Government of
Northwest Territories

2025 NWT SPRING WATER OUTLOOK

Water Monitoring and Stewardship Division
Environment and Climate Change

April 15, 2025

APERÇU DES EAUX PRINTANIÈRES DES TNO POUR 2025

Division de la surveillance et de la gestion des eaux
Environnement et Changement climatique

Le 15 avril 2025

Contents

Overview

This report is an outlook for anticipated 2025 spring water levels in the Northwest Territories (NWT). It presents data on snowpack, current water levels, and river ice conditions (inferred from winter air temperatures). These indicators provide an estimate of spring flow rates. Actual flow rates and water levels in the spring are dependent on weather conditions, which determine how quickly the snowpack melts, how river ice deteriorates, and where ice jams may occur.

As the melt season advances, the Department of Environment and Climate Change (ECC) will report regularly on current water level and river ice conditions and how break-up is progressing. This situational awareness relies on information from various sources including near real-time water level and flow data (always provisional), near real-time photographs of water levels and ice from cameras at water level gauge sites, near real-time interpreted satellite imagery of ice conditions, forecasted weather conditions, and reports from community flood watch programs.

Aperçu

Le présent rapport est un aperçu des niveaux d'eau prévus pour le printemps 2025 aux Territoires du Nord-Ouest (TNO). Il présente des données sur l'accumulation de la neige, les niveaux d'eau actuels et l'état des glaces fluviales (déduit des températures de l'air en hiver). Ces indicateurs fournissent une estimation des débits au printemps. Les débits et les niveaux d'eau réels au printemps dépendent des conditions météorologiques, qui déterminent la rapidité de la fonte du manteau neigeux, la détérioration de la glace fluviale et les endroits où des embâcles peuvent se former.

Tout au long de la saison de fonte printanière, le ministère de l'Environnement et du Changement climatique (MECC) publiera régulièrement des rapports sur les niveaux d'eau actuels et les conditions liées à la glace fluviale, ainsi que sur l'évolution de la débâcle. Nous résumons la situation sur la base de données provenant de diverses sources, notamment des données en temps quasi réel sur les niveaux et les débits d'eau (toujours provisoires), des photographies en temps quasi réel des niveaux d'eau et de la glace prises par les caméras installées sur les capteurs mesurant le niveau de l'eau dans les stations, des images satellites de l'état de la glace interprétées en temps quasi réel, des prévisions météorologiques, ainsi que des rapports des programmes de surveillance des inondations mis en place par les collectivités.

Current water levels:

As the spring melt season begins, water levels across the territory as of April 15, 2025, are generally lower than average, with some exceptions. The summer and fall of 2024 were warmer and drier than normal across most of the NWT. These warm and dry conditions have resulted in continued low water levels that have persisted since the late summer of 2022.

The Beaufort-Delta region received above average precipitation in the fall of 2024 prior to freeze up. Water levels for some smaller, local rivers in this region are either approximately average or above average. Water levels in the Mackenzie River Delta remain low as they are dependent on precipitation for the entire Mackenzie River basin and are not substantially influenced by local precipitation. Other notable exceptions to low water levels include the Peel River, South Nahanni River, and some smaller, local rivers in the Great Slave Lake basin.

Snowpack:

Snowpack across the territory in the winter of 2024-2025 was generally average, with variability between and within regions. Snowfall was generally higher than normal in the eastern and southeastern portions of the territory. Above average snowpack was observed specifically for the Yellowknife River basin and the Taltson River basin. Snowpack for all other basins was approximately average to below average.

These data are based on snow surveys conducted in late March by ECC. These surveys measure the volume of water that is produced when a snowpack melts – this is called snow water equivalent (SWE). The amount of SWE is based on both the depth of snow and its density.

Spring weather conditions will determine the timing of snowmelt, which is important because a quick, sudden snowmelt will cause a larger rise in water levels than would a prolonged snowmelt season.

Snowpack accumulation has also been assessed using a modelled climate product called ERA5-Land. ERA5-Land values for SWE compare well to those measured manually by ECC and other jurisdictions and is presented along with manual snow survey data.

River ice:

Winter air temperatures in the NWT were warmer than average in 2024-2025. Winter air temperatures, in part, affect the thickness of river ice.

Flood risk:

It is difficult to predict in advance how break-up will occur and if/where ice jams will form because these factors are highly dependent on spring weather conditions. Ice jams during break-up typically form on north-flowing rivers, where warm weather and snowmelt cause ice to break-up earlier on the southern reaches of a river. As this ice flows north (downstream), it may meet a more solid ice cover. When this happens, sheets of floating ice run into the solid ice and can form a dam (an 'ice jam'), which may cause water levels to rise rapidly behind it. The occurrence of ice jams is primarily dependent on weather conditions just prior to and during break-up. These weather conditions will influence how much and how quickly snowmelt water reaches river systems and how the ice breaks up. Over-winter conditions, such as snowfall, winter air temperatures and ice thickness, can play a role in the occurrence of ice jams as well.

Ice jam flooding can happen in any year regardless of pre-existing water levels and snowpack. The potential severity of flooding, if an ice jam occurs, is higher when water levels are already high, when snowpacks are large, and when river ice is thick.

ECC recommends that residents in communities that are susceptible to flooding follow the advice from Municipal and Community Affairs (MACA) to ensure that they are prepared for possible flooding every year.

Niveaux d'eau actuels

Alors que commence la fonte printanière, les niveaux d'eau sur l'ensemble du territoire en date du 15 avril 2025 se situent généralement sous la moyenne, à quelques exceptions près. L'été et l'automne 2024 ont été plus chauds et plus secs que la normale dans la majeure partie des TNO, ce qui a entraîné la persistance de faibles niveaux d'eau depuis la fin de l'été 2022.

La région de Beaufort-Delta a reçu des précipitations supérieures à la moyenne à l'automne 2024 avant la prise des glaces. Les niveaux d'eau de certains petits cours d'eau locaux de cette région sont soit proches de la moyenne, soit supérieurs à la moyenne. Les niveaux d'eau dans le delta du fleuve Mackenzie restent bas, car ils sont tributaires des précipitations pour l'ensemble du bassin du fleuve Mackenzie et ne sont pas fortement influencés par les précipitations locales. Parmi les autres exceptions notables aux faibles niveaux d'eau, mentionnons la rivière Peel, la rivière Nahanni Sud et certaines rivières locales de moindre importance dans le bassin du Grand lac des Esclaves.

Accumulation de neige

L'enneigement sur le territoire au cours de l'hiver 2024-2025 s'est situé dans la moyenne, avec une variabilité entre les régions comme à l'intérieur de celles-ci. Les chutes de neige ont été généralement supérieures à la normale dans l'est et le sud-est du territoire. Une accumulation de neige supérieure à la moyenne a été observée spécifiquement dans le bassin de la rivière Yellowknife et dans le bassin de la rivière Taltson. L'accumulation de neige dans tous les autres bassins s'est située approximativement dans la moyenne ou en deçà.

Ces données sont basées sur les relevés nivométriques effectués à la fin du mois de mars par le MECC. Ces relevés mesurent le volume d'eau produit lors de la fonte d'un manteau neigeux – c'est ce qu'on appelle l'équivalent en eau de la neige (EEN). L'EEN est basé sur la profondeur de la neige et sa densité.

Les conditions météorologiques printanières détermineront le moment de la fonte des neiges, ce qui est important : en effet, une fonte des neiges rapide et soudaine entraînera une augmentation plus importante des niveaux d'eau qu'une fonte des neiges prolongée.

L'accumulation du manteau neigeux a également été évaluée à l'aide d'un produit climatique modélisé appelé ERA5-Land. Les valeurs sur l'ENN obtenues au moyen d'ERA5-Land se comparent bien à celles mesurées manuellement par le MECC et d'autres territoires ou des provinces, et sont présentées aux côtés des données issues manuellement des relevés nivométriques.

Glace fluviale

Les températures de l'air en hiver aux TNO ont été plus chaudes que la moyenne en 2024-2025. Les températures hivernales influencent en partie l'épaisseur de la glace fluviale.

Risque d'inondation

Il est difficile de prévoir comment la débâcle se produira et si des embâcles se formeront, ainsi que l'endroit où cela aurait lieu, ces facteurs dépendant fortement des conditions météorologiques printanières. Les embâcles glaciaires causés lors de la débâcle se forment généralement sur les rivières qui s'écoulent vers le nord, lorsque le temps chaud et la fonte des neiges font en sorte que la glace se brise plus tôt sur les tronçons sud d'une rivière. Comme cette glace s'écoule vers le nord (en aval), elle pourrait rencontrer un couvert de glace plus solide. Lorsque cela se produit, des plaques de glace flottante heurtent la glace solide et peuvent former un barrage (un « embâcle ») susceptible d’entraîner une hausse rapide des niveaux d’eau derrière l’embâcle. L’apparition ou non d’embâcles dépend principalement des conditions météorologiques juste avant et pendant la débâcle. Ces conditions météorologiques influencent la quantité d’eau de fonte des neiges ainsi que la rapidité avec laquelle celle-ci atteint les systèmes fluviaux et la manière dont la glace se brise. Les conditions hivernales, telles que les chutes de neige, les températures froides et l’épaisseur de la glace, peuvent également jouer un rôle dans l’apparition d’embâcles.

Les inondations par embâcle peuvent se produire peu importe l’année, les niveaux d’eau préexistants et l’accumulation de neige. En cas d’embâcles, les inondations seront potentiellement plus graves si les niveaux d’eau sont déjà élevés, si les accumulations de neige sont importantes et si la glace fluviale est épaisse.

Le MECC recommande aux résidents des collectivités à risque d’inondations de suivre les conseils du ministère des Affaires municipales et communautaires (MAMC) pour s’assurer qu’ils sont préparés à d’éventuelles inondations chaque année.

Outlook by Region

North Slave and Tłı̨chǫ Regions

ECC snow surveys show that the snowpack in the Yellowknife River basin and Snare River basin were above average at 115% of normal (where 100% of normal = average), and approximately average at 97% of normal, respectively, as of early April 2025 (Table A1). The snowpack at other North Slave and Tłı̨chǫ sites was approximately average at 95% of normal.

Provisional flows on rivers (e.g. Cameron and Yellowknife) and water levels on lakes (e.g. Prosperous and Prelude) close to Yellowknife are either approximately average or below average. Flows on rivers draining into the East Arm of Great Slave Lake (e.g. Lockhart, Hoarfrost) are either above average or well above average. Flows on rivers north of Yellowknife (e.g. Snare, Coppermine) are approximately average. Conversely, in the Tłı̨chǫ region, water levels on the La Martre River and the Camsell River are the lowest on record.

An average to above average snowpack will increase soil moisture levels. As a result, water levels on most local lakes and rivers should be higher than in 2024, so long as there is average rainfall this summer. The average to above-average snowpack in the North Slave will not have a strong impact on water levels on Great Slave Lake (see Great Slave Lake section below for more information).

There are no communities in the North Slave that are on MACA's list of communities that are susceptible to flooding.

Great Slave Lake and Slave River Basin

The water level on Great Slave Lake has experienced record lows for the summers of 2023 and 2024. Great Slave Lake water level has since been recovering slowly and is approximately 30 cm higher than this time last year. This is largely in response to water levels on the Slave River being close to average since December of 2024. Slave River water level is approximately 40 cm higher than this time last year.

In the South Slave region of NWT, ECC snow surveys show that snowpack was approximately average at 101% of normal.

The majority of the water (~75-80%) in Great Slave Lake comes from the Slave River basin, which includes large areas of northern British Columbia, Alberta, and Saskatchewan. ECC uses snow data acquired from neighbouring jurisdictions to estimate snowpack in our shared basins. These data show that snowpack across the Slave River basin was variable, from below average snowpack in the Alberta plains to well above average snowpack near

Lake Athabasca. Basin-averaged percent of normal for Slave River basin SWE was below normal to normal, depending on the data source (see Appendix A-3). SWE in the mountainous headwaters of the Peace and Athabasca Rivers was approximately average to below average. This means that Great Slave Lake will receive a slightly below average snowmelt input this spring and increases to water levels will be modest and dependent on spring and summer rainfall.

Flow rates on the Slave River have been approximately average since December of 2024. Flow rates on the Peace River and Athabasca River have been average and below average, respectively. Water levels on Lake Athabasca are below average.

There are no communities in the Slave River basin on MACA's list of communities that are susceptible to flooding.

Taltson River Basin

Snow surveys show that snowpack in the Taltson and Tazin River Basins was well above average at 129% of normal. Water levels on the Taltson and Tazin rivers are above average and have increased since low water levels in 2024. Water levels on Tazin Lake are approximately average.

There are no communities in the Taltson River basin that are on MACA's list of communities that are susceptible to flooding.

Hay River Basin

Snow surveys show that the snowpack in the Hay River basin was average this year at 104% of normal. This includes snow surveys conducted in Alberta and British Columbia, as most (94%) of the land that feeds into the Hay River is in those jurisdictions. Snow survey locations are sparse in Hay River catchment.

The Town of Hay River is included in MACA's list of communities that are susceptible to flooding. Hay River, Kátł'odeeche First Nation, West Point First Nation, and Paradise Gardens all experienced severe flooding in 2022 when record-high water levels on the Hay River were combined with an average snowpack, a delayed spring melt, and a large precipitation event that occurred over the entire basin during break-up.

Water levels on the Hay River are well below average. Warm weather in early April has helped to initiate early snowmelt in the basin. The combination of low water levels, average snowpack and early season warm temperatures **suggests that spring flows will be lower than normal**. There is always a possibility that anomalous spring weather conditions can cause high water levels and out of bank flows.

Dehcho Region

The Liard River basin is comprised of large areas in the southeastern Yukon and northeastern British Columbia. Government of Yukon snowpack SWE data for April 1st indicates that the snowpack in the upper Liard basin is below average at 86% of normal. Further downstream, snow surveys by the Government of British Columbia show that SWE values are also below average at 88% of normal.

ECC snow survey data in the lower Liard basin in the NWT show approximately average SWE values at 99% of normal. ECC snow surveys in the remainder of the Dehcho region (outside the Liard River basin) also indicate that snowpack in the region is approximately average at 105% of normal.

Liard River water level has shown little recovery since the onset of drought conditions in 2023. Winter water levels have been below average to well below average, and warmer than average April temperatures has initiated early season snowmelt in the basin. Water level on the Mackenzie River at Fort Simpson is currently well below average. Other smaller gauged rivers in the Dehcho (e.g. Petitot, Trout, Jean Marie) have water levels that are well below average or the lowest levels on record.

In the Dehcho, MACA's list of communities that are susceptible to flooding include Fort Liard, Nahanni Butte, Jean Marie River, and Fort Simpson.

In Fort Liard, flooding has previously occurred when ice jams form on the Liard River downstream of the community, or when ice from the Petitot River jams on solid ice on the Liard River, causing water to back up. A lower-than-normal snowpack in the region and lower-than-normal water levels on the Liard River and Petitot River **suggest that flows will be lower than normal in spring**. There is always a possibility that anomalous spring weather conditions can cause high water levels and out of bank flows.

In Jean Marie River, significant flooding occurred in 2021 when existing high water levels on the Mackenzie River were combined with a higher-than-normal snowpack and a delayed spring melt. This occurred when the Mackenzie River broke downstream of the community and backed up water levels at Jean Marie River. Well below average water levels on the Mackenzie River, combined with an approximately average snowpack **suggest that spring flows will be lower than normal**. There is always a possibility that anomalous spring weather conditions can cause high water levels and out of bank flows.

In Nahanni Butte, significant flooding occurred in late spring/early summer 2012, when snowmelt from the mountains rapidly raised the water level of the South Nahanni River. The high water on the South Nahanni River flowed into high water levels on the Liard River and resulted in open water flooding in Nahanni Butte. The potential for flooding will depend on how quickly snow from higher altitudes melts, and if there are concurrent high rainfall events at that time. Well above average water levels on the South Nahanni River, combined with below average water levels on the Liard River, and a below average snowpack **suggests that the potential for flooding in Nahanni Butte will be average**, but will be highly dependent on rainfall events in mid-late June.

In Fort Simpson, significant flooding occurred in 2021 when high existing water levels on the Liard River and the Mackenzie River were combined with a higher-than-normal snowpack and a delayed spring melt. At Fort Simpson, the Liard River typically breaks up before the Mackenzie River, which causes Liard River ice to jam downstream of the community. Lower-than-normal water levels on the Liard River, combined with a lower-than-normal snowpack in the Liard River basin **suggest that spring flows will be lower than normal**. There is always a possibility that anomalous spring weather conditions can cause high water levels and out of bank flows.

Sahtu Region

In the Sahtu region, ECC snow surveys show that snowpack SWE values are about average at 105% of normal. Great Bear Lake is currently at a record low for this time of year and Great Bear River is also very low. Smaller gauged rivers in the Sahtu (e.g. Hare Indian, Loon, Whitefish) are about average or well below average. Here, MACA's list of communities at risk of flooding include Tulita and Fort Good Hope.

In Tulita, flooding has previously occurred when ice on Great Bear River jams on the Mackenzie River and brings backwater into the community. **Spring flows are likely to be lower than average on both the Great Bear River and the Mackenzie River**. There is always a possibility that anomalous spring weather conditions can cause high water levels and out of bank flows.

In Fort Good Hope, significant flooding occurred in 2021 when an ice jam downstream of the community caused water to back up along Jackfish Creek and create out of bank flows. This was caused by record high water levels on the Mackenzie River, higher-than-normal snowpack, and a delayed melt. Low water levels on the Mackenzie River at Fort Good Hope and an approximately average snowpack throughout much of the Mackenzie River basin **suggest that spring flows will be lower than normal**. There is always a possibility that anomalous spring weather conditions can cause high water levels and out of bank flows.

Gwich'in and Inuvialuit Regions

ECC and Government of Yukon snow survey data for the Peel River basin show that the snowpack is normal at 96% of normal. ECC snow surveys in the Inuvik region also show that snowpack is normal at 100% of normal.

Fort McPherson is identified on MACA's list of communities that are susceptible to flooding. Flooding occurred in 2023 in Fort McPherson when an ice jam formed downstream of the community and caused out of bank flows on the Peel River. The flooding was caused by a combination of high existing water levels, high snowpack, and a delayed snowmelt which caused the snow to melt rapidly while the ice cover was still relatively thick.

Water levels on the Peel River are currently approximately average. The average snowpack combined with average water levels suggests that **average flows can be expected during spring freshet**. The likelihood of out of bank flows will depend on spring weather conditions, including how quickly the snow melts and how river ice degrades.

Aklavik is identified on MACA's list of communities that are susceptible to flooding. Water levels on the Mackenzie River at Tsiigehtchic and throughout the Mackenzie Delta are below average for this time of year. The water level at break-up in the Mackenzie Delta will be dependent on spring weather conditions and how the ice breaks up and moves through the delta.

Factors to Watch

It is important to distinguish the difference between spring *flows* and the *water level* during break-up. The indicators presented here provide information about spring flows, which is the total amount of water that moves through a river during the spring. If snowmelt occurs very quickly and water moves to the rivers quickly, that volume of water will cause water levels to rise higher than if snowmelt is very slow. The rapid movement of snowmelt water to a river can also dislodge ice from the riverbank quicker, which increases the chance of strong ice jams. Generally speaking, lower spring flows reduce the potential for flooding, but they do not eliminate the risk. Communities should always prepare for the potential of spring flooding and be aware that water levels can rise quickly in response to ice jams.

The potential and severity of freshet flooding will depend in large part on the weather over the upcoming weeks and how quickly the snow and ice melt. The following variables are the primary factors that influence water levels and if there will be flooding:

- Rate of snow melt
  - Slow and steady onset of warm weather allows a progressive snowmelt and slow delivery of meltwater to the river network
  - Sudden extreme warm weather can cause a rapid snowmelt which can cause rapid increases in water levels
  - Rain on snow events can cause rapid snowmelt and can lead to rapid increases in water levels
- Rate of ice melt/break-up
  - Gradually warming weather across an entire basin allows ice to slowly degrade and melt (thermal break-up)
  - Very warm weather in upstream areas can cause rapid snow melt and local ice break-up. If this ice flows downstream into a solid ice cover, the force of the ice can cause downstream ice to break-up and can lead to ice jams
- Spring precipitation events
  - Rainfall events during break-up have the potential to bring significant amounts of additional water to a basin and can be impactful if they occur simultaneously with ice-jams
- Current water levels in lakes and rivers, and moisture in wetlands and soil
- Snowpack volumes (snow water equivalent - SWE)
- Winter temperatures
- Ice jam locations (primary cause of spring flooding in the NWT)
  - Can result in the back-up of large amounts of water and can cause flooding (even when water levels are low)

Water level and flow data are part of the NWT Hydrometric Monitoring Network, funded by ECC and Environment and Climate Change Canada (ECCC), and operated by the Water Survey of Canada. Data can be seen and/or downloaded at: https://wateroffice.ec.gc.ca/search/searchRealTime_e.html.

Water level and flow data are presented in Appendix B below. Flow data from smaller rivers are presented using a log scale on the y-axis to allow a better visualization of how current flows compare to historical data.

Please be reminded that all real-time data are provisional.

Appendix A: Snowpack Data for Spring 2025

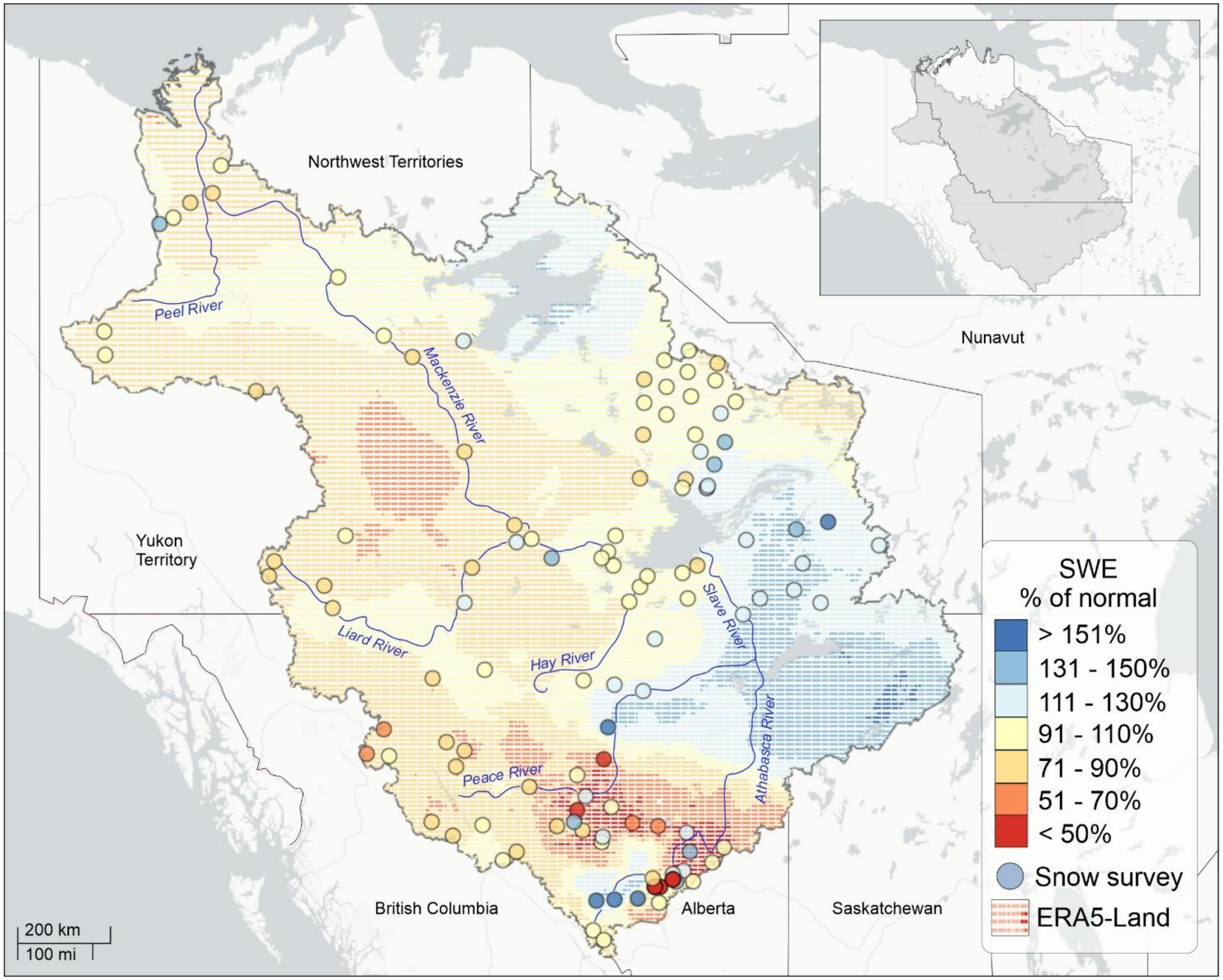


Figure A-1: End-of-season snow water equivalent (SWE, percent of normal) distribution in the Mackenzie River basin. Data from this map were compiled from ECC snow surveys (NWT) as well as snow survey data from neighboring jurisdictions. Gridded data sourced from ERA5-Land[1] are cropped to the Mackenzie River basin. Basin-averaged % of normal is 97 (snow survey data) and 95 (ERA5-Land dataset[1]).

(1) Muñoz Sabater, J. (2019): ERA5-Land hourly data from 1950 to present. Copernicus Climate Change Service (C3S) Climate Data Store (CDS). DOI: 10.24381/cds.e2161bac (Accessed on 09-04-2025)

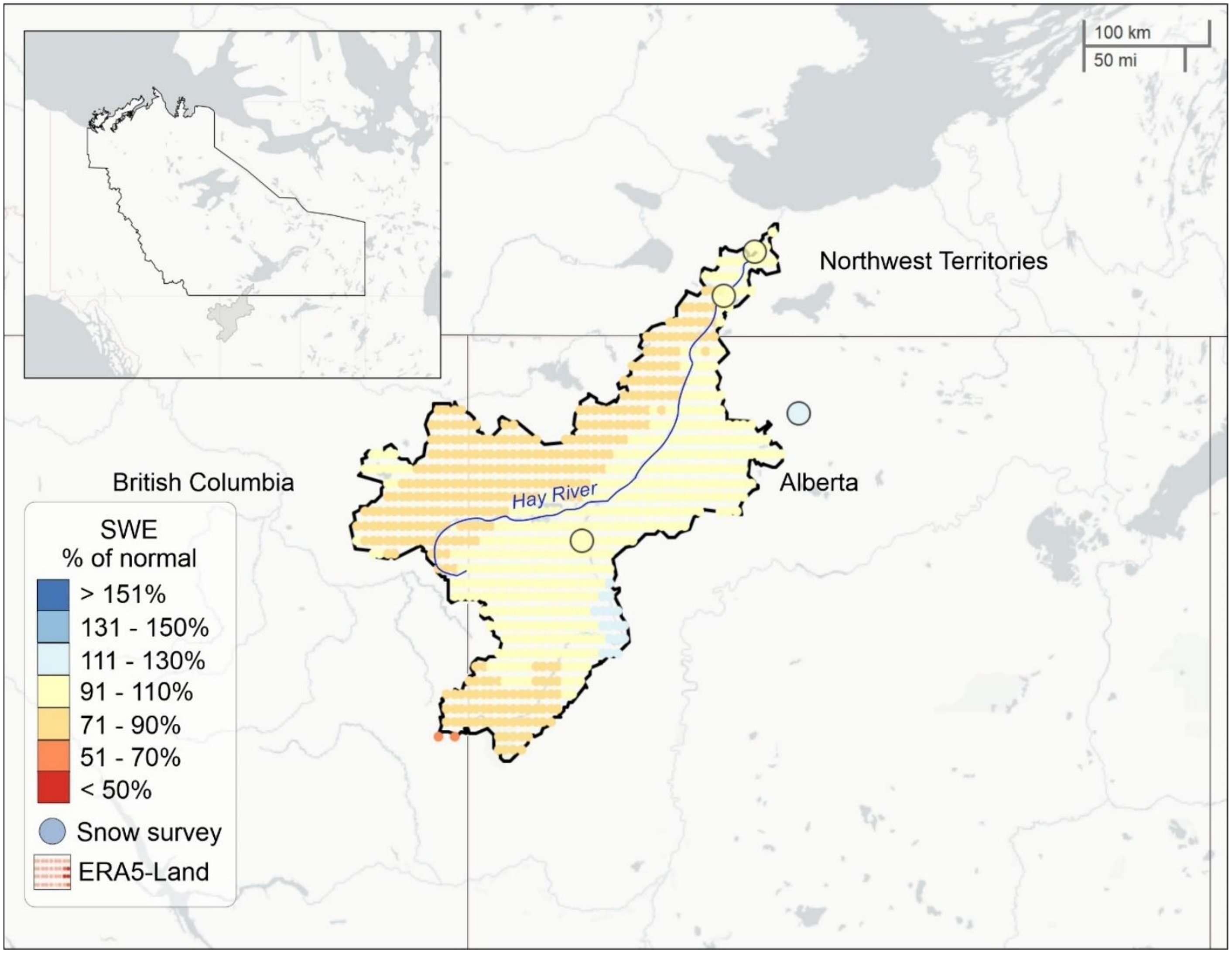


Figure A-2. End-of-season snow water equivalent (SWE, percent of normal) distribution in the Hay River basin. Data are mapped using ECC snow surveys as well as snow survey data from the Government of Alberta. Gridded data sourced from ERA5-Land are cropped to the Hay River basin. Inset map shows the basin (grey) relative to the NWT. Basin-averaged % of normal is 104 (snow survey data) and 92 (ERA5-Land dataset).

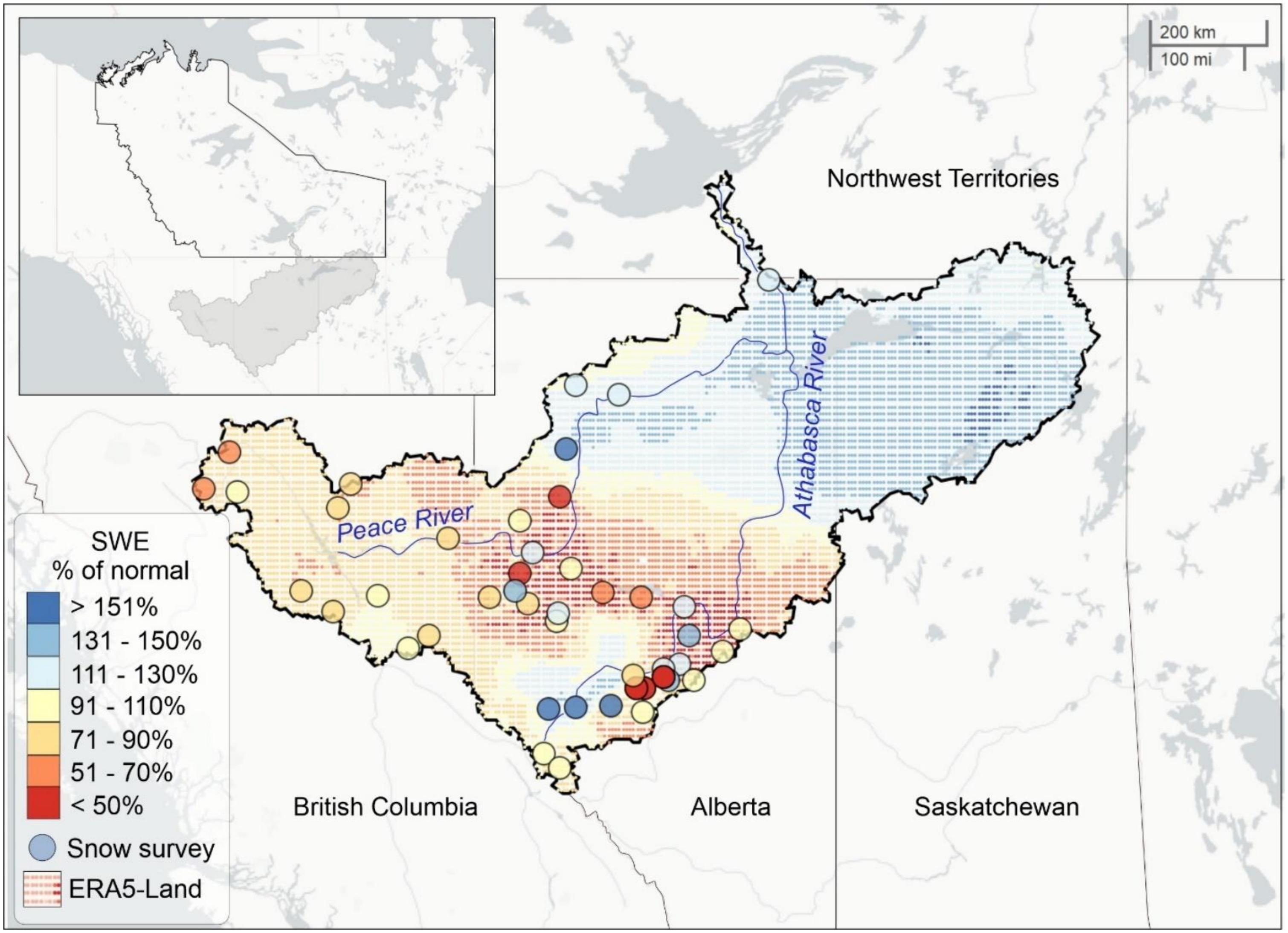


Figure A-3. End-of-season snow water equivalent (SWE, percent of normal) distribution in the Slave River basin. Data are mapped using ECC snow surveys as well as snow survey data from the Government of Alberta and Government of British Colombia. Gridded data sourced from ERA5-Land are cropped to the Slave River basin. Basin-averaged % of normal is 87 (snow survey data) and 99 (ERA5-Land dataset).

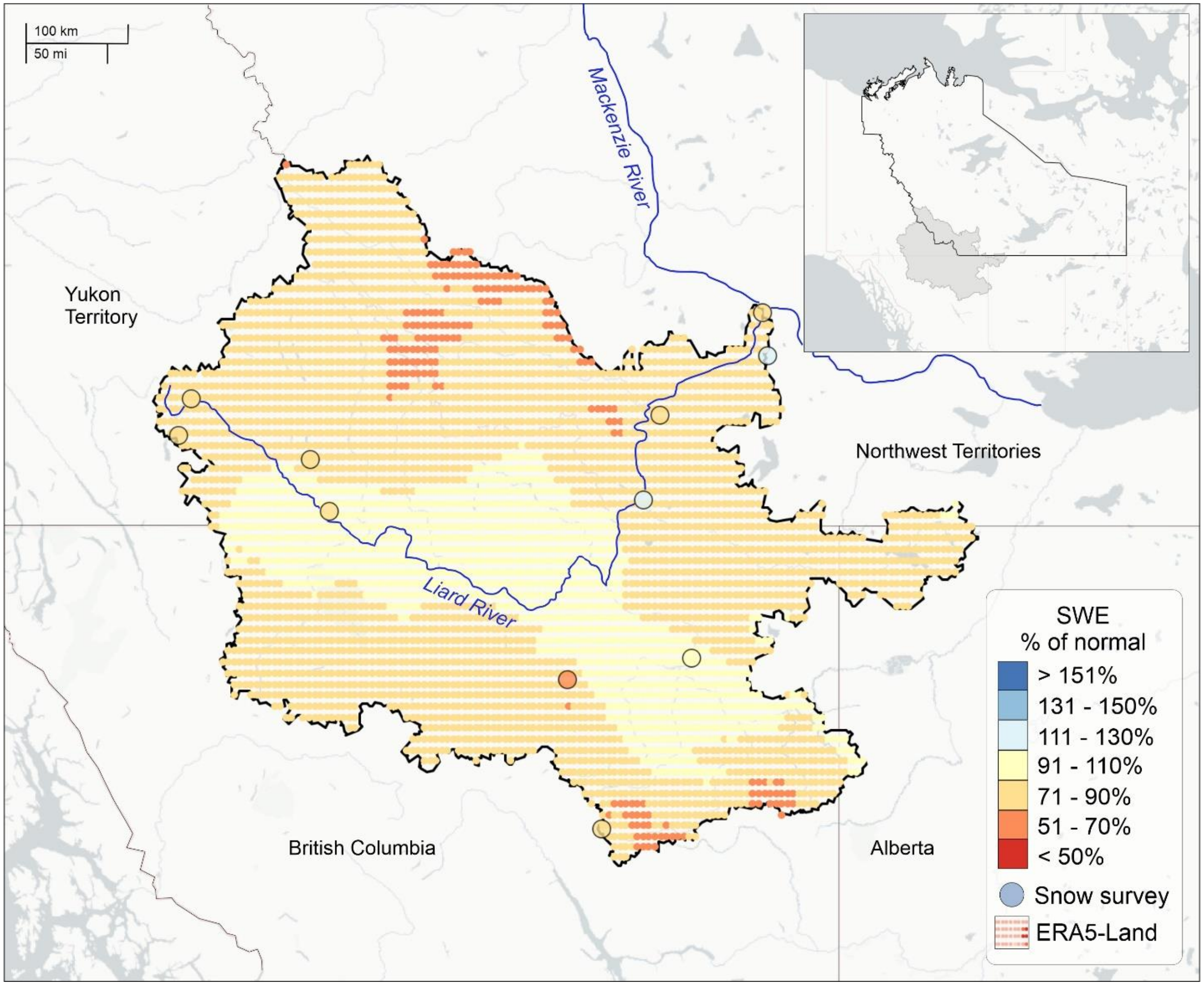


Figure A-4. End-of-season snow water equivalent (SWE, percent of normal) distribution in the Liard River basin. Data are mapped using ECC snow surveys as well as snow survey data from the Government of Yukon and the Government of British Colombia. Gridded data sourced from ERA5-Land are cropped to the Liard River basin. Basin-averaged % of normal is 90 (snow survey data) and 83 (ERA5-Land dataset).

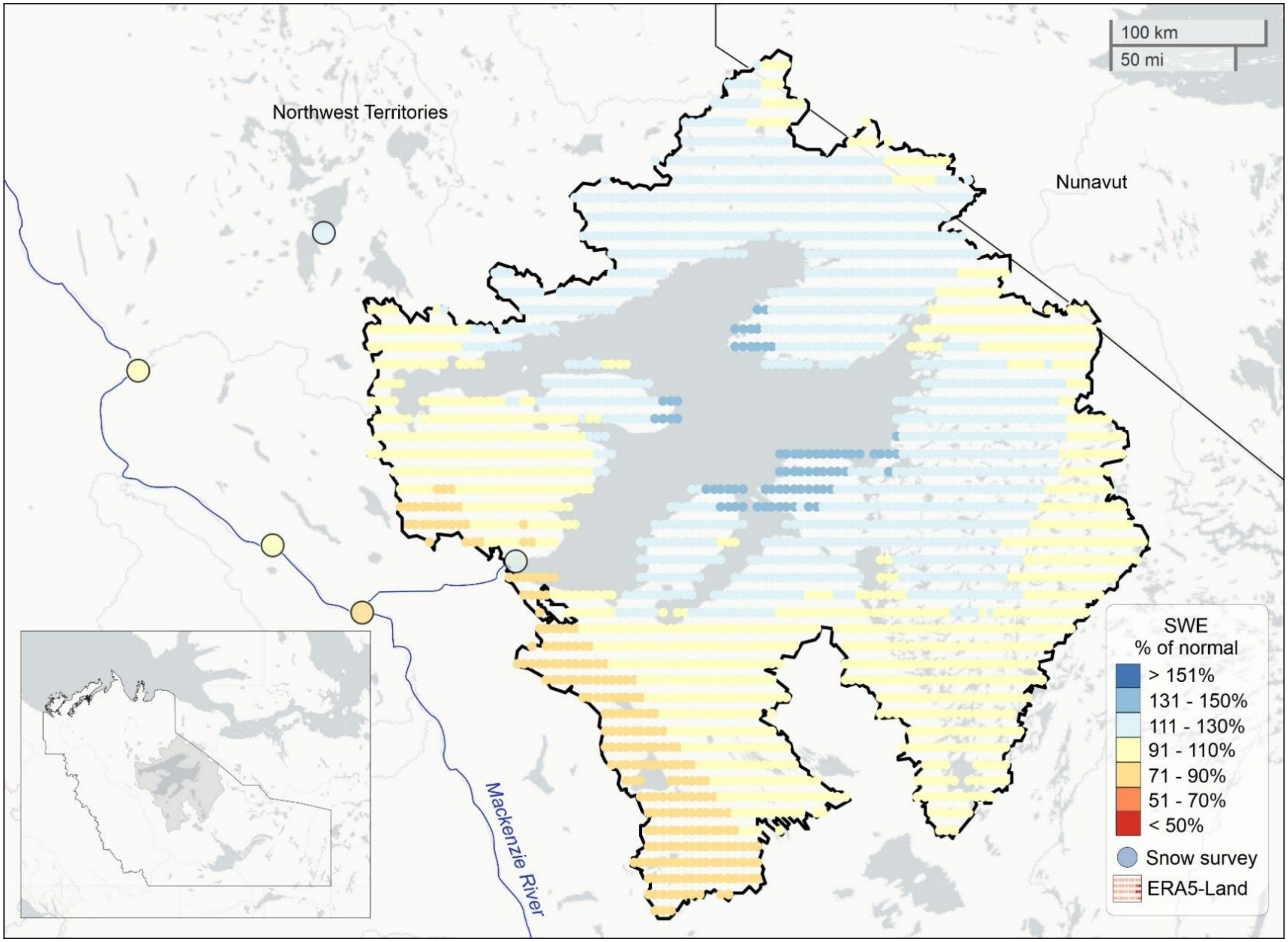


Figure A-5. End-of-season snow water equivalent (SWE, percent of normal) distribution in the Great Bear Lake basin. Data are mapped using ECC snow surveys. Gridded data sourced from ERA5-Land are cropped to the Great Bear Lake basin. Basin-averaged % of normal is 105 (snow survey data) and 108 (ERA5-Land dataset).

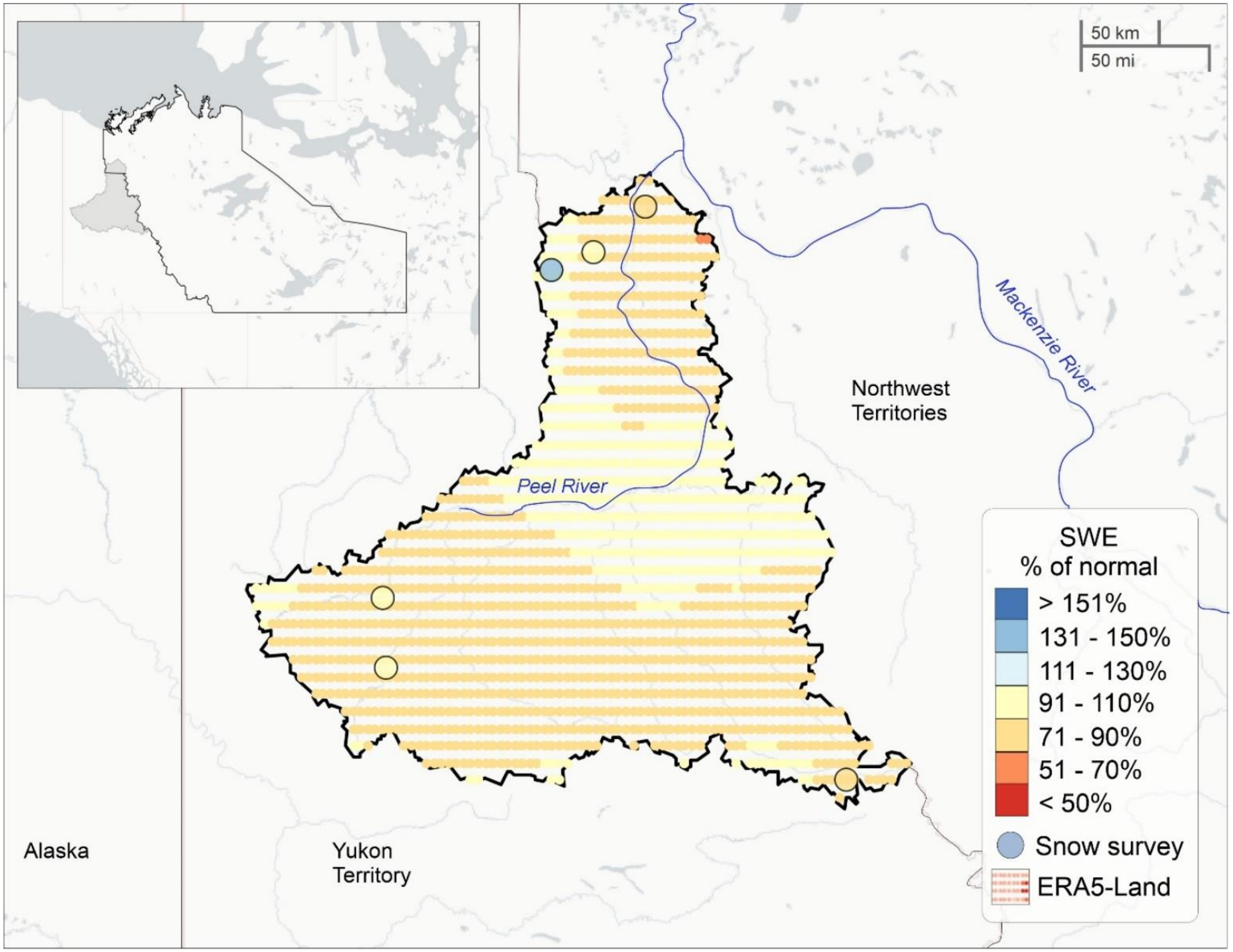


Figure A-6. End-of-season snow water equivalent (SWE, percent of normal) distribution in the Peel River basin. Data are mapped using ECC snow surveys as well as snow survey data from the Government of Yukon. Gridded data sourced from ERA5-Land are cropped to the Peel River basin. Basin-averaged % of normal is 102 (snow survey data) and 87 (ERA5-Land dataset).

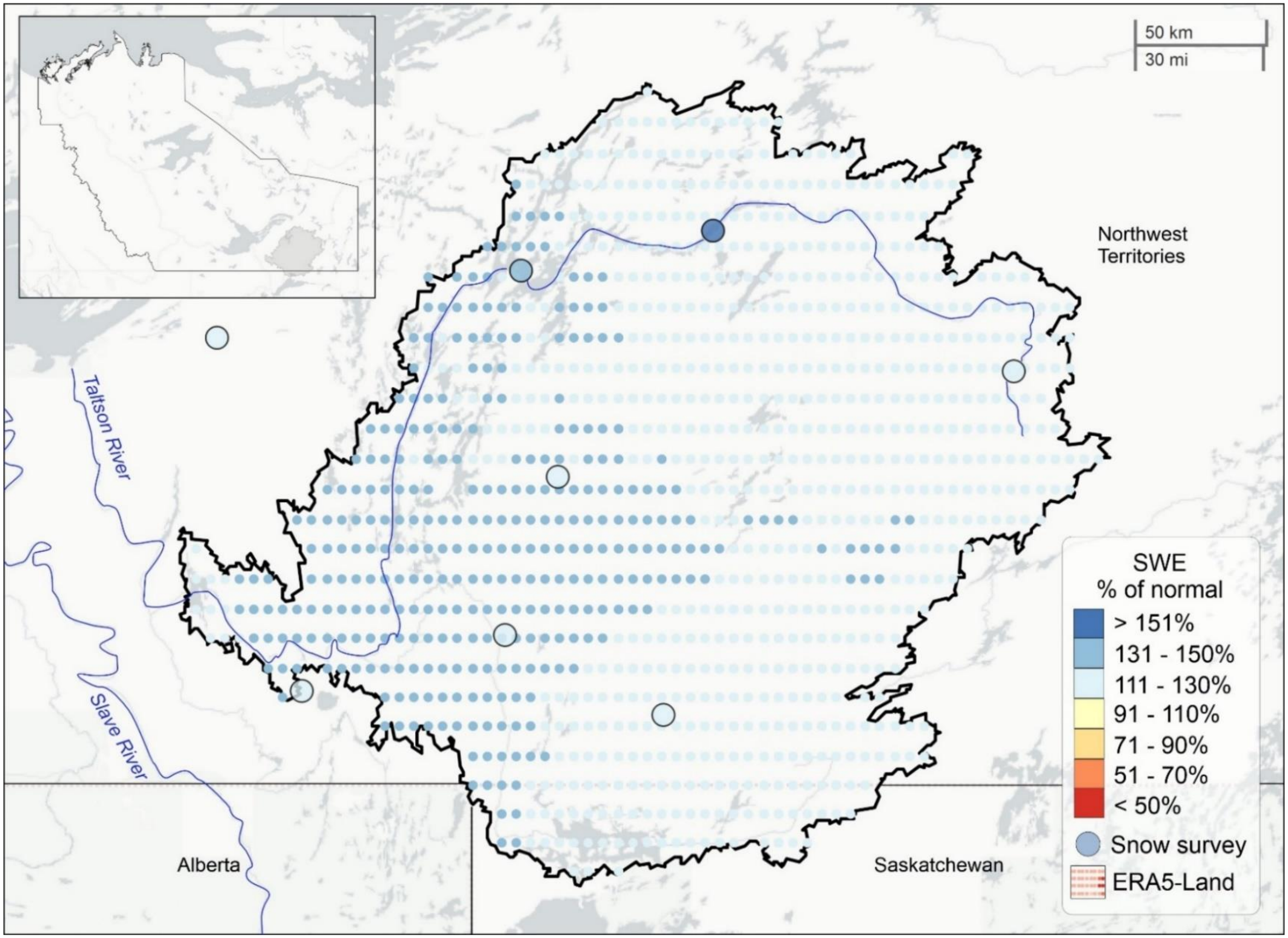


Figure A-7. End-of-season snow water equivalent (SWE, percent of normal) distribution in the Taltson River basin. Data are mapped using ECC snow surveys. Gridded data sourced from ERA5-Land are cropped to the Taltson River basin. Inset map shows the basin (grey) relative to the NWT. Basin-averaged % of normal is 129 (snow survey data) and 127 (ERA5-Land dataset).

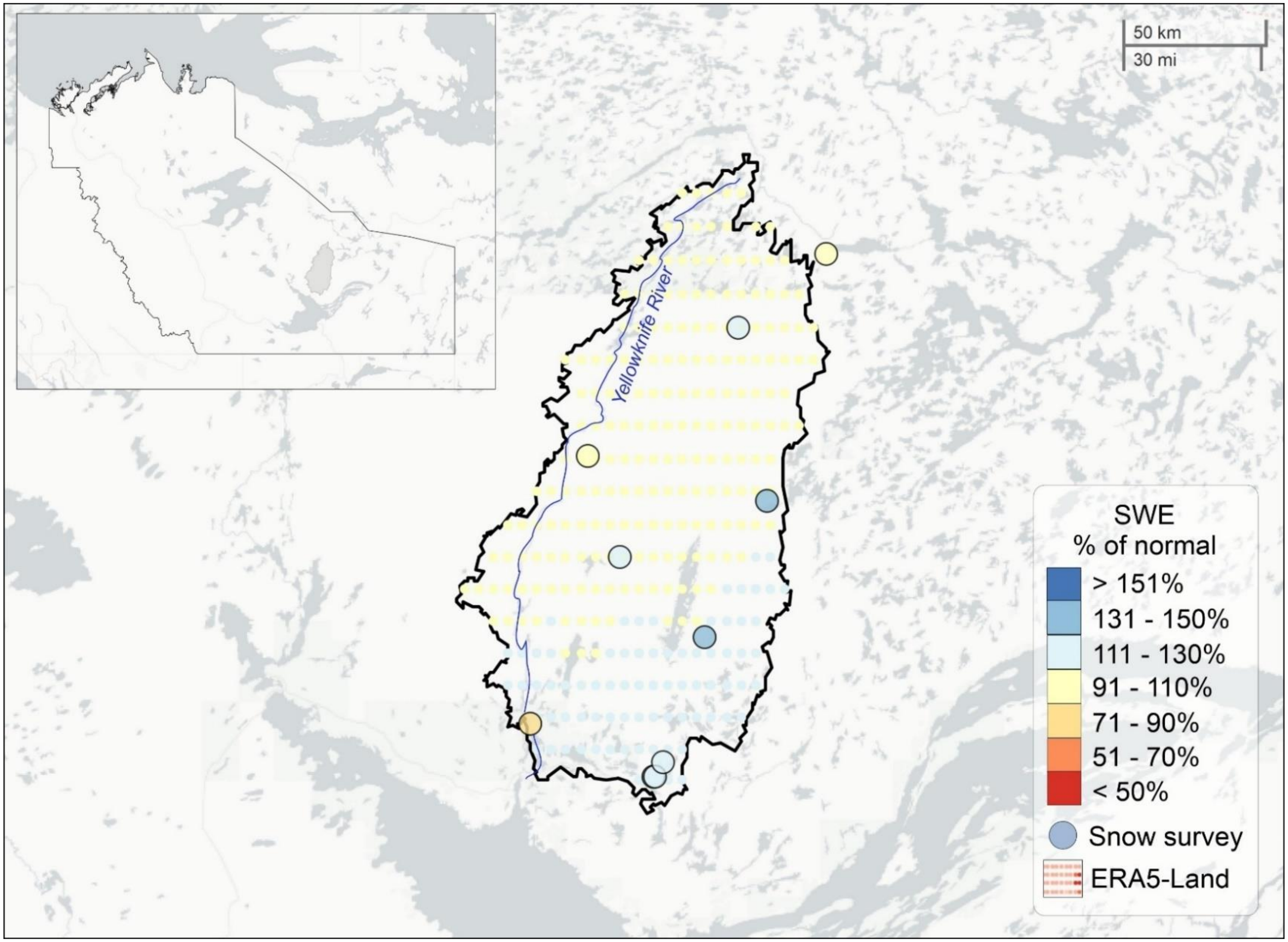


Figure A-8. End-of-season snow water equivalent (SWE, percent of normal) distribution in the Yellowknife River basin. Data are mapped using ECC snow surveys. Gridded data sourced from ERA5-Land are cropped to the Yellowknife River basin. Inset map shows the basin (grey) relative to the NWT. Basin-averaged % of normal is 115 (snow survey data) and 107 (ERA5-Land dataset).

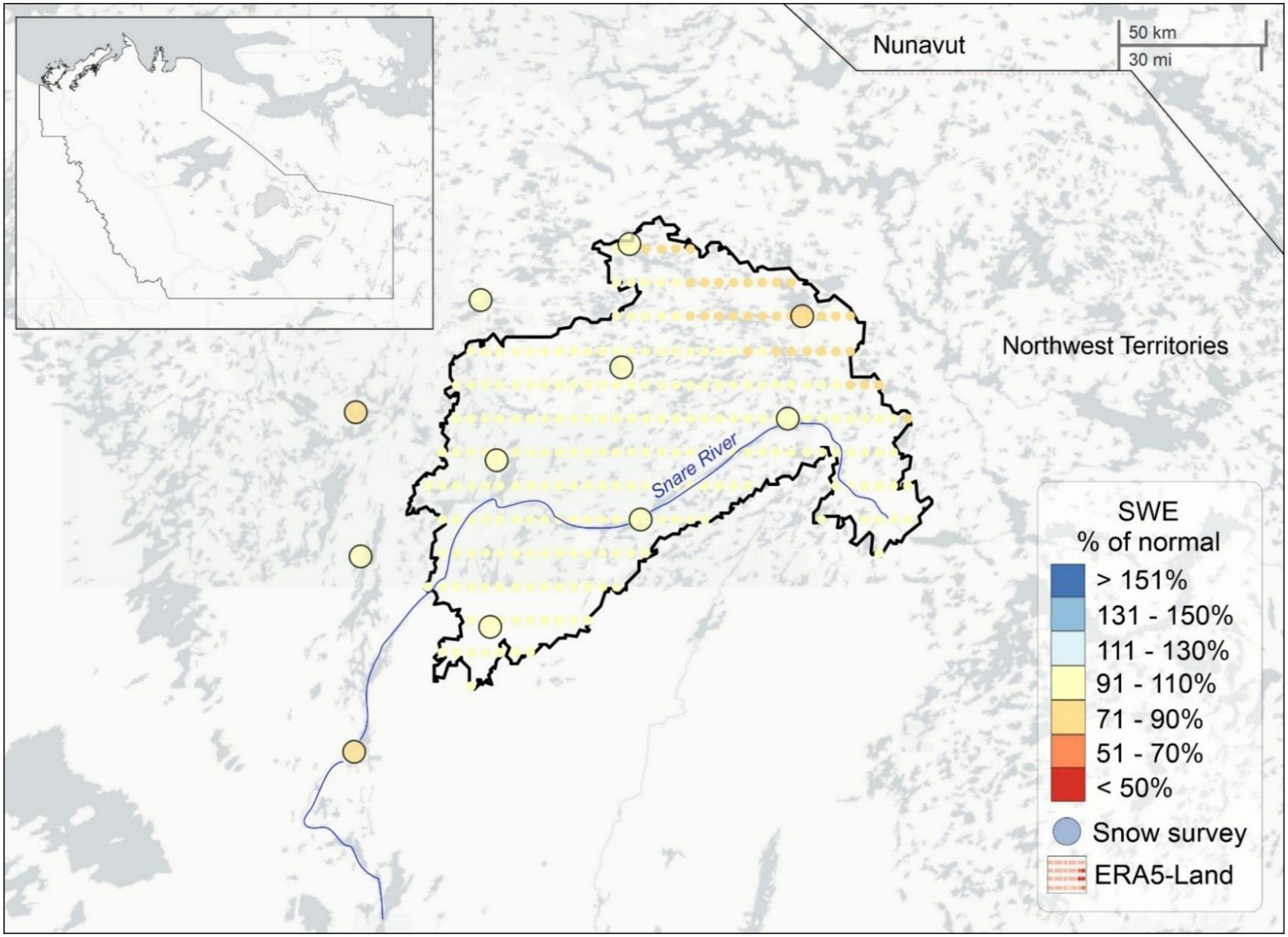


Figure A-9. End-of-season snow water equivalent (SWE, percent of normal) distribution in the Snare River basin. Data are mapped using ECC snow surveys. Gridded data sourced from ERA5-Land are cropped to the Snare River basin. Inset map shows the basin (grey) relative to the NWT. Basin-averaged % of normal is 96 (snow survey data) and 96 (ERA5-Land dataset).

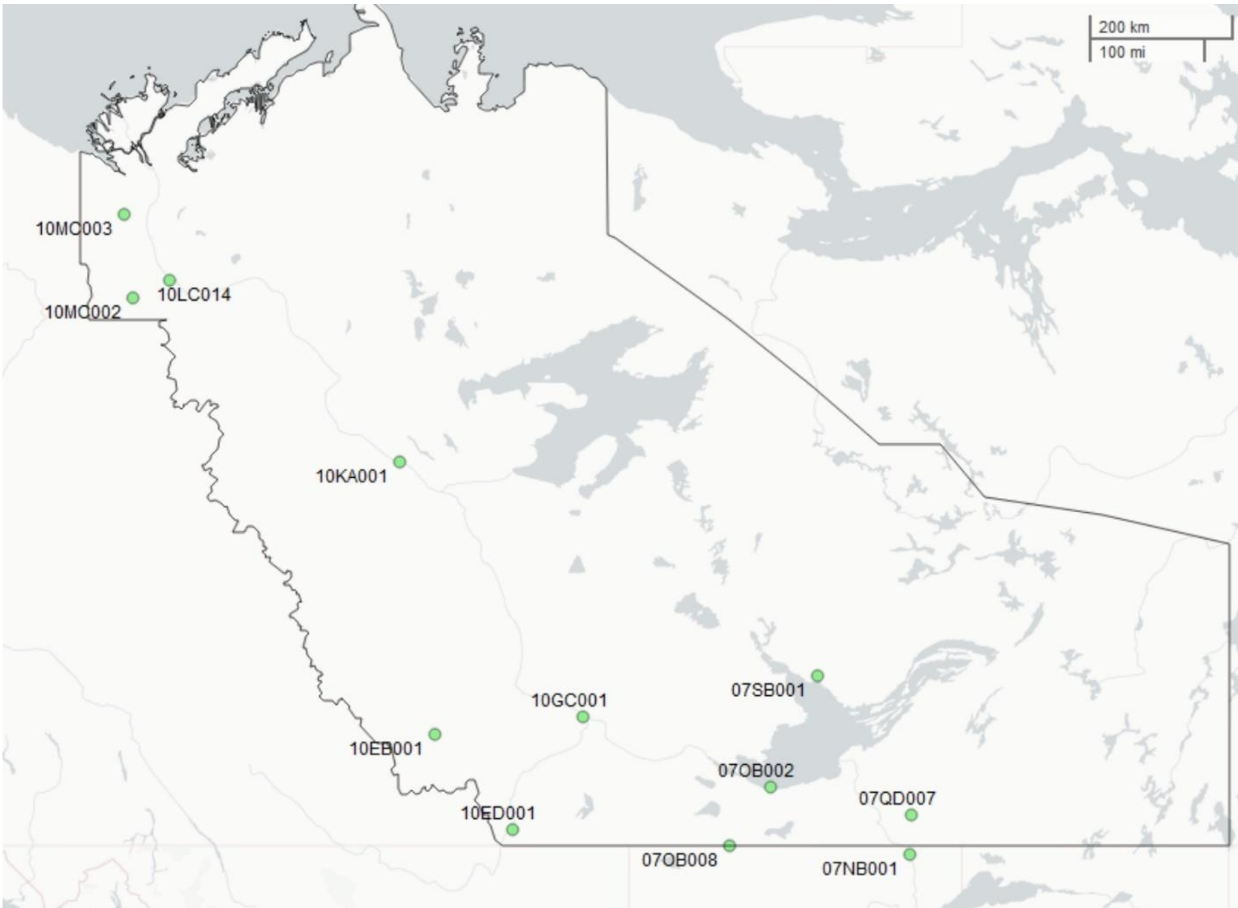
Table A-1: Detailed ECC snow survey data by location. Full dataset available upon request. f = Forestry site.

Site	Long	Lat	Length of Record (years)	Entire record Mean SWE (mm)	Current Mean Depth (cm)	Current Mean SWE (mm)	Rank of Current SWE	2025 % Normal (%)
Yellowknife River Basin				italics: <20 years				
Allan Lake	-113.05	62.95	37	86.4	57.6	115.0	4	133.1
Bluefish Hydro	-114.25	62.68	30	82.5	51.4	73.6	16	89.2
Denis Lake	-112.62	63.37	38	109.0	68.5	142.0	3	130.3
Ingraham Trail km 64 NW	-113.40	62.51	43	85.3	55.7	103.0	7	120.7
Ingraham Trail km 64 SE	-113.39	62.51	27	80.4	58.2	104.5	5	129.9
Jolly Lake	-112.21	64.12	13	*125.1*	52.6	121.0	6	96.8
Little Latham Lake	-113.63	63.20	38	97.5	57.5	108.5	10	111.3
Nardin Lake	-113.85	63.51	38	105.5	54.3	106.5	17	100.9
Sharples Lake	-112.82	63.90	38	108.0	66.6	129.5	6	119.9
Tibbitt Lake	-113.34	62.56	26	84.2	58.9	103.0	6	122.3
	MEANS				**58.1**	**110.7**		**115.4**
Snare River Basin								
Big Lake	-112.93	64.80	28	112.6	45.2	93.3	19	82.9
Big Spruce Lake	-116.00	63.50	47	101.6	53.6	90.5	29	89.1
Castor Lake	-115.99	64.52	48	112.8	55.9	89.4	36	79.3
Christison Lake	-114.17	64.65	31	106.8	49.9	116.0	10	108.7
Ghost Lake	-115.07	63.88	48	104.8	59.4	94.4	29	90.1
Indin Lake	-115.03	64.38	47	110.0	60.0	112.2	17	102.1
Mattberry Lake	-115.96	64.09	48	98.1	52.8	100.0	18	101.9
Mesa Lake	-115.14	64.85	48	121.3	56.2	121.0	23	99.8
Snare Lake	-114.04	64.20	47	110.6	58.4	118.5	20	107.2
White Wolf Lake	-114.11	65.01	30	118.2	47.8	111.0	20	93.9
Winter Lake	-113.03	64.50	46	82.3	48.3	87.8	15	106.7
	MEANS				**53.4**	**103.1**		**96.5**

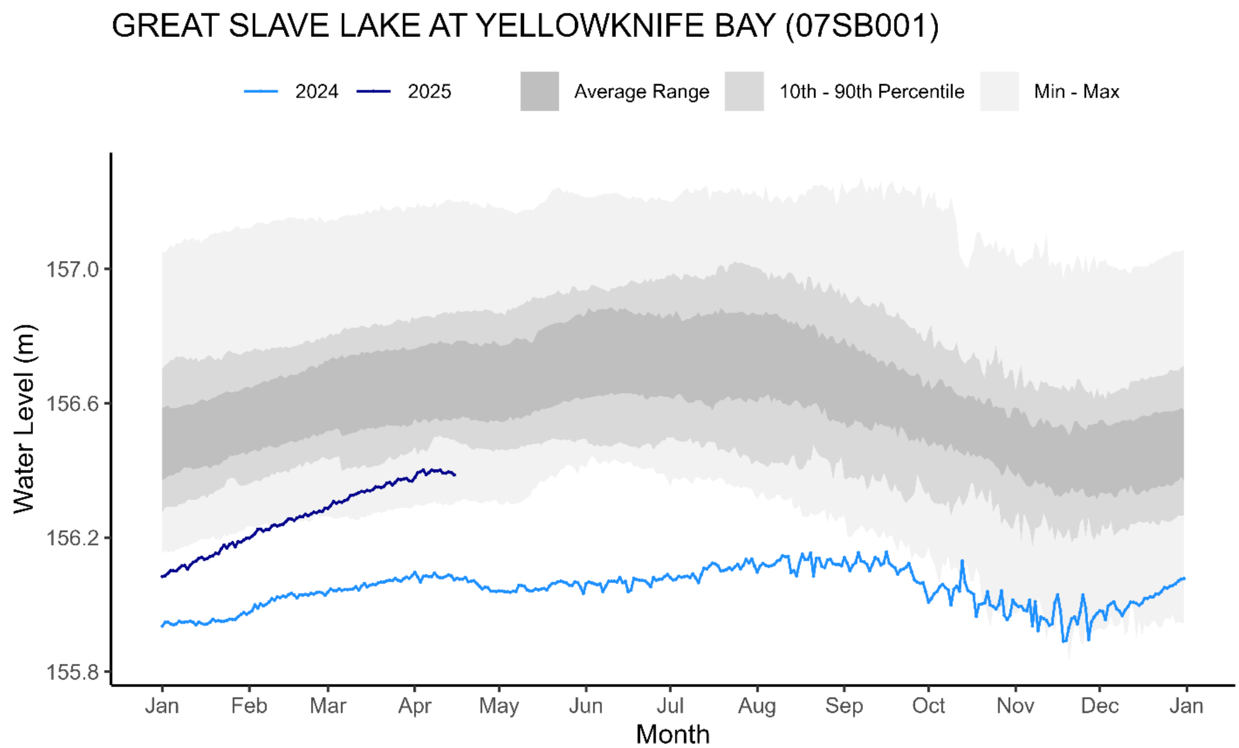
Other North Slave Region								
Mosquito Creek	-116.15	62.70	26	102.1	51.3	87.0	21	85.2
Pocket Lake	-114.37	62.51	27	96.9	50.8	101.0	10	104.2
	MEANS				**51.0**	**94.0**		**94.7**
South Slave Region								
Boundary Lake	-115.55	59.48	31	159.8	80.0	188.0	7	117.6
Crown Fire[f]	-117.15	61.58	8	*90.1*	39.9	86.0	6	95.4
Enterprise[f]	-116.15	60.56	8	*111.8*	57.4	114.0	3	102.0
Fort Providence[f]	-117.46	61.26	11	101.7	52.1	101.0	6	99.3
Fort Smith	-111.87	60.00	42	89.8	47.4	100.0	13	111.3
Hay River[f]	-115.84	60.77	11	*104.1*	54.1	111.0	4	106.6
Kakisa River	-117.25	61.00	44	106.2	59.0	116.0	17	109.2
Kimble Tower[f]	-117.73	61.14	11	*111.2*	57.9	118.0	5	106.1
Little Buffalo Tower	-113.78	61.00	43	119.5	48.5	95.0	30	79.5
Nyarling River	-114.17	60.33	42	105.6	51.3	103.0	21	97.6
Pine Point	-114.38	60.85	43	137.1	62.1	127.0	30	92.7
Swede Creek	-116.57	60.27	42	94.3	45.6	89.0	23	94.4
	MEANS				**54.6**	**112.3**		**101.0**
Taltson River Basin								
Dymond Lake	-106.28	61.39	54	119.2	77.6	154.0	6	129.2
Gray Lake	-108.35	61.85	57	106.9	78.2	182.0	2	170.3
Hill Island Lake	-109.78	60.51	54	97.3	56.9	108.0	18	111.0
Nonacho Lake	-109.67	61.72	55	105.5	73.5	146.0	5	138.4
Piers Lake	-111.17	60.32	40	105.5	60.9	128.0	7	121.3
Powder Lake[f]	-109.41	61.04	10	111.6	62.7	129.0	2	115.6
Thubun Lake	-111.75	61.50	39	92.0	58.8	113.0	5	122.9
Whirlwind Lake	-108.69	60.24	53	99.8	65.0	125.0	9	125.2
	MEANS				**66.7**	**135.6**		**129.3**
Dehcho Region								
Checkpoint	-121.25	61.45	30	105.7	61.4	123.0	10	116.4
Fort Liard[f]	-123.40	60.23	11	*91.2*	46.6	102.0	3	111.9

Fort Simpson	-121.33	61.80	30	96.9	53.2	83.0	20	85.7
Jean Marie River[f]	-120.65	61.52	11	*96.2*	50.5	97.0	5	100.8
Nahanni Butte[f]	-123.11	60.95	11	*106.3*	40.9	87.0	7	81.9
Trout Lake[f]	-119.81	61.14	11	*97.1*	61.8	131.0	3	135.0
Wrigley[f]	-123.41	63.20	11	*90.0*	35.7	72.0	8	80.0
	MEANS				**50.0**	**99.3**		**101.7**
Sahtu Region								
Colville Lake	-126.06	67.02	10	*93.7*	67.9	105.6	3	112.6
Deline	-123.43	65.19	9	*102.6*	65.8	116.0	2	113.1
Fort Good Hope	-128.61	66.27	9	*112.5*	63.7	119.0	4	105.8
Norman Wells	-126.76	65.28	10	*97.2*	52.8	106.0	5	109.1
Tulita	-125.53	64.90	9	*103.5*	51.9	85.0	9	82.1
	MEANS				**60.4**	**106.3**		**104.5**
Inuvialuit/Gwich'in Regions								
Caribou Creek	-133.48	68.05	40	122.1	54.1	117.0	20	95.8
Fort McPherson	-134.74	67.47	12	*125.7*	47.7	95.0	9	75.6
James Creek	-136.00	67.14	10	*91.4*	52.2	133.3	2	145.9
Midway Lake	-135.44	67.23	10	*154.6*	67.3	156.0	6	100.9
Rengleng River	-133.83	67.63	40	129.2	52.1	103.0	29	79.7
	MEANS				**54.7**	**120.9**		**99.6**

Appendix B: Provisional Water Level and Flow Plots (as of April 15, 2025)



Above - A map of the hydrometric stations included in the plots below.



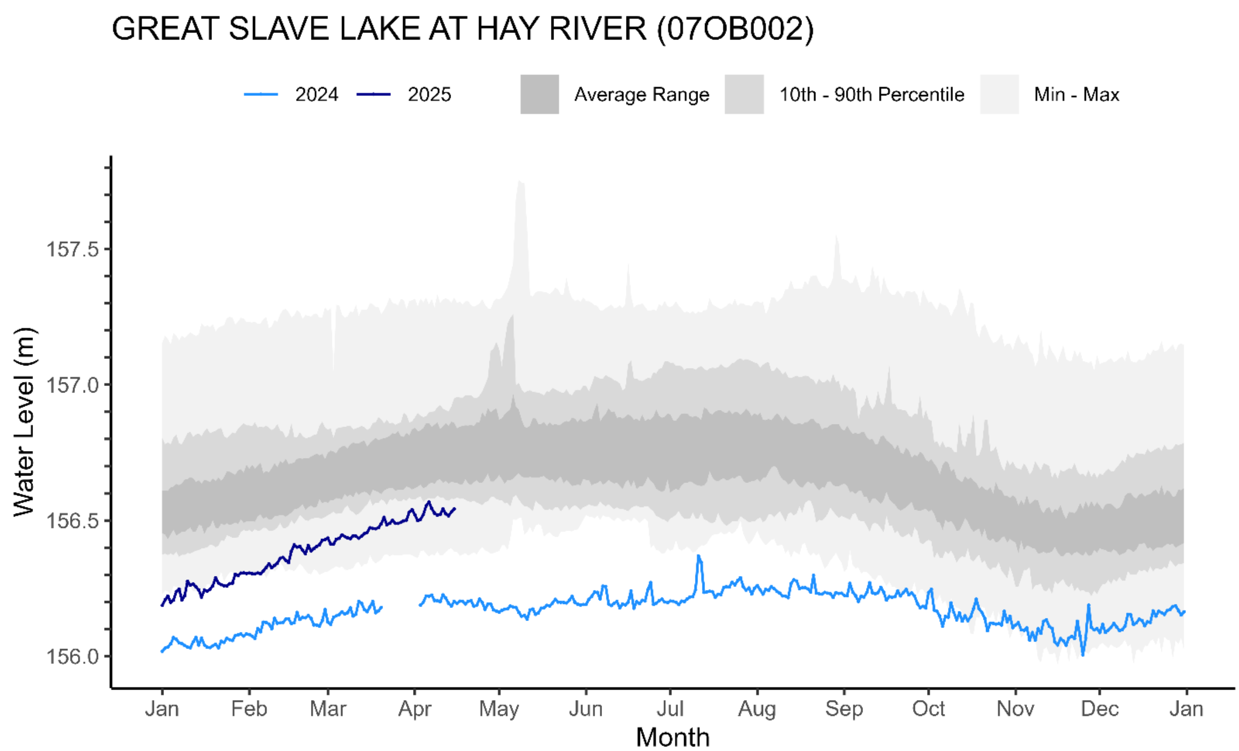


Figure B-1: Water levels (m) on Great Slave Lake for 2024 and 2025, relative to the historic average range (defined as the interquartile range) and historic maximum and minimums at: a) Yellowknife Bay; and b) Hay River.

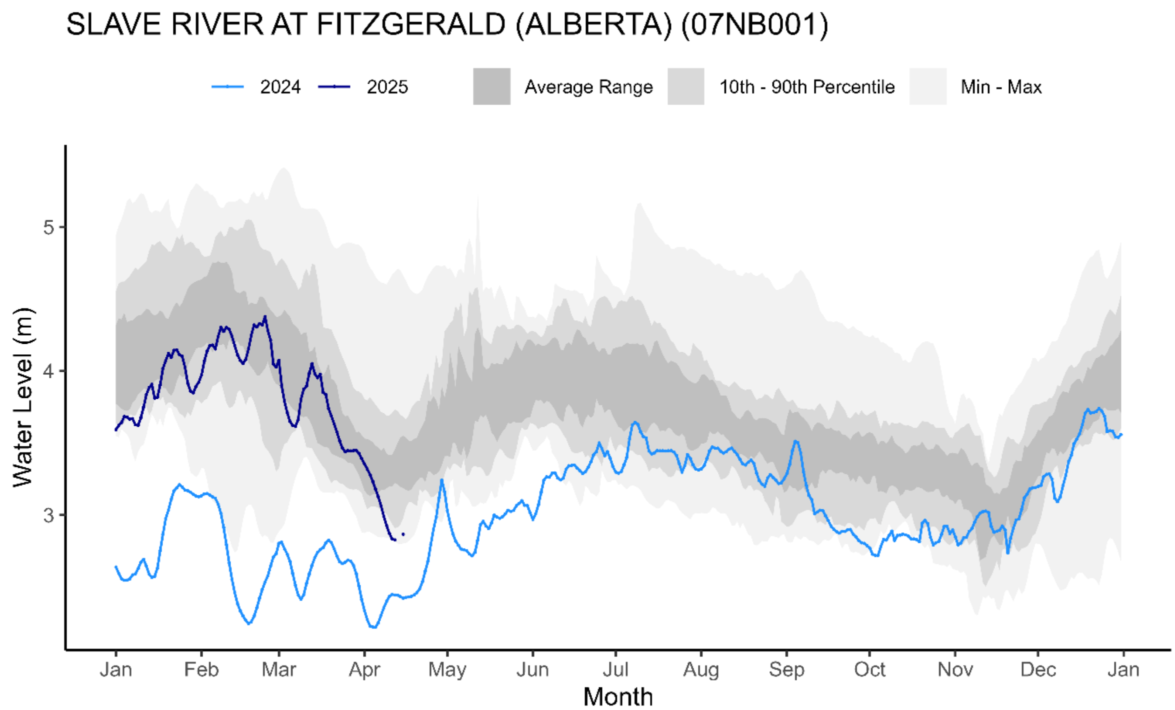


Figure B-2: Water level (m) on the Slave River at Fitzgerald for 2024 and 2025, relative to the historic average range (defined as the interquartile range) and historic maximum and minimums.

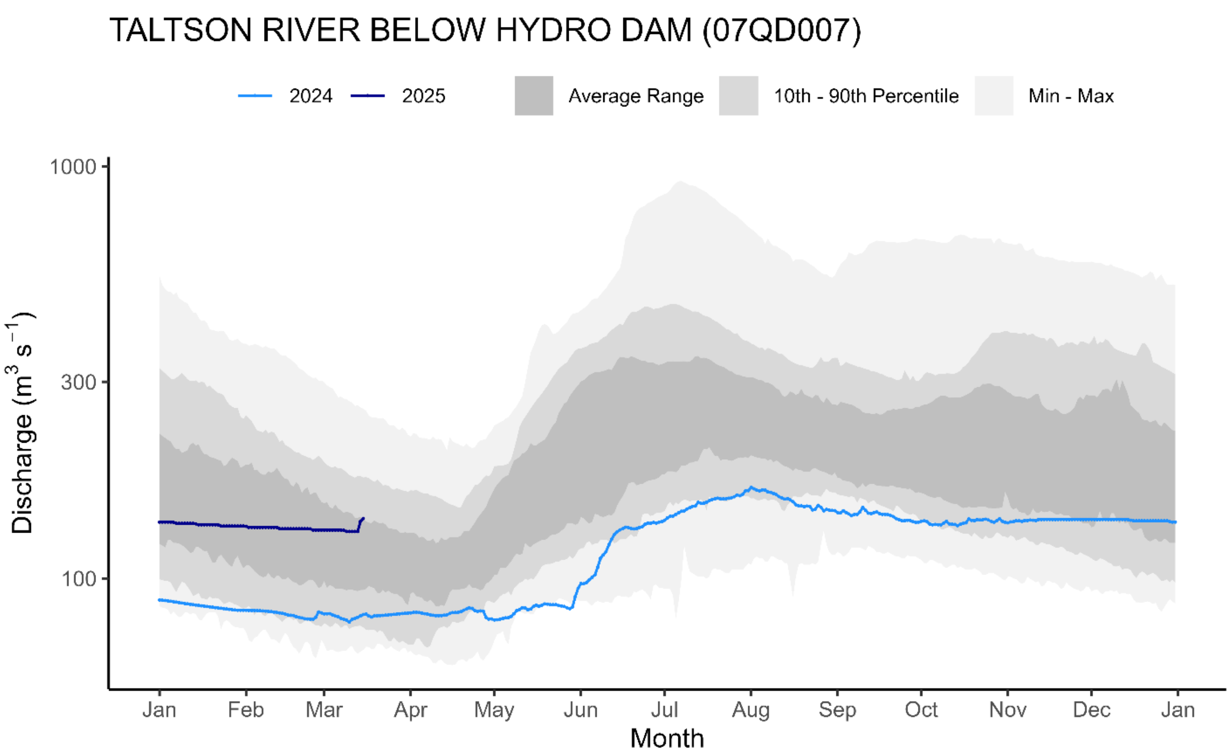


Figure B-3: Flow (m^3 s^{-1}) on the Taltson River for 2024 and 2025, relative to the historic average range (defined as the interquartile range) and historic maximum and minimums. Note: values are presented using a log scale on the y-axis.

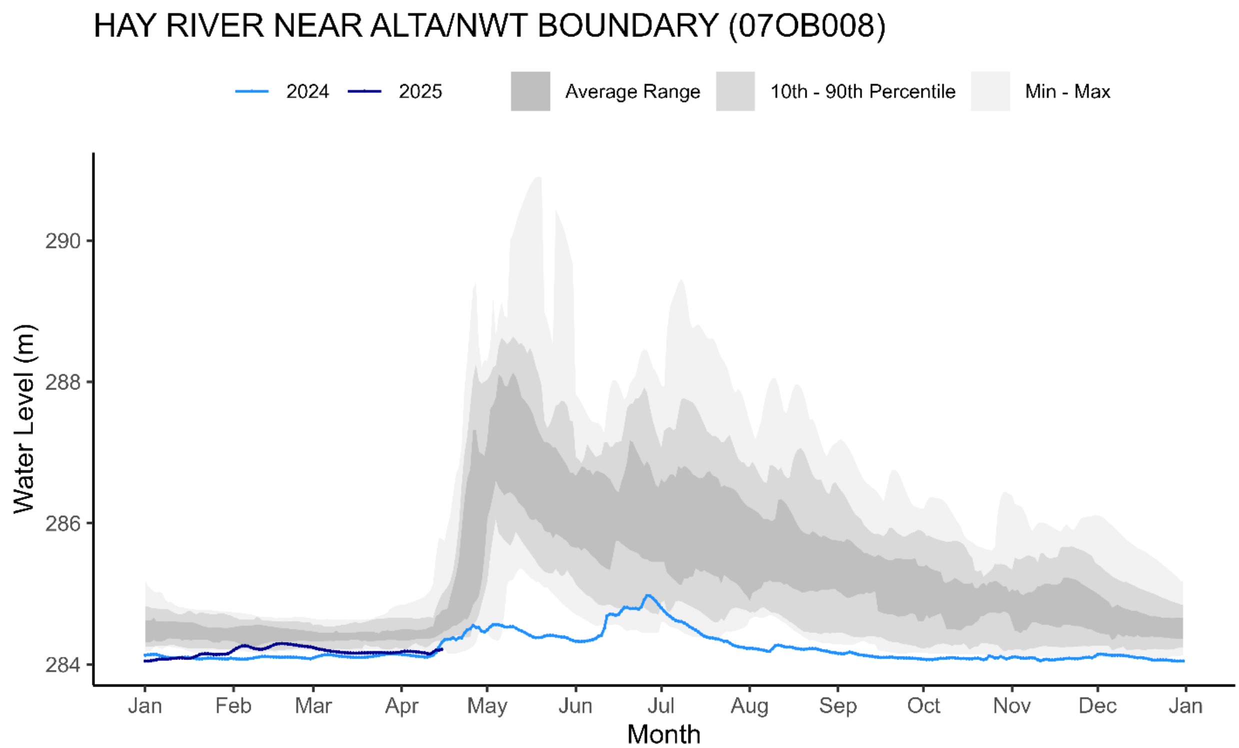


Figure B-4: Water level (m) on the Hay River near the Alberta/NWT boundary for 2024 and 2025, relative to the historic average range (defined as the interquartile range) and historic maximum and minimums.

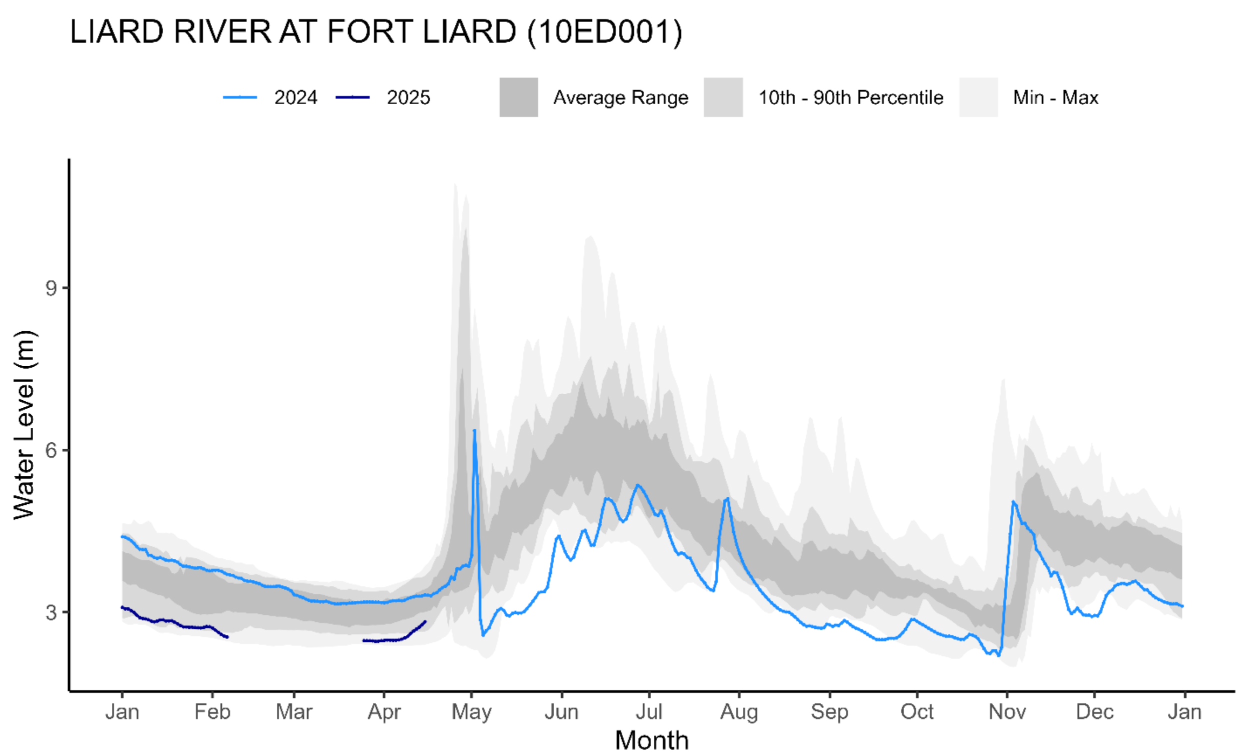


Figure B-5: Water level (m) on the Liard River at Fort Liard for 2024 and 2025, relative to the historic average range (defined as the interquartile range) and historic maximum and minimums.

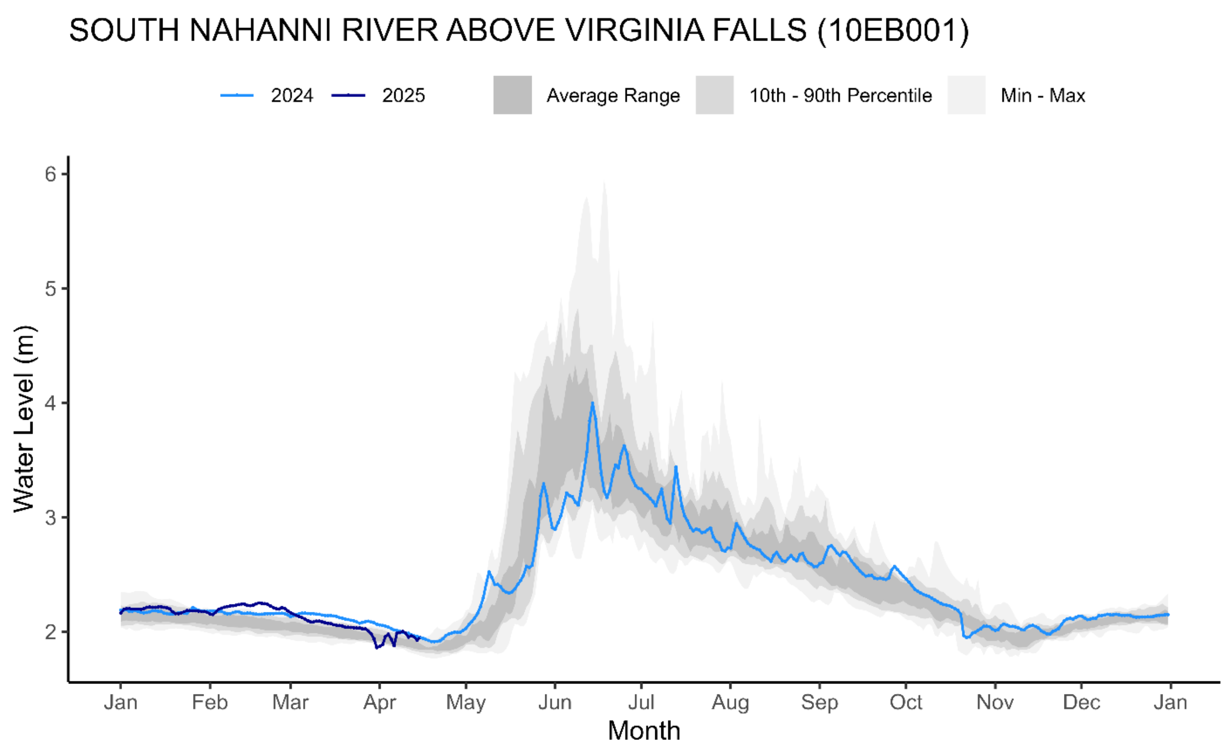


Figure B-6: Water level (m) on the South Nahanni River above Virginia Falls for 2024 and 2025, relative to the historic average range (defined as the interquartile range) and historic maximum and minimums.

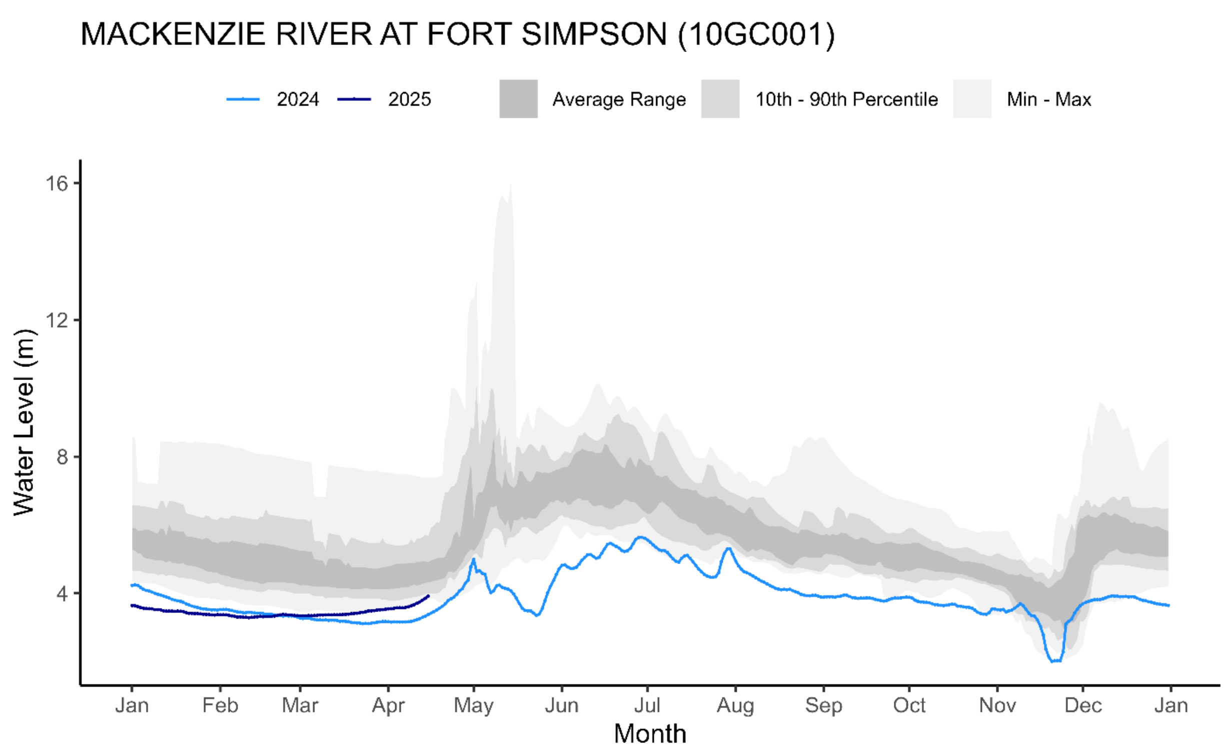


Figure B-7: Water level (m) on the Mackenzie River at Fort Simpson for 2024 and 2025, relative to the historic average range (defined as the interquartile range) and historic maximum and minimums.

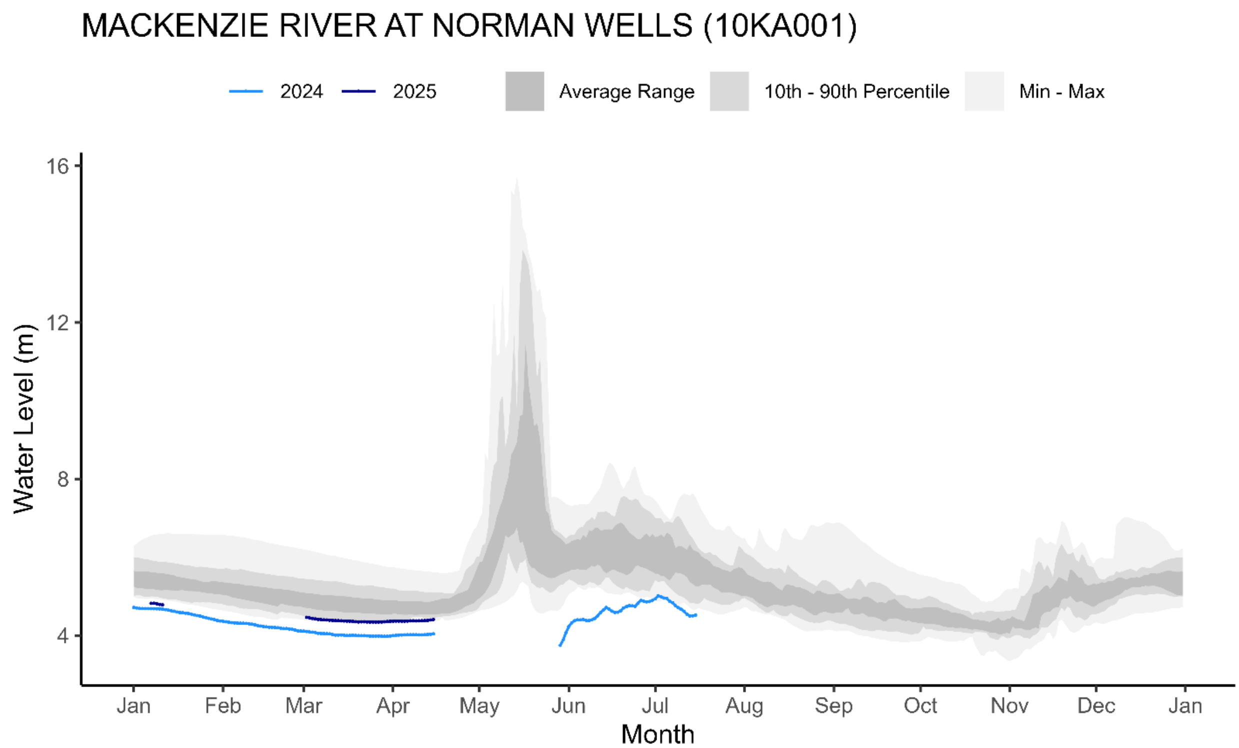


Figure B-8: Water level (m) on the Mackenzie River at Norman Wells for 2024 and 2025, relative to the historic average range (defined as the interquartile range) and historic maximum and minimums.

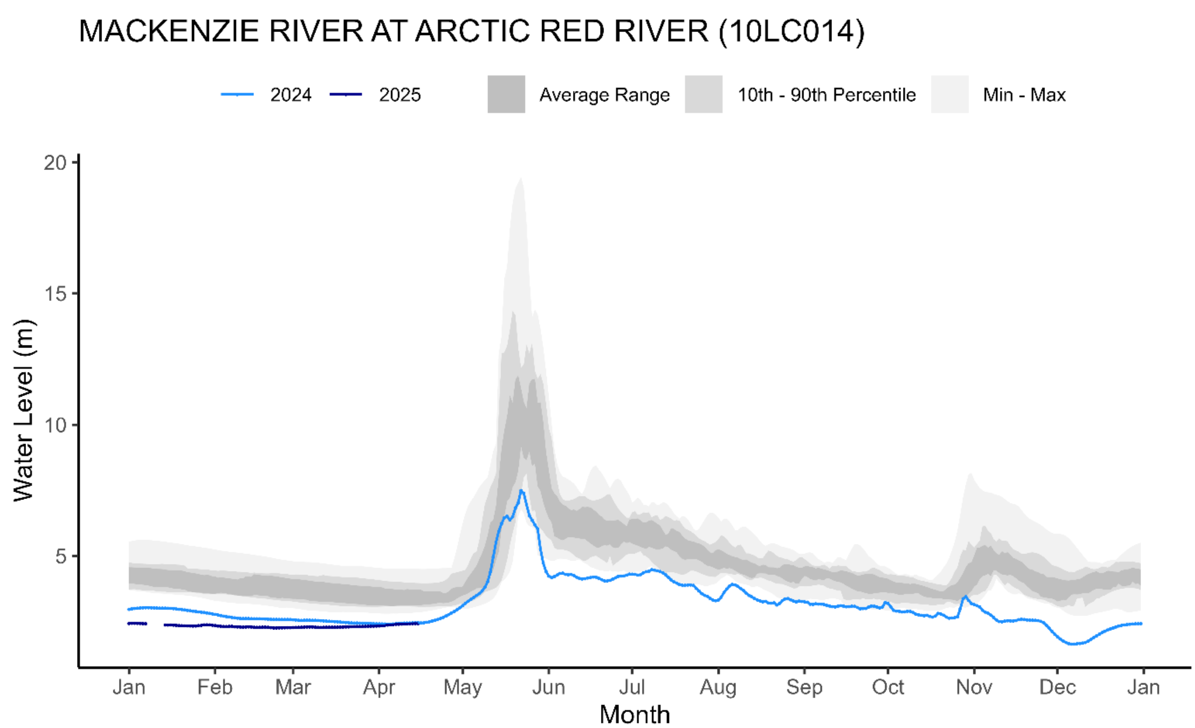


Figure B-9: Water level (m) on the Mackenzie River at Tsiigehtchic (Arctic Red River) for 2024 and 2025, relative to the historic average range (defined as the interquartile range) and historic maximum and minimums.

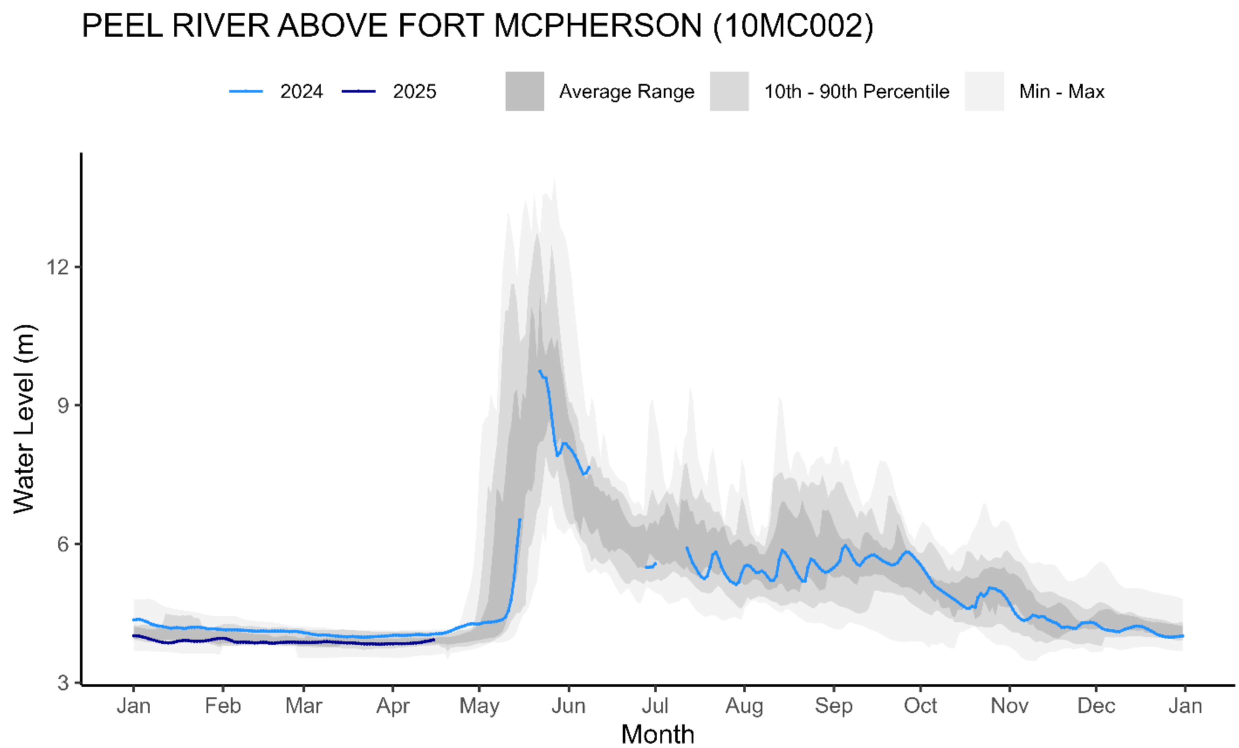


Figure B-10: Water level (m) on the Peel River above Fort McPherson for 2024 and 2025, relative to the historic average range (defined as the interquartile range) and historic maximum and minimums.

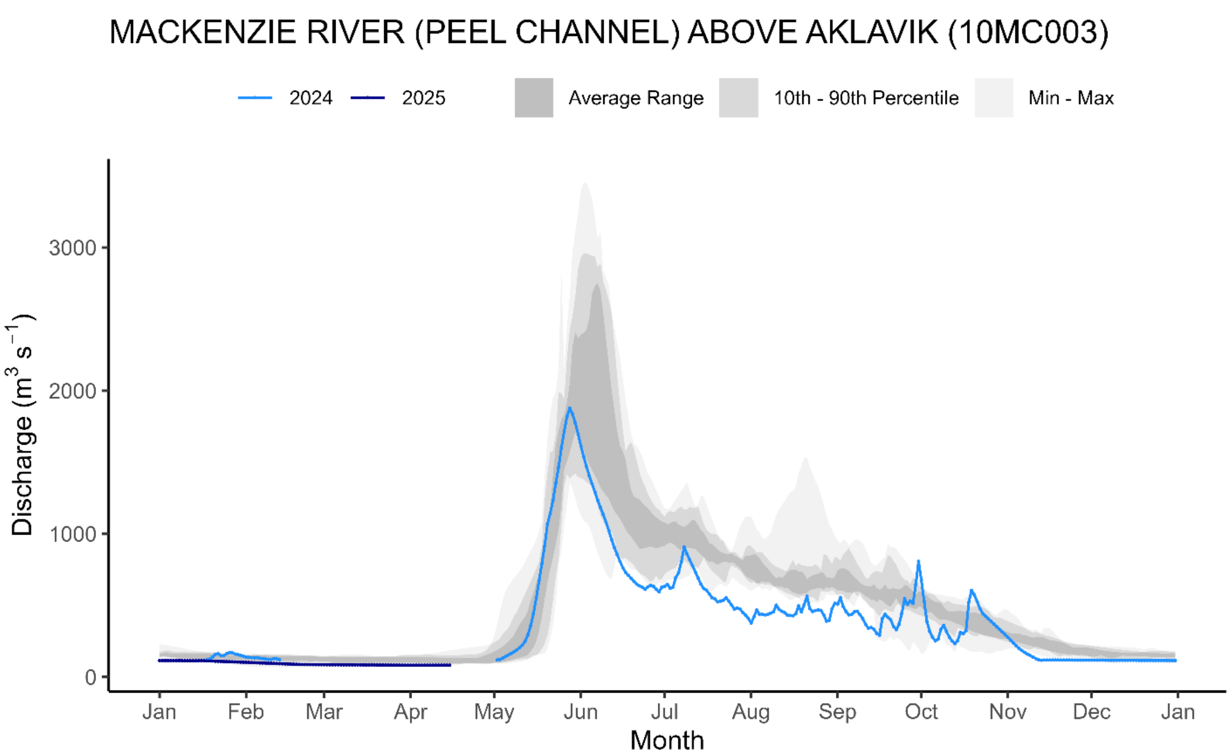
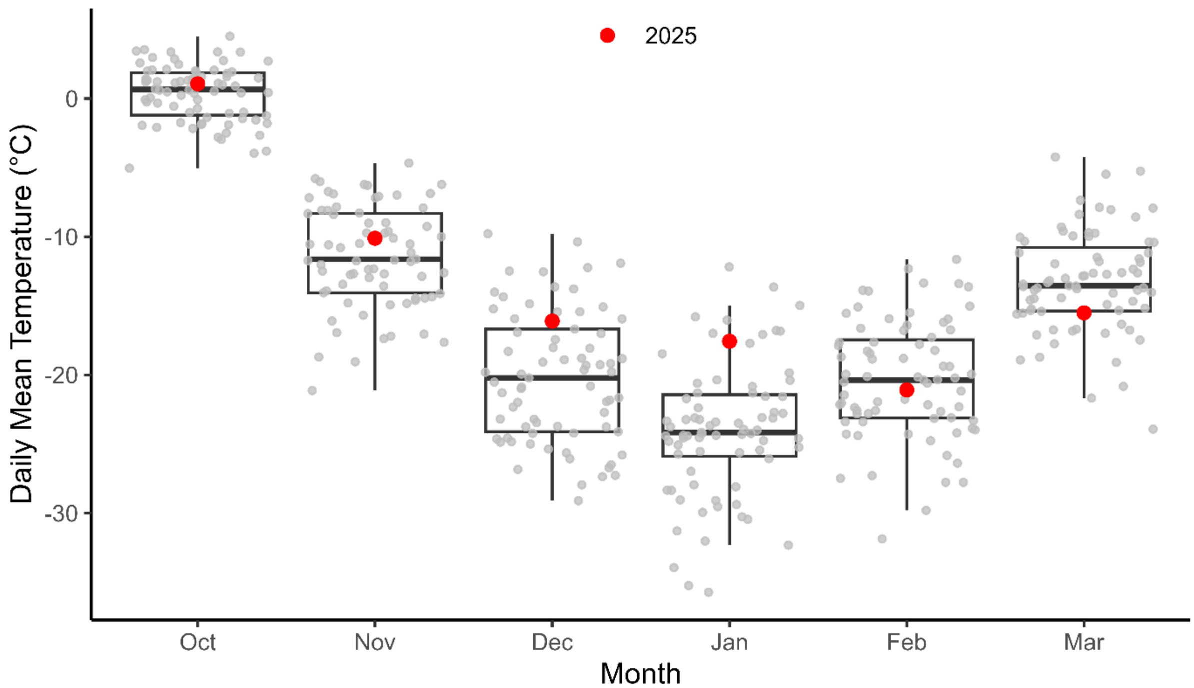


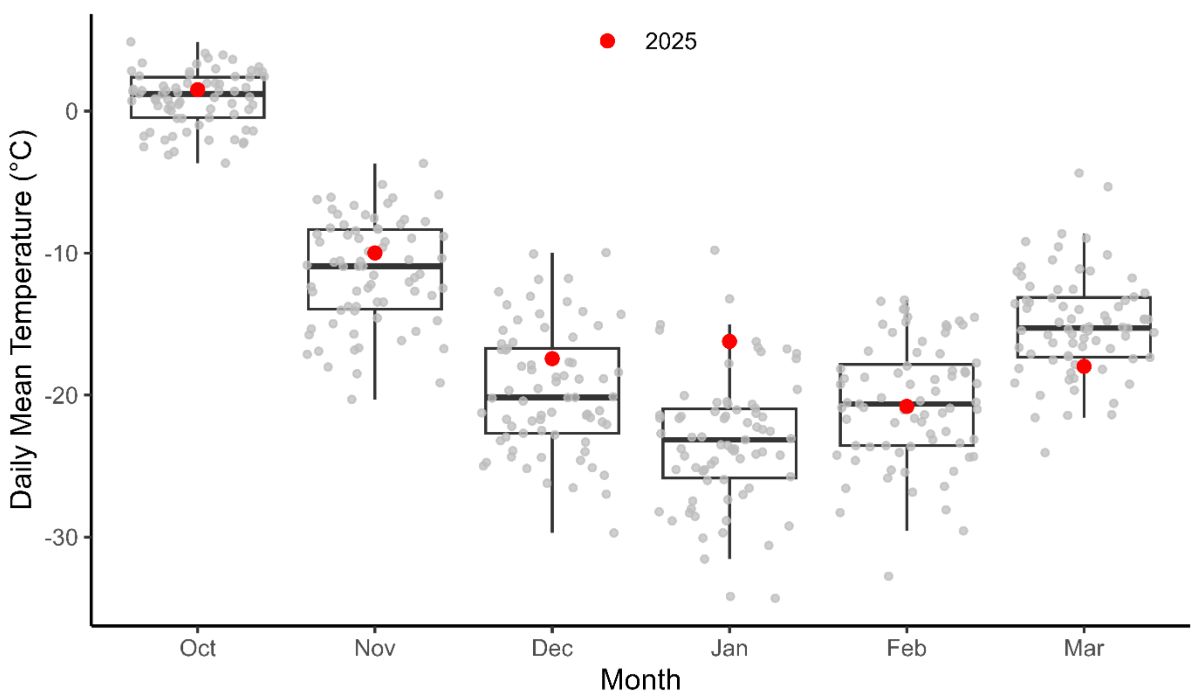
Figure B-11: Flow ($m^3 s^{-1}$) on the Mackenzie River (Peel Channel) above Aklavik for 2024 and 2025, relative to the historic average range (defined as the interquartile range) and historic maximum and minimums.

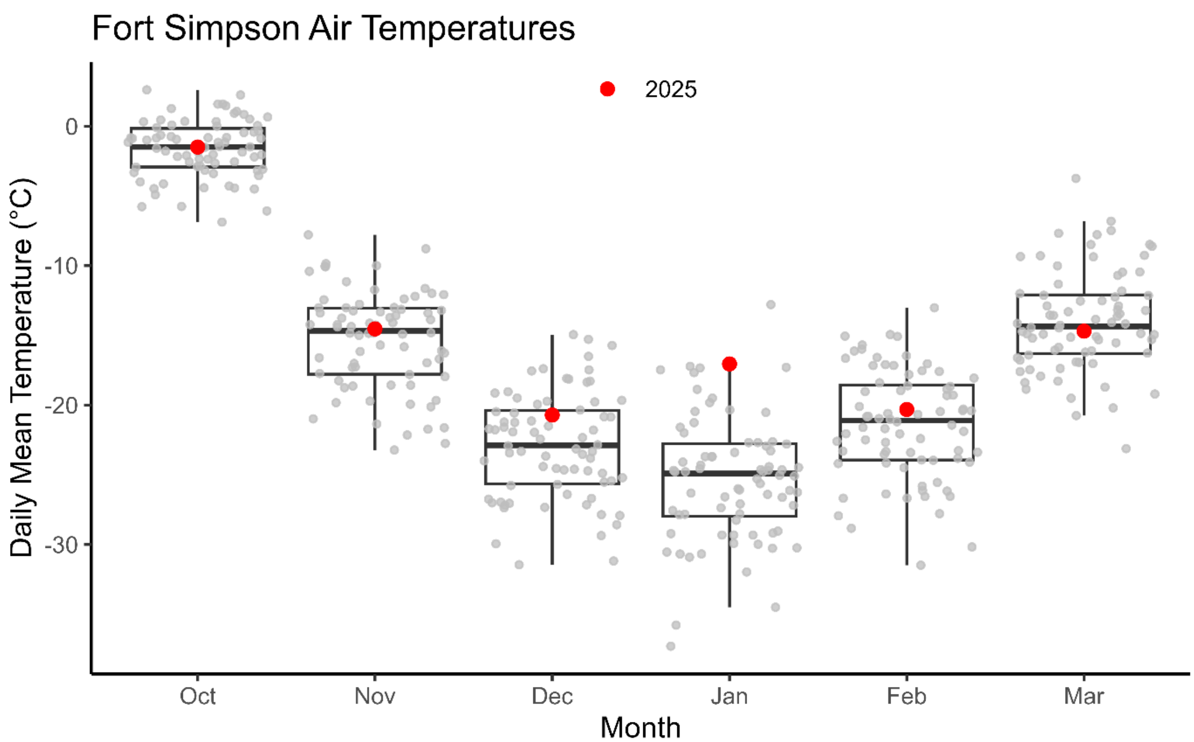
Appendix C: Climate Data for select NWT communities

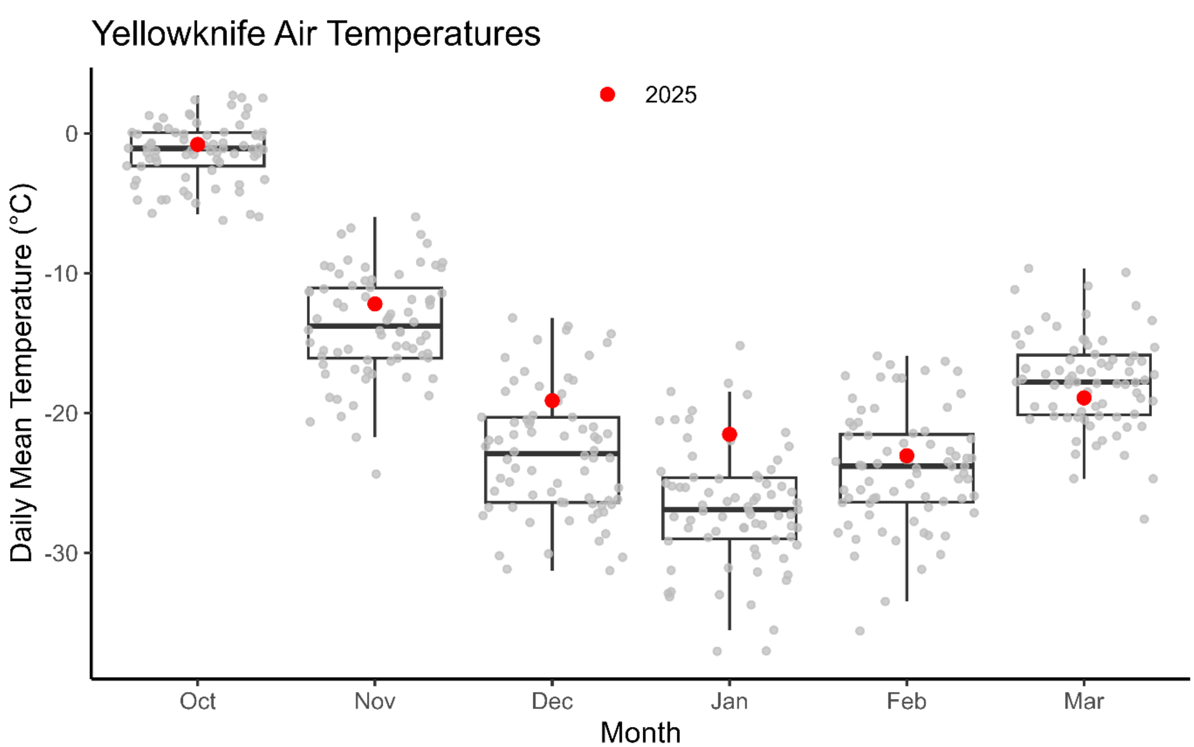
Fort Smith Air Temperatures

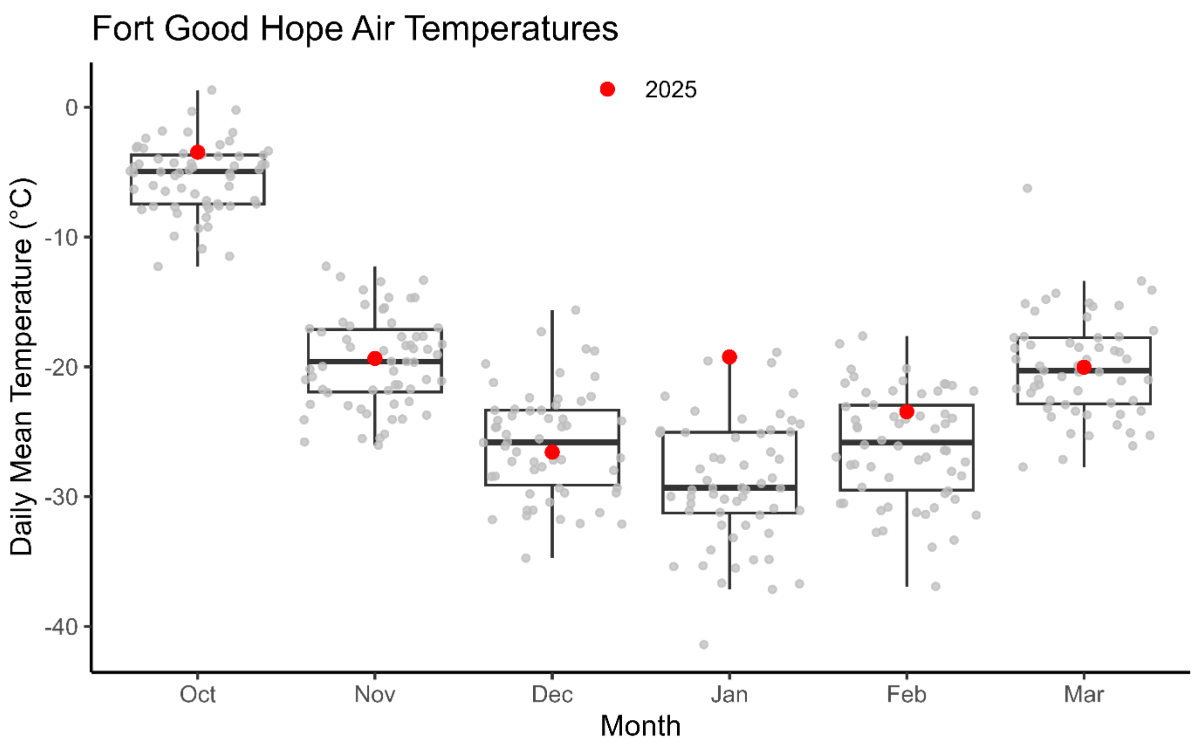


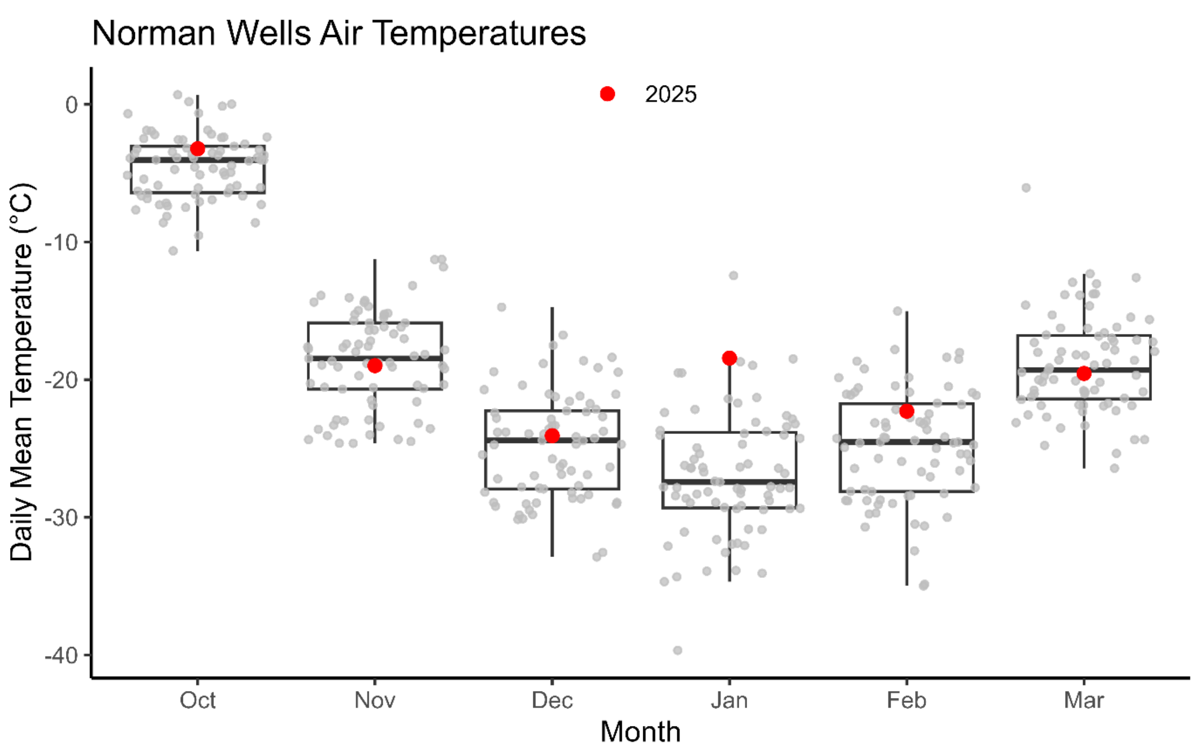
Hay River Air Temperatures




Fort Simpson Air Temperatures
2025
Daily Mean Temperature (°C)
0
-10
-20
-30
Oct
Nov
Dec
Jan
Feb
Mar
Month


Yellowknife Air Temperatures
2025
Daily Mean Temperature (°C)
0
-10
-20
-30
Oct
Nov
Dec
Jan
Feb
Mar
Month


Fort Good Hope Air Temperatures
2025
Daily Mean Temperature (°C)
0
-10
-20
-30
-40
Oct
Nov
Dec
Jan
Feb
Mar
Month


Norman Wells Air Temperatures
2025
Daily Mean Temperature (°C)
0
-10
-20
-30
-40
Oct
Nov
Dec
Jan
Feb
Mar
Month

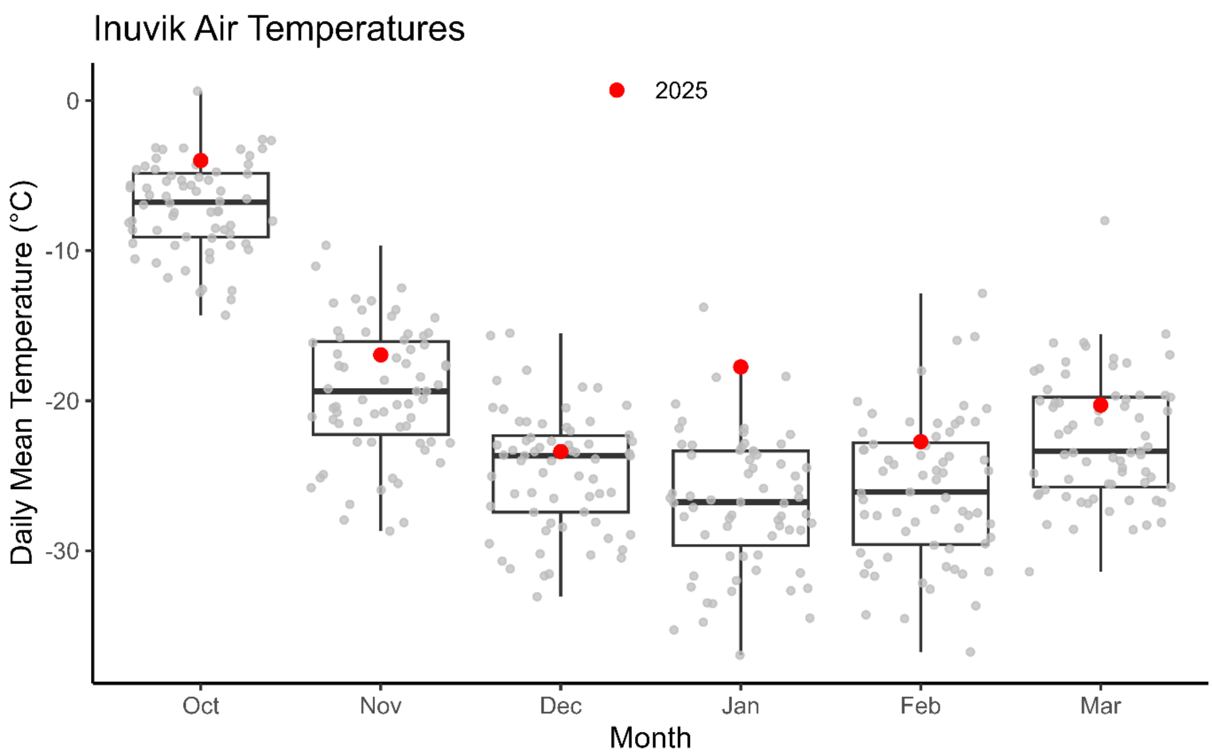


Figure C-1 to C-7: Mean monthly air temperatures (°C) for the winter of 2024/25 in Fort Smith, Hay River, Fort Simpson, Yellowknife, Fort Good Hope, Norman Wells, and Inuvik. Data were collected at automatic climate stations operated by Environment and Climate Change Canada. Light grey dots represent values from previous years on record (1950 - 2024), when available. The thick horizontal black line is the median value, while the other horizontal lines represent the interquartile range.

Appendix D: Other Resources

- Additional Information on ERA5-Land ERA5-Land hourly data from 1950 to present
- Yukon Snow Surveys https://yukon.ca/en/snow-surveys-and-water-supply-forecasts
- Yukon Flood Awareness Maps https://experience.arcgis.com/experience/bda2a6203f18451d8e9c521d0b23bfb7
- BC Snow Surveys https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/drought-flooding-dikes-dams/river-forecast-centre/snow-survey-water-supply-bulletin
- BC River Forecast Centre https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/drought-flooding-dikes-dams/river-forecast-centre
- Alberta River Forecast Centre https://rivers.alberta.ca/#
- Saskatchewan Water Security https://www.wsask.ca/lakes-rivers/provincial/