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2024 Conditions at Freeze-up Report

Based on Conditions as of November 21, 2024

Prepared by: Flow Forecasting & Operations Planning - Water Security Agency

Executive Summary

- This report summarizes conditions during the late fall/early winter period. Current conditions, in combination with the winter snowpack, become the initial conditions for the spring snowmelt runoff.
- This report gives an early indication of areas that are more vulnerable to potentially above or below normal runoff during the spring period. It is not a spring runoff forecast because winter snow, which plays a big role in spring runoff, cannot be accurately predicted at this time.
- Despite the general low snowmelt runoff in spring 2024, May and June rains resulted in most large water supply reservoirs being near or at normal levels throughout the year.
- July and August were generally dry across the province.
- Following a heavy rain event early in September, the remainder of the fall was generally drier than normal across the province.
- With the wet spring and timely rains in September, the growing season precipitation (from April through the end of October) was near normal across the province.
- With the dry two months leading up to freeze up, most of central, northern and southeastern Saskatchewan went into freeze-up with drier than normal soil moisture conditions.
- Even though conditions are somewhat drier than normal, this year is still an improvement from last year when moderate to extreme drought conditions were being observed across the province in October 2023.
- Two snowstorms occurred mid-November that brought 10 to 80 cm of snow to Saskatchewan, with east central regions receiving the most snow. This snowfall could result in two outcomes: 1) Insulating the soil and reducing frost penetration, increasing infiltration in the spring, which may reduce runoff. 2) Creating frozen topsoil due to partial melting and refreezing, reducing infiltration and increasing runoff.
- Most larger water supply reservoirs across southern and central Saskatchewan are at near normal elevations for this time of year.
- At this time, there are no areas where WSA believes that there is a heightened risk of above normal spring runoff in 2024.
- Many low-lying areas across the province are holding less water than normal. This means there is still concern of surface water supply issues developing or worsening across most of the province if winter snowfall is below average. In some cases, an above normal snowpack would be required to stave off extremely dry conditions.
- Current long-range forecasts and climate indices suggest near normal precipitation and below normal temperatures through the winter months over much of the province.
- Over the past month, ENSO-neutral conditions have continued. Based on model outputs, a weak La Niña is most likely to emerge in November/December 2024 and is expected to persist through January to March 2025. A long term La Niña pattern typically means a cooler and wetter winter for Saskatchewan.
- The preliminary Spring Runoff Outlook for 2025 will be issued in early February.

Cover Photo: Admiral Reservoir near Admiral, Oct. 31, 2023
(Jenna Coates, Water Security Agency)

Precipitation and Conditions leading into Freeze-Up

Summary:

- As a result of the higher May and June rains, even with the below normal runoff received across much of the province, most large water supply reservoirs were near normal levels throughout the year.
- Seasonal precipitation across the province was generally well below normal.
- Fall precipitation ranged from below normal across southern and most of northern Saskatchewan to near normal in central areas of the province.

2024 Spring Runoff Summary

In spring 2024, runoff levels varied significantly, ranging from well below normal to above normal across the province. In southwestern Saskatchewan, the runoff response ranged from near normal to above normal, with some creeks experiencing flows equivalent to a 1 in 5-year event. Across the remainder of the province, runoff levels were generally in the below to near normal range. The exception was the eastern areas of the grain belt where due to a substantial snowpack, frozen soils and a rapid melt in early April, peak flows in this region typically ranged from 1 in 5- to 1 in 25-year events.

2024 Summer Precipitation Summary

As shown in Figures 1 and 2, precipitation received throughout the summer across most of central Saskatchewan was near normal due to heavy rain received late in June. In this area, there were some pockets where precipitation accumulation percentiles were classified as moderate to very high. Conditions were the driest in the north and the southeast, where only 20 to 40 per cent of normal precipitation accumulations were received.

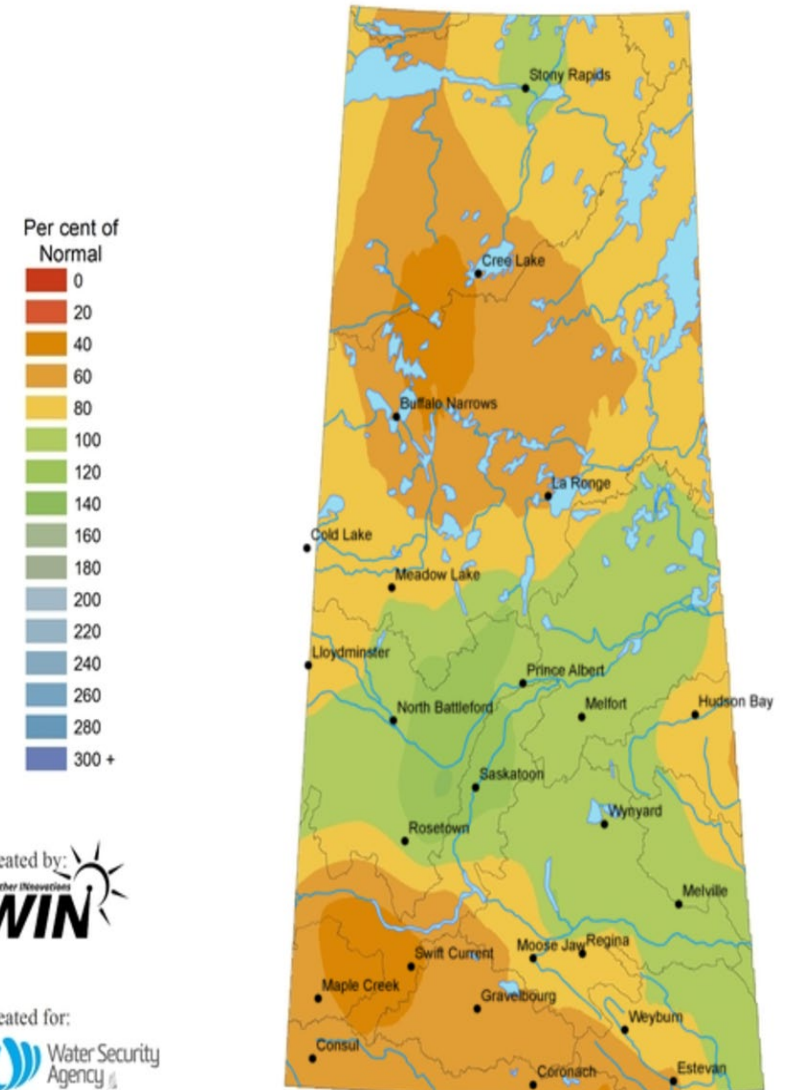
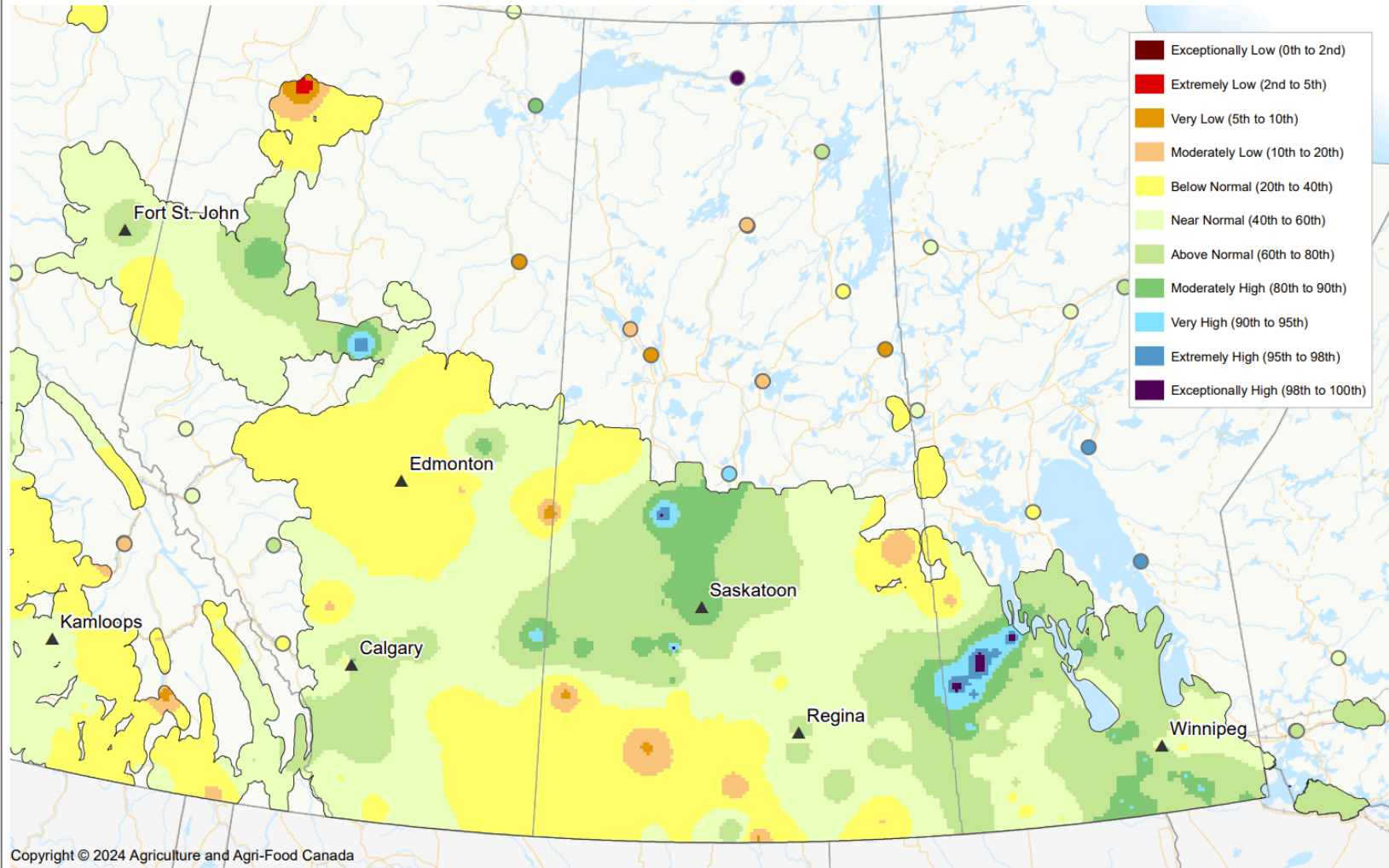


Figure 1: 90-day Per Cent Normal Rainfall Accumulations June 3 to August 31, 2024



Precipitation Percentiles

in past 90 days, as of August 31, 2024



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Created: 2024-09-01
www.agr.gc.ca/drought

Figure 2: June 3 to August 31, 2024 Precipitation Compared to Historic (Map Courtesy of Agriculture and Agri-Food Canada)

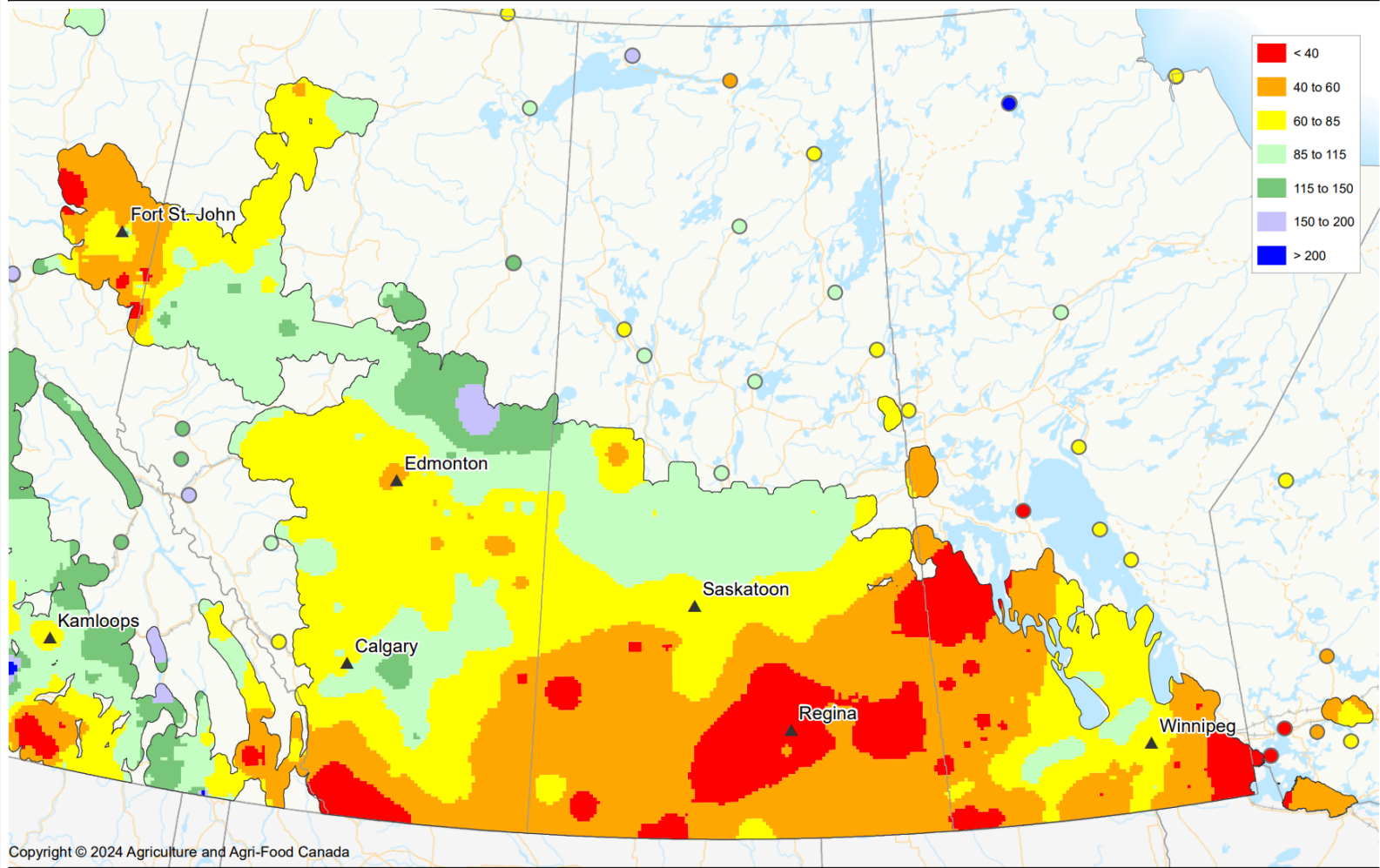
2024 Fall Precipitation Summary

Figure 3 shows rainfall percentages compared to normal across the province from September 20 to November 18, 2024. Generally, most of the southern and some of the northern areas of the province received well below normal precipitation this fall. The remainder of the province received near normal precipitation accumulations.

Two snowstorms occurred mid-November this year. The first one occurred from November 18 to 19, which impacted mostly eastern parts of the province. The second event occurred on November 22 to 24. Figure 4 highlights the estimated accumulations from both events. This map shows that the entire province received 10 to 80 cm of snow over this time period. The heaviest snow occurred in east-central Saskatchewan. The effects of this snowfall on soil moisture and runoff potential depend on the conditions through winter. Persistent snow cover may insulate the soil, reducing frost penetration and leading to increased spring infiltration, which could benefit soil moisture levels; however, if temperatures rise and snow partially melts, it may create a frozen soil layer, reducing spring infiltration and increasing runoff, potentially replenishing reservoirs and systems.

Percent of Average Precipitation

in past 60 days, as of November 18, 2024



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Created: 2024-11-19
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Figure 3: Per cent of Average Precipitation from September 20 to November 18, 2024
(Map Courtesy of Agriculture and Agri-Food Canada)

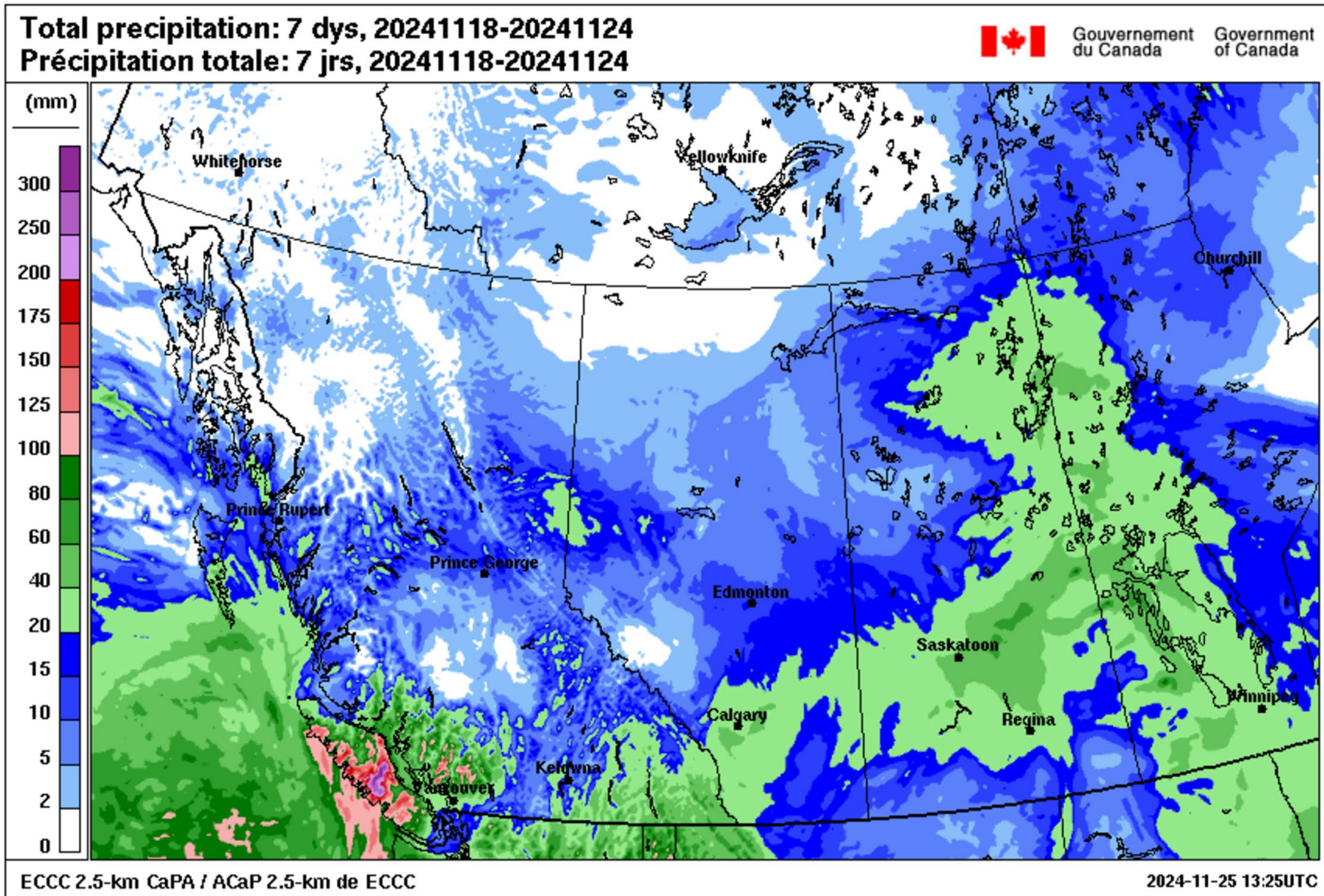


Figure 4: Snowfall Received from November 18 to 24, 2024
 (Map Courtesy of Environment and Climate Change Canada)

Soil Moisture Conditions

Summary:

- The dry fall has resulted in a lot of the province going into freeze up with soil moisture conditions that are drier than normal. The exceptions are parts of the southwest and northeast, where due to heavy early September precipitation, soil moisture conditions are near normal.
- Soil moisture conditions are driest in the northwest and south-central regions of the grain belt.

Figure 5 shows topsoil moisture conditions across the agricultural region of the province at the time of the final crop report issued on October 21, 2024. At this time, conditions were generally favorable across most of the north and central parts of the grain belt, while areas in the south experienced localized moisture shortages. Short moisture conditions (light orange) were reported in parts of the south-central and southwestern areas, especially near Swift Current, Moose Jaw and Regina. Very short moisture conditions (dark orange) were more concentrated around Lloydminster in the northwest and near Elbow in the south-central part of the province.

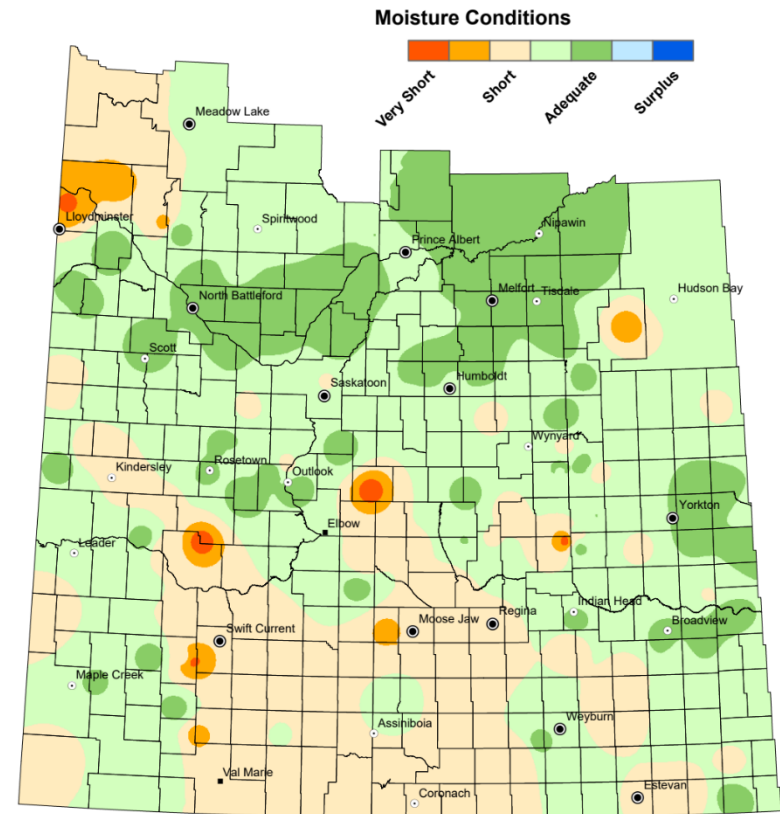


Figure 5: October 21, 2024
Cropland Topsoil Moisture Conditions
(Map Courtesy of the Saskatchewan Ministry of Agriculture)

The United States National Aeronautics and Space Administration (NASA) produces soil moisture products using data from the Gravity Recovery and Climate Experiment (GRACE) satellite mission (Figure 6). This map shows the root zone (top 1 metre) soil moisture conditions across the province as of November 11, 2024. The map indicates that with the lack of precipitation over the last couple of months, soil moisture conditions are drier than normal across most of northern, central and southeastern Saskatchewan. Conditions are the driest across central parts of the province. Near normal root zone soil moisture exists in the southwest and northeast part of the province. Due to heavy September rains, the extreme northeast and southwest corners of the province have a soil condition that is currently wetter than normal.

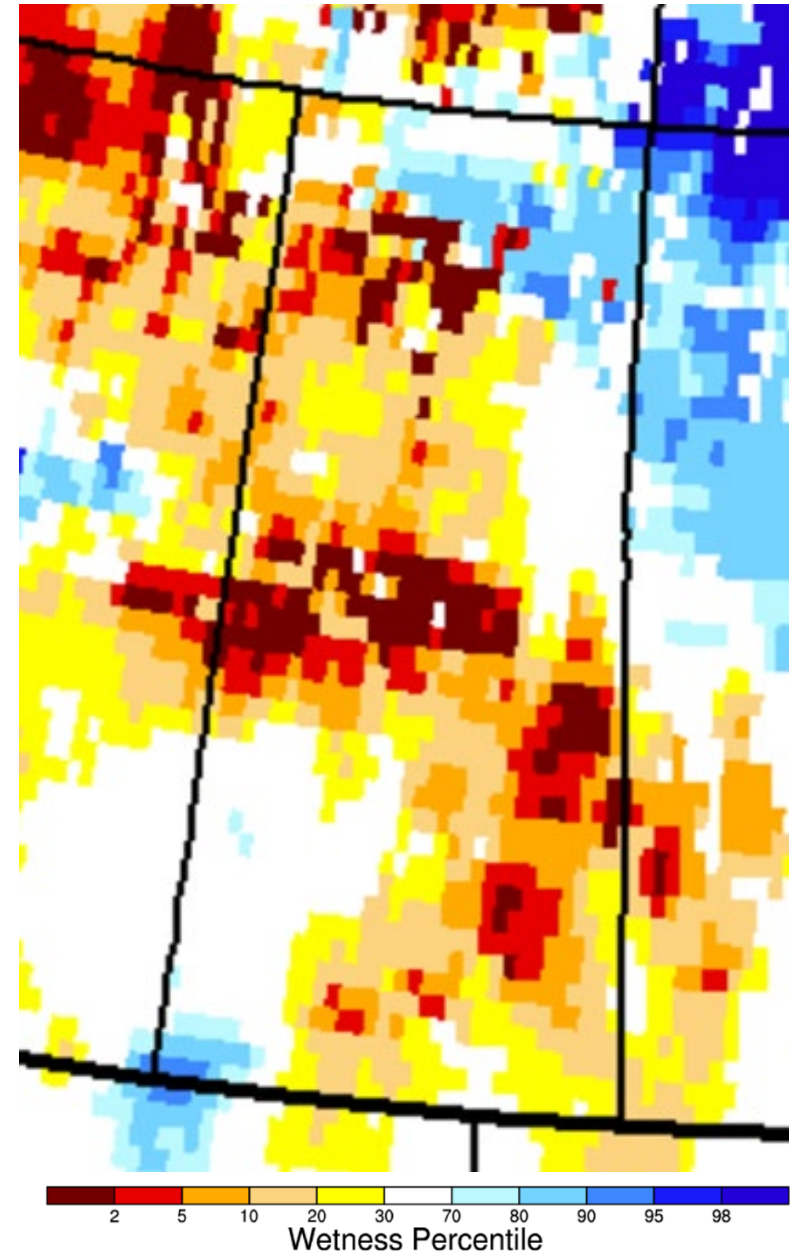


Figure 6: November 11, 2024 Root Zone Soil Moisture condition from GRACE satellite (Map Courtesy of NASA)

Drought Risk

Summary:

- Most major water supply reservoirs are at or near normal levels for this time of year.
- Moderate to severe agricultural drought conditions are being experienced in parts of the north and across southeastern Saskatchewan.

WSA uses two different products to help identify areas at risk for drought. The first is the Canadian Drought Map from Agriculture and Agri-Food Canada (Figure 7). This product defines drought conditions based on a number of different data sources, including factors such as temperature and precipitation indicators. The categories in this product range from abnormally dry, which signifies conditions that historically occur about once every three years, to exceptional drought conditions, which historically only occur about once every 50 years. This product is not focused on the stream flows and water supply; therefore, Saskatchewan developed the Hydrological Drought Map.

The Hydrological Drought Map is the second product used to help identify risk of drought in the province (Figure 9). This product is an indicator of the water supply conditions across the province. It uses monthly stream flow averages, monthly reservoir elevation averages and the six-month Standardized Precipitation-Evapotranspiration Index (SPEI) to define hydrological drought in the province. The categories in this product range from near normal and above, to extreme and exceptional drought.

The Canadian Drought Map for October 31 is shown in Figure 7. This map shows that with the dry conditions this fall, conditions have deteriorated across the southeast where conditions now range from abnormally dry to severe drought. Dry conditions have also worsened slightly across northern Saskatchewan with more areas moving into the severe drought conditions.

The Hydrological Drought Map for October 2024 is shown in Figure 7. This map shows that most of northern Saskatchewan is still experiencing moderate to severe hydrological drought conditions. The remainder of the province is generally showing mild drought conditions. This is an improvement from last year where moderate to extreme drought conditions were being observed across the province in October 2023.

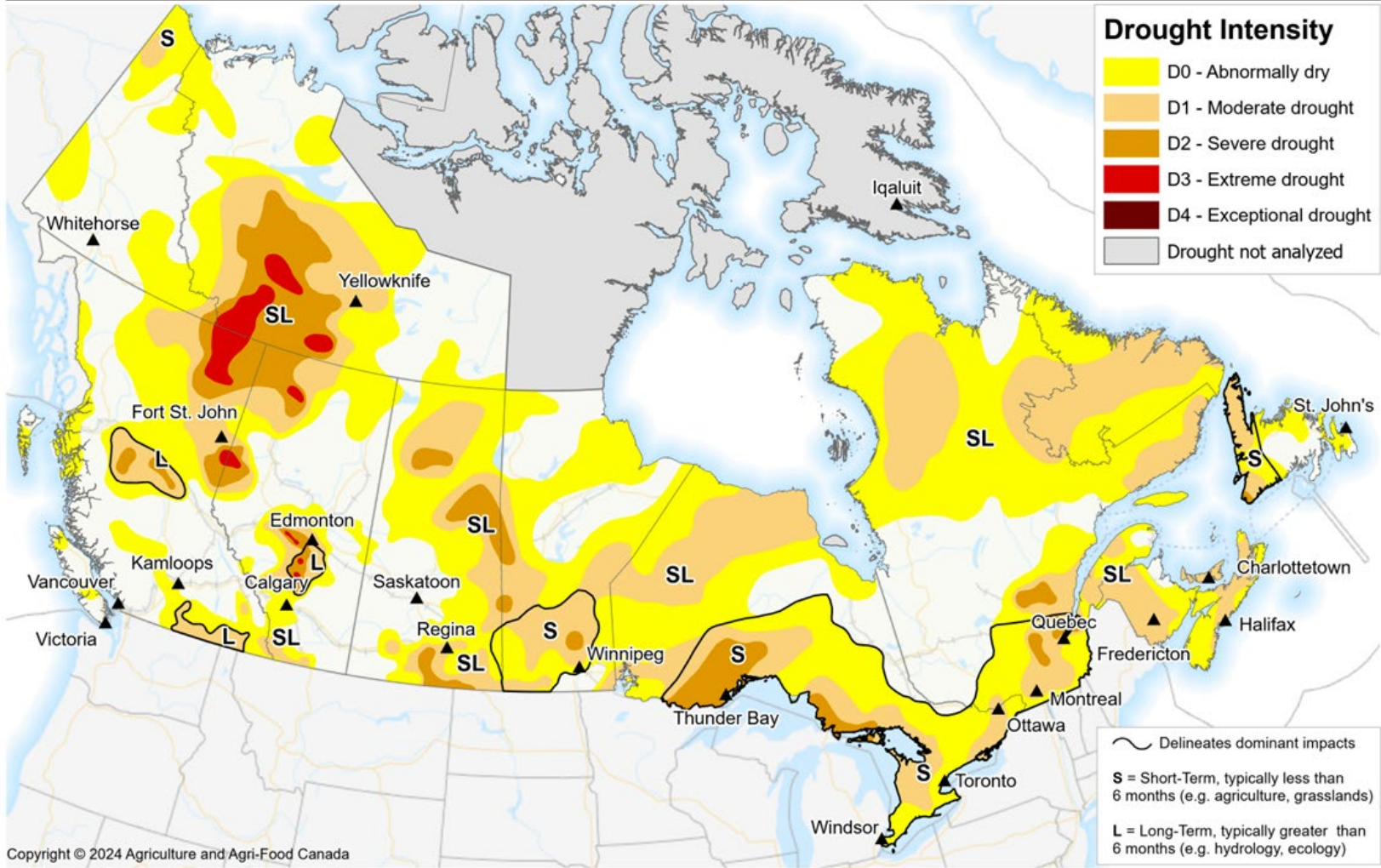
The six-month SPEI map is shown in Figure 9. SPEI is a normalized drought index that uses climate data to identify areas where drought conditions exist. The SPEI values are a relative measure of surface water surplus (positive values) or deficit (negative values) in an area. The values take the current precipitation minus the potential evapotranspiration and compare it to the average value at a location. The result is normalized, so the higher the negative number, the drier the conditions are. This map shows that over the past six months, conditions have generally been drier than normal across most of southern Saskatchewan, across most of the Churchill River Basin and in the east near Hudson Bay.

Using both the Canadian Drought Map and the Hydrological Drought Map, it is evident that with the dry conditions over the past two months, drier than normal conditions have worsened since last reporting across most of northern and southern portions of the province. Despite this, with the wet spring, and the proactive approach taken to retain as much water as possible, the lakes and reservoirs across the province generally remain at near or above normal levels for this time of year.



Canadian Drought Monitor

Conditions as of October 31, 2024



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Prepared by Agriculture and Agri-Food Canada's National Agroclimate Information Service. We also acknowledge various provincial, territorial and non-government organizations whose reports and assessments are consulted. The Drought Monitor focuses on broad-scale conditions. Regions in northern Canada may not be as accurate as other regions due to limited information.

Created: 2024-11-07
www.agr.gc.ca/drought

Figure 7: Canadian Drought Monitor – October 31, 2024
(Map courtesy of Agriculture and Agri-Food Canada)

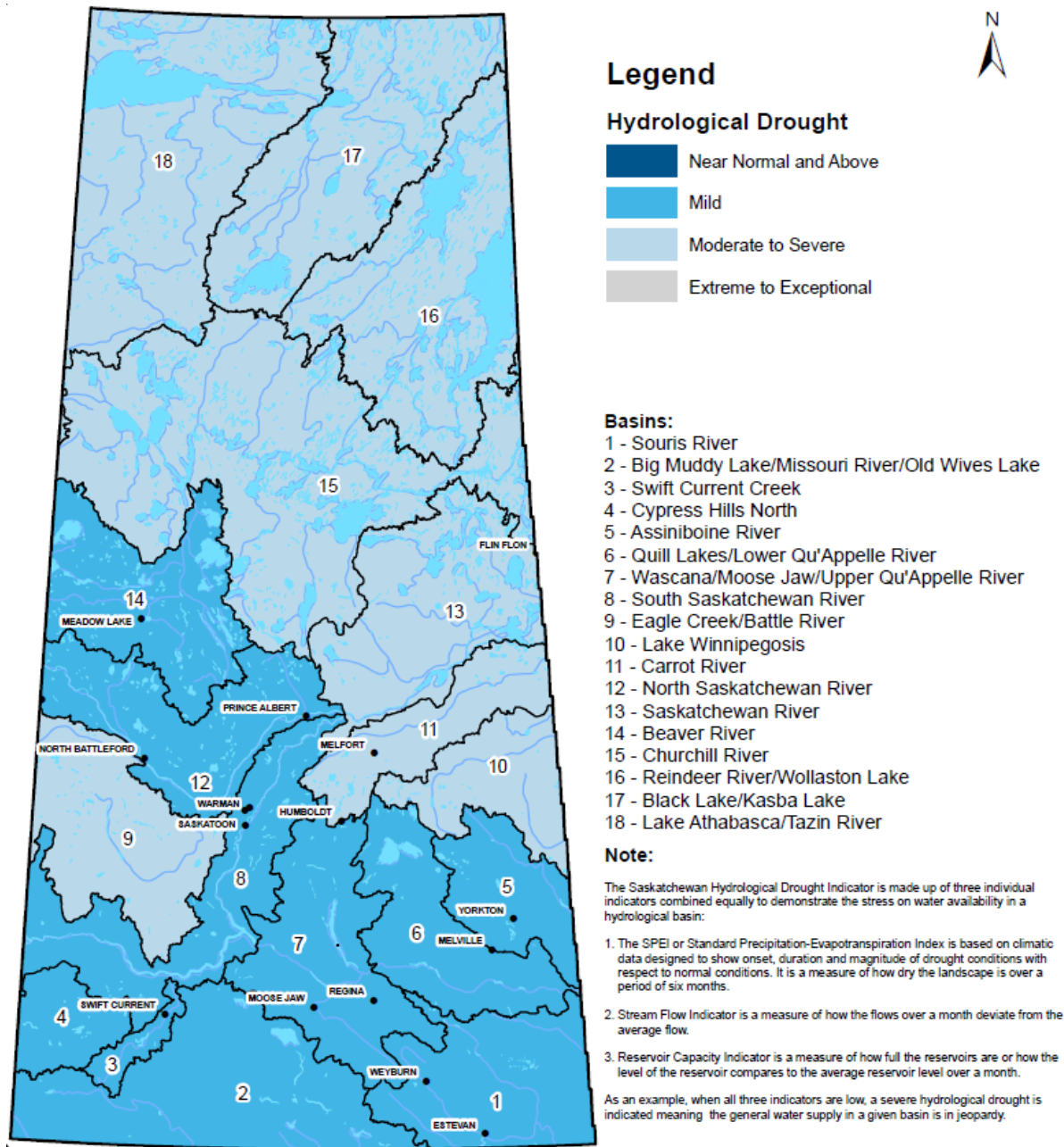
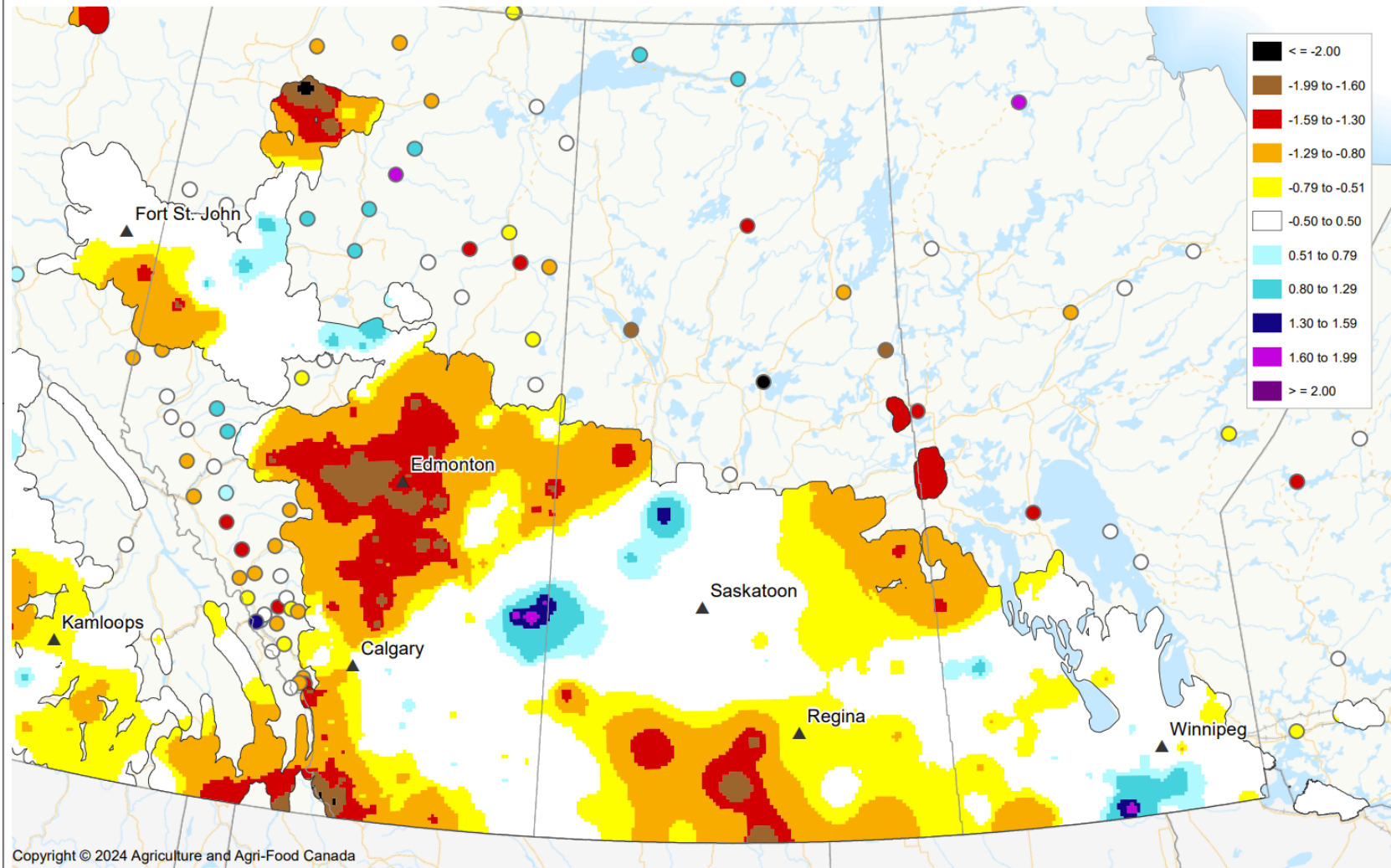


Figure 8: Hydrological Drought Map for October 2024



6 - Month Standardized Precipitation Evapotranspiration Index (SPEI)

as of November 18, 2024



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Created: 2024-11-19
www.agr.gc.ca/drought

Figure 9: 6-month Standardized Precipitation-Evapotranspiration Index (SPEI) for November 18, 2024
(Map courtesy of Agriculture and Agri-Food Canada)

Current Water Supply Conditions

Summary:

- 2024 was generally drier than normal across the province.
- In 2025, most of the province is in the moderate to high risk of seeing negative impact to surface and shallow groundwater supplies next year. South-central Saskatchewan is at the highest risk.
- Most major reservoirs are within their normal operating ranges for this time of year.

Figure 10 shows the hydrological drought risk map developed for 2025. This map was developed based on current conditions and highlights the risk to surface water and shallow groundwater supplies in 2025. It is important to note that only local runoff is considered in the creation of this map, not the major river systems, such as the Saskatchewan River System. Meaning, precipitation events in neighbouring provinces can contribute greatly to the water we get in Saskatchewan, but this map only considers our Saskatchewan datasets.

Drier than normal conditions observed through 2024 have resulted in moderate to high risks across much of the province. The highest areas of risk are concentrated in the southern, east-central, and far northern regions. In areas where the risk is high or extreme, even a normal snowpack may not be sufficient to prevent water shortages in 2025.

Even with the dry conditions experienced this fall, all major water supply reservoirs in the south remain near normal operating levels for this time of year.

DROUGHT RISK 2025

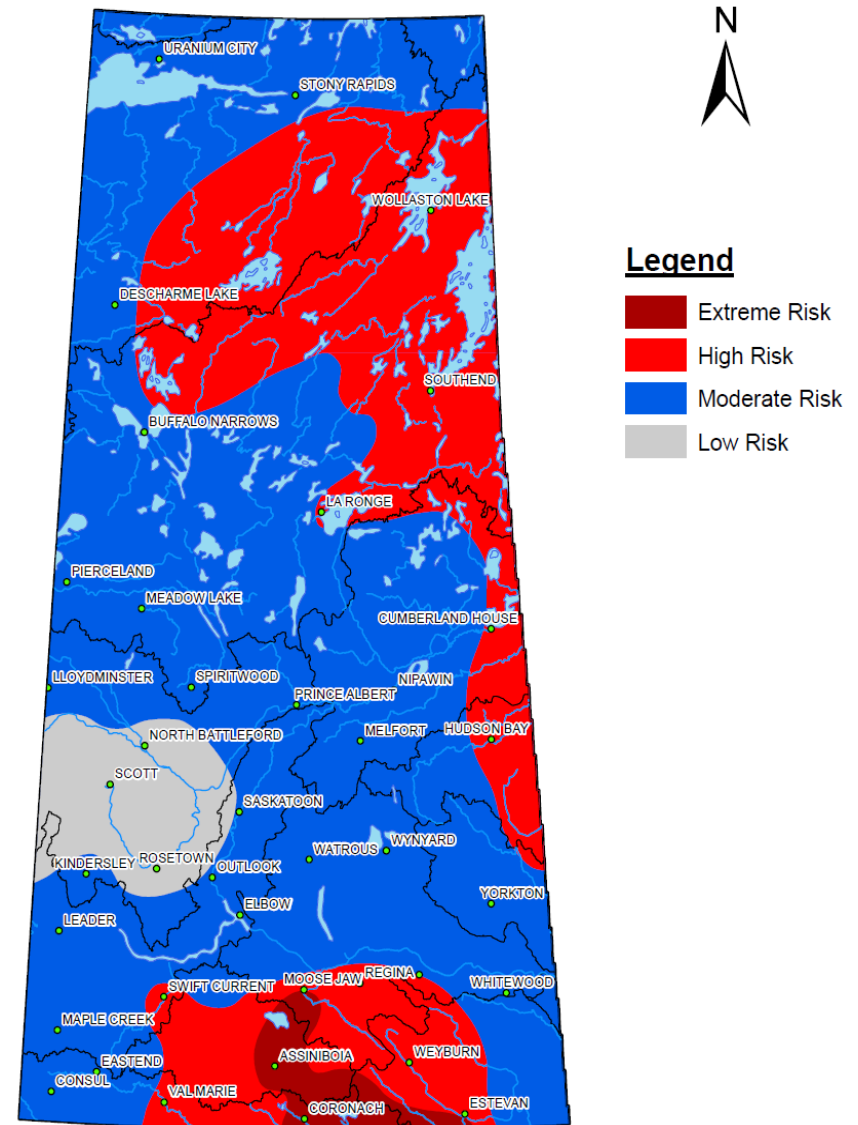


Figure 10: 2025 Drought Risk Map

Fall Streamflow

Summary:

- Generally, streamflows were below to well below normal across the province at freeze up.

Fall streamflow is an indication of conditions within a basin prior to freeze-up. Most creeks in southern Saskatchewan are ephemeral, typically only flowing for a short duration during the spring freshet or during periods of above normal rainfall; however, when conditions are wet, these creeks can flow at elevated rates over extended durations as water stored within the basin is slowly released.

Table 1 provides a summary of the preliminary flow, rank and historical statistics for select streamflow gauges across the province for October 31, 2024. October 31 is used for this table as many of these streamflow gauges are only operated seasonally. Table 1 shows that October 31 flows generally varied from below normal to well below normal across most of the province at freeze-up. There were a few exceptions, like the Sturgeon River near Prince Albert (05GF002) and some tributaries in the lower Qu'Appelle River where late season localized rain pushed the flows up slightly to closer to normal. Moderate to extreme drought conditions in summer and fall 2024 across most of Saskatchewan has resulted in, generally, well below flow conditions at freeze-up.

Pre-Spring Runoff Lake Level Projections

Summary:

- Lakes and reservoirs in the Qu'Appelle, Souris and Saskatchewan River basins are expected to be at or near normal levels prior to the spring runoff in 2025.

Table 2 shows the current lake levels on the Qu'Appelle River, and their projected March 1, 2025 levels. All lakes on the Qu'Appelle River System are expected to be near their normal levels on March 1, 2025.

In the Souris River Basin, Grant Devine Lake and Rafferty Reservoir are both below their February 1 target elevations of 561.0 m and 549.5 m, respectively. As such, no releases are being made from either reservoir at this time. Beginning on February 1, 2025, spring runoff forecasts for the Souris River Basin will be prepared in consultation with our United States partners on a semi-monthly basis. The reservoirs may be drawn down further in advance of spring runoff if warranted, in accordance with the 1989 Canada-US Agreement on Water Supply and Flood Control in the Souris River Basin.

Winter streamflow on the North Saskatchewan River is expected to be near normal through the winter. On the South Saskatchewan River, inflows to Lake Diefenbaker are expected to be slightly below normal through the winter. The current overwinter operating plan is to get Lake Diefenbaker to a target elevation of 551.5 m prior to the start of spring runoff (which typically occurs mid to late March). To minimize the risk of a low water year on Lake Diefenbaker, the target elevation will be adjusted depending on how the snowpack materializes in the mountains and across the prairies in Alberta and Saskatchewan throughout the winter.

Cumberland Lake has been below normal throughout the year due to the below normal flows throughout the Saskatchewan River Basin in 2024. With the planned increase in releases from Lake Diefenbaker

this winter, Cumberland Lake levels are expected to rise over the next couple of months and be near median levels throughout the winter.

The Quill lakes are expected to see small gains over the winter due to snow accumulation and potential groundwater inflows. Fishing Lake is still above the normal elevation for this time of year. For this reason, the Fishing Lake flood relief channel is being left open this winter to help slowly draw the lake down. The gates will be closed in advance of the spring runoff.

In other closed or semi-closed basin lakes, many of which are not gauged and not included in the table below, water levels have dropped and are expected to remain relatively steady going into the 2025 spring runoff.

Table 1: Fall Streamflow Conditions (October 31, 2024)

Station	2024 Flow (m ³ /s)	2024 Rank	Years of Record	Lower Quartile Flow (m ³ /s)	Median Flow (m ³ /s)	Upper Quartile Flow (m ³ /s)	Historical Rankings (October 31 highest flows)				
							1	2	3	4	5
ASSINIBOINE RIVER AT KAMSACK	0.56	43	80	0.27	0.64	1.76	2010	2016	2014	1954	1995
BALLANTYNE RIVER ABOVE BALLANTYNE BAY	1.76	47	48	3.47	6.36	8.54	2016	1970	1979	2012	1993
BATTLE CREEK AT ALBERTA BOUNDARY	0.16	36	50	0.15	0.21	0.26	2016	2010	2011	2012	1993
BATTLE RIVER NEAR THE SASKATCHEWAN BOUNDARY	0.35	46	46	1.14	1.95	3.00	1980	1982	1981	2020	1986
BEAVER RIVER BELOW WATERHEN RIVER	27.92	37	48	28.06	41.00	67.05	2005	1973	1997	2017	1974
BIRCH CREEK NEAR ELFROS	0.00	61	61	0.00	0.00	0.00	2016	2010	2006	1995	2005
BOGGY CREEK NEAR LUMSDEN	0.00	62	70	0.00	0.01	0.01	2016	2009	2010	1956	2019
CANOE RIVER NEAR BEAUVAL	5.23	45	51	7.65	11.50	17.45	1973	2005	1997	1995	2012
CARROT RIVER NEAR TURNBERRY	4.31	47	59	4.81	8.16	14.55	2016	2006	2005	2010	1978
CHURCHILL RIVER ABOVE OTTER RAPIDS	164.31	53	61	199.00	306.00	409.00	2020	1974	2005	1997	2017
CHURCHILL RIVER NEAR PATUANAK	75.15	33	41	89.80	140.00	181.00	1974	2020	2017	1975	2019
CUTARM CREEK NEAR SPY HILL	0.22	19	80	0.03	0.11	0.20	2016	2010	2014	1953	1954
DORE RIVER NEAR THE MOUTH	1.37	37	53	1.26	2.02	5.38	2017	1974	2007	1975	2018
FRENCHMAN RIVER AT INTERNATIONAL BOUNDARY	0.00	106	106	0.03	0.21	0.47	2016	2014	2007	1997	2010
HAULTAIN RIVER ABOVE NORBERT RIVER	9.03	50	55	11.90	16.90	24.05	2016	2012	1978	1997	1979
IRONSPRING CREEK NEAR WATSON	0.00	61	61	0.00	0.01	0.04	2016	2006	2010	2014	2005
LANIGAN CREEK ABOVE BOULDER LAKE	0.00	66	66	0.00	0.00	0.01	2010	2015	2016	2006	2005
LIGHTNING CREEK NEAR CARNDUFF	0.01	19	51	0.00	0.00	0.01	1975	2014	2016	1985	2013
LONG CREEK NEAR NOONAN	0.00	65	65	0.00	0.01	0.03	2013	2011	2014	1975	1978
MOOSE JAW RIVER NEAR BURDICK	0.10	35	71	0.03	0.10	0.26	2016	1959	1993	1976	1954
MOOSE MOUNTAIN CREEK ABOVE GRANT DEVINE LAKE	0.00	33	33	0.00	0.05	0.26	2014	2010	2011	2013	2016
NOTUKEU CREEK NEAR VANGUARD	0.01	59	76	0.02	0.07	0.13	2016	2011	1963	1916	1965
PIPESTONE CREEK ABOVE MOOSOMIN LAKE	0.03	23	51	0.00	0.01	0.17	2014	2011	2010	2016	2001
QUAPPELLE RIVER NEAR WELBY	7.04	28	63	3.62	5.83	10.16	2014	2010	2011	2016	1954
RED DEER RIVER NEAR ERWOOD	1.40	62	70	1.92	4.20	6.84	2016	2010	1954	1970	2006
REINDEER RIVER ABOVE DEVIL RAPIDS	91.88	39	40	249.00	343.50	429.50	1997	2020	2009	1987	1992
STURGEON-WEIR RIVER AT LEAF RAPIDS	44.55	24	47	31.50	44.55	53.70	2005	2020	1974	1983	2016
STURGEON RIVER NEAR PRINCE ALBERT	1.15	17	48	0.23	0.54	2.16	2010	2016	2005	2015	2012
SWAN RIVER NEAR NORQUAY	0.57	44	47	1.09	2.16	3.47	2016	1970	2010	1993	2009

Station	2024 Flow (m ³ /s)	2024 Rank	Years of Record	Lower Quartile Flow (m ³ /s)	Median Flow (m ³ /s)	Upper Quartile Flow (m ³ /s)	Historical Rankings (October 31 highest flows)				
							1	2	3	4	5
SWIFT CURRENT CREEK BELOW ROCK CREEK	0.45	23	69	0.25	0.34	0.52	2016	1993	2015	2014	2013
TORCH RIVER NEAR LOVE	2.63	52	66	2.90	4.73	7.30	2016	2005	1954	2015	2004
WATHAMAN RIVER BELOW WATHAMAN LAKE	30.85	46	53	41.30	59.50	83.50	1997	2005	1978	2020	1976
WHEELER RIVER BELOW RUSSELL LAKE	11.16	47	51	14.00	16.90	20.25	1976	2020	1997	1978	1979
WHITESAND RIVER NEAR CANORA	0.19	37	76	0.00	0.18	0.54	2016	2010	2014	1995	1954
WOOD RIVER NEAR LAFLECHE	0.01	19	67	0.00	0.00	0.01	2016	2014	2013	2019	2015
YELLOW GRASS DITCH NEAR YELLOW GRASS	0.00	68	68	0.00	0.00	0.00	2011	2010	2000	2014	2009
YORKTON CREEK NEAR EBENEZER	0.10	34	77	0.02	0.07	0.16	2016	1954	2014	1995	2010

Table 2: November 1, 2024 Observed Levels and Projections for March 1, 2025

Lake	November 1, 2024			March 1, 2025		
	Observed 2024 (masl)	Median (masl)	Departure from Median (m)	Projected 2025 (masl)	Median (masl)	Departure from Median (m)
Buffalo Pound	509.38	509.38	~	509.30	509.28	+0.02
Last Mountain	489.89	489.88	+0.01	489.88	489.90	-0.02
Echo-Pasqua	478.41	478.56	-0.15	478.37	478.50	-0.13
Mission-Katepwa	478.30	478.35	-0.05	478.30	478.27	+0.03
Crooked	450.91	451.07	-0.16	450.60	450.80	-0.20
Round	441.91	441.83	+0.08	441.80	441.55	+0.25
Quill lakes	519.53	515	4.53	519.59	515	4.59
Fishing	529.82	529	0.82	529.95	529	0.95

Climatic Conditions and Long-Range Weather Forecasts

Summary:

- Long-range forecasts are predicting near normal precipitation and below normal temperatures over the next couple of months.
- A weak La Niña is likely to emerge in November/December 2024, which is normally associated with cooler and wetter conditions.

Large Scale Climate Influences

The hydroclimate of Saskatchewan is heavily influenced by varying, recurring large-scale climate patterns such as the Pacific Decadal Oscillation (PDO), Pacific North American mode (PNA), and the El Niño-Southern Oscillation (ENSO). These large-scale climatic influences can provide insight but should be considered within the context of past experiences rather than a forecast of upcoming conditions.

PDO

The Pacific Decadal Oscillation is an index of sea surface temperatures over the northern portion of the Pacific Ocean. This index shifts from warm (positive) to cool (negative) phases lasting about 20 to 35 years. During negative phases, Saskatchewan typically experiences above normal snowfall and consequently experiences larger spring runoff events. Conversely, we tend to see lower than normal snowfall when the PDO is in its positive phase. The PDO signal has been negative since January 2020 and was very strong in October 2024 at -3.81, ranking as the third lowest since 1950. The PDO is expected to remain in the negative phase throughout the winter.

PNA

The Pacific North American Pattern is one of the most prominent modes of low-frequency variability in the Northern Hemisphere extratropics and is associated with fluctuations in the strength and location of the jet stream. During the positive phase, warmer and

drier conditions typically persist over western North America. The PNA is difficult to forecast beyond one month. The PNA is currently in the positive phase but is expected to go into the negative phase in late November.

ENSO

The El Niño-Southern Oscillation (ENSO) is a naturally occurring phenomenon that involves fluctuating Pacific Ocean temperatures near the equator. During El Niño (warm phase) years, Saskatchewan typically experiences warmer and drier winters. The opposite generally occurs during La Niña (cool phase) years; conditions tend to be cooler and wetter. Over the past month, ENSO-neutral continued, as evidenced by overall near-average sea surface temperatures observed across the central and eastern equatorial Pacific Ocean. Based on model outputs, a weak La Niña is most likely to emerge in November/December 2024 (57% chance) and is expected to persist through January-March 2025.

Seasonal Outlooks

The US National Weather Service hosts a webpage with seasonal forecasts from six models, including two Environment and Climate Change Canada models, and produces multi-model ensemble products. Most of these models are forecasting near normal precipitation and normal to below normal temperatures across Saskatchewan between December 1, 2024 and February 28, 2025. Conditions are expected to vary farthest from normal in the northwest where below normal temperatures are expected. Three-month spatial anomalies maps for precipitation (Figure 11) and temperature (Figure 12) covering the December 1, 2024 to February 28, 2025 forecast period are provided.

Monitoring of Runoff Conditions and Spring Runoff Forecasts

The Water Security Agency will continue to monitor conditions throughout the 2024-25 winter. Beginning in early February, Spring Runoff Outlooks will be released on www.wsask.ca.

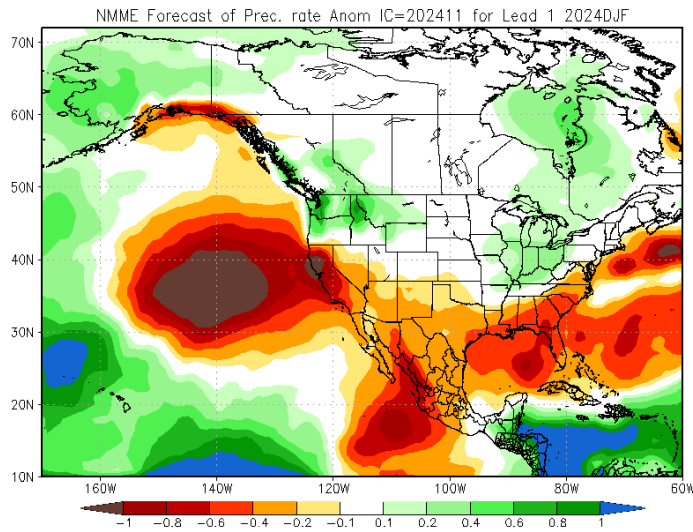


Figure 11: North American Multi-Model Ensemble Precipitation Anomaly Outlook for December 1, 2024 to February 28, 2025 (Map courtesy of the US National Weather Service)

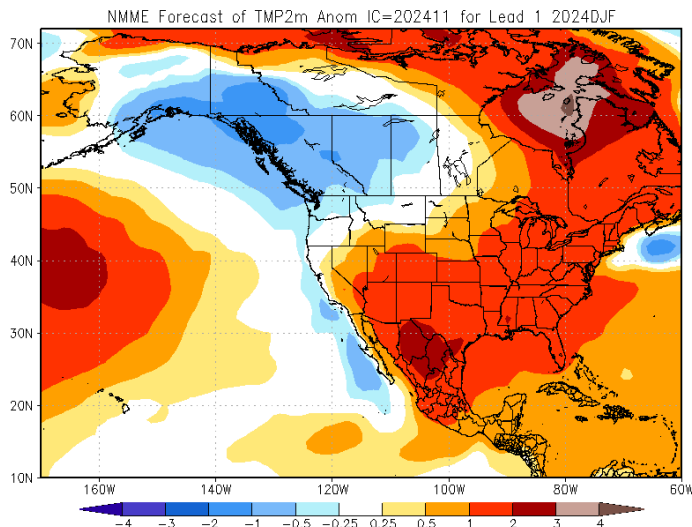


Figure 12: North American Multi-Model Ensemble Temperature Anomaly Outlook for December 1, 2024 to February 28, 2025 (Map courtesy of the US National Weather Service)