spring flooding risk is associated with the probability that forecasted flows and levels exceed the bankfull capacity and cause flooding for near normal future weather conditions. Moderate spring flooding risk is associated with the probability that forecasted flows and levels exceed bankfull capacity for the unfavourable future weather conditions but forecasted flows and levels are below the bankfull capacity for normal future weather conditions. Minor (low) spring flooding risk is associated with the probability that forecasted flows and levels will remain below the bankfull capacity even for the unfavourable future weather conditions.

A number of uncertainties exist with respect to the flood outlook. These include, but are not limited to, the following:

- future weather uncertainties (snowfall and spring rainfall)
- timing and speed of the snow melt
- uncertainty in meteorological and hydrometric data collected to date
- timing of the peak flows
- frost depth at the time of spring melt
- hydrologic model prediction uncertainties

[2] See Appendix A for 'Flood Outlook', 'Weather Scenarios', 'Favourable Weather', 'Normal Weather', and 'Unfavourable Weather' definitions

[7] See Appendix A for 'Minor/Moderate/Major' Flood risk definitions

Red River and Its Tributaries

- There is a low risk of significant spring flooding along the Red River.
- The risk of significant flooding is also low for the Pembina River, Rat River and Roseau River.
- The Red River and its tributaries are expected to remain within their banks for normal to favourable future weather scenarios.
- With unfavourable future weather, the Red River is still expected to be within its banks, though it may very slightly exceed bankfull capacity at some locations (Figure 16).
- The flood protection level of the community dikes and the individual flood protection works within the Red River basin are higher than the predicted peak levels, even in the unfavourable weather scenario.

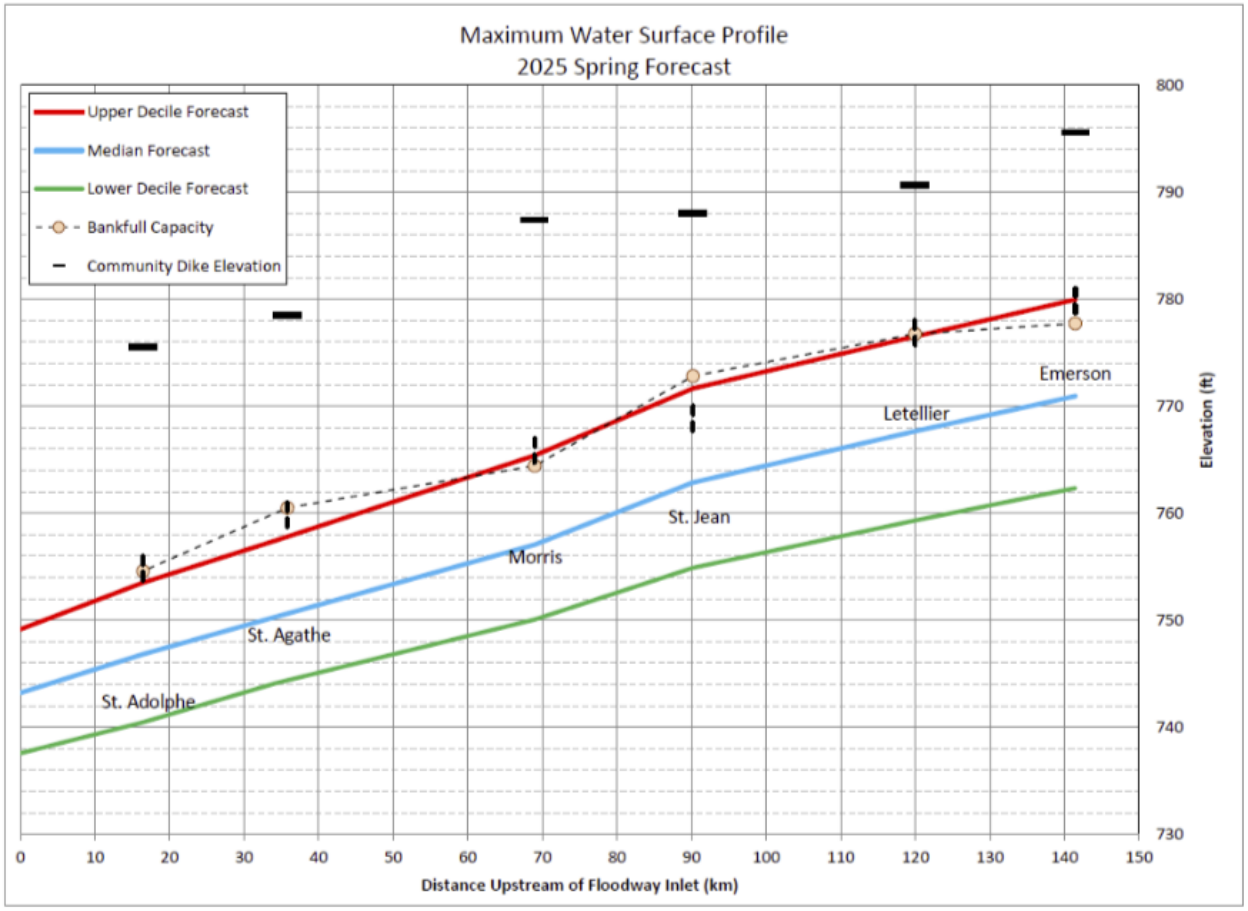

Figure 16 – Forecasted water levels in relation to flood stage and dike elevations in the Red River Valley.

Forecasted peak flows in cubic feet per second (cfs) for the Red River at Emerson and Ste. Agathe are shown in Table 3. Forecasted peak flows for the Pembina, Roseau, and Rat Rivers are given in Table 4.

Table 3: Forecasted peak flows for the Red River at Emerson and Ste. Agathe.

	Forecasted Peak Flows (cfs)	
Exceedance Probability	Emerson	Ste. Agathe
Lower Decile	10,300	11,600
Median	20,700	22,800
Upper Decile	35,100	37,600

Table 4: Forecasted peak flows for the Pembina, Roseau, and Rat Rivers.

	Forecasted Peak Flows (cfs)		
	Pembina River	Roseau River	Rat River
Exceedance Probability	Neche	Dominion City	Otterburne
Lower Decile	1,500	700	400
Median	2,600	1,100	800
Upper Decile	4,300	2,100	1,500

Red River Floodway

- The Red River Floodway has been operated in 36 out of the 56 years since it was constructed for the purpose of providing flood protection to the City of Winnipeg.
- The Red River Floodway is not expected to be operated under normal or favourable weather conditions during the 2025 spring melt.
- The Red River Floodway could be operated under unfavourable weather conditions to reduce levels within the City of Winnipeg.
- Open water peak estimated levels at James Avenue are:
    - Favourable weather: 2.02 m (6.6 ft)
    - Normal weather: 3.56 m (11.7 ft)
    - Unfavourable weather: 5.35 m (17.6 ft)

Assiniboine River and Its Tributaries

- There is a moderate risk of significant spring flooding along the Assiniboine River and its tributaries, including the Souris River and Qu'Appelle River.
- The Assiniboine River and its tributaries are expected to remain within their banks for normal to favourable future weather scenarios.
- Some locations along the Assiniboine may exceed the bankfull capacity with unfavourable future weather.
- The flood protection level of the community dikes in the City of Brandon and in towns of Melita, Souris, Wawanesa, and St. Lazare are at elevations which are high enough to protect against expected spring water levels.

Table 5 summarizes forecasted peak flows for the Assiniboine River at selected locations.

Table 5: Forecasted peak flows for the Assiniboine River at Russell, Miniota, Brandon and Holland.

	Forecasted Peak Flows (cfs)			
Exceedance Probability	Russell	Miniota	Brandon	Holland
Lower Decile	700	2,130	2,420	2,860
Median	1,200	3,960	4,330	5,740
Upper Decile	2,800	8,880	9,770	12,950

Forecasted peak flows in cubic feet per second (cfs) for the Souris River at Melita, Souris and Wawanesa are shown in Table 6.

Table 6: Forecasted peak flows for the Souris River at Melita, Souris and Wawanesa.

	Forecasted Peak Flows (cfs)		
Exceedance Probability	Melita	Souris	Wawanesa
Lower Decile	280	620	780
Median	780	1,230	1,460
Upper Decile	1,620	2,630	3,140

Portage Diversion

- The Portage Diversion has been operated 41 out of the 55 years since it was constructed for the purpose of preventing ice jamming on the Assiniboine River east of Portage la Prairie and to provide flood protection for areas along the Assiniboine River downstream of Portage la Prairie,

including the City of Winnipeg. Based on the runoff potential in the Assiniboine and Souris basins, the Portage Diversion is expected to be operated under unfavourable weather conditions. The Portage Diversion may be operated under normal weather conditions during the Spring to reduce ice jam related levels downstream of the diversion.

Shellmouth Dam

- The forecasted inflow volumes into the Shellmouth Reservoir for favourable, normal and unfavourable conditions are 161 million cubic meters (130,000 acre-feet), 272 million cubic meters (220,000 acre-feet) and 432 million cubic meters (350,000 acre-feet), respectively.
- The Shellmouth Dam is being operated to provide storage capacity for reservoir inflows in order to reduce flooding downstream as well as to ensure a sufficient reservoir level for recreation and water supply. The reservoir level as of March 20, 2025 is 423.28 m (1388.7 ft).
- The Shellmouth Liaison Committee provides regular input into the dam operations to meet the target level of 427.33 m to 427.94 m (1402 ft to 1404 ft) after the spring runoff. The outflow from the reservoir as of March 20, 2025 is 19.3 cubic metres per second (683 cubic feet per second).

Interlake Region

- The risk of significant flooding within the Interlake region is moderate. Levels will remain below the bankfull levels for favourable and normal future weather conditions. Levels are projected to exceed bankfull capacities for unfavourable future weather conditions.
- As in most years, there is a risk of ice jam induced flooding for the Icelandic and Fisher Rivers.

Forecasted peak flows in cubic feet per second (cfs) for the Fisher River at Dallas and Icelandic River at Riverton are shown in Table 7.

Table 7: Forecasted peak flows for the Fisher River at Dallas and The Icelandic River at Riverton.

	Forecasted Peak Flows (cfs)	
	Fisher River	Icelandic River
Exceedance Probability	Dallas	Riverton
Lower Decile	1,200	700
Median	2,170	1,100
Upper Decile	3,700	1,900

Fairford River Water Control Structure

The Fairford River Water Control Structure is set for normal discharge, which is between 50% and 60% of its full capacity. It will remain at this setting until the Lake Manitoba water level goes outside its desired range of 810.5 ft to 812.5 ft. The current discharge at the Fairford River Water Control Structure is 1,820 cfs, which is approximately 51% of full capacity.

Eastern Region

- The risk of significant spring flooding is low in the eastern region, including the Whiteshell Lakes area and the Winnipeg River basin.

Manitoba Lakes

- Currently, most major lakes are within their operating ranges. Most lakes are expected to be within their normal operating range after the spring runoff. The risk of spring flooding in most Manitoba lakes is low.

Lake Manitoba

- Lake Manitoba's current level is 247.26 m (811.23 ft).
- The current level is 0.15 m (0.48 ft) below the normal level for this time of year and is within the operating range of 247.04 m (810.5 ft) to 247.65 m (812.5 ft).
- After spring runoff, the lake level is expected to remain within the operating range.

Lake Winnipeg

- Lake Winnipeg's current level is 217.17 m (712.51 ft).
- The current level is 0.23 m (0.75 ft) below normal for this time of year and within the operating range of 216.71 m (711 ft) to 217.93 m (715 ft).
- After spring runoff, the lake level is expected to remain within the operating range.

Lake St. Martin

- Lake St. Martin is currently at 243.59 m (799.19 ft).

- The current level is near normal for this time of year.
- After spring runoff, the lake level is expected to remain within the operating range.

Lake Winnipegosis

- Lake Winnipegosis is currently at 253.06 m (830.26 ft).
- The current level is 0.13 m (0.42 ft) below normal for this time of year.
- After spring runoff, the lake level is expected to be near normal level.

Dauphin Lake

- Dauphin Lake's current level is 260.35 m (854.16 ft).
- The current level is 0.03 m (0.11 ft) above normal for this time of year and is within the operating range of 260 m to 260.54 m (853 ft to 854.8 ft).
- After spring runoff, the lake level may rise above the operating range but will remain below the flood protection level.

Northern Manitoba and The Pas Regions

- The risk of significant spring flooding is low along the Saskatchewan and Carrot Rivers when considering normal, favourable and unfavourable future weather scenarios.
- Levels along the Saskatchewan and Carrot Rivers at The Pas depend greatly on the outflows and the regulation of Saskatchewan's Tobin Lake. Considering the potential future Tobin Lake outflows and future weather conditions, the peak open water levels on the main stems of the Saskatchewan and Carrot Rivers are expected to be below bankfull levels. Manitoba continually consults with Saskatchewan regarding operation of the dams located in Saskatchewan including the release of flows into Manitoba rivers.
- The risk of significant flooding is low along the Swan River under normal, favourable and unfavourable future weather conditions.
- As in many other years, there is a risk of ice jam induced flooding along the Saskatchewan, Carrot and Swan Rivers.

Emergency Management Flood Preparations

The Manitoba government, local authorities and emergency management partners are continuing to prepare for spring flooding. Manitoba Emergency Management Organization (EMO) continues to work with all local authorities and emergency management partners to provide guidance and support for preparedness and response activities in the upcoming hazard season. This includes:

- reviewing existing emergency plans
- providing overall situational awareness by disseminating relevant up to date information
- providing education and training opportunities
- preparing resources for use in flood response
- hosting conference calls with local authorities and emergency management partners
- providing continuous coordination and collaboration with emergency management stakeholders
- working with Indigenous Services Canada (ISC) and Municipal and Northern Relations (MNR) on ISC and MNR-led preparedness activities for First Nations and Northern Affairs Communities
- issuing emergency alerts as required

The ice-jam mitigation program on the Red River north of Winnipeg and the Icelandic River has been completed, with ice cutters and ice-breaking equipment deployed along these rivers to break up the ice. Ice breaking along the Fisher River to try to reduce the chance of ice jamming is scheduled to begin this week and be completed by March 28.

Future Forecast Information

When the spring melt begins, operational forecasts will be issued daily. As in many previous years, the risk of flooding could change in any of the basins depending on weather conditions leading up to and during the spring melt.

Appendix A: Definitions

[1] Ice Jam:

- A blockage of ice on a river/stream which restricts flow, resulting in increased water levels upstream.

- Jams may occur due to changing river channel geometry, bends in the river channel, depth and thickness of ice, rate of water level rise, or a solid section of ice downstream.

[2] Flood Outlook:

- Estimated spring peak water levels and flows provided before spring water flow begins.
- Estimates are based on diverse information, such as soil moisture, winter precipitation, snowpack, topography, current water level, channel capacity, and future weather condition scenarios (precipitation, temperatures, etc.).
- Estimates are provided for three weather scenarios (favourable, normal, and unfavourable) which correspond to three different probabilities of occurrence (lower decile, median and upper decile).

[3] Weather Scenarios:

- Used to account for future weather such as additional snow, melt rates and spring rainfall. These are determined by statistical analysis of the past 30 to 40 years of climate data.
- Three scenarios used:
    - Lower decile (favourable)
        - There is a 10% chance of the weather being ‘favourable’ or better. 90% of the time the weather will be worse than this ‘favourable’ condition.
    - Median (normal)
        - There is a 50% chance of the weather being ‘normal’ or better.
    - Upper decile (unfavourable)
        - There is a 10% chance of the weather being ‘unfavourable’ or worse. 90% of the time the weather will be better than this ‘unfavourable’ condition.
- The Province’s practice is to plan/prepare to the upper decile (i.e., unfavourable) condition.

[3] Favourable Weather:

- Characterized by little additional precipitation and a gradual snow melt.
- The lower decile weather condition.

[3] Normal Weather:

- Characterized by normal rainfall and temperature.
- Typically used to describe historic climate conditions.
- The median weather condition.

[3] Unfavourable Weather:

- Significant wide-spread precipitation with a rapid snowmelt.
- The upper decile weather condition.

[5]Flow/Discharge [expressed in cubic feet per second (cfs) or cubic metres per second (cms)]:

- The volume of water that passes a given location within a given period of time.

[6] FPL – Flood Protection Level:

- Is the water level of the greater of the flood of record or the 1-in-200-yr flood, plus a freeboard allowance for a particular waterway (typically 2 ft) or water body (i.e., the freeboard is site specific).
- It is provided by the Hydrologic Forecasting and Water Management (HFWM) branch of Manitoba Transportation and Infrastructure on a site-specific and structure-specific basis.
- This is formally set by the Water Resources Administration Act for the Red River Designated Flood Areas.
- In non-Designated Flood Areas, the province uses the determined FPLs. For other works or developments, the FPL is recommended by the province, but ultimately regulated by the local planning districts and/or municipalities.

[7]Definition for minor/moderate/major risk of flooding:

- Minor Risk of Flooding:
    - Forecasted flows and levels will remain below bankfull capacity even for the unfavourable future weather conditions.

- Moderate Risk of Flooding:
    - Forecasted flows and levels exceed bankfull capacity for the unfavourable future weather conditions but forecasted flows and levels are below bankfull capacity for normal or favourable future weather conditions.

- Major Risk of Flooding:
    - Forecasted flows and levels exceed bankfull capacity and cause flooding for near normal and unfavourable future weather conditions.

Operational Forecasts:

- Estimated future crest water level, flow and date of occurrence provided once active melt and river flow has begun.

- Estimates are modelled based on observed flow, existing conditions (including channel capacity, topography, and remaining snowpack) and normal future weather.

- Observed conditions are monitored throughout the flood and compared against the historic climate data used to generate the forecast.

- Forecasts are updated when weather conditions are outside the range of historical climate data used to generate the forecast.

- A range of forecasted values is provided further in advance of an upcoming forecasted crest because of unknowns in the basin conditions and river flows, and limitations in the modelling procedures.