Government of
Northwest Territories

NWT Water Monitoring Bulletin – May 3, 2025 at 14:00

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:

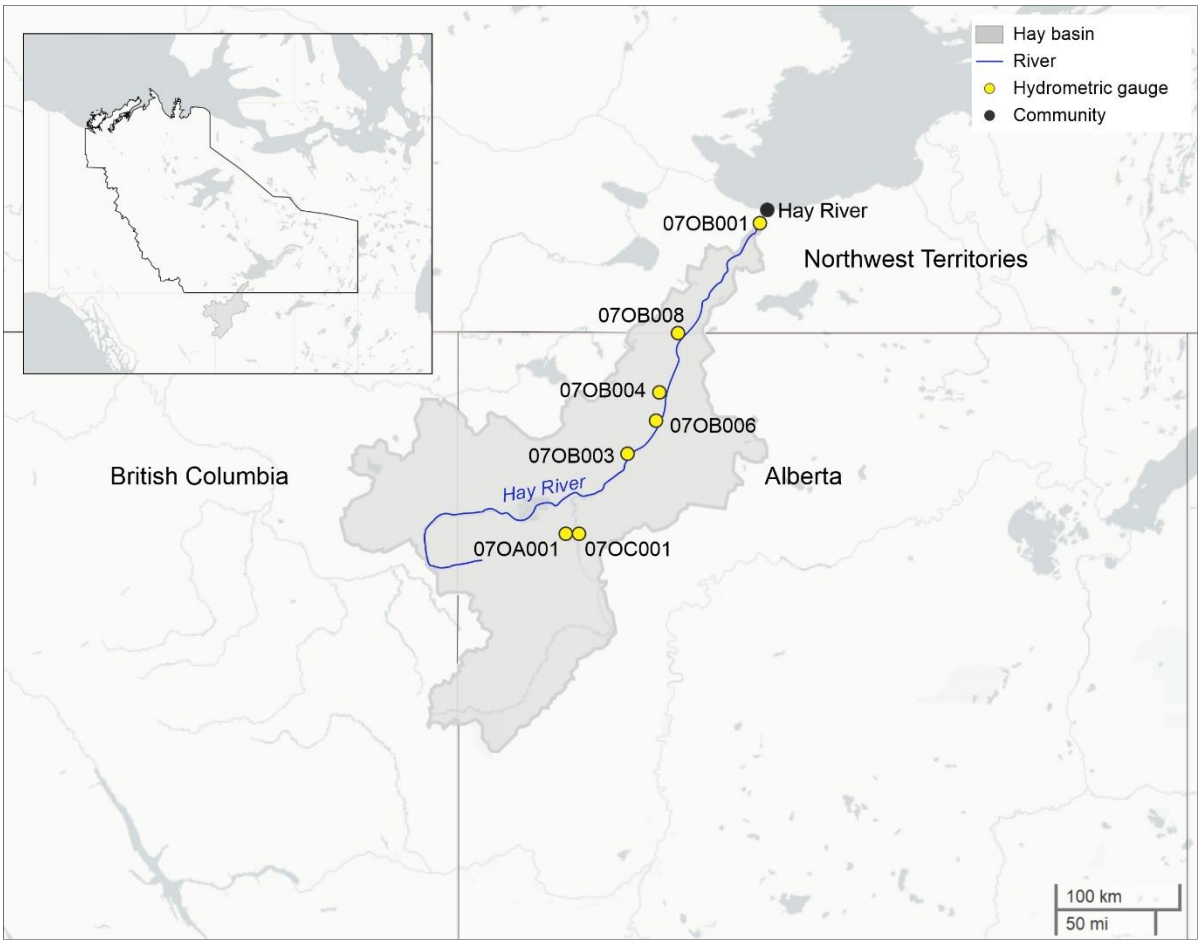
- Break-up has been progressing along the Hay River;
    - The river is mostly free of ice, with very small amounts of ice remaining upstream of Hay River.
    - Rubble ice above the Pine Point bridge pushed downstream last night.
        - This ice jam had been holding in place since this past Tuesday.
    - The water level measured near the Town of Hay River has dropped by more than 2 m over the last 24 hours, and is currently at 2.9 m.
        - The peak water level of the flood event in 2022 was 12.5 m.
        - The peak water level during break-up last year (2024) was 2.4 m.
- Break-up along the Liard River is progressing;
    - The 2025 break-up flood risk has passed for Fort Liard.
    - Water level measured near the town of Fort Liard has dropped by about 2 m over the last 72 hours.
        - Water level peaked earlier this week on Tuesday, when the ice front pushed downstream past Fort Liard.
    - The ice front on the Liard River is currently located between Nahanni Butte and the mouth (where it meets the Mackenzie River).
    - With warmer than average temperatures forecasted for this weekend, continued ice movement and break-up is anticipated on the Liard River.
- Break-up along the Mackenzie River is progressing;
    - Large open water sections are continuing to grow on the Mackenzie River between Fort Providence and upstream of Fort Simpson.
    - Open water sections are developing on the Mackenzie River near Fort Simpson.
    - Relatively small fluctuations in water level have been observed in response to ice movement.

- With warmer than average temperatures forecasted for this weekend, continued ice movement and break-up is anticipated on the Mackenzie River.

Hay River

Current Status:

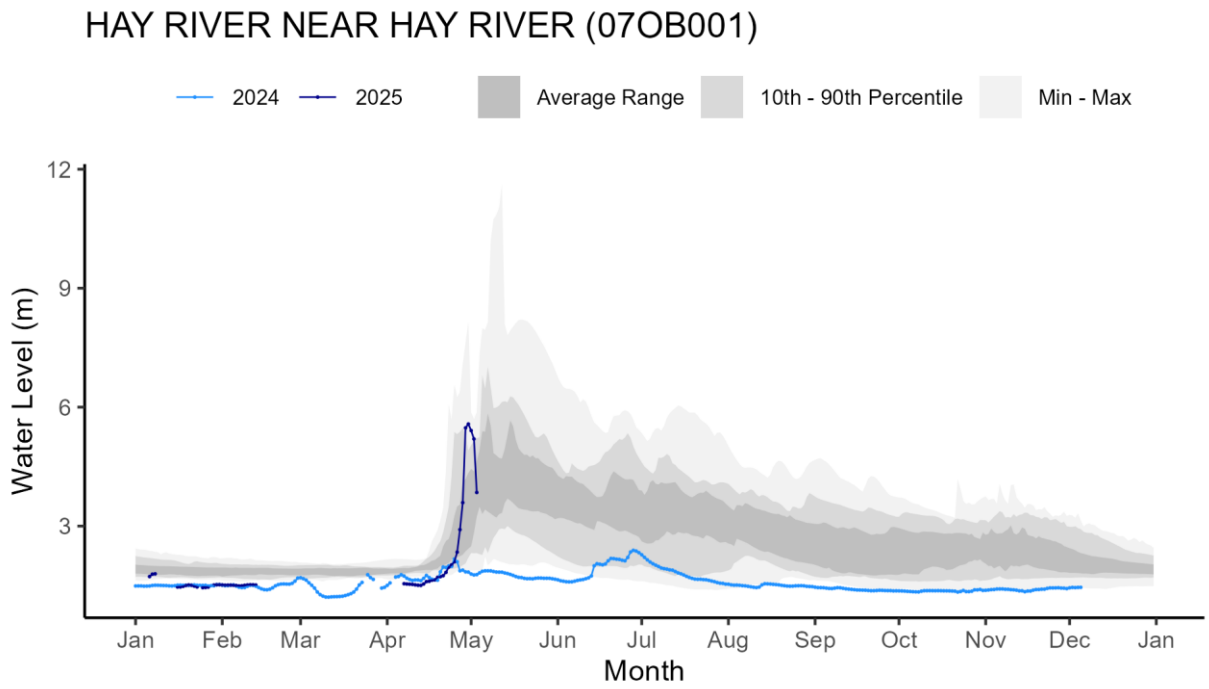
- The Hay River is mostly free of ice, with very small amounts of ice remaining upstream of the Town of Hay River.
    - Rubble ice above the Pine Point bridge pushed downstream last night (this ice jam had been holding in place since this past Tuesday).
- The water level measured near the Town of Hay River has dropped by more than 2 m over the last 24 hours, and is currently at 2.9 m.
    - The peak water level of the flood event in 2022 was 12.5 m.
    - The peak water level during break-up last year (2024) was 2.4 m.
- Temperatures for the Town of Hay River are expected to be average to well above average for the weekend and the upcoming week.
- Refer to the [Town of Hay River website] for the most up-to-date information, as well as webcam images of current conditions.



Above – Map of hydrometric stations in the Hay River basin. The station numbers are referenced in the water level plots below.

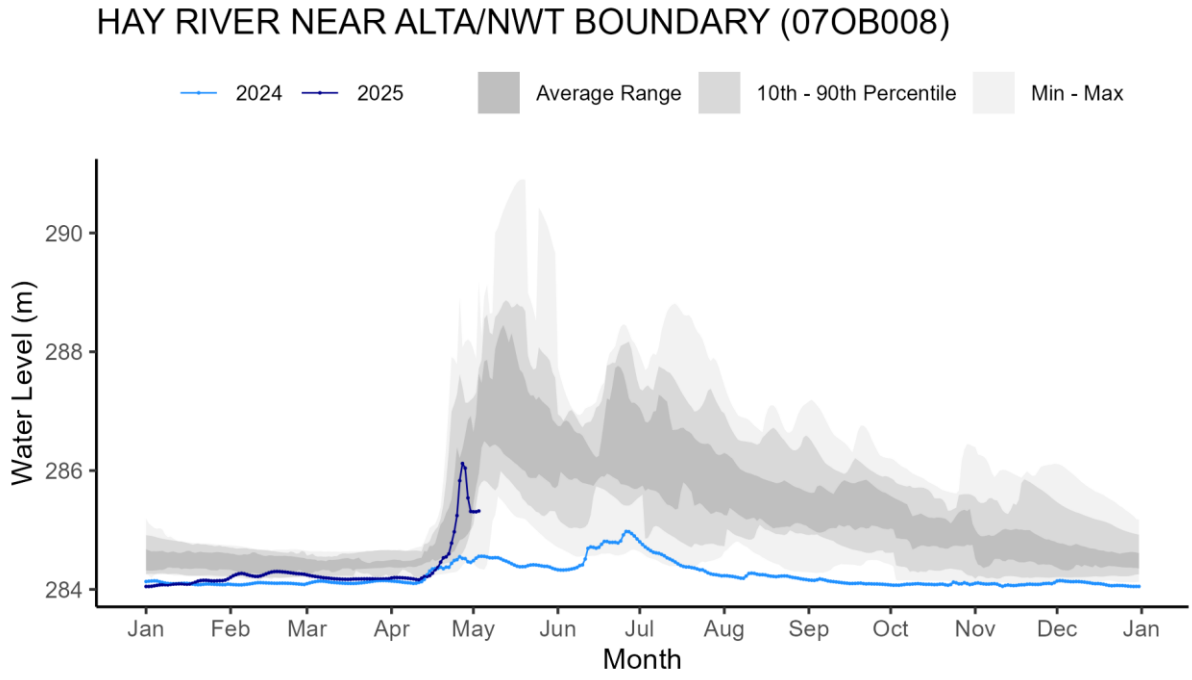
Hydrometric Data:

Hay River near Hay River [07OB001]:



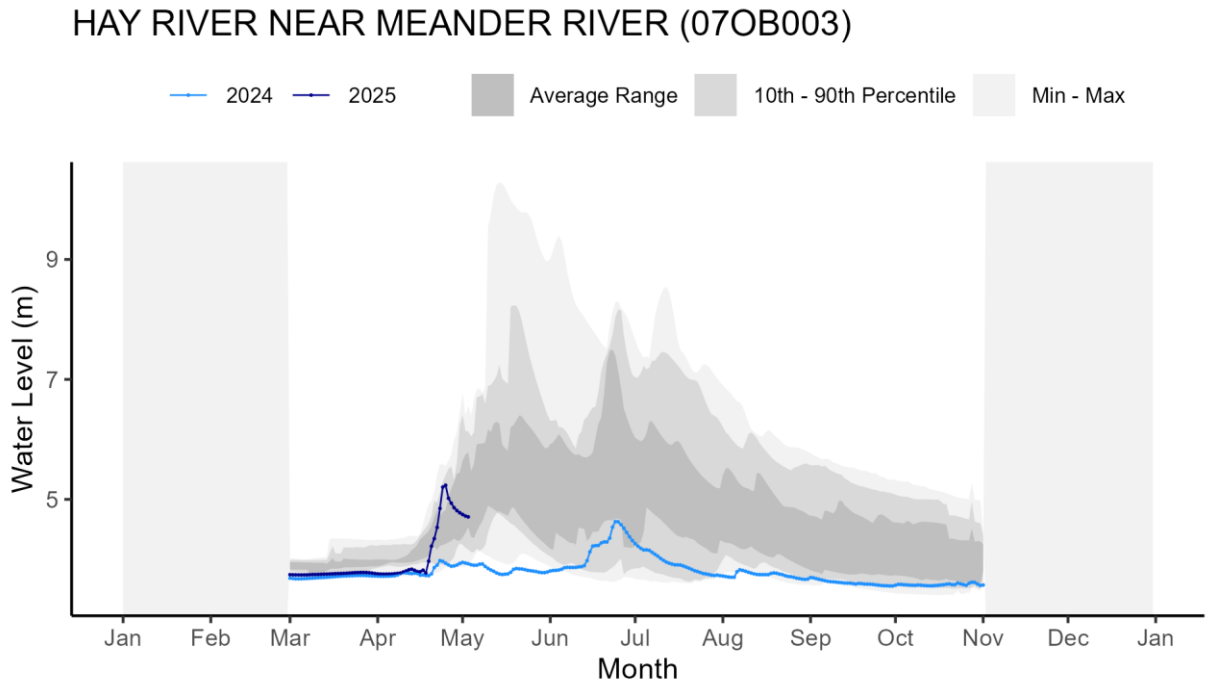
Above - Water level data for Hay River near Hay River. Daily average levels for the previous year also are shown here.

Hay River near Alberta/NWT Boundary [07OB008]:



Above - Water level data for Hay River near Alberta/NWT Boundary. Daily average levels for the previous year also are shown here.

Hay River Near Meander River [07OB003]:



Above - Water level data for Hay River near Meander River. Daily average levels for the previous year also are shown here.

Gauge photos:

Hay River near the border [07OB008]:

Above – Hay River near the border hydrometric gauge photo on May 3 at 12:00. Photo courtesy of Water Survey of Canada and GNWT.

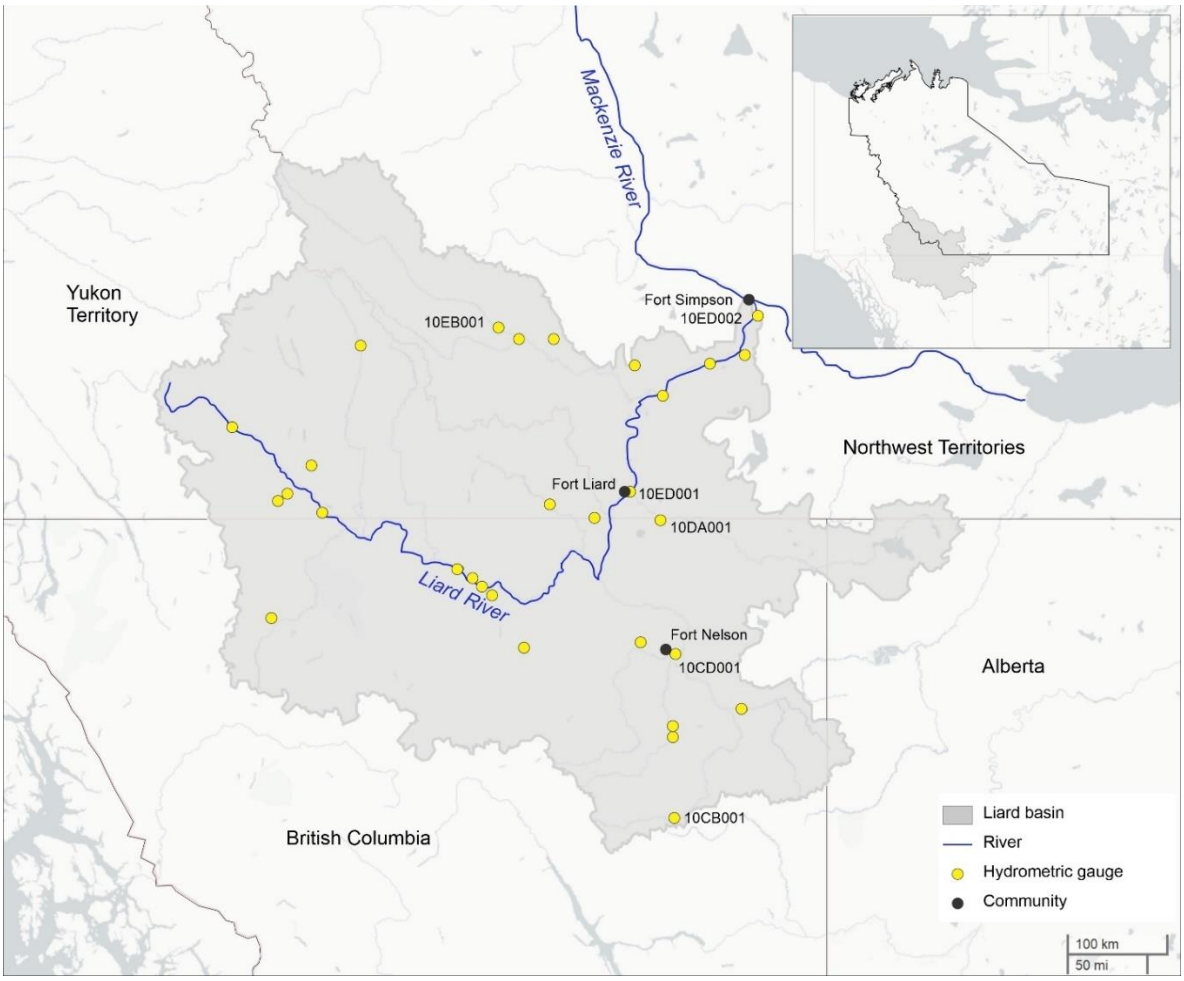
Hay River Near Hay River [07OB001]:

Above - Hay River Near Hay River hydrometric gauge photo from May 3 at 13:00. Photo courtesy of Water Survey of Canada and GNWT.

Liard River

Current Status:

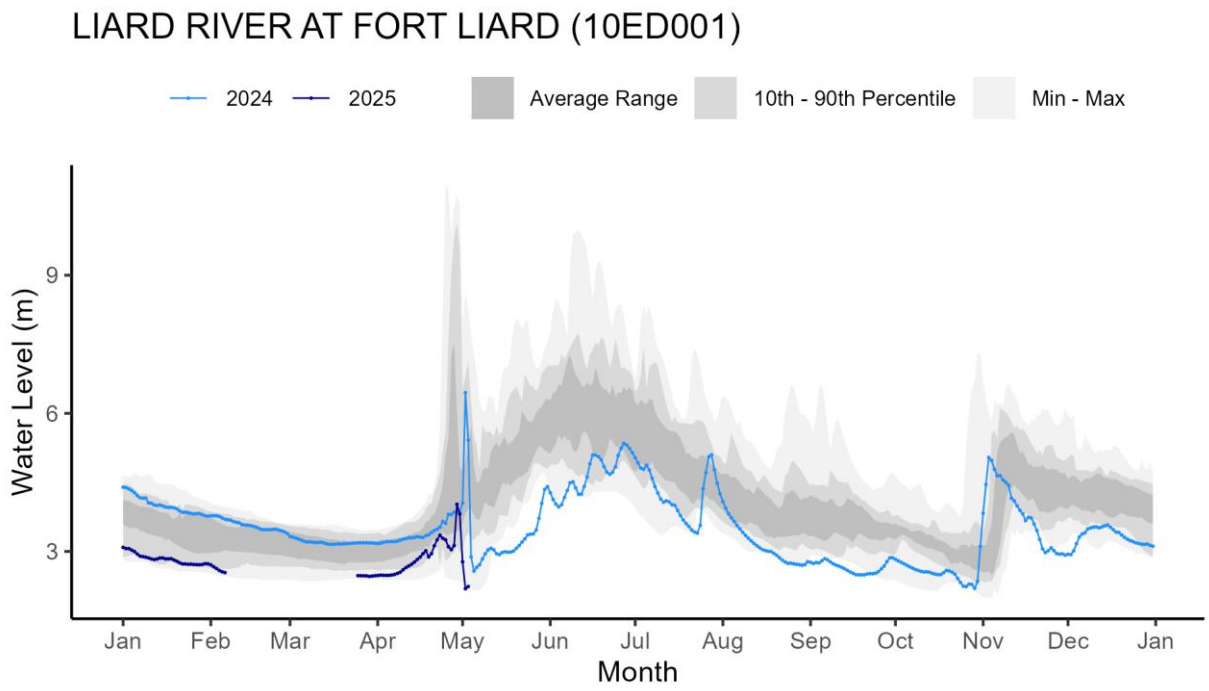
- The 2025 break-up flood risk has passed for Fort Liard.
    - The ice front on the Liard River is currently located between Nahanni Butte and the mouth (where it meets the Mackenzie River).
- Water level measured near the town of Fort Liard has dropped by about 2 m over the last 72 hours.
    - Water level peaked earlier this week on Tuesday, when the ice front pushed downstream past Fort Liard.
- The water level at the mouth of the Liard River (where it meets the Mackenzie River) has been rising underneath the ice by about 80 cm in the past 24 hours.
    - River ice remains mostly intact on the Liard River near the mouth.
- Temperatures for the lower Liard basin are expected to be average to well above average for the weekend and the upcoming week.
    - With warmer than average temperatures forecasted for this weekend, continued ice movement and break-up is anticipated on the Liard River.



Above – Map of hydrometric stations in the Liard River basin. The station numbers are referenced in the water level plots below.

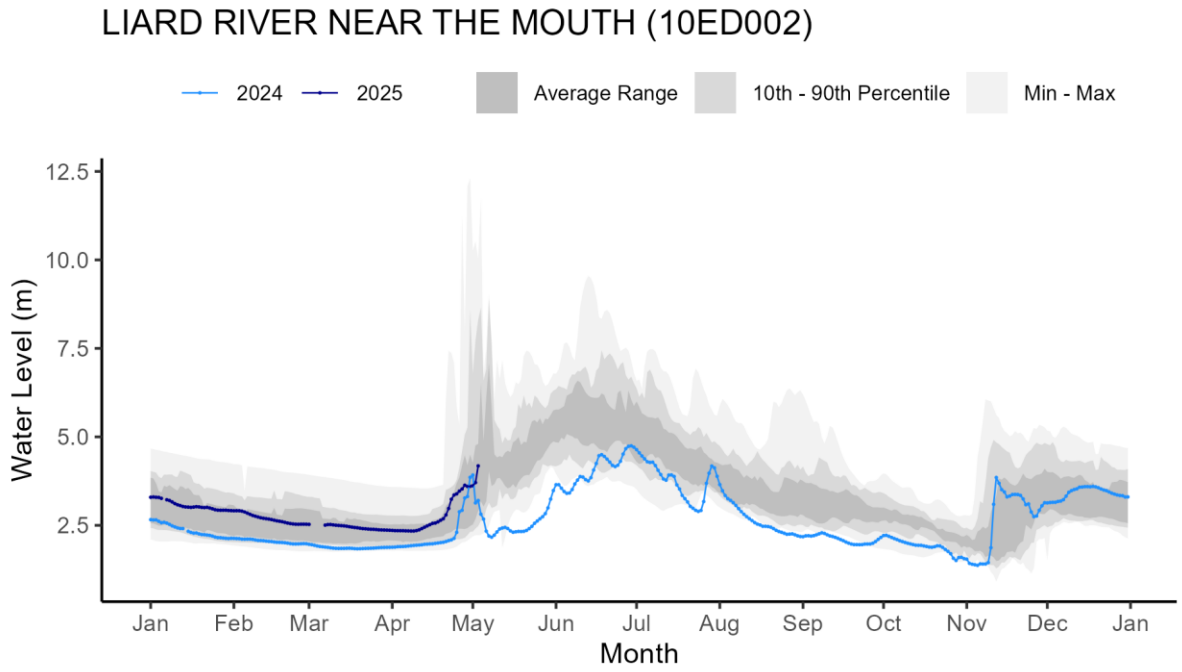
Hydrometric Data:

Liard River at Fort Liard [10ED001]:



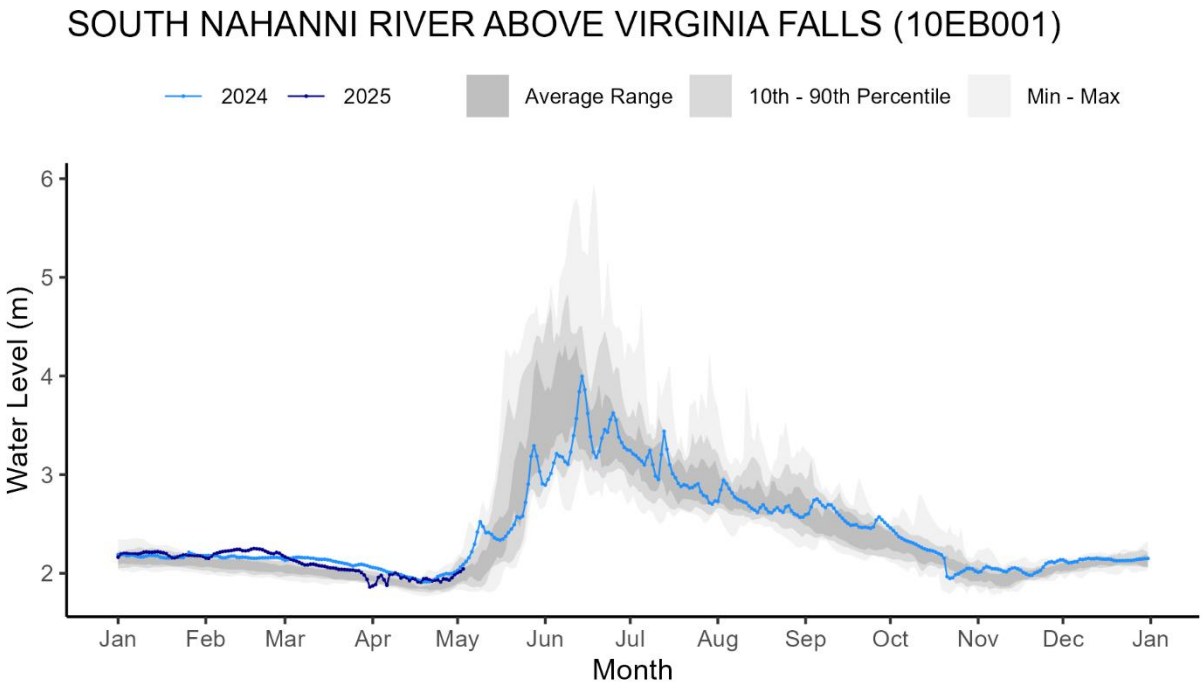
Above - Water level data for Liard River at Fort Liard. Daily average levels for the previous year also are shown here.

Liard River near the mouth [10ED002]:



Above - Water level data for Liard River near the mouth. Daily average levels for the previous year also are shown here.

South Nahanni River Above Virginia Falls [10EB001]:



Above - Water level data for South Nahanni River above Virginia Falls. Daily average levels for the previous year also are shown here.

Gauge photos:

Liard River at Fort Liard [10ED001]:

Above – Liard River at Fort Liard hydrometric gauge photo from May 3 at 12:00. Photo courtesy of Water Survey of Canada and GNWT.

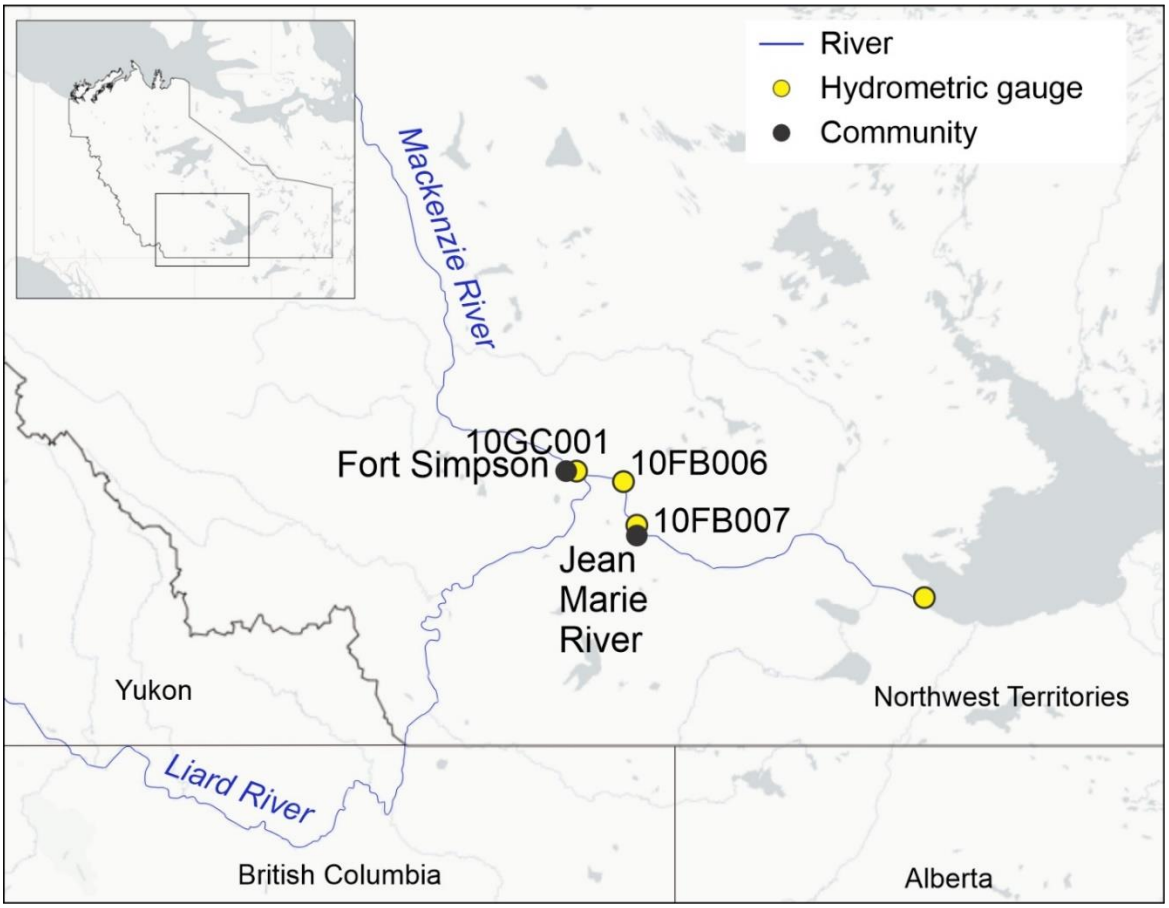
Liard River near the mouth [10ED002]:

Above - Liard River near the mouth hydrometric gauge photo from May 3 at 13:00. Photo courtesy of Water Survey of Canada and GNWT.

Mackenzie River

Current Status:

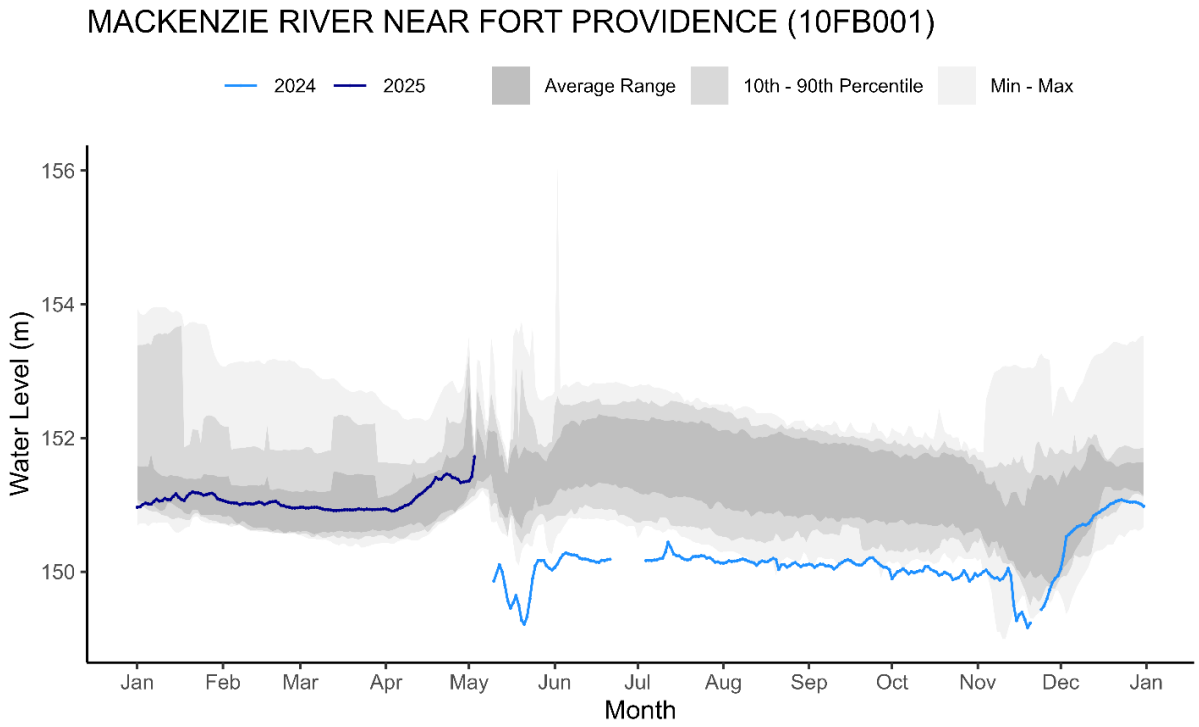
- Ice has been continuing to shift on the Mackenzie River between Fort Providence and upstream of Fort Simpson.
    - Large open water sections are continuing to grow, and ice jams have been forming and releasing on the Mackenzie River between Fort Providence and upstream of Fort Simpson.
    - Ice remains mostly intact at Fort Simpson, with some small open water sections developing.
- The water level measured at Strong Point (gauge 10FB006) decreased earlier this week by over 1 m.
    - This suggests that an ice jam just upstream (above) of the gauge is holding in place.
- Relatively small fluctuations in water level have been observed in response to ice movement.
- Temperatures for the town of Fort Simpson are expected to be variable for the weekend and the upcoming week, ranging from -4C to 16C.
    - With warmer than average temperatures forecasted for today, continued ice movement and break-up is anticipated on the Mackenzie River.



Above – Map of hydrometric stations along the Mackenzie River near Fort Simpson and Jean Marie River. The station numbers are referenced in the water level plots below.

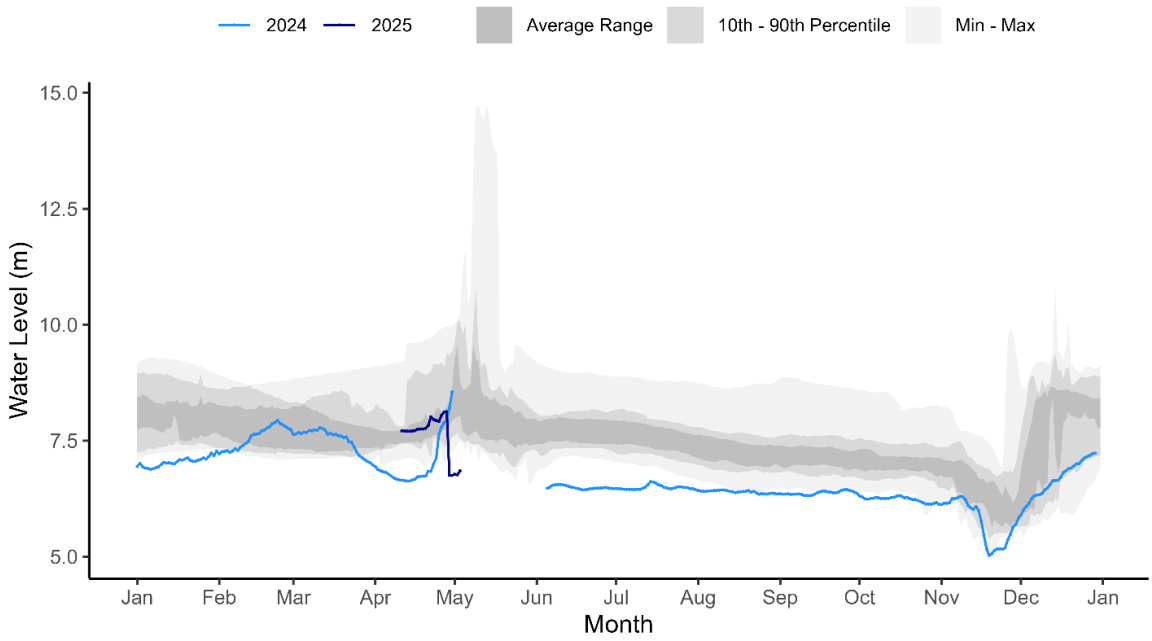
Hydrometric Data:

Mackenzie River near Fort Providence [10FB001]:



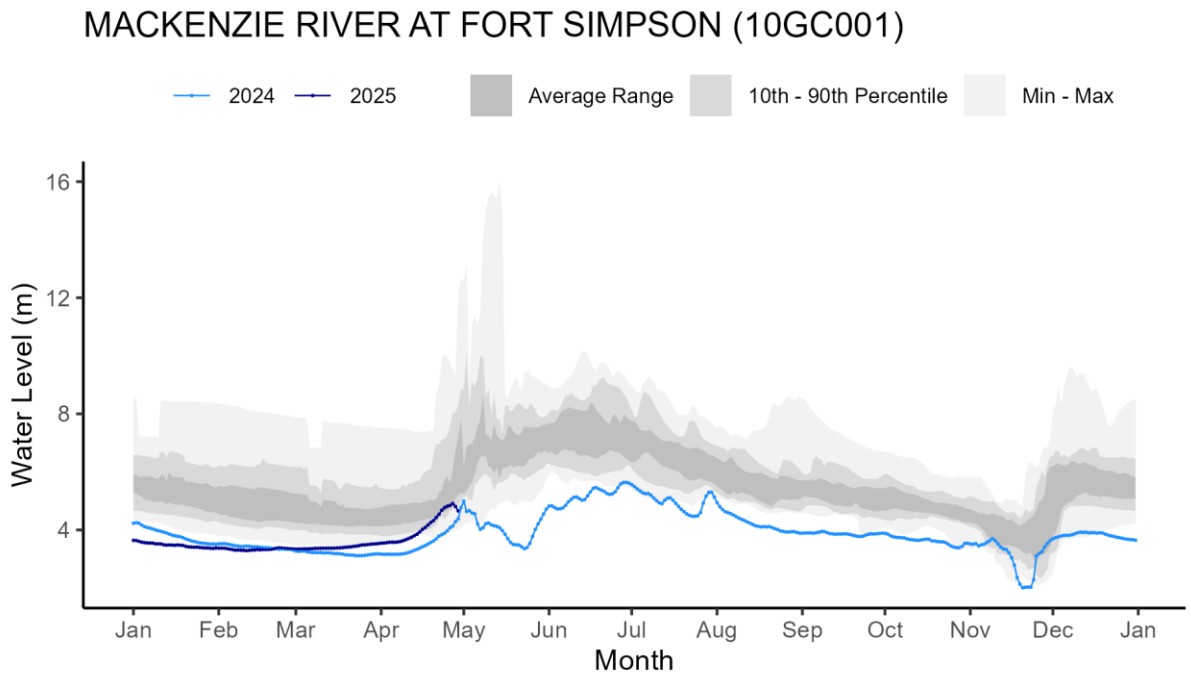
Above – Water level data for the Mackenzie River at Fort Providence. Daily average levels for the previous year are also shown here.

Mackenzie River at Strong Point [10FB006]:



Above – Water level data for the Mackenzie River at Strong Point. Daily average levels for the previous year are also shown here.

Mackenzie River At Fort Simpson [10GC001]:



Above - Water level data for Mackenzie River at Fort Simpson. Daily average levels for the previous year also are shown here. Note: Sensor was damaged by river ice and current data are unavailable.

Gauge photos:

Mackenzie River at Strong Point [10FB006]:

Above - Mackenzie River at Strong Point hydrometric gauge photo from May 3 at 12:00. Photo courtesy of Water Survey of Canada and GNWT.

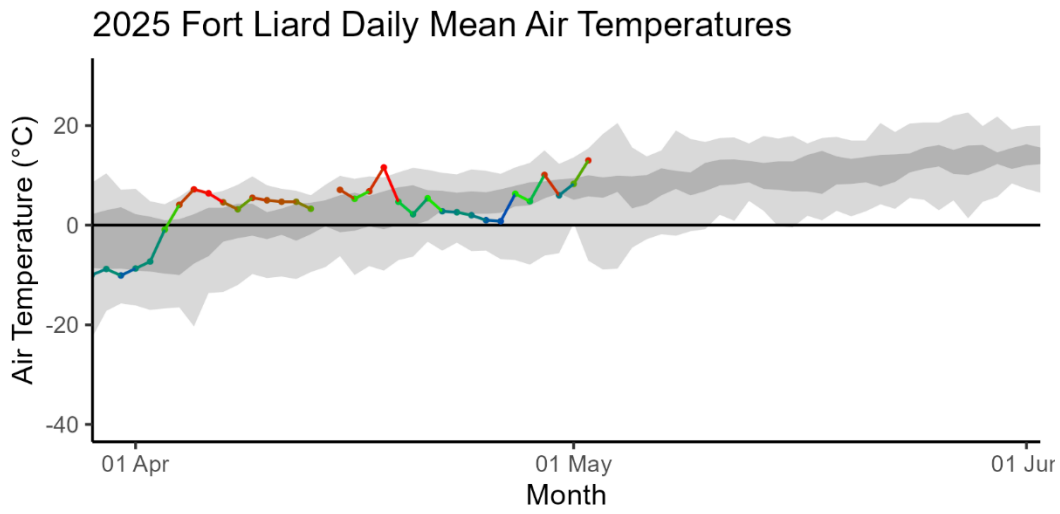
Mackenzie River at Fort Simpson [10GC001]:

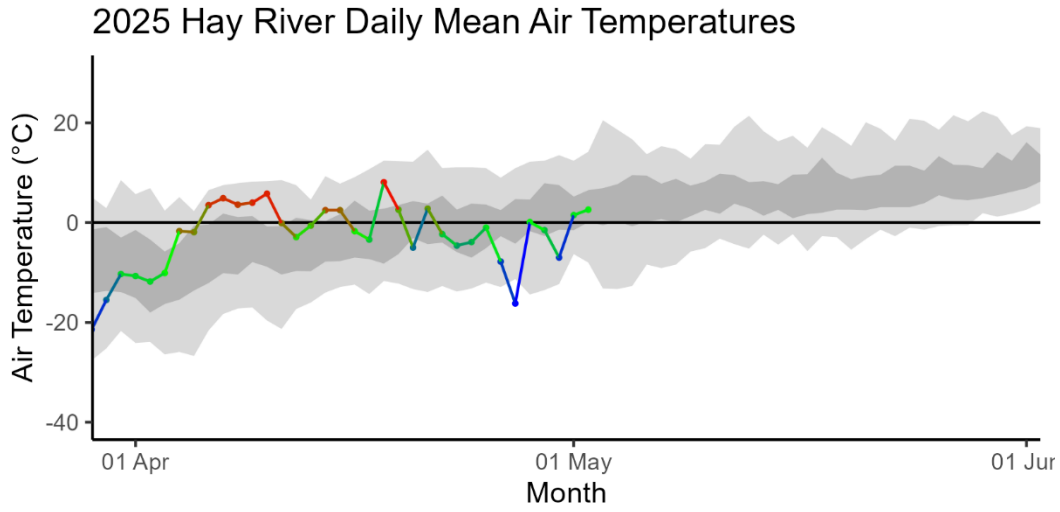
Above – Mackenzie River at Fort Simpson hydrometric gauge photo from May 3 at 11:00. Photo provided by GNWT.

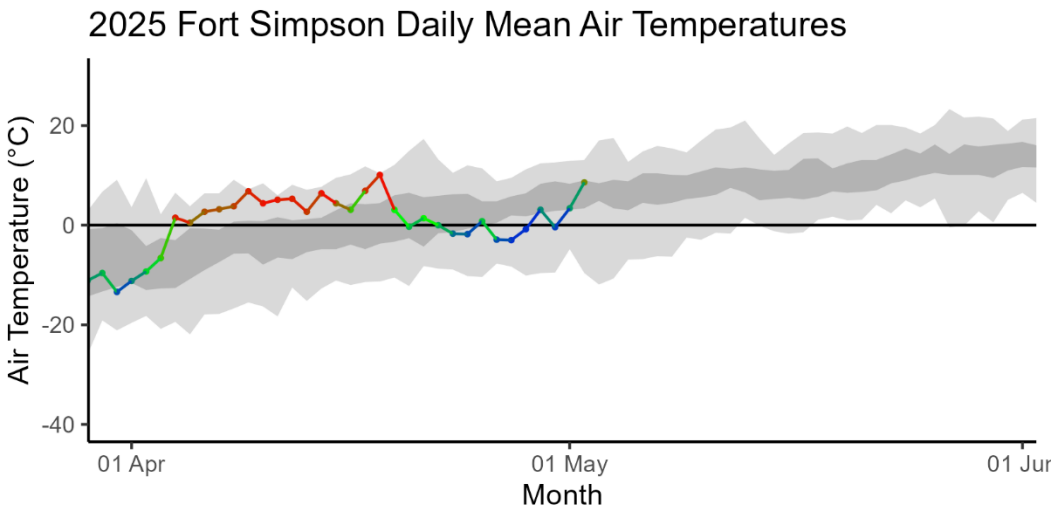
Weather Data:

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.

Above average to average temperatures are expected this weekend in Jean Marie River and Fort Simpson, with 5-10 mm of rain and/or snow in the forecast.






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

Fort Liard seven-day weather forecast:

Sat 3 May	Sun 4 May	Mon 5 May	Tue 6 May	Wed 7 May	Thu 8 May	Fri 9 May
16°C A mix of sun and cloud	14°C 30% Chance of showers	14°C A mix of sun and cloud	20°C A mix of sun and cloud	14°C 70% Chance of showers	13°C A mix of sun and cloud	15°C A mix of sun and cloud
Tonight	**Night**	**Night**	**Night**	**Night**	**Night**	
6°C A few clouds	-1°C Clear	3°C Cloudy periods	6°C 60% Chance of showers	0°C Cloudy periods	-1°C Cloudy periods	

Hay River seven-day weather forecast:

Sat 3 May	Sun 4 May	Mon 5 May	Tue 6 May	Wed 7 May	Thu 8 May	Fri 9 May
18°C 30% Chance of showers	9°C 60% Chance of showers	1°C Sunny	13°C Sunny	18°C 40% Chance of showers	8°C Sunny	9°C Sunny
Tonight	**Night**	**Night**	**Night**	**Night**	**Night**	
3°C 30% Chance of showers	-6°C Cloudy periods	-3°C Cloudy periods	9°C Cloudy	3°C Clear	-1°C Clear	

Fort Simpson seven-day weather forecast:

Sat 3 May	Sun 4 May	Mon 5 May	Tue 6 May	Wed 7 May	Thu 8 May	Fri 9 May
16°C 30% Chance of showers	6°C Periods of rain mixed with snow	10°C A mix of sun and cloud	15°C A mix of sun and cloud	8°C Showers	11°C A mix of sun and cloud	14°C A mix of sun and cloud
Tonight	**Night**	**Night**	**Night**	**Night**	**Night**	
2°C 30% Chance of showers	-4°C Cloudy	1°C Cloudy	5°C Periods of rain	-1°C Cloudy periods	-1°C 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

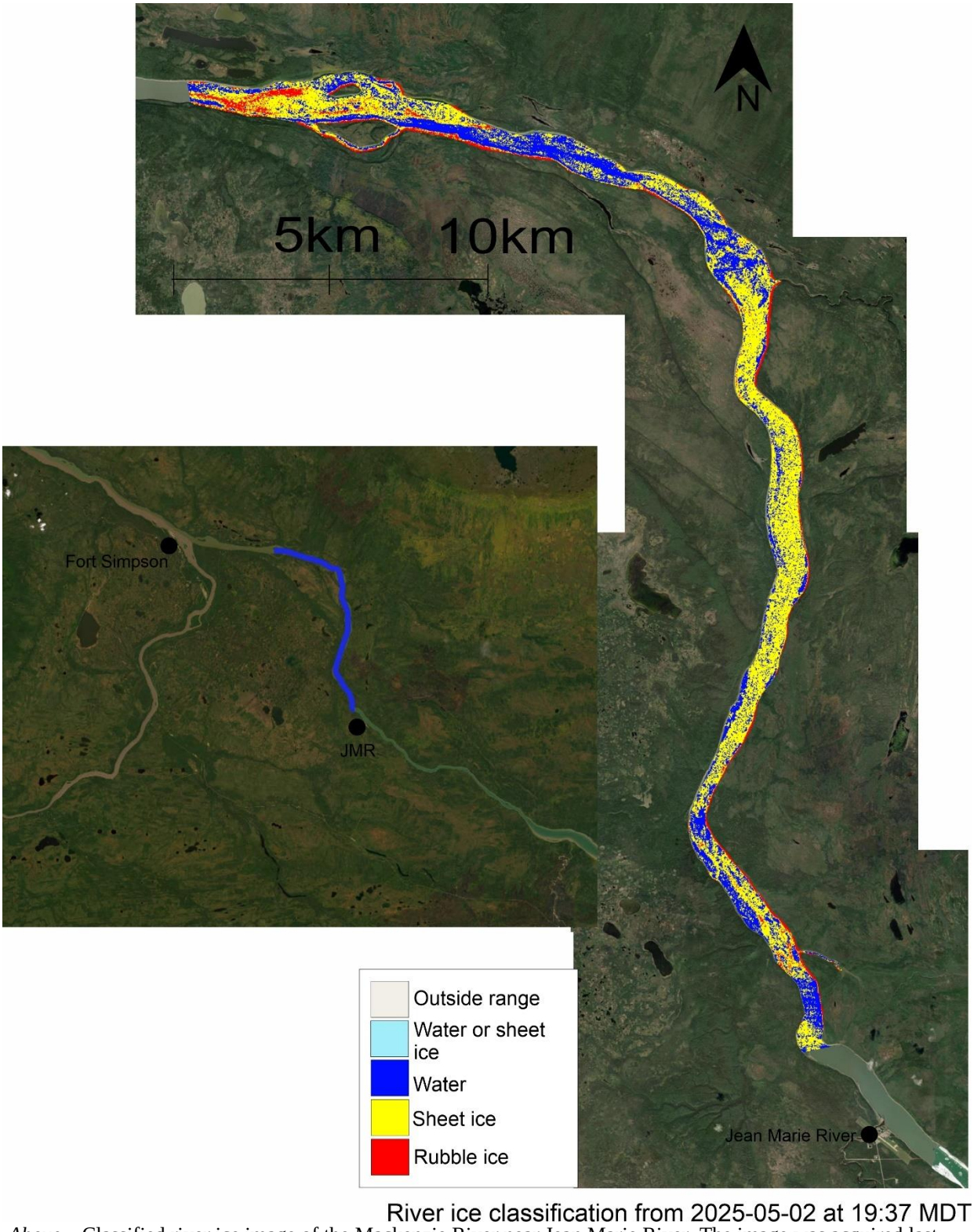
chances of ice jams. If an ice jam occurs, the location of the ice jam is also very important. Each river reach has different locations that are prone to ice jams. The location of the ice jam can be an important factor as to whether or not a community floods. Furthermore, ice will jam and then move again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

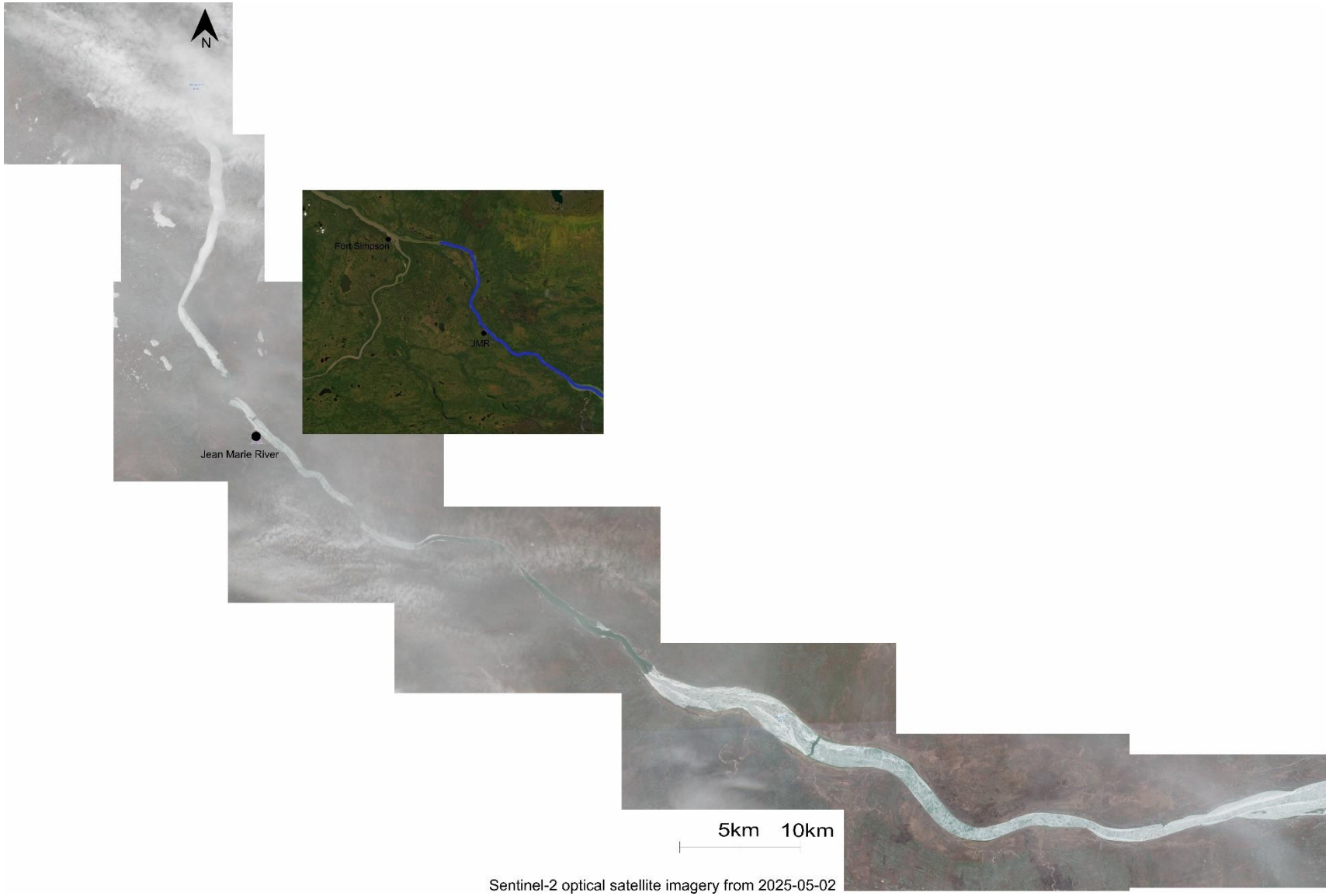
- The figures in this report plot water levels. The values on the y-axis are (in most cases) relative to an arbitrary datum. This means that the values on each gauge can be compared to different years but should not be used to compare water levels from one location to the next.

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.

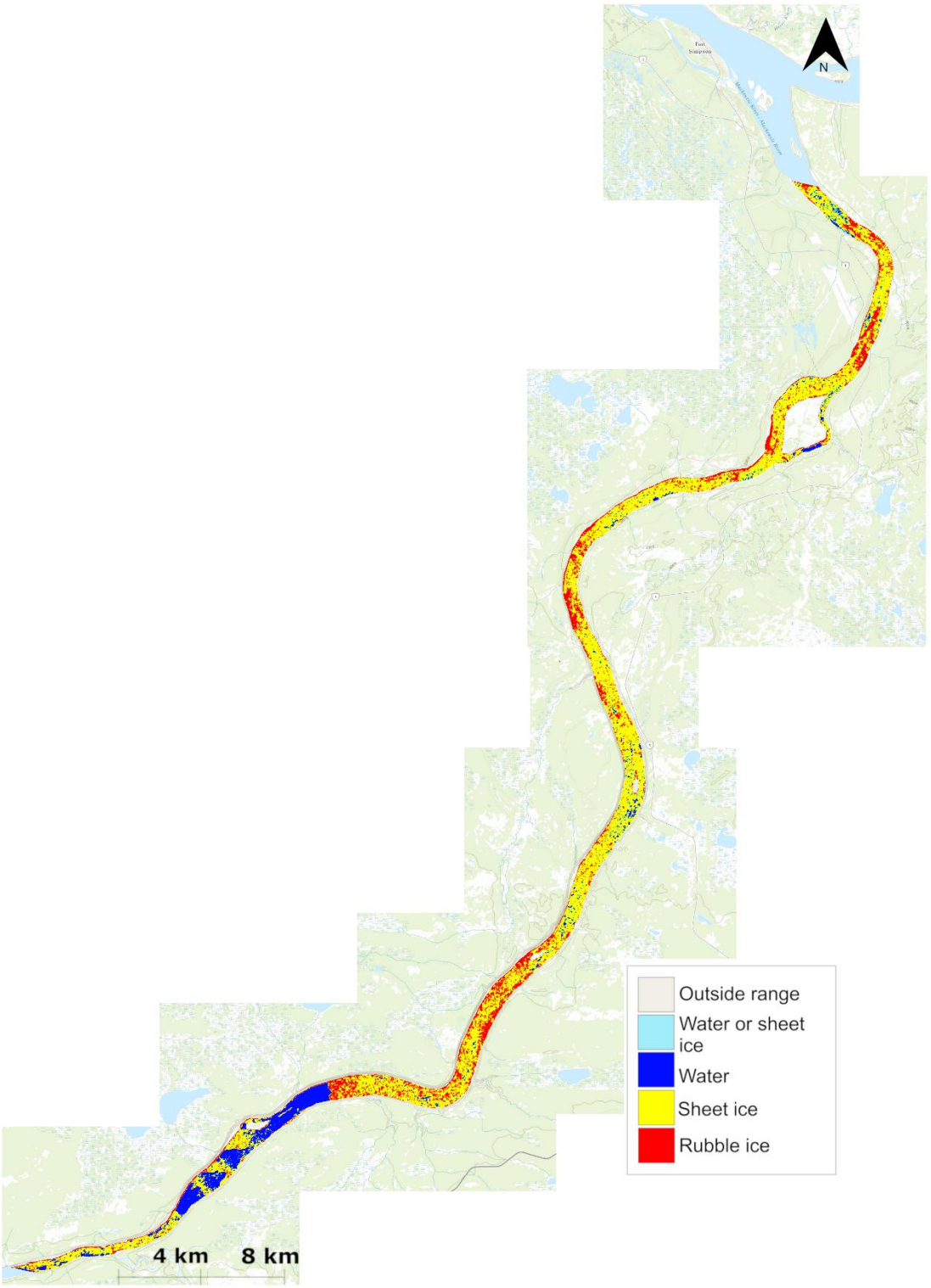
Appendix A: River Ice Imagery



Above – Classified river ice image of the Mackenzie River near Jean Marie River. The image was acquired last night at 19:37 MDT and is courtesy of the federal government's Government Operations Centre. The river ice classification was completed using the IceBC algorithm.



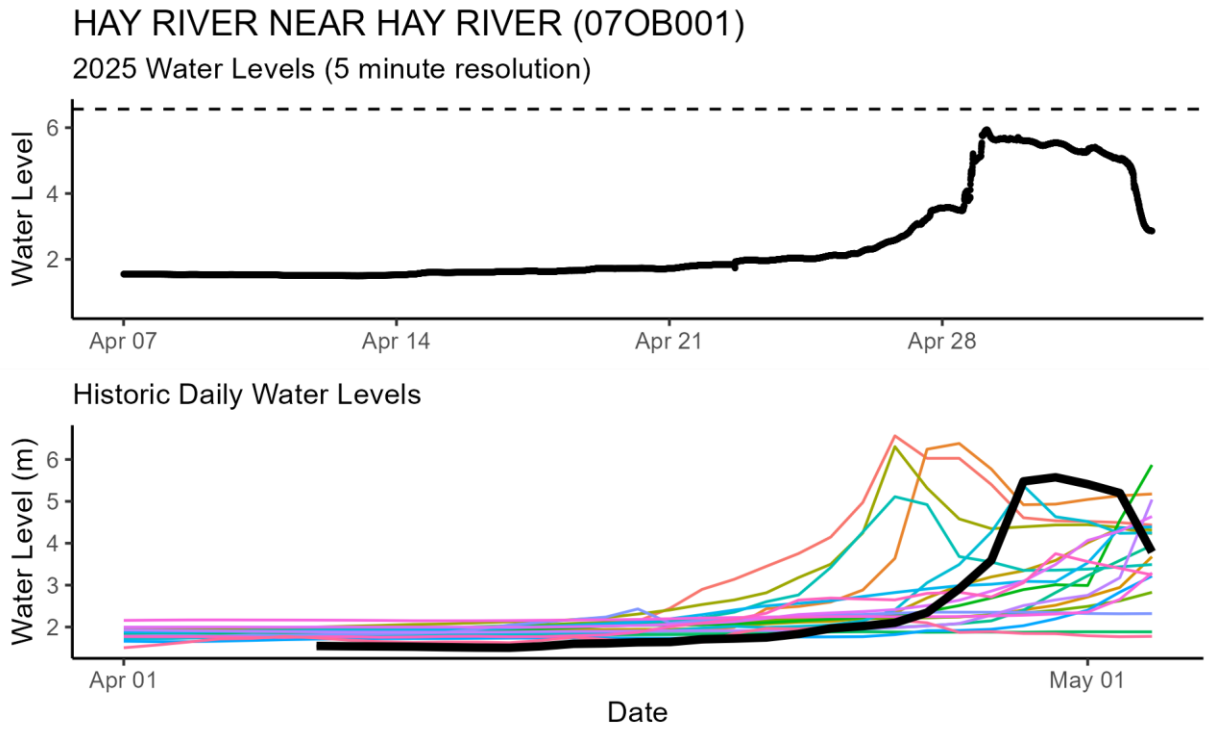
Above – Sentinel-2 optical satellite imagery over the Mackenzie River near Jean Marie River. This image was acquired on 2025-05-02.



Above – Classified river ice image of the Liard River near the mouth (where it meets the Mackenzie River). The image was acquired yesterday morning at 08:36 MDT and is courtesy of the federal government's Government Operations Centre. The river ice classification was completed using the IceBC algorithm.

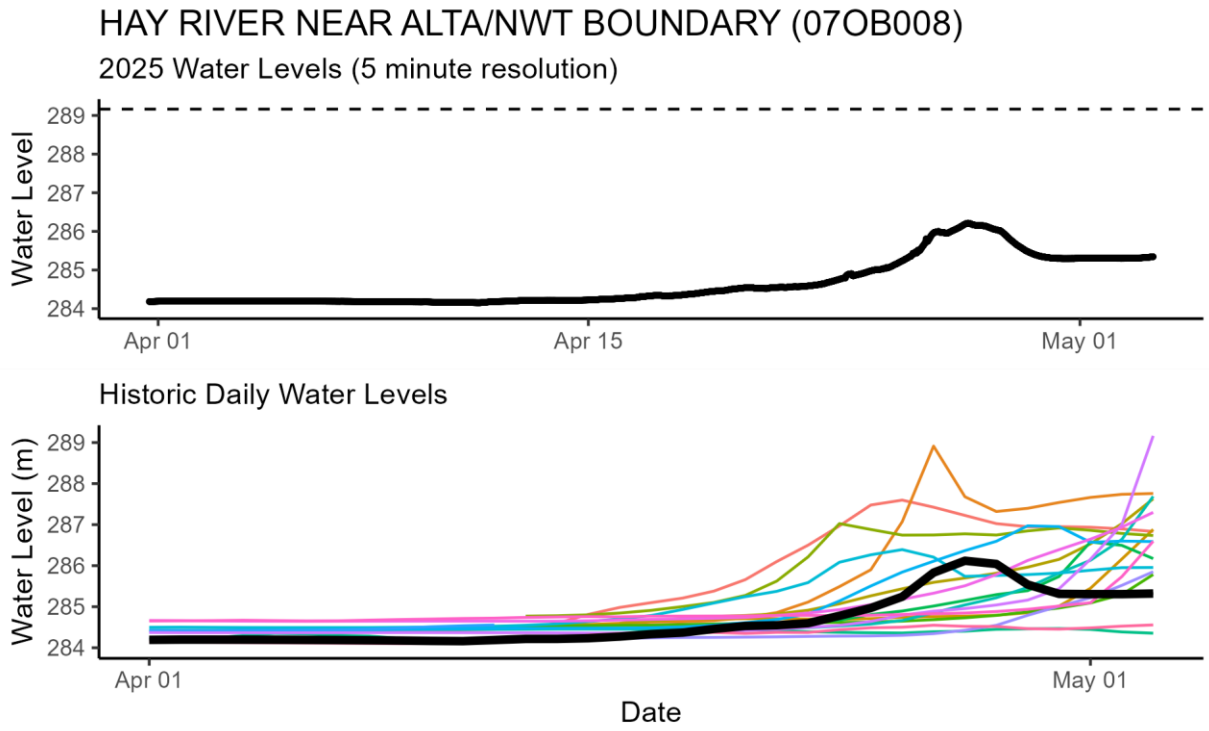
Appendix B: High resolution and historic water level plots

Hay River near Hay River [07OB001]:



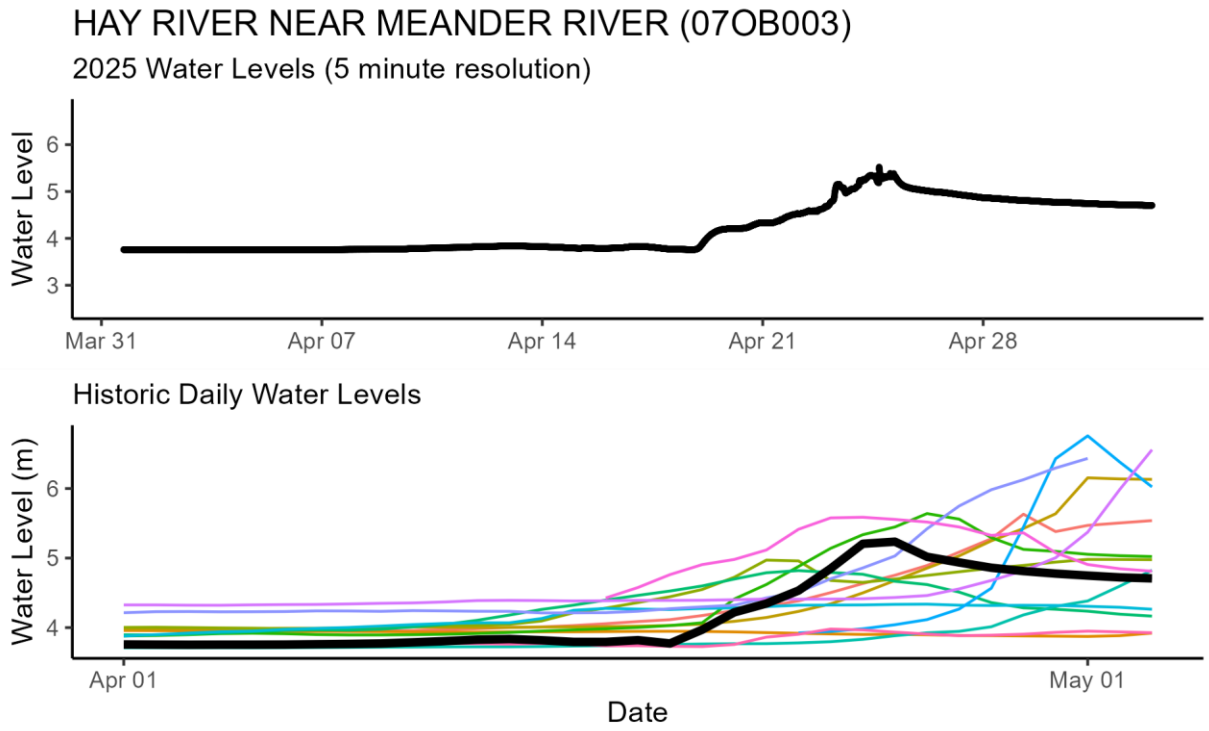
Above - The upper graph in the figure presents real time water level data at 5-minute resolution. The lower graph shows daily average levels relative to the previous 20 years.

Hay River near Alberta/NWT Boundary [07OB008]:



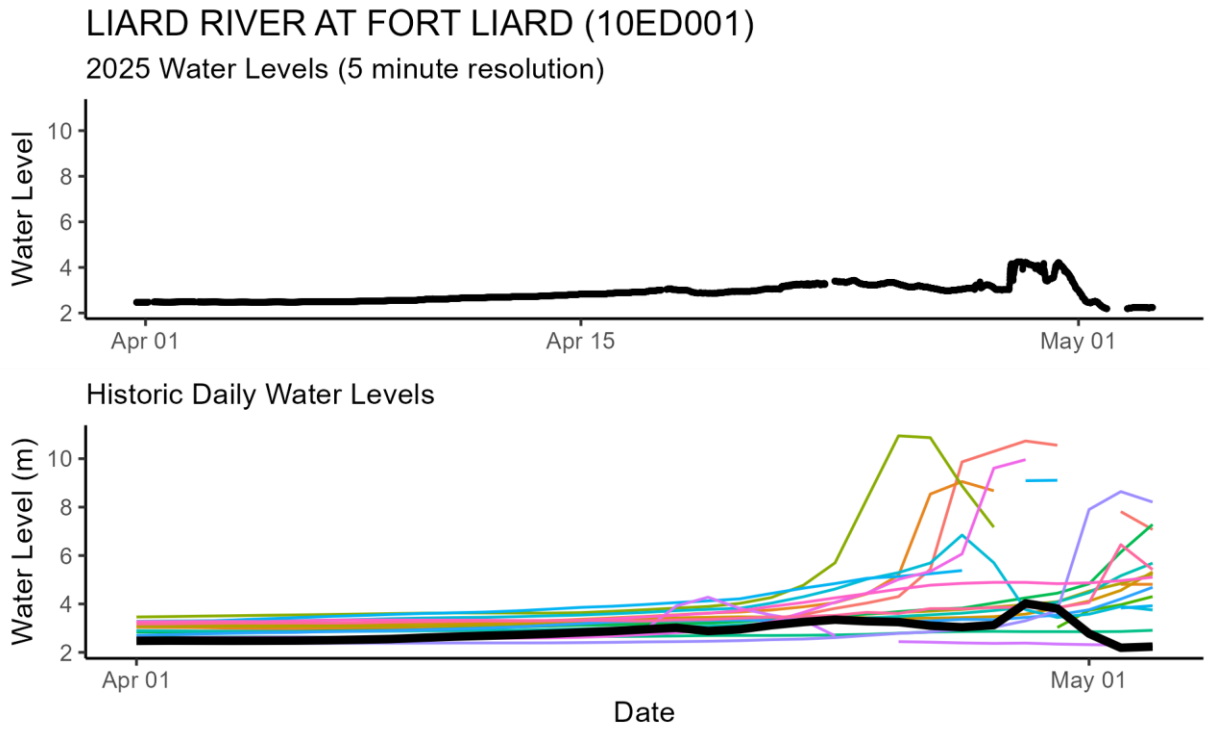
Above - The upper graph in the figure presents real time water level data at 5-minute resolution. The lower graph shows daily average levels relative to the previous 20 years.

Hay River near Meander River [07OB003]:



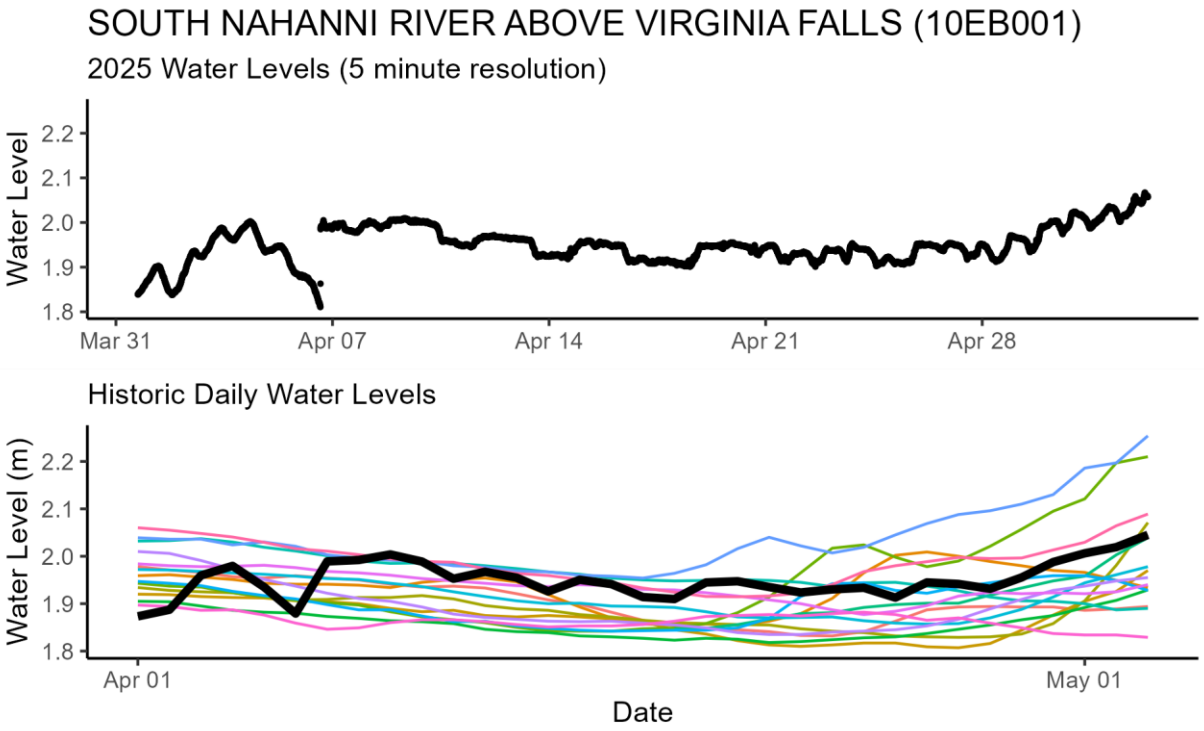
Above - The upper graph in the figure presents real time water level data at 5-minute resolution. The lower graph shows daily average levels relative to the previous 20 years.

Liard River at Fort Liard [10ED001]:



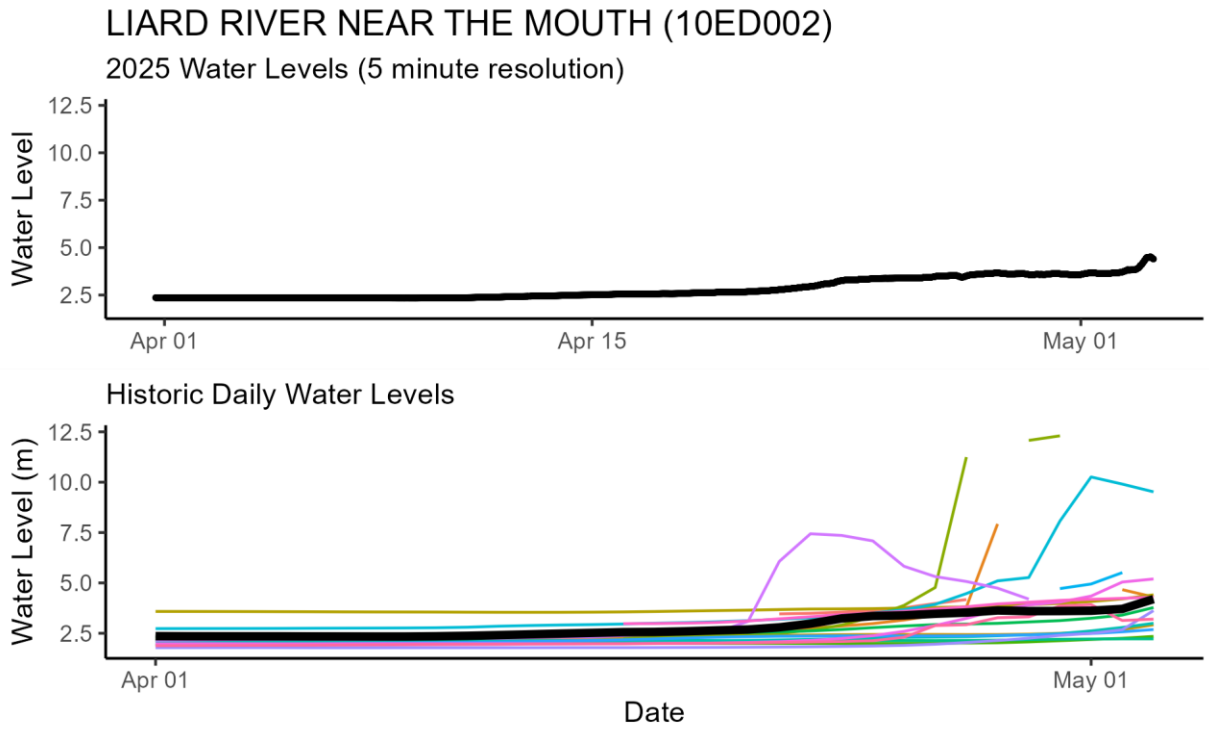
Above - The upper graph in the figure presents real time water level data at 5-minute resolution. The lower graph shows daily average levels relative to the previous 20 years.

South Nahanni River Above Virginia Falls [10EB001]:



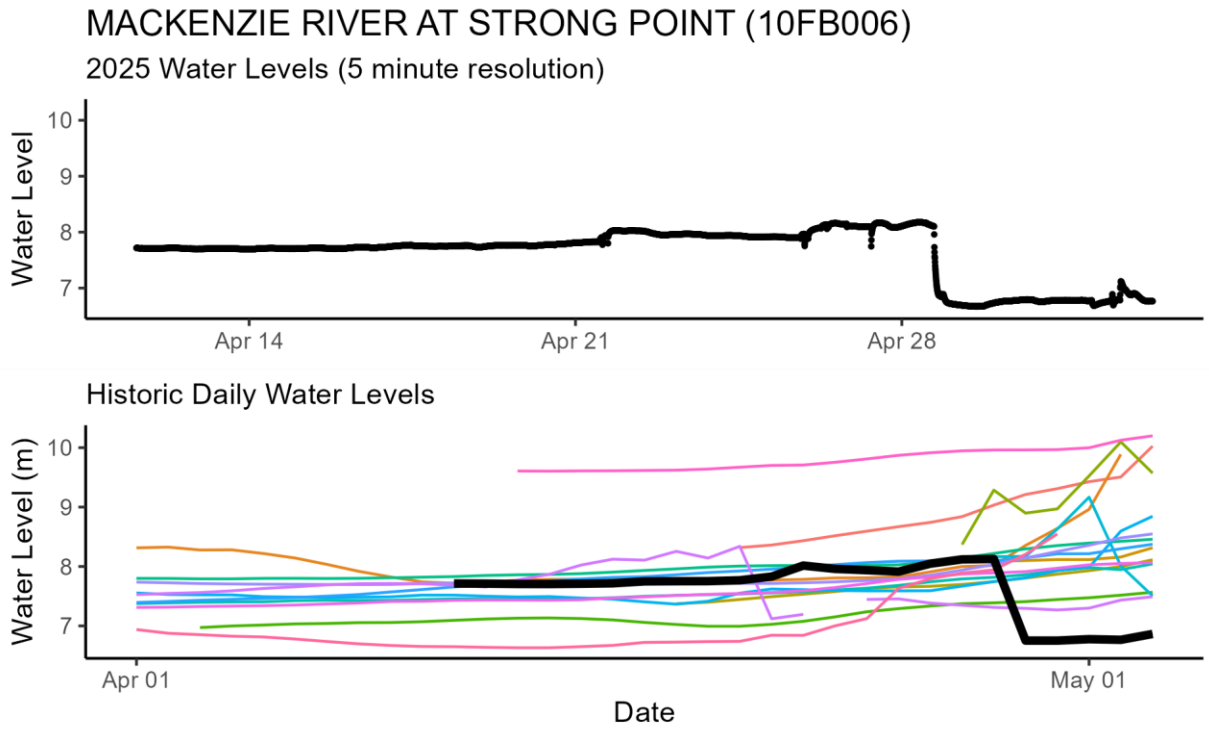
Above - The upper graph in the figure presents real time water level data at 5-minute resolution. The lower graph shows daily average levels relative to the previous 20 years.

Liard River near the mouth [10ED002]:



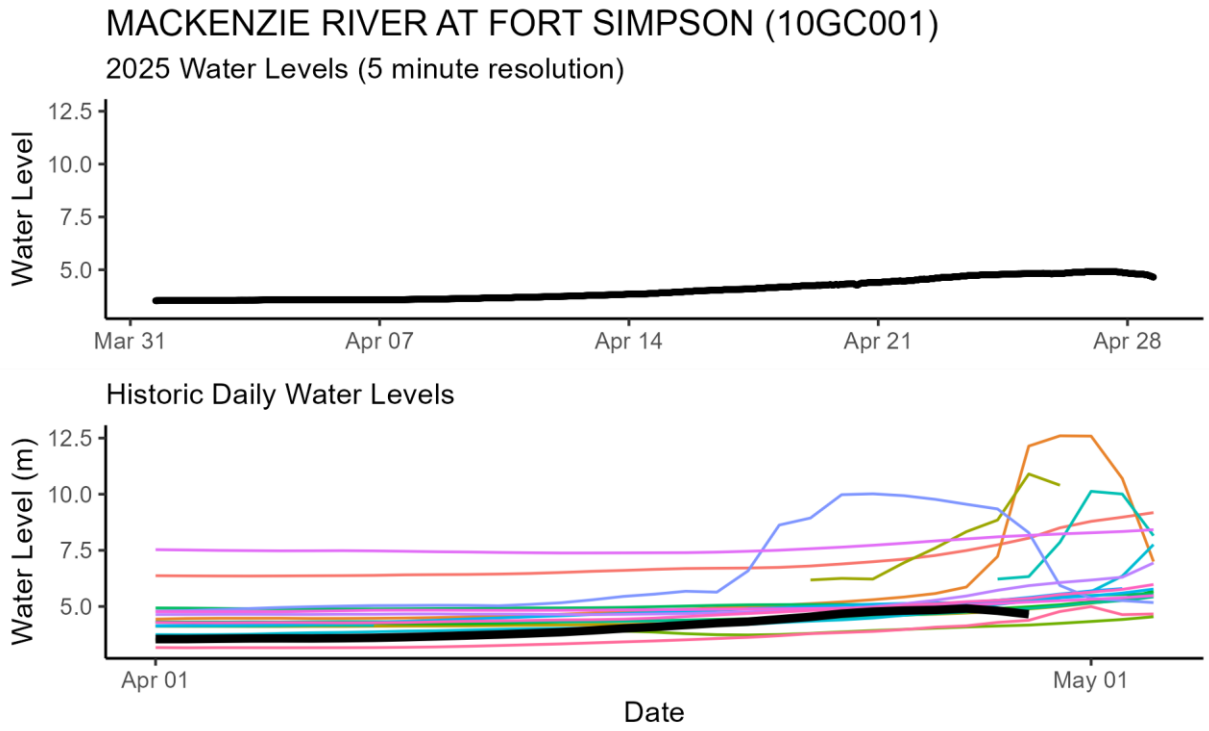
Above - The upper graph in the figure presents real time water level data at 5-minute resolution. The lower graph shows daily average levels relative to the previous 20 years.

Mackenzie River at Strong Point [10FB006]:



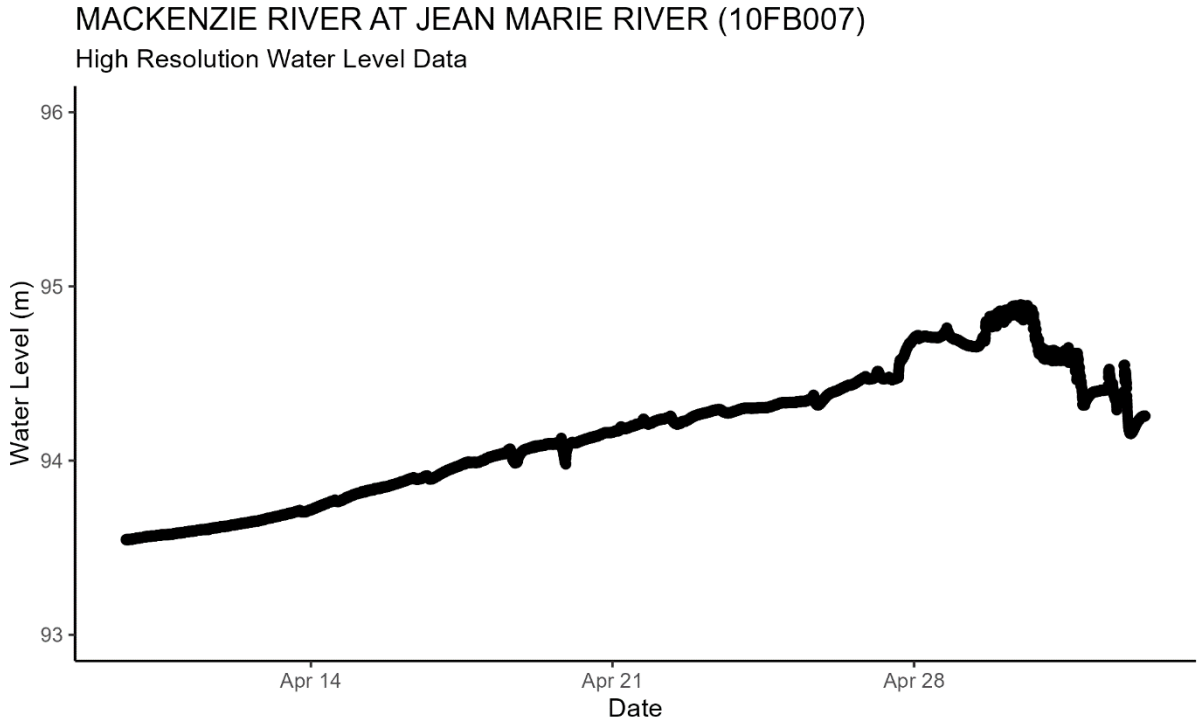
Above - The upper graph in the figure presents real time water level data at 5-minute resolution. The lower graph shows daily average levels relative to the previous 20 years.

Mackenzie River At Fort Simpson [10GC001]:



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 Jean Marie River [10FB007]:



Above - Real time water level data at 5-minute resolution.