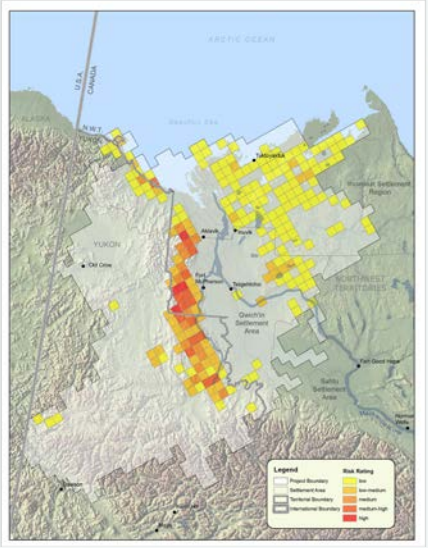
Cultural Vulnerability Site Mapping

Creating a vulnerability index tool for climate change induced threats to archaeological sites and traditional land use areas within the Gwich'in Settlement Area.

CONTEXT

Climate change is increasing permafrost thaw in the NWT, and causing cultural, structural and economic damage to the North. The thaw of ice-rich permafrost can result in landscape changes, such as thaw slumps, which can expose preserved archaeological remains and alter traditional land use. In order to assess the vulnerability of these sites, the GNWT is collaborating with the Prince of Wales Northern Heritage Centre and researchers from the University of Victoria to create a vulnerability index tool. This tool will map and predict areas susceptible to alterations in landscape due to the changing climate of the Northwest Territories.

Figure 1. Source: Government of the Northwest Territories



OBJECTIVE

This project is developing a vulnerability index tool for climate change induced threats to archaeological sites in the Gwich'in Settlement Area (GSA). The project is building a GIS-based predictive model that uses spatial data on active thaw slumps, archaeological sites, Gwich'in traditional land use sites, and other landscape variables. The current year of the project has been dedicated acquiring analysis software (PCI Geomatica), in conjunction with the Department of Lands, Centre for Geomatics, to analyze data in areas at high risk of impact from thaw slump activity.

APPROACH

In the first and second years of the project an inventory of growing thaw slumps was created, which examined over 5,000, 225km^2 grid cells, to identify, record and characterize thaw slumps in the GSA.

Secondly, compilations of Gwich'in traditional land use data and known archaeological sites were utilized to develop a map of current and traditional land use. This map was overlain with water features, geological features and other environmental information.

The analysis software has been purchased and will aid with next years' goals by automating the process of isolating slump and archaeological features, and the process of change detection in thaw slumping activity. It will also

RESULTS

The results of this year's funding include the submission for publication of a paper on permafrost thaw and aboriginal cultural landscapes to a journal. A risk map was created for this paper and includes information relevant to this project.

PCI Geomatica will facilitate detailed mapping of interactions between thaw slumps and cultural resources, which will enable the project leads to fine tune the overall risk map.

Significance

Understanding how traditional lands have been used and how they are currently being used, as well as threatened, helps to save information about the NWT, before this information is lost due to climate change impacts.

Partners

- *Prince of Wales Northern Heritage Centre*
- *University of Victoria*
- *NWT Geoscience Office*
- *GNWT Environment and Natural Resources, Environment Division*
- *Aboriginal Affairs and Northern Development Canada*
- *The Gwich'in Social and Cultural Institute*

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