

# Quarterly Project Report

## 1. Team Identification

*Project Team:* Marine Ecosystem ▼

*Budget Year:* 2019

*Quarter:* Q4

## 2. Scope - Highlights of the Period

*Person Days:* 0

### *Accomplishments*

Deschepper

\* The BiGCIIM model ran for the first time (from 2002 to 2014) but then crashed. The reason for it crashing is still being investigated.

\* Our first outputs were presented at the Sea Ice Symposium of the International Glaciological Society in Winnipeg (IGS; August 2019). The presentation title was: Understanding the productivity of the sympagic and pelagic ecosystems of the Hudson Bay Complex using biogeochemical modelling.

PierreJean

\* Three epifaunal communities were highlighted within the HBC according to the distance to the coast and rivers.

\* The prediction and projection of taxonomic richness were modeled using the hierarchical modelling species communities using temperature, salinity and water depth.

Schembri

\* Ichtyoplankton movement model for Arctic cod larvae caught in 2017-2018 was run

and presented these results were presented at IGS conference (also started writing the manuscript for this work).

\* Analysis of zooplankton assemblages and physical data showed that salinity is not a factor.

Matthes

\* Oral presentation of preliminary results at IGS.

\* Processing and exchange of data sets (oceanographic data, biological parameters, carbon data) between team 1, team 3 and team 4.

Jacquemot

\* With the aid of an undergraduate intern (Carlee Morency), RNA and DNA amplicons from 42 samples from the Nelson River (Eukaryotes large and small fraction) and 40 samples from the Churchill River (bacteria and eukaryotes) were extracted and sequenced. From this we now have 16 million raw reads that are being processed. Flow cytometry samples were run to count bacteria, and phytoplankton concentrations from the Churchill River.

\* Oral presentation at the IGS. The presentation title was: Diversity and distribution of microbial eukaryotes in the Churchill – Nelson estuarine system.

\* Writing first paper on microbial eukaryotes structure on the Nelson-Churchill estuarine systems.

\* Bioinformatic analysis and assembly of the *Micromonas commode* genome for chapter 3 of thesis.

\* DNA extraction of samples for the chapter 2 of thesis.

Lee

\* Results showed that nitrate concentrations in the main three rivers (Churchill, Nelson and Hayes) that discharge into Hudson Bay are higher especially in winter.

\* Nutrient compositions such as Nitrate to phosphate and Silicate to Nitrate molar ratios are different between regulated and unregulated rivers.

\* For the Hayes river (natural condition), there is a positive relationship between organic nitrogen concentrations and daily river discharges.

Barbedo

\* Continuing sensitivity analysis of satellite primary production model to photosynthetic parameters acquired during the BaySys expedition 2018.

Dalman

\* Master completed.

*Missed Targets*

\* None for this quarter.

### 3. Activity Tracking

ID	Task	% Complete	Status
41	Task 3.1 Assess the timing of Primary ...	90	Main sampling was done during the 2018 Amund

<i>ID</i>	<i>Task</i>	<i>% Complete</i>	<i>Status</i>
42	Task 3.2 Estimate the magnitude of Pr...	90	Main sampling was done during the 2018 Amund
43	Task 3.3 Evaluate nutrient processing ...	90	Main sampling was done during the 2018 Amund
44	Task 3.4 Phase 1 Biogeochemical mod...	100	Completed.
45	Task 3.4 Phase 2 Biogeochemical mod...	90	On track.

## 4. Risk And Issue Updates

<i>ID</i>	<i>Risk Event</i>	<i>Status</i>

## 5. Budget Information

### CURRENT QUARTER SPENDING

Amounts are the cumulative totals to the end of the reporting period.

#### 1. Salaries and Benefits

<i>a) Graduate Students</i>	\$38,908	Salaries for HQPs
<i>b) PDF's</i>	\$14,936	Salaries for RA
<i>c) Technical Staff</i>	\$3,070	Salary for Technical Staff (Archambault's lab)

#### 2. Equipment or Facility

<i>a) Purchase or Rental</i>	\$0	No Expense
<i>b) Operations and Maintenance Cost</i>	\$0	No Expense

#### 3. Materials and Supplies

\$6,563	Material and chemicals for laboratory and fieldwork (Mundy's La
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#### 4. Travel Expenses

<i>a) Conferences</i>	\$0	No Expense
<i>b) Field Work</i>	\$0	No Expense
<i>c) Project Related Travel</i>	\$363	Travel Expenses (Tremblay's Lab)
<i>d) Central Planning Meetings</i>	\$0	No Expense

#### 5. Dissemination Costs

\$0	No Expense
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<b>Total</b>	<b>\$63,840</b>
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### OTHER ORGANIZATIONS IN-KIND CONTRIBUTIONS

<i>Organization</i>	<i>Contribution</i>	<i>Description</i>

<i>Organization</i>	<i>Contribution</i>	<i>Description</i>
University of Laval	15,000	Contribution from Laval University
<b>Total</b>		<b>\$15,000</b>

## 6. Budget Explanation

<i>Budget Statement</i>	
<i>Cash Contributions</i>	
<i>Expenditure Tracking</i>	 <a href="#">Click here to attach a file</a>

## 7. Research Team

<i>Team Member</i>	<i>Overview of Participation and Scientific Contributions</i>
Frederic Maps	Supervising and training HQP Deschepper.
Jean-Eric Tremblay	Supervising nutrient database and supervising HQPs Deslongchamps, Gagn...
Louis Fortier	Supervising and training HQP Schembri.
Connie Lovejoy	Supervising and training HQP Jacquemot.
Simon Belanger	Supervising and training HQP Barbedo de Freitas.
Philippe Archambault	Supervising and training HQP Marie PierreJean.
C.J. Mundy	Supervising and training HQPs Matthes and Dalman.
Gabriele Deslongchamps	Coordinating planning, reporting, communications.
Jonathan Gagnon	No more work to be done.
Sylvain Blondeau	No more work to be done.
Inge Deschepper	Working on her project.
Sarah Schembri	Working on her project.
Loïc Jacquemot	Working on her project.
Lucas Barbedo de Freitas	Working on her project.
Janghan Lee	Working on her project.
Lisa Matthes	Working on her project.
Laura Dalman	Graduated from her master.

## 8. Other

Please provide any additional information/comments as required.

[<< Reasearch Team](#)

*Before submitting the form, please confirm that the information contained in this report is complete and accurate to the best of your knowledge.*



*Upon clicking submit the report will be saved as:*

BaySys Quarterly Status Report - Marine Ecosystem 2019 Q4

**Submit**

*It will then automatically be sent for review and approval by the project team.*

*Txt Report Status:*

Draft In Progress



# Quarterly Project Report

## 1. Team Identification

*Project Team:* NEMO Modeling ▼

*Budget Year:* 2019

*Quarter:* Q4

## 2. Scope - Highlights of the Period

*Person Days:* 0

### *Accomplishments*

Major accomplishments include the completion and dissemination of historical simulations, training of HQP, and continued research and analysis. Specific accomplishments are as follows:

Simulations (launched and run by Natasha Ridenour, Paul Myers, Laura Castro de la Guardia, and University of Alberta team)

Historical experiments launched using ERA-Interim and CMIP5 atmospheric forcing, finalized WFDEI HYPE and Arctic-HYPE runoff from Team 2 are complete (Laura Castro de la Guardia, Natasha Ridenour, and Paul Myers), and include

- ERA-Interim (ERA-Interim atmospheric forcing, up to date calibrated HYPE in HBC) (simulations to 2018 completed)
- MIROC (MIROC forcing, explicit tidal forcing, calibrated HYPE in HBC and Arctic-HYPE to present provided; also running to 2070 with bias-corrected T, P, and winds provided by Ouranos, and bias-corrected discharge provided by Team 2)
- MRI (MRI forcing, tides, calibrated HYPE and Arctic-HYPE to present provided; also running to 2070 with bias-corrected fields )
- GFDL (GFDL forcing, tides, calibrated HYPE and Arctic-HYPE to present provided; also running to 2070 with bias-corrected fields)

Training of HQP

Shabnam Jafarikhasragh has contributed to model-data comparison for the baseline evaluation, as well as script and diagnostic development for the climate change and regulation impact assessment, using historical (to 2005) NEMO simulations, also for application to future NEMO simulations when completed. Natasha Ridenour continues to contribute to model-data comparison and is conducting an assessment of Hudson Strait inflow. Both the baseline evaluation and relative climate change and regulation impacts assessments are in progress. Research and diagnostic development are ongoing. Research publications include

- Evaluation of thermodynamic and dynamic contributions to sea ice conditions in Hudson Bay completed by Shabnam JafariKhasragh and submitted for review

*Missed Targets*

Sensitivity analyses are ongoing. Future CMIP5 simulations are being run without BLING to ensure that these experiments are made available as scheduled.

### 3. Activity Tracking

ID	Task	% Complete	Status

### 4. Risk And Issue Updates

ID	Risk Event	Status

### 5. Budget Information

#### CURRENT QUARTER SPENDING

Amounts are the cumulative totals to the end of the reporting period.

#### 1. Salaries and Benefits

a) Graduate Students	\$9,000	salary; Please note that this and other budget-related explanatio
b) PDF's	\$14,000	salary
c) Technical Staff	\$0	N/A

#### 2. Equipment or Facility

a) Purchase or Rental	\$0	N/A
b) Operations and Maintenance Cost	\$0	N/A

#### 3. Materials and Supplies

	\$0	N/A
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#### 4. Travel Expenses

a) Conferences	\$0	N/A
b) Field Work	\$0	N/A
c) Project Related Travel	\$0	N/A
d) Central Planning Meetings	\$0	N/A

#### 5. Dissemination Costs

	\$0	N/A
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<b>Total</b>	<b>\$23,000</b>	
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## OTHER ORGANIZATIONS IN-KIND CONTRIBUTIONS

Organization	Contribution	Description
<b>Total</b>	<b>\$0</b>	

## 6. Budget Explanation

<i>Budget Statement</i>	Please note that this and other budget-related explanations will need to be address
<i>Cash Contributions</i>	
<i>Expenditure Tracking</i>	 <a href="#">Click here to attach a file</a>

## 7. Research Team

Team Member	Overview of Participation and Scientific Contributions
Paul Myers	Team 6 co-lead; NEMO modeling, student supervision
Natasha Ridenour	PhD1; freshwater dynamics and circulation, model evaluation
Jennifer Lukovich	Team 6 co-lead; model-data comparison, sea ice dynamics
Shabnam Jarfarikhasragh	HQP; model evaluation and diagnostic development, SSTs, heat, energy, an...
Kevin Sydor	Manitoba Hydro Team 6 co-lead; NEMO modelling coordination
Karen Wong	Manitoba Hydro Team 6 co-lead; NEMO and MIKE3 modelling coordination

## 8. Other

Please provide any additional information/comments as required.

[<< Reasearch Team](#)

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