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January 8, 2024

Mosha Cote
Research Liaison
Nunavummi Qaujisaqtulirijikkut/Nunavut Research Institute (NRI)
Iqaluit, NU
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Chairperson
Nunavut Impact Review Board (NIRB)
P.O Box 1360
Cambridge Bay, NU
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RE: Scientific Research License #04 016 23R-M 2023 Annual Summary Report and 2024 Plans.

Dear NRI, NIRB and interested parties,

With this letter, I report on the river sampling activities of the project entitled, *Monitoring Seasonal Environmental Change in Rivers of the Kitikmeot Region*, permitted under the multiyear NRI licence number: **04 016 23R-M**. The goal of this project is to enhance our capacity to directly observe physical and biogeochemical characteristics of rivers across the Kitikmeot through the use of in-situ observational systems (“river moorings”) to collect measurements continuously over the deployment period. These river moorings provide time series observations of river physical and biogeochemical parameters, observations that are crucial to understanding and predicting the impacts of terrestrial change on the Kitikmeot marine system. This report describes the project activities carried out in 2023, and also details our plans for the 2024 field season, under the same license.

2023 Annual Summary:

Two successful river mooring deployments were carried out in 2023. The first was in the Coppermine River, where members of the Kugluktuk Hunters and Trappers Organization deployed a river mooring on August 9th using a small aluminum boat. The mooring was recovered again by boat on Sept 28th, 2023. The mooring was positioned in the same location as in 2019 and 2021 (Figure 1a), in the lee of a small island to keep it out of the main channel boat traffic. The mooring successfully recorded water temperature, conductivity (salinity), water level, turbidity (cloudiness), as well as dissolved oxygen concentrations from the date of deployment until recovery. This was the third community-directed deployment and recovery carried out in Kugluktuk completely independently of the southern science team and it was another success!

The second deployment was in Freshwater Creek, here members of Viventem Science Support, guided by a member of the Ekaluktutiak Hunters and Trappers Organization, deployed a river mooring on August 19th using a canoe. The mooring was recovered again by boat on Oct 16th, 2023. The mooring was positioned in a location that was chosen by the EHTO and Fisheries and Oceans collaborators who are also conducting research in the Freshwater Creek system (Figure 1b). The mooring successfully recorded water temperature, conductivity (salinity), water level, coloured dissolved organic material, as well as dissolved oxygen concentrations from the date of deployment until recovery. This was the first community-directed deployment and recovery carried out in Cambridge Bay and it was a great success!

Attached to this report are the 1-page posters created for the Kugluktuk Hunters and Trappers Organization and the Ekaluktutiak Hunters and Trappers Organization summarizing the goals of the project and informing community members about the moorings. Posters summarizing the data collected this summer will be shared with the communities during winter meetings in early 2024.

2024 Plans:

Now that we have been able to show the ease of community-directed deployments, we would like to request for a renewal of our permit to redeploy river moorings in the Coppermine and Burnside rivers, and in Freshwater Creek in 2024. As detailed in our original permit application, our primary plan will be to work with community partners in Kugluktuk, Cambridge Bay, and Bathurst Inlet to access rivers early in the season after spring ice break up (after mid-June 2024). Community partners will select appropriate deployment sites as close to the river mouth as possible, keeping up-stream of the tidal influence. Mooring recovery will also be carried out by community partners and will take place before freeze-up, likely in August in the Burnside River, in late September or October in the Coppermine River and Freshwater Creek. Recoveries will be carried out by small boat. We will work with community partners through the Hunters and Trappers Organizations in Kugluktuk, Cambridge Bay, and Bathurst Inlet, to coordinate the deployment and recovery of moored systems.

We appreciate your support and commitment to this investigation of rivers within the Kitikmeot. Any comments, suggestions, and/or ideas you may have related to this research are most welcome. If you have any questions, please contact myself or one of my collaborators and we would be happy to talk with you. We look forward to working with you in 2024.

Sincerely,

Kristina Brown

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On behalf of the project's co-PIs:

Bill Williams, Research Scientist, Fisheries and Oceans Canada, Institute of Ocean Sciences,
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Figure-1 (a) Location of 2023 Coppermine River mooring deployment (star); and (b) location of the 2023 Freshwater Creek mooring deployment (star). Maps made in Google Earth.

Coppermine River Monitoring (Aug-Sept 2023)

Observing river systems is key to understanding how changes on the land impact coastal ocean health. This research aims to monitor rivers over the summer of 2023:

- We placed a set of sensors in the Coppermine River on August 9th and will remove them again in late September, before freeze-up.
- The sensors will record water temperature, salt content, and the height of the water; they will also monitor dissolved oxygen and the turbidity (cloudiness) of the water as the summer season continues to advance
- These observations will help us to understand how changes on the land will impact the coastal ocean ecosystems of the Kitikmeot, now and in the future



Location of Coppermine River mooring



If you see this yellow float in the river, please leave it in place. Quana!

For more information, please contact:

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If you see the yellow float and/or this larger white float washed ashore, please contact the HTO or Kristina Brown, Quana!



This research is supported by:



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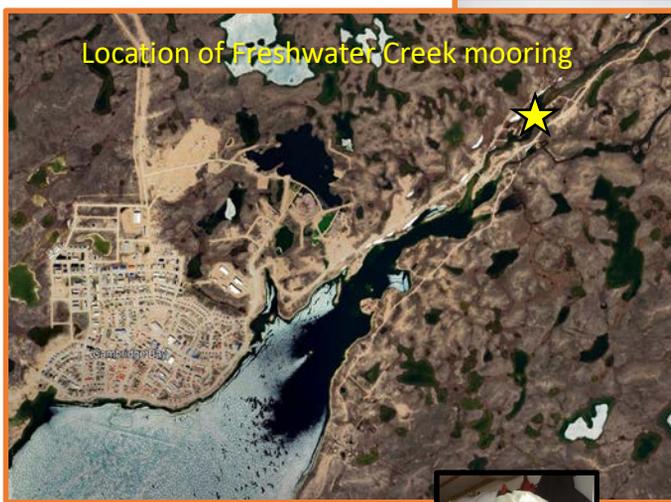


CANADA RESEARCH CHAIRS
CHAIRES DE RECHERCHE DU CANADA

Freshwater Creek Monitoring (Aug-Sept 2023)

Observing river systems is key to understanding how changes on the land impact coastal ocean health. This research aims to monitor rivers over the summer of 2023:

- We placed a set of sensors in Freshwater Creek on August 19th and will remove them again in late September, before freeze-up. The same set of sensors have also been placed in the Coppermine River (Kugluktuk)
- The sensors will record water temperature, salt content, and the height of the water; they will also monitor dissolved oxygen and dissolved organic material in the river as the summer season advances
- These observations will help us understand how changes on the land will impact the coastal ocean ecosystems of the Kitikmeot, now and in the future



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