

Mapping Landscape Hazards

Using geoscience mapping to identify hazard risks in a changing climate

CONTEXT

Climate change is affecting Yukon communities. It alters the permafrost on which they are built, affects flood patterns, and alters landscape stability. Communities are seeking information that will help them increase local resilience and adapt to change. Landscape hazard maps are one tool communities can use to prepare for ongoing environmental change and subsequent impacts on infrastructure.



Photo: Yukon College and Yukon Geological Survey

OBJECTIVES

This project investigates current landscape hazards related to permafrost, surficial geology and hydrology in Yukon communities. It creates easy-to-interpret maps showing ranked hazard risk that can be integrated in decision-making processes.

APPROACH

To identify existing hazards, researchers gathered and mapped geoscience information such as surficial geology, permafrost and water data. Projections of future climate variability and permafrost distribution were then used to identify potential hazard risks. Integrating the results allowed the research team to rank the risks of current and future hazards in each study community.

RESULTS

Landscape hazard maps have been completed for Mayo, Pelly Crossing, Burwash Landing and Destruction Bay, Ross River, Faro and Dawson City. Hazard maps for Old Crow will be available in March 2016.

For each community, hazard risks were ranked by severity (low, moderate, high) and represented graphically on a community-scale map. In most mapped communities, high hazard risk was associated with active or likely permafrost degradation, thaw settlement, landslides, erosion, thermokarst, and active floodplains. Areas with low risk typically had no or very limited permafrost degradation, flooding or geological hazards.

Hazard maps from this project have been used to identify areas for future development, tailor infrastructure to site conditions, assess land use suitability, and inform community-based decision-making.

Significance

Landscape hazard maps help Yukon communities understand how their area will respond to environmental change and allow them to adapt effectively to these impacts.

Partners

- Northern Climate ExChange, Yukon Research Centre, Yukon College
- Government of Yukon, Yukon Geological Survey
- Universities of Montreal, Ottawa, Laval and Alberta
- First Nations in study communities
- Municipalities of study communities
- Aboriginal Affairs and Northern Development Canada

FOR MORE INFO

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