Nechako Research NEWSLETTER

September 2025 | Volume 7 | Issue 3

RIO TINTO RESEARCH CHAIRS

RioTinto | BC Works

NHG Northern Hydrometeorology Group

Freshwater Fish Ecology Laboratory | UNBC

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TERRITORIAL ACKNOWLEDGEMENT

Working on traditional First Nations territories in a scientific context is a humbling and deeply appreciated privilege. The opportunity to work hand-in-hand with Indigenous communities is a gift for which we are sincerely grateful. This collaboration not only enriches scientific understanding but also fosters mutual respect and cultural exchange. We are grateful for the trust and partnership extended to us, and we strive to approach this work with the utmost gratitude and responsibility. We acknowledge that our work takes place within the unceded traditional lands of 15 First Nations:

- Binche Whut'en
- Cheslatta Carrier Nation
- Lake Babine Nation
- Lheildli T'enneh
- Nadleh-Whut'en
- Nak'azdli Whut'en
- Nee-Tahi-Buhn Indian Band
- Saik'uz
- Skin Tyee Band
- Stellat'en
- Takla Lake
- Tl'azt'en
- Ts'il Kaz Koh (Burns Lake) Band
- Wet'suwet'en First Nation
- Yekooche First Nation

Netʃa koh (Nechako River) at Cottonwood Island Nature Park in Prince George

The Nechako River is referred to as Netʃa koh, meaning 'Big River' in the traditional language of the Dakelh Nations.

CONTENTS

In this issue of the Nechako Research Newsletter, you will find updates from the current team of researchers, including updates from the Summer season and plans for the Fall season.

September 30 is the National Day for Truth and Reconciliation. We wear orange to honour the thousands of survivors of residential schools. #EveryChildMatters

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HAPPY FALL EQUINOX!

Stephen Déry

Yet another summer has flown by as we now begin the fall season across the Nechako Watershed. Relative to the last three summer seasons, 2025 brought us decent rains across all summer months providing some relief for the long-term drought impacting the region. Still, parts of the Nechako Watershed, particularly in the upper reaches surrounding the Nechako Reservoir, saw meager amounts of precipitation during the past summer. For instance, Ootsa Lake / Skins Lake observed only 43% of normal precipitation between June to August. Meanwhile, Prince George Airport reported 83% of normal precipitation between June to August. Current long-term forecasts show near to above average air temperatures and near normal precipitation across north-central including the Nechako Watershed. With the El Niño Southern Oscillation (ENSO) still in a neutral phase and with the possible emergence of a weak La Niña this winter, we may expect at least average precipitation this autumn and winter.

Research contributions from the Northern Hydrometeorology Group (NHG) in this issue of the newsletter cover several topics. First, post-doctoral fellow Mostafa Khorsandi reports on the ongoing development of both observational and simulated datasets of water temperature across the Nechako Watershed. An outcome of this work is the creation of water temperature simulations for 11 sites in the watershed spanning from up to 1950-2024, for which the time series were deposited in a publicly accessible website at Zenodo. Second, I provide a short summary of an online data visualization tool for our water temperature observations collected across the Nechako Watershed from 2019 to 2024. Third, field crew members led by Dylan Broeke provide an update on all summer field activities conducted across the Nechako Watershed.

July 1st marked the beginning of my one-year sabbatical at UNBC. During this sabbatical, I will not be teaching any courses at UNBC; rather, I will be focusing on research, graduate student supervision and administrative duties. As the NSERC / Rio Tinto Industrial Research Chair (IRC) concluded on June 30th, there is now an extensive final report due at NSERC (the Natural Sciences and Engineering Research Council of Canada) by the end of September. This is to ensure that the original objectives and deliverables were met over the duration of the IRC program of research. Research related to the new Rio Tinto Research Chair in climate change and water security is also ramping up this fall with the recruitment of new team members (see details later in this piece and bios for new team members in the newsletter). I am therefore planning to spend considerable time interacting with the new team members this fall to ensure their projects are initiated in a timely fashion. Furthermore, I will be based at UNBC's Northwest campus in Terrace for three weeks starting September 29th. This will provide time to work on the equipment part of our Monitoring Extreme Climate and Hydrometeorological Events (MECHE) observatory installed on the rooftop of the UNBC Northwest campus. I also anticipate having the opportunity to interact with many colleagues at Rio Tinto, Trinity Consultants/Ecofish Research Ltd, and other individuals and organizations while based in Terrace. Thus my sabbatical is off to a busy and productive start with much momentum going into this fall.

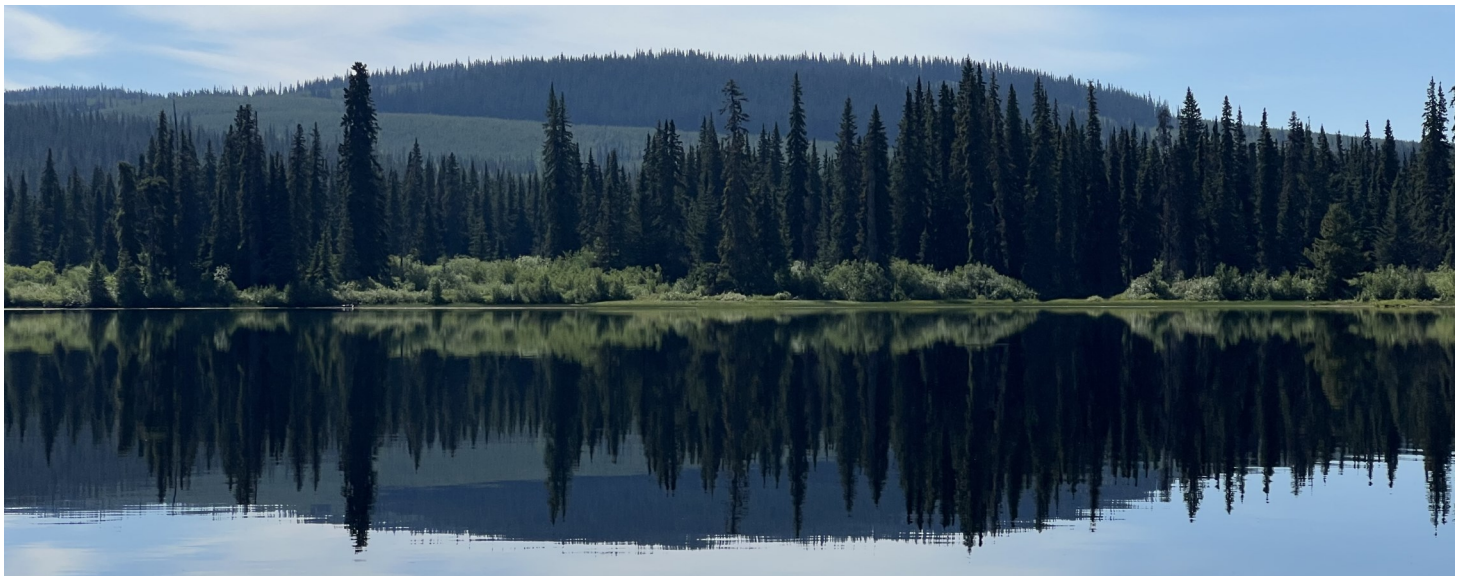
HAPPY FALL EQUINOX!

The outreach section of this newsletter provides information on a recent presentation I delivered on climate monitoring and climate change in the Nechako Watershed at a NorthCAN meeting. You will also find a list of recent media interactions and other community engagement activities. This includes details on the deployment of a new weather station at Isle Pierre, just west of Prince George, during which we hosted a class of grade 8 students from Prince George Secondary School.

The end of the 2025 summer field season marks the conclusion of positions for our three undergraduate research assistants / field technicians: Kainen Parmar, Lynn Poeppelmann and Maria Tavares. We are extremely grateful for all their hard work this past summer that ensured all field sites were successfully visited for data downloads and equipment maintenance this summer. We are pleased, however, to retain Kainen as one of two new Master's students joining the Rio Tinto Research Chair team this fall. Kainen will undertake a project exploring the microclimates and climate change in the Vanderhoof Agricultural Belt using in part data from NHG weather stations. Nisarga Sharma is another Master's student joining the team this autumn. Nisarga will tackle a project exploring moisture transport across the Coast Mountains towards the upper Nechako Watershed in atmospheric rivers. Also joining the team in September is Maziyar Dowlatabadibazaz as Data Manager in support of our data management and quality control efforts. Coming back to the NHG in a different capacity this autumn is former MSc student Devin Wittig who will assist with monitoring atmospheric rivers in the Upper Nechako Watershed in collaboration with UNBC colleagues Drs. Phil Owens and Kristen Kieta. Finally, we also pleased to welcome Hadi Sanikhani as a Research Associate for the NSERC Alliance project. Hadi is investigating the role of large-scale teleconnections such as ENSO on summer water temperatures in the Nechako Watershed. Short biographies for all of our new team members are available in the newsletter.

Wishing everyone a most pleasant fall season!

Stephen Déry



Nadina Lake

NHG TEAM

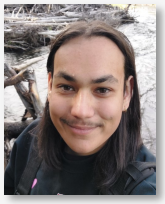
Dr. Stephen Déry is the Rio Tinto Research Chair in Climate Change and Water Security.

Rio Tinto Research Chair team members from the Northern Hydrometeorology Group.

Stephen Déry
Project Leader

Dylan Broeke
Field Manager

Maria Tavares
Field Technician
Data Administrator



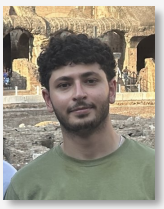
Kainen Parmar
Field Technician
M.Sc. Student

Lynn Poeppelmann
Field Technician

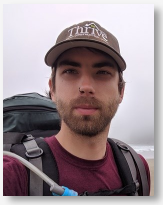
Devin Wittig
Research Skills Development Trainee

Lucas Moura
Research Assistant
Newsletter Editor

Erica Lee
Research Manager
Newsletter Editor

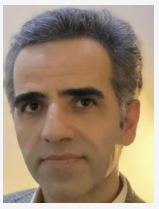


Maziyar Dowlatabadibazaz
Data Manager



Justin Kokoszka
M.Sc. Candidate

Mostafa Khorsandi
Post-Doctoral Fellow



Hadi Sanikhani
Research Associate

Nisarga Sharma
M.Sc. Student

NHG TEAM UPDATES

New team members!

Hadi Sanikhani

Hi everyone, my name is Hadi Sanikhani, and I recently joined the NHG as a Research Associate. I hold a PhD in Water Resources Engineering, and prior to this role, I was a visiting researcher at INRS in Quebec City. My background includes research on hydroclimatic extremes, drought analysis, rainfall-runoff modeling, and the use of statistical and machine learning methods in hydrology. At NHG, I am currently contributing to a project that investigates the influence of large-scale climate oscillations on snowpack evolution and streamflow-temperature dynamics in the Nechako Watershed. I'm excited to be part of this team and look forward to learning and contributing through this collaboration.

Maziyar Dowlatabadibazaz

My name is Maz and I'm joining NHG this fall as Data Manager. I earned my Bachelor of Science in Computer Science from UBC and have experience across ed-tech, machine learning research, and fusion energy. Outside of work, I enjoy Fleetwood Mac, playing guitar and piano, and going for walks. I'm excited to support NHG's work by providing reliable, insightful data for researchers and communities.

Nisarga Sharma

I am Nisarga Sharma, a Master's student with the NHG at UNBC. I did my bachelor's in Physics and worked on atmospheric moisture content over Nepal, which developed my interest for further understanding of climate and water systems. Further, my master's research will focus on climate and water security, building on my previous experience and programming skills. Outside of research, I enjoy hiking, swimming, playing the flute, and some good company.

Devin Wittig

My name is Devin Wittig and I recently completed my Master of Science in Natural Resources and Environmental Science at UNBC. My research focused on the Gaat Héeni (Silver Salmon River) located on the traditional and unceded territory of the Taku River Tlingit First Nation territory. Within my work, I studied how atmospheric rivers influence hydrologic variability and sockeye salmon migration. I live in Dakwäkäda (Haines Junction), and in my free time enjoy skiing, paddling, and spending time on the land with family and friends. I look forward to supporting research at UNBC and supporting communities across the Nechako Watershed.

NHG TEAM UPDATES

Concluding the 2025 Field Season, thank you to the members of our Field Crew!

A big thank you to the Field Technicians, Lynn Poeppelmann, Maria Tavares and Kainen Parmar as their summer positions conclude at the end of August. Maria and Lynn are returning to their undergraduate studies at UNBC, both graduating come 2026. Kainen will begin a Master's degree with the NHG, under the supervision of Dr. Stephen Déry.

Lynn Poeppelmann

Maria Tavares

Kainen Parmar

SUMMER FIELD SEASON UPDATE

Dylan Broeke

Maria Tavares

Kainen Parmar

Lynn Poeppelmann

This summer's fieldwork was very successful and efficient. With the field crew working for the second season together, they were able to split up early and cover lots of ground in the two separate field trucks. For example, during a weeklong trip to Huckleberry mine, the crew was able to visit nine water temperature loggers, two tipping bucket rain gauges, and two weather stations. These trips included boat rides, 4x4 roads, and kilometers of bushwhacking, which is just what the field crew enjoys.

While at Huckleberry Mine, the two-and-a-half-year long troubleshoot of getting the station online (https://julie-theriault.uqam.ca/huckleberry-mine/) was finally completed and the weather station is now connected to an online server with 30 minute live updates. This was possible due to the help of NHG collaborator Hadleigh Thompson at L'Université du Québec à Montréal (UQAM). Soon, the Parsivel Disdrometer, a laser sensor which measures and distinguishes between precipitation type, will connect to the network and join the weather station on the online server.

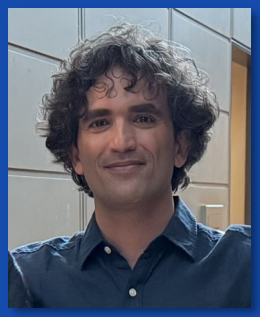
Even though there were several moments and trips this season that needed troubleshooting and revisits, the crew was able to work it into the schedule and solve the issues. New sites were also built this summer including a weather station at Isle Pierre. The Isle Pierre build included a youth outreach activity, facilitating hands-on learning for a class of grade 8 students from Prince George Secondary School. Come the end of the field season, nearly everything will be completed with only a small number of tasks needed to be completed in September by the Field Manager.

Figure 1: Huckleberry Mine Weather Station and Parsivel Disdrometer.

Figure 2: From left to right; Field Technician - Kainen Parmar, Professor - Stephen Dery, Research Manager - Erica Lee, Field Technician - Maria Tavares, Field Technician - Lynn Poeppelmann, Field Manager - Dylan Broeke, posing in front of the Ness Lake weather station at the end-of-field-season get together.

Ness Lake

MONITORING AND MODELING WATER TEMPERATURE IN THE NECHAKO WATERSHED



Mostafa Khorsandi

Water temperature plays a vital role in riverine ecosystems, particularly in cold regions where fish populations are highly sensitive to thermal changes. Over the past five years, our team has developed and released three complementary datasets to support environmental monitoring and modeling in the Nechako Watershed, British Columbia. The first dataset provides high-resolution in situ water temperature observations for 2019-2021 [1]. The second dataset is an update to the first, expanding the number of stations and including more recent observations for 2019-2024 [2]. The third dataset offers long-term hindcast simulations for 1950-2024 period using calibrated Air2Stream models for 11 sites selected from the Water Survey of Canada (WSC) network, where both hydrometric and water temperature data are available [3].

Observed Water Temperature Dataset

The observational dataset, recently updated and published in Data in Brief [2], provides quality-controlled 15-minute water temperature records for 32 monitoring stations distributed across lakes, rivers, and tributaries in the Nechako Watershed. This updated version builds on an earlier published dataset [1] and now includes new sites in both regulated and unregulated streams. Data from these stations span year-round, capturing full seasonal dynamics including freeze-thaw periods. The data are valuable for ecological studies, regulatory assessments, and hydrological modeling.

Hindcasted Water Temperature Dataset

A third dataset, available at Zenodo (https://zenodo.org/records/16097586), provides simulated daily water temperatures for 11 hydrometric stations (Figure 3) from 1950 to 2024 using the Air2Stream model. The model was calibrated using historical observations and shows high performance (Root Mean Square Errors < 1.5 °C at all sites, e.g., Figure 4). This dataset is ideal for long-term trend analysis, climate impact studies, and providing thermal boundary conditions for downstream modeling applications.

Applications and Future Use

Together, these datasets provide a powerful toolset for understanding spatio-temporal variations in water temperature across the Nechako Watershed. They are particularly valuable for:
- Assessing impacts of climate change and flow regulation
- Supporting habitat suitability studies for salmonids
- Informing the Summer Temperature Management Program for the Nechako River
- Providing upstream thermal boundary conditions for ecohydraulic and water quality models

Both datasets are openly available through Zenodo [3,4].

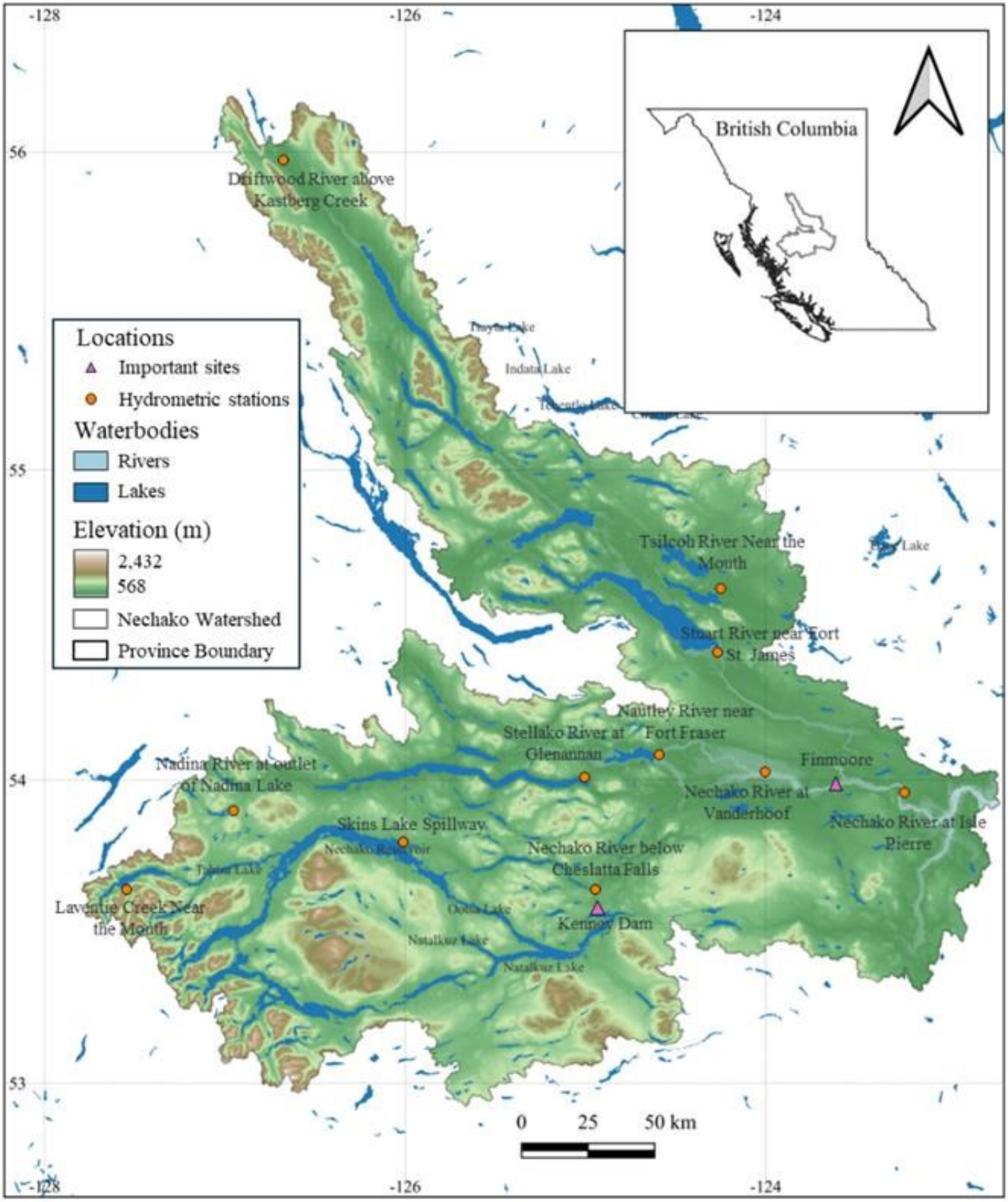


Figure 3: Locations of 11 selected WSC hydrometric stations equipped with water temperature sensor and important sites across the Nechako Watershed.

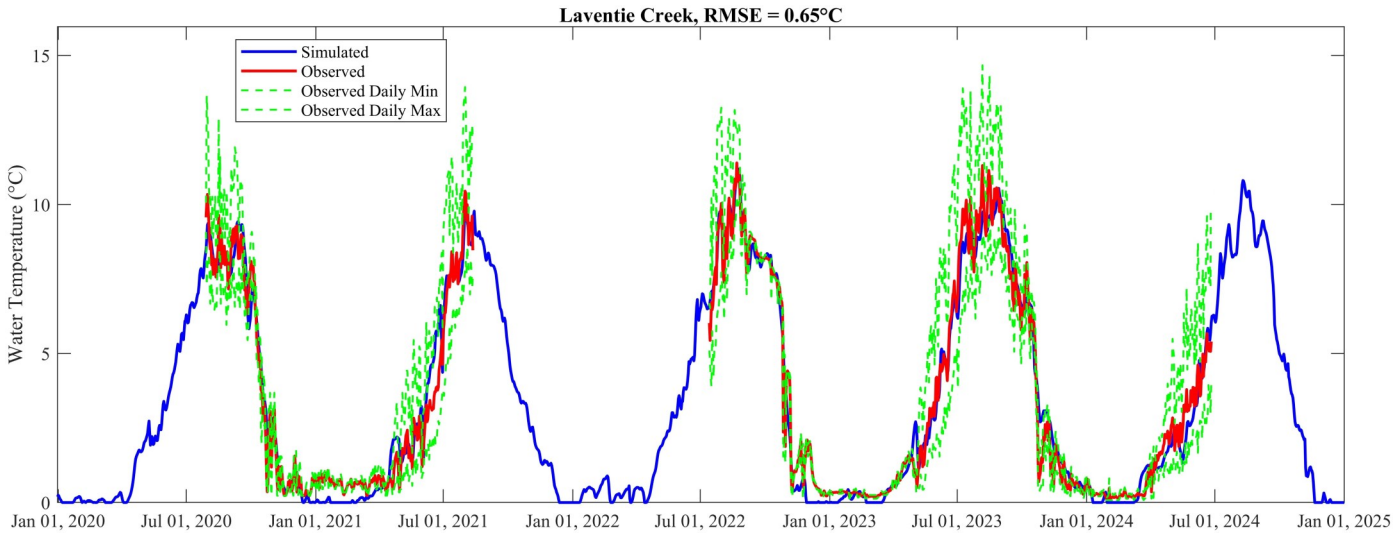


Figure 4: Simulated (blue) and observed (red) daily water temperatures at Laventie Creek Near the Mouth from 2020–2024, with daily maximum and minimum values (green).

References

[1] D.E. Gilbert, J.E. Morris, A.R. Kaveney, S.J. Déry, Sub-hourly water temperature data collected across the Nechako Watershed, 2019-2021, Data in Brief (2022) 108425. https://doi.org/10.1016/j.dib.2022.108425.

[2] J.E. Kokoszka, D. Broeke, F. Calder-Sutt, M. Khorsandi, M.A. Tavares, S.J. Déry, Updating "Sub-hourly water temperature data collected across the Nechako Watershed, 2019-2021" to 2024 and with supplemental sites, Data in Brief (2025) 111710. https://doi.org/10.1016/j.dib.2025.111710.

[3] M. Khorsandi, S. Déry, Daily hindcasted water temperature and model outputs for 11 sites in the Nechako Watershed, (2025). https://doi.org/10.5281/ZENODO.16097586.

[4] J.E. Kokoszka, M.A. Tavares, D. Broeke, F. Calder-Sutt, S.J. Déry, Sub-hourly water temperature data collected by UNBC's northern hydrometeorology group (NHG) across the Nechako Watershed, 2019-2024, (2025). https://doi.org/10.5281/ZENODO.15053906.

NEW UNBC WATER TEMPERATURE DATA VISUALIZATION TOOL

Stephen Déry

The Northern Hydrometeorology Group (NHG) is pleased to announce the development of a new online data visualization tool for its water temperature data collected across the Nechako Watershed. The "WaterTempviz Stream Temperature Data Visualization Tool" was adapted from a similar platform developed for water temperature data collected in Alaska. This tool can be accessed at: https://nhgwatertemp-lfqhnuleb-maziyars-projects.vercel.app/ and then by clicking on "Start Exploring". Afterwards, a map of NHG water temperature loggers across the Nechako Watershed appears on the top left (see Figure 5). Clicking on any of the circles that mark our field sites, the time series of water temperature data appears in the top right panel. The example below shows the data for the lower Stuart River collected between 2020 to 2024. Up to four sites can be selected simultaneously thereby facilitating comparisons between sites across the Nechako Watershed. Data can also be downloaded using the button at the bottom right of the time series plot while there is the option to download a graph (in four different formats including PDFs) by clicking on the three horizontal bars on the top right of the plot.

Aside from the two plots, the bottom left panel lists all available NHG sites including some relevant metadata such data provider, site identification number, water body, and start and end years for the time series. The bottom center panel illustrates the daily mean and range of water temperature over the period of record. Meanwhile, the bottom right panel shows a comparison between mean daily air and water temperatures. The NHG continues to update this data visualization tool to provide access to more recent data collected during the 2025 summer field season and to add new sites in the network. Sincere thanks to Ahmad Jalil, PhD candidate at UNBC under the supervision of Dr. Hossein Kazemian and Data Manager Maziyar Dowlatabadibazaz for implementing this data visualization tool with the NHG time series of water temperature for the Nechako Watershed.

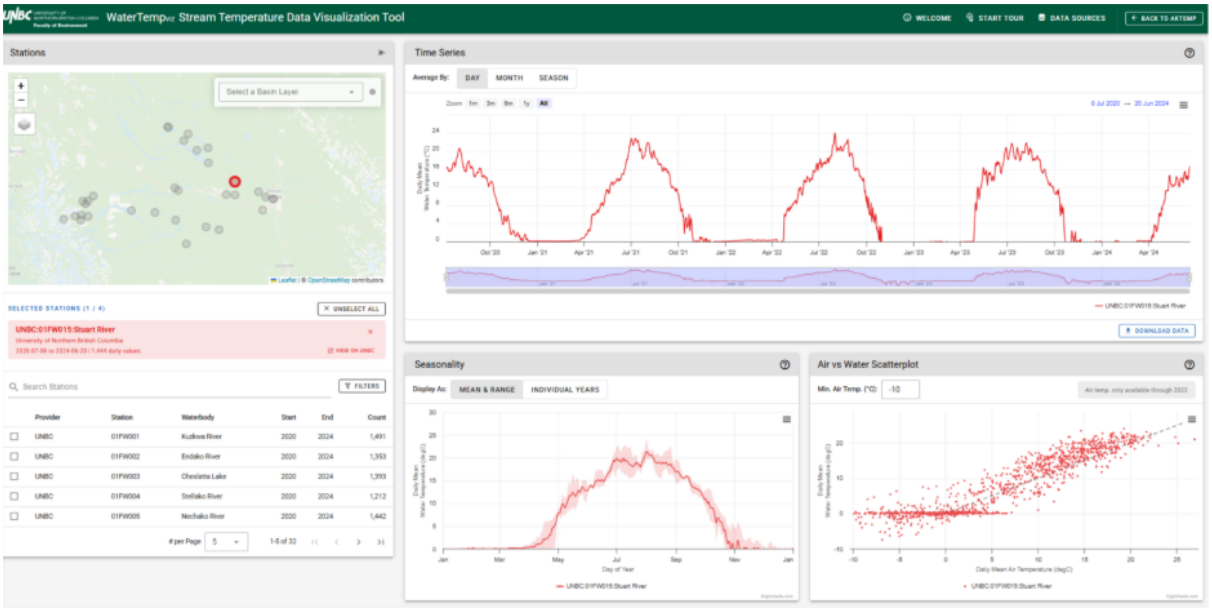


Figure 5: Screenshot of the WaterTempviz stream temperature data visualization tool implemented to the Nechako Watershed. This platform provides easy access to water temperature data collected by the Northern Hydrometeorology Group (NHG) between 2019 to 2024. This example shows the daily water temperature for the lower Stuart River collected between 2020 and 2024.

FFEL UPDATE

Eduardo Martins

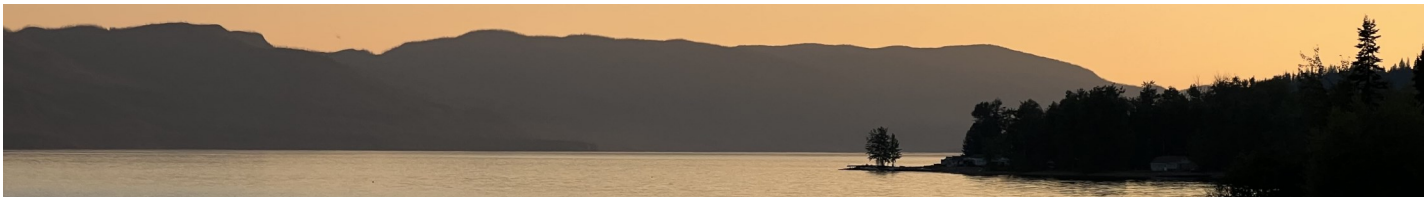
This past summer, members of the FFEL launched two pilot studies to further our understanding of freshwater fishes in the Nechako Watershed. Both projects highlight innovative field approaches, the importance of partnerships, and the dedication of our students to advancing conservation-focused research.

PhD student John Gray explored approaches to investigate thermal habitat selection by juvenile and adult Chinook salmon. Both life stages are facing increasing pressures from warming freshwater habitats, which can limit access to suitable thermal habitat critical for survival, growth, and reproduction. John assessed the feasibility of capturing juveniles for habitat use monitoring along the upper Nechako River using dip netting and minnow trapping, confirming that juveniles can be reliably and effectively captured across diverse rearing environments. Working with the Lheidli T'enneh First Nation, the Upper Fraser Fisheries Conservation Alliance, and Fisheries and Oceans Canada, our team tagged two adult female Chinook salmon migrating up the Chilako River. The females were tagged with a combined acoustic, radio and temperature data logger package, which will enable John to assess their migration up the Chilako, potential use of Tatuk Lake and thermal refuge use.

In another pilot study, PhD candidate Avery Dextrase used radio telemetry to investigate movement and activity of endangered Nechako River white sturgeon on their spawning grounds near Vanderhoof. Twenty adults were tagged with depth, activity, and body temperature sensing radio transmitters. Data transmitted by the tags and collected by four stationary receiver stations around the spawning grounds revealed broad habitat use: fish that had been classified as likely spawners at the time of tagging earlier in the spring moved extensively among monitored sites, occupied depths from the surface to nearly four meters, and displayed diurnal fluctuation in body temperature.

This fall, our team will retrieve the acoustic receivers used to monitor the tagged female Chinook salmon in the Chilako River and also try and retrieve the temperature dataloggers that were carried by the fish. We will also finalize data collection for our study on thermal ecology of Stellako River rainbow trout (featured in the previous issue of the Nechako Newsletter) and look forward to sharing what we have learned in these studies!

Finally, I'd like to introduce two new MSc students to our lab: Kirsten Mathison and Jonny Russell. Kirsten will join our Stellako River research team to further our understanding of rainbow trout thermal ecology. In particular, Kirsten will conduct thermal tolerance experiments and develop models that predict mortality during heat waves. Jonny will also work on a similar research topic, but will focus on sockeye salmon fry (likely from Fraser Lake). He will also use existing telemetry data on adult sockeye to generate predictive models of temperature-related mortality during spawning migrations. Their studies will initiate a new phase in the FFEL research program, where we will focus toward bridging the gap between lab-based studies of thermal tolerance and their application to reliably predict mortality in nature.



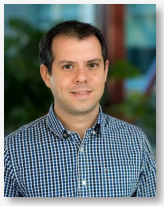
Francois Lake

FFEL TEAM

Dr. Eduardo Martins is the Rio Tinto Research Chair in Climate Change and Freshwater Fish Ecology.

Rio Tinto Research Chair team members from the Freshwater Fish Ecology Lab.

Freshwater Fish Ecology Laboratory | UNBC

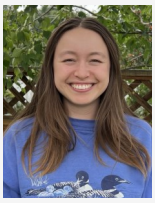


Eduardo Martins

Project Leader

Melody Mah

Research Manager



Erica Lee

Research Manager
Newsletter Editor

Avery Dextrase

Ph.D. Candidate

Eliseu Peixoto

M.Sc. Student

John Gray

Ph.D. Student

Annika Putt

Ph.D. Candidate

Allison Pugh

M.Sc. Student

Lucas Moura

Ph.D. Candidate

Abigail Oviatt

M.Sc. Candidate

Kirsten Mathison

M.Sc. Student

Carly Walters

M.Sc. Student

Jonny Russell

M.Sc. Student

FFEL TEAM UPDATES

New team members!

Kirsten Mathison

Hello everyone! My name is Kirsten Mathison and I am joining the FFEL Lab as a Master's student. I've spent much of the past few years on the water: studying critical habitat for Southern Resident Killer Whales with Parks Canada, monitoring juvenile salmonids in the Broughton Archipelago, or just sailing around the Salish Sea. I am excited to begin my graduate research on the thermal tolerance of rainbow trout in the Stellako River, and I look forward to becoming part of this community of people working in the Nechako Watershed.

Jonny Russell

Hi all! I'm Jonny Russell, a new Master's student in the FFEL, with a focus on the thermal recovery of Sockeye Salmon in Northern BC. My history is in data analysis, having done my undergrad in Computer Science and Statistics, along with a Data Science Bootcamp and some analysis for the Quesnel River Research Centre. For the past few years I've been transitioning into the Fisheries field: founding the UNBC Fisheries Club, strengthening ties with the American Fisheries Society, and painting my love for slimy beasts that dance beneath the waves. I'm excited pursue my passion for aquatic conservation within the scientific community of Northern BC!

Stellako River

MOVEMENT AND ACTIVITY OF THE ENDANGERED NECHAKO RIVER WHITE STURGEON ON THE SPAWNING GROUNDS

Avery Dextrase

Not much is known about the movement and activity of white sturgeon on their spawning grounds. This is especially true for the endangered Nechako River white sturgeon population whose only known spawning habitat is confined to an approximately 3 km reach near Vanderhoof, British Columbia. In spring 2025, we monitored adult white sturgeon in this reach using radio tracking to document sturgeon movement and activity during the spawning period. As part of a broader study, 20 adult Nechako River white sturgeon were tagged with radio tags that recorded and transmitted depth, body temperature, and activity every 30 seconds. Additionally, at the time of tagging, we assessed how close these fish were to spawning.

Tagged fish moving into the spawning grounds were detected by four stationary radio receiver stations set up throughout the area between early May and mid-June 2025. A total of 10 adult tagged fish were detected on the spawning grounds, four of which had been classified when tagged as likely spawners, four were possible spawners, and two unlikely spawners. The likely spawners first arrived at the spawning area between May 17th and May 25th and stayed for up to four weeks. The fish were detected at all stations on multiple occasions and were usually in motion, suggesting broad use of the habitat.

The likely spawners experienced depths ranging from 0 to 3.8 m, with a mean depth of 1.7 m and all fish surfacing (0 m) at least once. The mean body temperature on the spawning grounds was 12.0°C and ranged from 6.8 to 19.2°C. The spawners tended to have warmer body temperatures and occupy deeper water during the daytime and evening (10 am to 10 pm) than in the night and early morning (10 pm to 10 am). This work provides a novel insight into the habitat use and movement of white sturgeon on the Nechako River spawning grounds and will be continued in the spring of 2026.

Figure 6: An adult Nechako River white sturgeon.

Figure 7: A radio receiver station on land next to the white sturgeon spawning area in Vanderhoof, British Columbia.

INVESTIGATING THERMAL HABITAT SELECTION BY CHINOOK SALMON THROUGHOUT THE NECHAKO

John Gray

Climate change is rapidly warming freshwater habitats, altering the availability of suitably cold environments relied upon by Chinook salmon (Oncorhynchus tshawytscha) and exacerbating existing threats including habitat loss and fragmentation, water impoundment, and productivity declines. Chinook salmon spend considerable portions of their life rearing, migrating, and spawning in riverine habitats, making them particularly susceptible to thermal shifts in freshwater environments. In response, Chinook salmon may rely on thermal variability that exists naturally within freshwater systems and seek environments in lakes, stream confluences, or groundwater upwellings where cooler preferred, or optimal temperatures exist. By exploiting these thermal refuges, Chinook salmon may be able to tolerate warm conditions; yet, their thermoregulatory behaviour remains poorly understood. In 2025, we began two pilot studies to better understand how Chinook salmon select and use thermal habitats within the Nechako Watershed at different life stages, both as yearling (i.e., 0+) juveniles and as adult spawners.

Investigations into juvenile Chinook salmon thermal habitat selection began along the Nechako River by assessing the feasibility of capturing juveniles within different rearing habitats using various capture methods. Dip netting in June proved to be an effective capture method within marginal habitat, but particularly effective within shallow non-natal tributaries. Juvenile capture by minnow trapping in July was effective in deeper, higher flow habitats (e.g., mainstem rearing habitat) and resulted in lower catch-per-unit-effort. Overall, capture efficiency was limited by low juvenile densities but validated the idea that juveniles could be captured reliably across different rearing habitats within the Nechako Watershed.

In July, we began a new study in collaboration with Lheidli T'enneh First Nation, Upper Fraser Fisheries Conservation Alliance, and Fisheries and Oceans Canada to monitor adult Chinook salmon migration and thermal habitat selection along the Chilako River and potential use of Tatuk Lake. Despite being a tributary of the Nechako River, the Chilako River contains a distinct population of Chinook salmon that return to spawn earlier than those in the Nechako and Stuart Rivers (i.e., spring vs summer migration). Lheidli T'enneh First Nation operate a fish fence on the Chilako River to collect spawning brood for hatchery enhancement. As part of this project, two adult Chinook salmon collected at the fence that are not needed for hatchery brood were tagged with a temperature and depth sensing acoustic telemetry tag (Fig. 8) and released upstream past the fence. Acoustic telemetry receivers deployed at key locations along the length of the river will evaluate how these adult Chinook salmon select and use thermal habitats and specifically the role that Tatuk Lake may serve as a thermal refuge to adult Chinook salmon holding in the river. We intend to recover applied tags for a fine scale assessment of thermal habitat use throughout their time in the Chilako River and potentially Tatuk Lake.

Figure 8: Female Chilako River Chinook salmon tagged with an acoustic telemetry tag.

OUTREACH

Communicating our findings through various means continues to be a top priority!

PRESENTATIONS

- Dextrase, A., Mah, M., and Pugh, A. Fish Adaptations. Exploration Place, Prince George, BC, 21 August 2025.
- Dextrase, A. Movement and activity of endangered Nechako River white sturgeon on the spawning grounds. North American Sturgeon and Paddlefish Society Meeting, Nelson, BC, 22 September 2025.
- Déry, S. J. Climate monitoring and research in the Nechako Watershed. Quarterly meeting of the Northern BC Climate Action Network (NorCAN), Prince George. 04 September 2025.

PUBLICATIONS

- Smith, D.A., Crossman, J.A. & Martins, E.G., 2025: Assessing acoustic receiver detection efficiency using autocorrelation adjusted machine learning models. Animal Biotelemetry **13**, 25. https://doi.org/10.1186/s40317-025-00419-z

MEDIA INTERACTIONS

- 2025/07/16 - Recent rain and drought relief in northern BC, CKPG News, CKPG (Prince George, BC)
- 2025/07/31—Snorkeling the Stellako: UNBC researchers dive into rainbow trout health, CKPG News, CKPG (Prince George, BC) (https://ckpgtoday.ca/2025/07/31/snorkeling-the-stellako-unbc-leading-fish-ecology-research-on-rainbow-trout/)

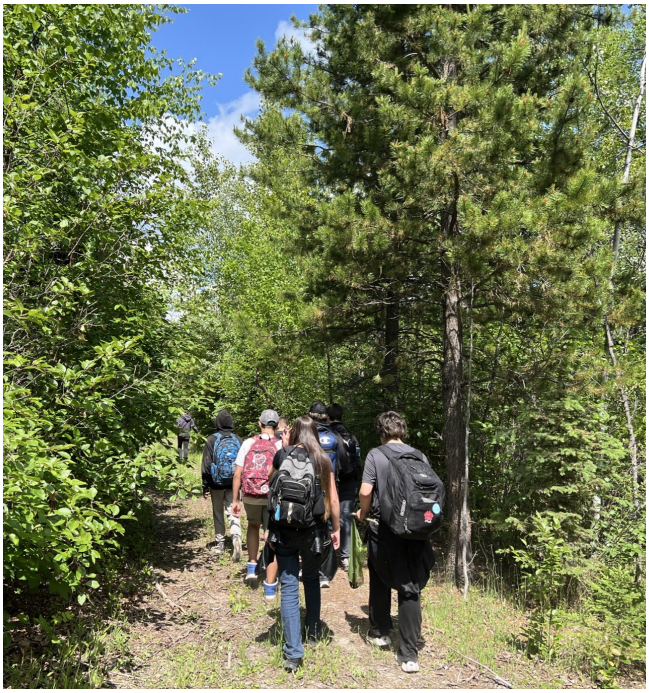
Media day at the Stellako River with CKPG, UNBC, and FFEL's Eduardo, Carly, and Allie.

OUTREACH—YOUTH ENGAGEMENT

During the middle of June, members of the Northern Hydrometeorology Group led a youth outreach event, building NHG's newest weather station at Isle Pierre. NHG's Stephen, Dylan, Lynn, Kainen, Maria, and Erica hosted 13 grade 8 students from Prince George Secondary School. Stephen started the day with an introduction to NHG's research, followed by Dylan's introduction to NHG's scientific equipment. Students then learned hands-on how to build a NHG weather station, from assembling the main tripod structure, to installing a temperature probe and other sensors. Although the sun blazed and the bugs were plenty, the enthusiasm for climate science circled in the air. Students enjoyed lunch surrounded by the forest, admiring their hard work and contributions to the new build. After lunch, students departed back to Prince George while the NHG Field Crew finalized the station build.

NHG members had a blast engaging with youth at the Isle Pierre Youth Outreach Event. We look forward to the next opportunity to engage with future generations of climate scientists! NHG's newest weather station site is made possible by community partners - thank you Jody and Ed for your support in NHG's research and outreach activities. The new Isle Pierre station fills the gap between NHG's weather stations in Prince George (Ness Lake), and Vanderhoof (Nulki Lake).

OUTREACH—YOUTH ENGAGMENT



Check out our websites!

https://web.unbc.ca/~sdery/rtrc

https://www.ffishlab.ca/

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