3.3 Climate Variability / Change and Marine Ecosystem Resources in Hudson Bay

Summary

Project Leader(s)
Gosselin, Michel

The Climate Variability/Change and Marine Ecosystem Resources in Hudson Bay subproject will quantify the response of the marine ecosystem to climate-induced variability and change in sea temperature, the timing of the river freshet and ice cover dynamics as documented in projects 3.1 and 3.2. In collaboration with projects 3.4, the impacts of climate forcing on biogeochemical fluxes, biological production, fish recruitment and marine mammal distribution will be addressed. The overarching objective of the project is to assess how climate-induced variability and change in sea temperature, sea-ice cover dynamics (project 3.1) and the timing and intensity of river freshet (project 3.2) affect marine biological productivity, fish stocks and marine mammals in Hudson Bay. Previous landbased studies of the inshore-offshore coastal gradient in biological productivity have demonstrated the central importance of under-ice river plumes in determining primary production, zooplankton dynamics and the feeding success and survival of fish larvae in this immense estuarine system. The oceanography of central Hudson Bay has yet to be studied in detail. In particular, the reach of river plumes (and their ecological impacts) into central Hudson Bay in spring is unknown. To fill these gaps, project 3.3 will repeat coastal observations of primary production and zooplankton and extend them to the offshore zone. This will enable us to assess the extent of the effect of climate-induced modifications of the hydrologic and sea ice annual cycles on Hudson Bay as a whole.

People

Network Investigators
Barber, David G. (University of Manitoba)
Ferguson, Steven (University of Manitoba)
Fortier, Louis (Université Laval)
Gagné, Jacques (Université Laval)
Gosselin, Michel (Université du Québec à Rimouski)
Gratton, Yves (Institut national de la recherche scientifique - Eau, Terre et Environnement)
Hammill, Mike (Université du Québec à Rimouski)
Larouche, Pierre (Université du Québec à Rimouski)
Michel, Christine (University of Manitoba)
Poulin, Michel (Université du Québec à Rimouski)
Power, Michael (University of Waterloo)
Price, Neil (McGill University)
Simard, Yvan (Université du Québec à Rimouski)
Tremblay, Jean-Eric (Université Laval)

Collaborators & Research Associates
Bailleul, Frédéric
Belt, Simon T (University of Plymouth)
Massé, Guillaume (University of Plymouth)

Post-Doctoral Fellows
Mei, Zhi-Ping (Université du Québec à Rimouski)
Mundy, CJ (Christopher John) (Université du Québec à Rimouski)

PhD Students
Benoit, Delphine (Université Laval)
Forest, Alexandre (Université Laval)
Gagnon, Jonathan (Université Laval)
Lafrance, Pascale  (Université Laval)
Lapoussière, Amandine  (Université du Québec à Rimouski)
Martin, Johannie  (Université Laval)
Thanassekos, Stéphane  (Université Laval)

**Masters Students**
Forest, Alexandre  (Université Laval)
Lapoussière, Amandine  (Université du Québec à Rimouski)
Lewis, Adam  (University of Waterloo)
Martin, Johannie  (Université Laval)
Proteau, Kary  (Université du Québec à Rimouski)
Seguin, Emmanuelle  (Université du Québec à Rimouski)
Toujani, Ammed  (Université du Québec à Rimouski)

**Undergraduate Students**
Canuel, Pierre  (Université Laval)

**Technical Staff**
Cloutier, Hélène  (Université Laval)
Cubaynes, Hannah  (Université du Québec à Rimouski)
Desjardins, Isabelle  (Université du Québec à Rimouski)
Duluc, Céline
Ferland, Joannie  (Université du Québec à Rimouski)
Gagnon, Jonathan  (Université Laval)
Jose, Caroline  (Université du Québec à Rimouski)
Lamarre, Jean-François  (Université du Québec à Rimouski)
Lebel, Simon  (Université Laval)
Lemaire, Nicolas  (Université du Québec à Rimouski)
Letourneau, Louis  (Université Laval)
Piot, Adéline  (Université du Québec à Rimouski)
Prokopowicz, Anna
Ringuette, Marc  (Université Laval)
Rondeau, Jean-Guy  (Fisheries and Oceans Canada - Maurice Lamontagne)
Simard, Mélanie  (Université du Québec à Rimouski)
Taillon-Richard, Phébéée
Tremblay-Daoust, Ariane  (Université du Québec à Rimouski)

**Project Staff**
Kommick, Nicholas  (Université du Québec à Rimouski)
Michaud, Luc  (Université Laval)

**Partners**
IPY Federal Program Office
Université Laval
Indian and Northern Affairs Canada - Northern Scientific Training Program
Institut des sciences de la mer de Rimouski
Fisheries and Oceans Canada - Freshwater Institute
Nunavik Research Center
Fisheries and Oceans Canada - Maurice Lamontagne Institute
Canadian Museum of Nature
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