Government of
Northwest Territories

NWT Water Monitoring Bulletin – May 15, 2025 at 12:00

NWT break up reports will be published routinely as break up unfolds. These reports will focus on regions with active snowmelt and ice break up. The geographic focus of the report will shift as conditions change. Additional information about basin conditions can be found in the ECC Snow Survey Bulletin and Spring Water Outlook, available here. If you have any photos or information about break up in your community, feel free to reach out to us: nwtwaters@gov.nt.ca.

Current Status:

- Break up is progressing along the Mackenzie River between Wrigley and Fort Good Hope;
    - The ice front is within 30 km of Tulita (as indicated by radar imagery acquired this morning).
    - River ice is starting to melt along the shore of the Mackenzie River at Norman Wells and Fort Good Hope (as indicated by images from hydrometric gauges).
    - Sheet ice movement has been observed near Fort Good Hope, as of last night.
- The water level measured on the Mackenzie River at Norman Wells has been lower than normal for most of the winter.
    - Water levels measured at Norman Wells and Fort Good Hope are currently rising underneath the ice, as is normal for this stage of break-up.
- Temperatures in the Sahtu region have bene cooler than normal since late April, but much of the region will see warmer than normal temperatures this coming weekend. This will accelerate the melt of snow and river ice in the region.
- The 2025 break-up flood risk has passed for Fort Simpson and Jean Marie River.

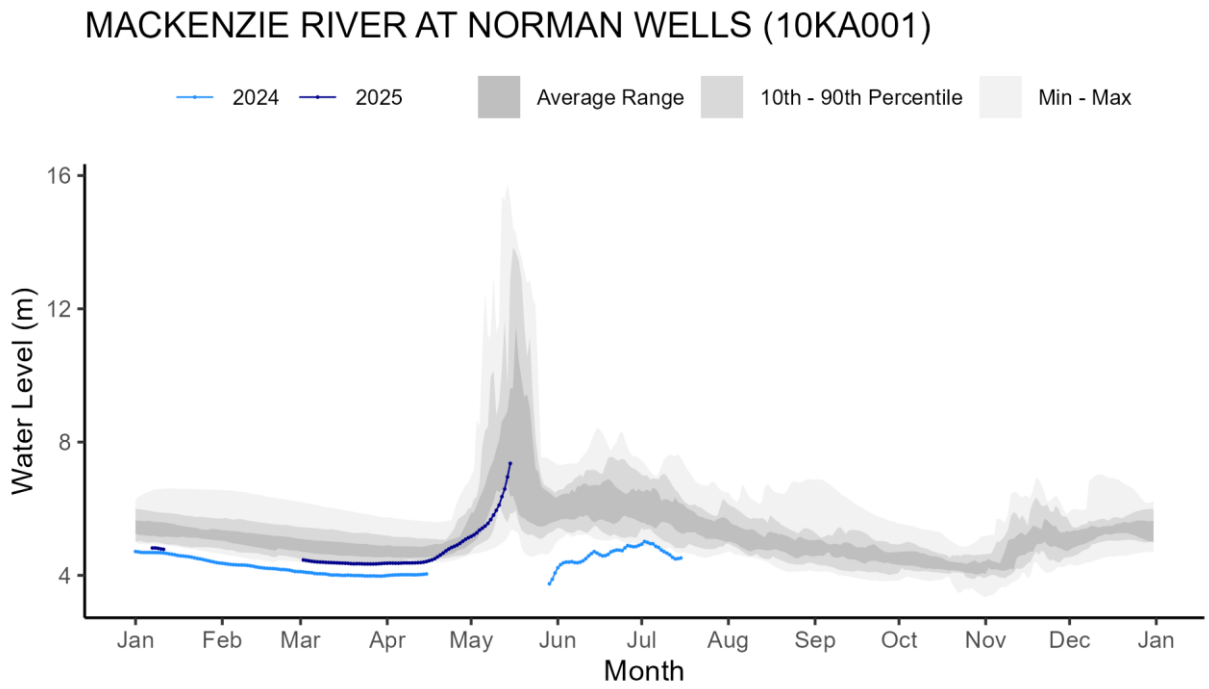
Contents

Station map:

Above – Map of select Hydrometric stations along the Mackenzie River near Tulita, Norman Wells and Fort Good Hope.

Hydrometric Data:

Mackenzie River at Norman Wells [10KA001]:



Above - Water level data for Mackenzie River at Norman Wells [10KA001]. Daily average levels for the previous year also are shown here.

Gauge photos:

Mackenzie River at Norman Wells [10KA001]:

Above – Mackenzie River at Norman Wells hydrometric gauge photo from May 14th at 09:00. Photo courtesy of Water Survey of Canada and GNWT.

Mackenzie River at Fort Good Hope [10LD001]:

Above – Mackenzie River at Fort Good Hope hydrometric gauge photo from May 14th at 12:00. Photo provided by GNWT.

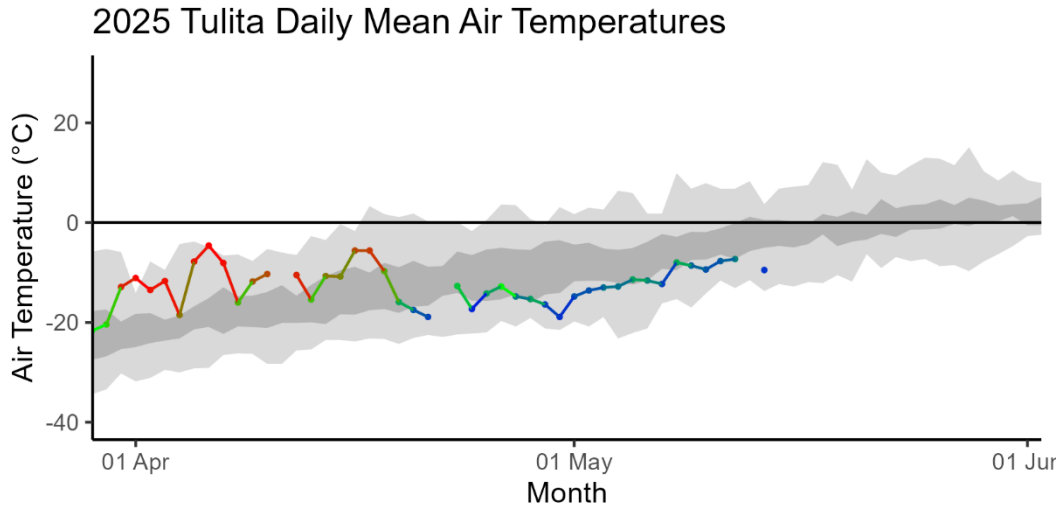
Weather Data:

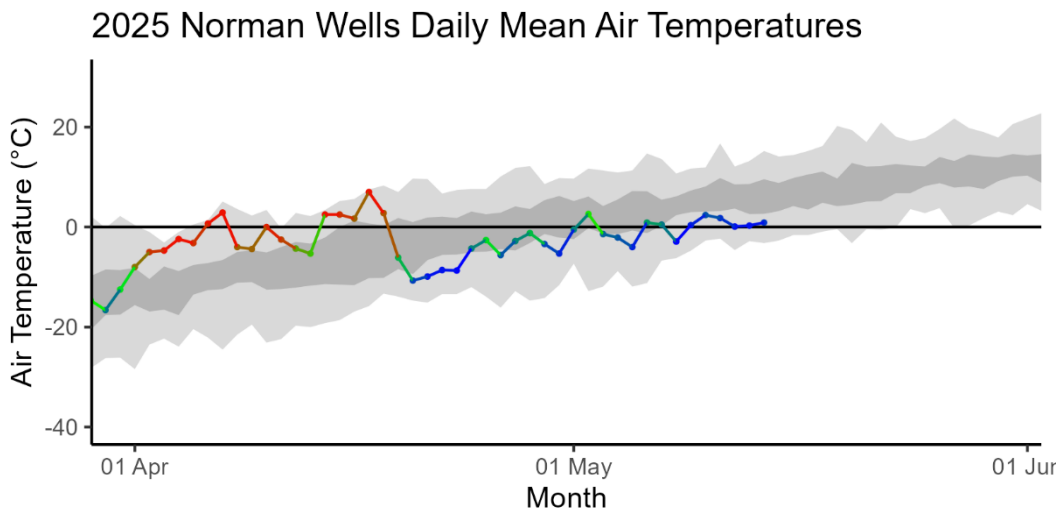
Weather information informs how snow and ice will melt and provides information about how this spring is unfolding relative to previous springs. Warmer than normal conditions early in the spring allow for additional energy to melt the snowpack and soften river ice. Rain-on-snow events can cause rapid melt of snowpacks and facilitate quick delivery of snowmelt water to rivers. Locations included here cover basin areas that feed into NWT rivers that are currently undergoing break-up. The first set of figures show how temperatures have been relative to average (dark grey band) this spring, while the second set is Environment and Climate Change Canada (ECCC) weather forecast data for the next seven days.

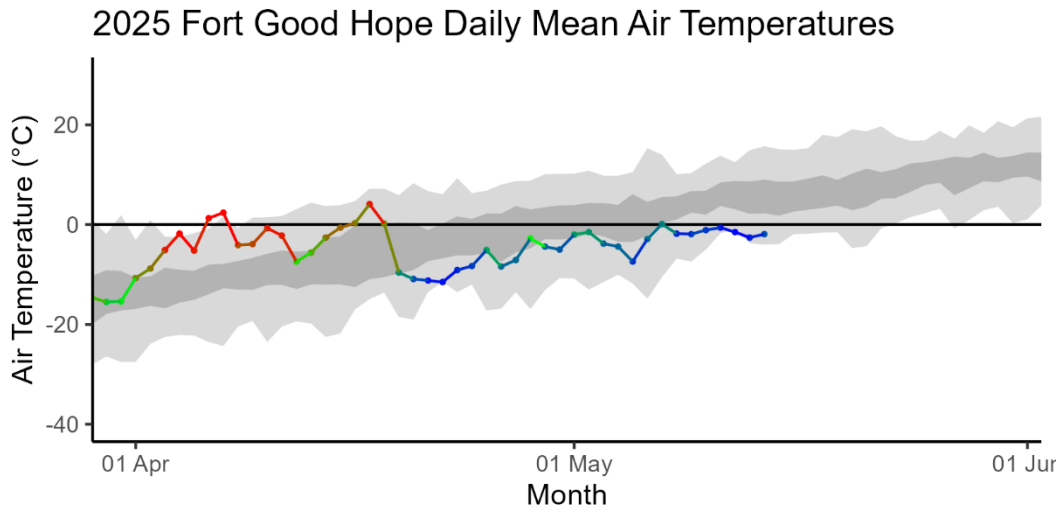
The Sahtu region has seen cooler than normal temperatures since late April. Norman Wells and Tulita are forecast to see temperatures that are warmer than normal over the weekend, and overnight lows will be above zero. These temperatures should accelerate snowmelt over the weekend.

In Fort Good Hope, temperatures are expected to be closer to average, and overnight lows will be below zero. These temperatures will moderate any snowmelt over the weekend.

There is no significant precipitation forecast for the weekend in the Sahtu.




2025 Norman Wells Daily Mean Air Temperatures
Air Temperature (°C)
20
0
-20
-40
01 Apr
01 May
01 Jun
Month


2025 Fort Good Hope Daily Mean Air Temperatures
Air Temperature (°C)
20
0
-20
-40
01 Apr
01 May
01 Jun
Month

Tulita seven-day weather forecast:

Thu 15 May	Fri 16 May	Sat 17 May	Sun 18 May	Mon 19 May	Tue 20 May	Wed 21 May
5°C	12°C	12°C	16°C	6°C	11°C	11°C
A mix of sun and cloud	A mix of sun and cloud	A mix of sun and cloud	A mix of sun and cloud	60% Chance of showers	A mix of sun and cloud	A mix of sun and cloud
Tonight	**Night**	**Night**	**Night**	**Night**	**Night**	
0°C	3°C	1°C	2°C	2°C	2°C	
Mainly cloudy	Cloudy periods	Cloudy periods	Cloudy periods	Cloudy periods	Cloudy periods	

Norman Wells seven-day forecast:

Thu 15 May	Fri 16 May	Sat 17 May	Sun 18 May	Mon 19 May	Tue 20 May	Wed 21 May
5°C	12°C	12°C	16°C	6°C	11°C	11°C
A mix of sun and cloud	A mix of sun and cloud	A mix of sun and cloud	A mix of sun and cloud	60% Chance of showers	A mix of sun and cloud	A mix of sun and cloud
Tonight	**Night**	**Night**	**Night**	**Night**	**Night**	
0°C	3°C	1°C	2°C	2°C	2°C	
Mainly cloudy	Cloudy periods	Cloudy periods	Cloudy periods	Cloudy periods	Cloudy periods	

Fort Good Hope seven-day forecast:

Thu 15 May	Fri 16 May	Sat 17 May	Sun 18 May	Mon 19 May	Tue 20 May	Wed 21 May
3°C	6°C	4°C	5°C	7°C	8°C	8°C
Mainly sunny	Mainly cloudy	Cloudy	A mix of sun and cloud	Cloudy	A mix of sun and cloud	A mix of sun and cloud
Tonight	**Night**	**Night**	**Night**	**Night**	**Night**	
-3°C	1°C	-2°C	-3°C	1°C	1°C	
Partly cloudy	Clear	Cloudy	Cloudy periods	Cloudy periods	Cloudy periods	

Factors to Watch:

It is important to note that much of the water contributing to NWT rivers originates from outside of the NWT, which is why we also rely on information from the Yukon, British Columbia, Alberta and Saskatchewan.

The potential and severity of flooding will depend in large part on the weather over the upcoming weeks and how this interacts with existing ice conditions, water levels and snowpack amounts.

The primary factors that influence water levels in the spring are:

- Ice jams (can result in out-of-bank flows, even if there are below normal flows)
- Rate of melt of ice and snow:
    - Gradual vs quick melt
    - Rain on snow or ice events (rain brings a lot of energy to help melt happen more quickly)
- Current water levels
- How wet the ground was in the fall
- Snowpack

Spring Break up on NWT Rivers: Mechanical vs Thermal

In any given year, spring flooding can occur in a number of NWT communities, including Hay River, Jean Marie River, Fort Simpson, Fort Liard, Tulita, Fort Good Hope, Fort McPherson and Aklavik. Spring flooding is caused by ice jam-induced flooding and can occur irrespective of existing water levels. However, if existing water levels are high, the impact of an ice jam flood can be much worse.

Ice jams typically occur on north-flowing rivers where warm weather and snowmelt cause ice to break up on the southern reaches of a river. As this ice flows north (downstream), it meets a more solid ice cover, hits the ground, or gets stuck in a river bend. When this happens, the pieces of floating ice jam can form a dam, which causes water levels to rise rapidly. This is called a **mechanical break up**, whereby the ice downstream is broken up by the force of ice moving into it.

If there is warm and sunny weather throughout early spring, the ice may thermally erode and weaken. This provides less of a resisting force for ice and water moving down the river and will have less of a chance of causing water levels to rise behind an ice jam. This is called a **thermal break up**.

The causes of mechanical and thermal break ups are usually dependent on the weather during early spring. Warm weather, sunshine, and rain on snow events are usually a good way to bring extra energy into the system to help melt the ice. Warm temperatures in the upstream part of a basin could also cause a rapid snowmelt and move water to the river very quickly. This could lead to ice-jam conditions downstream if the ice has not yet received enough energy to degrade. Another important factor is the thickness of the ice. Thicker ice takes longer to melt and can increase the

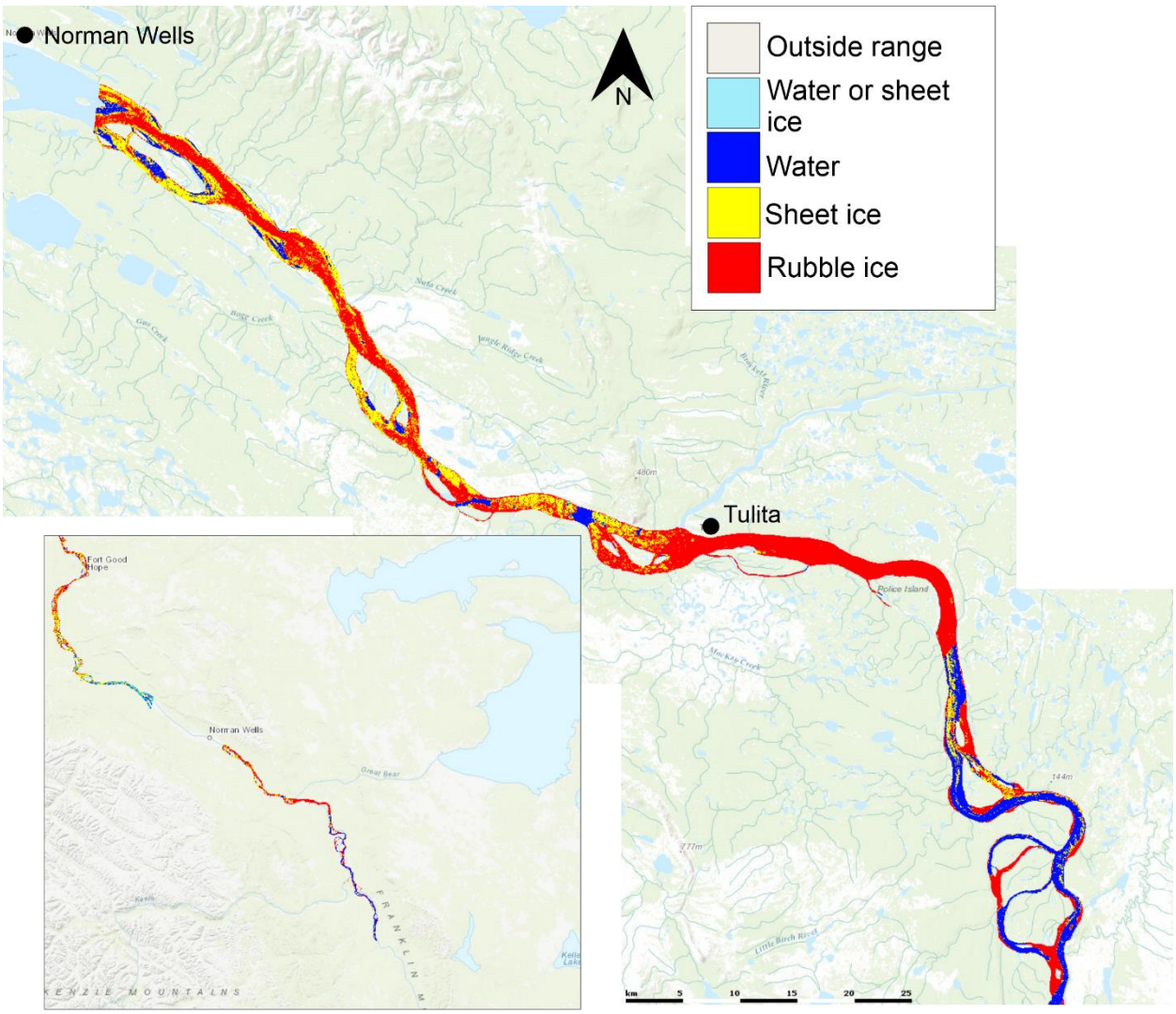
chances of ice jams. If an ice jam occurs, the location of the ice jam is also very important. Each river reach has different locations that are prone to ice jams. The location of the ice jam can be an important factor as to whether or not a community floods. Furthermore, ice will jam and then move again at multiple locations along a river as break up progresses downstream. The timing and location of each jam can also influence if a community will flood.

Technical Note:

- The figures in this report plot water levels. The values on the y-axis are (in most cases) relative to an arbitrary datum. This means that the values on each gauge can be compared to different years but should not be used to compare water levels from one location to the next.

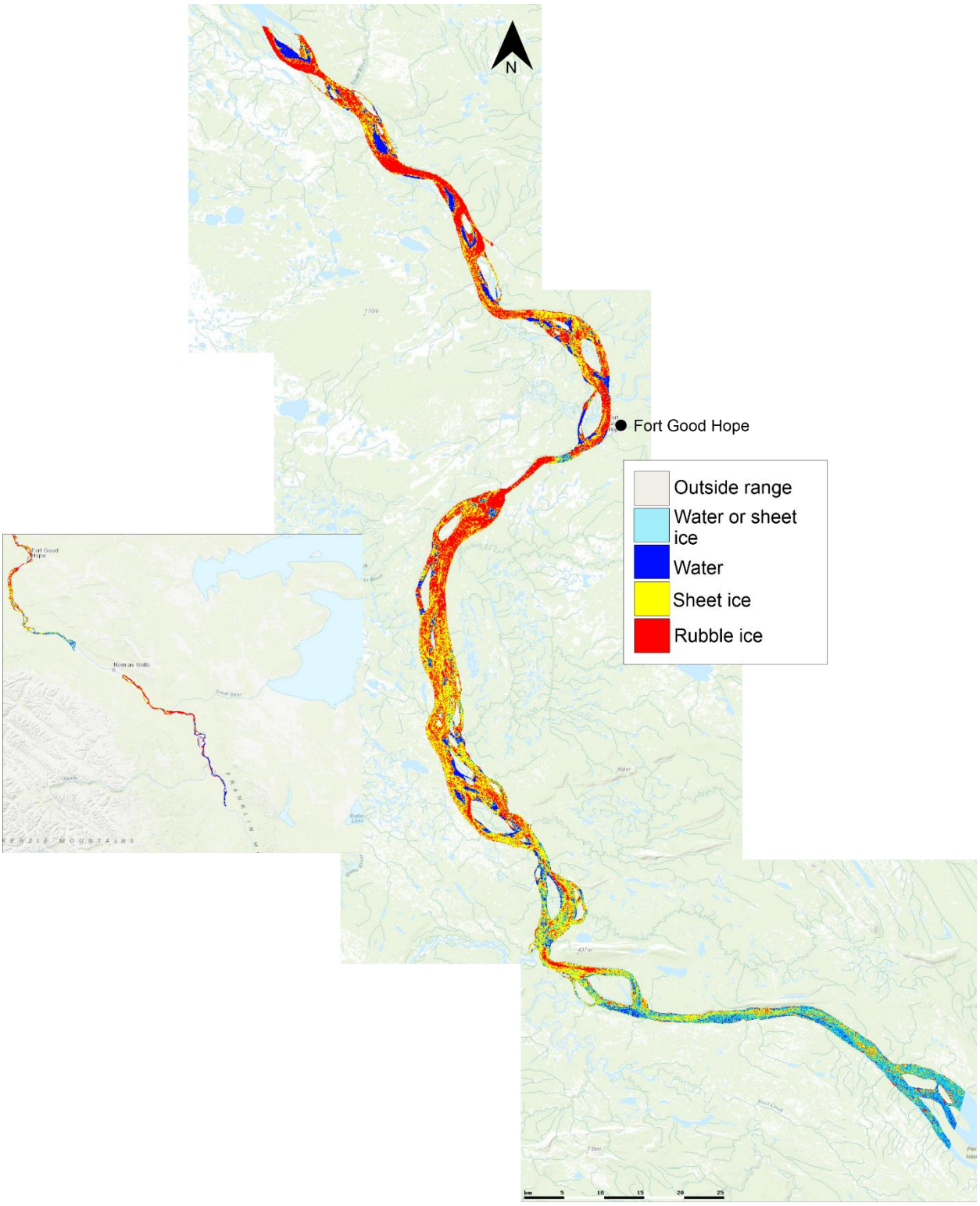
For example, the Hay River near the border gauge (07OB008) records a level of about 288 m. The Hay River near Hay River gauge (07OB001) usually records a level of about 4 m. This **does not mean** that the water level at the Hay River at the border site is 284 m higher than the water level at the Hay River near Hay River site.

Appendix A: River Ice Imagery



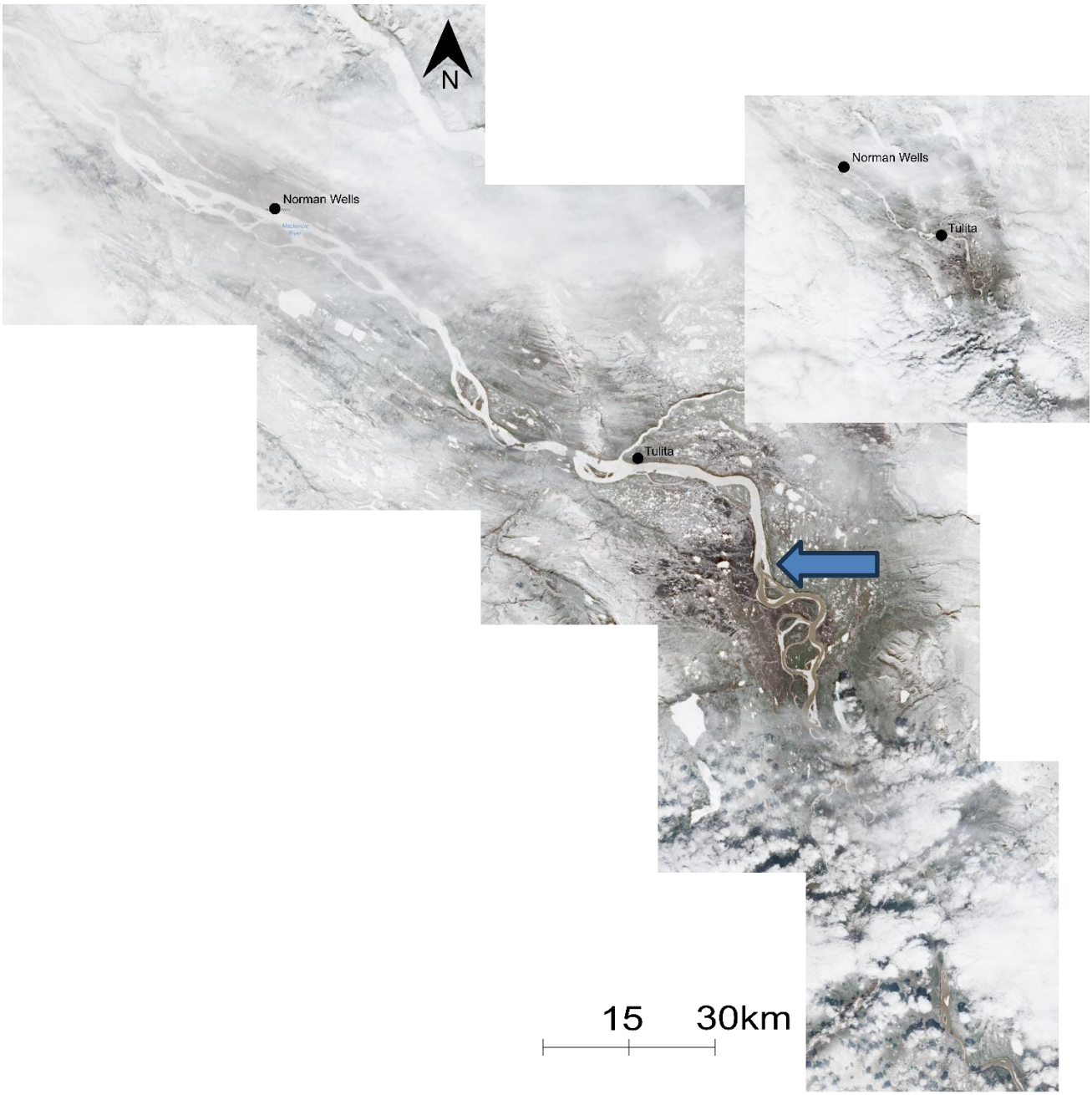
River ice classification imagery from 2025-05-15 8:44 MDT

Above – Classified river ice image of the Mackenzie River near Tulita. This image shows the ice front that is within 30 km of Tulita. The image was acquired this morning at 8:44 MDT and is courtesy of the federal government's Government Operations Centre. The river ice classification was completed using the IceBC algorithm



River ice classification imagery from 2025-05-15 9:15 MDT

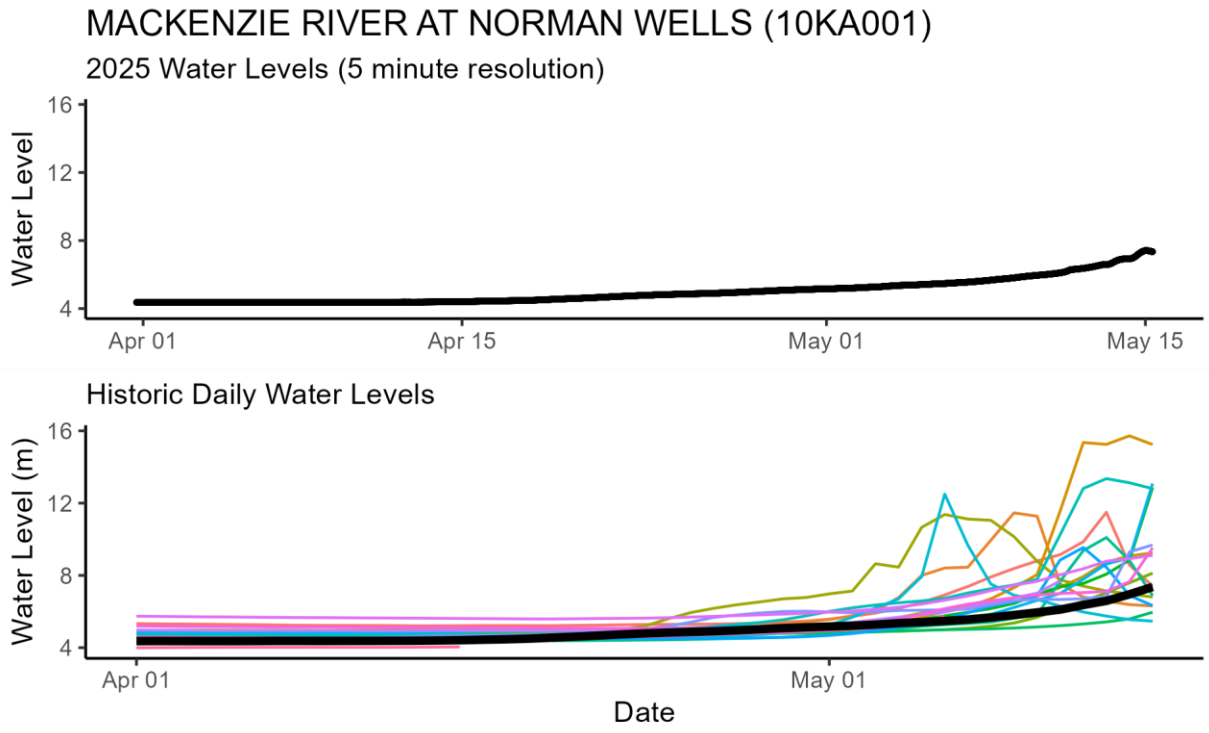
Above – Classified river ice image of the Mackenzie River near Fort Good Hope. The image was acquired this morning at 9:15 MDT and is courtesy of the federal government's Government Operations Centre. The river ice classification was completed using the IceBC algorithm



Above – Sentinel-2 optical satellite imagery taken over the Mackenzie River on 2025-05-14. This image shows the ice front and an ice jam approximately 35 km upstream of Tulita (see blue arrow).

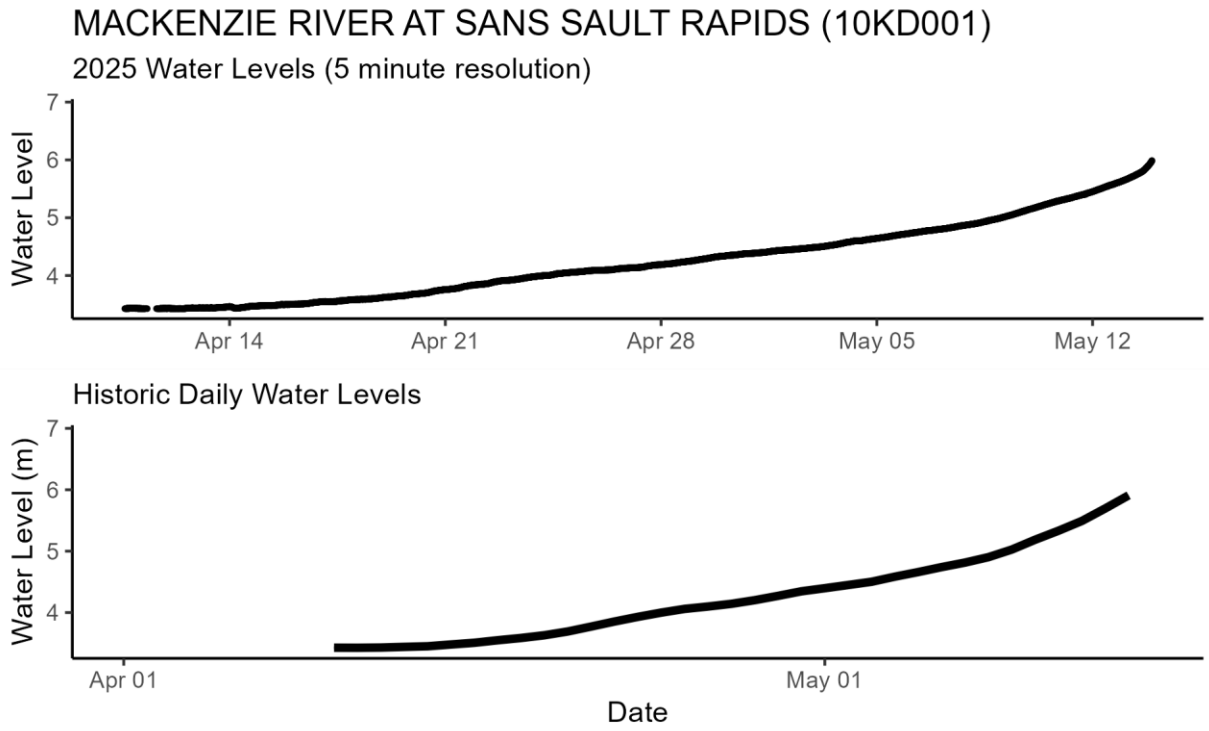
Appendix B: High resolution and historic water level plots

Mackenzie River at Norman Wells [10KA001]



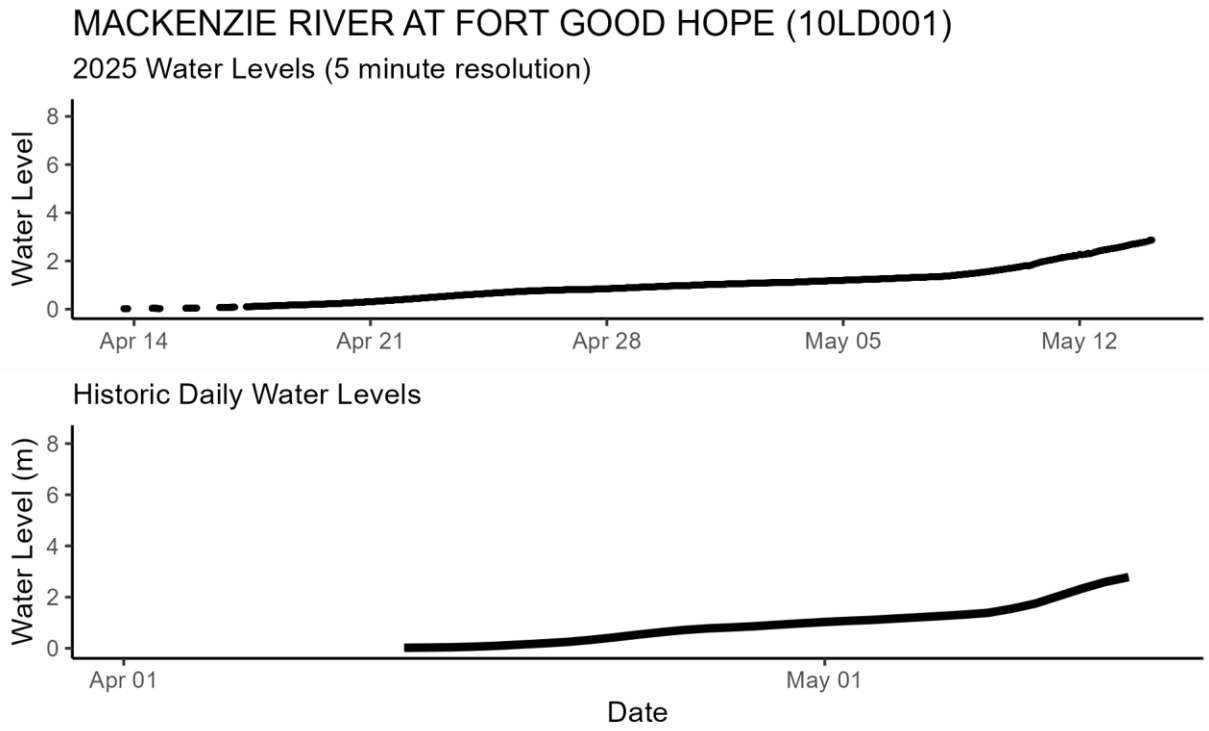
Above - The upper graph in the figure presents real time water level data at 5-minute resolution. The lower graph shows daily average levels relative to the previous 20 years.

Mackenzie River at Sans Sault Rapids [10KD001]



Above - The upper graph in the figure presents real time water level data at 5-minute resolution. The lower graph shows daily average levels relative to the previous 20 years.

Mackenzie River at Fort Good Hope [10LD001]



Above - The upper graph in the figure presents real time water level data at 5-minute resolution. The lower graph shows daily average levels relative to the previous 20 years.