

Quarterly Project Report – Year 5 – Q2

Team Information

Project:	BaySys
Project Team:	Team 2
Budget Year Ending:	2020

Scope Highlights

Total Person Days in the Field: 0

Covid-19 situation updates (see anticipated risk section):

Diminished time capacity to complete reporting requirements and anticipated delay in publication activities

Major Accomplishments:

Task 2.1

- Submission of “Improved high-latitude storage...” (Stadnyk et al., in revision) to Elementa

Task 2.2

- Preparation of Ph.D. thesis for LRNB VIC sensitivity and uncertainty modelling
- LRNB structural and parameter uncertainty manuscripts submitted

Task 2.3

- Distribution of regulated, naturalized, uncertainty results to oceanographic modelling team (Team 6)
- Resubmission of regulation paper, submission of HER/CC comparison paper

Task 2.4

- Preparation of uncertainty methodology manuscripts (2)

Missed Targets:

Delay in submission of Elementa publications (anticipated by March 2020, delayed until June 2020)

Task Updates

This list displays tasks that are currently not marked as complete and are assigned to your project team.

Select an entry from the list below you can view its current details and then click Insert Task Update below to include an update in your report.

ID	Task	% Complete	Status
2.1	Continental scale modelling: Elementa publication on HYPE model development	80	HBC publication submitted and in revision; pan-Arctic in preparation (anticipated submission June 2020); modelling complete
2.2	LNRB sensitivity and uncertainty analysis	80	R Lihare defense June 2020; two publications pending in Elementa ; modelling complete
2.3	Regulated system modelling	90	Two publications submitted and pending acceptance; modelling complete
2.4	Uncertainty analysis	70	Publications in progress; anticipated submission by July 2020; modelling complete

Completed **On Track** **Potential Issue** **Behind Schedule**

Risk Updates

The list below displays risks associated with the project that have been highlighted for your project team.

Select an entry to see the details associated with it.

Risk	Covid-19 pandemic
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Details	Delay in deliverables/reporting timelines
Leading indicator	
Action plan	Time extensions for submission and completion of publications related to BaySys; additional time before reporting final deliverables from BaySys

Use the fields below to enter an update for the risk or issue.

ID	Risk	Status
	Covid-19 pandemic	

Current Quarter Spending

Enter your team expenses for the reporting period. The values entered should represent the cumulative amount for the budget year up to the end of the quarter. If no expenses have been incurred for a category then please enter a zero amount.

	Amount	Description
1. SALARIES AND BENEFITS		
Graduate Students		
PDF's and RA	\$4315.85	Salary for S. Pokorny
Technical Staff		
2. EQUIPMENT OR FACILITY		
Purchase or Rental		
Operations and Maintenance		
3. MATERIALS AND SUPPLIES		
Total Cost	\$120.28	Printer and computing supplies
4. TRAVEL EXPENSES		
Conferences		
Field Work		

Project Related Travel		
Central Planning Meetings		
Dissemination Costs		
TOTAL	\$4436.13	

IN-KIND CONTRIBUTIONS

Organization	Contribution <i>(cumulative to end of quarter)</i>	Description
University of Calgary	\$16,250	A.Tefs (1/3), A. Thiombiano salaries
University of Northern British Columbia	\$7,333	R. Lilhare salary

Budget Explanation

STATEMENT OF ACCOUNT

Budget Statement

Expenditures were to support Research Associate Scott Pokorny (part time). Budget spending is on track and within budget

Cash Contributions

Salaries for A. Tefs, A. Thiombiano are supported by T.A. Stadnyk through other means (in kind contributions to BaySys), and R.Lilhare by S. Dery.

Expenditure Tracking

Provide a PDF copy of the University's expense report containing cumulative expenses spent on the BaySys project for this fiscal year.

Research Team

Team Member	Overview of Participation and Scientific Contributions
K. Koenig	Participation in meetings; review of publications
T. Stadnyk	Coordination of meetings; writing of publications; overseeing completion of deliverables and reporting
A. Tefs	Technical lead for Team 2; coordination of reporting and Phase 2 report; completion of manuscripts
S. Pokorny	Completion of manuscripts
S. Dery	Participation in meetings, writing and preparation of manuscripts; co supervision of students
G. Ali	Participation in meetings, editing of manuscripts; co supervision of students
M. Braun	Participation in meetings; preparation of manuscript on climate scenarios
M. Vieira	Participation in meetings; preparation of manuscript on climate scenarios
A. Thiombiano	Participation in meetings; preparation of manuscript on climate scenarios

Other

Please provide any additional information/comments as required.

Quarterly Project Report – Year 5 – Q2

Team Information

Project:	BaySys
Project Team:	Marine Ecosystem
Budget Year Ending:	2020

Scope Highlights

Total Person Days in the Field: 0

Covid-19 situation updates (see anticipated risk section):

- Team 3 members are all working from home due to the COVID-19 pandemic, making collaborative work more difficult.
- Team 3 students and coordinator (RA Deslongchamps) had a virtual meeting to discuss the Phase II report and the potential issues regarding the covid situation.
- For most of the students, lab work was completed before the pandemic, except for regeneration samples analyses (Lee) and taxonomic analyses (Matthes).
- Submission of manuscript about the spring primary production in Hudson Bay might be delayed due to unfinished analysis of algal taxonomy samples (samples need to be analyzed under a light microscope at the university which is currently closed).

Major Accomplishments:

Deschepper

- Debugged the BiGCIIM light interpretation, light split, unit conversion and light parameterization to run model for more than 12 years.
- Included CDOM light attenuation coefficient calculation in BiGCIIM pelagic module.
- Fixed tracer bug found in NEMO3.6.
- Presented the poster “Biogeochemical modeling in Hudson Bay” at the Québec-Océan annual scientific meeting in Mont St-Anne (March 2020).

PierreJean

- Writing a manuscript on the description of epibenthic communities for submission the in the Elementa Special issue.

Schembri

- Analyzed the chemical composition of the Arctic cod otoliths in the Aquatic lab in Université du Québec à Chicoutimi (UQAC).
- Processed and analyzed raw data, then compared chemical analysis with model outputs.
- Started the writing of a manuscript about zooplankton for submission the in the Elementa Special issue.
- Participated to the Québec-Océan annual scientific meeting in Mont St-Anne (March 2020).

Barbedos

- Submitted an article entitled "Climate Control of Phytoplankton Blooms at the Marginal Ice Zone in the Hudson Bay System" to the Elementa: the science of the Anthropocene.
- Analyzed photosynthetic parameters obtained from P vs I curves from the 2018 BaySys expedition.
- Working on a draft article related to phytoplankton dynamic in fall season in Hudson Bay for submission the in the Elementa Special issue.

Matthes

- Presented an oral presentation entitled "First measurement of spring primary production in central Hudson Bay" of BaySys data collected during the 2018 cruise at the Ocean Science International Meeting in San Diego, USA (February 2020).
- Processing of physical and biological data for manuscripts about the primary production in the Nelson river estuary and central Hudson Bay.

Jacquemot

- Presented an oral presentation entitled "Finding the estuaries using microbial communities along river to sea continuums in Hudson Bay" of the results of his thesis chapter 1 at the Ocean Science International Meeting in San Diego, USA (February 2020).
- Finishing the redaction of the final manuscript of the first article for submission in the Elementa special issue (under co-authors revision).
- Analyzed data for thesis chapter 2 and 3. Preliminary results of chapter 2 have been presented during a poster session at the Québec-Océan annual scientific meeting in Mont St-Anne (March 2020).

Lee

- Analyzed and calculated rates of carbon and nitrogen uptake and examined wintertime nutrient profile.
- Continue working on thesis and manuscript redaction.

Missed Targets:

- None for this quarter.

Task Updates

This list displays tasks that are currently not marked as complete and are assigned to your project team.

Select an entry from the list below you can view its current details and then click Insert Task Update below to include an update in your report.

ID	Task	% Complete	Status
41	Task 3.1 Assess the timing of Primary Production	90	Results are being analyzed and manuscripts will be published soon.
42	Task 3.2 Estimate the magnitude of Primary Production	90	Results are being analyzed and manuscripts will be published soon.
43	Task 3.3 Evaluate nutrient processing along freshwater-marine gradients	90	Results are being analyzed and manuscripts will be published soon.
44	Task 3.4 Phase 1 Biogeochemical modeling	100	Completed.
45	Task 3.4 Phase 2 Biogeochemical modeling	90	On track.

Completed **On Track** **Potential Issue** **Behind Schedule**

Risk Updates

The list below displays risks associated with the project that have been highlighted for your project team.

Select an entry to see the details associated with it.

Risk	Covid-19 pandemic
Details	The covid-19 pandemic is forcing all Team 3 members to work from home, meaning that students have no access to their labs. Most students were done with lab work but this might delay the analyses of regeneration and nitrification samples (HQP Lee) and taxonomic samples (HPQ Matthes). Unfinished analysis will likely delay the submission of some manuscripts.

Leading indicator	NA
Action plan	No action plan is taken at the moment.

Use the fields below to enter an update for the risk or issue.

ID	Risk	Status
	Covid-19 pandemic	Potential delay for finishing lab work and submitting manuscripts.

Current Quarter Spending

Enter your team expenses for the reporting period. The values entered should represent the cumulative amount for the budget year up to the end of the quarter. If no expenses have been incurred for a category then please enter a zero amount.

	Amount	Description
1. SALARIES AND BENEFITS		
Graduate Students	48,946\$	Salaries for HQPs.
PDF's and RA	10,658\$	Salaries for RA Deslongchamps (Tremblay), for essential laboratory work for HQP Jacquemot (Lovejoy) and for taxonomic analyses (Fortier).
Technical Staff	0\$	No expense.
2. EQUIPMENT OR FACILITY		
Purchase or Rental	0\$	No expense.
Operations and Maintenance	182\$	Cleaning and adjusting Microscope for diatom image acquisition (Lovejoy).
3. MATERIALS AND SUPPLIES		
Total Cost	0\$	No expense.
4. TRAVEL EXPENSES		
Conferences	0\$	No expense.
Field Work	0\$	No expense.

Project Related Travel	6,028\$	Partial travel fees for participation to the ArcticNet Annual Scientific Meeting in Halifax in December 2019 (Deschepper and Lee) and for the ASLO Ocean Science Meeting in San Diego in February 2020 (Mattles and Loic).
Central Planning Meetings	0\$	No expense.
Dissemination Costs	125\$	Printing fees for posters (Lovejoy and Tremblay).
TOTAL	66,010\$	

IN-KIND CONTRIBUTIONS

Organization	Contribution <i>(cumulative to end of quarter)</i>	Description
University Laval	\$15,000	Contribution from Laval University

Budget Explanation

STATEMENT OF ACCOUNT

Budget Statement

All expenditures have been done according to schedule. The only deviation from the plan was a few thousand dollars used to pay the partial salary of a PDF.

Cash Contributions

Expenditure Tracking

Provide a PDF copy of the University's expense report containing cumulative expenses spent on the BaySys project for this fiscal year.

Research Team

Team Member	Overview of Participation and Scientific Contributions
Frédéric Maps	Supervising and training HQP Deschepper.

Jean-Éric Tremblay	Supervising nutrient database and supervising HQPs Deslongchamps, Gagnon, Blondeau and Lee.
Louis Fortier	Replaced by Frédéric Maps.
Connie Lovejoy	Supervising and training HQP Jacquemot.
Simon Bélanger	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 his project.
Lucas Barbedo de Freitas	Working on his project.
Janghan Lee	Working on his project.
Lisa Matthes	Working on her project.
Laura Dalman	Graduated from her master.

Other

Please provide any additional information/comments as required.

Quarterly Project Report – Year 5 – Q2

Team Information

Project:	BaySys
Project Team:	Contaminants (team 5)
Budget Year Ending:	2020

Scope Highlights

Total Person Days in the Field: 0

Covid-19 situation updates (see anticipated risk section):

U. Manitoba officially closed 23 March 2020. All personnel are now working from home.

Remaining laboratory analysis is delayed until access is gained.

Non-Canadian K. Munson (PDF1) relocated out-of-country in anticipation of border closure.

Major Accomplishments:

Submission of manuscript “Intermittent increases in boreal lake fish mercury despite long-term recovery from hydroelectric regulation” to Hydro for review prior to submission for publication.

Submit a revised version of "Evaluation of high flow-rate continuous flow-centrifugation and filtration techniques for sampling and concentrating suspended sediment" manuscript to Hydrological Processes

Missed Targets:

Submission of revised Phase II report following

Finishing sediment color and particle size distribution analyses due to shut down access to laboratory facilities.

Task Updates

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Select an entry from the list below you can view its current details and then click Insert Task Update below to include an update in your report.

ID	Task	% Complete	Status
5.1	Relationship between mercury methylation and organic matter remineralization	75	
5.2	Suspended sediment and organic matter fingerprinting	85	
5.3	Mass balance modeling of methylmercury in Hudson Bay	80	

Completed **On Track** **Potential Issue** **Behind Schedule**

Risk Updates

The list below displays risks associated with the project that have been highlighted for your project team.

Select an entry to see the details associated with it.

Risk	Covid-19 pandemic
Details	Work from home order for U Manitoba, Manitoba Hydro, and BaySys collaborating universities shut down access to laboratory facilities and decreased the available working hours for team personnel due to changes in child and family care.
Leading indicator	Limited progress on project tasks due to decreased working hours; need for revised timeline Phase II report and manuscript completion; decreased ability to collaborate within and beyond team.
Action plan	Resume laboratory analysis following reopening of university laboratories, adapt Phase II and manuscript completion to revised BaySys schedule; emphasize progress on support activities (data compilation for CanWIN, QA/QC evaluation of analyzed

	samples).
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Use the fields below to enter an update for the risk or issue.

ID	Risk	Status
	Covid-19 pandemic	

Current Quarter Spending

Enter your team expenses for the reporting period. The values entered should represent the cumulative amount for the budget year up to the end of the quarter. If no expenses have been incurred for a category then please enter a zero amount.

	Amount	Description
1. SALARIES AND BENEFITS		
Graduate Students		
PDF's and RA	18,890.64	PDF Capelle (Kuzyk)
Technical Staff	10,351.58	Technical staff Ciastek (Kuzyk), Larshkari (Stern)
2. EQUIPMENT OR FACILITY		
Purchase or Rental		
Operations and Maintenance		
3. MATERIALS AND SUPPLIES		
Total Cost		
4. TRAVEL EXPENSES		
Conferences		
Field Work		
Project Related Travel		
Central Planning Meetings		
Dissemination Costs		

TOTAL	29,242.22	Spending related to technical staff and PDF salaries.
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IN-KIND CONTRIBUTIONS

Organization	Contribution <i>(cumulative to end of quarter)</i>	Description

Budget Explanation

STATEMENT OF ACCOUNT

Budget Statement

Cash Contributions

Expenditure Tracking

Provide a PDF copy of the University's expense report containing cumulative expenses spent on the BaySys project for this fiscal year.

Research Team

Team Member	Overview of Participation and Scientific Contributions
Feiyue Wang	Editing and revision of historical fish mercury manuscript.
Allison Zacharias	Hydro review of historical fish mercury manuscript.
Sarah Wakelin	Hydro review of historical fish mercury manuscript.
Kathleen Munson	Completion and submission of historical fish mercury manuscript for Hydro review; data compilation for archival and sharing; revision of Phase II report.
Zou Zou Kuzyk	Supervision of MSc (Huyghe), data evaluation, manuscript preparation. Evaluation of organic matter fingerprinting.
Samantha Huyghe	Completed particle size analysis for the surface samples of cores,

	received most but not all the organic carbon and nitrogen data before the shutdown. Started work on figures for thesis and a potential manuscript for Elementa. Despite the shutdown and reduced work hours from home, the goal is still to submit my thesis by the end of August 2020.
David Lobb	Editing and revision of suspended sediment sampling manuscript.
Masoud Goharrokhi	Completion and submission the revised version of suspended sediment sampling manuscript to Hydrological Processes; Working on Lake Winnipeg sedimentation dynamics manuscript for sending to advisors (David Lobb and Philip Owens) review.
Robie Macdonald	Evaluation of data, collaboration on ongoing manuscripts with Teams 4 and 5.
Philip Owens	Editing and revision of suspended sediment sampling manuscript.
Ellen Petticrew	Evaluation of organic matter fingerprinting.
Gary Stern	Commented on historical fish mercury manuscript. Supervision of biota methylmercury and mercury data evaluation.
Evelyn Ang	Laboratory analysis of sediment methylmercury (prior to shutdown), data compilation.
Shiva Lashkari	Completed QA/QC of biota methylmercury and mercury analysis. Participation in BaySys-related tasks is now complete.

Other

Please provide any additional information/comments as required.

Quarterly Project Report – Year 5 – Q2

Team Information

Project:	BaySys
Project Team:	Team 6 - Myers
Budget Year Ending:	2020

Scope Highlights

Total Person Days in the Field: 0

Covid-19 situation updates (see anticipated risk section): Limited, other than higher priorities being given to Covid related research on Compute Canada Systems

Major Accomplishments:

- All 5 regulated CMIP forced simulations completed out to 2070
- Issues with BLING biogeochemical model fixed
- Ran historical scenarios with naturalized and regulated runoff and BLING biogeochemical model for Team 4
- Running future RCP8.4 scenarios with naturalized and regulated runoff and BLING biogeochemical model for Team 4
- Model output given to multiple teams, with significant processing carried out for Team 4 and their box model, for example
- Continued analysis of NEMO simulation output
- Started writing BaySys NEMO overview paper
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Missed Targets:

- *None*

Task Updates

This list displays tasks that are currently not marked as complete and are assigned to your project team.

Select an entry from the list below you can view its current details and then click Insert Task Update below to include an update in your report.

Don't have ID numbers, but all on track

ID	Task	% Complete	Status

Completed **On Track** **Potential Issue** **Behind Schedule**

Risk Updates

The list below displays risks associated with the project that have been highlighted for your project team.

Select an entry to see the details associated with it.

No specific concerns. All activities still on track

Risk	Covid-19 pandemic
Details	
Leading indicator	
Action plan	

Use the fields below to enter an update for the risk or issue.

ID	Risk	Status
	Covid-19 pandemic	

Current Quarter Spending

Enter your team expenses for the reporting period. The values entered should represent the cumulative amount for the budget year up to the end of the quarter. If no expenses have been incurred for a category then please enter a zero amount.

	Amount	Description
1. SALARIES AND BENEFITS		
Graduate Students		
PDF's and RA	12,273	
Technical Staff		
2. EQUIPMENT OR FACILITY		
Purchase or Rental		
Operations and Maintenance		
3. MATERIALS AND SUPPLIES		
Total Cost		
4. TRAVEL EXPENSES		
Conferences		
Field Work		
Project Related Travel		
Central Planning Meetings		
Dissemination Costs		
TOTAL		

IN-KIND CONTRIBUTIONS

Organization	Contribution <i>(cumulative to end of quarter)</i>	Description

Budget Explanation

STATEMENT OF ACCOUNT

Budget Statement: Note, because of issues and delays in getting grant extended, I had to pay people using other grants in this quarter.

Cash Contributions

Expenditure Tracking

Provide a PDF copy of the University's expense report containing cumulative expenses spent on the BaySys project for this fiscal year.

Research Team

Team Member	Overview of Participation and Scientific Contributions
Yarisbel Garcia-Quintana	PDF – Biogeochemical model analysis and output processing
Yiran Xu	MSc – model output processing and analysis; script writing and sharing
Ran Tao	MSc – model output processing and analysis

Other

Please provide any additional information/comments as required.