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ACADEMIC AND RESEARCH POSITIONS

- 2015 – present **Full Professor**, Department of Oceanography, Dalhousie University, Halifax, NS
- 2012 – present **Adjunct Professor**, University of Maryland Center for Environmental Science, Horn Point Laboratory, Horn Point, MD, USA
- 2011 – 2015 **Associate Professor, Canada Research Chair II**, Department of Oceanography, Dalhousie University, Halifax, NS
- 2008 – 2013 **Adjunct Professor**, School of Marine Sciences, University of Maine, Orono, MN, USA
- 2006 – 2011 **Assistant Professor, Canada Research Chair II**, Department of Oceanography, Dalhousie University, Halifax, NS
- 2006 – 2008 **Adjunct Professor**, Institute for Marine and Coastal Sciences, Rutgers University, New Brunswick, NJ, USA
- 2005 – 2006 **Assistant Professor**, Institute for Marine and Coastal Sciences, Rutgers University, New Brunswick, NJ, USA
- 2002 – 2005 **Assistant Research Professor**, Institute for Marine and Coastal Sciences, Rutgers University, New Brunswick, NJ, USA
- 1999 – 2002 **Post-Doctoral Fellow**, College of Oceanic and Atmospheric Sciences, Oregon State University, Corvallis, OR, USA, Advisor: Mark Abbott
- 1998 – 1999 **Post-Doctoral Fellow**, Alfred Wegener Institute of Polar and Marine Research, Bremerhaven, Germany, Advisor: Jens Schröter

EDUCATION

- 1995 – 1998 **Ph.D.** in Marine Biology, University Rostock, Germany, Thesis: “*A coupled, three-dimensional model for the dynamics of nutrients and plankton in the Western Baltic Sea*”, Advisor: Bodo von Bodungen
- 1992 – 1994 **M.Sc.** (Diplom) in Numerical Mathematics, University Rostock, Germany, Thesis: “*On the direct and inverse Ekman problem*”
- 1989 – 1992 **B.Sc.** (Vordiplom) in Mathematics, University Rostock, Germany

OTHER PROFESSIONAL ACTIVITIES

Editor	<p>Co-Editor in Chief for <i>Biogeosciences</i> (since May 2013)</p> <p>Guest Editor of <i>Biogeosciences</i> Special Issue “<i>Biogeochemistry and ecosystems in the western north Pacific continental margins under climate change and anthropogenic forcing</i>” (2013)</p> <p>Co-editor of book <i>Modeling Coastal Hypoxia - Numerical Simulations of Patterns, Controls and Effects of Dissolved Oxygen Dynamics</i>, published by Springer (2017)</p>
Editorial board member	<p><i>Frontiers in Ocean Observation</i> (since February 2015), <i>Biogeosciences</i> (since February 2012), <i>Ocean Modelling</i> (June 2009 to June 2018), <i>Atmosphere-Ocean</i> (June 2008 to September 2012)</p>
Chair	<p>Compute Canada Review panel for Research Portals and Platforms (2017, 2018)</p>
Member in scientific steering committees and working groups	<p>CMOS 2009 Congress Scientific Organizing Committee (08/2008 – 06/2009); Ocean Tracking Network Council (07/2009 – 06/2012); Ocean Tracking Network Scientific Advisory Committee (01/2010 – 05/2014); IMBER/LOICZ Continental Margins Task Team (12/2010 – 12/2014); Climate Variability and Predictability (CLIVAR) Working Group for Ocean Model Development (10/2010 – 12/2013); CMOS 2012 Congress Scientific Organizing Committee (08/2011 – 06/2012); SCOR WG 142 <i>Quality control procedures for oxygen and other biogeochemical sensors on floats and gliders</i> (10/2012 – present); Organizing Committee for IOC Conference “One Ocean, One Planet” in Barcelona, Spain, in 2014 (07/2013 – 11/2014); Organizing Committee for 2015 Gordon Conference on Ocean Circulation (05/2014 – 02/2015); GODAE OceanView Science Team (08/2014 – present); GODAE OceanView Marine Ecosystem Analysis and Prediction Task Team (co-chair) (08/2014 – present); Scientific organizing committee of the 2015 Liege Colloquium on Marine Environmental Monitoring, Modelling and Prediction (07/2014 – 05/2015), Member of the Science and Technology Advisory Committee of the Copernicus Marine Environment Monitoring Service (CMEMS) (04/2015 – present); Member of the International Science Committee of the Biogeochemical Argo program (01/2016—present); Organizing Committee for 2017 Blue Planet Symposium in Greenbelt, Maryland (2017); Huntsman Award Committee (09/2016—present); SCOR WG 154 “<i>Integration of Plankton-Observing Sensor Systems to Existing Global Sampling Programs (P-OBS)</i>” (9/2017—present); ASLO John Martin Award Committee (08/2018—present)</p>
Chair and co-chair of conference sessions	<p>Ocean Sciences Meeting 2006 Session OS009 <i>Advances in the Study of Carbon Cycling on Continental Margins</i>; Ocean Sciences Meeting 2008 Session OS094 <i>Coastal Ocean Modelling and Prediction</i>; AGU Fall Meeting 2008 Session B46 <i>Carbon Flux and the North Atlantic Bloom</i>; CMOS 2009 1st Plenary Session; CMOS 2009 Session <i>Physical-biological interactions in the ocean</i>; Ocean Sciences Meeting 2012 Session 041 <i>Methods and Applications of Data</i></p>

Assimilation for Ocean Biogeochemistry; 2013 ASLO Meeting *Biological and biogeochemical responses to human impacts at the sediment-water interface*; IOC One Ocean, One Planet Conference 2014 *Response of marine biota to human pressures*; 2015 ASLO Aquatic Sciences Meeting *Advances in coastal hypoxic modeling: from physics to fish*; 2016 AGU/ASLO/TOS Ocean Sciences Meeting *Physical and biogeochemical processes and the support of shelf sea primary productivity and carbon cycling*;

Manuscript reviewer

AMBIO (1), Antarctic Science (1), Atmosphere-Oceans (4), Biogeosciences (numerous), Continental Shelf Research (5), Deep-Sea Research I (3), Deep-Sea Research II (3), Dynamics of Atmosphere and Ocean (1), Ecological Modelling (1), Estuarine, Coastal and Shelf Sciences (1), Estuaries and Coasts (1), G-cubed (1), Geophysical Research Letters (7), Global Biogeochemical Cycles (6), Journal of Geophysical Research (17), Journal of Marine Systems (7), Journal of Soils and Sediments (1), Limnology and Oceanography (6), Limnology and Oceanography: Fluids and Environment (1), Limnology and Oceanography: Methods (2), Marine Ecology Progress Series (9), Nature (2), Nature Geoscience (3), Ocean Dynamics (4), Ocean Modelling (9), Ocean Science (3), Plos ONE (1), Journal of Plankton Research (1), Ocean Science (2), Progress in Oceanography (6), Science (2)

Panel member for funding agencies

DOE Carbon Cycle Program, 2003 (reviewed more than 20 proposals); NSF Biological Oceanography, 2006 (reviewed more than 20 proposals); NASA ROSES, 2011 (reviewed 5 proposals); German Research Foundation SFB 754, 2011 (reviewed 20 proposals); NSERC Research Tools and Instrumentation “Geoscience/Evolution and Ecology” Committee, 2015 (reviewed 45 proposals); German Research Foundation SFB 754, 2015 (reviewed 20 proposals); NSERC Research Tools and Instrumentation “Geoscience/Evolution and Ecology” Committee, 2016 (reviewed 43 proposals); Compute Canada Research Portals and Platforms Allocation panel, 2016 (reviewed 4 proposals); NASA ESUSPI panel, 2017 (reviewed 6 proposals); Compute Canada Research Portals and Platforms Allocation panel, 2017 (reviewed 4 proposals);

Proposal reviewer

NSF Antarctic Program, 2003; DOE Carbon Cycle Program, 2003; Maryland SeaGrant, 2004; NSF Biological Oceanography, 2004, 2005, 2006, 2007, 2009; NSF Chemical Oceanography 2007, 2008; Hawaii SeaGrant 2006, 2008; NSERC Discovery Grants Program 2008, 2009, 2010, 2011, 2012, 2013, 2016, 2017, 2018; NSERC Strategic Projects 2008; CFI Leaders Opportunities Fund 2010; Wisconsin SeaGrant 2009; Science Foundation of the Netherlands 2009; NASA ROSES 2011; Polish Science Foundation 2010, 2012; Oregon SeaGrant 2011; ANR French Science Foundation 2013; NSERC RTI proposals 2016, 2017

Research cruises

R/V Alfred Penck, Baltic Sea Monitoring cruise in 1996; CTD measurements and water sampling

R/V Bjarni Saemundson, North Atlantic Bloom cruise in 2008; CTD measurements, water sampling, recovery of Lagrangian floats and seagliders
R/V Walton Smith, Gulf of Mexico in 2017; deployment of biogeochemical floats, water sampling and filtering

Professional organizations

Member in American Geophysical Society, American Society of Limnology and Oceanography, The Oceanography Society, European Geosciences Union

PUBLICATION METRICS

Google Scholar profile: <http://scholar.google.ca/citations?user=HeoyndMAAAAJ&hl=en>
3923 citations in total, h-index: 29, i10-index: 59 (accessed on September 24, 2018)

PUBLICATIONS IN PEER-REVIEWED JOURNALS, BOOK CHAPTERS AND BOOKS (my students and post-doctoral fellows in *bold-italics*)

- 2018** Fennel, K., and Testa, J.M., **Biogeochemical controls on coastal hypoxia**, *Annual Review of Marine Science*, doi: 10.1146/annurev-marine-010318-095138 (publication scheduled for 2019)
- Claret, M., E.D. Galbraith, J.B. Palter, D. Bianchi, K. Fennel, D. Gilbert, and J.P. Dunne, Rapid coastal deoxygenation due to ocean circulation shift in the NW Atlantic, *Nature Climate Change*, doi:10.1038/s41558-018-0263-1 (2018)
- Rutherford**, K. and Fennel, K., Diagnosing transit times on the northwestern North Atlantic continental shelf, *Ocean Science*, doi:10.5194/os-2018-60 (2018)
- Moriarty, J.M., C.K. Harris, M.A.M. Friedrichs, K. Fennel, and K. Xu, Impact of seabed resuspension on oxygen and nitrogen dynamics in the northern Gulf of Mexico: A numerical modeling study, *Journal of Geophysical Research-Oceans* (in press)
- Fennel, K. and **Laurent**, A., N and P as ultimate and proximate limiting nutrients in the northern Gulf of Mexico: Implications for hypoxia reduction strategies, *Biogeosciences* **15**, 3121-3131 (2018)
- Lemay, J., Thomas, H., Craig, S. E., Burt, W. J., Fennel, K., and Greenan, B. J. W., Hurricane Arthur and its effect on the short-term variability of pCO₂ on the Scotian Shelf, NW Atlantic, *Biogeosciences* **15**, 2111-2123 (2018)
- Yu**, L., Fennel, K., Bertino, L., Gharamti, M.E., Thompson, K.R., Insights on multivariate updates of physical and biogeochemical ocean variables using an Ensemble Kalman Filter and an idealized model of upwelling, *Ocean Modelling* **126**, 13-28 (2018)
- Laurent**, A., Fennel, K., Ko, D.S., Lehrter J., Climate change projected to exacerbate impacts of coastal eutrophication in the northern Gulf of Mexico, *Journal of Geophysical Research-Oceans*, **123**, 3408-3426 (2018)
- Lohrenz, S.E., Cai, W.-J., Chakraborty, S., Huang, W.-J., Guo, X., He, R., Xue, Z., Fennel, K., Howden, S., Tian, H., Satellite estimation of coastal pCO₂ and air-sea

flux of carbon dioxide in the northern Gulf of Mexico, *Remote Sensing of Environment* **207**, 71-83 (2018)

Izett, J. and **Fennel**, K., Estimating the cross-shelf export of riverine materials, Part 1: General relationships from an idealized numerical model, *Global Biogeochemical Cycles* **32**, 160-175 (2018)

Izett, J. and **Fennel**, K., Estimating the cross-shelf export of riverine materials, Part 2: Estimates of Global Freshwater and Nutrient Export, *Global Biogeochemical Cycles* **32**, 176-186 (2018)

2017

Fennel, K., Ocean hotspots of nitrogen loss, *Nature*, 551, 305-306 (2017)

Luettich, R. A., Jr., L. D. Wright, C. R. Nichols, R. Baltes, M. A. M. Friedrichs, A. Kurapov, A. van der Westhuysen, K. **Fennel**, and E. Howlett (2017), A test bed for coastal and ocean modeling, *Eos* 98, <https://doi.org/10.1029/2017EO078243> (2017)

Justic, D., Rose, K.A., Hetland, R.D., **Fennel**, K. (eds.), Modeling Coastal Hypoxia: Numerical Simulations of Patterns, Controls and Effects of Dissolved Oxygen Dynamics, Springer, 433 pages (2017)

Sharples, J., Middelburg, J., **Fennel**, K., Jickells, T.D., What proportion of riverine nutrients reaches the open ocean? *Global Biogeochemical Cycles*, 31, 39–58, doi:10.1002/2016GB005483 (2017)

Jickells, T. D., Buitenhuis, E., Altieri, K., Baker, A.R., Capone, D., Duce, R.A., Dentener, F., **Fennel**, K., Kanakidou, M., LaRoche, J., Lee, K., Liss, P., Middelburg, J.J., Moore, J.K., Okin, G., Oschlies, A., Sarin, M., Seitzinger, S., Sharples, J., Singh, A., Suntharalingam, P., Uematsu, M., Zamora, L.M., A reevaluation of the magnitude and impacts of anthropogenic atmospheric nitrogen inputs on the ocean, *Global Biogeochemical Cycles* 31, 289–305, doi:10.1002/2016GB005586 (2017)

Moriarty, J. M., Harris, C. K., **Fennel**, K., Friedrichs, M. A. M., Xu, K., and Rabouille, C., The roles of resuspension, diffusion and biogeochemical processes on oxygen dynamics offshore of the Rhône River, France: a numerical modeling study, *Biogeosciences* 14, 1919-1946, doi:10.5194/bg-14-1919-2017 (2017)

Laurent, A., **Fennel**, K., Modeling river-induced phosphorus limitation in the context of coastal hypoxia, In: *Modeling Coastal Hypoxia: Numerical Simulations of Patterns, Controls and Effects of Dissolved Oxygen Dynamics*, Justic, D., Rose, K.A., Hetland, R.D., Fennel, K., (eds.), p. 149-171, Springer (2017)

Rose, K., Justic, D., **Fennel**, K., Hetland, R., Numerical modeling of hypoxia and its effects: Synthesis and going forward, In: *Modeling Coastal Hypoxia: Numerical Simulations of Patterns, Controls and Effects of Dissolved Oxygen Dynamics*, Justic, D., Rose, K.A., Hetland, R.D., Fennel, K., (eds.), p. 401-421, Springer (2017)

Laurent, A., **Fennel**, K., Cai, W.-J., Huang, W.-J., Barbero, L., and Wanninkhof, R., Eutrophication-induced acidification of coastal waters in the northern Gulf of Mexico: results from a coupled physical-biogeochemical model, *Geophysical Research Letters* **44**, 946-956, doi:10.1002/2016GL071881 (2017)

2016

- Brennan**, C.E., **Blanchard**, H., **Fennel**, K., Putting temperature and oxygen thresholds of marine animals in context of environmental change: A regional perspective for the Scotian Shelf and Gulf of St. Lawrence, *Plos ONE* **11**(12) e0167411.doi:10.1371/journal.pone.0167411 (2016)
- Xue, Z., He, R., **Fennel**, K., Cai, W.-J., Lohrenz, S., Huang, W.-J., and Tian, H., Modeling $p\text{CO}_2$ variability in the Gulf of Mexico, *Biogeosciences*, **13**:4359-4377, doi:10.5194/bg-13-4359-2016 (2016)
- Fennel**, K., **Laurent**, A., Hetland, R., Justić, D., Ko, D.S., Lehrter, J., Murrell, M., Wang, L., **Yu**, L., **Zhang**, W., Effects of model physics on hypoxia simulations for the northern Gulf of Mexico: A model inter-comparison, *Journal of Geophysical Research-Oceans* **121**, 5731-5750, doi:10.1002/2015JC011577 (2016)
- Constable, A.J., D.P. Costa, O. Schofield, L. Newman, E.R. Urban Jr., E.A. Fulton, J. Melbourne-Thomas, T. Ballerini, P.W. Boyd, A. Brandt, B. de la Mare, M. Edwards, M. Eléaume, L. Emmerson, K. **Fennel**, S. Fielding, H. Griffiths, J. Gutt, M.A. Hindell, E.E. Hofmann, S. Jennings, H. Sul La, A. McCurdy, B.G. Mitchell, T. Moltmann, M. Muelbert, E. Murphy, T. Press, B. Raymond, K. Reid, C. Reiss, J. Rice, I. Salter, D. Smith, S. Song, C. Southwell, K. Swadling, A. Van de Putte, Z. Willis, Determining priority variables (“ecosystem Essential Ocean Variables” – eEOVs) for observing dynamics and change in Southern Ocean ecosystems, *Journal of Marine Systems*, 161, 26-41, doi: 10.1016/j.jmarsys.2016.05.003 (2016)
- Brennan**, C., **Bianucci**, L., **Fennel**, K., Sensitivity of northwest North Atlantic shelf circulation to surface and boundary forcing: A regional model assessment, *Atmosphere-Ocean* **54**, 230–247, doi:10.1080/07055900.2016.1147416 (2016)
- Bianucci**, L., **Fennel**, K., Chabot, D., Shackell, N., Lavoie, D., Ocean biogeochemical models as management tools: a case study for Atlantic wolffish and declining oxygen, *ICES Journal of Marine Science*, **73**(2):263-274, doi: 10.1093/icesjms/fsv220 (2016)
- Laurent**, A., **Fennel**, K., **Wilson**, R., Lehrter, J., and Devereux, R., Parameterization of biogeochemical sediment–water fluxes using in-situ measurements and a steady-state diagenetic model, *Biogeosciences* **13**:77-94, doi:10.5194/bg-13-77-2016 (2016)
- Cahill, B., Wilkin, J., **Fennel**, K., Vandemark, D., Friedrichs, M., Interannual and seasonal variabilities in air-sea CO_2 fluxes along the U.S. eastern continental shelf and their sensitivity to increasing air temperatures and variable wind, *Journal of Geophysical Research-Biogeosciences*, **121**, 295-311, doi:10.1002/2015JG002939 (2016)
- Fennel**, K., VanderZwaag, D.L., Ocean acidification: Surging science and lagging law and policy responses, p. 342-362, In: Warner, R., Kaye, S. (eds.) *Routledge Handbook on Maritime Regulation and Enforcement*, Routledge, Taylor and Francis Group, New York (2016)

- 2015** **Zhang**, W., Hetland, R.D., DiMarco, S.F., **Fennel**, K., Processes controlling mid-water column oxygen minima over the Texas-Louisiana shelf, *Journal of Geophysical Research—Oceans*, 120:2800-2812, doi:10.1002/2014JC010568 (2015)
- Kuhn**, A.M., **Fennel**, K., **Mattern**, J.P., Model investigations of the North Atlantic spring bloom initiation, *Progress in Oceanography*, **138**:176-193
http://dx.doi.org/10.1016/j.pocean.2015.07.004 (2015)
- Yu**, L., **Fennel**, K., **Laurent**, A., Lehrter, J.C., Numerical analysis of the primary processes controlling oxygen dynamics on the Louisiana shelf, *Biogeosciences* **12**:2063-2076, doi:10.5194/bg-12-2063-2015 (2015)
- Yu**, L., **Fennel**, K., **Laurent**, A., A modeling study of physical controls on hypoxia generation in the northern Gulf of Mexico, *Journal of Geophysical Research-Oceans* 120, 5019-5039, doi:10.1002/2014JC010634 (2015)
- 2014** Hartman, W., VanderZwaag, D.L., **Fennel**, K., Recovery Planning for Pacific Marine Species at Risk in the Wake of Climate Change and Ocean Acidification: Canadian Practice, Future Courses, *Journal of Environmental Law and Practice* **27**:23-56 (2014)
- Liu, K.-K., Kang, C.-K., Kobari, T., Liu, H., Rabouille, C., and **Fennel**, K., Biogeochemistry and ecosystems of continental margins in the western North Pacific Ocean and their interactions and responses to external forcing – an overview and synthesis, *Biogeosciences* **11**:7061-7075, doi:10.5194/bg-11-7061-2014 (2014)
- Mattern**, J.P., **Fennel**, K., Dowd, M., Periodic time-dependent parameters improve forecasting abilities of biological ocean models, *Geophysical Research Letters* **41**, 6848-6854, doi:10.1002/2014GL061178 (2014)
- Langseth, B.J., Purcell, K.M., Craig, J.K., Schueller, A.M., Smith, J.W., Shertzer, K.W., Creekmore, S., Rose, K.A., **Fennel**, K., Effect of changes in dissolved oxygen concentrations on the spatial dynamics of the Gulf Menhaden fishery in the northern Gulf of Mexico, *Marine and Coastal Fisheries: Dynamics, Management, and Ecosystem Science* **6**:223-234, doi:10.1080/19425120.2014.949017 (2014)
- Lagman**, K., **Fennel**, K., Thompson, K.R., **Bianucci**, L., Assessing the utility of frequency dependent nudging for bias correction in biogeochemical models, *Ocean Modelling* **81**:25-35, doi: 10.1016/j.ocemod.2014.06.006 (2014)
- Feng, Y., **Fennel**, K., Jackson, G.A., DiMarco, S.F., Hetland, R.D., A model study of the response of hypoxia to upwelling favorable wind on the northern Gulf of Mexico shelf, *Journal of Marine Systems* **131**:63-73 (2014)
- Laurent**, A., **Fennel**, K., Simulated reduction of hypoxia in the northern Gulf of Mexico due to phosphorus limitation, *Elementa* **2**:000022, doi:10.12952/journal.elementa.000022 (2014)
- Azhar, M.A., Canfield, D.E., **Fennel**, K., Thamdrup, B., Bjerrum, C. J., A model-based insight into the coupling of nitrogen and sulfur cycles in a coastal upwelling system, *Journal of Geophysical Research-Biogeosciences* **119**, 264-285,

doi:10.1002/2012JG002271 (2014)

Fennel, K. Other nutrients and dissolved oxygen and climate change, In: Freedman, B. (ed) *Global Environmental Change, Handbook of Global Environmental Pollution XXVII*, 973 p., Springer, Heidelberg, Germany, doi:10.1007/SpringerReference_306841 (2014)

Ibarra, D., **Fennel**, K., Cullen, J., Coupling 3-D Eulerian bio-physics (ROMS) with individual-based shellfish ecophysiology (SHELL-E): A hybrid model for carrying capacity and environmental impacts of bivalve aquaculture, *Ecological Modelling* **273**, 63-78 (2014)

Garçon, V., Bell, T. G., Wallace, D., Arnold S. R., Baker A., Bakker, D. C. E., Bange, H. W., Bates, N. R., Bopp, L., Boutin, J., Boyd, P., Bracher, A., Burrows, J. P., Carpenter, L. J., **Fennel**, K., Font, J., Friedrich, T., Garbe, C. S., Gruber, N., Jaeglé, L., Lana, A., Lee, J. D., de Leeuw, G., Liss, P. S., Miller, L., Olgun, N., Olsen, A., Pfeil, B., Quack, B., Read, K. A., Reul, N., Rödenbeck, C., Rohekar, S. S., Saiz-Lopez, A., Saltzman, E. S., Schneising, O., Schuster, U., Séférian, R., Steinhoff, T., Yves Le Traon, P., Wittke, F. Perspectives and Integration in SOLAS science. In: Liss, P. S. and Johnson, M. T. (Editors), "Ocean-Atmosphere Interactions of Gases and Particles", 247 Springer Earth System Sciences, DOI 10.1007/978-3-642-25643-1_5 (2014)

2013

Luetlich, R.A. Jr., Signell, R., Friedrichs, C., Friedrichs, M., Harding, J., **Fennel**, K., Howlett, E., Graves, S., Smith, E., Crane, G., Wright, D., Baltes, B., The U.S. IOOS Super-regional Coastal Ocean Modeling Testbed: Implementation and Overview of Findings, *Journal of Geophysical Research-Oceans* **118**, 6319-6328, doi:10.1002/2013JC008939 (2013)

Xue, Z., He, R., **Fennel**, K., Cai, W.-J., Lohrenz, S., and Hopkinson, C.: Modeling ocean circulation and biogeochemical variability in the Gulf of Mexico, *Biogeosciences* **10**, 7219-7234, doi:10.5194/bg-10-7219-2013 (2013)

Wilson, R.F., **Fennel**, K. and **Mattern**, J.P., Simulating sediment-water exchange of nutrients and oxygen: A comparative assessment of models against mesocosm observations, *Continental Shelf Research* **63**, 69-84 (2013)

Mattern, P., Dowd, M., **Fennel**, K., Particle Filter-based data assimilation for a 3D biological ocean model and satellite observations, *Journal of Geophysical Research-Oceans* **118**, 2746-2760, doi:10.1002/jgrc.20213 (2013)

Mattern, P., **Fennel**, K., Dowd, M.: Uncertainty in hypoxia predictions for the TX-LA shelf, *Journal of Geophysical Research-Oceans* **118**, 1316-1332, doi:10.1002/jgrc.20130 (2013)

Fennel, K., **Hu**, J., **Laurent**, A., Marta-Almeida, M., Hetland, R. (2013) Sensitivity of hypoxia predictions for the Northern Gulf of Mexico to sediment oxygen consumption and model nesting, *Journal of Geophysical Research-Oceans* **118**, 990-1002, doi:10.1002/jgrc.20077

Burt W.J., Thomas, H., **Fennel**, K., Horne, E. (2013) Sediment-water column fluxes of carbon, oxygen and nutrients in Bedford Basin, Nova Scotia, inferred from ²²⁴Ra

measurements, *Biogeosciences*, **10**, 53-66, doi:10.5194/bg-10-53-2013

2012

Laurent, A., **Fennel**, K., **Hu**, J., Hetland, R. (2012) Simulating the effects of phosphorus limitation in the Mississippi and Atchafalaya river plumes, *Biogeosciences* **9**, 4707-4723, doi:10.5194/bg-9-4707-2012

Bianucci, L., **Fennel**, K., and Denman, K. L. (2012) Role of sediment denitrification in water column oxygen dynamics: comparison of the North American east and west coasts, *Biogeosciences* **9**, 2673-2682, doi:10.5194/bg-9-2673-2012

Mattern, P., **Fennel**, K., Dowd, M. (2012) Estimating time-dependent parameters for a biological ocean model using an emulator approach, *Journal of Marine Systems* **96-97**:32-47

Hu, J., **Fennel**, K., **Mattern**, J.P., Wilkin, J. (2012) Data assimilation with a local Ensemble Kalman Filter applied to a three-dimensional biological model of the Middle Atlantic Bight, *Journal of Marine Systems* **94**:145-156

2011

He, R., Chen, K., **Fennel**, K., Gawarkiewicz, G. G., and D. J. McGillicuddy Jr. (2011) Seasonal and interannual variability of physical and biological dynamics at the Shelfbreak Front of the Middle Atlantic Bight: nutrient supply mechanisms, *Biogeosciences*, **8**:2935-2946

Fennel, K., Cetinić, I., D'Asaro, E., Lee, C., Perry, M.J. (2011) An interdisciplinary autonomous data set of the 2008 North Atlantic spring bloom, *EOS Transactions AGU*, **92**:465-466

Fennel, K., Hetland, R., Feng, Y., DiMarco, S. (2011) A coupled physical-biological model of the Northern Gulf of Mexico shelf: Model description, validation and analysis of phytoplankton variability, *Biogeosciences* **8**, 1881-1899, doi:10.5194/bg-8-1881-2011

Bagniewski, W., **Fennel**, K., Perry, M.J., D'Asaro, E. (2011) Optimizing models of the North Atlantic spring bloom using physical, chemical and bio-optical observations from a Lagrangian float, *Biogeosciences* **8**, 1291-1307, doi:10.5194/bg-8-1291-2011

Hofmann, E.E., Cahill, B., **Fennel**, K., Friedrichs, M., Hyde, K., Lee, C., Mannino, A., Najjar, R., O'Reilly, J., Wilkin, J., Xue, J. (2011) Continental shelf carbon budgets, pathways and forcing functions, *Annual Reviews of Marine Sciences* **3**, 93-122

2010

Druon, J.N., Mannino, A., Signorini, S., McClain, C., Friedrichs, M., Wilkin, J., **Fennel**, K. (2010) Modeling the dynamics and export of Dissolved Organic Matter in the Northeastern U.S. continental shelf. *Estuarine, Coastal and Shelf Science* **88**, 488-507

Mafra, L., Bricelj, V.M., **Fennel**, K. (2010) Domoic acid uptake and detoxification kinetics in oysters and mussels in relation to body size and anatomical distribution of toxin. *Aquatic Toxicology* **100**, 17-29

Fennel, K., (2010) Nitrogen and Carbon Cycling on Continental Shelves. *Ocean Science* **6**:539-548, doi:10.5194/os-6-539-2010

- Mattern**, J.P., **Fennel**, K., Dowd, M., (2010) Introduction and Assessment of Measures for Quantitative Model-Data Comparison using Satellite Images. *Remote Sensing* **2**:794-818; doi:10.3390/rs2030794
- Mattern**, J.P., Dowd, M., **Fennel**, K., (2010) Sequential Data Assimilation Applied to a Physical-Biological Model for the Bermuda Atlantic Time Series Station. *Journal of Marine Systems* **79**:144-156, doi: 10.1016/j.jmarsys.2009.08.004
- 2009** **Fennel**, K., Wilkin, J., (2009) Quantifying biological carbon export for the northwest North Atlantic continental shelves. *Geophysical Research Letters* **36**, L18605, doi:10.1029/2009GL039818
- Lehmann**, M.K., **Fennel**, K., He, R., (2009) Statistical validation of a 3-D bio-physical model of the western North Atlantic. *Biogeosciences* **6**:1961-1974, doi:10.5194/bg-6-1961-2009
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- Fennel**, K. (2010) Data-assimilative models for coastal ocean ecosystems: Challenges and opportunities (*Invited*) *Eos Trans. AGU*, 91(26), Ocean Sci. Meet. Suppl., Abstract PO24A-03
- Dowd, M., **Mattern**, J.P. **Fennel**, K. (2010) State Space Models and Data Assimilation for Ocean Biogeochemical Models (*Invited*) *Eos Trans. AGU*, 91(26), Ocean Sci. Meet. Suppl., Abstract PO14C-02

- Cooley, S.R., **Fennel**, K., Doney, S. (2010) Modeling ocean acidification's potential to impact commercial marine harvests at regional scales *Eos Trans. AGU*, 91(26), Ocean Sci. Meet. Suppl., Abstract IT43D-04
- Mattern**, J.P. **Fennel**, K., Dowd, M., Wilkin, J., Mannino, A. (2010) Satellite Data Assimilation for a 3D Physical-Biological Model using a Particle Filter *Eos Trans. AGU*, 91(26), Ocean Sci. Meet. Suppl., Abstract PO25A-08
- Wilson**, R., **Fennel**, K., Brady, D., DiToro, D. (2010) Parameter Optimization of a Two-Layered Sediment Model Through Variational Assimilation *Eos Trans. AGU*, 91(26), Ocean Sci. Meet. Suppl., Abstract IT45C-06
- Xiao, Y., Friedrichs, M.A.M., **Fennel**, K., Hyde, K., O'Reilly, J. A Model Study of Phytoplankton Phenology on the Northeast U.S. Continental Shelf *Eos Trans. AGU*, 91(26), Ocean Sci. Meet. Suppl., Abstract IT45C-07
- Feng, Y., Jackson, G.A., DiMarco, S.F., Hetland, R. **Fennel**, K. (2010) Beyond the Story of Nitrogen, Why was the Area of Hypoxia Off the Mississippi River Smaller than the Prediction in 2009? *Eos Trans. AGU*, 91(26), Ocean Sci. Meet. Suppl., Abstract IT45D-03
- Bagniewski**, W.J., **Fennel**, K., Perry M.J., D'Asaro, E.A., Briggs, N., Rehm, E. (2010) Diatom-driven carbon export during the North Atlantic Spring Bloom: coupled physical-biological modelling and variational data assimilation *Eos Trans. AGU*, 91(26), Ocean Sci. Meet. Suppl., Abstract IT15L-05
- Coble, P.G., Daly, K.L., Cai, W., **Fennel**, K., Lohrenz, S.E., Robbins, L.L. (2010) A Preliminary Carbon Budget for the Gulf of Mexico (*Invited*) *Eos Trans. AGU*, 91(26), Ocean Sci. Meet. Suppl., Abstract CO53A-01
- Xue, J., Friedrichs, M.A.M., Cahill, B.E., Wilkin, J., Mannino, A., **Fennel**, K., Hofmann E.E., Najjar, R. (2010) The effect of river discharge on U.S. Eastern continental shelf carbon cycling *Eos Trans. AGU*, 91(26), Ocean Sci. Meet. Suppl., Abstract IT51B-04
- Lee, C.M., D'Asaro, E.A., Perry, M.J., **Fennel**, K., Briggs, N., Cetinic, I., Gray, A., Gudmundsson, K., Kallin, E., Lampitt, R.S., Martin, P., Poulton, N., Rehm, E., Rynearon, T., Sackmann, B.S., Sieracki, M.E., **Bagniewski**, W. (2010) The 2008 North Atlantic Spring Bloom Experiment: Autonomous Sampling in a Lagrangian Frame (*Invited*) *Eos Trans. AGU*, 91(26), Ocean Sci. Meet. Suppl., Abstract IT51A-06
- Fennel**, K., Harris, C.K., Hetland, R., Kaihatu, J., Xu, K., (2009) A coupled physical-biogeochemical-sediment model for the TX-LA shelf in the northern Gulf of Mexico, *CERF 20th Biennial Conference*, November 1-5, Portland, Oregon, Abstract ID: 32-F
- Feng, Y., Jackson, G., DiMarco, S., **Fennel**, K., Hetland, R., (2009) Numerical Scenario Testing of Nutrient, Freshwater and Wind limitations and their Effect on the Louisiana Deadzone, *CERF 20th Biennial Conference*, November 1-5, Portland, Oregon, Abstract ID: 32-C
- Fennel**, K., Wilkin, J., Najjar, R. (2009) Nitrogen and carbon cycling on the North American east coast continental shelf, *CMOS 43rd Annual Congress*, Halifax, NS May 31 – June 4, Abstract 1C-203.2
- Ibarra**, D., **Fennel**, K., Cullen, J. J. (2009) A 3-D physical-biological coupled model to assess water-column impacts of bivalve aquaculture in a mussel farm in Ship Harbour, Nova Scotia, *CMOS 43rd Annual Congress*, Halifax, NS May 31 – June 4, Abstract 1B-203.5

- Laurent A., Vezina, A. F., **Fennel**, K., Cullen, J. J., (2009) Modelling the biological effects of summer upwelling events in Lunenburg Bay, Canada, *CMOS 43rd Annual Congress*, Halifax, NS May 31 – June 4, Abstract 1D-203.3
- Wilson**, R., Fennel, K. (2009) Parameter optimization of a two-layered diagenetic model through variational data assimilation, *CMOS 43rd Annual Congress*, Halifax, NS May 31 – June 4, Abstract 2D-100-I5.4
- Bagniewski**, W., **Fennel**, K., Perry M. J., D’Asaro, E., Briggs, N., Gray, A., Lee, C., Rehm, E. (2009) Application of variational data assimilation to coupled physical-biological models of the North Atlantic Bloom, *CMOS 43rd Annual Congress*, Halifax, NS May 31 – June 4, Abstract 1D-203.5
- Fennel**, K., **Lehmann**, M., Wilkin, J., He, R. (2008) Modelling biogeochemical processes on the North American east coast continental shelf, *ICES Meeting*, Halifax, NS, September 22-26, Abstract L:15
- Mattern**, P., **Fennel**, K., Dowd, M. (2008) Application of two Statistical Data Assimilation Procedures to a 1D Biological Model of the BATS Site, *ICES Meeting*, Halifax, NS, September 22-26, Abstract L:23
- Lehmann**, M., **Fennel**, K., He, R., Wilkin, J. (2008) A bio-optical product for a coupled bio-physical ocean circulation model of the Western North Atlantic, *ICES Meeting*, Halifax, NS, September 22-26, Abstract L:27
- Bagniewski**, W., **Fennel**, K., Perry, M.J. (2008) Application of variational data assimilation to coupled physical-biological models of the North Atlantic Bloom, *ICES Meeting*, Halifax, NS, September 22-26, Abstract L:22
- Ibarra**, D.A., Hasegawa, D., **Fennel**, K., Cullen, J.J. (2008) Water-column impacts of bivalve aquaculture: Bio-optical assessment and 3D modeling in a mussel farm on ship harbour, Nova Scotia, *ASLO Summer Meeting*, St. John’s, Newfoundland, June 8-13, Abstract SS04
- Fennel**, K., Hetland, R.D., DiMarco, S.F. (2008) Coupled physical-biogeochemical modeling of the Louisiana Dead Zone, *Ocean Sciences Meeting Abstract*, S094
- Lehmann**, M., **Fennel**, K., He, R., Wilkin, J. (2008) Quantitative Validation of Coupled Bio-physical Ocean Circulation Models, *Ocean Sciences Meeting Abstract*, S094
- Mattern**, P., Dowd, M., **Fennel**, K. (2008) Application of the Ensemble Kalman Filter on a one-dimensional, biogeochemical model of the Bermuda Time-series Station, *Ocean Sciences Meeting Abstract*, S116
- Previdi**, M., **Fennel**, K., Wilkin, J., Haidvogel, D., (2006) Varying Uptake of Atmospheric CO₂ on the Northeast U.S. Continental Shelf Associated with the North Atlantic Oscillation, *Eos Trans. AGU*, **87**(52), Fall Meet. Suppl., Abstract A43D-08
- Fennel**, K., Wilkin, J. (2006) A Biogeochemical Model for the Northwestern Atlantic Continental Shelf, *EOS Trans. AGU*, **87**(36), Ocean Sci. Meet. Suppl., Abstract OS33D-05
- Hofmann, E.E., McClain, C.R., Haidvogel, D.B., Wilkin, J., Lee, C., Mannino, A., Najjar, R., O’Reilly, J., Yoder, J., **Fennel**, K., Seitzinger, S., Signorini, S., Pollard, D., Friedrichs, M. (2006) Eastern U.S. continental shelf carbon budget: Modeling, data assimilation and analysis, *Eos Trans. AGU*, **87**(36), Ocean Sci. Meet. Suppl., Abstract OS25G-22.

- Katz, M.E., **Fennel**, K., Berner, R.A., Falkowski, P.G. (2005) Long-Term Trends in the Global Carbon Cycle: Biogeochemical Records of the Past 205 myrs. *Eos Trans. AGU*, **86**(52), Fall Meet. Suppl., Abstract PP42A-01
- Katz, M.E., Milligan, A., Cramer, B., **Fennel**, K., Miller, K., Wright, J., Falkowski, P.G. (2004) Effects of Organic Carbon/Carbonate Burial Ratios and Biological Carbon Fixation on the Global Carbon Cycle Over the Past ~200 Myr. *EOS Trans. AGU*, **85**(47), Fall Meet. Suppl., Abstract PP53D-05
- Collier, R., Crawford, G., **Fennel**, K., Larson, G., Buktenica, M., Dymond, J. (2004) Long-term Observations of Crater Lake, Oregon: Energy, Carbon, and Nutrient Cycles in an Ultra-oligotrophic Ecosystem. *EOS Trans. AGU*, **85**(47), Fall Meet. Suppl., Abstract OS43A-0541
- Fennel**, K., Wilkin, J., Goodman, P., Haidvogel, D. (2004) Nitrogen and Carbon budgets for the U.S. continental shelves—a coupled physical-biological modeling study. *ASLO/TOS Ocean Research Conference*, SS2.07, SS5.15
- Wilkin, J., Arango, H., **Fennel**, K., Goodman, P., Haidvogel, D. (2004) Modeling the U.S. East Coast Shelf. *EOS Trans. AGU*, **84**(52), Abstract OS42H-05
- Falkowski, P.G., Follows, M., **Fennel**, K. (2003) The Co-evolution of the Nitrogen and Oxygen Cycles on Earth, *Eos Trans. AGU*, **84**(46), Fall Meet. Suppl.
- Katz, M., Wright, J., Miller, K., Cramer, B., **Fennel**, K., Falkowski, P.G. (2003) Biological overprint of the geological carbon cycle. *GSA Abstracts* **35**(6), no. 63602
- Fennel**, K., Abbott, M.R., Spitz, Y.H., Richman, J.G., Nelson, D.M. (2002) Modeling controls of phytoplankton production in the Southern Ocean—Modern and glacial scenarios, *EOS Trans. AGU*, Abstract OS11L-11
- Spitz, Y.H., Richman, J.G., Abbott, M.R., **Fennel**, K. (2002) Comparison of one- and three-dimensional simulations of the oligotrophic ecosystem in the North Pacific, *EOS Trans. AGU*, Abstract OS321-08
- Fennel**, K. (1999) Convection and the timing of the phytoplankton spring bloom in the western Baltic Sea. *Geophysical Research Abstracts* **1**(2):407, OA5.
- Fennel**, K. (1998) A coupled, three-dimensional model of the nutrient and plankton dynamics in the western Baltic Sea. (Ph.D. thesis, in German) *Marine Science Reports*, No.30, Baltic Sea Research Institute, 97 pages

INVITED PRESENTATIONS (SINCE 2009)

- Speaker (invited), Ian Morris Scholar in Residence at UMCES, June 18-21, 2018, Cambridge, MD, USA (2 seminars, 1 public lecture, 2 student workshops)
- Speaker (invited), C-CASCADE Conference, January 25, 2018, Hamburg, Germany
- Speaker (invited), NIWA Visiting Scientist, November 14 to 27, 2017, Wellington, New Zealand (2 seminars)
- Speaker (invited), Schulich Conference, Interuniversity Institute in Eilat, October 16, 2017 Israel
- Speaker (invited), NOAA Seminar Series, September 14, 2017, Silver Spring, MD, USA
- Speaker (invited), Gordon Conference in Chemical Oceanography, July 25, 2017, New London, MN, USA

Plenary Speaker (invited), 2017 CMOS Meeting, June 7, Toronto, Ontario
Speaker (invited), 2016 AGU Fall Meeting, December 15, San Francisco, USA
Speaker (invited), 2016 EGU Assembly, April 20, 2016, Vienna, Austria
Speaker (invited), University of Waterloo, April 8, 2016
Speaker (invited), Bio-Argo Science Planning Meeting, January 11-13, 2016, Villefranche-sur-mer, France
Keynote speaker (invited), 27th Liege Colloquium, May 4, 2015, Liege, Belgium
Speaker (invited), University of Connecticut, April 24, 2015, Groton, CT, USA
Speaker (invited), 2014 High Performance Computing Symposium (HPCS), June 27, 2014, Halifax, Canada
Speaker (invited), Geophysical Fluids Dynamics Laboratory, April 10, 2014, Princeton, New Jersey
Speaker (invited), Gordon Research Conference on Coastal Ocean Circulation, June 12, 2013, Biddeford, ME, USA
Speaker (invited), Marine Biogeochemical Data Assimilation Symposium, CSIRO Cutting Edge Science Symposium Series, May 28-30, 2013, CSIRO, Hobart, Australia
Seminar speaker (invited), Louisiana State University, April 19, 2013, Baton Rouge, LA, USA
Speaker (invited), Gulf of Mexico Hypoxia Research Coordination Workshop, April 17-18, 2013, Stennis Space Center, MS, USA
Speaker (invited), Gulf of Mexico Coastal Carbon Synthesis Workshop, March 26-27, 2013, St. Petersburg, FL, USA
Plenary speaker (invited), Ocean Optics XXI Conference, October 9, 2012, Glasgow, Scotland
Seminar speaker (invited), Horn Point Lab, University of Maryland, September 26, 2012, Cambridge, MD, USA
Plenary speaker (invited), Ocean Carbon and Biogeochemistry Workshop, July 18, 2012, Woods Hole, MA, USA
Speaker (invited), First Canada-Brazil Bi-lateral Workshop on Ocean Science and Technology, May 2012, Rio de Janeiro, Brazil
Plenary speaker (invited), 3rd Hypoxia Coordination Workshop, Mar 27, 2012, Bay St. Louis, MS
Seminar speaker (invited), Freshwater Institute, DFO, Dec 3, 2010, Winnipeg, MB
Seminar speaker (invited), Department of Earth and Ocean Sciences, University of British Columbia, Dec 2, 2010, Vancouver, BC
Seminar speaker (invited), Applied Environmental Research Laboratory, Vancouver Island University, Dec 1, 2010, Nanaimo, BC
Seminar speaker (invited), School of Earth and Ocean Sciences, University of Victoria, Nov 30, 2010, Victoria, BC
Seminar speaker (invited), Institute of Ocean Sciences, DFO, Nov 30, 2010, Victoria, BC
Seminar speaker (invited), Department of Earth and Atmospheric Sciences, University of Alberta, Nov 29, 2010, Edmonton, AB
Seminar speaker (invited), School of Marine Sciences, University of Maine, May 20, 2010, Orono, MN, USA
Speaker (invited), CIFAR Oceans Meeting, May 18, 2010, Montreal, QC
Conference speaker (invited), 2010 Ocean Sciences Meeting, February 22-26, 2010, Portland, OR, USA
Seminar speaker (invited), Bedford Institute of Oceanography, January 2010, Halifax, NS
Speaker (invited), SCOR workshop on Biological Ocean Observatories, September 2009, Mestre, Italy
Conference speaker (invited), MOCA-09 Conference, Joint Assembly of IAMAS, IAPSO and IACS, July 19-29, 2009, Montreal, QC

CONFERENCE PRESENTATIONS (1ST AUTHOR ONLY)

Speaker, 2018 CMOS Congress, June 13, 2018, Halifax, Canada
Speaker, 2018 EGU Assembly, April 11, 2018, Vienna, Austria
Speaker, 2018 Ocean Sciences Conference, February 15, 2018, Portland, OR, USA
Speaker, 2017 Goldschmidt Conference, August 17, 2017, Paris, France
Speaker (invited), Gordon Conference in Chemical Oceanography, July 25, 2017, New London, MN
Plenary speaker (invited), CMOS Meeting, June 7, 2017, Toronto
Speaker, 2017 EGU Assembly, April 27, 2017, Vienna, Austria
Speaker (invited), 2016 AGU Fall meeting, December 15, 2016, San Francisco, CA, USA
Speaker (invited), 2016 EGU Assembly, April 20, 2016, Vienna, Austria
Speaker, 2016 Ocean Sciences Meeting, February 25, 2016, New Orleans, LA, USA
Speaker, 2015 Goldschmidt Conference, August 18, 2015, Prague, Czech Republic
Speaker, International Workshop on Ocean Modelling, June 1-5, 2015, Canberra, Australia
Speaker, 2015 ALSO Aquatic Sciences Meeting, February 23, 2015, Granada, Spain
Speaker (invited), 2014 High Performance Computing Symposium (HPCS), June 27, 2014, Halifax, Canada
Speaker, EGU General Assembly, April 29, 2014, Vienna, Austria
Speaker, ASLO/TOS Aquatic Sciences Meeting, February 20, 2013, New Orleans, MS, USA
Plenary speaker (invited), Ocean Optics XXI Conference, October 9, 2012, Glasgow, Scotland
Speaker, Coastal and Estuarine Research Foundation Conference, November 2011, Daytona Beach, FL, USA
Speaker (invited), Ocean Sciences Meeting, February 2010, Portland, OR, USA
Speaker (invited), MOCA-09 Joint Assembly, July 2009, Montreal, QC
Speaker, CMOS 43rd Congress, June 2009, Halifax, NS
Speaker, ICES Annual Conference, September 2008, Halifax, NS
Poster presenter, Ocean Sciences Meeting, March 2008, Orlando, FL, USA
Speaker, Estuarine Research Federation 2007 Conference, November 7, 2007, Providence, RI, USA
Speaker, 2006 Ocean Sciences Meeting, February 20-24, 2006, Honolulu, HI, USA
Speaker, ROMS Users Meeting, October 2005, La Jolla, CA, USA
Speaker, International Marine Environmental Modeling Seminar, October 2004, Washington, DC, USA
Speaker, ASLO/TOS Ocean Research Conference, February 2004, Honolulu, HI, USA
Poster presenter, JGOFS SMP Workshop, July 2002, Woods Hole, MA, USA
Speaker, AGU/ASLO Ocean Sciences conference, February 2002, Honolulu, HI, USA
Poster presenter, NASA/EOS IWG Meeting, October-November 2001, San Antonio, TX, USA
Speaker, ASLO Aquatic Sciences Meeting, February 2001, Albuquerque, NM, USA
Speaker (invited), 5th International Scientific Conference of the Maritime Research Institute, May 1999, Szczecin, Poland
Speaker, 24th EGS General Assembly, April 1999, Den Haag, The Netherlands
Speaker, 15th Baltic Marine Biologists Symposium, June 1997, Mariehamn, Finland

WORKSHOPS

Organizer, Canadian BioArgo Workshop, January 2017, Halifax, NS, Canada
Co-Organizer, GODAE OceanView Marine Ecosystem Analysis and Prediction/Data Assimilation Workshop, June 2016, Santa Cruz, CA, USA

Participant (invited), International BioArgo Planning Meeting, January 2016, Villefranche-sur-mer, France

Co-Organizer, GODAE OceanView Marine Ecosystem Analysis and Prediction Workshop, June 2015, Halifax, NS, Canada

Participant (invited), Gordon and Betty Moore Foundation workshop on modeling –omic data, March 2013, Miami, FL, USA

Participant (invited), CIFAR Oceans Meeting, November 13-14, 2009, Montreal, QC

Participant (invited), OCB Scoping Workshop “Floats and Gliders”, April 2009, Monterey, CA, USA

Participant (invited), PAGSE Symposium “Leaders in Canadian Environmental Research”, May 2008, Ottawa

Participant, Terrain-following Ocean Models Users Workshop, August 2003, Seattle, WA, USA

Participant (invited), Crater Lake Workshop, February 2003, Corvallis, OR, USA

Participant (invited), Carbon Data-Model Assimilation Institute, May 2002, UCAR, Boulder, CO, USA

Participant, JGOFS Southern Ocean Data Workshop, February 2002, Honolulu, HI, USA

Participant (invited), WOCE Young Investigator Workshop, June 2000, UCAR, Boulder, CO, USA

Participant, SOLAS Open Science Conference, February 2000, Damp, Germany

Participant, “Summer School on Inverse Methods and Data Assimilation”, July 1999, OSU, Corvallis, OR, USA

TRAINING OF HQP

Advisor

Timothee Bourgeois	Post-doctoral fellow, 10/2017 – present
Bin Wang	Ph.D. student, 09/2017 – present
Fabian Grosse	Post-doctoral fellow, 05/2017 – present
Chris Gordon	M.Sc. student, 09/2016 – present
Wenxia Zhang	Post-doctoral fellow, 04/2015 – 05/2016; now Research Scientist at East China Normal University
Emma Shouldice	Undergraduate honours student, 05/2015 – 05/2016
Chris Gordon	Undergraduate honours student, 05/2015 – 05/2016
Pujan Thakrar	Undergraduate Co-op student, 05/2015 – 08/2015
Jonathan Izett	M.Sc. student, 10/2014 – 08/2016; now Ph.D. student at TU Delft, Netherlands
Krysten Rutherford	Ph.D. student, 10/2014 – present
Haiyan Zhang	Ph.D. student, 09/2014 – 8/2016; now Post-doctoral fellow at Tianjin University
Rui Zhang	M.Sc. student, 01/2014 – 08/2017; now employed at RBR Inc. Ottawa
Hannah Blanchard	Undergraduate Co-op student, 05/2013 – 08/2013
Kirk Herman	Undergraduate Co-op student, 05/2013 – 08/2013
Catherine Brennan	Post-doctoral fellow, 09/2012 – 05/2016; now Research Scientist at DFO
Jann Paul Mattern	Post-doctoral fellow, 09/2012 – 08/2013; now Research Scientist at UCSC
Jonathan Lemay	Undergraduate honours student, 06/2012 – 03/2013, completed

Bruce Delo	Research Assistant, 06/2012 – 05/2013
Liuqian Yu	Ph.D. student, 01/2012 – present
Angela Kuhn-Cordova	Ph.D. student, 09/2011 – 08/2017; now Post-doctoral fellow at Scripps
Arnaud Laurent	Post-doctoral fellow, 06/2011 – present
Karl Lagman	M.Sc. student, 11/2010 – 06/2013, completed, now Oceanographer/Data Analyst with AMEC in Halifax
Laura Bianucci	Post-doctoral fellow, 09/2010 – 10/2014, now Research Associate at Pacific Northwest National Lab in Seattle
Irene Jantz Lee	Undergrad summer student, 05/2010 – 09/2011
Catriona Campbell	M.Sc. student, 01/2010 – 05/2010, withdrew
Jiatang Hu	Post-doctoral fellow, 09/2009 – 08/2011, now Lecturer at Sun-Yat Sen University, Guangzhou, China
Robin Wilson	M.Sc. student, 09/2008 – 09/2011, completed, now Programmer at Nerd Corps Animation Studios
Jing Zhang	Undergraduate Co-op student, 05/2008 – 12/2008
Witold Bagniewski	M.Sc. student (visiting), 09/2007 – 05/2010, completed, now Post-doctoral fellow at University of New South Wales
Christine Richey	M.Sc. student, 08/2007 – 12/2007, withdrew, new student at UC Davis medical school
Moritz Lehmann	Post-doctoral fellow, 05/2007 – 04/2009, now Consultant with CBCL Consulting, Halifax
Michael Previdi	Post-doctoral fellow, 01/2006 – 12/2006, now Assistant Research Professor at LDEO, Columbia University, NY, USA

Co-advisor/Co-supervisor

Benjamin Richaud	Ph.D. student, 05/2018 – present, co-supervised with Eric Oliver
Eyram Apetcho	Ph.D. student at GEOMAR Kiel, Germany, 09/2012 – present, co-supervised with Andreas Oschlies
Cara Nissen	M.Sc. student at Bergen University, Norway, 09/2012 – 08/2014, co-advised with Corinna Shrum, completed
Jann Paul Mattern	Ph.D. student (Department of Statistics), 01/2009 – 08/2012, co-advised with Michael Dowd, completed
Diego Ibarra	Ph.D. student, 10/2008 – 12/2012, co-advised with John Cullen, completed
Jann Paul Mattern	M.Sc. student (visiting), 05/2007 – 12/2008, co-advised with Michael Dowd, completed
Daniel Morrison	Research Technician, 02/2008 – present, co-supervised with 12 others
Susanne Craig	Research Associate, 01/2009 – 05/2009, co-supervised with John Cullen
Michael Casey	Research Technician, 04/2007 – 08/2007, co-supervised with 2 others
Timothy Chipman	Research Technician, 09/2006 – 02/2008, co-supervised with 12 others

Member of supervisory committee (excluding students directly supervised by me)

Arienna Balbar	M.Sc. student, 2017 – present
Ricardo Arruda	Ph.D. student, 2016 – present
Danielle Denley	Ph.D. student, 2015 – 2018
Christoph Renkl	Ph.D. student, 2015 – present
Yuan Wang	Ph.D. student, 2015 – present
Lorenza Raymondi	Ph.D. student, 2014 – present
Nadine Lehmann	Ph.D. student, 2014 – present
Julia Moriarty	Ph.D. student (Virginia Institute of Marine Science), 2014 – 2017
Yi Sui	Ph.D. student, 2014 – present
Jing Tao	Ph.D. student, 2013 – present
Jean-Pierre Auclair	Ph.D. student, 2013 – present
Shiliang Shan	Ph.D. student, 2012 – 2016
Micheal Brown	M.Sc. student, 2010 – 2013
Mathieu Dever	Ph.D. student, 2010 – 2016
Martha Baldwin	M.Sc. student, 2010 – 2012
Anna Katavouta	Ph.D. student, 2010 – 2015
William Burt	Ph.D. student, 2010 – 2015
Elizabeth Shadwick	Ph.D. student, 2010
Julie Sperl	M.Sc. student, 2008 – 2009
Romero Advincula	Ph.D. student, 2007 – 2008
Adam Comeau	M.Sc. student, 2007 – 2010
Tara Tapics	M.Sc. student, 2007 – 2009
Katie Hastings	M.Sc. student, 2007 – 2010
Oliver Berreville	Ph.D. student, 2006 – 2009
Nathalie Dubois	Ph.D. student, 2006 – 2010
Jeffrey Barrell	Ph.D. student, 2006 – 2014

Other supervisory activities (excluding students directly supervised by me)

Hansen Johnson	Examiner, 2017, Ph.D. qualifying exam
Nadine Lehman	Examiner, 2017, Ph.D. qualifying exam
Anne Lombardi	Chair, 2016, M.Sc. defense

Danielle Denley	Examiner, 2015, Ph.D. qualifying exam
Jean-Pierre Auclair	Examiner, 2014, Ph.D. qualifying exam
Kevin Sorochan	Examiner, 2014, Ph.D. qualifying exam
Mathieu Dever	Examiner, 2014, Ph.D. qualifying exam
Shilian Shan	Examiner, 2014, Ph.D. qualifying exam
Jing Tao	Examiner, 2014, Ph.D. qualifying exam
Jeff Barrell	Reader and examiner, 2014, Ph.D. defense
Melissa Nacke	Reader, 2013, Honours thesis
Jordana Lacoste	Reader, 2013, Honours thesis
Anna Katavouta	Examiner, 2013, Ph.D. proposal defense
Francisco Bravo	Examiner, 2013, Ph.D. qualifying exam
Yi Xu	External reader and examiner, 2012, Ph.D. defense (Rutgers University)
Mathieu Dever	Examiner, 2012, Ph.D. qualifying exam
Shiliang Shan	Examiner, 2012, Ph.D. qualifying exam
Kimberly Davis	Examiner, 2010, Ph.D. qualifying exam
Yi Xu	Examiner, 2010, Ph.D. qualifying exam (Rutgers University)
Mehera Kidston	Reader, 2010, Ph.D. thesis (University of New South Wales, Australia)
Katie Hastings	Reader and examiner, 2010, M.Sc. defense
Elizabeth Shadwick	Reader and examiner, 2010, Ph.D. defense
Adam Comeau	Reader and examiner, 2010, M.Sc. defense
Remi Daigle	Examiner, 2009, Ph.D. qualifying exam
Oliver Berreville	Reader and examiner, 2009, Ph.D. defense
Tara Tapics	Reader and examiner, 2009, M.Sc. defense
Jianwei Wei	Examiner, 2008, Ph.D. qualifying defense
Scott Ryan	External reader and examiner, 2008, M.Sc. thesis defense (Acadia University)
Lauren McLean	Reader, 2008, Honours thesis
Arnaud Laurant	Examiner, 2007, Ph.D. proposal defense
Elisabeth Shadwick	Examiner, 2007, Ph.D. qualifying Exam
Jeffrey Barrell	Examiner, 2007, Ph.D. qualifying Exam, 2010: Ph.D. proposal defense
Romero Advincula	Examiner, 2007, Ph.D. qualifying Exam
Nathalie Dubois	Examiner, 2007, Ph.D. qualifying Exam; 2008, Ph.D. proposal defense; Reader and examiner, 2010, Ph.D. defense
Megan Saunders	Examiner, 2007, Ph.D. qualifying Exam

Angelina Vanderlaan Examiner, 2006, Ph.D. qualifying Exam

Teaching

Conversations with Ocean Scientists (OCEA 1000)	Fall 2015 and Winter 2016 (enrollment 56 students)
Biological Oceanography (OCEA 5140)	Winter 2014 (enrollment 35 students)
Oceans and Global Change (OCEA 4000)	Winter 2012, co-taught with 1 other (enrollment 10 students)
Special Topics in Oceanography (OCEA 5240)	Fall 2010, Fall 2011 (module worth 30% of the full course; enrollment 5 students)
Marine Modelling (OCEA4380/5380)	Winter 2018, Winter 2016; Winter 2014; Winter 2012; Winter 2011; Winter 2010; Winter 2009; Winter 2008; 5 guest lectures in Winter 2007 (enrollment between 5 and 15 students)
Introduction to Oceanography	Spring 2006, Rutgers University (enrollment: 120 students)
Modelling of Coupled Systems	Winter 2005, Rutgers University, co-taught with 2 others (enrollment between 5 and 10 students)
Guest lecturer	Introduction to Oceanography, OSU, 3 lectures in 2002 Graduate Oceanography Seminar, Rutgers University, 2 lectures in 2003 and 2004 Global Biogeochemical Cycling (ENVS 3600), 1 lecture in 2010 Biological Oceanography (OCEA 4140/5140), 1 lecture in 2010, 1 lecture in 2012

SERVICE TO THE UNIVERSITY

Chair	Departmental Tenure and Promotion Committee, 2018 – present
Member	Faculty review committee for departmental review of Dalhousie's Department of Mathematics and Statistics, 2017 – 2018
Member	Search committee for CRC in Geophysical Fluid Dynamics, 2017
Member	Search committee for CRC in Biological Oceanography, 2017
Member	Search committee for Diversity Position in Physical Oceanography, 2016
Member	Senate review committee for Dalhousie's Institute of Research in Materials, 2014

Co-chair	Search committee for faculty position in Aquaculture Modeling, 2014
Member	Search committee for CRC in Marine Chemistry, 2012 – 2014
Member	Departmental Space Committee, 2011, 2013 – present
Member	FoS Travel Advisory Committee, 2011 – 2015
Member	FoS Nominating Committee, 2010 – present
Member	Departmental Strategic Planning Committee, 2010, 2014 – present
Chair	Organizing Committee for 2009 Killam Public Lecture Series “Oceans and Global Change”
Member	Ocean Tracking Network Council, 2009 – 2012
Member	Writing team, CERC Phase II proposal for Oceans and Technology, 2009
Member	Departmental Recruitment Committee, 2009 – 2011
Chair	Departmental Web Committee, 2008 – 2012
Organizer	Departmental Seminar Series, 2006 – 2007, with Barry Ruddick

RESEARCH GRANTS AND CONTRACTS

At Dalhousie:

Compute Canada: Resource allocation, 2017, Valued at \$38,892

OFI: Cooperative Model Framework for the northwest North Atlantic and Canadian Arctic Gateway (with Jinyu Sheng and 4 others), 2017-2022, Total Budget: \$750,000

DFO: BGC-Argo Workshop grant, 2017, Budget: \$30,000

MEOPAR: Prediction Core (with 10 others), 2017-2019, My Budget: \$65,000

MEOPAR: Canadian Ocean Acidification Research Partnership (with 15 others), 2017-2019, My budget: \$23,600

GOMRI: Three-dimensional Gulf circulation and biogeochemical processes unveiled by state-of-the-art profiling float technology and data-assimilative ocean models (with Nick Shay and 2 others), 2016-2018, My budget: \$540,000

Schulich Ocean Studies Centre Initiative: Dynamics and contribution of N₂ fixation to new and export production in the Gulf of Aqaba (with Ilana Berman-Frank and 3 others), 2015-2018, Total budget: \$180,000

MEOPAR: Workshop grant, 2015, Budget: \$15,000

Compute Canada: Resource allocation, 2015, Valued at \$40,440

ExxonMobil: Knowledge Build Grant, 2014, Budget: \$55,000

NSERC: Discovery Grant, 2014 – 2019, Budget: \$305,000

ExxonMobil: Knowledge Build Grant, 2013, Budget: \$16,500

NOAA: A community coastal and ocean modeling testbed (COMT) to improve understanding and operational forecasts of extreme events and chronic environmental conditions, 2013 – 2018 (with Rick Luettich and 20 others), Total budget: \$4M

Compute Canada: Resource allocation, 2014, Valued at \$53,750

MEOPAR NCE: Biogeochemical projections under a changing climate (lead PI with 3 others), 2012 – 2017, Total budget: \$1,370,000; My budget: \$794,000

ACEnet: Novel assimilation techniques for data streams from emerging ocean observation systems, 2010 – 2011, Budget: \$20,000

NOAA: A super-regional testbed to improve models of environmental processes on the U.S. Atlantic and Gulf of Mexico coasts (with Don Wright and 30 others), 2011 – 2013, Total budget: \$4M

NSERC: Ocean Tracking Network Canada (with Sara Iverson and 27 others), 2010 – 2015, Total budget: \$10M

NSERC: Year-round automated observations of ecological processes in coastal waters (equipment grant; with J. Cullen and W. Li), 2009, Total budget: \$138,007

NOAA: NGOMEX 2008 Mechanisms Controlling Hypoxia: Integrated Causal Modeling, 2009 – 2014, My budget: US\$ 246,279

ONR: Rapid environmental assessment using and integrated coastal ocean observation modeling system, 2-year extension (with O. Schofield and 7 others), 2009 – 2010, My budget: US\$ 189,493

MMS: Integrated bio-physical modeling of the Texas-Louisiana Shelf, (with S. DiMarco and 2 others), 2007 – 2010, My budget: US\$ 62,398

NOAA: Modeling hypoxia and ecological responses to climate and nutrients (with W.M. Kemp and 5 others), 2007 – 2012, My budget: US\$ 181,191

NSERC: Discovery Grant, 2007 – 2013, Budget: \$115,000

ONR: Rapid environmental assessment using and integrated coastal ocean observation modeling system (with O. Schofield and 7 others), 2006 – 2008, My budget: US\$ 282,560

CFI: Environmental Simulation and Analysis Laboratory (equipment grant), 2006, CFI Budget: \$124,991 (matched by NSRIT to a total of \$249,982)

NOAA: Mechanisms controlling hypoxia on the Louisiana Shelf: Real-time Observations (with S. DiMarco and 10 others), 2006 – 2008, My budget: US\$ 62,450

At Rutgers:

NOAA: Multi-scale coupled climate modeling system (with D. Haidvogel and 5 others), 2006, Total budget: US\$ 114,000

NASA: Biosignatures in evolving planetary atmospheres, (with P. Falkowski and L. Godfrey), 2005, Total budget: US\$ 123,200

USGS: Ecological Modeling of Crater Lake, 2002 – 2003, Budget: US\$ 30,000

ACRONYMS (INSTITUTIONS AND ORGANIZATIONS)

ACEnet—Atlantic Computational Excellence network

AGU—American Geophysical Union

ASLO—American Society of Limnology and Oceanography
CFI—Canada Foundation for Innovation
CIFAR—Canadian Institute for Advanced Research
CMOS—Canadian Meteorological and Oceanographic Society
CCPO ODU—Center for Coastal Physical Oceanography Old Dominion University
DOE—U.S. Department of Energy
EGS—European Geophysical Society
IACS—International Association of Cryospheric Sciences
IAMAS—International Association of Meteorology and Atmospheric Sciences
IAPSO—International Association for the Physical Sciences
ICES—International Council for the Exploration of the Sea
LDEO—Lamont-Doherty Earth Observatory
MEOPAR NCE—Marine Environmental Observation, Prediction and Response Network of Centres of Excellence
MMS—U.S. Minerals Management Service
NASA—U.S. National Aeronautics and Space Administration
NOAA—U.S. National Oceanic and Atmospheric Administration
NSERC—Natural Sciences and Engineering Research Council of Canada
NSF—U.S. National Science Foundation
OFI—Ocean Frontier Institute
ONR—U.S. Office of Naval Research
OSU—Oregon State University
SCOR—Scientific Committee on Oceanic Research
UCAR—University Corporation for Atmospheric Research
USGS—U.S. Geological Survey