

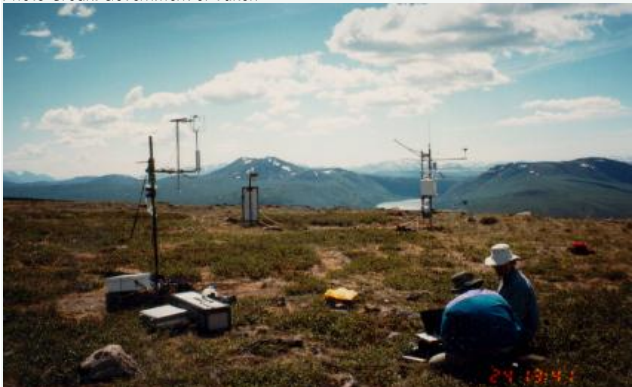
Hydrology

Examining how changing temperatures, precipitation and permafrost thaw affect Yukon hydrology

CONTEXT

Hydrology is the study of processes associated with the water cycle such as precipitation, evaporation, and water transport through the ground or in rivers. Current research in Yukon's Wolf Creek Research Basin uses a model to investigate the impacts of altered precipitation, temperature, permafrost and vegetation patterns on Yukon's water regions. The Wolf Creek Research Basin is an ideal study area because it flows through three main ecosystems: forest, alpine tundra and sub-alpine taiga.

Photo Credit: Government of Yukon



OBJECTIVE

To better understand how climate change alters Yukon's hydrology. With this data in hand, researchers are then able to provide adaptation measures to the mining, hydro-electric, transportation, oil and gas, agriculture, forestry, tourism, recreation and municipal sectors.

APPROACH

The Water Resources Branch will use a water model tool that involves a variety of future precipitation and temperature scenarios to understand how sensitive water resources are to these changes. The model also considers changes in permafrost, vegetation, and evaporation processes. These allow it to predict flows in scenarios that feature warming air temperature and precipitation changes. The model will then be applied elsewhere in Yukon, extending findings beyond the Wolf Creek Research Basin.

EXPECTED RESULTS

With the water model tool, researchers will better understand:

- The effects of changing precipitation, temperature, permafrost and vegetation on the water system;
- The possibility of further droughts or floods;
- The changes to expect in the volume of seasonal and annual river flows, as well as the timing and magnitude of peak flows.

Adaptive strategies for various Yukon sectors can then be made to improve:

- Land-zoning;
- Community structure designs;
- Future flood warnings.

Significance

Additional work is required to improve our understanding of how a changing climate is impacting Yukon's hydrology. This work will help us develop strategic adaptations for our communities, like improved flood warning systems and dike designs.

Partners

- Water Resources Branch
Department of Environment,
Government of Yukon
- Aboriginal Affairs and Northern
Development Canada

FOR MORE INFO

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