

Andrew K. Hamilton

2429 1st Ave West
Vancouver, BC
Canada
V6T 1Z4

Cell: (778) 883-2398
Work: (604) 822-4853
Email: andrew@madzu.com
Web: efm.civil.ubc.ca

-- Research Interests --

- Environmental fluid mechanics
- Polar oceanography and ocean-ice sheet dynamics
- Application of autonomous underwater vehicles under-ice
- Climate-cryosphere-ocean feedback mechanisms

-- Education --

- Ph.D. Candidate, Environmental Fluid Mechanics** 2009-present
Department of Civil Engineering, University of British Columbia, Vancouver, Canada
Supervisors: B.E. Laval (UBC) and D.R. Mueller (Carleton University)
Thesis: *“Fjord dynamics and glacio-marine interactions on Northern Ellesmere Island, Canada”*
- M.Sc., Oceanography** 2007
Department of Earth and Ocean Sciences, University of British Columbia, Vancouver, Canada
Supervisors: R. G. Ingram (UBC) and C. Lovejoy (Université Laval)
Thesis: *“Biohydrography of eukaryotic microorganisms in a cold-ocean ecosystem”*
- B.Sc., Biological and Physical Sciences with Distinction** 1996
Department of Biological Sciences, University of Alberta, Edmonton, Canada

-- Fellowships and Awards --

- Faculty of Applied Science Graduate Award, University of British Columbia (\$5,000) 2013
- Earl R Peterson Memorial Scholarship in Civil Engineering, University of British Columbia (\$1,000) 2013
- W. Garfield Weston Award for Northern Research - Doctoral, ACUNS (\$40,000) 2011-13
- Faculty of Applied Science Graduate Award, University of British Columbia (\$10,000) 2010
- Michael Smith Foreign Study Supplement, National Science and Engineering Research Council (\$6000) 2010
- Four Year Fellowship – Doctoral, University of British Columbia (\$6250) 2009-13
- Faculty of Applied Science Graduate Award, University of British Columbia (\$10,000) 2009
- Weather Research House Supplement, Canadian Meteorological and Oceanographic Society (\$10,000) 2009
- Canada Graduate Scholarship - Doctoral, National Science and Engineering Research Council (\$70,000) 2009-11
- Rutherford Rae Scholarship for Achievement in Oceanography, University of British Columbia (\$1500) 2006
- Best Poster Award (Natural Sciences) - ArcticNet AGM Banff (\$500) 2005
- Faculty of Science Grant Supplement Award, University of British Columbia (\$4000) 2004
- Post-Graduate Scholarship - Masters, National Science and Engineering Research Council (\$34,600) 2004-06
- Excellence Recruitment Award, University of British Columbia (\$1000) 2004
- Deans Honor Roll, Faculty of Science, University of Alberta 1993-96
- Undergraduate Scholarship, University of Alberta (\$1000) 1995
- Matriculation Prize, University of Alberta (\$500) 1992

-- Professional Experience --

- Graduate Research Assistant (Full-time) 2009-present
Department of Civil Engineering, University of British Columbia, Vancouver, Canada
Various Projects
- Investigation of fjord oceanography and ocean-ice shelf interactions
 - Application of Gavia-class AUV for under-ice studies
 - Research into human-robot interactions (including AUVs) for space exploration
- Research Consultant (6-month contract) 2014-15
Lorax Environmental Services Ltd., Vancouver, Canada
Brucejack Lake Water Quality Project
- Design and implementation of ice-covered lake dynamics study
- Project Scientist and Co-Lead (6-month contract) 2011
Canadian Ice Service, ArcticNet, and University of British Columbia, Vancouver, Canada
Project Icebergs
- Investigation of iceberg drift and deterioration using Gavia-class AUV
- Visiting Scientist (3-month fellowship) 2010
National Institute for Water and Atmospheric Research, Wellington, New Zealand
Antarctica 2010: Glacier Tongues and Ocean Mixing
- Investigation of under-ice ocean mixing in Antarctica using Gavia-class AUV
- Research Assistant and Field Guide (4-month contract) 2008
Earth and Atmospheric Sciences, University of Alberta, Edmonton, Canada.
IPY Project GLACIODYN
- Field study of glacial dynamics and hydrology
- Visiting Scientist (3-month contract) 2008
Department of Biology, Université Laval, Quebec City, Canada
IPY Project MERGE (Microbiological and Ecosystem Response to Global Environmental change)
- Field research of arctic oceanography and marine microbiology
- Graduate Research Assistant (Full-time) 2004-06
Earth and Ocean Sciences. University of British Columbia, Vancouver, Canada and Department of Biology, Université Laval, Quebec City, Canada
- Investigation of Arctic biophysical oceanography
- Sea-going Physical Oceanography Technician (Full-time) 2004
Institute of Ocean Sciences, Fisheries and Oceans Canada, Sidney, Canada
Joint Western Arctic Climate Study (JWACS) and Beaufort Gyre Freshwater Experiment
- Field research of Arctic physical oceanography

-- Other Professional Experience --

- Director and Executive Producer (Documentary Filmmaker) 2001-05
Madzu Productions, Edmonton Canada
- Directed and produced two feature-length travel documentaries on location in Tibet and West Papua, Indonesia
- Filmography:
- *WAH! Pigs, police and penis gourds*, 75 min, Dir. A. Hamilton, Madzu Productions, 2003
 - *Tibetan Farmers AdYenture Hotel*, 75 min, Dir. A. Hamilton, Madzu Productions, 2001

-- Grants and Sponsored Projects --

<i>Ocean dynamics and meltwater input on the fate of Ellesmere Island ice shelves, ice tongues, and epishelf lakes (Project 626-12/13/14/15) - PI D. Mueller (CarletonU)</i> Polar Continental Shelf Program, Government of Canada (~\$100,00 over 4 years) ArcticNet Network of Centres of Excellence (~\$75,000 over 3 years) Co-authored funding proposal with D. Mueller	2012-15
<i>Project Icebergs: Iceberg mapping and data analysis - PI: D. Mueller (CarletonU) and B. Laval (UBC)</i> Environment Canada, Canadian Ice Service, and ArcticNet (\$190,000) Co-investigator, budget manager, and co-authored funding proposal with PIs	2011-12
Northern Scientific Training Program Grant - A. Hamilton Canadian Polar Commission (\$7300)	2011-13
<i>Antarctica 2010: Glacier Tongues and Ocean Mixing - PI C. Stevens (NIWA)</i> Corporate sponsors Air New Zealand, Seamor Marine Ltd., Gavia AUV ehf. (est. \$50,000 in-kind support) Authored all sponsorship proposals	2010
<i>Optimizing human/robot survey systems to maximize scientific return – PI B. Laval (UBC)</i> Canadian Analogue Research Network, Canadian Space Agency (\$49,998) Co-investigator and co-authored funding proposal with B. Laval and others	2010

-- Teaching Experience --

<u>Science Instructor and Demonstrator</u> Edmonton Space and Science Center, Edmonton, Canada <ul style="list-style-type: none">• Taught classes in astronomy, meteorology, geology, and physics for students grades K-12• Engaged general public by presenting entertaining and informative science experiments	2000
<u>Teaching Assistant</u> BIOL 432, Field Methods in Ecology Department of Biological Sciences, University of Alberta, Edmonton, Canada <ul style="list-style-type: none">• Field instructor of sampling techniques for limnology portion of summer undergraduate course	1998

-- Student Supervision --

<u>Research Assistant Supervision</u> J. Rajewicz (M.Sc. student), A. Garbo (undergraduate), K. Xu (field assistant), Milne Fiord, Nunavut Supervised oceanographic/glaciological students and field team for 4-weeks at a remote camp in the high-Arctic	2014
<u>Research Assistant Supervision</u> N. Wilson, Research Assistant, Geography and Environmental Studies, Carleton University Supervised oceanographic/glaciological research assistant during 4-week field-work at remote camp in the high-Arctic	2013
<u>Graduate Research Supervision</u> A. Crawford, M.Sc. Student, Geography and Environmental Studies, Carleton University Supervised iceberg deterioration research project during 4-week Arctic research cruise	2011
<u>Undergraduate Research Supervision</u> C. Fortier, Civil Engineering, University of British Columbia Supervised summer intern studying application of AUVs in physical limnology	2010

M. Zieleman, W. Tang, and D. Been, Engineering Physics, University of British Columbia 2010
Sponsored and advised Engineering Physics final project to design AUV water sampler

M. Mosher, G. Hamilton, and J. Harrison, Engineering Physics, University of British Columbia 2009
Sponsored and advised Engineering Physics final project to design AUV water sampler

-- Publications --

-- In Prep --

1. **Hamilton, A.K.**, B.E. Laval and D.R. Mueller. Ice-ocean dynamics in Milne Fiord. To be submitted to JGR-Oceans.
2. **Hamilton, A.K.**, D.R. Mueller, B.E. Laval, and W. Vincent. Interannual and seasonal dynamics of the last epishelf lake in the Canadian Arctic. To be submitted to Limnology and Oceanography.
3. **Hamilton, A.K.**, B.E. Laval and D.R. Mueller. Estimates of submarine melt in Milne Fiord. To be submitted to JGR-Oceans.

-- Refereed Journals --

1. Forrest, A.L., M.E. Wittmann, V. Schimdt, N.A. Raineault, **A.K. Hamilton**, W. Pike, S.G. Schladow, J.E. Reuter, B.E. Laval, and A.C. Trembanis. 2012. Quantitative assessment of invasive species in lacustrine environments through benthic imagery analysis. *Limnology and Oceanography: Methods* **10**: 65-74. {doi 10.4319/lom.2012.10.65}
2. Lim, D.S.S., A.L. Brady, and PLRP Team (Abercromby, A.F., Andersen, D.T., Andersen, M., Arnold, R.R., Bird, J.S., Bohm, H.R., Cady, S.L., Cardman, Z., Chan, A.M., Chan, O., Chénard, C., Cowie, B.R., Davila, A., Deans, M.C., Dearing, W., Delaney, M., Downs, M., Fong, T., Forrest, A., Gernhardt, M.L., Gutsche, J.R., Hadfield, C., **Hamilton, A.K.**, Hawes, I., Hansen, J., Heaton, J. Imam, Y., Laval, B.L., Lees, D., Leoni, L., Looper, C., Love, S., Marinova, M.M., McCombs, D., McKay, C.P., Mullins, G., Nebel, S.H., Nuytten, P., Pendery R., Pike, W., Pointing, S.B., Pollack, J., Raineault, N., Reay, M., Reid, D., Sallstedt, T., Schulze-Makuch, D., Seibert, M., Shepard, R., Slater, G.F., Sumner, D.Y., Suttle, C.A., Trembanis, A., Turse, C., Wilhelm, M., Wilkinson, N., Williams, D., Winget, D.M., Winter, C.). 2011. A historical overview of the Pavilion Lake Research Project – Analog science and exploration in an underwater environment. *Geological Society of America Special Papers*, **483**: 85-115. [doi:10.1130/2011.2483(07)]
3. Galand, P., C. Lovejoy, **A.K. Hamilton**, G. Ingram, E. Pedneault, and E. Carmack. 2009. Archeal diversity and a gene for ammonia oxidation are coupled to ocean circulation. *Environmental Microbiology* **11**: 971-980. [doi:10.1111/j.1462-2920.2008.01822.x]
4. Mueller, D., L. Copland, **A.K. Hamilton** and D. Stern. 2008. Examining Arctic ice shelves prior to the 2008 breakup. *Eos Transactions of the American Geophysical Union*, **89(49)**: 502-503. [doi:10.1029/2008EO490002]
5. **Hamilton, A.K.**, C. Lovejoy, P. Galand and R. G. Ingram. 2008. Water masses and biogeography of picoeukaryote assemblages in a cold hydrographically complex system. *Limnology and Oceanography* **53**: 922-935. [doi: 10.4319/lm.2008.53.3.0922]

-- Conference Presentations --

1. **Hamilton, A.K.**, D.R. Mueller, and B.E. Laval, W.R. Vincent. 2015. Interannual and seasonal dynamics of the last epishelf lake in the Canadian Arctic. ArcticNet AGM, Vancouver, Canada. 14-19 Dec 2015. (Oral)
2. **Hamilton, A.K.**, D.R. Mueller, and B.E. Laval. 2014. Ocean properties and submarine melting in a high-Arctic fiord (Milne Fiord). American Geophysical Union Fall Meeting. San Francisco, USA. 14-19 Dec 2014. (Poster)
3. Stevens, C.J, A.F Forrest, **A.K. Hamilton**, B.E. Laval, D.R. Mueller. 2013. Development of a navigation model for AUVs under ice at high latitudes. ArcticNet AGM St. Johns, NFLD (Poster)
4. Mueller, D.R., **A.K. Hamilton**, A.L. Forrest, B.E. Laval, V. Schmidt, A.J. Crawford, T. Hamilton, L. Brathwaite. 2012. The drift, deterioration and demise of Berghaus: From Petermann ice island fragment to ice cube. ArcticNet 8th Annual AGM, Vancouver BC, December 10-14, 2012. (Oral – plenary presentation)
5. Forrest, A.F., **A.K. Hamilton**, V. Schmidt, B.E. Laval, D.R. Mueller, A. Crawford, S. Brucker, J. Gagnon, J.E. Tremblay, R. Yeo, L. Brathwaite. 2012. Observations beneath Petermann Ice Island-B (PII-B) in the Canadian Arctic. ArcticNet AGM Vancouver (Oral)

6. Crawford A., D.R. Mueller, A.L. Forrest, **A.K. Hamilton**, V. Schmidt, B.E. Laval, S. Brucker, L. Brathwaite, J Gagnon. 2012. Deterioration patterns of ice islands adrift in the Canadian Arctic. ArcticNet AGM Vancouver (Oral)
7. **Hamilton, A.K.**, B.E. Laval, and D.R. Mueller. 2012. Fjord dynamics and glacio-marine interactions on northern Ellesmere Island. American Geophysical Union Fall Meeting. San Francisco, USA. 3-5 Dec 2012. (Poster)
8. Crawford A.J., D.R. Mueller, **A.K. Hamilton**, A.L. Forrest, V. Schmidt, and R. Yeo. Ice islands of the Canadian Arctic: morphology and deterioration. Presentation at: 1st Annual Workshop of the Network of Expertise on Transportation in Arctic Waters; 2012 Sept 9; Churchill, MB.
9. Crawford A.J., D.R. Mueller, **A.K. Hamilton**, A.L. Forrest, V. Schmidt, and R. Yeo. On Thick Ice: Ice islands of the Eastern Canadian Arctic. Nunavut Research Institute; 2012 Aug 4; Iqaluit, Canada. (Oral)
10. **Hamilton, A.K.**, B.E. Laval, D.R. Mueller. Arctic fjord oceanography and glacio-marine interactions of northern Ellesmere Island. Tidewater Glaciers Workshop, 26-31 August 2012; Svalbard, Norway. (Oral)
11. **Hamilton, A.K.**, B.E. Laval, C. Stevens, D. Mueller, A.L. Forrest, V. Schmidt. Diving under thick ice: investigations of glacier-ocean interactions using an autonomous underwater vehicle (AUV). Tidewater Glaciers Workshop, 26-31 August 2012; Svalbard, Norway. (Oral)
12. Forrest, A.L., **A.K. Hamilton**, V. Schmidt, B.E. Laval, D. Mueller, A. Crawford, S. Brucker, and T. Hamilton. (2012). Digital terrain mapping of Petermann Ice Island fragments in the Canadian High Arctic. 21st IAHR International Symposium on Ice: Ice Research for a Sustainable Environment. Dailin, China. 10 pages. (Paper and oral)
13. Crawford, A.J., Mueller, D., **Hamilton, A.K.**, Forrest, A. and Braithwaite, L. (2012) Improvements to Iceberg Drift and Deterioration Models for Use with Ice Islands in the Eastern Canadian Arctic. International Polar Year: From knowledge to action, Montreal, April 22-27, 2012. (Poster)
14. **Hamilton, A.K.** 2010. Surveying under-ice environments with a small autonomous underwater vehicle (AUV). Polar Environments Theme Workshop. Dunedin, New Zealand. (Oral)
15. **Hamilton, A.K.**, C. Lovejoy and G. Ingram. 2006. Biohydrography of picoeukaryotes in the North Water Polynya. ArcticNet AGM, Victoria, Canada. (Poster)
16. **Hamilton, A.K.**, C. Lovejoy and G. Ingram. 2006. Biohydrography of picoeukaryotes in the North Water Polynya. ASLO Conference, Victoria, Canada. (Oral)
17. **Hamilton, A.K.**, C. Lovejoy and G. Ingram. 2005. Vertical segmentation of microbial communities in the North Water Polynya. ArcticNet AGM, Banff, Canada. (Poster - *Best Poster Award*)
18. Telmer, K. and **A.K. Hamilton**. 2003. Why is this geochemist kissing a fish? The geochemistry of fish otoliths. University of Victoria Science Outreach Day, Victoria, Canada. (Poster)
19. Barnes C. and **A.K. Hamilton**. 2003. NEPTUNE: North East Pacific Time-series Undersea Networked Experiment. GAC/MAC 2003, Vancouver, Canada. (Poster)

-- Book Chapters --

1. Forrest, A.L, Z. Leong, **A.K. Hamilton**, and B.E. Laval. Autonomous underwater vehicles as platforms for experimental hydraulics research. IN M.V. Muste and others (Eds.). *Experimental Hydraulics: Flows, Methods, Instrumentation, Data Analysis, and Management*. International Association for Hydro-Environment Engineering and Research. Taylor and Francis. 785 pp. *Submitted*.

-- Technical Reports and Theses --

1. **Hamilton, A.K.**, W. Van Wychen, Y. Drocourt. 'Challenges and Gaps in the Study of Tidewater Glaciers': IN J.A. Jania and J. Szafraniec (Eds.). Report from Field Workshop on Studies of Tidewater Glaciers, Svalbard 2013. Cryosphere Working Group of the International Arctic Science Committee. Sosnowiek 2013.
2. **Hamilton, A.K.**, A.F. Forrest, A. Crawford, V. Schmidt, B.E. Laval, D.R. Mueller, T. Hamilton, S. Brucker. 2013. Project ICEBERGS Final Report. Canadian Ice Service, Environment Canada. 36pp.
3. **Hamilton, A.K.** 2008. Ellesmere ice shelves, ecosystems and climate change: Aquatic microbial sampling report, Operation NUNALIVUT '08. IPY MERGE Project Report. 27pp.
4. **Hamilton, A.K.** 2006. Biohydrography of eukaryotic microorganisms in a cold ocean ecosystem. University of British Columbia, Vancouver, Canada. (M.Sc. thesis)
5. Telmer, K., and **A.K. Hamilton**. 2003. Detection of Strontium marks in juvenile sockeye salmon otoliths by laser ablation-ICPMS line scans. Department of Fisheries and Oceans Project Report 5pp.
6. Telmer, K., **A.K. Hamilton**, J. Spence, E. da Silva Brabo, and R. Angelica. 2003. AMAZOLS-1: Amazon Organic Lake Sediment Standard. Report for International Atomic Energy Agency (IAEA) Coordinated Research Project. 4pp.

7. Telmer, K., and **A.K. Hamilton**. 2002. The microchemistry of juvenile salmonid otoliths: detecting Sr/Ca mass marking and juvenile anadromy. Department of Fisheries and Oceans Report. 15pp.

-- Academic Seminars --

- The Laval Lab Legacy: Deepworkers, AUVs, Ice and my PhD. UBC Hydrotechnical Seminar. Nov 04 2015.
- Polar Haloclines: they are so hot right now! UBC Physical Oceanography Seminar. Dec 01 2014.
- Fjord dynamics and glacio-marine interactions on northern Ellesmere Island. UBC Hydrotechnical Seminar. Oct 4 2012.
- Iceberg dead ahead! – Project Icebergs. UBC Polar Club. Mar 01 2012.
- Project Icebergs: drift and deterioration experiment. CCGS *Amundsen* Science Seminars. Oct 03 2011.
- The best laid plans: Ellesmere Island's Crazy Ice shelf-epishelf lake-glacier system and the triumphs and tribulations of Arctic guerilla field work. UBC Physical Oceanography Seminar Series. June 22 2011.
- Antarctica 2010: Glacier Tongues and Ocean Mixing. Naval Post Graduate School, Monterey. May 31 2011.
- Floating ice and floating lakes: experimental design for the weird and wonderful Ellesmere epishelf lake and ice shelf study. UBC Environmental Fluid Mechanics Seminar Series. Feb 28 2011.
- Ellesmere ice shelves, ecosystems and climate change. UBC Environmental Fluid Mechanics Seminar. April 15 2010.

-- Workshops --

- Greenland Ice Sheet Ocean Observing System (GrIOOS) Workshop. San Francisco, USA. 12-13 Dec 2015.
- Field Workshop on Studies of Tidewater Glaciers. RV *Horyzont II*, Svalbard. 26-31 Aug 2012.

-- Outreach --

Authored Websites

- **Hamilton, A.K.**, B.E. Laval and others. 2012. Environmental Fluid Mechanics at UBC. [<http://efm.civil.ubc.ca/>]
- **Hamilton, A.K.**, C. Stevens, A. Forrest, M. Doble, B. Laval. 2010. Antarctica 2010: Glacier tongues and ocean mixing. [<http://www.madzu.com/Antarctica2010/Antarctica2010/Home.html>]
- **Hamilton, A.K.**, and S. Gagnon. 2008. Climate Change: Ellesmere Island Ice Shelves. Canadian Geographic Magazine 2008 Oct. [cited 2008 Sept 16]. [http://www.canadiangeographic.ca/magazine/oct08/feature_grisefjord_cc3.asp]
- **Hamilton, A.K.**, D.R. Mueller, L. Copland. 2008. Northern Ellesmere ice shelves, ecosystems and climate impacts. [<http://www.madzu.com/ellesmere/Home.html>]

Invited talks

- The 'Frozen' North: Ocean-ice interactions in a changing Arctic. Burnaby Youth Sustainability Network 2013 'Do It Green' Conference April 19 2013. Burnaby North High School, Burnaby, BC, Canada
- Changing Landscapes: Science in Canada's North. Vancouver Science World. Vancouver, BC, Canada. Oct 20 2012.
- Changing Landscapes: Science in Canada's North. Vancouver Science World. Vancouver, BC, Canada. Sept 22 2012.
- Pavilion Lake Research Project: Astrobiology and Robots. Shad Valley High School Panel Discussion. Pavilion Lake, BC, Canada.

Media Coverage

- Canadian Arctic - New fractures in centuries-old ice shelf. Eye on the Arctic. Radio Canada International (RCI). 09 Aug 2013. [<http://www.rcinet.ca/en/2013/08/09/eye-on-the-arctic-understanding-the-milne-ice-shelf/>] (Radio interview)
- Featured Scientist. BC Year of Science. October 2011. [<http://www.youtube.com/watch?v=Fv5xYotg5vo>] (Video interview)
- Northern Science NOW. Interactive map of research conducted by Canada's most promising northern scientists. Canadian Geographic Online Magazine [serial on the Internet]. 2012 Dec. [cited 2013 Apr 24]. Available from: [<http://www.canadiangeographic.ca/magazine/dec12/map/>] (click on northernmost star on map).
- Underwater robot studying ice-covered Antarctic Ocean. CTV News October 23 2010. [<http://www.ctvnews.ca/underwater-robot-studying-ice-covered-antarctic-ocean-1.566438>] (Television interview)
- Copland, L., D. Mueller, and **A.K. Hamilton**. 2008. Ellesmere ice shelves, ecosystems and climate change. Media Presentation Eureka, Nunavut, Canada.

Andrew K. Hamilton

- **Hamilton, AK**, and N. Burkard. 2006. *Weird Wild Wonderful: The Invisible Arctic*. Telus Broadcasting. 50 min. (Pilot episode for television)

-- Film Presentations --

- Invited speaker – “Explorations in Tibet and New Guinea” – Calgary Teachers Convention - 2005
- Invited speaker – “Tibetan Adventure: Two Months in Tibet” - Edmonton Teachers Convention - 2004
- Keynote speaker – “Travels in Tibet and New Guinea” – Edmonton/Calgary/Vancouver/Victoria - 2004
- Opening night speaker – “WAH! Behind the Scenes in New Guinea” - Calgary International Film Festival - 2003
- Keynote speaker – “Tibetan Adventure: Two Months in Tibet” – Edmonton/Calgary/Vancouver/Victoria - 2002

--Select Field Experience--

- Doctoral Research, Milne Fiord, Ellesmere Island, Canada, 4-weeks 2015
- Research Consultant, Brucejack Lake, British Columbia, Canada, 4-weeks 2015
- Doctoral Research, Milne Fiord, Ellesmere Island, Canada, 4-weeks 2013
- Doctoral Research, Milne Fiord, Ellesmere Island, Canada, 3-weeks 2012
- AUV Scientist, CGGS *Amundsen*, Arctic Ocean, 4-weeks 2011
- Doctoral Research, Milne Fiord, Ellesmere Island, Canada, 4-weeks 2011
- AUV Scientist, CGGS *Amundsen*, Arctic Ocean, 3-weeks 2011
- AUV Scientist, Pavilion Lake, British Columbia, Canada, 2-weeks 2009-10
- AUV Researcher, Swains Pond, New Hampshire, USA, 1-week 2010
- AUV Researcher, Lake Tahoe, California, USA, 2-weeks 2009
- Field Guide, Belcher Glacier, Devon Island, Canada, 3-weeks 2008
- Research Scientist, Ellesmere Island, Canada, 3-weeks 2008
- Masters Research, CGGS *Amundsen*, Arctic Ocean, 6-weeks 2005
- Oceanography Technician, CGGS *Louis S. St. Laurent*, Beaufort Sea, 5-weeks 2004
- Oceanography Technician, Coastal British Columbia, Canada, 2-years 2002-04
- Biology Research Assistant, Northern Alberta Boreal Forest, Canada, 3-years 1996-99

Over 280 field-days in the Arctic.

-- Certifications --

- CPR Level C with AED - St. Johns Ambulance 2015
- Standard First Aid with Basic Rescuer and CPR (Level C) - St Johns Ambulance (15 hrs) 2015
- Crevasse Rescue Course – Alpine Club of Canada 2008
- Avalanche Awareness Course - Canada West Mountain School (20 hrs) 2004
- Basic Boating Course - Canadian Power and Sail Squadron (28 hrs) 2002
- Pleasure Craft Operator Certificate - Canadian Power and Sail Squadron 2002
- Marine Radio Operators Certificate – Canadian Coast Guard 2002
- Advanced Wilderness First Aid and CPR – Slipstream (80 hrs) 2001
- PADI Open Water Scuba Diver 1997

-- Affiliations --

- ArcticNet
- American Geophysical Union (AGU)
- Canadian Meteorological and Oceanographic Society (CMOS)
- University of British Columbia Polar Club (Founding Member)