

Theme 1, Project 1: A synthesis and analysis of existing hydrological, biological and chemical data for the Hudson Bay Lowlands

Pete Whittington, University of Western Ontario, Post-doctoral Fellow

Email address: whittington.pete@gmail.com

Personal/lab website: N/A

Supervisor(s): Brian Branfireun, University of Western Ontario, bbranfir@uwo.ca

Project Team:

Pete Whittington, University of Western Ontario, whittington.pete@gmail.com

Brian Branfireun, University of Western Ontario, bbranfir@uwo.ca

Jim Robertson, Detour Gold, jrobertson@detourgold.com

Rationale

The wetlands of the Hudson-James Bay Lowland (HJBL) are a vital part of Ontario (and the world) covering nearly one-third of Ontario's landmass and are the largest source of freshwater to the saline James Bay, and represent a significant resource (water, traditional foods) for First Nation's communities. Despite these facts, little scientific information exists about how the Lowland functions hydrologically, ecologically, and biogeochemically, largely because of the inaccessibility of the region and its low population density. However, with the discovery of many mineral rich deposits (e.g., Ring of Fire) leading to resource extraction, as well as a changing climate, it is now critical to understand how the hydrology, ecology, and chemistry of this region are coupled, and how these changes will manifest themselves across this complex ecosystem. Unfortunately the time to collect certain kinds of baseline data (e.g. pre-climate warming) has passed. Contained within unpublished government initiatives and reports, publically-available compliance data from private industry, First Nations generated reports and academic resources, important historical data exist. These data sets, when taken individually, would appear to be isolated both temporally and spatially, unable to answer regional landscape questions concerning baseline conditions; however, if all of these data sets were combined they could be used to establish "snapshots" of the lowlands at various points over the past half century from which changes may be detected.

Description

The project is largely a data mining exercise attempting to find and then synthesize existing hydrologic and simple water chemistry data from Ontario's Far north.

Specific objectives are:

- Determine the extent of accessible data sets for water quantity (e.g., flow) and simple water chemistry (e.g., temp, Hg) for Ontario's Far North
- Synthesize these data sets and offer insight into the changing north.

Outcomes

Ontario's Far North is undergoing a significant increase in industrial development (e.g., Ring of Fire) and many of the impact assessments and guidelines being used are based on southern standards which are likely not applicable to northern systems. In addition, the area is also undergoing considerable change due to climate change driver and thus showing that non-stationarity (stationarity is loosely that the past can be used to predict the future) is occurring will be important for informed land-use and planning decisions.

- Insight into the changing hydrological regime of Ontario's Far North
- Two academically peer-reviewed journal articles