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Monitoring Seasonal Environmental Change in Rivers of the Kitikmeot Region

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Scientific Research

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[illegible]

Period of operation: from 0001-01-01 to 0001-01-01

b3r^bbA7Dσ49JrEzDz^c: from 0001-01-01 to 0001-01-01

Λαμβάνονται ως δεδομένα:

Kristina Brown

Fisheries and Oceans Canada

Institute of Ocean Sciences, 9860 West Saanich Rd, P.O. Box 6000,

Sidney BC V8L 4B2

Canada

ᐅᓴᑲᑕᐅᑎᑦ: 778-835-8374. ᓱᑲᔪᑲᑦᑦ:

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$\epsilon_b \Delta^c \dot{\Pi}_\sigma{}^b \wedge e_\mu \triangleleft \epsilon_b \epsilon_\sigma \triangleleft e_\nu \triangleleft {}^\alpha L^\alpha{}_\sigma{}^b$

ᑭᕐᓂᕋᓴᓄᓇᓱᓪᓗ: Monitoring Seasonal Environmental Change in Rivers of the Kitikmeot Region Project

Description: Rivers directly link the land and the ocean by delivering freshwater, heat, nutrients, and carbon to the coastal system. Observing river systems is therefore key to understanding the impacts of terrestrial environmental change on Arctic ocean health. This project aims to enhance our capacity to directly observe the physical and biogeochemical characteristics of rivers across the Kitikmeot Region by developing in-situ observational systems (“river moorings”) to carry out these measurements continuously. These river moorings will provide the first time series observations of river physical and biogeochemical parameters in the Kitikmeot Region, observations that are crucial to understanding and predicting the impacts of terrestrial change on the Kitikmeot marine system. This project proposes to deploy four (4) autonomous observational systems (moorings) in rivers throughout the Kitikmeot Region for the continuous measurement of physical and biogeochemical properties of these rivers over the summers of 2018 and 2019. Moorings will record measurements of the river’s physical conditions, including temperature, conductivity, and water level, as well as biogeochemical parameters, including dissolved oxygen content, turbidity (cloudiness), and coloured dissolved organic material (CDOM) concentration. The proposed project has three main parts: (1) deployment; (2) recovery; and (3) assessment for future applications. Deployment: River moorings will be deployed within four (4) rivers throughout the Kitikmeot Region, including the Tree River, Hood River, Burnside River, and Western River. Each river mooring will be deployed from a float plane, within the river’s main channel, close to the river mouth. Each mooring will be held in place by a river-bottom anchor, as well as a shore line fixed with a metal stake. Recovery: After approximately 2-months of measurements, river moorings will be completely removed from all four river locations. Access to the sites for recovery will be carried out either by float plane or by a small aluminum skiff launched from the R/V Martin Bergmann. Assessment: A primary goal of this project is to develop observational arrays that can be used by community-directed research programs in Kugluktuk and Cambridge Bay to inform community concerns around environmental stewardship. Lessons learned during the development, deployment, and recovery of the river mooring arrays will be discussed with local community groups to develop river mooring systems that directly meet community monitoring needs. This project contributes directly to Polar Knowledge Canada’s research priorities to collect observations on the present state of the Kitikmeot Marine Region. Results from this project will be shared with the communities of Kugluktuk and Cambridge Bay, as facilitated through local contacts such as the Kugluktuk HTO, Cambridge Bay HTO, and Canadian High Arctic Research Station.

▷ΔΑΠΝΩΣΗ: N/A

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havaangit aulapkaihimayangit uumani Ukiuqtaqtuq Qauyiharningit Kanata'm qauyihaqhimayangit hivunikhaat kititiqhimayangit tautukhimayangit ublunganit ilitquhingit haffumani Qitirmiunmi Imarmiuttangit Avikturnia. Nalunaiqhiiyangit haffumani havaangit avvautiginiaqtangit nunaliit Qurluqtuq Iqaluktuuttiarmilu, nunaqatigiiktunut tuhaqtittiniaqtangit Qurluqtuq HTO ngit, Iqaluktuuttiaq HTO ngit unalu Kanatamiunut Ukiuqtaqtumi Qauyiharvingit.

Personnel

Personnel on site: 3

Days on site: 8

Total Person days: 24

Operations Phase: from 2018-07-15 to 2018-07-21

Operations Phase: from 2018-07-15 to 2018-09-10

Closure Phase: from 2018-08-15 to 2018-09-10

Post-Closure Phase: from to

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ጠቅላይ	የግልጽ ማረጋገጫ ለሮብላይት ማረጋገጫ	የግልጽ ማረጋገጫ	ጋራ ማረጋገጫ ማረጋገጫ ጋራ ማረጋገጫ ማረጋገጫ	ፈጣሪ ማረጋገጫ ማረጋገጫ ፈጣሪ ማረጋገጫ ማረጋገጫ ፈጣሪ ማረጋገጫ ማረጋገጫ	የግልጽ ማረጋገጫ ማረጋገጫ ማረጋገጫ ማረጋገጫ ማረጋገጫ ማረጋገጫ ማረጋገጫ
Tree River	Other	Crown	N/A	N/A	N/A
Hood River	Other	Crown	N/A	N/A	N/A
Burnside River	Other	Crown	N/A	N/A	N/A
Western River	Other	Crown	N/A	N/A	N/A

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Information is not available			

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ማረጋገጫ ማረጋገጫ ማረጋገጫ	Authorization requested to carry out scientific research in the proposed Kitikmeot rivers	Not Yet Applied		

Project transportation types

Transportation Type	ፈጣሪ ማረጋገጫ	ፈጣሪ ማረጋገጫ ፈጣሪ ማረጋገጫ	Length of Use
Air	0	Cessna 206 (float plane) or de Havilland Beaver (float plane)	
Water	0	aluminum boat (18ft)	

Project accomodation types

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[illegible]

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ΔL^{9b} ΔD^{9b} CD^{9b} ΔL^{9b} ΔD^{9b}

 $\triangleleft^b C d^c$
$$\Delta^b C j_c \sim \sigma \Delta^q \sigma^q$$

$\Delta^{\epsilon} \Gamma \Delta C_{\delta}^{c} D^{c}$ $\Delta^{b} D_{\delta}^{b} C D L R^{c}$

No negative impact to the environment is anticipated, all moored equipment will be removed at the end of

each season. Any trash generated on site (plastic wrap, cardboard etc.) will be taken back to Cambridge Bay and disposed of in the household waste stream, any recyclable materials will be taken south for disposal in appropriate facilities.

Additional Information

SECTION A1: Project Info

SECTION A2: Allweather Road

SECTION A3: Winter Road

SECTION B1: Project Info

SECTION B2: Exploration Activity

SECTION B3: Geosciences

SECTION B4: Drilling

SECTION B5: Stripping

SECTION B6: Underground Activity

SECTION B7: Waste Rock

SECTION B8: Stockpiles

SECTION B9: Mine Development

SECTION B10: Geology

SECTION B11: Mine

SECTION B12: Mill

SECTION C1: Pits

SECTION D1: Facility

SECTION D2: Facility Construction

SECTION D3: Facility Operation

SECTION D4: Vessel Use

SECTION E1: Offshore Survey

SECTION E2: Nearshore Survey

SECTION E3: Vessel Use

SECTION F1: Site Cleanup

SECTION G1: Well Authorization

SECTION G2: Onland Exploration

SECTION G3: Offshore Exploration

SECTION G4: Rig

SECTION H1: Vessel Use

SECTION H2: Disposal At Sea

SECTION 11: Municipal Development

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All 4 proposed mooring locations are in the main river channel, upstream of the river mouth.

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N/A

ᐱᓪᓇ ᐱᑦᑎᐅᑦ ᑦᑲᓂᐱᑦ)ᑦᑕᑎᐅᓂᓴᑦ: ᐱᓂᑦᑎᓂᑦᑭᓴᑦᐱᑦᑕᐱᑦᑕᑎᓂᑦᑭᓴᑦᐱᑦᑕᐱᑦᑕᑎᓂᑦᑭᓴᑦ

N/A

Miscellaneous Project Information

River moorings will be deployed in four (4) rivers throughout the Kitikmeot Region using a float plane. The rivers will be accessed early in the season after spring ice break up (late-July 2018, mid-June 2019). Site selection will be as close to the river mouth as possible, based on float plane access to the main channel, keeping up-stream of the tidal influence. The moored system will be anchored to the bottom of the river, mid-channel, in 1 – 4m water depth. The mooring's location in space will be maintained with an upstream fluke anchor, as well as a shore line. A float will be used to keep the system upright, all attempts will be made to keep this float below the surface at the time of deployment. Once each mooring is deployed, river water samples for the determination of geochemical parameters will be collected to calibrate instruments. Mooring recovery will take place in late August or early September, either by water (small boat) or by air (float plane). Ship access to the river mouth may be possible aboard the RV Martin Bergmann, in which case the ship's aluminum skiff will be used to access the river and recover the moorings. Alternatively, the mooring may be recovered by air using a float plane, with the same approach as deployment.

[illegible]

No negative impact to the environment is anticipated, all moored equipment will be removed at the end of each season. Any trash generated on site (plastic wrap, cardboard etc.) will be taken back to Cambridge Bay and disposed of in the household waste stream, any recyclable materials will be taken south for disposal in appropriate facilities.

Cumulative Effects

N/A

Impacts

$\Delta^{\text{5b}} \text{CD} \sigma^{\text{5b}} \text{r}^{\text{c}}$ $\Delta^{\text{c}} \text{N} \Gamma \text{D} \text{C} \dot{\sigma}^{\text{c}} \text{D}^{\text{c}}$ $\Delta^{\text{b}} \text{D}^{\text{5b}} \text{CD} \text{r}^{\text{c}} \text{L}^{\text{c}}$

[illegible]
$$(P = \langle b \rangle \Delta \mathcal{P} \cap \mathcal{J}^a \mathcal{Q}^b)^c, N = \langle b \rangle \mathcal{P}^b \mathcal{J}^c \langle \mathcal{D} \mathcal{J}^a \mathcal{Q}^b \rangle^c \langle \mathcal{C} \mathcal{D} \mathcal{J}^b \mathcal{J}^b \rangle^b \langle \mathcal{D} \mathcal{J}^a \mathcal{Q}^b \rangle^c, M = \langle b \rangle \mathcal{P}^b \mathcal{J}^c \langle \mathcal{D} \mathcal{J}^a \mathcal{Q}^b \rangle^c \langle \mathcal{C} \mathcal{D} \mathcal{J}^b \mathcal{J}^b \rangle^b \langle \mathcal{D} \mathcal{J}^a \mathcal{Q}^b \rangle^c, U = \langle b \rangle \mathcal{J}^b \mathcal{L}^a \mathcal{Q}^b \mathcal{J}^c \rangle^b)$$