

JENNIFER A. BRENTRUP

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Education

- 2017 Ph.D., Miami University, Oxford, Ohio, USA
Ecology, Evolution, and Environmental Biology
- 2010 B.A., Colby College, Waterville, Maine, USA
Biology with Environmental Science Concentration

Research and Teaching Positions

- 2022-Present Postdoctoral Research Associate, Cary Institute of Ecosystem Studies,
Millbrook, New York
- 2020-2021 Visiting Assistant Professor, Departments of Biology and Environmental
Studies, St. Olaf College, Northfield, Minnesota
- 2020 Postdoctoral Research Associate, Rubenstein School of Environment and
Natural Resources, University of Vermont, Burlington, Vermont
- 2017-2019 Postdoctoral Research Fellow, Ecology, Evolution, Environment, and Society
Program, Dartmouth College, Hanover, New Hampshire
- 2016-2017 Dissertation Research Scholar, Department of Biology, Miami University,
Oxford, Ohio
- 2013-2016 Teaching Assistant, Department of Biology, Miami University, Oxford, Ohio
- 2012-2014 Graduate Student Fellow, Global Lake Ecological Observatory Network
- 2011-2013 NSF-IGERT Environmental Aquatic Resource Sensing Research Fellow,
Department of Biology, Miami University, Oxford, Ohio

Teaching: Instructor of Record

- Fall 2021 *Introductory Biology* (lecture and laboratory); sophomore level;
Biology Department, St. Olaf College
Introduction to Environmental Studies; first-year level;
Environmental Studies Department, St. Olaf College
- Spring 2021 *Macrosystems Ecology and Data Science*; sophomore-senior level;
Biology Department, St. Olaf College
Introduction to Environmental Studies; first-year level;
Environmental Studies Department, St. Olaf College
- Interim 2021 *Introduction to Environmental Studies*; first-year level;
Environmental Studies Conversation Program, St. Olaf College
- Fall 2020 *Limnology* (lecture and laboratory); senior level;
Biology Department, St. Olaf College
Introduction to Environmental Studies; first-year level;
Environmental Studies Department, St. Olaf College
- Spring 2018 *Exploring New Tools in Data Manipulation and Visualization in R*; graduate
level; Department of Biological Sciences, Dartmouth College

Graduate Teaching Assistant

- Spring 2016 *Introductory Biology Laboratory*; graduate level
Head Teaching Assistant, Department of Biology, Miami University
- Fall 2015 *Field Ecology*, junior and senior level
Department of Biology, Miami University
- 2014-2015 *Introductory Biology: Cellular and Molecular*, first-year level
Department of Biology, Miami University
- 2013-2014 *Limnology*, senior and graduate level
Department of Biology, Miami University

Peer-reviewed Publications ^U = mentored undergraduate student)

- 2022 Hébert, M.P., C.C. Symons, M. Cañedo-Argüelles, S.E. Arnott, A.M. Derry, V. Fugère, W.D. Hintz, S.J. Melles, L. Astorg, H.K. Baker, **J.A. Brentrup**, A.L. Downing, Z. Ersoy, C. Espinosa, Carmen; J.M. Franceschini, A.T. Giorgio, N. Gobeler, D.K. Gray, D. Greco, Danielle; E. Hassal, M. Huynh, S. Hylander, K.L. Jonasen, A. Kirkwood, S. Langenheder, O. Langvall, H. Laudon, L. Lind, M. Lundgren, A. McClymont, L. Proia, R.A. Relyea, J.A. Rusak, M.S. Schuler, C.L. Searle, J.B. Shurin, C.F. Steiner, M. Striebel, S. Thibodeau, P. Urrutia-Cordero, L. Vendrell-Puigmitja, G.A. Weyhenmeyer, B.E. Beisner. 2022. Lake salinization drives consistent losses of zooplankton abundance and diversity across coordinated experiments. *Limnology and Oceanography Letters*. DOI: 10.1002/lol2.10239.
- Hintz, W.D., S.E. Arnott, C.C. Symons, D.A. Greco, A. McClymont, **J.A. Brentrup**, M. Cañedo-Argüelles, A.M. Derry, A.L. Downing, D.K. Gray, S.J. Melles, R.A. Relyea, J.A. Rusak, C.L. Searle, L. Astorg, H.K. Baker, B.E. Beisner, K.L. Cottingham, Z. Ersoy, C. Espinosa, J. Franceschini, A.T. Giorgio, N. Göbeler, E. Hassal, M.P. Hébert, M. Huynh, S. Hylander, K.L. Jonasen, A.E. Kirkwood, S. Langenheder, O. Langvall, H. Laudon, L. Lind, M. Lundgren, L. Proia, M.S. Schuler, J.B. Shurin, C.F. Steiner, M. Striebel, S. Thibodeau, P. Urrutia-Cordero, L. Vendrell-Puigmitja, G.A. Weyhenmeyer. 2022. Current water quality guidelines across North America and Europe do not protect lakes from salinization. *Proceedings of the National Academy of Sciences*. 119 (9). DOI: 10.1073/pnas.2115033119
- Ward, N.K., **J.A. Brentrup**, D.C. Richardson, K.C. Weathers, P.C. Hanson, R.J. Hewett, C.C. Carey. Physical characteristics of the stream–lake transitional zone affect littoral lake metabolism. *In press at Aquatic Sciences*.
- 2021 Lofton, M.E., **J.A. Brentrup**, W.S. Beck, J.A. Zwart, R. Bhattacharya, L.S. Brighenti, S.H. Burnet, I.M. McCullough, B.G. Steele, C.C. Carey, K.L. Cottingham, M.C. Dietze, H.A. Ewing, K.C. Weathers, S.L. LaDeau. Using near-term forecasts and uncertainty partitioning to inform prediction of oligotrophic lake cyanobacterial density. *In press at Ecological Applications*.
- Farrell, K.J., K.C. Weathers, S. H. Sparks, **J.A. Brentrup**, C.C. Carey, M.C. Dietze, J.R. Foster, K.L. Grayson, J.H. Matthes, M.D. SanClements. 2021. Training macrosystems scientists requires both interpersonal and technical

skills. *Frontiers in Ecology and the Environment*. 19(1): 39-46. DOI: 10.1002/fee.2287

Holgerson, M.A., R.A. Hovel, P.T. Kelly, L.E. Bortolotti, **J.A. Bretrup**, A.R. Bellamy, S.K. Oliver, A.J. Reisinger. 2021. Integrating ecosystem metabolism and consumer allochthony reveals nonlinear drivers in lake organic matter processing. *Limnology and Oceanography*. DOI: 10.1002/lno.11907

Roznere M., M. Jeong, L. Maechling^U, N.K. Ward, **J.A. Bretrup**, B. Steele, D.A. Bruesewitz, H.A. Ewing, K.C. Weathers, K.L. Cottingham, A.Q. Li. 2021. Towards a Reliable Heterogeneous Robotic Water Quality Monitoring System: An Experimental Analysis. In: Siciliano B., Laschi C., Khatib O. (eds) *Experimental Robotics*. ISER 2020. Springer Proceedings in Advanced Robotics, vol 19. Springer, Cham. DOI: 10.1007/978-3-030-71151-1_13

Yang, B., M.G. Wells, B.C. McMeans, H.A. Dugan, J.A. Rusak, G.A. Weyhenmeyer, **J.A. Bretrup**, A.R. Hrycik, A. Laas, R.M. Pilla, J.A. Austin, P.J. Blanchfield, C.C. Carey, M.M. Guzzo, N.R. Lottig, M.D. MacKay, T.A. Middel, D.C. Pierson, J. Wang, J.D. Young. 2021. A New Thermal Categorization of Ice-Covered Lakes. *Geophysical Research Letters*. 48(3): e2020GL091374. DOI: 10.1029/2020GL091374

2020 **Bretrup, J.A.**, D.C. Richardson, C.C. Carey, N.K. Ward, D.A. Bruesewitz, K.C. Weathers. 2020. Under-ice respiration rates shift the annual carbon cycle in the mixed layer of an oligotrophic lake from autotrophy to heterotrophy. *Inland Waters*. 11(1): 114-123. DOI: 10.1080/20442041.2020.1805261

Dempsey, C.M., **J.A. Bretrup**, S. Magyan^U, L.B. Knoll, H.M. Swain, E.E. Gaiser, D.P. Morris, M.T. Ganger, and C.E. Williamson. 2020. Relative importance of photodegradation and biodegradation of terrestrially derived dissolved organic matter across four lakes of differing trophic status. *Biogeosciences*. 17: 6327–6340. DOI: 10.5194/bg-17-6327-2020

2019 de Eyto, E., S. Kelly, E. Ryder, M. Dillane, L. Archer, D. O’Cathain, S. Daly, K. Lyons, B. Obrador, **J. Bretrup**, A. Naumoski, R. Poole, F.E. Lucy, E. Jennings. 2019. High frequency monitoring reveals fine scale spatial and temporal dynamics of the deep chlorophyll maximum of a stratified coastal lagoon. *Estuarine, Coastal and Shelf Science*. 218: 278-291. DOI: 10.1016/j.ecss.2018.12.010

2018 Pilla, R.M., C.E. Williamson, J. Zhang, R.L. Smyth, J.D. Lenters, **J.A. Bretrup**, L.B. Knoll. 2108. Long-term trends in water temperature and stratification metrics for two small lakes: A consequence of decreased water transparency. *Journal of Geophysical Research: Biogeosciences*. 123(5): 1651-1665. DOI: 10.1029/2017JG004321

**Featured in Research Spotlight Article in Earth and Space Science News*

Knoll, L.B., C.E. Williamson, R.M. Pilla, T.H. Leach, **J.A. Bretrup**, T.J. Fisher. 2018. Browning-related oxygen depletion in an oligotrophic lake. *Inland Waters*. 8(3): 255-263. DOI: 10.1080/20442041.2018.1452355

- Leach, T.H., B.E. Beisner, C.C. Carey, P. Pernica, K.C. Rose, Y. Huot, **J.A. Bretrup**, I. Domaizon, H.P. Grossart, B.W. Ibelings, S. Jacquet, P.T. Kelly, J.A. Rusak, D. Straile, J. Stockwell, P. Verburg. 2018. Patterns and drivers of deep chlorophyll maxima structure in 100 lakes: the relative importance of light and thermal stratification. *Limnology & Oceanography*. 63: 628-646. DOI: 10.1002/lno.10656
- 2017 Kelly, P.T., T. Bell, A.J. Reisinger, T.L. Spanbauer, L.E. Bortolotti, **J.A. Bretrup**, C. Briseño-Avena, X. Dong, A.M. Flanagan, E.M. Follett, J. Grosse, T. Guy-Haim, M.A. Holgerson, R.A. Hovel, J.Y. Luo, N.C. Millette, A. Mine, M.E. Muscarella, S.K. Oliver, H.J. Smith. 2017. Ecological Dissertations in the Aquatic Sciences (Eco-DAS): An excellent networking and professional development opportunity for early career aquatic scientists. *Limnology and Oceanography Bulletin*. 26(2): 25-30. DOI: 10.1002/lob.10180
- 2016 **Bretrup, J.A.**, C. E. Williamson, W. Colom-Montero, W. Eckert, E. de Eyto, H.P. Grossart, Y. Huot, P.D F. Isles, L.B. Knoll, T.H. Leach, C.G. McBride, D. Pierson, F. Pomati, J.S. Read, K.C. Rose, N.R. Samal, P.A. Staehr, L.A. Winslow. 2016. The potential of high-frequency profiling to assess vertical and seasonal patterns of phytoplankton dynamics in lakes: An extension of the Plankton Ecology Group (PEG) model. *Inland Waters*. 6(4): 565-580. DOI: 10.5268/IW-6.4.890
- Williamson, C.E., E.P. Overholt, **J.A. Bretrup**, R.M. Pilla, T.H. Leach, S.G. Schladow, J.D. Warren, S.S. Urmey, S. Sadro, S. Chandra, P.J. Neale. 2016. Sentinel responses to droughts, wildfires, and floods: Ultraviolet radiation and the consequences for lakes and their ecosystem services. *Frontiers in Ecology and the Environment*. 14(2): 102-109. DOI: 10.1002/fee.1228
- Dugan, H.A., R.I. Woolway, A.B. Santoso, J.R. Corman, A. Jaimes, E.R. Nodine, V.P. Patil, J.A. Zwart, **J.A. Bretrup**, A.L. Hetherington, S.K. Oliver, J.S. Read, K.M. Winters, P.C. Hanson, E.K. Read, L.A. Winslow, K.C. Weathers. 2016. Consequences of gas flux model choice on the interpretation of metabolic balance across 15 lakes. *Inland Waters*. 6(4): 581-592. DOI: 10.5268/IW-6.4.836
- Knoll, L.B., A. Morgan^U, M.J. Vanni, T.H. Leach, T.J. Williamson, **J.A. Bretrup**. 2016. Quantifying pelagic phosphorus regeneration using three methods in lakes of varying productivity. *Inland Waters*. 6(4): 509-522. DOI: 10.5268/IW-6.4.866
- 2015 Williamson, C.E., E.P. Overholt, R.M. Pilla, T.H. Leach, **J.A. Bretrup**, L.B. Knoll, E.M. Mette, R.E. Moeller. 2015. Ecological consequences of long-term browning in lakes. *Scientific Reports*. 5:18666. DOI: 10.1038/srep18666
- Read, E.K., V.P. Patil, S.K. Oliver, A.L. Hetherington, **J.A. Bretrup**, J.A. Zwart, K.M. Winters, J.R. Corman, E.R. Nodine, R.I. Woolway, H.A. Dugan, A. Jaimes, A.B. Santoso, G.S. Hong, L.A. Winslow, P.C. Hanson, K.C. Weathers. 2015. The importance of lake-specific characteristics for water

quality across the continental United States. *Ecological Applications*. 25(4): 943-955. DOI: 10.1890/14-0935.1

- 2014 Williamson, C.E., **J.A. Bretrup**, J. Zhang, W.H. Renwick, B.R. Hargreaves, L.B. Knoll, E.P. Overholt, K.C. Rose. 2014. Lakes as sensors in the landscape: Optical metrics as scalable sentinel responses to climate change. *Limnology and Oceanography*. 59(3): 840-850. DOI: 10.4319/lo.2014.59.3.0840
- Carey, C.C., K.L. Cottingham, K.C. Weathers, **J.A. Bretrup**^U, N.M. Ruppertsberger^U, H.A. Ewing, N.G. Hairston, Jr. 2014. Experimental blooms of the cyanobacterium *Gloeotrichia echinulata* increase phytoplankton biomass, richness and diversity in an oligotrophic lake. *Journal of Plankton Research*. 36(2): 364-377. DOI: 10.1093/plankt/fbt105
- 2013 Weathers, K.C., P.C. Hanson, P. Arzberger, **J.A. Bretrup**, J. Brookes, C.C. Carey, E. Gaiser, D.P. Hamilton, G.S. Hong, B. Ibelings, V. Istvánovics, E. Jennings, B. Kim, T. Kratz, F.-P. Lin, K. Muraoka, C. O'Reilly, C. Piccolo, K.C. Rose, E. Ryder, G. Zhu. 2013. The Global Lake Ecological Observatory Network (GLEON): the evolution of grassroots network science. *Limnology and Oceanography Bulletin*. 22: 71-73. DOI: 10.1002/lob.201322371

Publications in Review, Revision, and Preparation (available upon request)

- 2022 Arnott, S.E.* , V. Fugère* , C.C. Symons* , S.J. Melles* , B.E. Beisner, M. Cañedo-Argüelles, Marie-Pier Hébert, **J.A. Bretrup**, A.L. Downing, D.K. Gray, D. Greco, W.D. Hintz, A. McClymont, R.A. Relyea, J.A. Rusak, C.L. Searle, L. Astorg, H.K. Baker, Z. Ersoy, C. Espinosa, J.M. Franceschini, A.T. Giorgio, N. Göbeler, E. Hassal, M. Huynh, S. Hylander, K.L. Jonassen, A. Kirkwood, S. Langenheder, O. Langvall, H. Laudon, L. Lind, M. Lundgren, E.R. Moffett, L. Proia, M.S. Schuler, J.B. Shurin, C.F. Steiner, M. Striebel, S. Thibodeau, P.U. Cordero, L. Vendrell-Puigmitja, G.A. Weyhenmeyer, A.M. Derry* . Broad scale intraspecific variation in freshwater zooplankton salt tolerance. *In revision at Limnology and Oceanography Letters*. Manuscript ID: LOL2-21-0131. * = authors with equal contributions
- De Palma-Dow, A. I.M. McCullough, **J.A. Bretrup**. Turning up the heat: Long-term data synthesis reveal impacts of wildfire, climate, and phosphorus in a hypereutrophic lake. *In review at Ecosphere*.
- Bretrup, J.A.**, A.E. Conway^U, and K.L. Cottingham. Interactive effects of salt and warming on freshwater zooplankton community dynamics. *In preparation for the Journal of Plankton Research*.
- Lutz, D.A., B. Steele, E.N. Dethier, **J.A. Bretrup**, H.J. Rubin^U, C. Herrick, M. Palace, K.C. Weathers, M.J. Ducey, K.M. Johnson, K.L. Cottingham. Estimating lake water clarity using Landsat imagery: a site-specific reflectance and machine learning approach. *In preparation for Ecosphere*.

Non-peer Reviewed Publications

- 2018 Weathers, K.C., **J.A. Bretrup**, L. Borre. 2018. Networked Lake Science:

How a global network is using the National Lakes Assessment database for research and graduate student training. *North American Lake Management Society LakeLine Magazine*.

Data Products and Software

- 2021 Ward, N.K., **J.A. Bretrup**, A.E. Johnson, C.C. Carey, K.C. Weathers, and J.R. Fichter. 2021. Underwater temperature, light, and dissolved oxygen data from 3 mini-buoys in Lake Sunapee, NH, USA from June to October 2018 ver 2. Environmental Data Initiative.
<https://doi.org/10.6073/pasta/b73f0b4a97ccef80249eb09b619979d5>
- 2020 Dempsey, C.M., **J.A. Bretrup**, S. Magyan, L.B. Knoll, H.M. Swain, E.E. Gaiser, D.P. Morris, M.T. Ganger, and C.E. Williamson. 2020. Photodegradation and biodegradation of dissolved organic carbon from four lakes of varying trophic status in Pennsylvania and Florida in 2016. ver 1. Environmental Data Initiative.
<https://doi.org/10.6073/pasta/f786154967693a6e86c9b63fd9e30091>
- LSPA, K.C. Weathers, **J.A. Bretrup**, D.C. Richardson, C.C. Carey, N.K. Ward, D.A. Bruesewitz. 2020. Ecosystem metabolism estimates from Lake Sunapee, NH, USA and meteorological driver data at the Newport, NH, USA NOAA NCDC weather station from August 2007–December 2008. ver 1. Environmental Data Initiative.
<https://doi.org/10.6073/pasta/d1c9e809bec3620c4f89080dc6b8bac8>
- 2014 Winslow, L.A., J.S. Read, I.R. Woolway, **J.A. Bretrup**, T.H. Leach, J.A. Zwart, S. Albers, D. Collinge. 2014. rLakeAnalyzer: Lake Physics Tools. Open source R Package. Version 1.11.4.1. Available on CRAN.
- Read, E., V. Patil, S. Oliver, A. Hetherington, **J.A. Bretrup**, J. Zwart, K. Winters, J. Corman, E. Nodine, I. Woolway, H. Dugan, A. Jaimes, A. Santoso, G. Hong, L. Winslow, P. Hanson, and K. Weathers. 2014. 2007 Environmental Protection Agency (EPA) National Lakes Assessment dataset plus derived data and additional spatially explicit ancillary environmental data. ver 1. Environmental Data Initiative.
<https://doi.org/10.6073/pasta/9db21b475ea31422a9f05574bdd03cf2>.

Grants and Fellowships (total = \$309,988)

- 2022 NSF Collaborative Research RAPID, Senior Personnel; \$177,183
Lake ecosystem responses to fire along gradients of burn characteristics and hydrologic connectivity
- 2020 USGS & Vermont Water Resources and Lake Studies Center, Co-PI; \$18,400
Impact of Storms on Lake Phytoplankton Community Dynamics
- 2019 Queen's-Dartmouth Research Development Fund; \$19,455
The effects of chloride contamination on freshwater biodiversity
Assisted in grant writing, idea development, and running experiments
- 2018 Midge Eliassen Fellowship Award; \$2,700
- 2016-2017 Miami University Dissertation Research Scholarship; \$19,950

- 2016 Ecological Dissertations in the Aquatic Sciences (Eco-DAS) Symposium XII
Selective NSF-funded training program to bridge interdisciplinary gaps in aquatic ecology. Funding to attend one workshop
- 2015 Lacawac Sanctuary Moeller Research Fellow Grant; \$1,500
- 2011-2015 Global Lake Ecological Observatory Network (GLEON) Graduate Student Travel Awards; \$3,800
Funding to assist in attending four GLEON meetings
- 2012-2014 GLEON Graduate Student Fellowship Program; \$3,000
Selective NSF-funded macrosystem biology training program in network science. Funding to attend three workshops and one GLEON meeting
- 2013 Miami University Biology Department Research Grant; \$400
- 2011-2013 NSF-IGERT: Environmental Aquatic Resource Sensing Fellowship; \$60,000

Invited Presentations

- 2021 **Brentrup, J.A.** Road salt and cyanobacteria: Improving predictions for the impacts of local and regional stressors on aquatic food webs. *Invited seminar.* University of Minnesota Ecology, Evolution, and Behavior Seminar Series. St. Paul, Minnesota. October 2021.
- 2020 **Brentrup, J.A.** Environmental data exploration, visualization, and data narratives. *Invited seminar.* Tufts University, Medford, Massachusetts. March 2020.
- Brentrup, J.A.** Long-term effects of climate change on lakes and the importance of winter sampling. *Invited seminar.* Superfund Research Program's Dragonfly Mercury Monitoring Project, Dartmouth College, Hanover, New Hampshire. January 2020.
- 2018 **Brentrup, J.A.** The role of water transparency and winter in regulating carbon cycling in lakes. *Invited seminar.* University of Vermont, Burlington, Vermont. November 2018.
- 2017 **Brentrup, J.A.,** E.K. Read, S.K. Oliver, V. Patil, A.L. Hetherington, J.A. Zwart, K.M. Winters, J.R. Corman, E.R. Nodine, R.I. Woolway, H.A. Dugan, A. Jaimes, A.B. Santoso, G.S. Hong, L.A. Winslow, P.C. Hanson, K.C. Weathers. The importance of lake specific characteristics for water quality across the continental United States. *Invited oral presentation.* North American Lake Management Society. Denver, Colorado. November 2017.
- Brentrup, J.A.,** C.E. Williamson. Lakes as Sentinels: How advances in remote sensing can detect climate change signals in lakes. *Invited oral presentation.* Lakes, Climate, and Remote Sensing Workshop. Toulouse, France. May 2017.
- Brentrup, J.A.,** The role of water transparency in regulating carbon dynamics in lakes. *Invited seminar.* Dartmouth College, Hanover, New Hampshire. April 2017.
- 2014 **Brentrup, J.A.** A Buoy Tale: Linking high-frequency sensor data with a climate change index. *Invited seminar.* Colby College, Waterville, Maine. April 2014.

- 2012 **Brentrup, J.A.** Buoy Platforms: Stationary and Profiling Buoys. *Invited oral presentation*. Lacawac Ecological Observatory Workshop. Lacawac Sanctuary, Lake Ariel, Pennsylvania. June 2012.

Mentored Undergraduate Student Presentations (student denoted by ^U)

- 2021 McBride, L.^U, Á. Nieto^U, Z. Plechaty^U, M. Smith^U, **J.A. Brentrup**. How do differences in duckweed and pH affect nutrient concentrations? Poster Presentation. St. Olaf Collaborative Undergraduate Research and Inquiry Symposium. Northfield, Minnesota. August 2021.
- Nieto, Á.^U, L. McBride^U, Z. Plechaty^U, M. Smith^U, **J.A. Brentrup**. How does duckweed density affect dissolved oxygen concentrations in eutrophic freshwater ecosystems? Poster Presentation. St. Olaf Collaborative Undergraduate Research and Inquiry Symposium. Northfield, Minnesota. August 2021.
- Plechaty, Z.^U, L. McBride^U, Á. Nieto^U, M. Smith^U, **J.A. Brentrup**. How does duckweed density and dissolved oxygen affect nitrogen cycling in a eutrophic pond? Poster Presentation. St. Olaf Collaborative Undergraduate Research and Inquiry Symposium. Northfield, Minnesota. August 2021.
- Smith, M.^U, L. McBride^U, Á. Nieto^U, Z. Plechaty^U, **J.A. Brentrup**. What effect does duckweed density have on thermal stratification patterns? Poster Presentation. St. Olaf Collaborative Undergraduate Research and Inquiry Symposium. Northfield, Minnesota. August 2021.
- 2019 Conway, A.E.^U, **J.A. Brentrup**, K.L. Cottingham. The effects of salt and warming on freshwater plankton community dynamics. Poster Presentation. Dartmouth College Undergraduate Wetterhahn Science Symposium. Hanover, New Hampshire. May 2019.
- 2013 Hackett, K.E.^U, C.E. Williamson, **J.A. Brentrup**, L.B. Knoll. What can lakes tell us about climate change? Miami University Undergraduate Research Forum. Oxford, Ohio. April 2013.

Contributed Presentations (Lead author presentations only)

- 2019 **Brentrup, J.A.**, N.K. Ward, C.C. Carey, K.L. Cottingham, D.A. Bruesewitz, D. C. Richardson, K.C. Weathers. A comparison of three winters of under-ice ecosystem metabolism estimates reveals high variability in under-ice net ecosystem production. Poster Presentation. Global Lake Ecological Observatory Network Annual Meeting. Ontario, Canada. November 2019.
- Brentrup, J.A.**, M. Lofton, W. Beck, R. Bhattacharya, L. Brighenti, S. Burnet, I. McCullough, S. Stewart, J. Zwart, C. Carey, K. Cottingham, H. Ewing, S. LaDeau, K. Weathers. State-space Bayesian models enable near-term forecasts of phytoplankton blooms in a large, north temperate lake. Poster Presentation. NSF Macrosystems Biology PI Meeting. Boulder, Colorado. May 2019.
- 2018 **Brentrup, J.A.**, D. C. Richardson, C.C. Carey, N.K. Ward, D.A. Bruesewitz, K.C. Weathers. High under-ice respiration rates shift the annual carbon cycle

in an oligotrophic lake from net autotrophy to net heterotrophy. Poster Presentation. Global Lake Ecological Observatory Network Annual Meeting. Perth, Australia. December 2018.

Brentrup, J.A., D. C. Richardson, C.C. Carey, N.K. Ward, D.A. Bruesewitz, K.C. Weathers. The importance of ice-on and ice-off periods for driving under-ice metabolism dynamics in an oligotrophic lake. Oral Presentation. Association for the Sciences of Limnology and Oceanography Annual Meeting. Victoria, BC, Canada. June 2018.

Brentrup, J.A., I. McCullough, S. LaDeau, R. Bhattacharya, L. Brighenti, S. Burnet, N. Catalán, B. Denfeld, J. Doubek, L. Hoang, S. Khan, M. Lofton, T. Moore, S. Stewart, M. Xiao, P. Hanson, K. Weathers, K. Cottingham, C. Carey, H. Ewing, M. Greer. The GLEON Fellowship Program: Early career training in team science and complex data synthesis – A case study of using Bayesian hierarchical modeling for near-term forecasting of cyanobacterial blooms in Lake Sunapee. Poster Presentation. NSF Macrosystems Biology PI Meeting. Washington, D.C., January 2018.

2016 **Brentrup, J.A.**, E. Ryder, A. Scofield, W. Colom-Montero, W. Eckert, E. de Eyto, H-P. Grossart, Y. Huot, P. Isles, L.B. Knoll, T.H. Leach, C.G. McBride, D. Pierson, F. Pomati, K.C. Rose, N.R. Samal, R. Smyth, P.A. Staehr, C.E. Williamson, L.A. Winslow. What controls the formation of metalimnetic oxygen peaks? Poster Presentation. Global Lake Ecological Observatory Network Annual Meeting. Lunz, Austria. July 2016.

Brentrup, J.A., C.E. Williamson, C.D. Dempsey, L.B. Knoll. Photodegradation exceeds biodegradation in processing dissolved organic matter in one sub-tropical and three temperate lakes. Oral Presentation. Association for the Sciences of Limnology and Oceanography Annual Meeting. Santa Fe, New Mexico. June 2016.

Brentrup, J.A., C.E. Williamson, C.D. Dempsey, L.B. Knoll. Photodegradation exceeds biodegradation in processing dissolved organic matter in one sub-tropical and three temperate lakes. Oral Presentation. Midwest Ecology and Evolution Conference. Oxford, Ohio. March 2016.

2015 **Brentrup, J.A.**, C. E. Williamson, W. Colom-Montero, W. Eckert, E. de Eyto, H.P. Grossart, Y. Huot, P. Isles, L. B. Knoll, T. H. Leach, C. G. McBride, D. Pierson, F. Pomati, J. S. Read, K.C. Rose, N. R. Samal, P. A. Stæhr, L. A. Winslow. The potential of high-frequency profiling to assess vertical and seasonal patterns of phytoplankton dynamics in lakes: An extension of the Plankton Ecology Group (PEG) model. Poster Presentation. Global Lake Ecological Observatory Network Annual Meeting. Chuncheon, South Korea. October 2015.

2014 **Brentrup, J.A.**, C.E. Williamson, W. Eckert, E. Eyto, H.P. Grossart, L.B. Knoll, A. Laas, T.H. Leach, D. Motta Marques, C.G. McBride, F. Pomati, J.S. Read, E. Ryder, P.A. Staehr, L.A. Winslow. Using profiling buoys to look below the lake surface: An analysis of vertical chlorophyll dynamics across

space and time. Poster Presentation. Global Lake Ecological Observatory Network Annual Meeting. Jouvence, Quebec, Canada. October 2014.

Brentrup, J.A., C.E. Williamson. Photolability and biolability of dissolved organic matter in three contrasting lakes. Oral Presentation. Association for the Sciences of Limnology and Oceanography Annual Meeting. Portland, Oregon. May 2014.

Brentrup, J.A., T.H. Leach, C.E. Williamson. Application of advanced optical and acoustic tools to assess climate-driven changes in DOC and consumer-producer biomass ratios. Invited Poster Presentation. Thermokarst Aquatic Ecosystems Workshop (THAW): Freshwater ecosystems in changing permafrost landscapes. Poster Presentation. Québec City, Québec, Canada. March 2014.

2013 **Brentrup, J.A.**, C.E. Williamson, B.R. Hargreaves, L.B. Knoll. Tea or Coffee Anyone? Using high-frequency sensor data to understand differences in DOM optical quality. Poster Presentation. Global Lake Ecological Observatory Network Annual Meeting. Bahia Blanca, Argentina. November 2013.

Brentrup, J.A., C.E. Williamson, B.R. Hargreaves, L.B. Knoll. **ARTHUR** – Aquatic Resource Tool for High-Frequency Underwater Research: Assessing sentinel responses of lakes to climate change. Poster Presentation. Northeast Geological Society of America Annual Meeting. Bretton Woods, New Hampshire. March 2013.

Brentrup, J.A., C.E. Williamson, J.M. Fischer, M.H. Olson, K.C. Rose. Rapid Increases in Transparency in an Alpine Lake Following Ice-Out. Poster Presentation. Association for the Sciences of Limnology and Oceanography Annual Meeting. New Orleans, Louisiana. February 2013.

2012 **Brentrup, J.A.**, C.E. Williamson, B.R. Hargreaves, L.B. Knoll. **ARTHUR** – Aquatic Resource Tool for High-Frequency Underwater Research. Poster Presentation. Global Lake Ecological Observatory Network Annual Meeting. Mulranny, Ireland. October 2012.

2011 **Brentrup, J.A.**, K.C. Rose, T.H. Leach, C.E. Williamson, J.M. Fischer, J.E. Saros, B.R. Hargreaves, R.E. Moeller. Sentinel Responses to Extreme Precipitation Events in Lakes: Changes in UV Transparency. Poster Presentation. Global Lake Ecological Observatory Network Annual Meeting. Sunapee, New Hampshire. October 2011.

Workshops

2021 *Invited Participant*, “Empowering Development of the Next Generation of Educational Materials for Forecasting,” sponsored by Ecological Forecasting Initiative-Research Coordination Network, NSF, June 2021.

2019 *Invited Workshop Leader*, “Northeastern North America GLEON Conference,” sponsored by the Cary Institute of Ecosystem Studies and GLEON, Millbrook, New York, April 2019.

- 2018 *Invited Participant*, “Ecological Forecasting Workshop,” sponsored by Boston University, Boston, Massachusetts, July 2018.
Invited Workshop Leader, “Northeastern North America GLEON Conference,” sponsored by the Cary Institute of Ecosystem Studies and GLEON, Millbrook, New York, April 2018.
- 2017 *Invited Participant*, “Bayesian Statistics Workshop,” sponsored by the Cary Institute of Ecosystem Studies and GLEON, Millbrook, New York, December 2017.
Invited Session and Workshop Leader, “Northeastern North America GLEON Conference,” sponsored by the Cary Institute of Ecosystem Studies and GLEON, Millbrook, New York, April 2017.
- 2015 *Organizer and Co-Instructor*, “Introduction to Project on Environmental Data-Driven Inquiry Exploration (EDDIE) Teaching Modules, Lake Modeling in R, and Team Science Best Practices,” sponsored by GLEON, Chuncheon South Korea, October 2015.
Invited Session Leader, “Northeastern North America GLEON Conference,” sponsored by the Cary Institute of Ecosystem Studies and GLEON, Millbrook, New York, April 2015.
- 2014 *Organizer and Co-Instructor*, “Internal and external force interactions and biological responses in lakes,” sponsored by GLEON, Jouvence, Canada, October 2014.
- 2013 *Co-organizer*, “Working with high-frequency data: GLEON tools and a local case study of Argentine lake La Salada,” sponsored by GLEON, Bahia Blanca, Argentina, November 2013.
Co-organizer, “Lacawac Ecological Observatory Workshop,” sponsored by NSF-IGERT Environmental Aquatic Resource Sensing, Lacawac Sanctuary, Pennsylvania, June 2013.
- 2012 *Co-organizer*, “Lacawac Ecological Observatory Workshop,” sponsored by NSF-IGERT, Lacawac Sanctuary, Pennsylvania, June 2012.
- 2011 *Invited Participant*, “Automated Monitoring and High-Frequency Data Analysis,” sponsored by GLEON, Lake Erken Laboratory, Norrtälje, Sweden, July 2011.

Service, Training, and Outreach

- 2020-2021 New Faculty Learning Community Participant, St. Olaf College
- 2020 Zoom a Scientist Webinar Series Presenter, Lake Champlain Sea Grant, University of Vermont
- 2019 Lake Sunapee Protective Association (LSPA) Presentation at Annual Meeting, Sunapee, NH
 Future Faculty Teaching Series Participant, Dartmouth Center for the Advancement of Learning, Dartmouth College
 Ecology, Evolution, Ecosystems, and Society Post-doctoral Fellowship Search Committee Member, Dartmouth College
- 2017 Women in Science, Technology Engineering, and Math (STEM) Day Session Organizer, Miami University
- 2016 Graduate Student Teaching Enhancement Program Participant,

Center for the Enhancement of Learning, Teaching, and University
Assessment, Miami University
2015 Lake Giles “Dock Talk” Meeting with Community Members, Blooming
Grove Hunting and Fishing Club, Pennsylvania
2014-2015 Global Lake Ecological Observatory Network Steering Committee Member
2014 Global Lake Ecological Observatory Network Program Committee Member
for 16th Annual Meeting
2013-2015 Global Lake Ecological Observatory Network Student Association Co-Chair
elect, Co-Chair, Chair
2013-2014 Graduate Student Liaison for Departmental Seminar Series, Miami University
2012-2013 Faculty Learning Committee on Scholarly Communication, Miami University

Undergraduates Mentored

Morgan Smith (St. Olaf College ‘22)
Zoe Plechaty (St. Olaf College ‘23)
Liam McBride (St. Olaf College ‘24)
Àngel Nieto (St. Olaf College ‘24)
Alexandra Conway (Dartmouth College ‘20)*
Rafael Rosas (Dartmouth College ‘20)⁺
Bryce Williamson (Middlebury College ‘18)
Adam Darwiche (Miami University ‘17)
Allyson Ernst (Miami University ‘16)
Amelia Fleitz (Miami University ‘15)
Marie Moulton (Miami University ‘14)**
Kathryn Hackett (Miami University ‘13)***

*Presidential Scholar, Dartmouth College, Hanover, New Hampshire

⁺Recipient of Ernest Everett Just Fellowship for Underrepresented Minorities, Dartmouth
College, Hanover, New Hampshire

**Recipient of Undergraduate Summer Scholarship, Miami University, Oxford, Ohio

***Recipient of Hughes Summer Internship, Miami University, Oxford, Ohio

Reviewer for:

*Ecology, Geophysical Research Letters, Global Change Biology, Limnology &
Oceanography, Limnology & Oceanography Letters, National Science Foundation,
University of Wisconsin Sea Grant Institute*

Professional Memberships

Global Lake Ecological Observatory Network (GLEON)
Association for the Sciences of Limnology and Oceanography (ASLO)
Ecological Society of America (ESA)