

3.2 The Hudson Bay Coastal Zone in a Changing Climate System

Summary

Project Leader(s)

Papakyriakou, Tim N.

Southwestern Hudson Bay and its coastal zone is a sensitive habitat for a large range of flora and fauna, contains the second largest contiguous peat accumulation and third largest wetland in the world, and is increasingly becoming the focus of economic development and northern identity. Its importance on the regional and global scale is disproportionate to its geographic footprint in relationship to global climate, habitat and cultural preservation. The current generation of global climate models indicates that this region will experience large increases in temperature and changes in precipitation amount and patterns associated with elevated levels of greenhouse gas. Any change in the microclimate of Hudson Bay, due to climatic forcing and its associated effects on the sea ice regime and local water balance, will impact local hydrology (water quantity and quality) through: effects on permafrost and nutrient cycling within the peatland and climate's effect on water budget, heat budget, permafrost extent, and vegetation dynamics. It is our goal to better understand these linkages. The overarching objective of our proposed research is an assessment of the impacts of climate change on watershed processes in the Hudson Bay Lowlands (HBL) and their downstream effects (particularly those associated with freshwater and carbon) on Hudson Bay (HB). Two questions arise: 1) How does the state of HB affect biogeophysical and biogeochemical processes that describe the nature, occurrence and transport of water and carbon within the terrestrial (and aquatic) systems of the HBL? 2) How do watershed processes (biogeophysical and biogeochemical) feedback to affect the state of HB?

People

Network Investigators

Bello, Richard (York University)
Chen, Bing
Hanesiak, John (University of Manitoba)
Lafleur, Peter (Trent University)
Lobb, David (University of Manitoba)
Papakyriakou, Tim N. (University of Manitoba)
Pollard, Wayne (McGill University)
Snelgrove, Ken (University of Manitoba)
Tenuta, Mario (University of Manitoba)
Young, Kathy (York University)

Collaborators & Research Associates

Derksen, Christopher (Meteorological Service of Canada - Climate Research Branch)

Post-Doctoral Fellows

Granskog, Mats (University of Manitoba)
Huang, Qiang (University of Manitoba)

PhD Students

Kim, Sung Joon (University of Manitoba)
Neta, Tali
Pucko, Monika (University of Manitoba)
Verratti, Michael (York University)

Masters Students

Al-Mamun, Mohammad Mahfuz (University of Manitoba)

Churchill, Jackie (University of Manitoba)
Else, Brent (University of Manitoba)
Hanis, Krista
Liu, Xiang (Memorial University of Newfoundland)
Mojdehi, Patrick (York University)
Scott, Glenn (University of Manitoba)
Stainton, Emmelia (University of Manitoba)
Swystun, Kyle (University of Manitoba)
Yee, Stanley (York University)

Honours Undergraduate Students

Gade, Ashley (University of Manitoba)
Hille, Erika (York University)
Luk, Lawrence (York University)
Pokharel, Bipin (York University)
Seifi, Sadaf (York University)
Tonkonojenkov, Roman (York University)
Verma, Sara
Whitten, Robert (York University)
Zahedi, Hossein

Undergraduate Students

Dewar, Jacquie
Kressall, Ryan (University of Manitoba)

Technical Staff

Fuchs, Colin (University of Manitoba)
Johnson, Bruce (University of Manitoba)
Mossdrop, David (University of Manitoba)

Project Staff

Raddatz, Rick (University of Manitoba)

Partners

University of Manitoba
York University
Manitoba Hydro
Indian and Northern Affairs Canada - Northern Scientific Training Program
Churchill Northern Studies Centre
Meteorological Service of Canada - Climate Research Branch
Environment Canada - Meteorological Service of Canada

Publications

Articles Published in Refereed Publications

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