Government of
Northwest Territories

NWT Water Monitoring Bulletin – November 03, 2023

NWT Water Monitoring Bulletins are posted monthly. These bulletins are intended to provide an update of water flow and level data at select NWT Hydrometric Network gauge stations across the Northwest Territories.

Where available, data from river sites are presented as flow (discharge) and data from lake sites are presented as level. When flow data are unavailable, data from river sites are presented as level. The figures in this report represent current conditions for this year, relative to historic minimum and maximum values, as well as the average range, which is calculated as the interquartile range.

The NWT Hydrometric Network is a partnership between ECC and Environment and Climate Change Canada (ECCC) and is operated by the Water Survey of Canada (ECCC). Both historic and real-time data for all stations are available at https://wateroffice.ec.gc.ca/index_e.html. All 2022 and 2023 data are considered provisional and may contain values that are later corrected.

Any questions regarding information contained in this Bulletin can be directed to NWTWaters@gov.nt.ca.

Current status:

- Water levels across the NWT remain very low moving into freeze-up.
    - These dry conditions began last summer and fall (2022) and have persisted through this summer and fall (2023).
- In October, rainfall was close to average across the NWT.
    - Total rainfall amounts for October are usually much lower than rainfall amounts during summer months, which means that a normal amount of rain in October will not overcome moisture deficits from the summer.
- In October, snowfall amounts (presented here as s*now water equivalent*, which is the amount of water left over when snow is melted) were variable throughout the territory. Some communities received very little snow (e.g., Fort Simpson, Yellowknife, Hay River), some received normal amounts (e.g., Fort Smith, Norman Wells), and others received much more snow than normal (e.g., Inuvik).
- The trend of warm air temperatures in the summer carried through to October, with the NWT being much warmer than normal during this month.

- Great Slave Lake and Mackenzie River water levels remain extremely low, largely due to hot and dry conditions in northern Alberta and British Columbia, and the southern NWT.
    - The Slave River has been below average over the entire the summer.
    - Great Slave Lake is currently at the lowest water level ever recorded.
    - The Mackenzie River at Tsiigehtchic is the lowest on record for this time of year and recorded the lowest level on record at any time of year in mid-October.
        - Great Slave Lake went from being a record high water level in June 2022 to record low in September 2023 (for the respective times of year).
        - Over the last five years, water levels on Great Slave Lake have shifted from extremely low (July 2019) to the highest on record (2020 to 2022) back to extremely low (September 2023). The magnitude and frequency of these fluctuations have not previously been seen in the 84-year record.
        - These strong fluctuations in water levels are a result of large weather systems that have moved over the entirety of the Great Slave Lake basin, which includes sub basins in northern BC, Alberta, Saskatchewan and NWT.
        - While it is difficult to isolate individual events, these weather systems are likely a combination of climate variability from global teleconnections (La Niña and El Niño events) and climate change.

- In the South Slave and Dehcho regions, the summer and fall were very warm and dry. October rainfall was above average in Fort Smith, below average in Hay River, and about average in Fort Simpson. Fort Smith was the only community to record an appreciable amount of snow.
    - Flow rates on most rivers in the Taiga Plains (excluding larger rivers such as the Slave, Liard, and Mackenzie) generally decrease substantially every year in the fall before freeze-up due to limited lake storage.
    - Water levels and flows on many gauged rivers in the South Slave and Dehcho regions are at or near the lowest on record (for the time of year), including:
        - Taltson River

        - Hay River (lowest on record)
        - Kakisa River
        - Trout River
        - Jean-Marie River
        - Petitot River (lowest on record)
        - Liard River

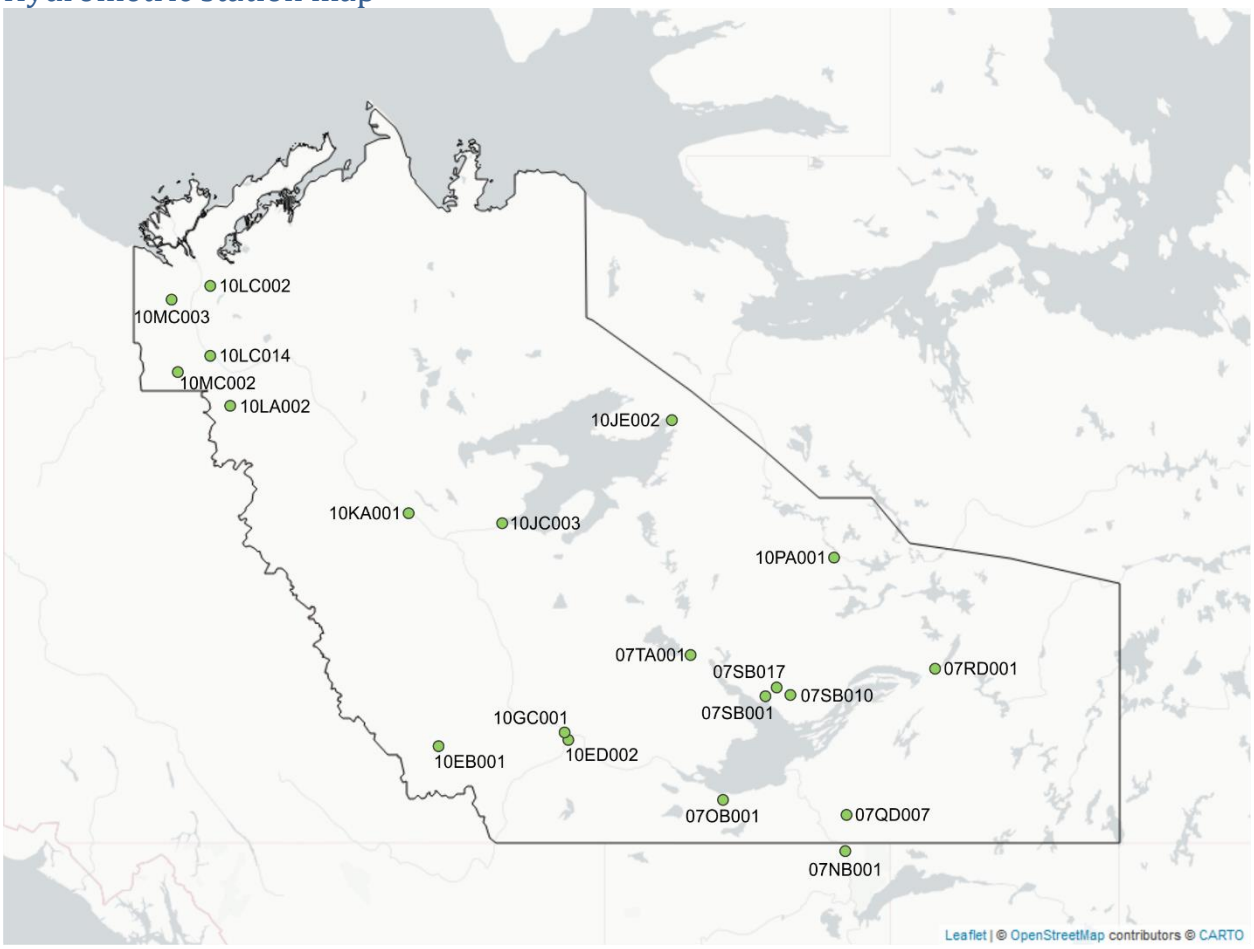
- Conditions in the North Slave are similar to the South Slave.
    - Rainfall amounts in the North Slave region in October were lower than average in the Yellowknife region, and slightly higher than average in the Tłı̨chǫ. Very little snow was recorded in this region.
    - Water levels and flows on many gauged rivers in the North Slave region are at or near the lowest on record (for the time of year), including:
        - Cameron River (lowest on record)
        - Yellowknife River
        - Prelude Lake
        - Prosperous Lake
        - Snare River (lowest on record)
        - Coppermine River (lowest on record)

- The Sahtu region received about average rainfall (although total amounts were very low) and average snowfall in October.
    - Water levels and flows on most gauged rivers and lakes in the Sahtu are below normal, including:
        - Great Bear River (slightly below normal)
        - Great Bear Lake (well below normal)
        - Loon River (below normal)
        - Hare Indian River (about normal)

- The Beaufort Delta region received less rainfall than normal and above average snowfall in October.
    - Water levels and flows on gauged local rivers in this region are variable, likely due to a late-fall precipitation event in the Peel River and Arctic Red River basins:
        - Peel River (above normal)
        - Arctic Red River (above normal)
        - Rengleng River (below normal)
        - Travaillant River (about normal)
    - Water levels in the Mackenzie Delta are about normal and have risen recently due to increased flow in the Peel River and Arctic Red River basins Water levels should drop as this water moves through the Delta as it is not sustained by water on the Mackenzie River

Contents

Hydrometric station map



Above – A map of the hydrometric stations included in this report.

Information on interpreting figures:

Water level and flow figures:

The dark blue line shows current levels/flows from this year (2023). The dark grey band represents the average range (calculated as the interquartile range), while the light grey bands represent the highest and lowest levels or flows on record. If the dark blue line is within the dark grey band, current conditions can be assumed to be normal.

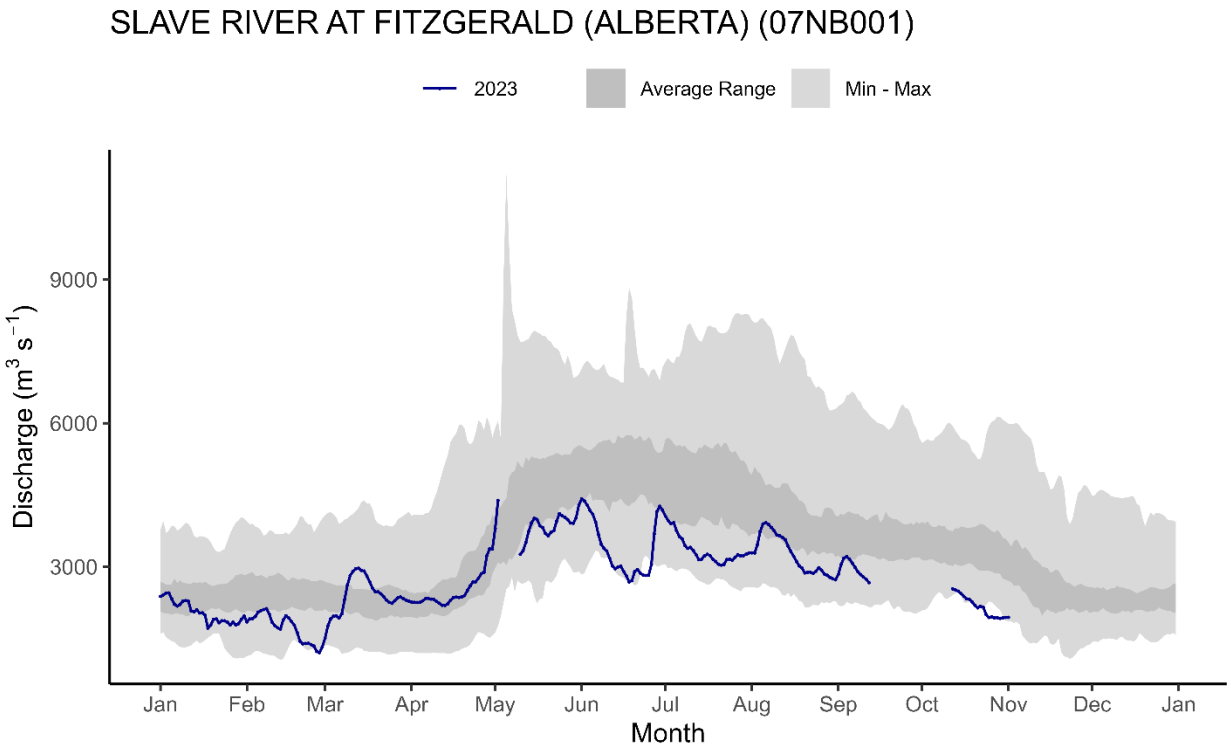
Note: The grey bands are calculated for data prior to 2022. If the line from 2023 is above (below) the grey band, it means that the flow or level from that year was the highest (lowest) on record.

Climate figures:

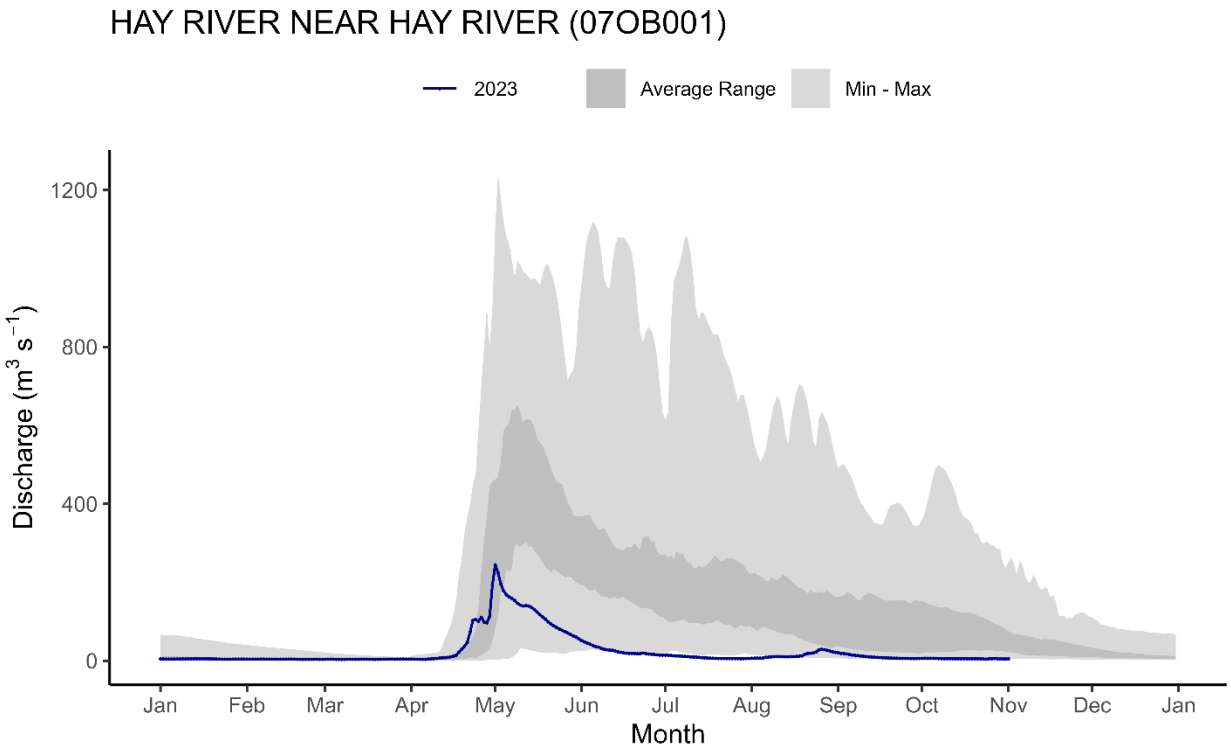
Monthly air temperature and precipitation data are displayed for six communities in the NWT (Fort Smith, Hay River, Yellowknife, Fort Simpson, Norman Wells, and Inuvik) and presented as box and whisker plots. The box in each plot represents the average range (calculated as the interquartile range) for each month, and the whiskers are the vertical black lines that represent the extreme values (10^{th} to 90^{th} percentiles). Each grey dot is the value from a previous year, beginning in 1950. The red or blue dots represent the values for the current year. These data are acquired and managed by Environment and Climate Change Canada.

Water level and flow data:

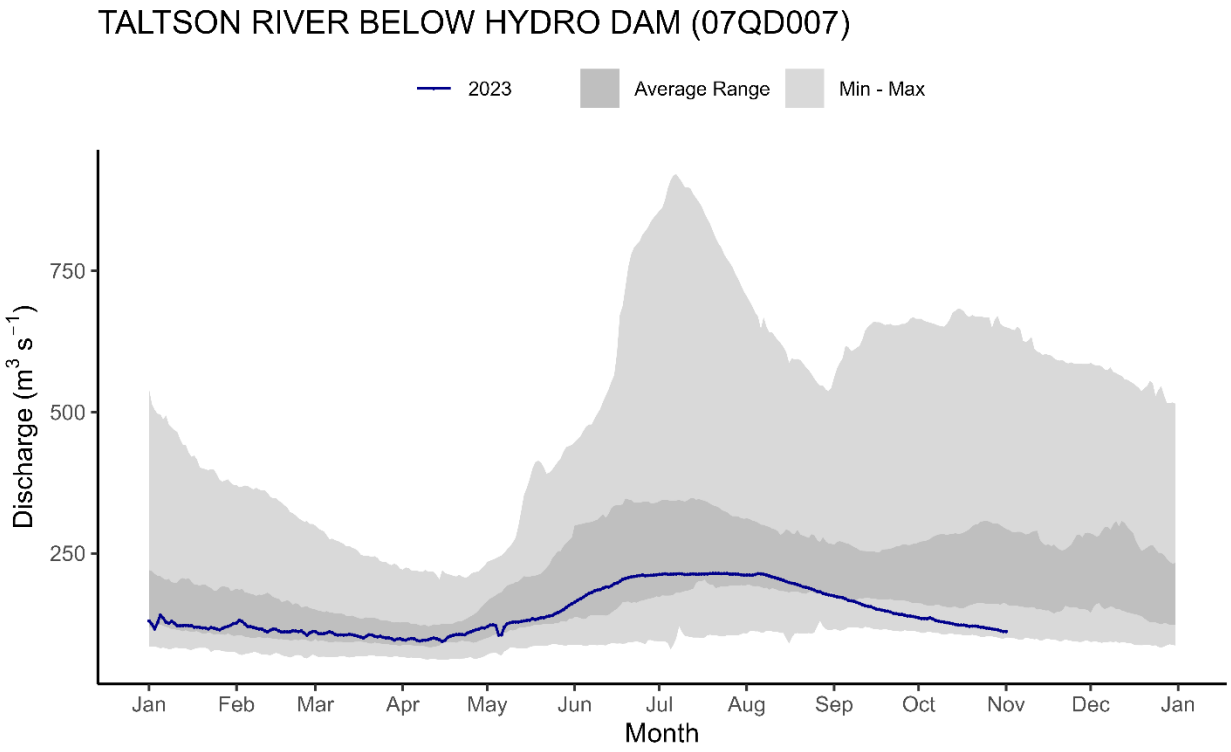
Slave River at Fitzgerald [07NB001]



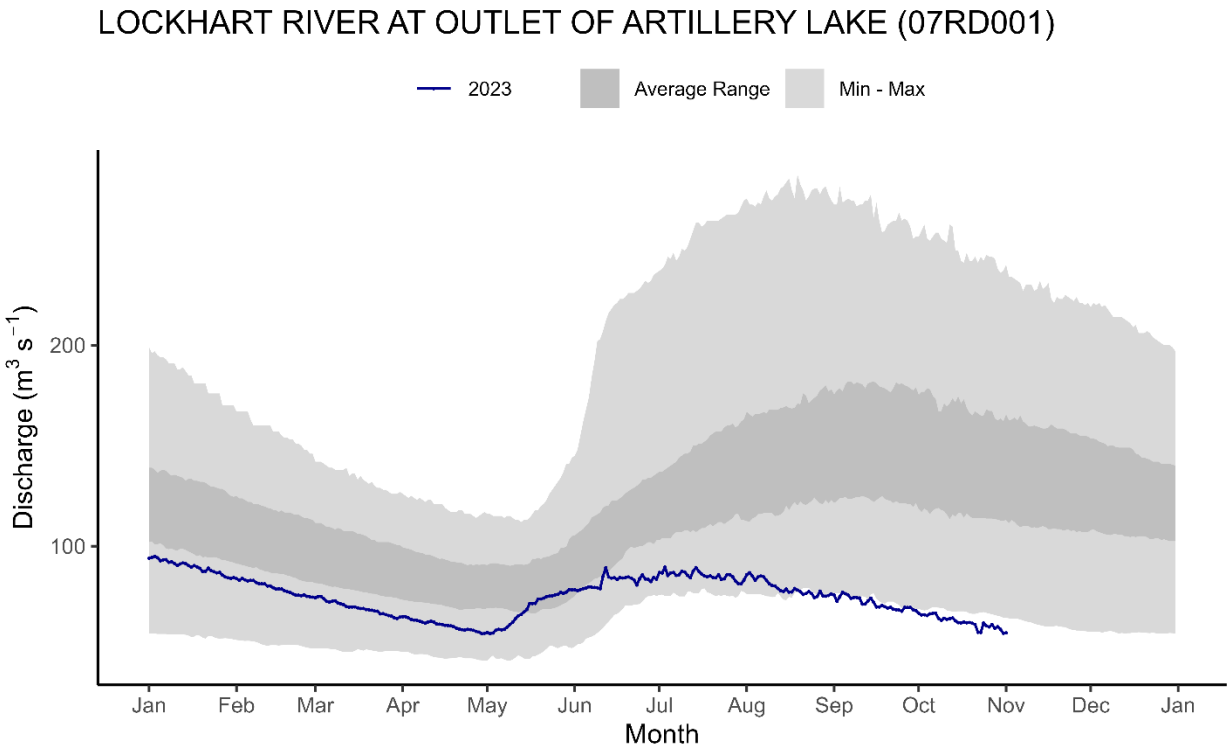
Hay River near Hay River [07OB001]



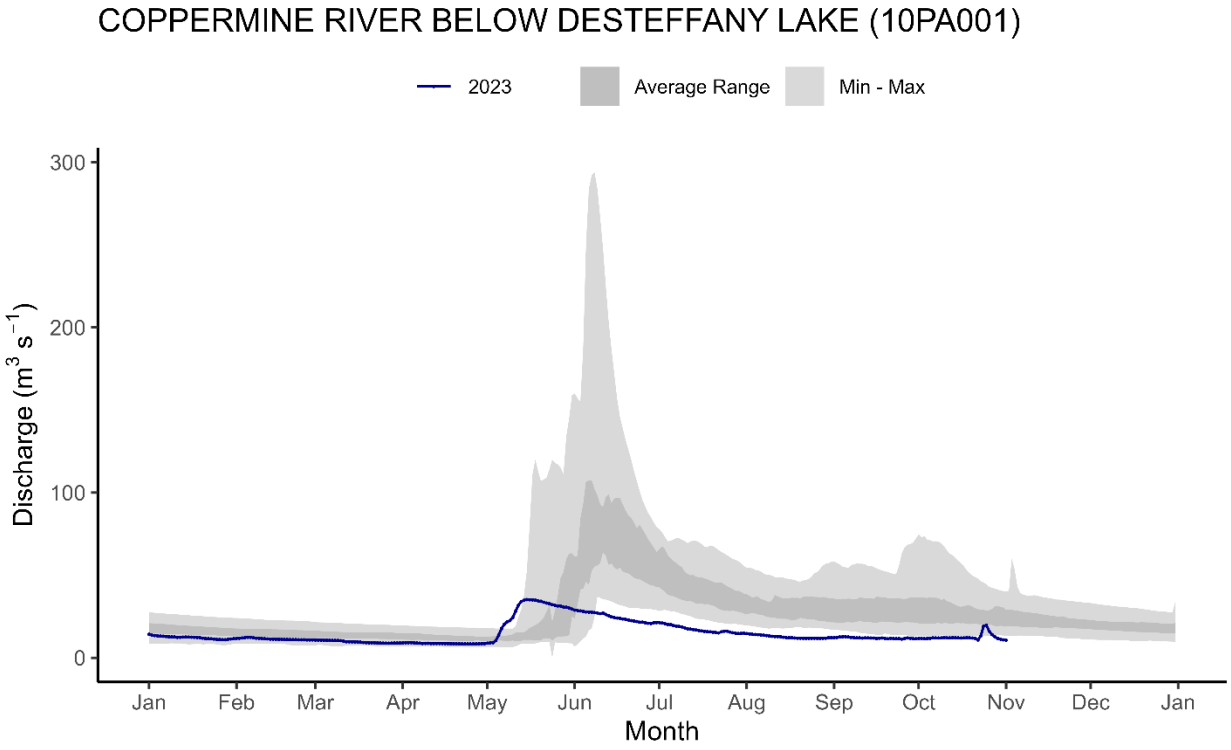
Taltson River below Hydro Dam [07QD007]



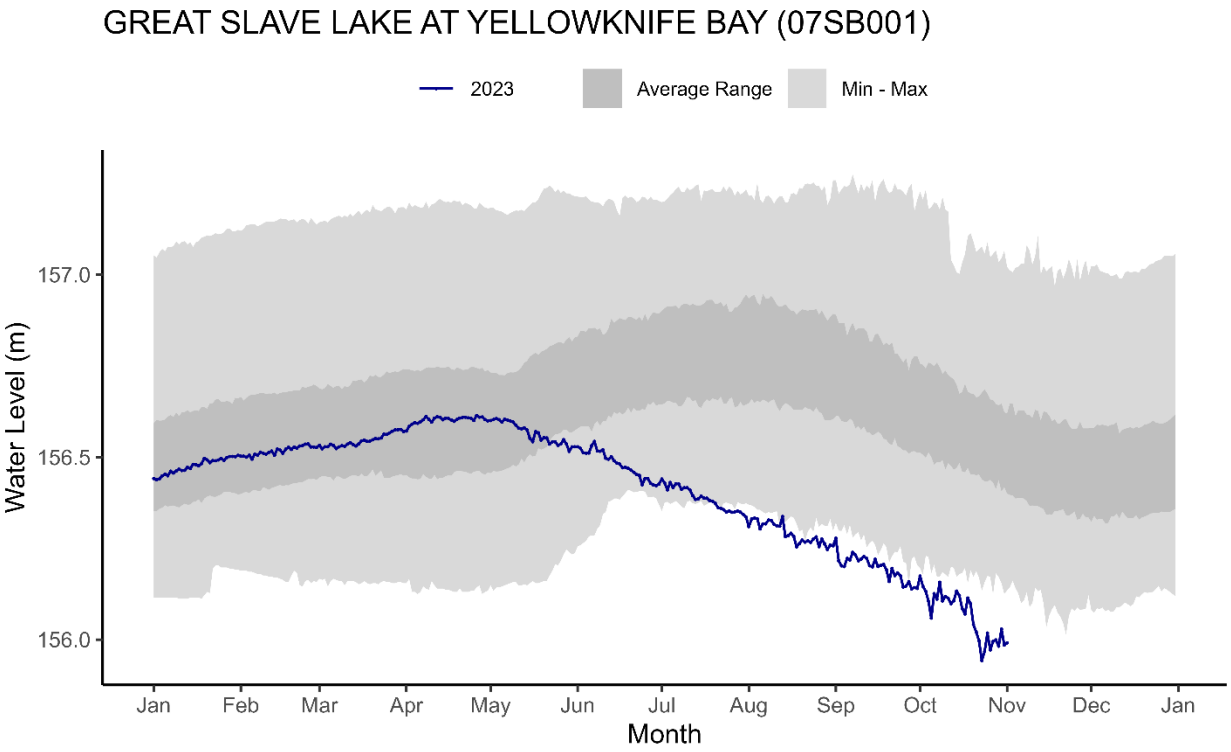
Lockhart River at outlet of Artillery Lake [07RD001]



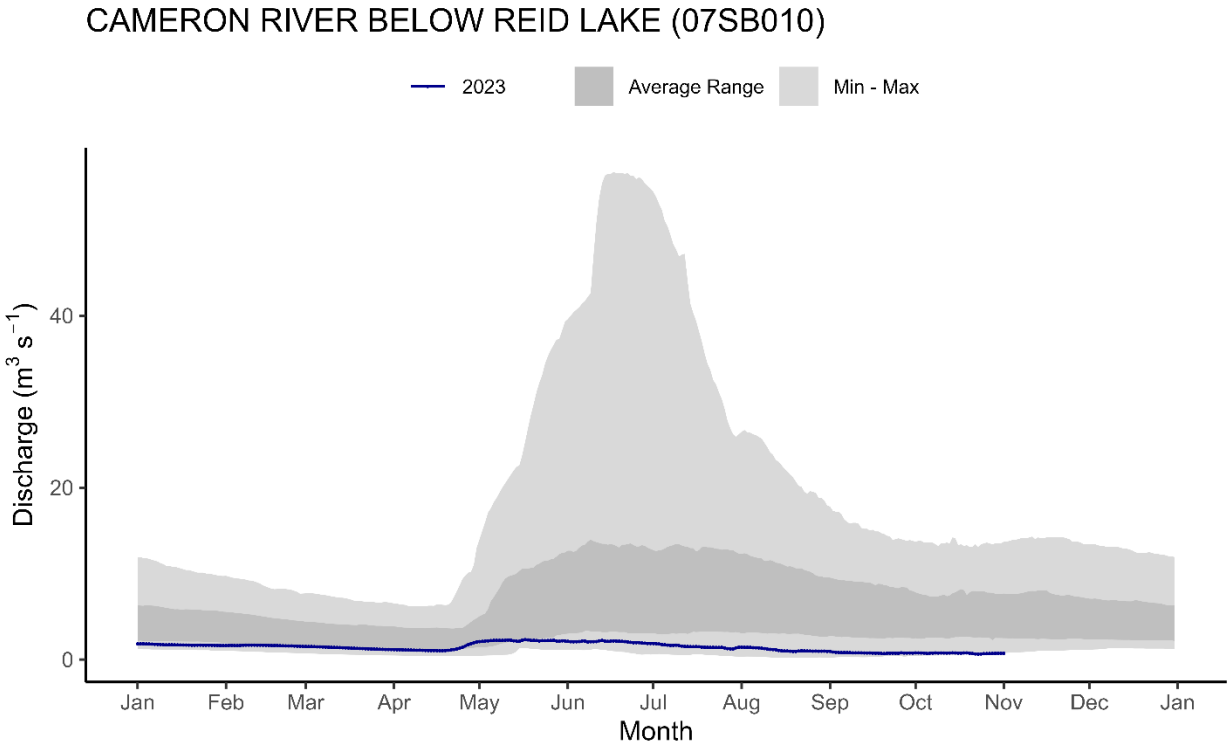
Coppermine River below Desteffany Lake [10PA001]



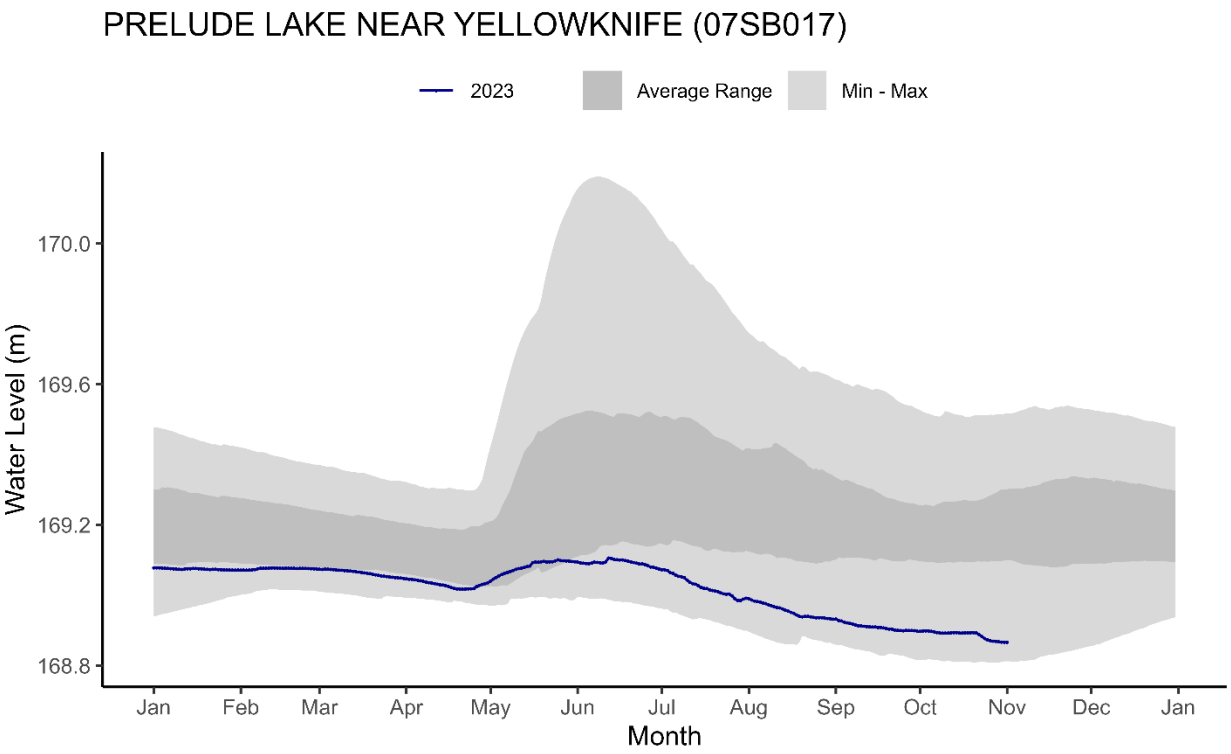
Great Slave Lake at Yellowknife Bay [07SB001]



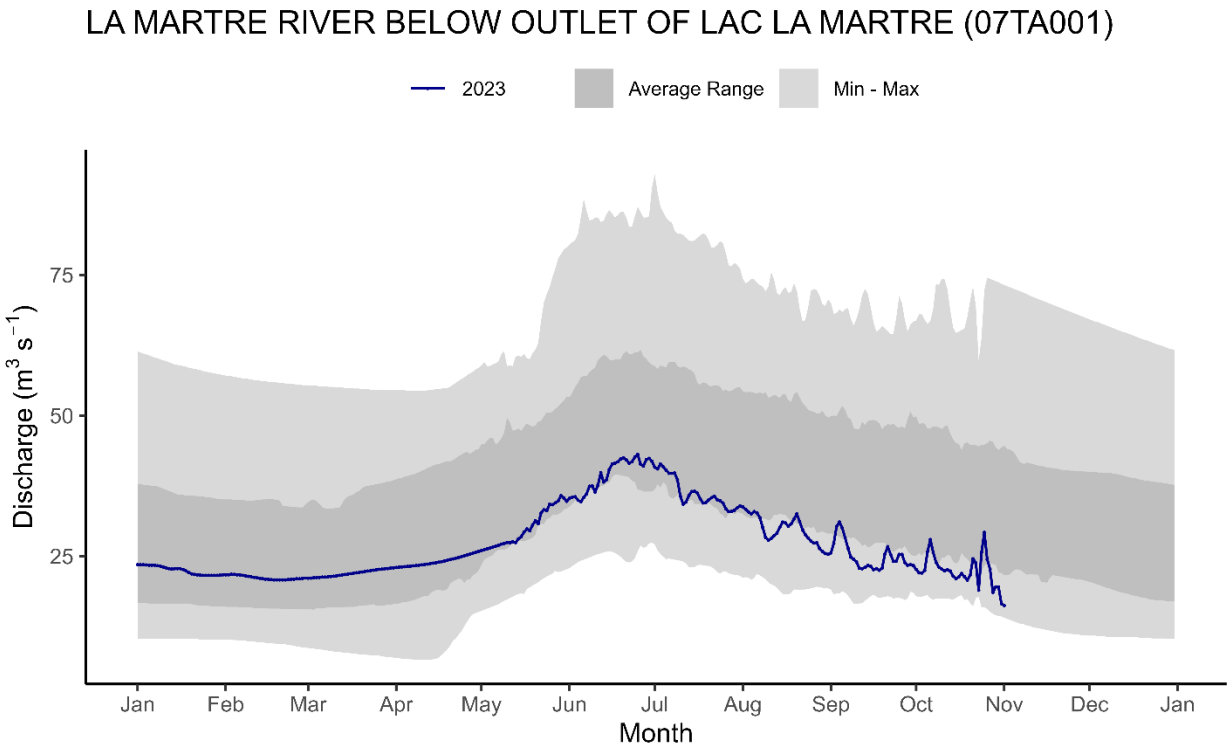
Cameron River below Reid Lake [07SB010]



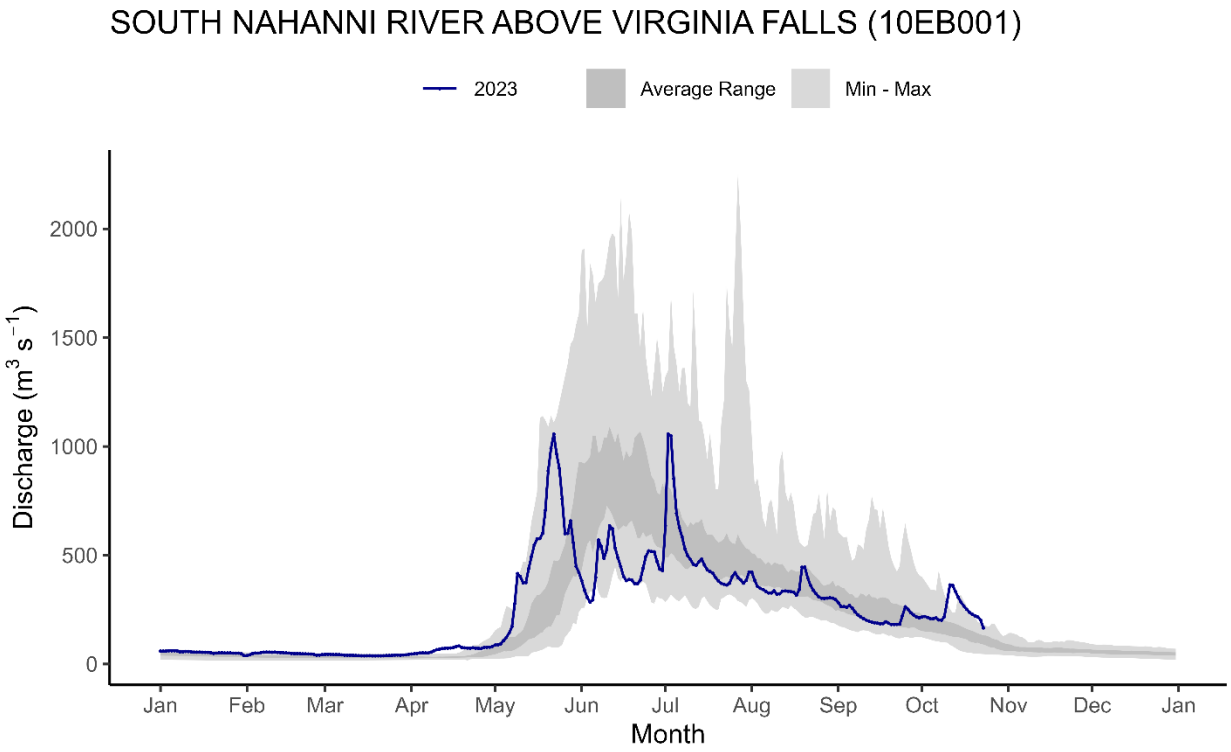
Prelude Lake near Yellowknife [07SB017]



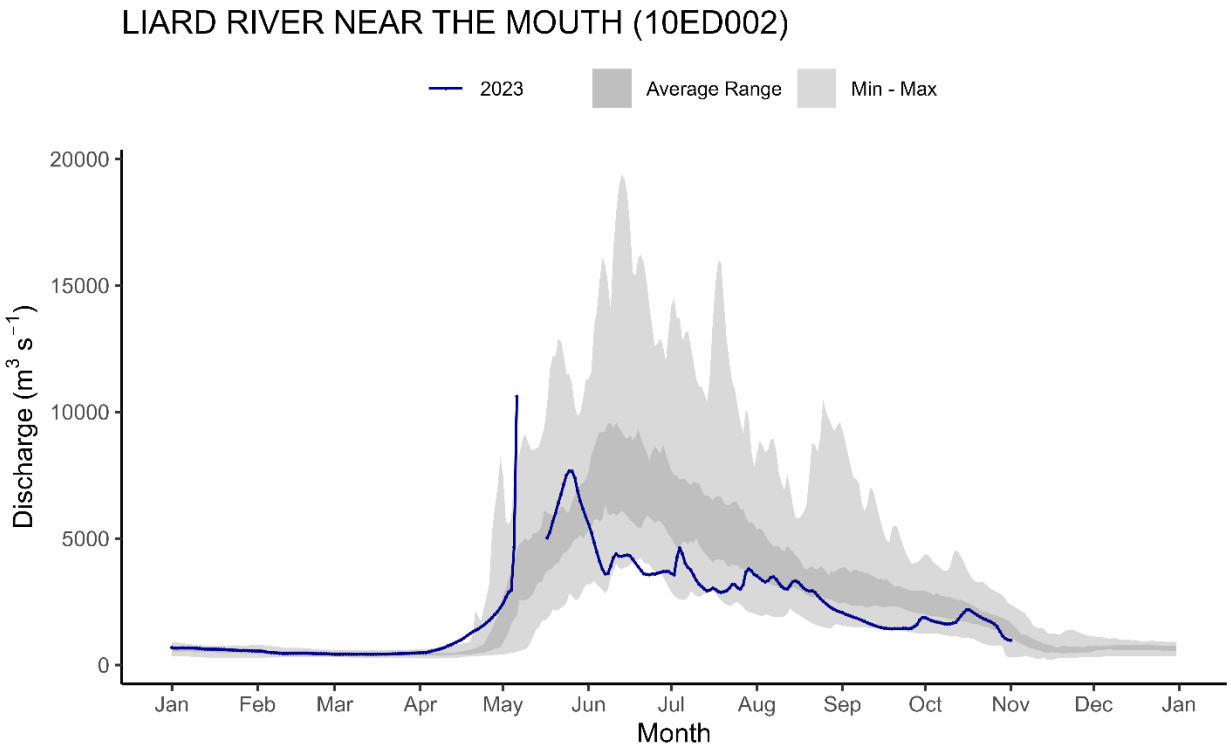
La Martre River below outlet of Lac La Martre [07TA001]



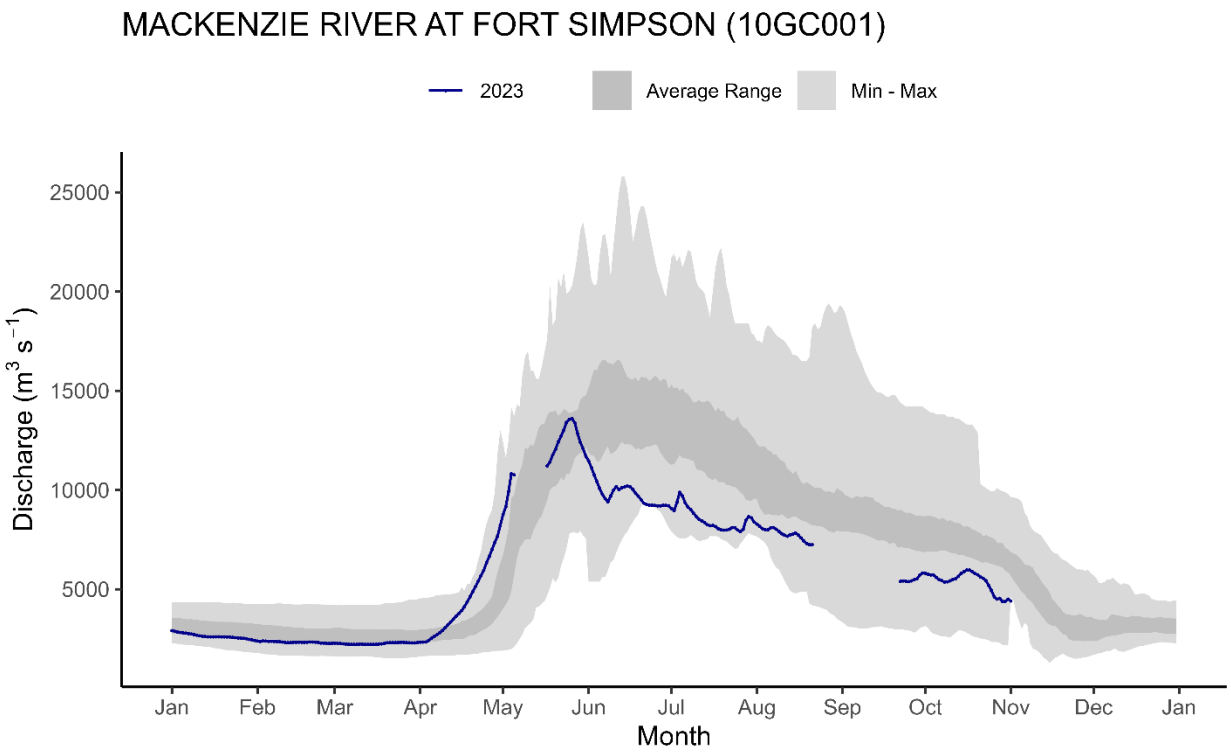
South Nahanni River above Virginia Falls [10EB001]



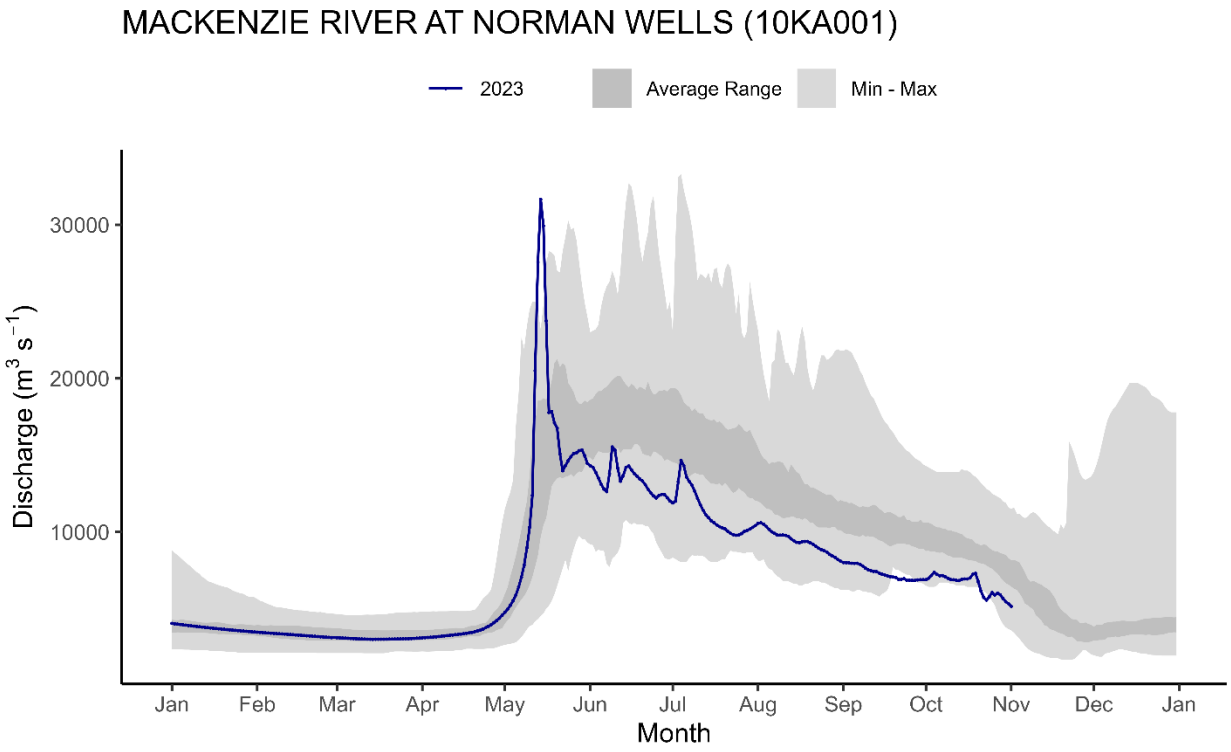
Liard River near the Mouth [10ED002]



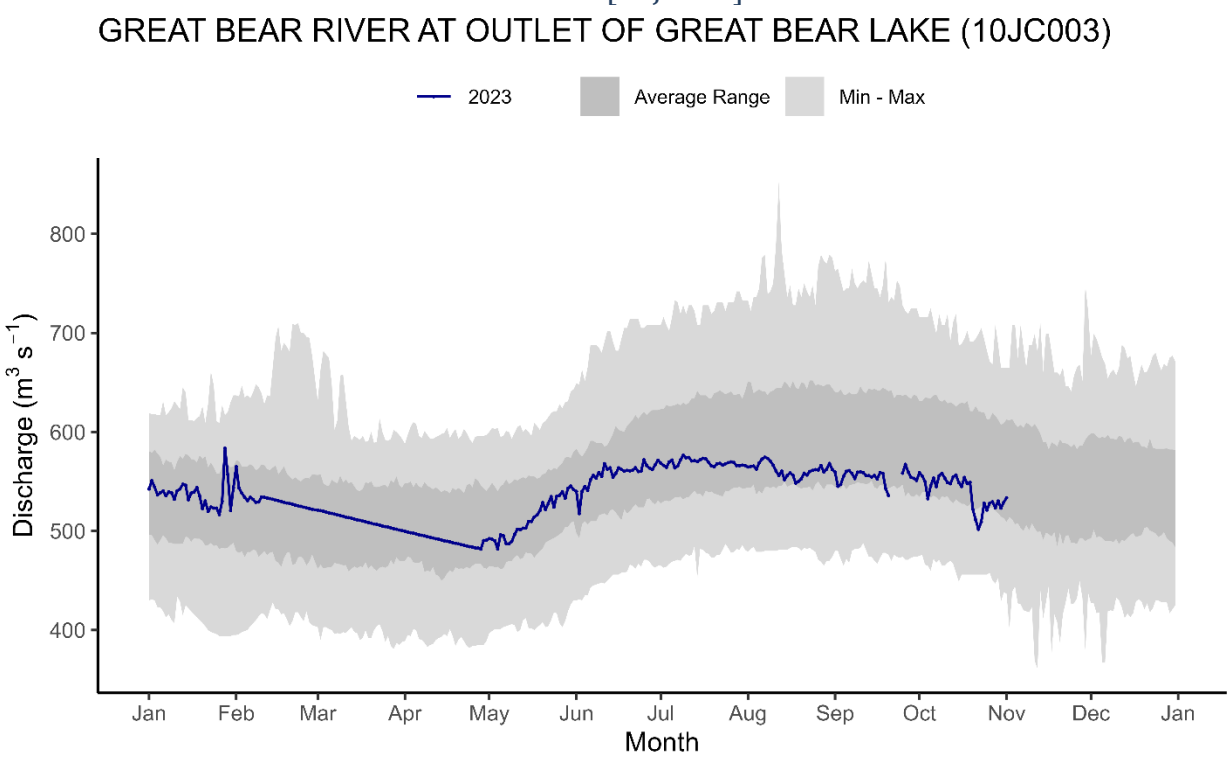
Mackenzie River at Fort Simpson [10GC001]



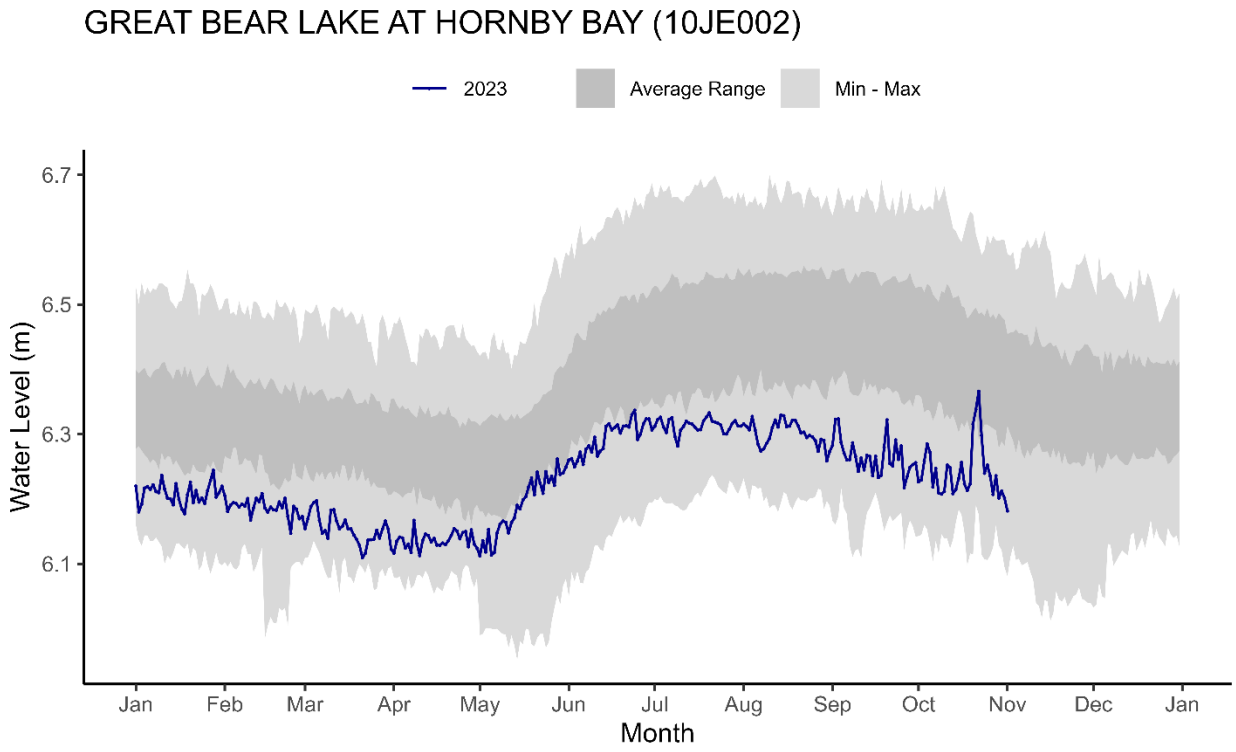
Mackenzie River at Norman Wells [10KA001]



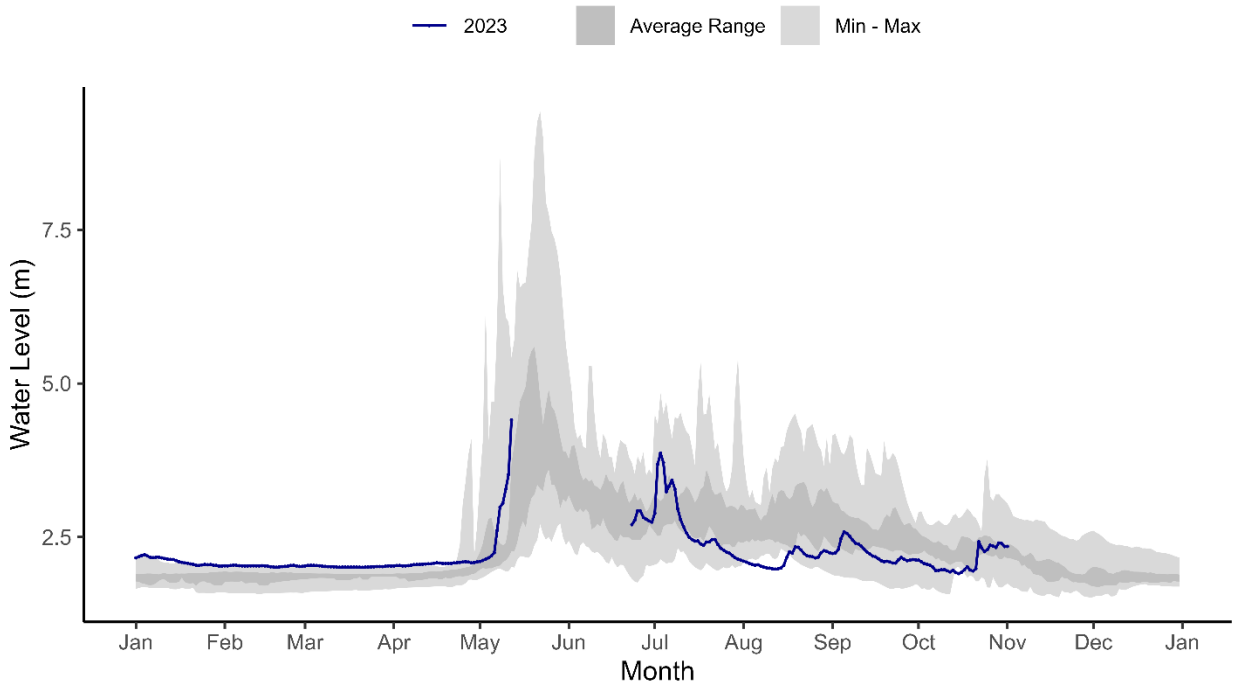
Great Bear River at outlet of Great Bear Lake [10JC003]



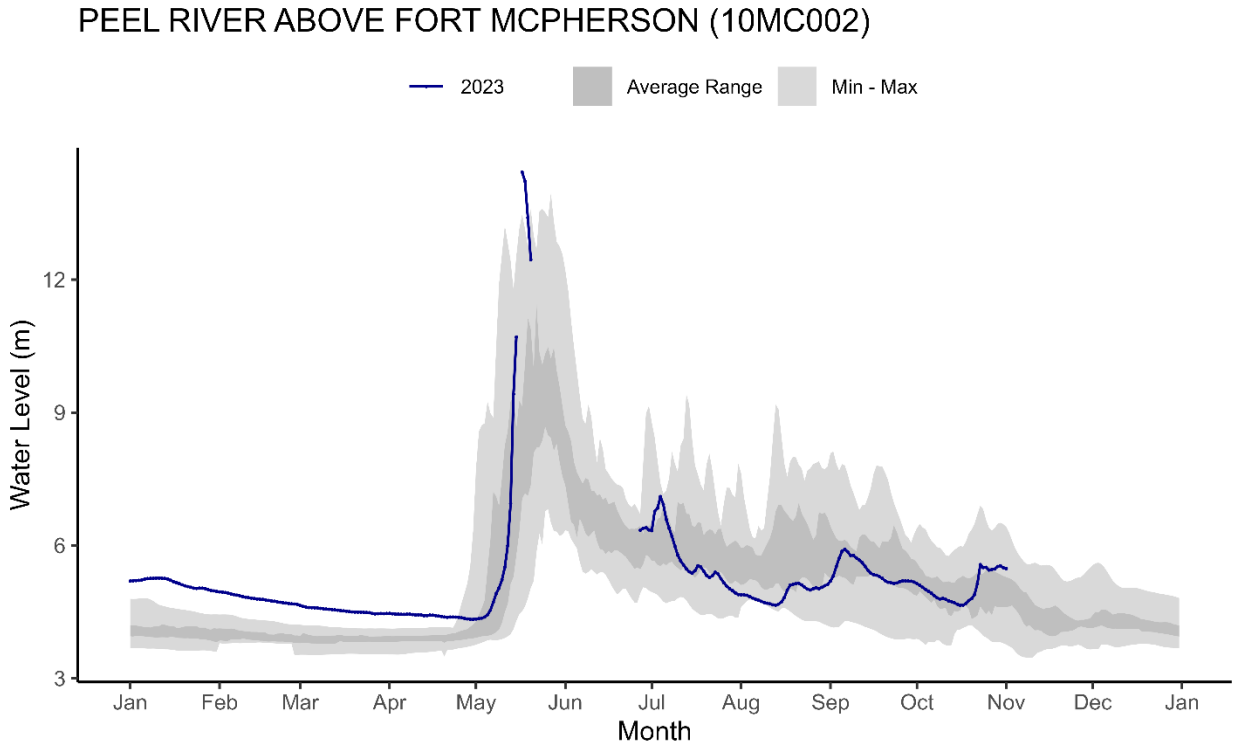
Great Bear Lake at Hornby Bay [10JE002]



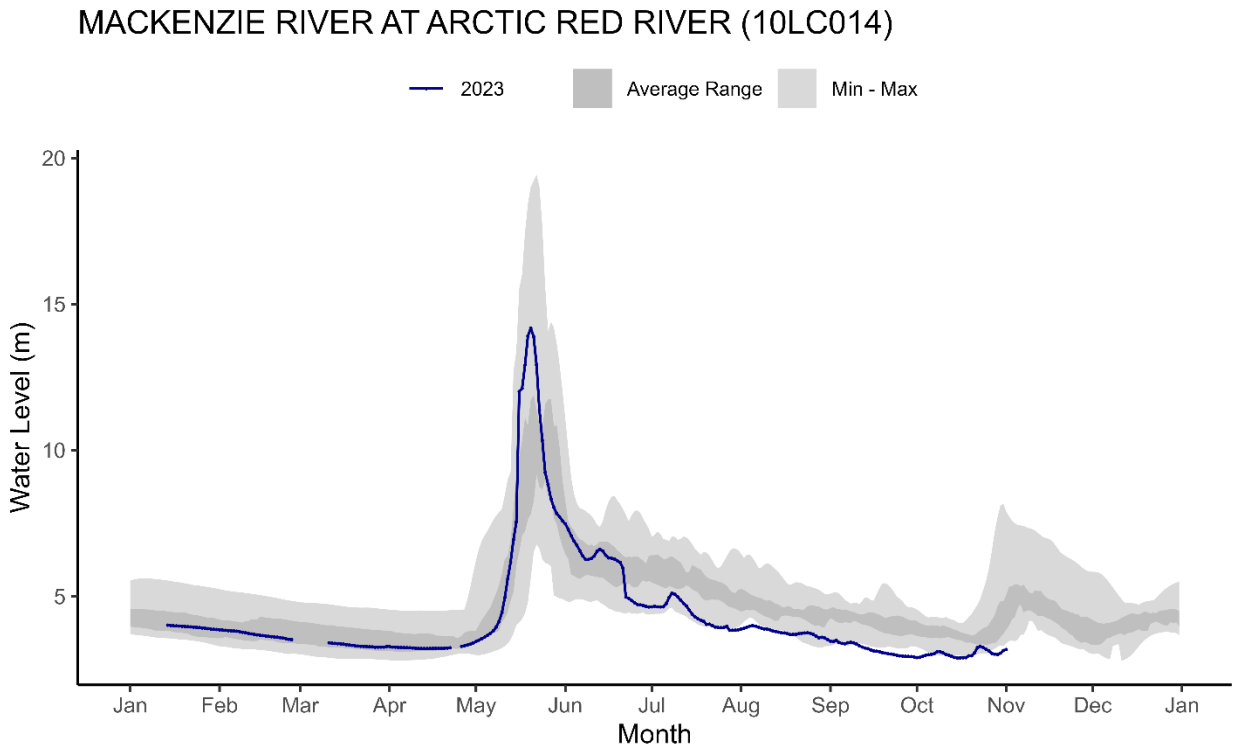
Arctic Red River near the mouth [10LA002]



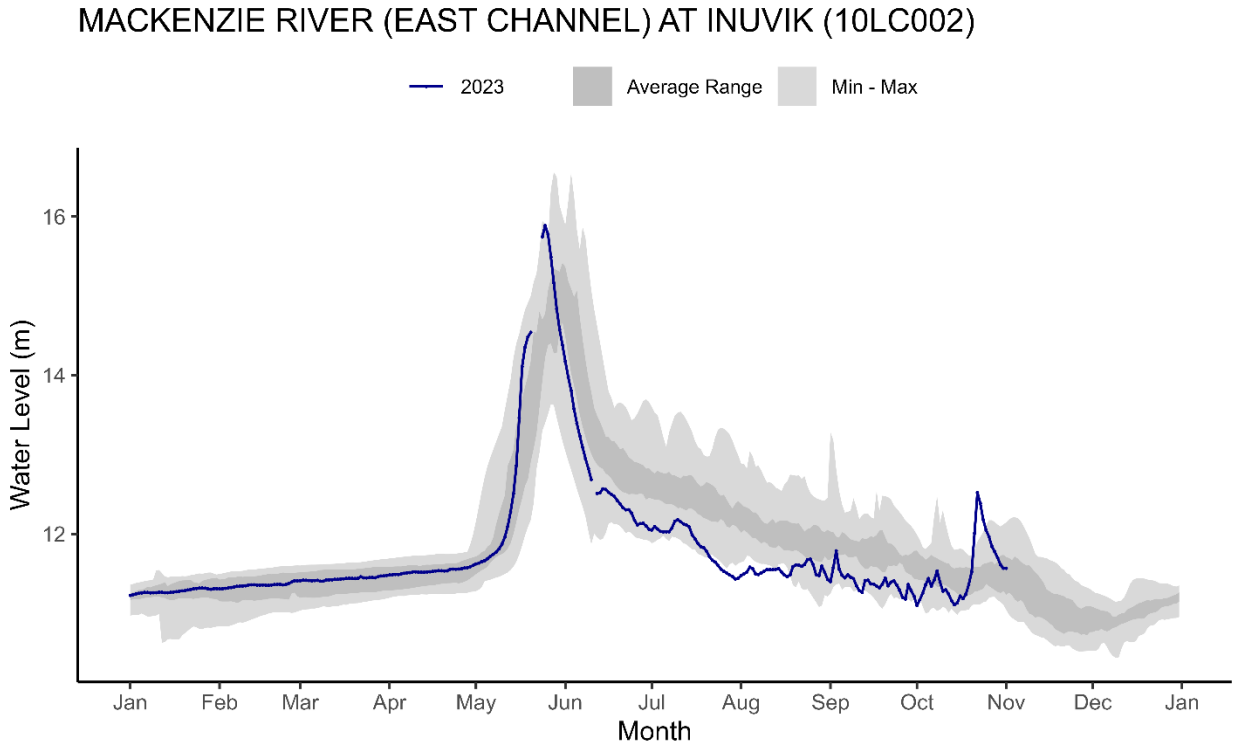
Peel River above Fort McPherson [10MC002]



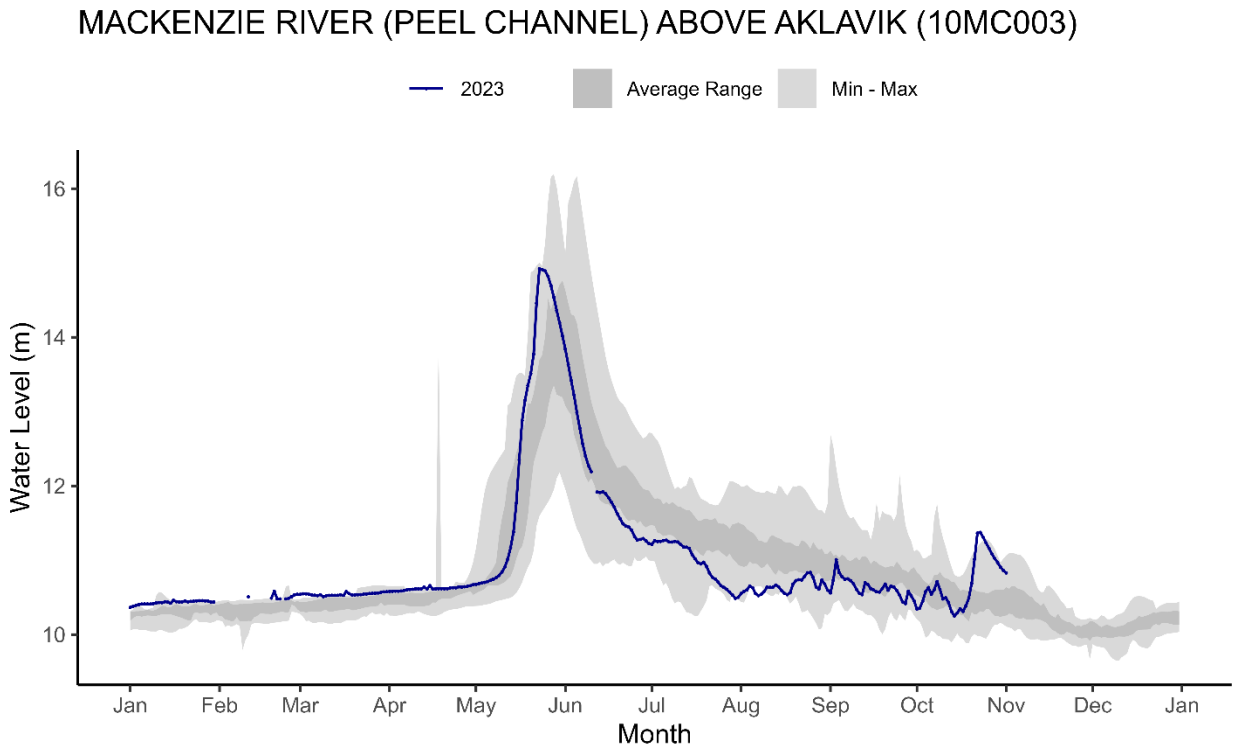
Mackenzie River at Arctic Red River [10LC014]



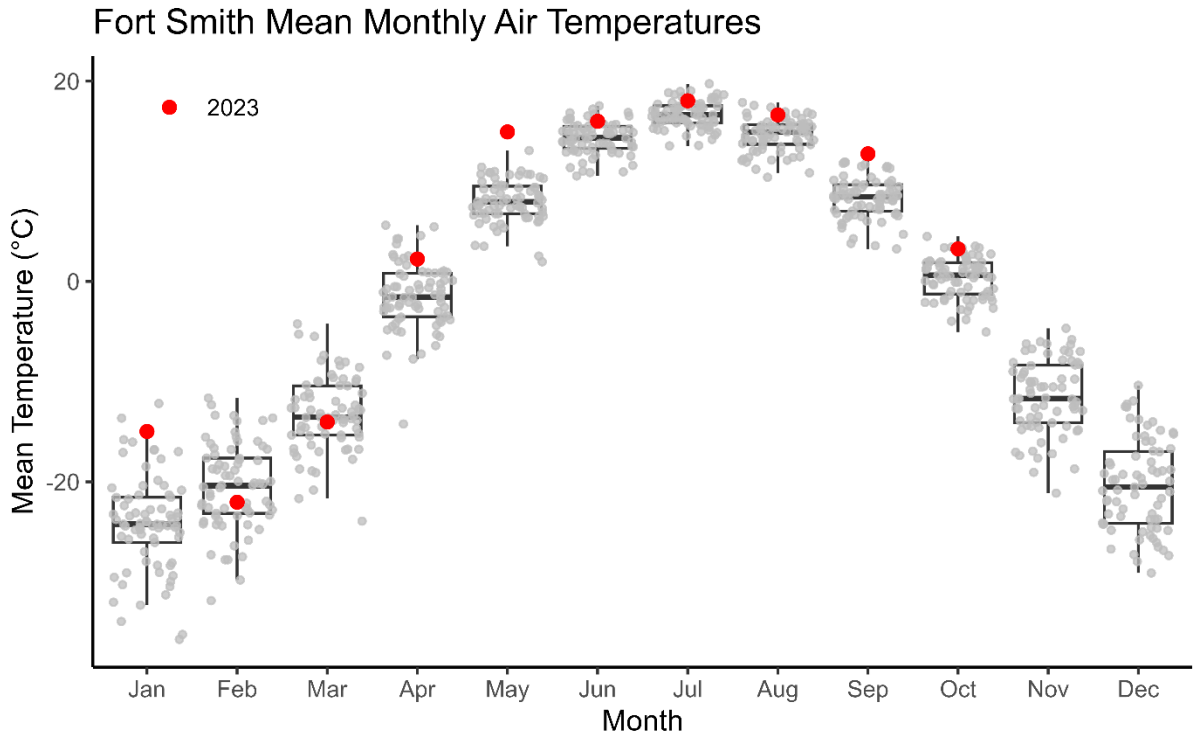
Mackenzie River (East Channel) at Inuvik [10LC002]

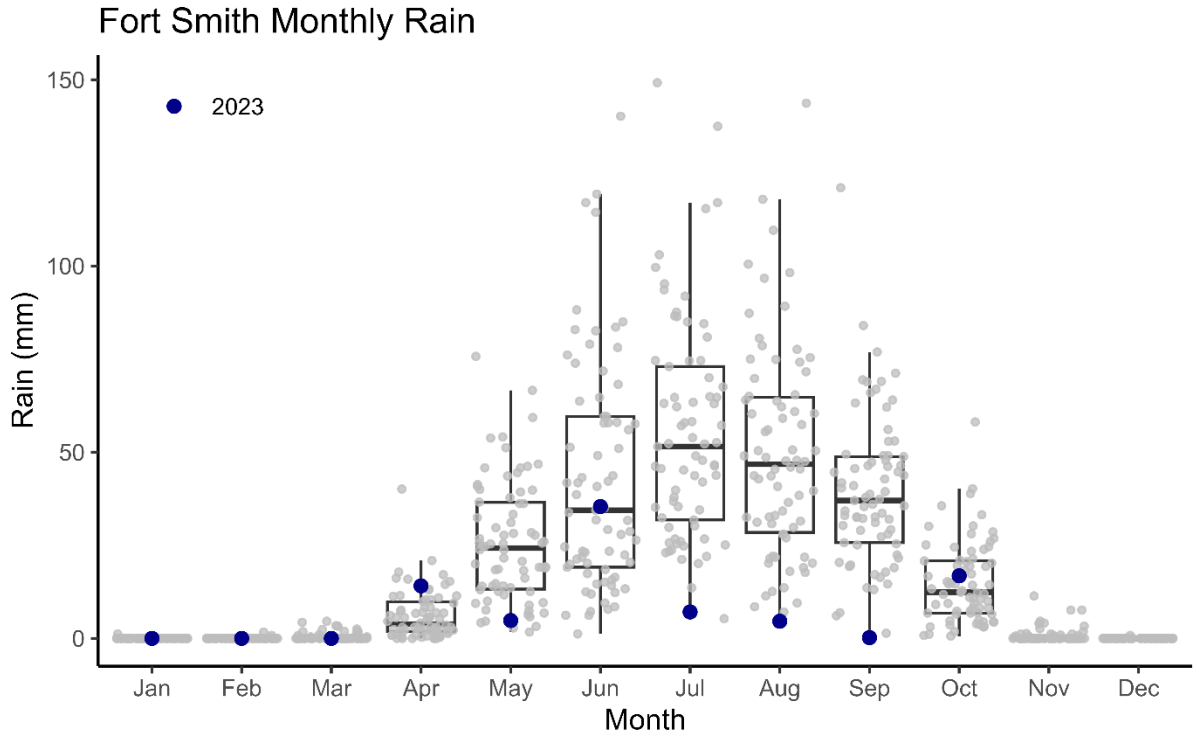


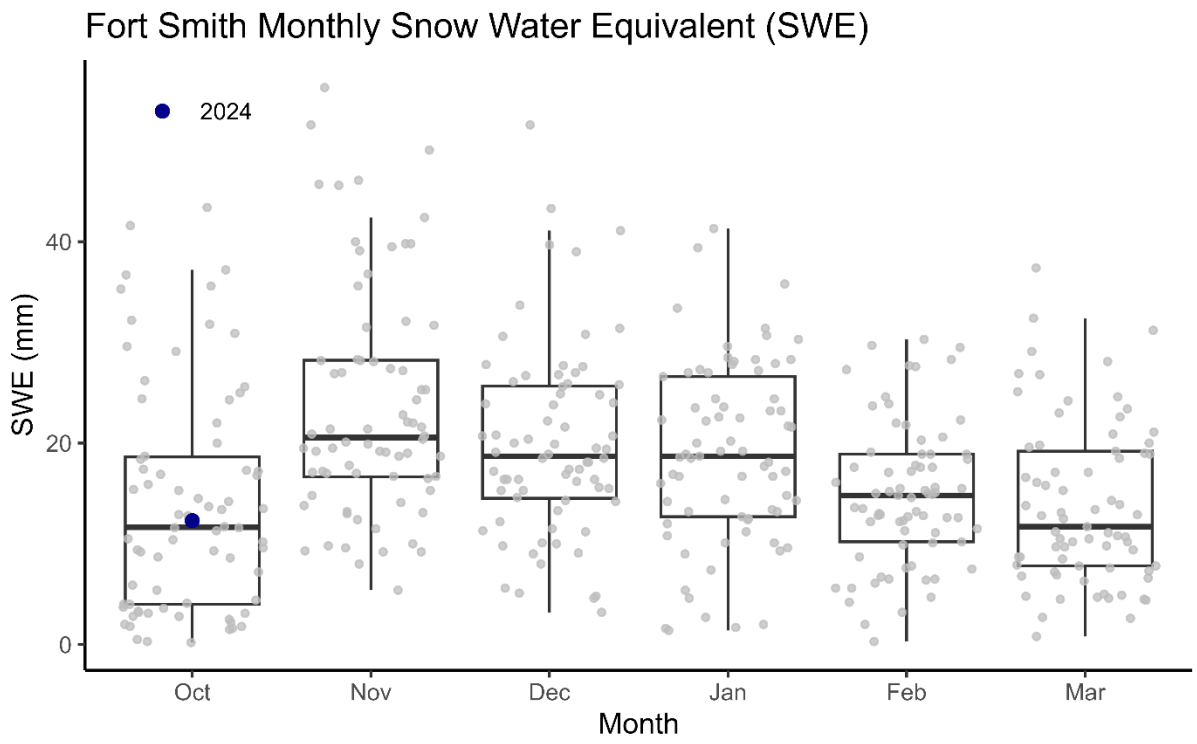
Mackenzie River (Peel Channel) above Aklavik [10MC003]



Climate Data:
Fort Smith

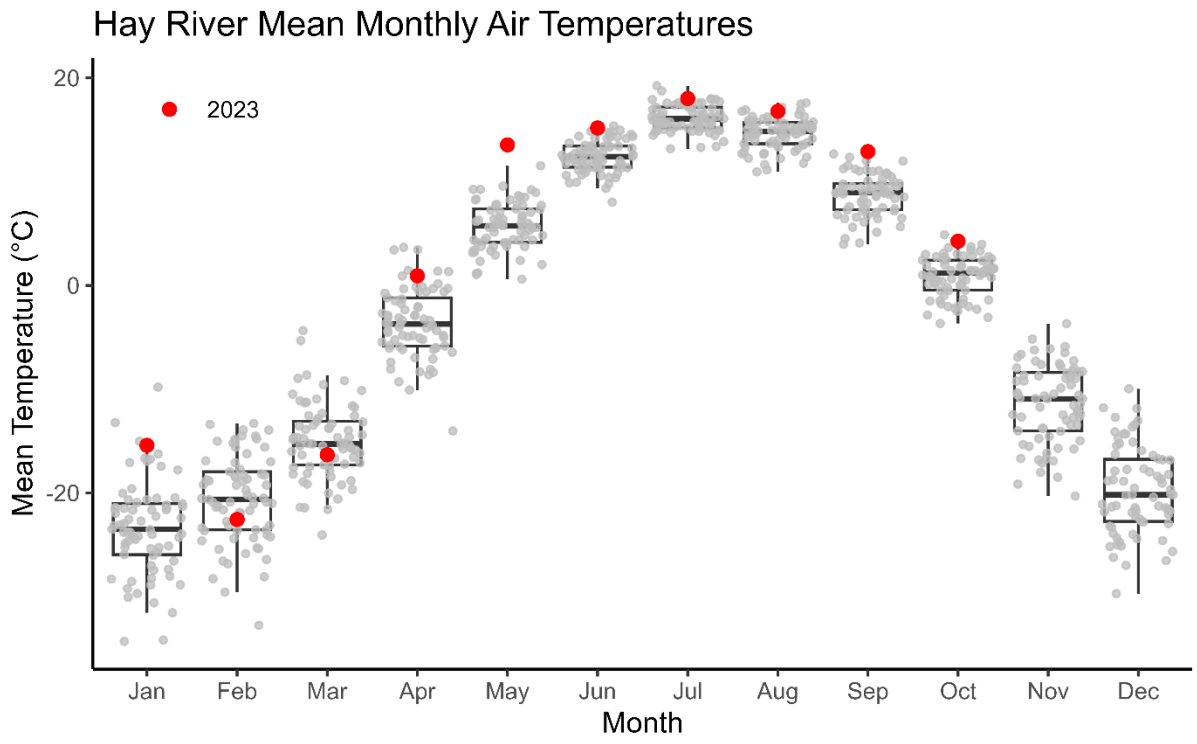






This figure shows the amount of snow water equivalent (i.e., amount of water left over when a snowpack is melted) over a winter (Oct to Mar). The year displayed as '2024' includes the last three months of 2023 (Oct, Nov, Dec) as well as the first three months of 2024 (Jan, Feb, Mar).

Hay River


Hay River Mean Monthly Air Temperatures
2023
Mean Temperature (°C)
20
0
-20
Jan
Feb
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May
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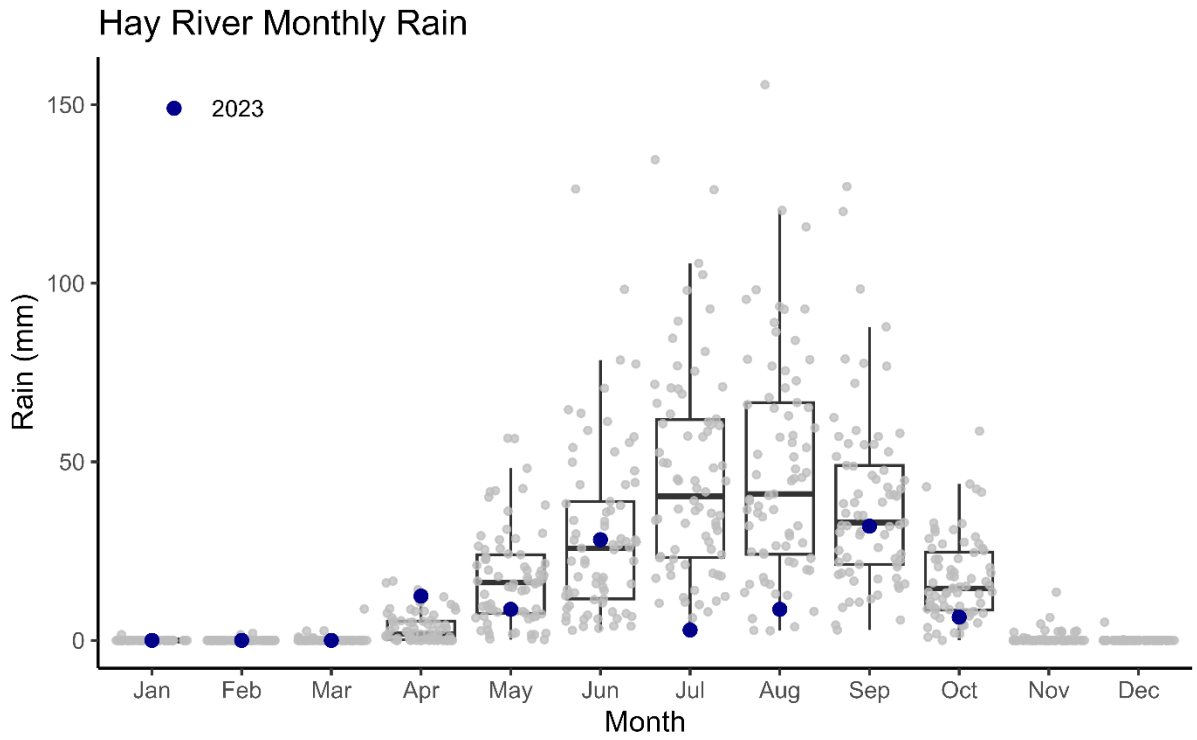
Sep
Oct
Nov
Dec
Month


Hay River Monthly Rain
2023
Rain (mm)
150
100
50
0
Jan
Feb
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Nov
Dec
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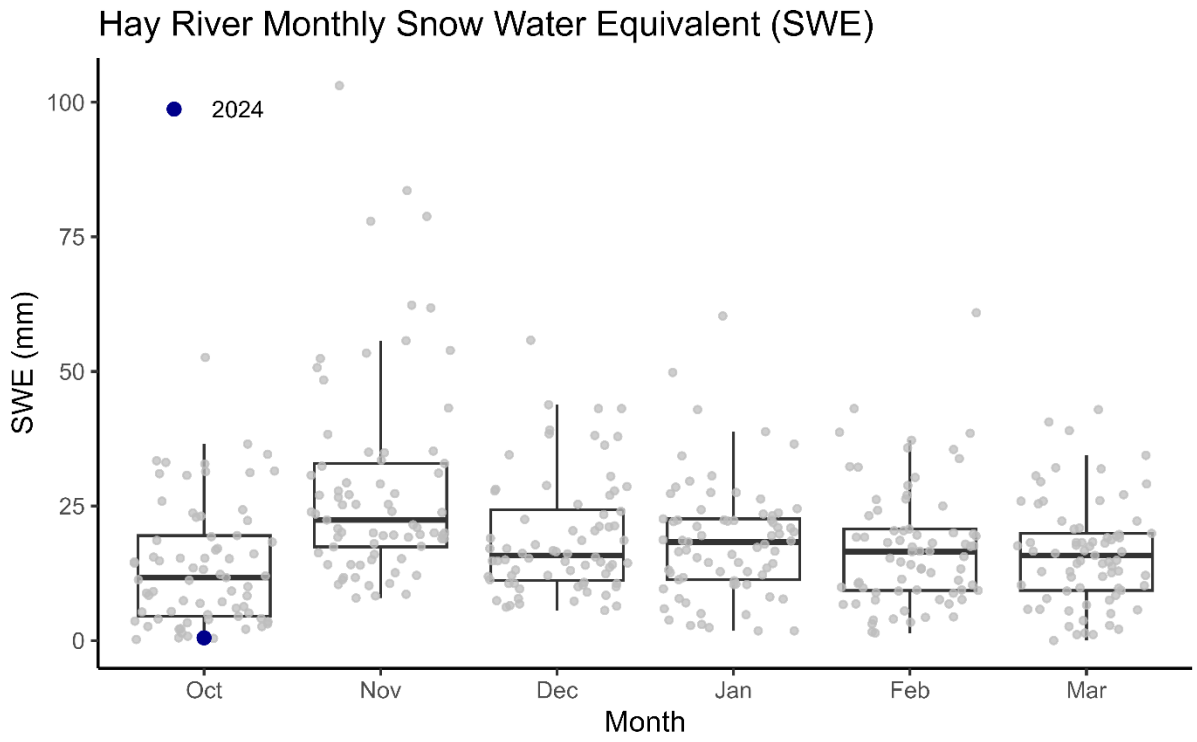

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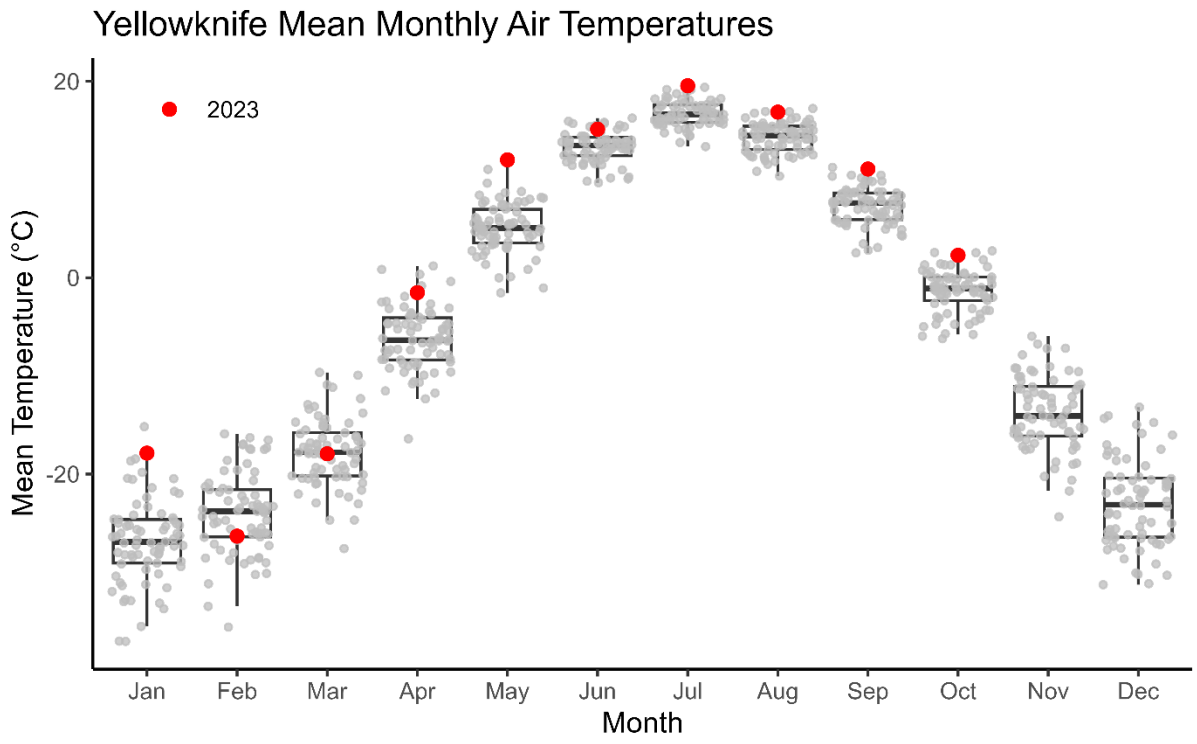
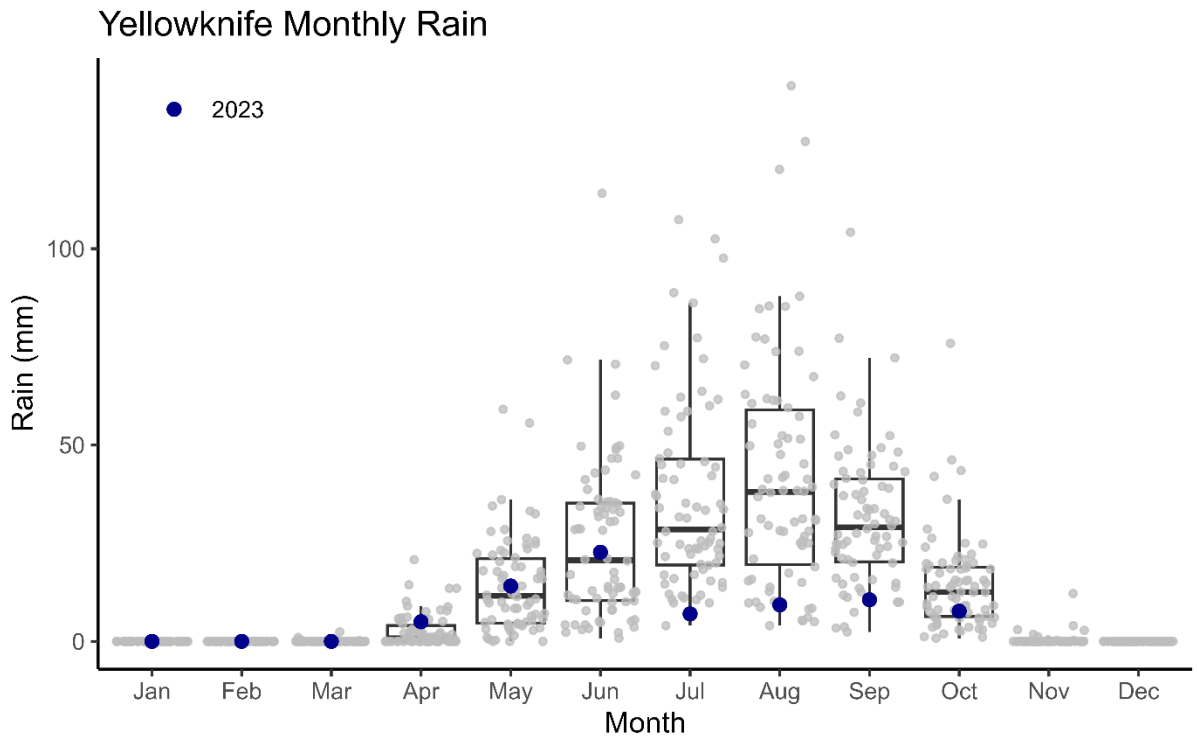
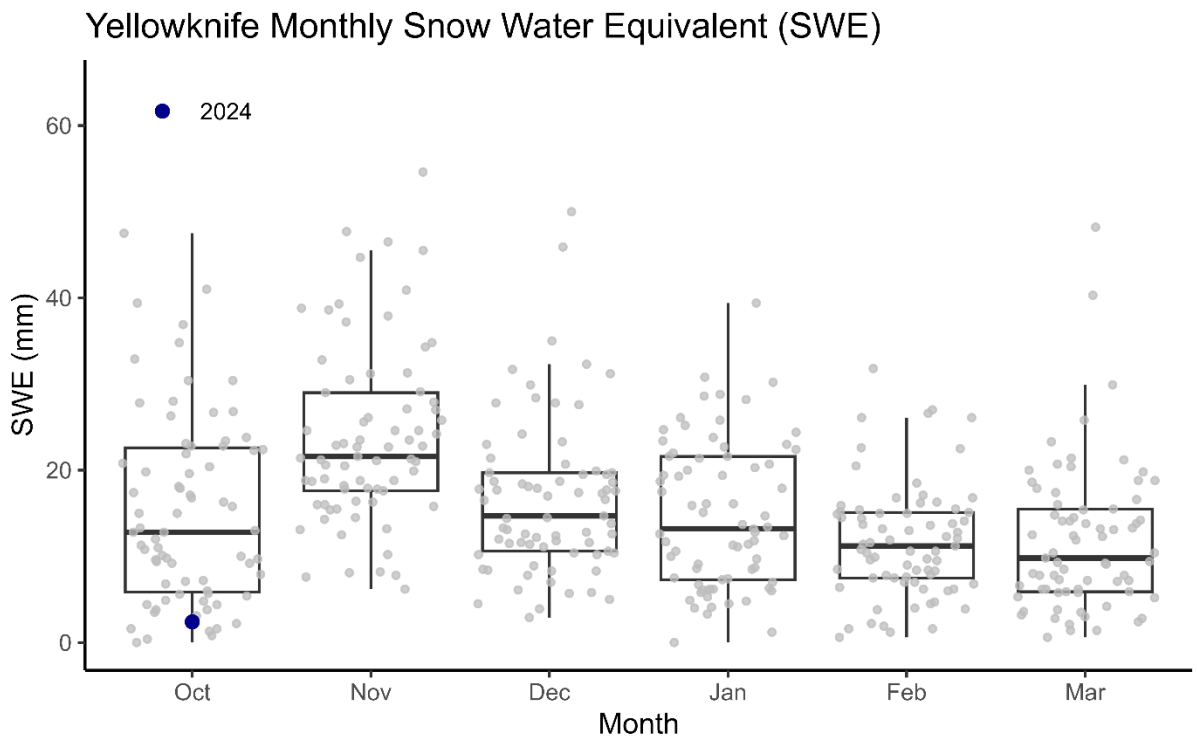
Yellowknife







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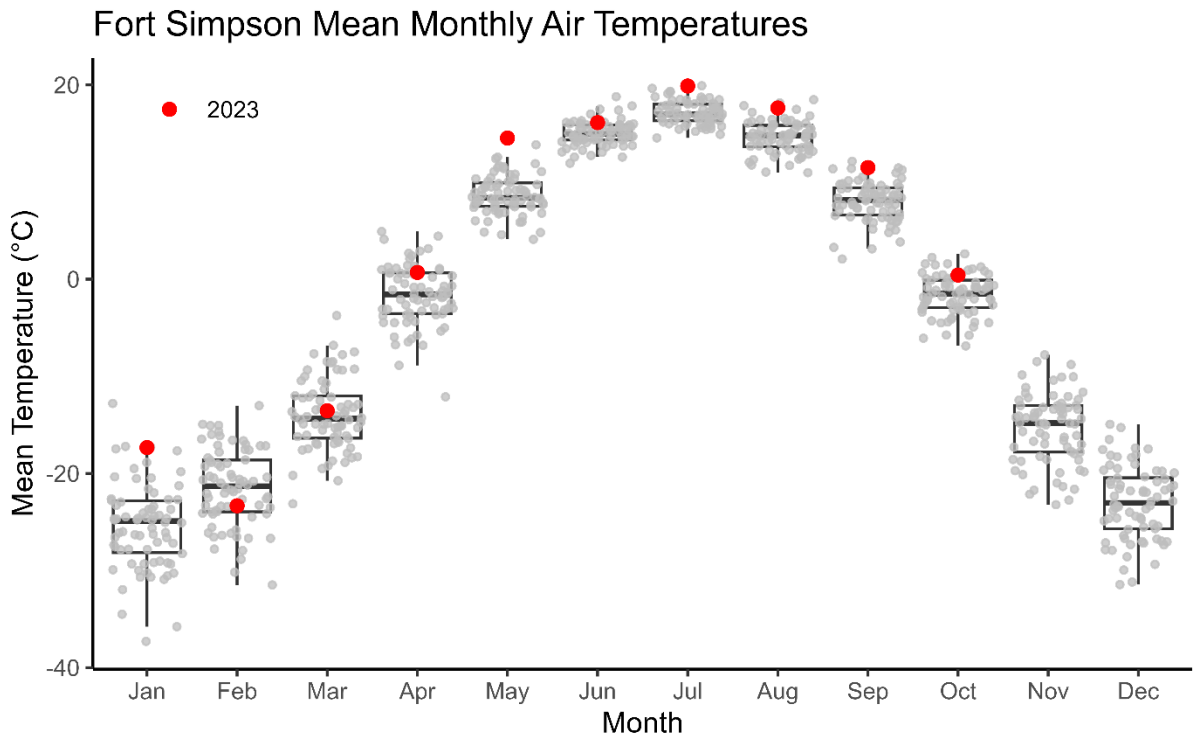
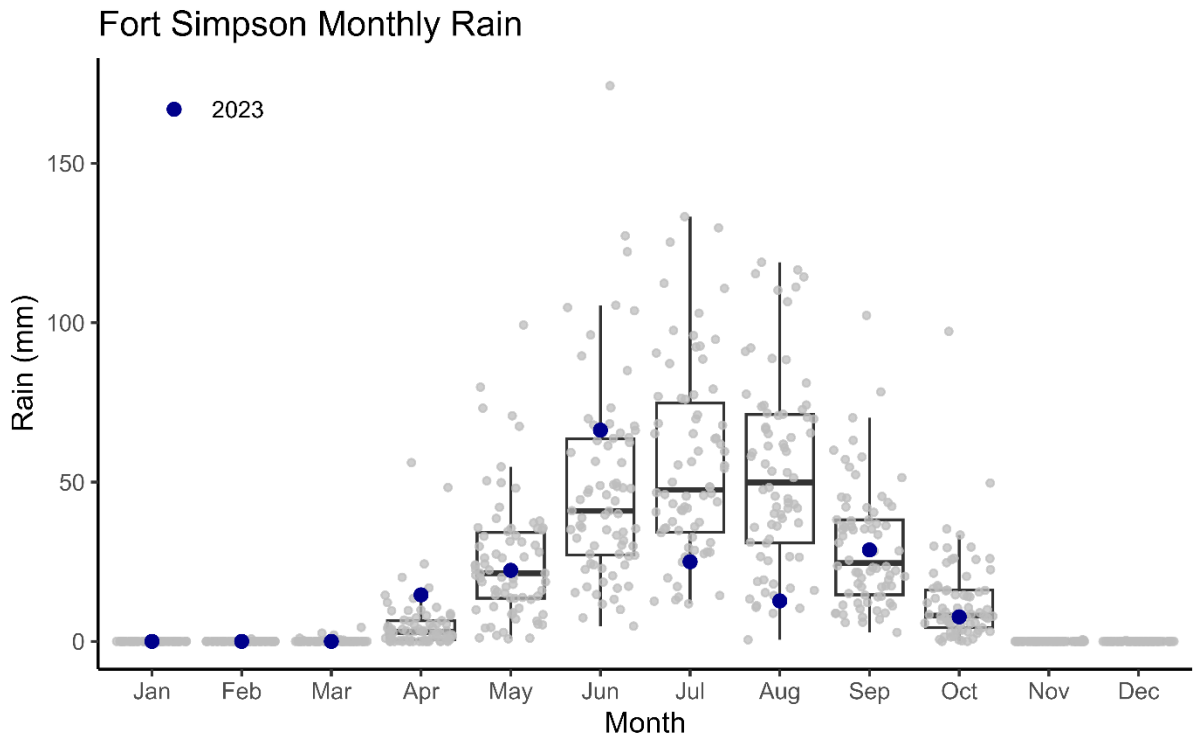
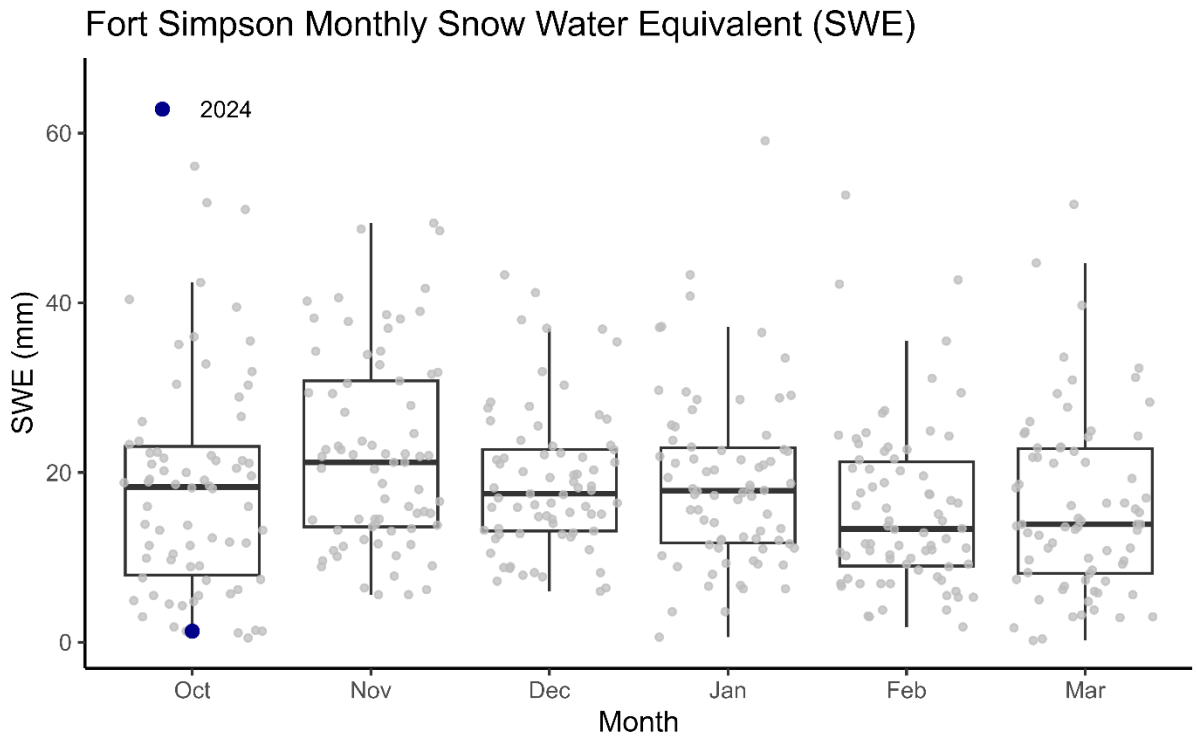
Fort Simpson







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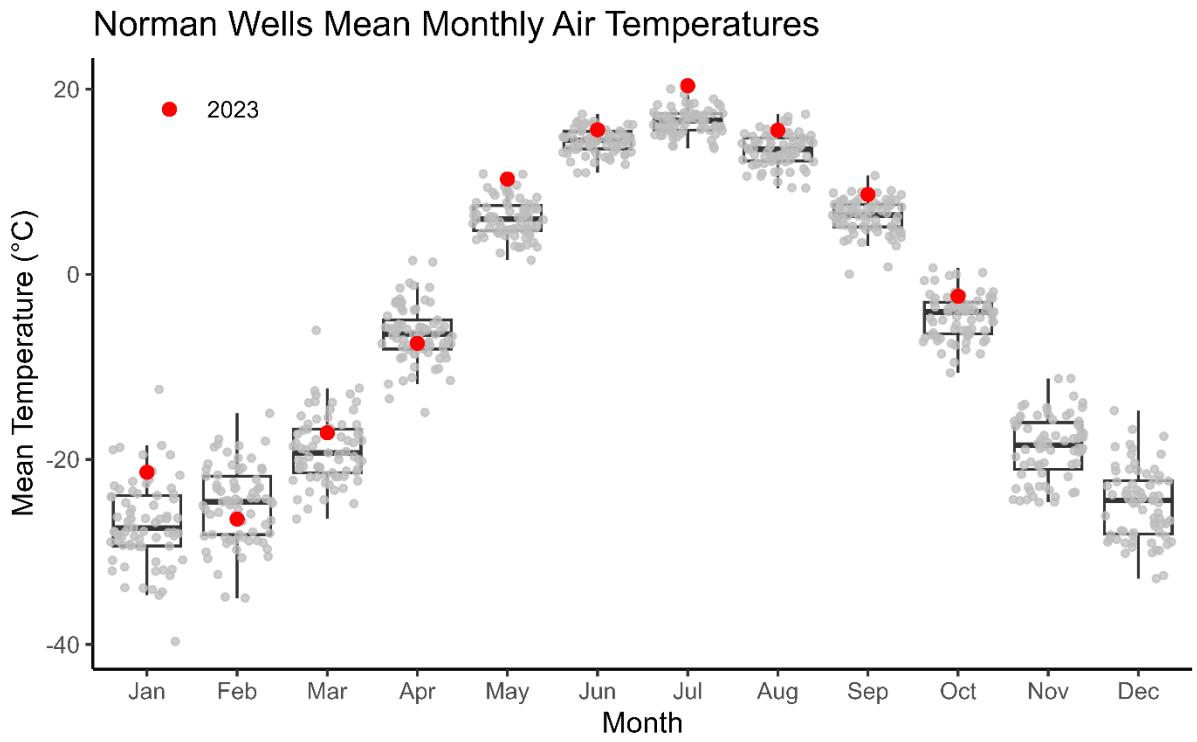
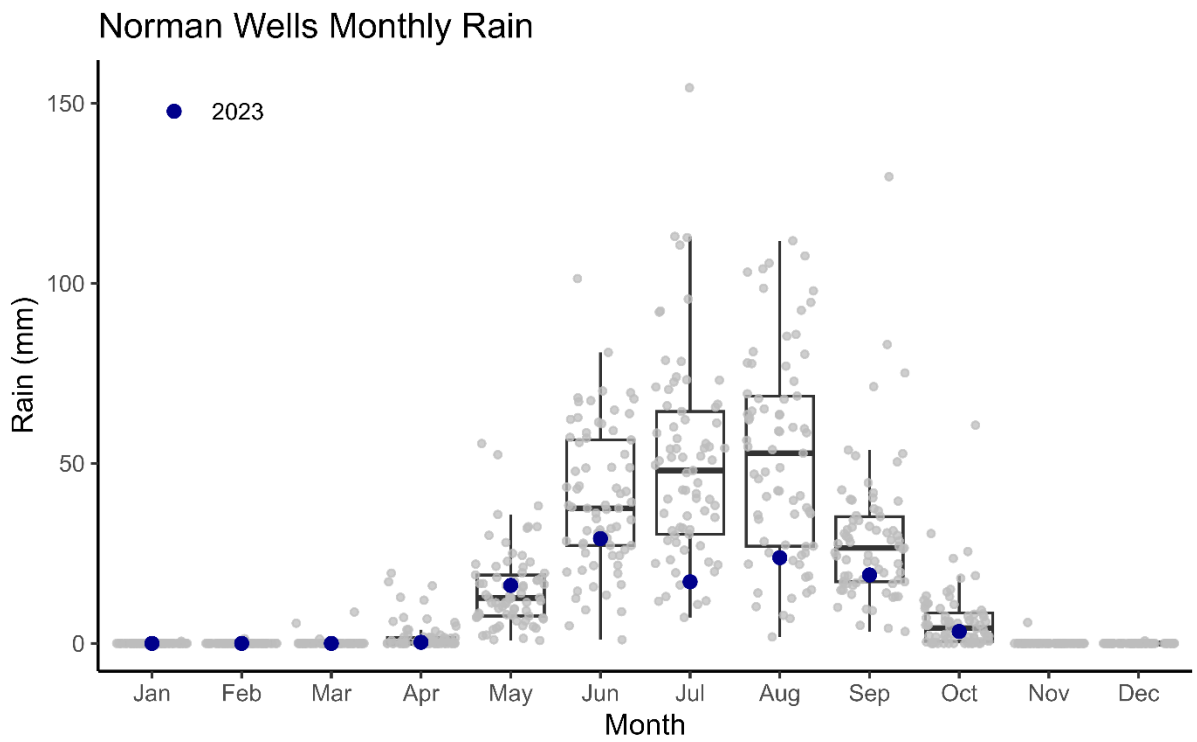
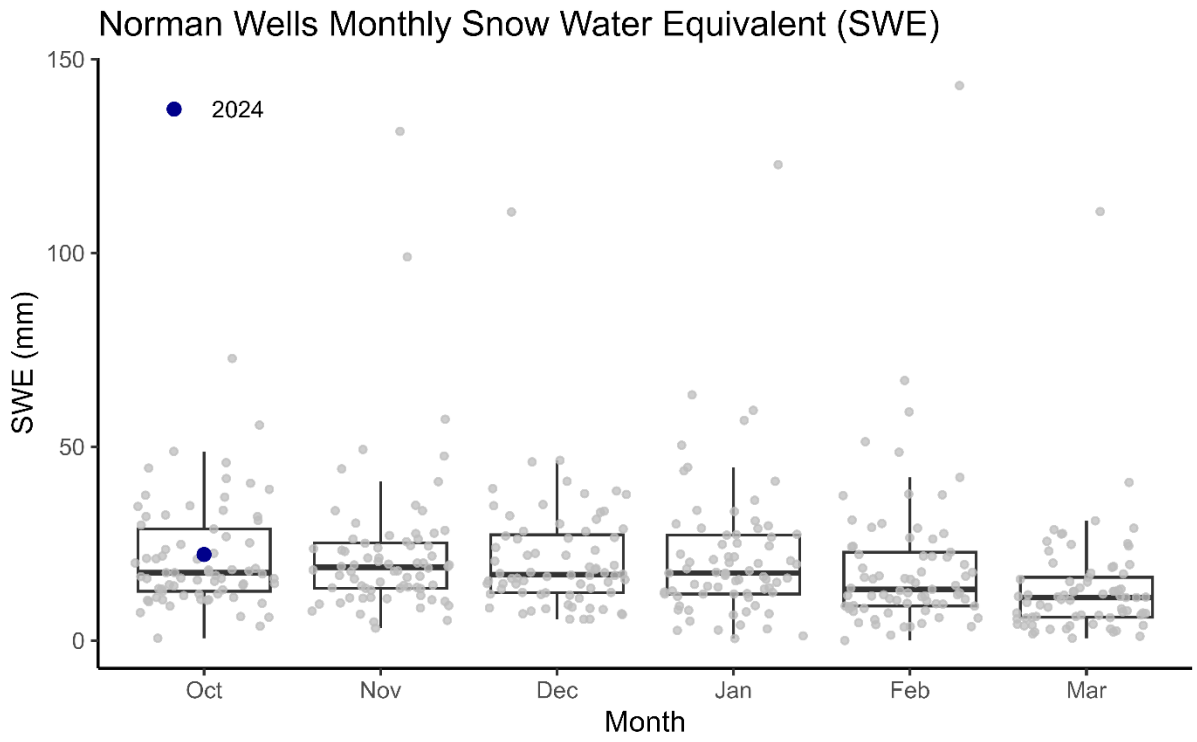
Norman Wells







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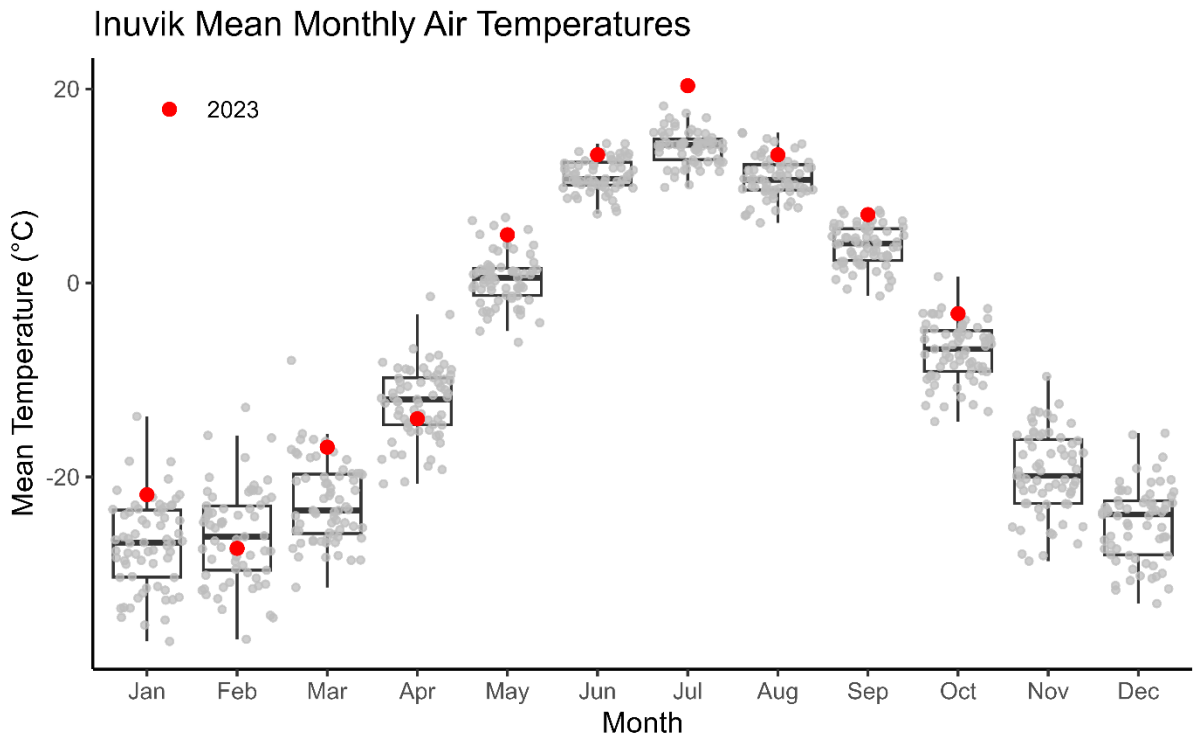
Inuvik


Inuvik Mean Monthly Air Temperatures
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Mean Temperature (°C)
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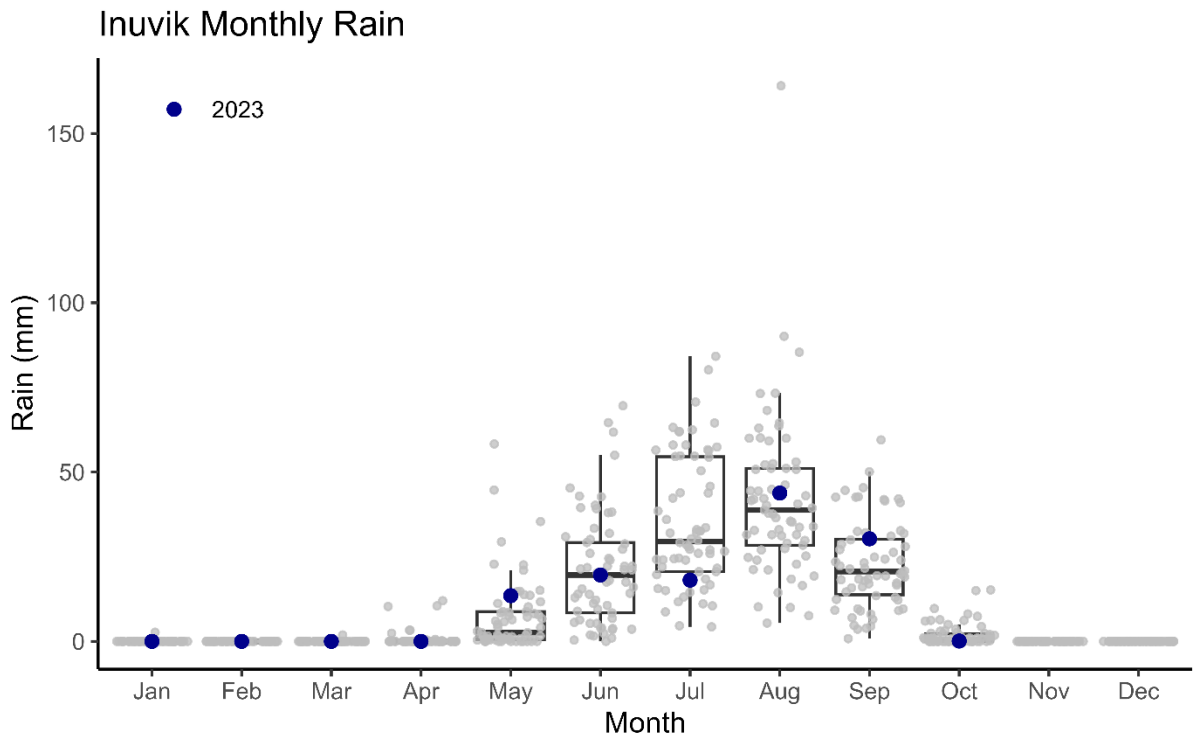
Inuvik Monthly Rain
2023
Rain (mm)
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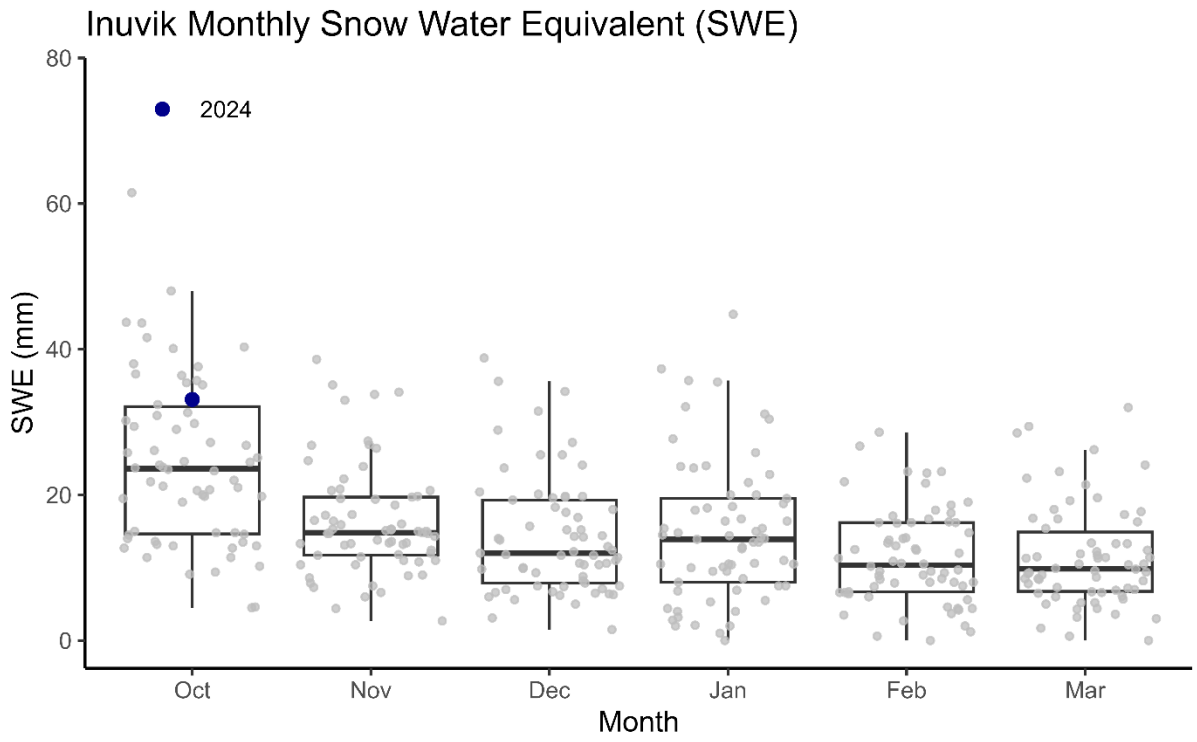

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