

Hydroelectricity

Examining climate change impacts on the Yukon River's headwaters and the affects on hydroelectricity generation

CONTEXT

Climate change is affecting the headwater region of the Yukon River watershed. We are seeing changes in snowpack accumulation, the timing of snowmelt, and the volume and timing of water released by glaciers. These affect the flow of water through Whitehorse and have the potential to impact hydroelectric power generation. The Northern Climate ExChange of the Yukon Research Centre is partnering with Yukon Energy Corporation, the University of Alberta, and the Yukon Geological Survey to better

Photo Credit: Yukon College



understand these changes and resulting impacts.

OBJECTIVES

To develop predictive tools that will improve our understanding of climate change on the amount and timing of water flow in the upper Yukon River watershed and the implications on downstream energy generation.

APPROACH

Researchers are installing weather and snowpack monitoring stations across the upper Yukon River watershed. These record seasonal fluctuations and form the basis of a long-term monitoring network. Researchers will also conduct ground-penetrating radar and velocity surveys for glaciers in the study area.

The data collected will be used to develop models of regional glacier characteristics and hydrology, which will then be used to identify how both might change under various climate scenarios. Ultimately, this approach will provide predictive tools for determining responses to future climate variability.

EXPECTED RESULTS

Potential current and future changes to runoff in response to climate change will be identified. This information will help Yukon Energy Corporation operate its hydro-generation equipment more efficiently. Most importantly, the project will also provide the corporation with tools to help predict, plan for and adapt to climate change and to ensure hydroelectric security for Yukon.

Significance

Understanding and preparing for changes in the Yukon River flow will allow the Yukon Energy Corporation to provide Yukoners with renewable energy efficiently.

Partners

- Northern Climate ExChange
Yukon Research Centre
Yukon College
- Yukon Energy Corporation
- University of Alberta
- Yukon Geological Survey,
Energy, Mines and
Resources,
Government of Yukon

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Pan-Territorial Information Notes
MAR.2013.YT.09
ISSN 2291-3904