Government of
Northwest Territories

NWT Water Monitoring Bulletin – May 24, 2025 at 13:00

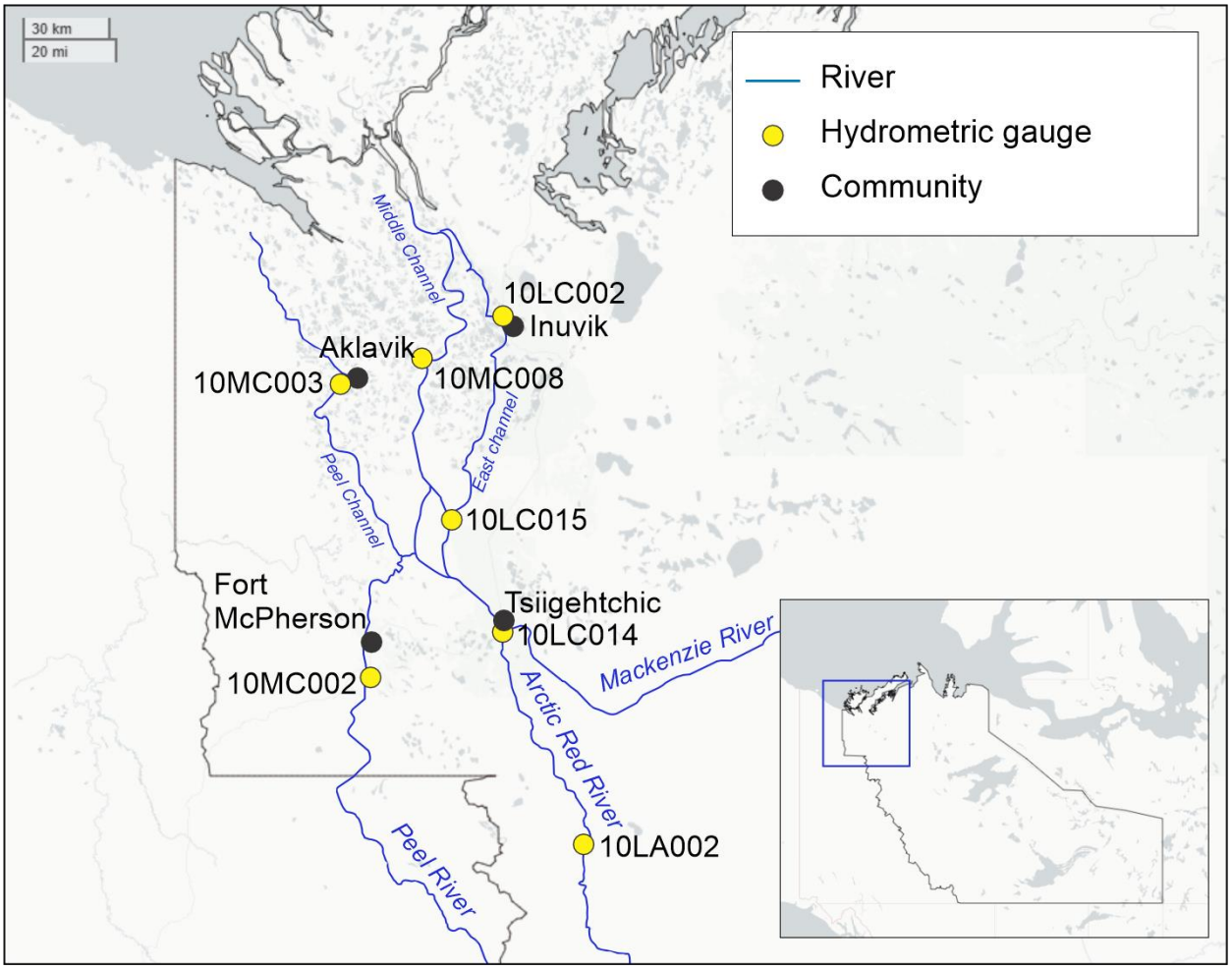
NWT break up reports will be published routinely as break up unfolds. These reports will focus on regions with active snowmelt and ice break up. The geographic focus of the report will shift as conditions change. Additional information about basin conditions can be found in the ECC Snow Survey Bulletin 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:

- The 2025 break-up flood risk has passed for Tulita and Fort Good Hope.
- Break-up is progressing along the Mackenzie River;
    - The ice front is between Fort Good Hope and Tsiigehtchic.
    - Movement of large ice sheets has been observed on the Mackenzie River at the confluence of Arctic Red River, near Tsiigehtchic, as of yesterday morning.
- Break-up is progressing along the Peel River;
    - Water levels have been rising on the Peel River and its tributaries over the last week but currently remain below water levels of any concern.
    - Open water sections are growing upstream of and near Fort McPherson.
    - Sections of relatively intact ice remain.
- In the Beaufort Delta, large open water sections have been observed between Tsiigehtchic and the East Channel confluence.
- Average to above average temperatures and above freezing overnight lows forecasted for the next week will result in continued break-up progression and snowmelt.

Contents

Station Map



Above – Map of Hydrometric stations and nearby communities for the plots included in this report.

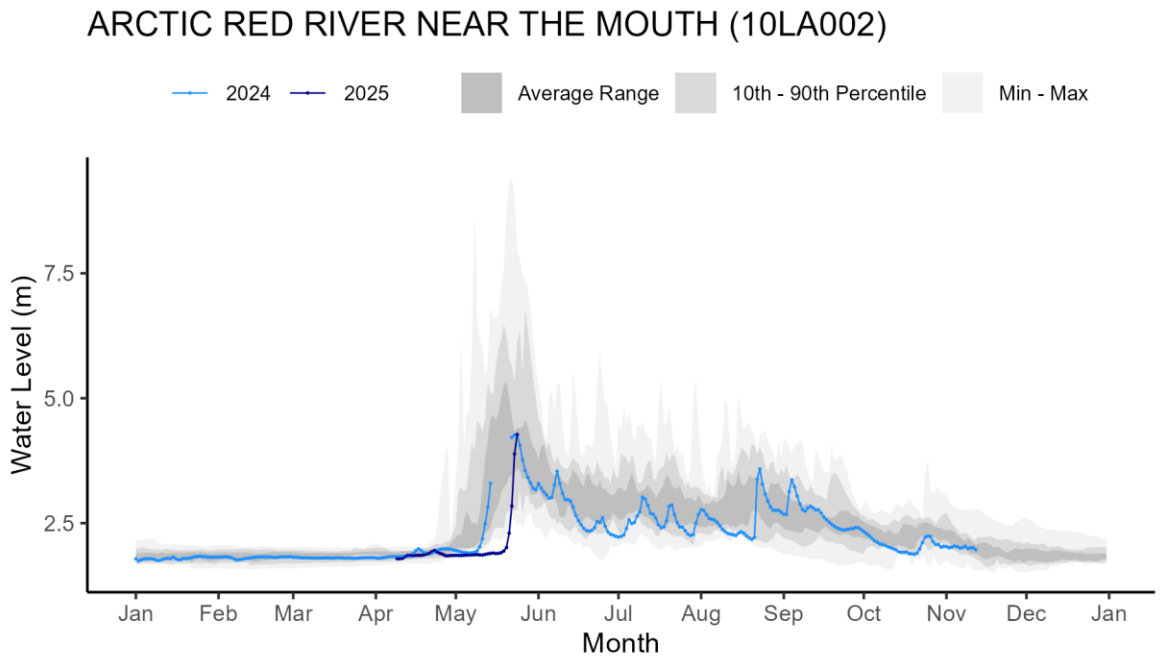
Mackenzie River

Current Status:

- Break-up is progressing along the Mackenzie River;
    - The ice front is now between Fort Good Hope and Tsiigehtchic.
    - Hydrometric gauge imagery showed sheet ice movement on the Mackenzie at the confluence with the Arctic Red River (near Tsiigehtchic), as of yesterday morning.
- Water level measured on the Mackenzie River at Arctic Red River rose to 7.8 m yesterday afternoon, and has since receded to 6.9 m.
    - For reference, the water level measured at this location rose to greater than 12 m in the high-water year of 2021.
- Average to below average temperatures are expected early next week for Tsiigehtchic, followed by average to above average temperatures towards the end of the week.
    - Above freezing overnight lows forecasted for next week will result in continued break-up progression and snowmelt.

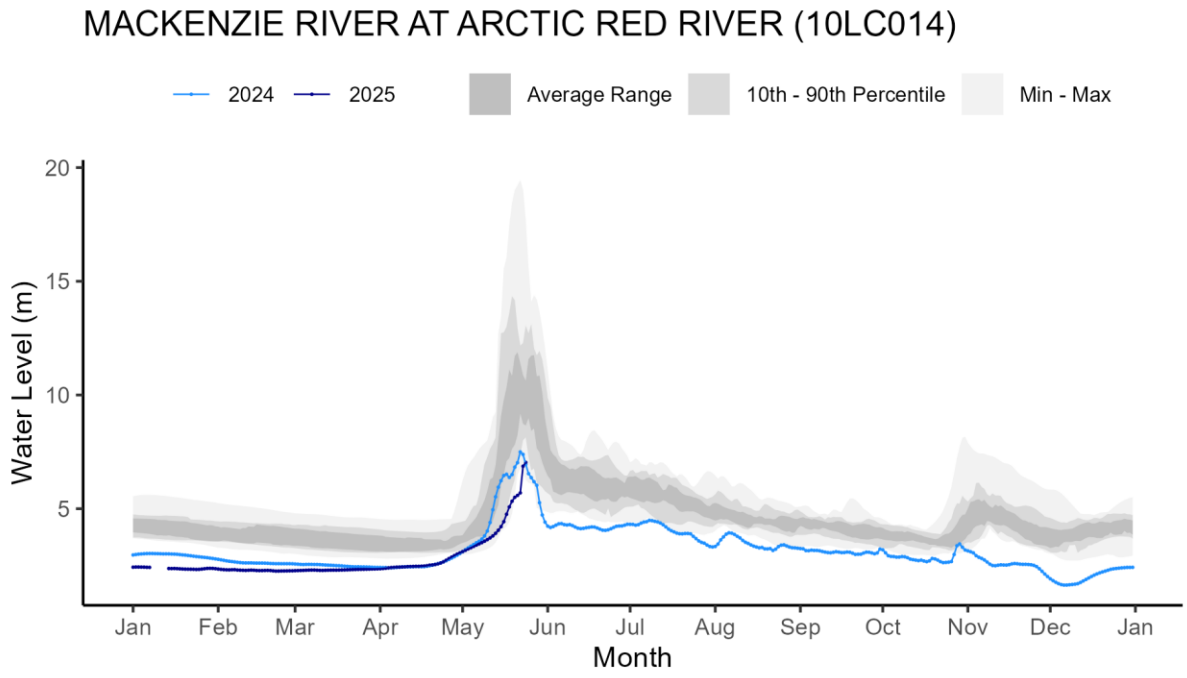
Hydrometric Data:

Arctic Red River near the Mouth [10LA002]



Above - Water level data for Arctic Red River near the Mouth [10LA002]. Daily average levels for the previous year also are shown here. Note: This graph shows daily averages, so small changes in level over the last day cannot be seen (see Appendix B for more detailed data).

Mackenzie River at Arctic Red River [10LC014]



Above - Water level data for Mackenzie River at Arctic Red River [10LC014]. Daily average levels for the previous year also are shown here.

Gauge photos:

Mackenzie River at Arctic Red River [10LC014]

Above - Mackenzie River at Arctic Red River [10LC014] hydrometric gauge photo from May 24 at 12:00. Photo courtesy of Water Survey of Canada and GNWT.

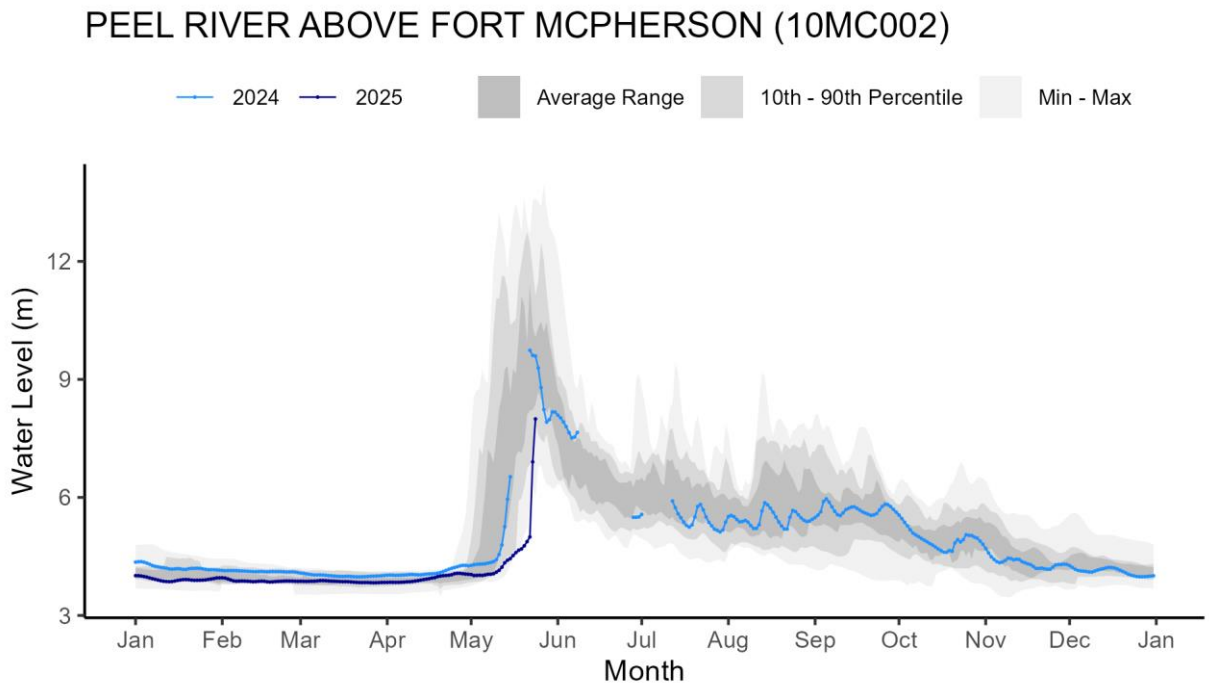
Peel River

Current Status:

- Break-up is progressing along the Peel River;
    - Sections of open water and relatively intact ice have been observed near Fort McPherson.
    - Water level measured on the Peel River at Fort McPherson has risen to 8.2 m.
        - For reference, the water level rose to greater than 12 m in 2023.
        - The current water level remains below that of any concern.
- Average to below average temperatures are expected early next week for Fort McPherson, followed by average to above average temperatures towards the end of the week.
    - Above freezing overnight lows forecasted for next week will result in continued break-up progression and snowmelt.

Hydrometric Data:

Peel River above Fort Mcpherson [10MC002]



Above - Water level data for Peel River above Fort Mcpherson [10MC002]. Daily average levels for the previous year also are shown here.

Gauge photos:

Above – Peel River above Fort McPherson hydrometric gauge photo from May 24 at 12:00. Photo courtesy of Water Survey of Canada and GNWT.

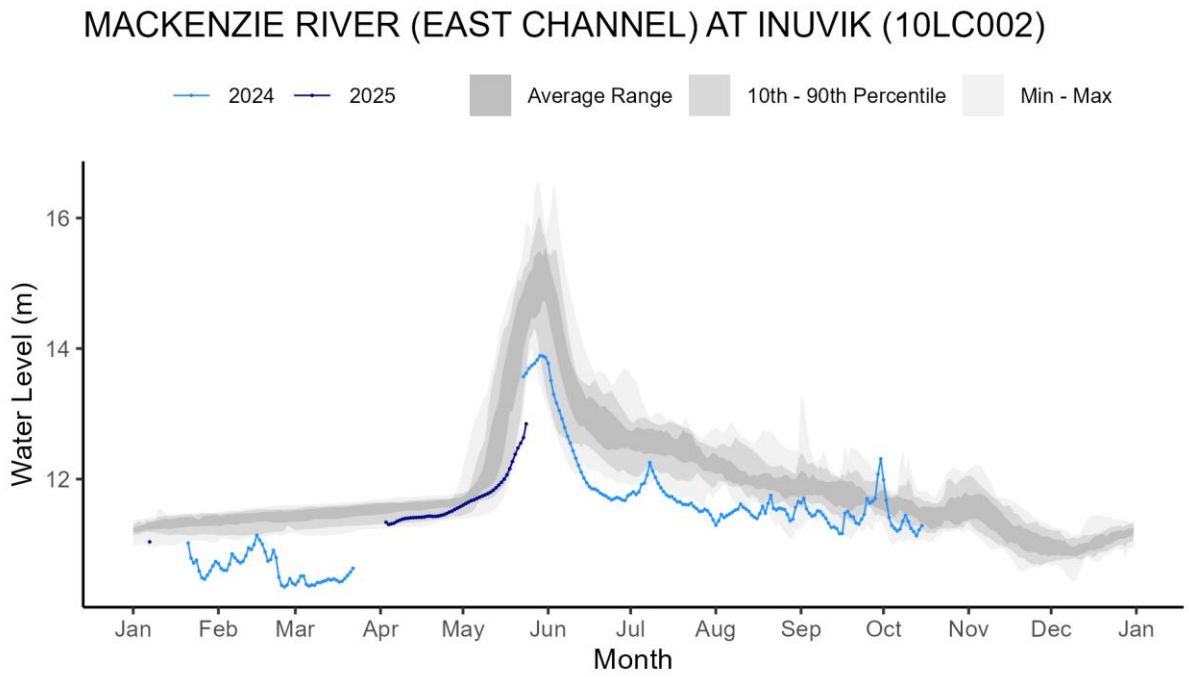
Beaufort Delta

Current Status:

- Large open water sections have been observed between Tsiigehtchic and the East Channel confluence.
    - Open water sections are also growing along the riverbanks.
- Water levels have been rising under relatively intact ice but are currently below levels of any concern.
- Average to below average temperatures are expected early next week, followed by average to above average temperatures towards the end of the week.
    - Above freezing overnight lows forecasted for next week will result in continued break-up progression and snowmelt.

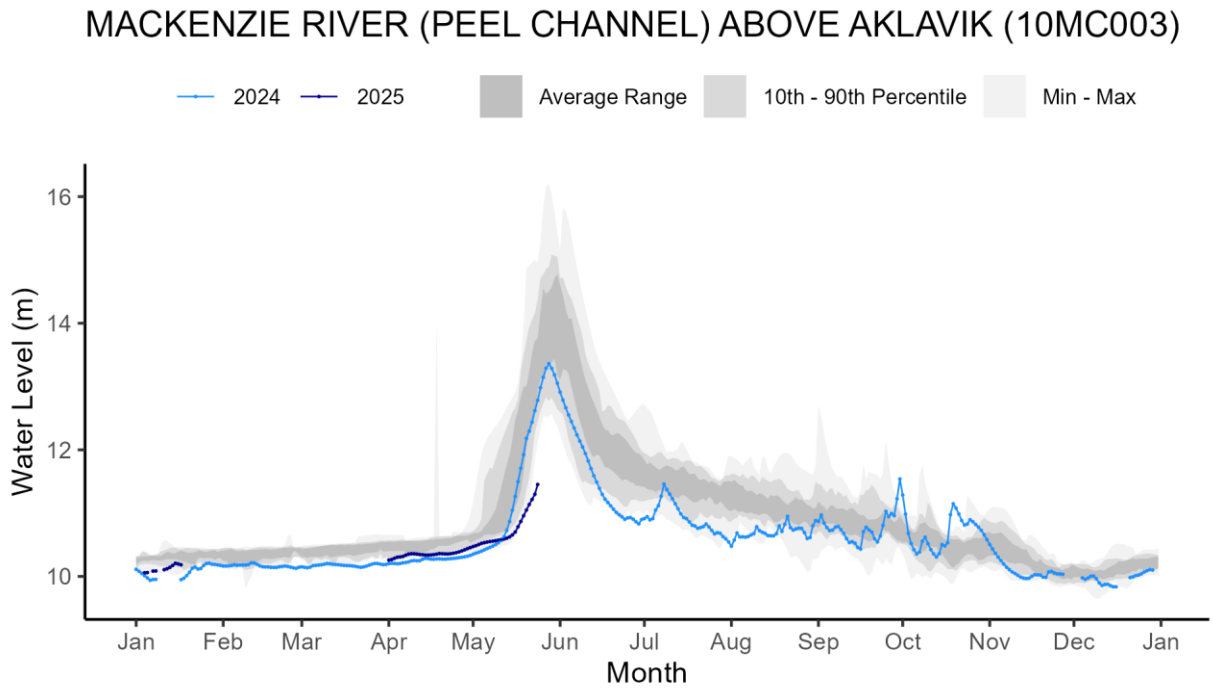
Hydrometric Data:

Mackenzie River (East Channel) at Inuvik [10LC002]



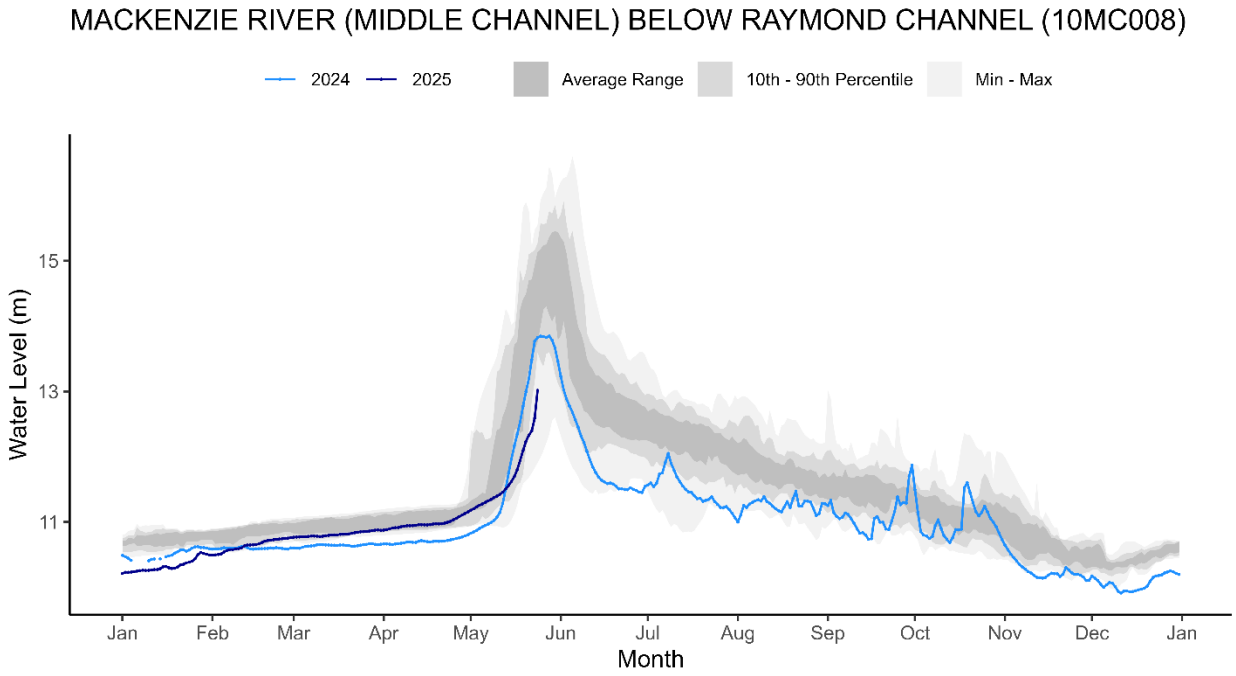
Above - Water level data for Mackenzie River (East Channel) at Inuvik [10LC002]. Daily average levels for the previous year also are shown here.

Mackenzie River (Peel Channel) above Aklavik [10MC003]



Above - Water level data for Mackenzie River (Peel Channel) above Aklavik [10MC003]. Daily average levels for the previous year also are shown here.

Mackenzie River (Middle Channel) below Raymond Channel [10MC008]



Above - Water level data for Mackenzie River (Middle Channel) below Raymond Channel [10MC008]. Daily average levels for the previous year also are shown here.

Gauge photos:

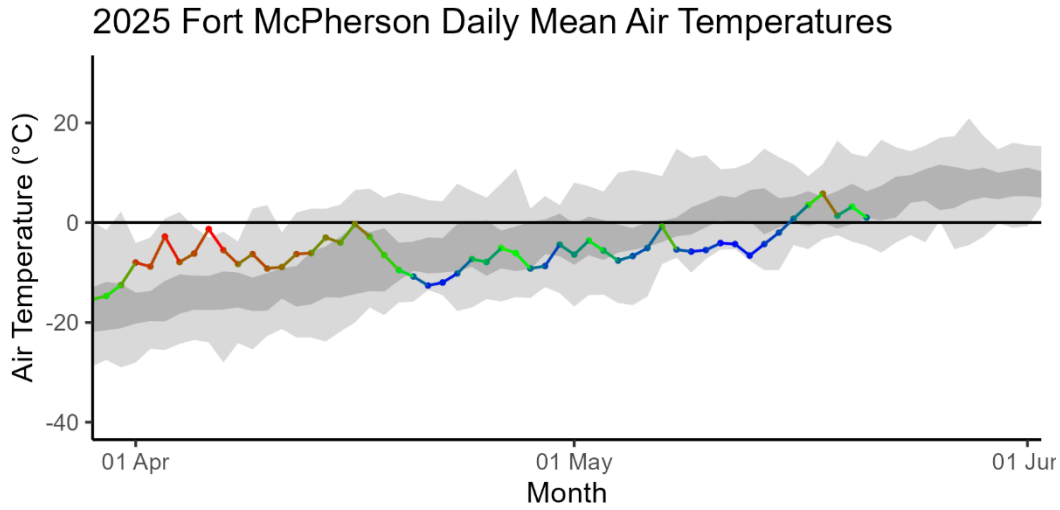
Above – Mackenzie River below Raymond Channel hydrometric gauge photo from May 24 at 12:00. Photo courtesy of Water Survey of Canada and GNWT.

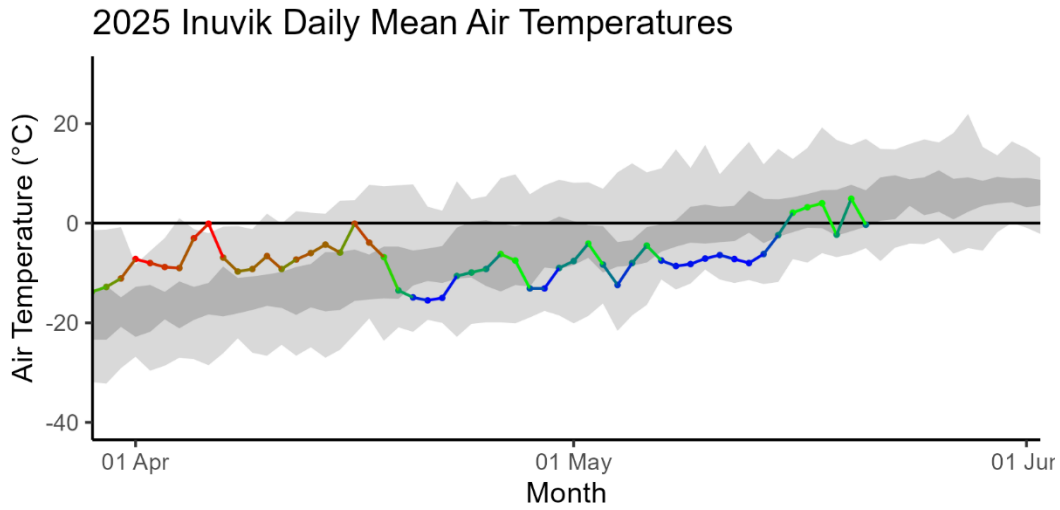
Weather Data:

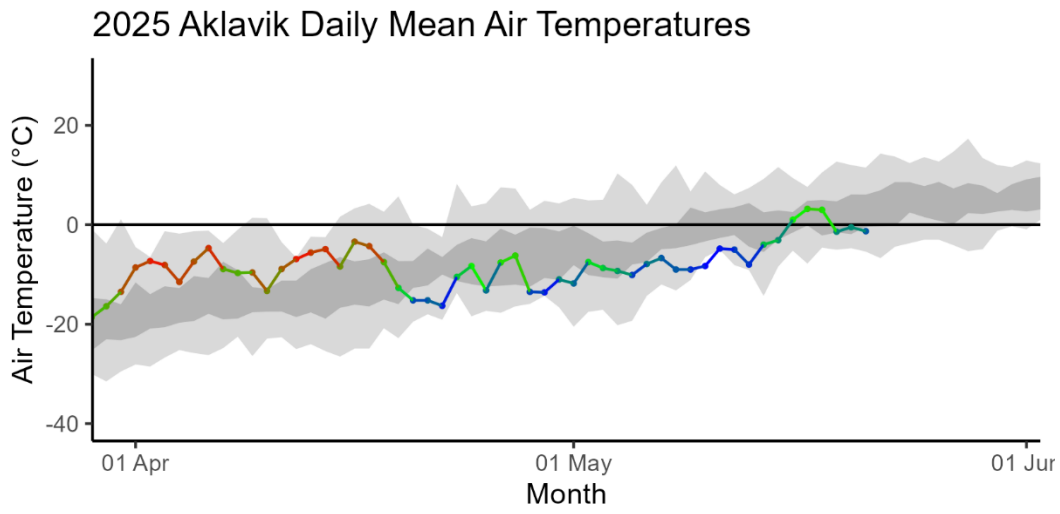
Weather information informs how snow and ice will melt and provides information about how this spring is unfolding relative to previous springs. Warmer than normal conditions early in the spring allow for additional energy to melt the snowpack and soften river ice. Rain-on-snow events can cause rapid 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.

For the Peel River basin and Beaufort-Delta, average to below average temperatures are expected early next week, followed by average to above average temperatures towards the end of the week. Overnight lows will be above freezing.

No significant precipitation is forecast for these regions over the next week.







Fort McPherson seven-day forecast:

Sat 24 May	Sun 25 May	Mon 26 May	Tue 27 May	Wed 28 May	Thu 29 May	Fri 30 May
5°C Mainly cloudy	3°C 30% Periods of drizzle	6°C Cloudy	12°C Cloudy	18°C Sunny	8°C Cloudy	10°C 30% Chance of showers
Tonight	**Night**	**Night**	**Night**	**Night**	**Night**	
1°C Partly cloudy	0°C Cloudy	2°C Cloudy	6°C A mix of sun and cloud	2°C A mix of sun and cloud	2°C A mix of sun and cloud	

Inuvik seven-day forecast:

Sat 24 May	Sun 25 May	Mon 26 May	Tue 27 May	Wed 28 May	Thu 29 May	Fri 30 May
7°C Mainly cloudy	6°C 30% Periods of drizzle	7°C Cloudy	6°C Cloudy	17°C Sunny	12°C Cloudy	10°C 30% Chance of showers
Tonight	**Night**	**Night**	**Night**	**Night**	**Night**	
2°C Clearing	0°C Cloudy	4°C Cloudy	4°C A mix of sun and cloud	2°C A mix of sun and cloud	3°C 30% Chance of showers	

Aklavik seven-day forecast:

Sat **24 May**	**Sun** **25 May**	**Mon** **26 May**	**Tue** **27 May**	**Wed** **28 May**	**Thu** **29 May**	**Fri** **30 May**
 **8°C** A mix of sun and cloud	 **5°C** 30% Periods of drizzle	 **6°C** Cloudy	 **6°C** Cloudy	 **12°C** Sunny	 **6°C** Cloudy	 **7°C** 30% Chance of showers
Tonight	**Night**	**Night**	**Night**	**Night**	**Night**	
 **0°C** A mix of sun and cloud	 **0°C** A mix of sun and cloud	 **2°C** Cloudy	 **3°C** Cloudy	 **0°C** Cloudy	 **1°C** Cloudy	

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

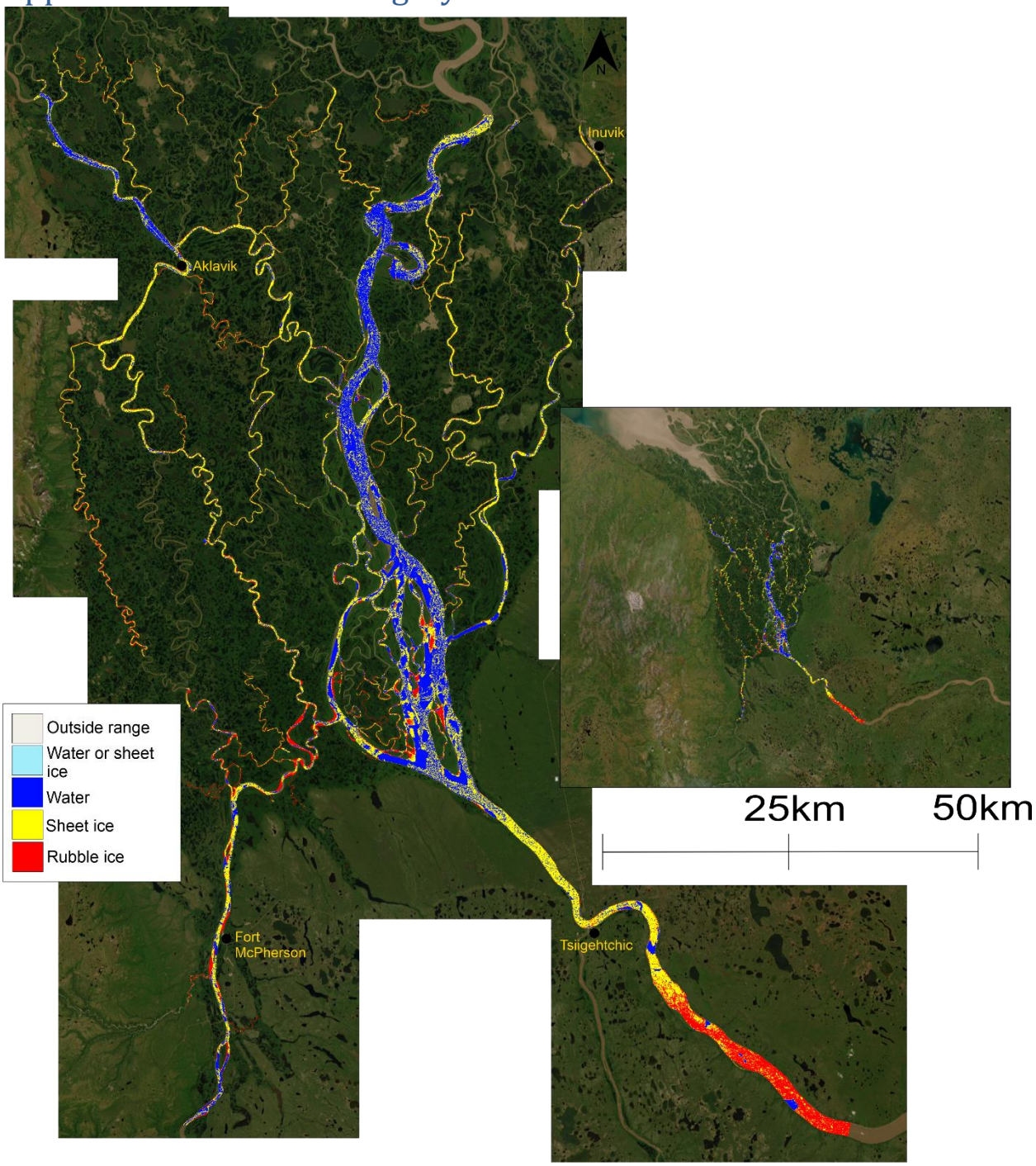
chances of ice jams. If an ice jam occurs, the location of the ice jam is also very important. Each river reach has different locations that are prone to ice jams. The location of the ice jam can be an important factor as to whether or not a community floods. Furthermore, ice will jam and then move again 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

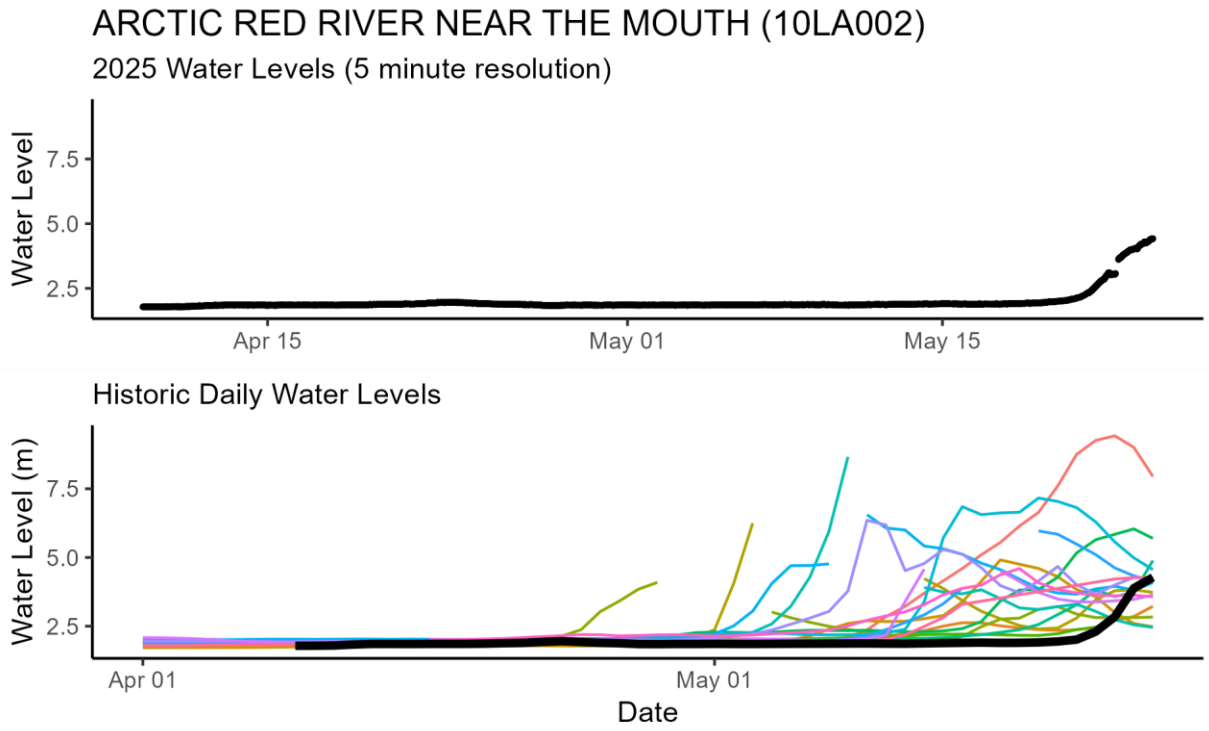


River ice classification imagery from 2025-05-24 9:23 AM MDT

Above – Classified river ice image of the Mackenzie River and Peel River. This image shows that the ice front on the Mackenzie River is upstream of Tsiigehtchic, and open water sections in the delta near the East Channel confluence. There are open water sections on the Peel River near Fort McPherson. Blue areas downstream of the East Channel Confluence are misclassified and the ice remains relatively intact, with some small open water sections. The image was acquired this morning at 9:23 MDT and is courtesy of the federal government's Government Operations Centre. The river ice classification was completed using the IceBC algorithm.

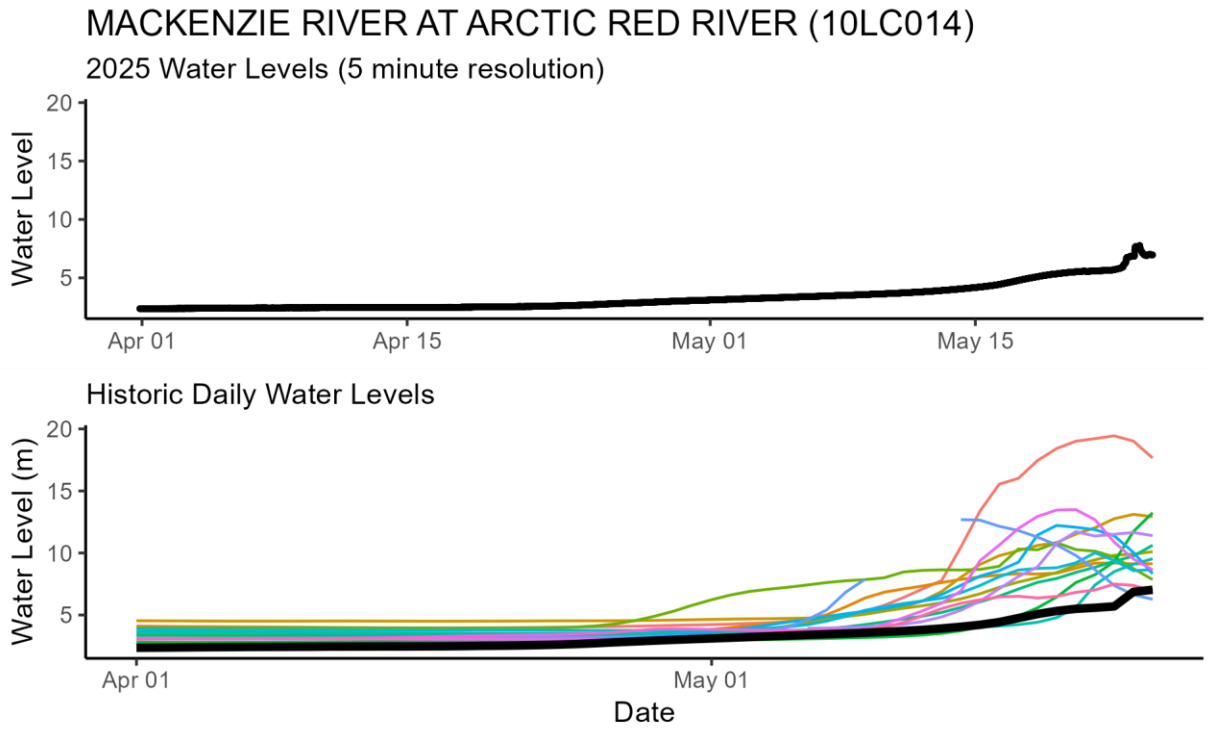
Appendix B: High resolution and historic water level plots

Arctic Red River near the mouth [10LA002]



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 Arctic Red River [10LC014]



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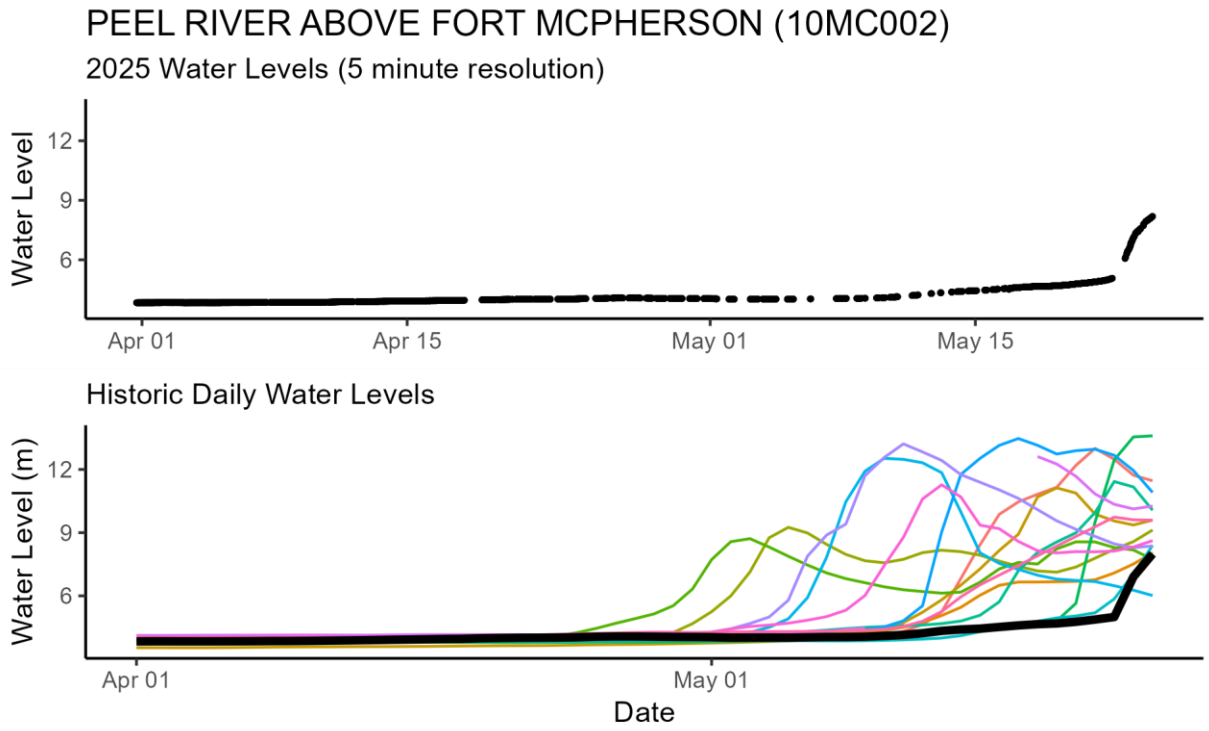
Peel River above Fort McPherson [10MC002]



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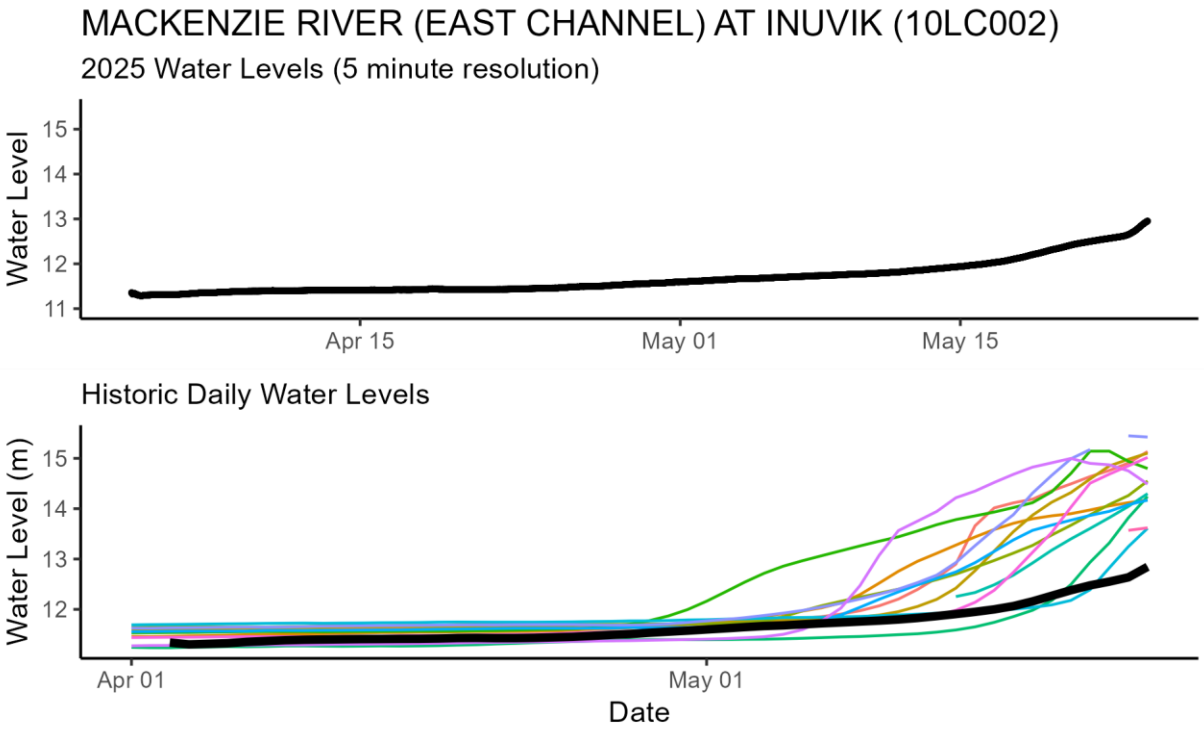
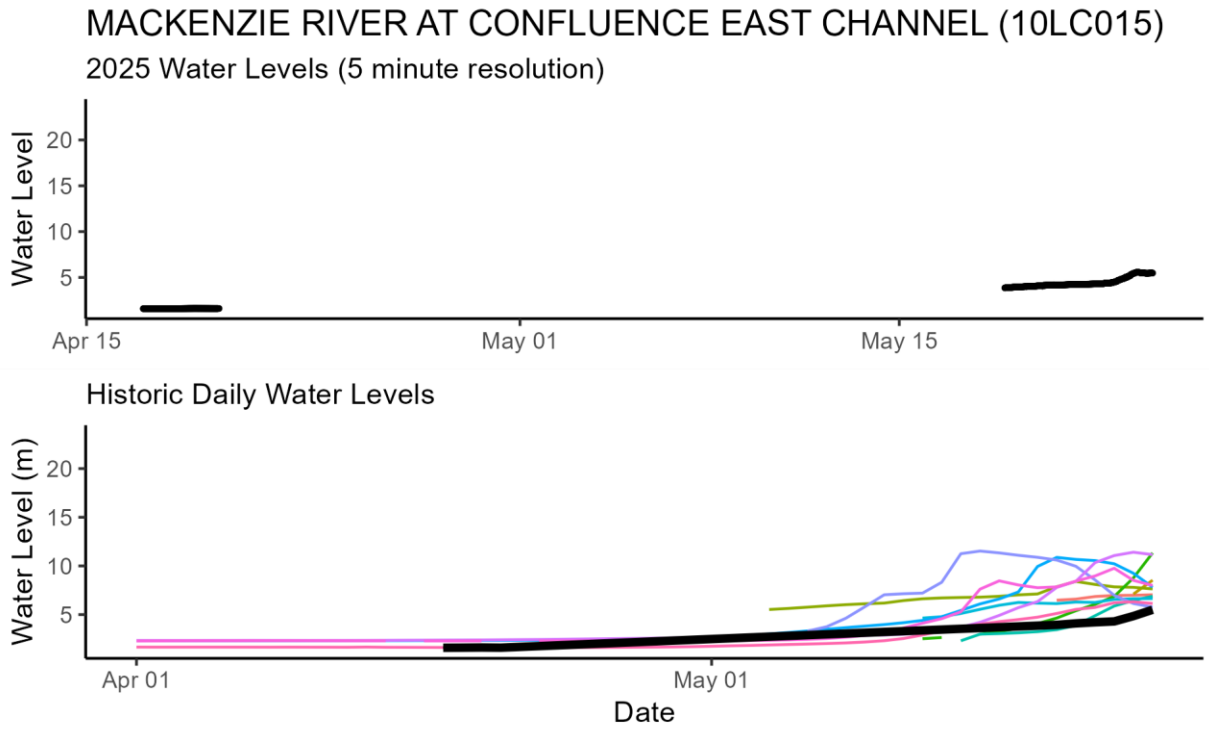
Mackenzie River (East Channel) at Inuvik [10LC002]



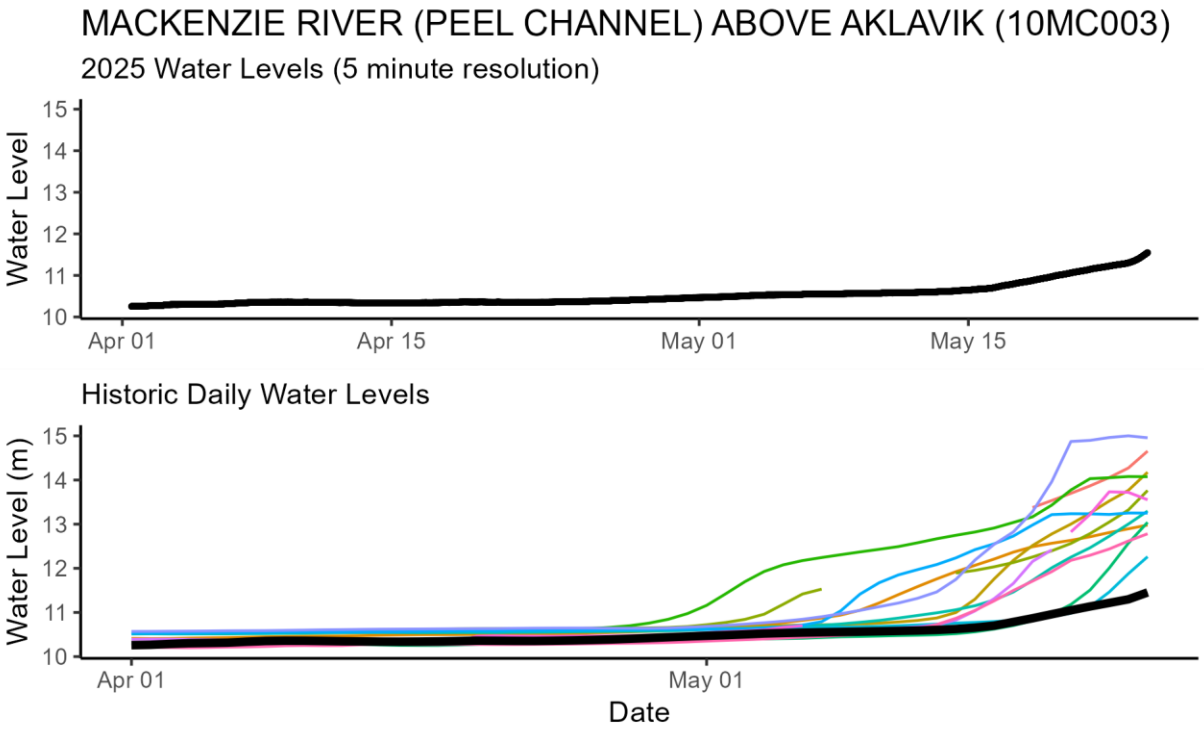
Above - The upper graph in the figure presents real time water level data at 5-minute resolution. The lower graph shows daily average levels relative to the previous 20 years.

Mackenzie River at Confluence East Channel [10LC015]



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 (Peel Channel) above Aklavik [10MC003]



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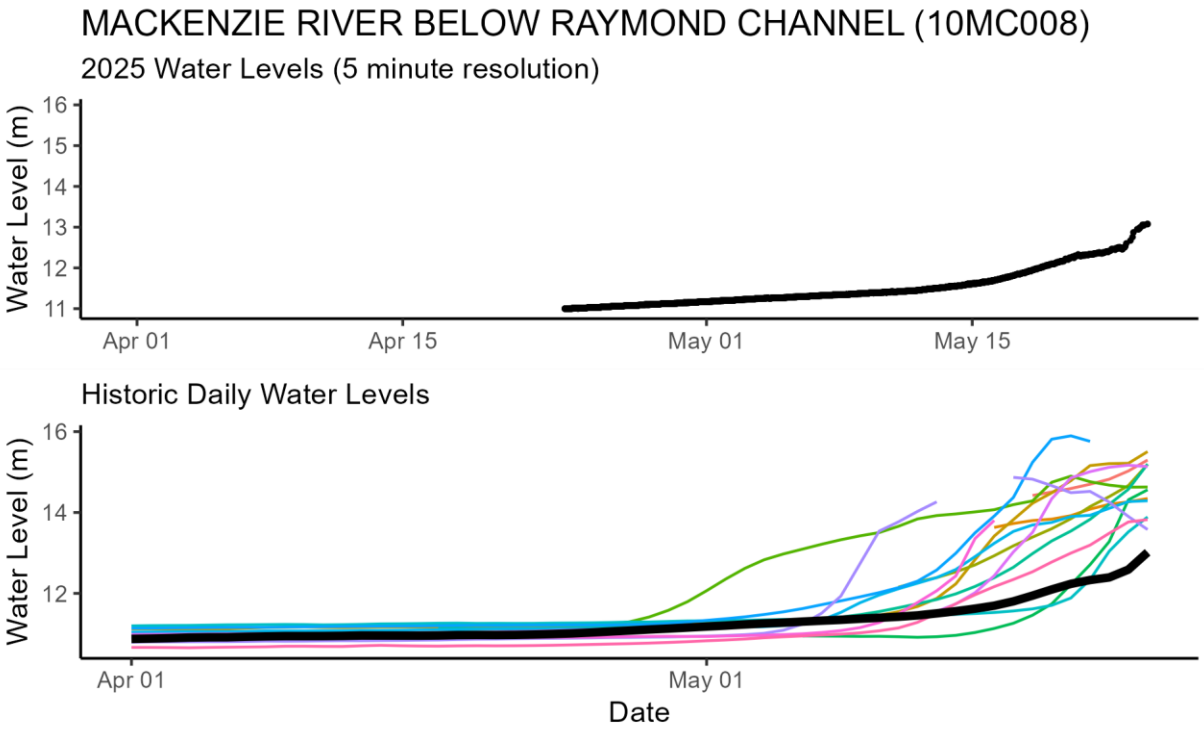
Mackenzie River (Middle Channel) below Raymond Channel [10MC008]



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