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Government of
Northwest Territories

NWT Water Monitoring Bulletin – May 29, 2025 at 15:00

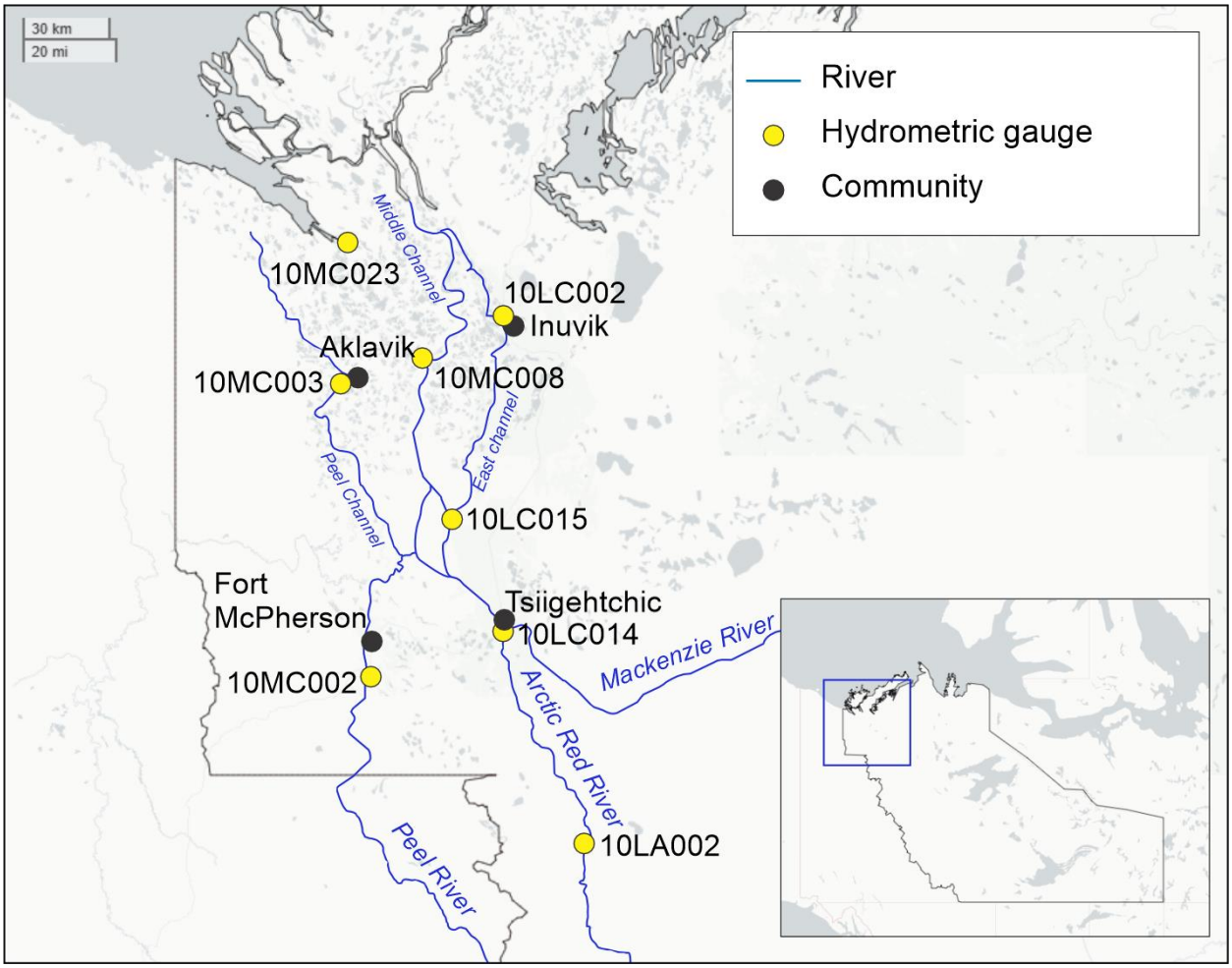
NWT break up reports will be published routinely as break up unfolds. These reports will focus on regions with active snowmelt and ice break up. The geographic focus of the report will shift as conditions change. Additional information about basin conditions can be found in the ECC Snow Survey Bulletin 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 ice on the Peel River has moved well past Fort McPherson and the break-up flood risk for 2025 has now passed.
    - An ice jam developed downstream of Fort McPherson over the weekend with a maximum length of approximately 12 km, but the jam did not reach the community.
- Break-up is progressing throughout the Beaufort Delta;
    - Large open water sections have been observed on the Main Channel and East Channel.
    - Rubble ice movement has continued on the Mackenzie River downstream of Tsiigehtchic.
    - Sheet ice movement has been observed on the Mackenzie River below Raymond Channel and near Aklavik.
- Water level sensors at several gauges have been impacted by ice and are not transmitting correct data;
    - Water level is continuing to rise relatively slowly in the Middle Channel and Napoiak Channel.

Contents

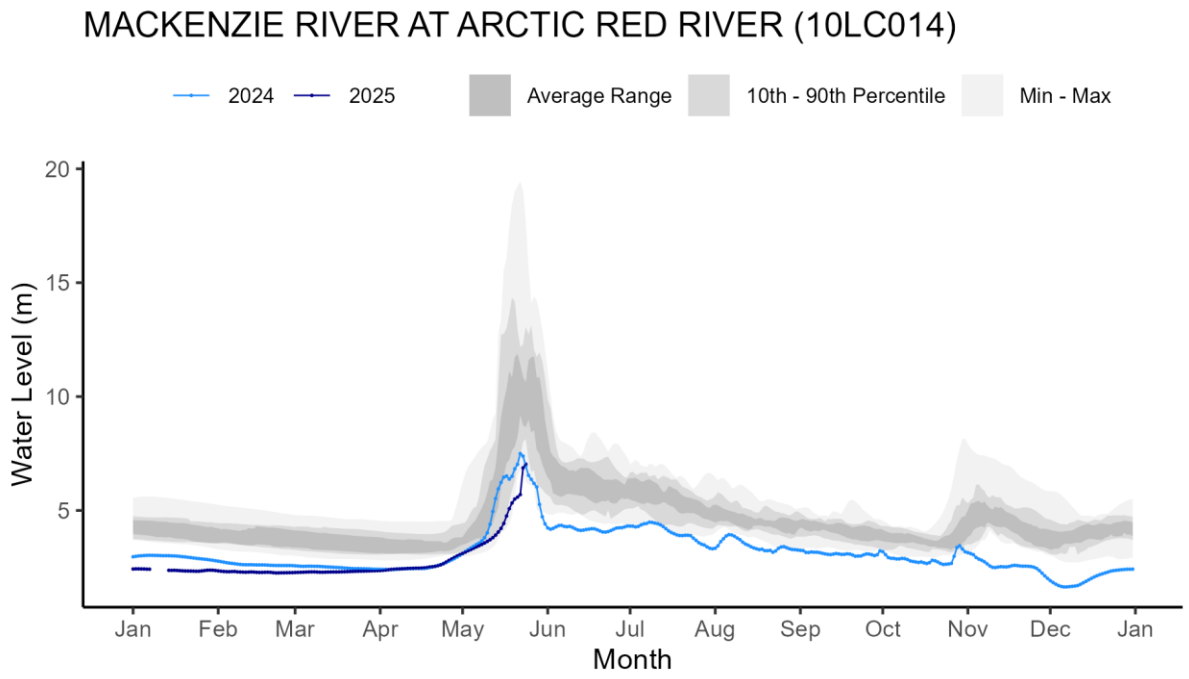
Station Map



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

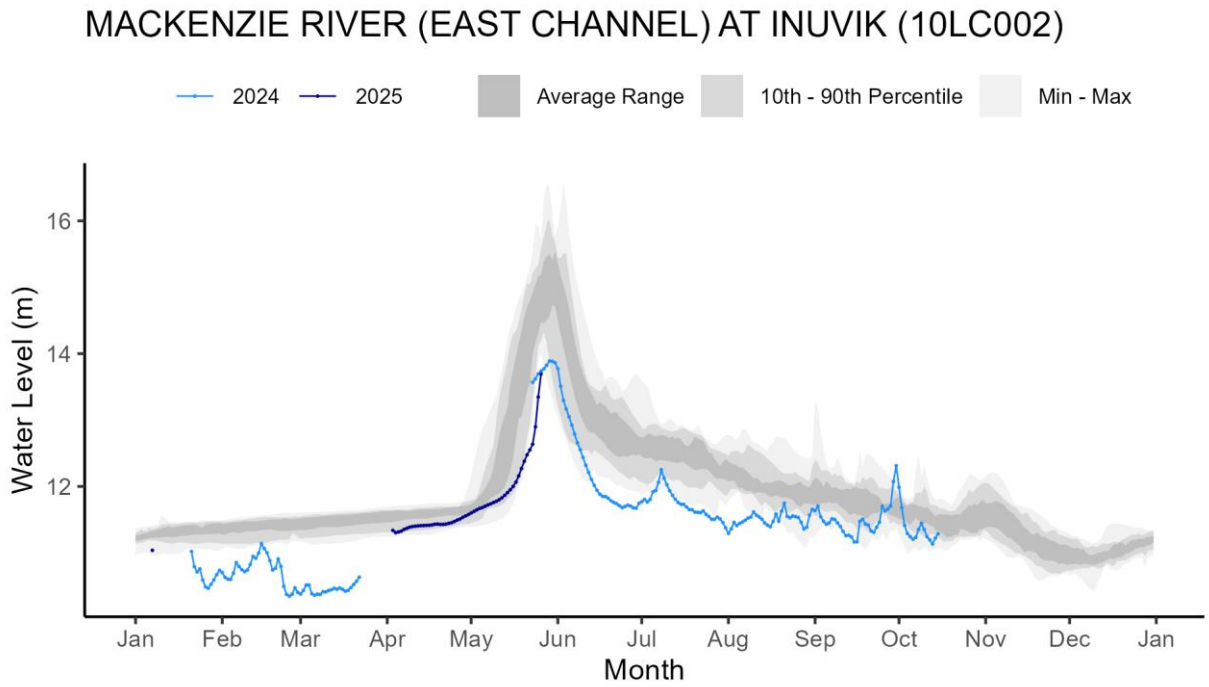
Hydrometric Data:

Mackenzie River at Arctic Red River [10LC014]



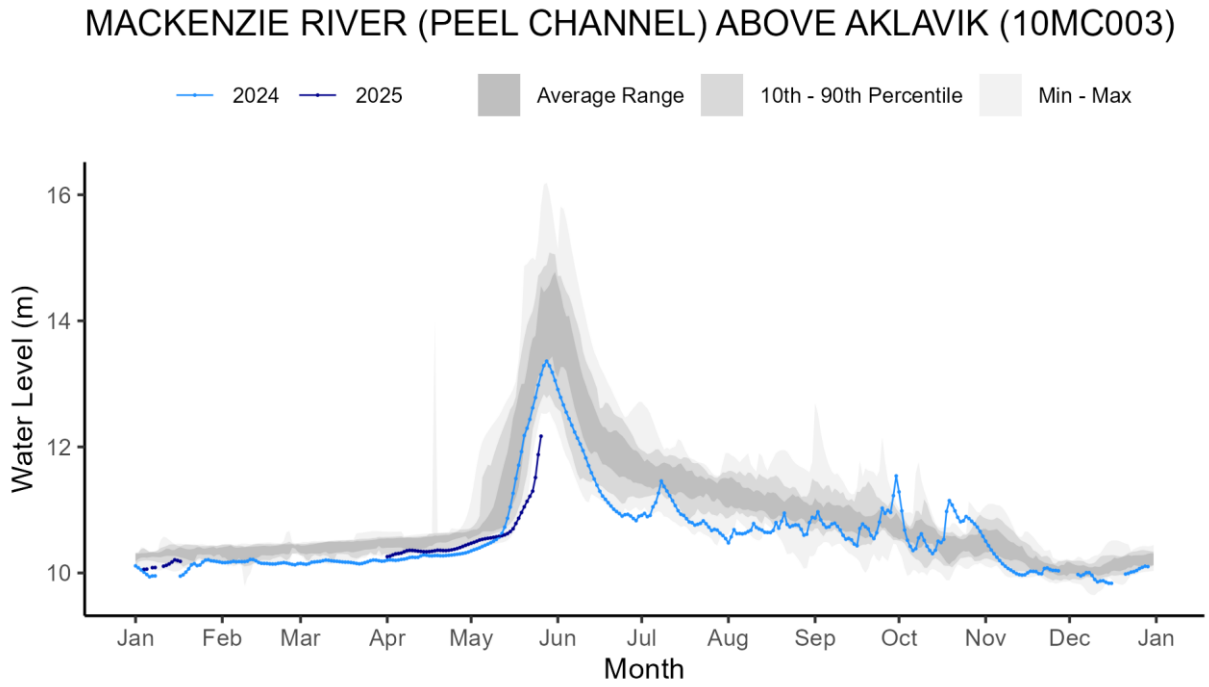
Above - Water level data for Mackenzie River at Arctic Red River [10LC014]. Daily average levels for the previous year also are shown here. **Note: Current data are ice-affected and are not shown here.**

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



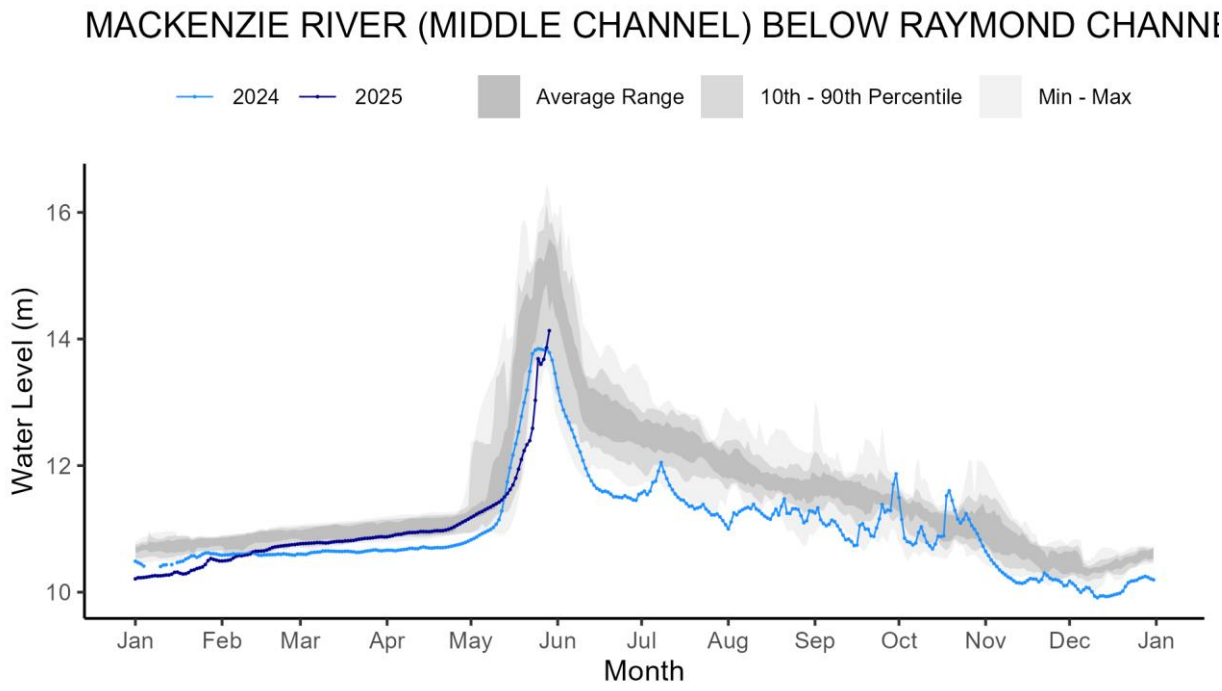
Above - Water level data for Mackenzie River (East Channel) at Inuvik [10LC002]. Daily average levels for the previous year also are shown here. **Note: Current data are ice-affected and are not shown here.**

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



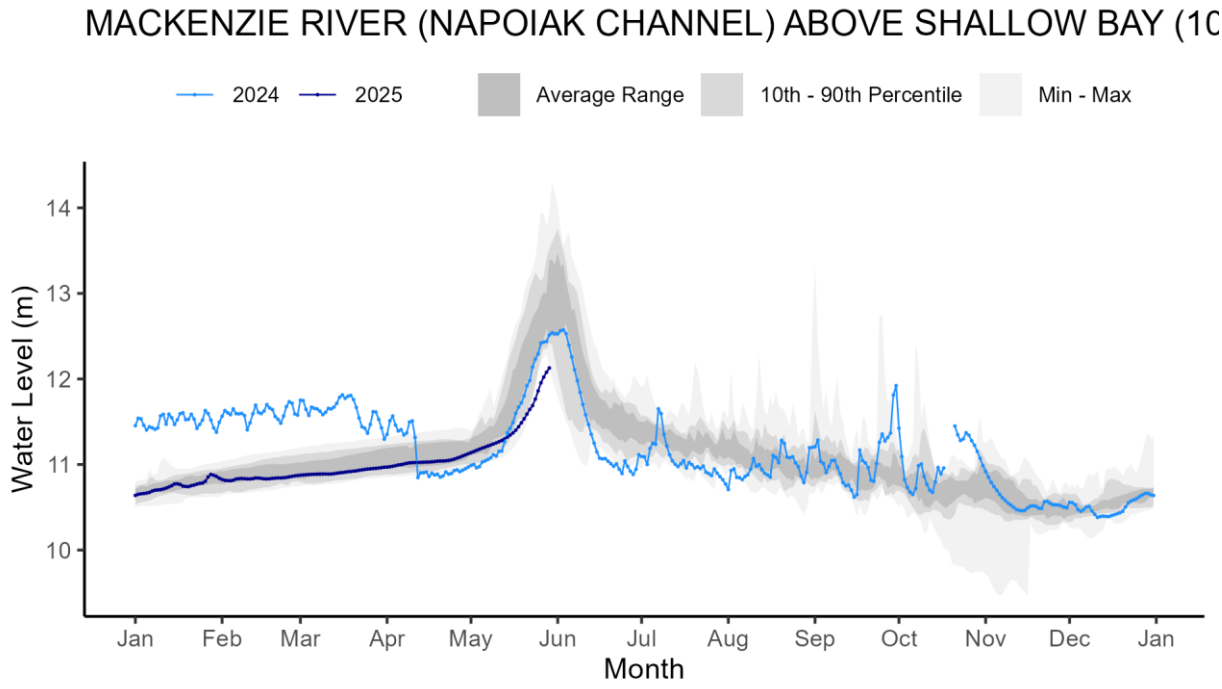
Above - Water level data for Mackenzie River (Peel Channel) above Aklavik [10MC003]. Daily average levels for the previous year also are shown here. **Note: Current data are ice-affected and are not shown here.**

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.

Mackenzie River (Napoiak Channel) above Shallow Bay [10MC023]



Above - Water level data for Mackenzie River (Napoiak Channel) above Shallow Bay [10MC023]. 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 28 at 13:00. Photo courtesy of Water Survey of Canada and GNWT.

Mackenzie River below Raymond Channel [10MC008]

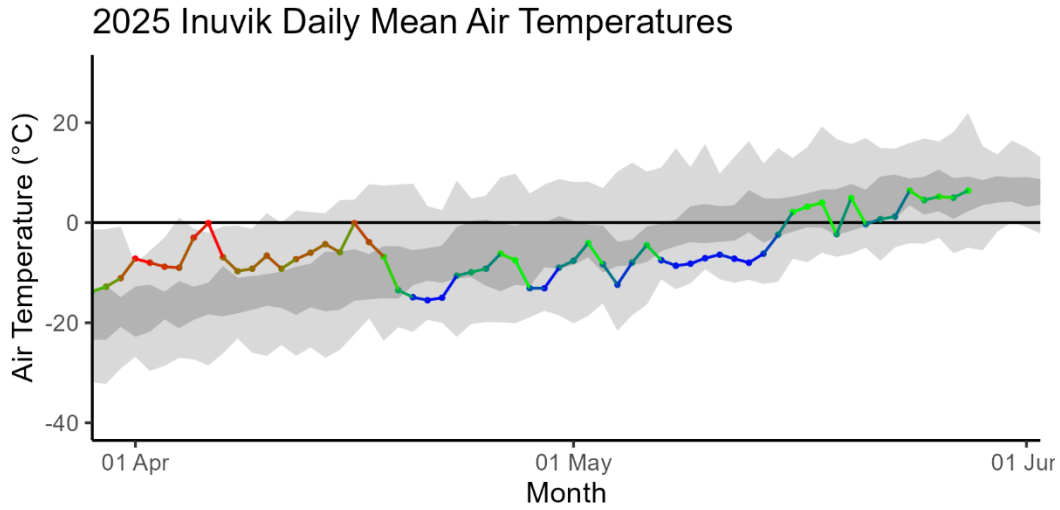
Above – Mackenzie River below Raymond Channel hydrometric gauge photo from May 29 at 10:00. Photo courtesy of Water Survey of Canada and GNWT.

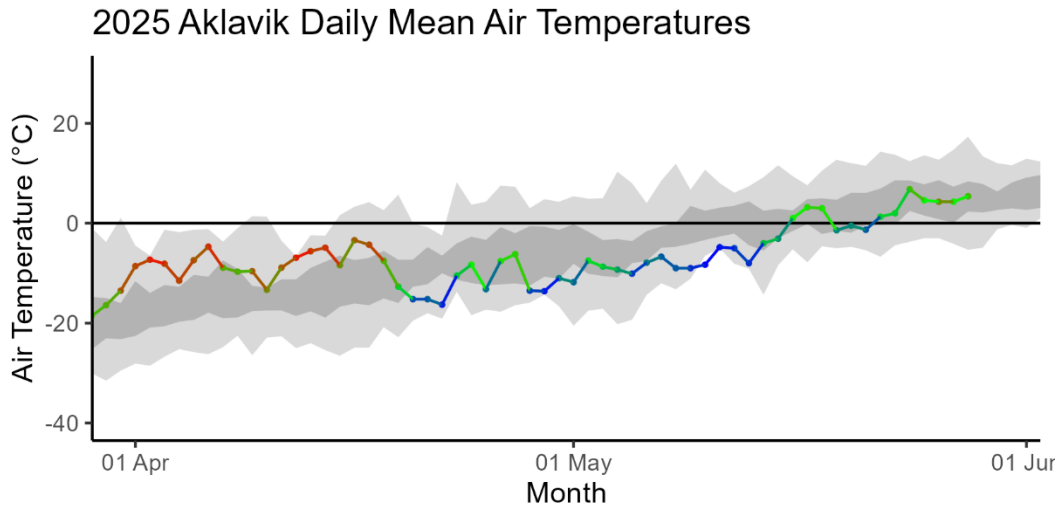
Weather Data:

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.

Average to below average temperatures and overnight lows fluctuating near freezing will moderate break-up progression over the next few days for Inuvik and Aklavik.

Minimal precipitation (~ 5 mm) is forecast for Inuvik over the next couple days. No significant precipitation is forecast for Aklavik.





Inuvik seven-day forecast:

Thu 29 May	Fri 30 May	Sat 31 May	Sun 1 Jun	Mon 2 Jun	Tue 3 Jun	Wed 4 Jun
 11°C 30% Chance of showers	 5°C 30% Chance of flurries or rain showers	 5°C Sunny	 4°C Cloudy	 9°C A mix of sun and cloud	 8°C A mix of sun and cloud	 5°C 30% Chance of flurries
Tonight	**Night**	**Night**	**Night**	**Night**	**Night**	
 -1°C 30% Periods of drizzle	 1°C A mix of sun and cloud	 -2°C Cloudy	 -1°C A mix of sun and cloud	 -4°C A mix of sun and cloud	 -4°C A mix of sun and cloud	

Aklavik seven-day forecast:

Thu 29 May	Fri 30 May	Sat 31 May	Sun 1 Jun	Mon 2 Jun	Tue 3 Jun	Wed 4 Jun
 5°C Mainly cloudy	 4°C 30% Chance of flurries	 4°C A mix of sun and cloud	 5°C Cloudy	 5°C A mix of sun and cloud	 6°C A mix of sun and cloud	 4°C A mix of sun and cloud
Tonight	**Night**	**Night**	**Night**	**Night**	**Night**	
 -1°C 40% Periods of drizzle	 0°C A mix of sun and cloud	 -2°C 60% Chance of rain showers or flurries	 -1°C A mix of sun and cloud	 -1°C A mix of sun and cloud	 -2°C A mix of sun and cloud	

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

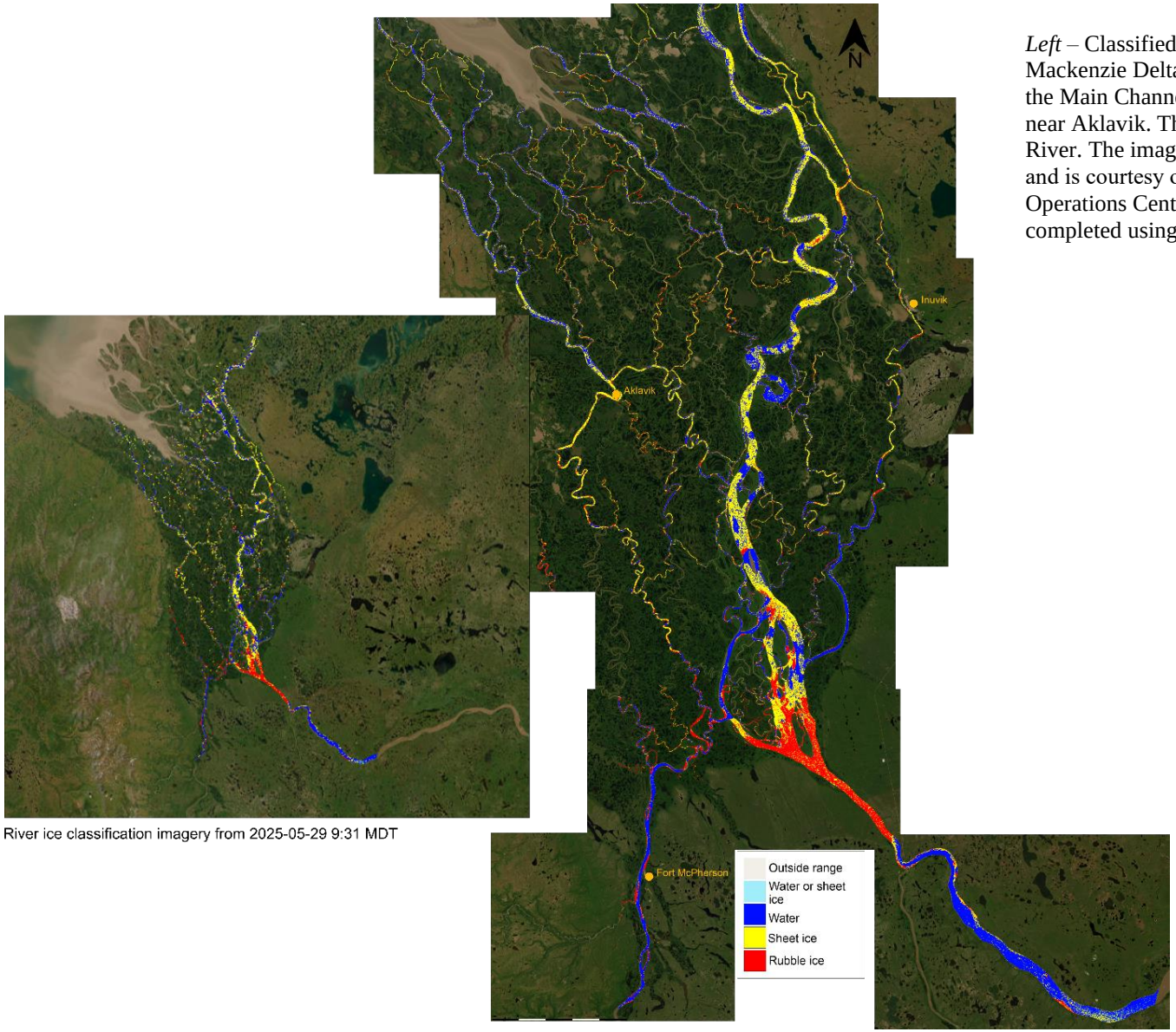
chances of ice jams. If an ice jam occurs, the location of the ice jam is also very important. Each river reach has different locations that are prone to ice jams. The location of the ice jam can be an important factor as to whether or not a community floods. Furthermore, ice will jam and then move again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

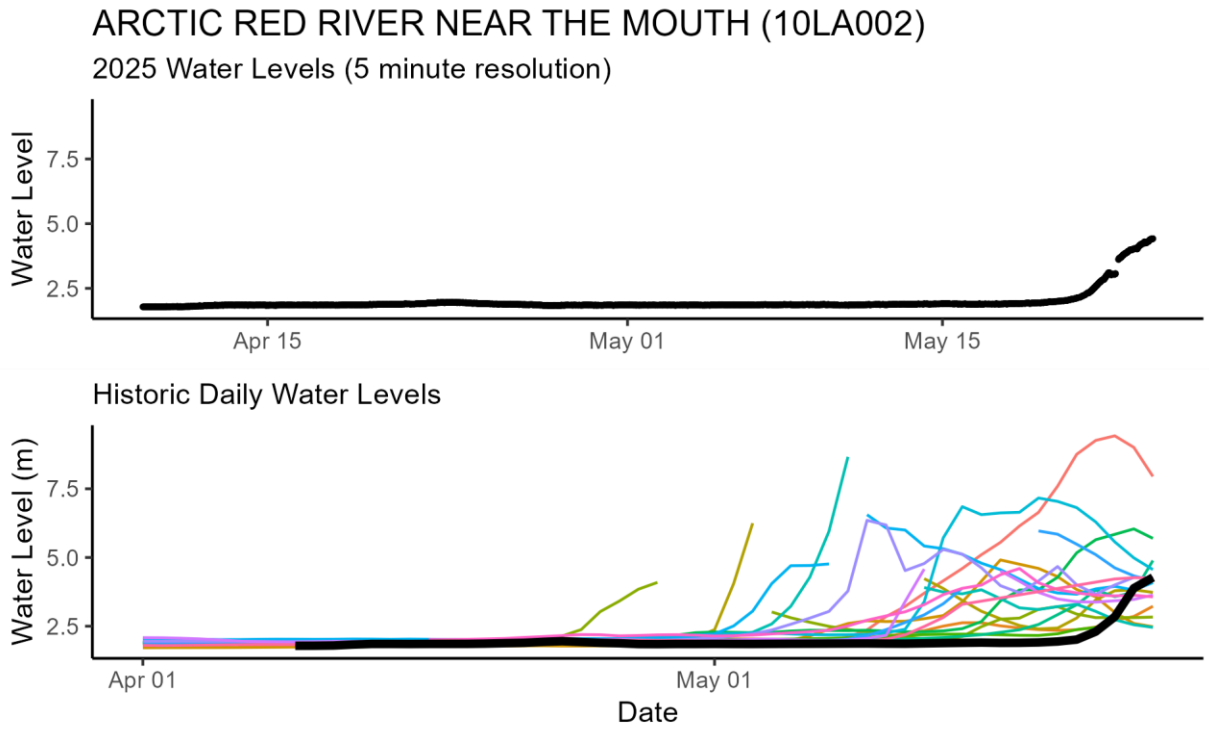


River ice classification imagery from 2025-05-29 9:31 MDT

Left – Classified river ice image of the Peel River and Mackenzie Delta. This image shows open water sections on the Main Channel and East Channel, and relatively intact ice near Aklavik. This image also shows open water for the Peel River. The image was acquired this morning at 9:31 MDT and is courtesy of the federal government's Government Operations Centre. The river ice classification was completed using the IceBC algorithm

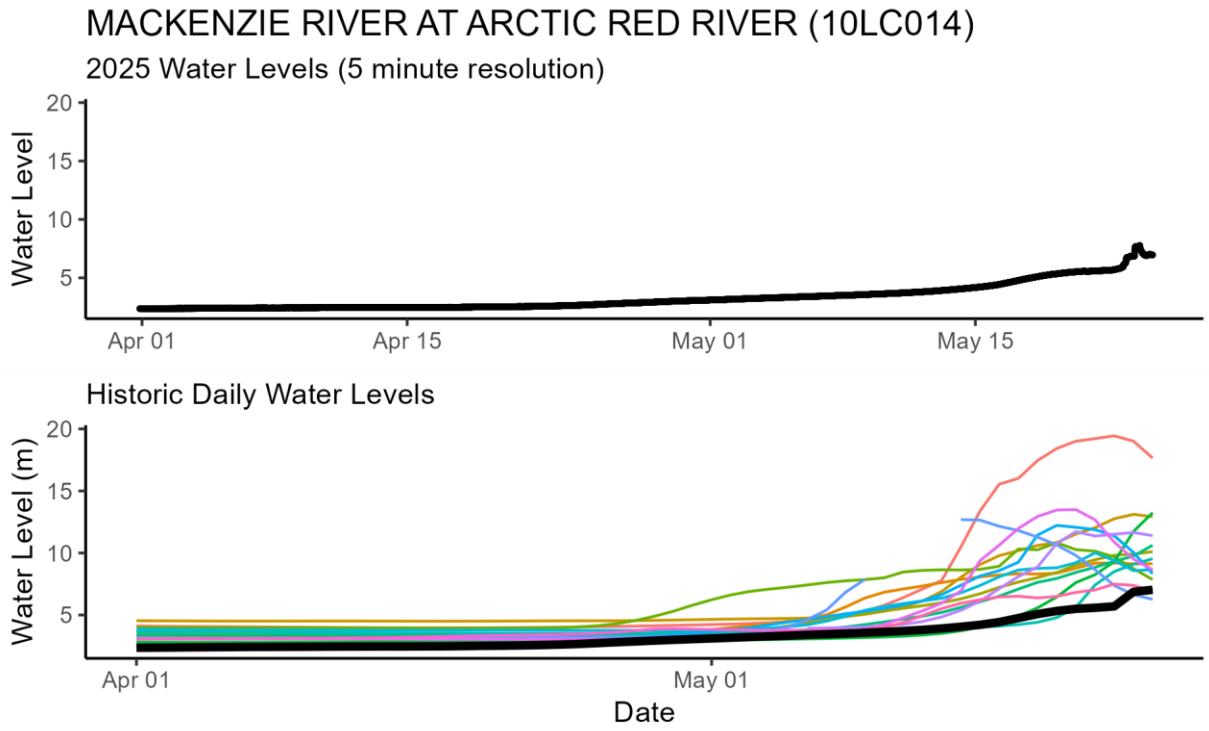
Appendix B: High resolution and historic water level plots

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. **Note: Current data are ice-affected and are not shown here.**

Mackenzie River at Arctic Red River [10LC014]



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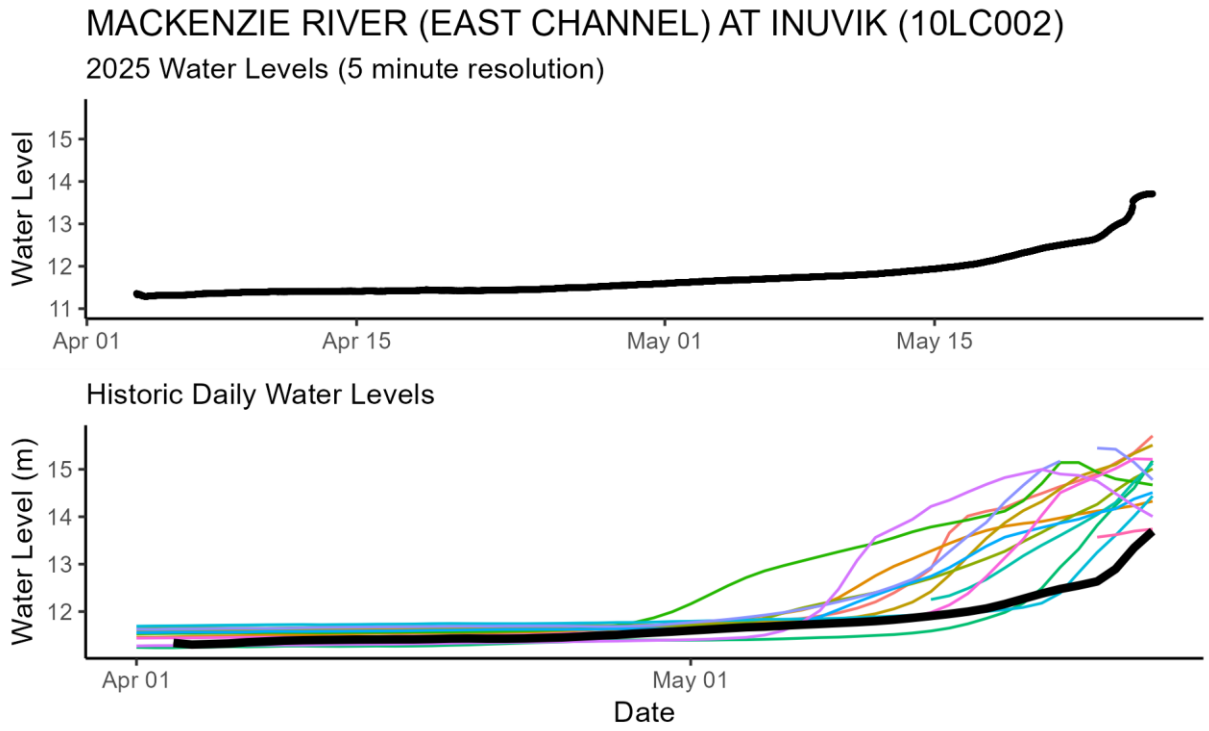

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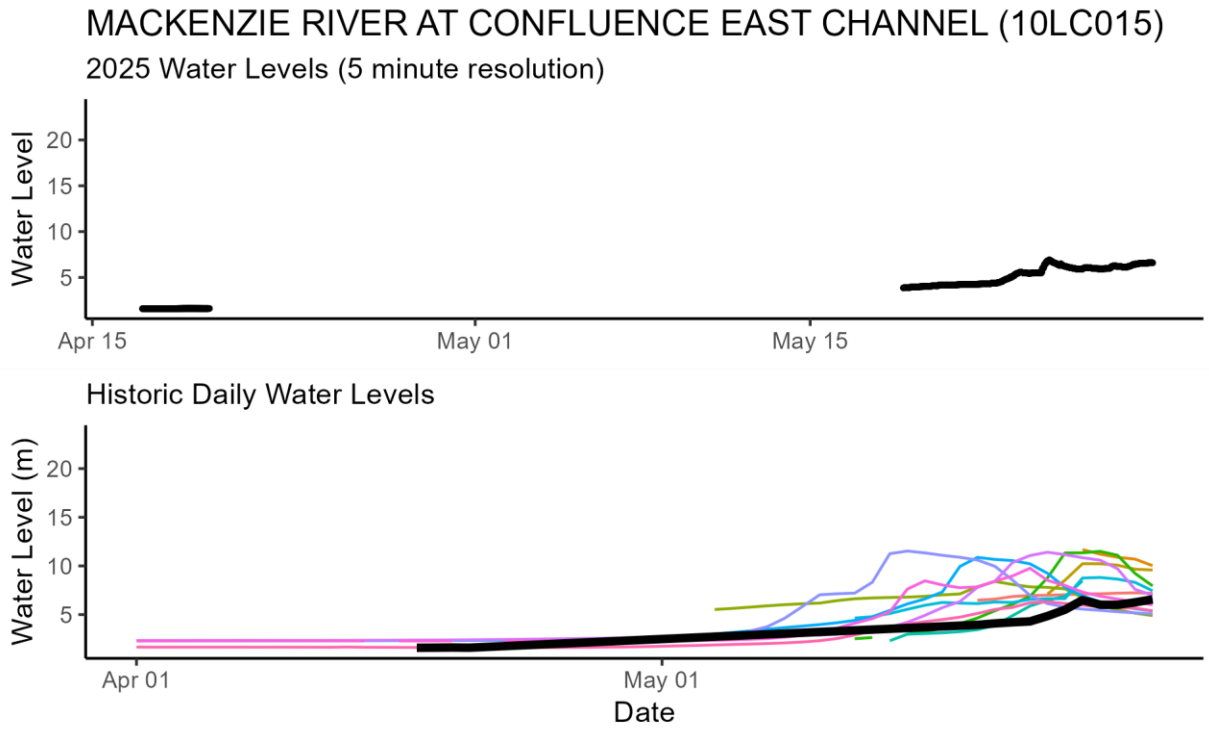
Mackenzie River at Confluence East Channel [10LC015]



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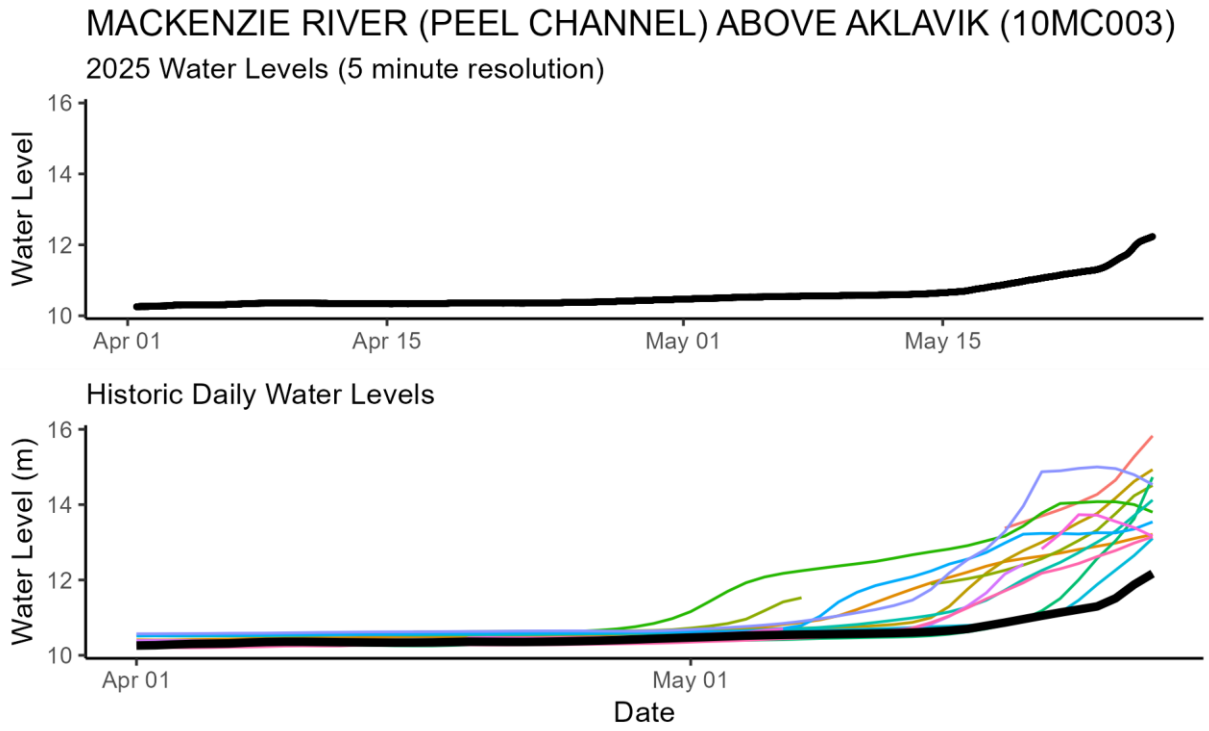
Mackenzie River (Peel Channel) above Aklavik [10MC003]



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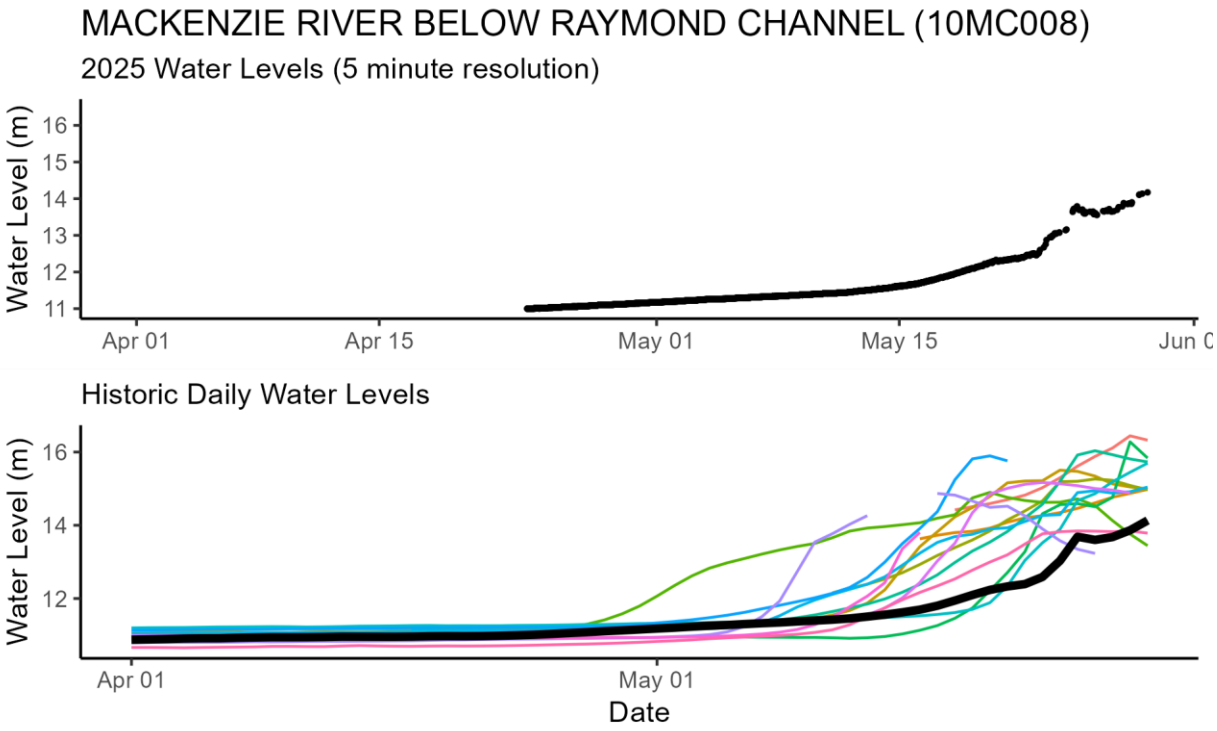

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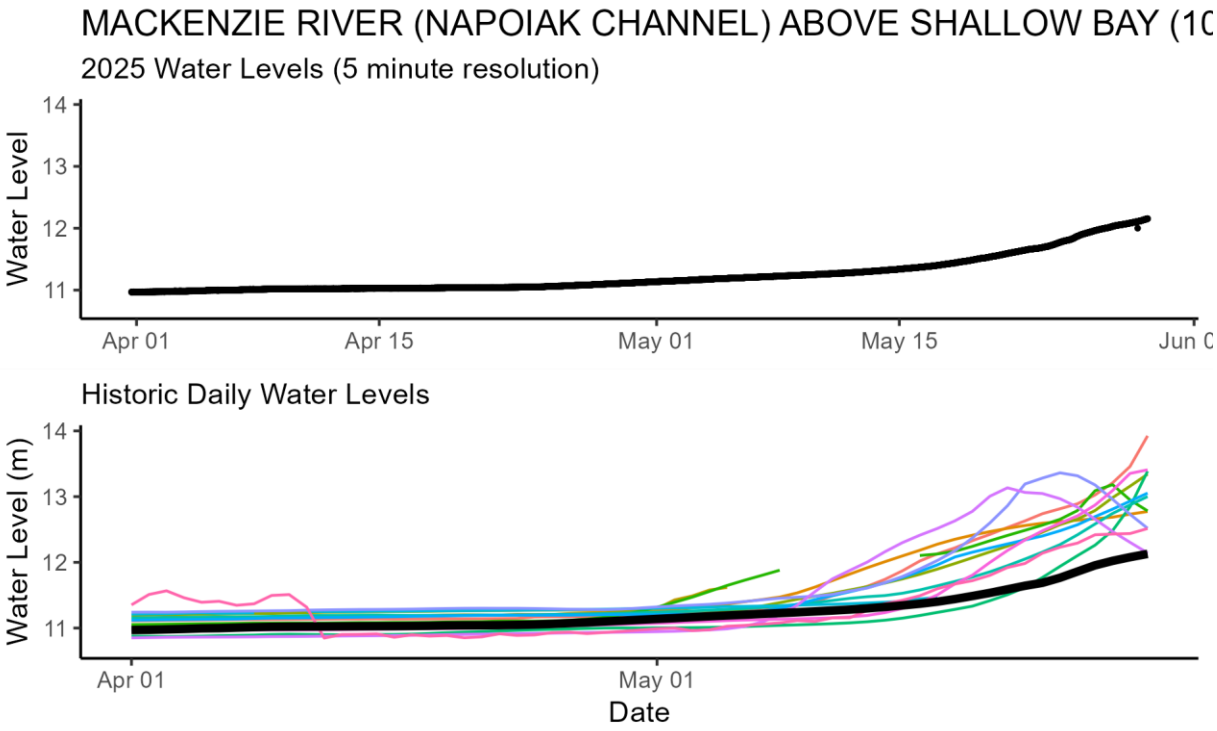
Mackenzie River (Napoiak Channel) Above Shallow Bay (10MC023)



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