

# KATHRYN MELISSA SCHREINER

email: kschrein@d.umn.edu

phone: 218-726-8680

## EDUCATION

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- Doctor of Philosophy in Oceanography. 2013. Texas A&M University, College Station, TX  
*Advisor: Thomas Bianchi*
- Master of Science in Earth Sciences. 2008. Purdue University, West Lafayette, IN  
*Advisor: Timothy Filley*
- Bachelor of Science in Chemistry, Honors. 2006. Purdue University, West Lafayette, IN

## ACADEMIC APPOINTMENTS

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- Dec 2017 to present Graduate faculty, University of Minnesota Duluth Department of Geology
- Aug 2014 to present Graduate faculty, University of Minnesota Duluth Department of Chemistry and Biochemistry
- Aug 2014 to present Graduate faculty, University of Minnesota Water Resources Science
- Aug 2014 to present Assistant Professor, Large Lakes Observatory and Department of Chemistry and Biochemistry, University of Minnesota Duluth
- Jan 2013 to July 2014 Postdoctoral Fellow, Department of Civil and Environmental Engineering, Northwestern University
- Aug 2012 to Dec 2012 Teaching Assistant and Instructor of Record for Honors Introductory Oceanography Laboratory, Texas A&M University
- Aug 2010 to May 2012 Teaching Assistant and Instructor of Record for Introductory Oceanography laboratory, Texas A&M University
- Aug 2008 to July 2010 Research Assistant, Dept of Oceanography, Texas A&M University
- Aug 2006 to June 2008 Research Assistant, Dept of Earth and Atmospheric Sciences, Purdue University

## PUBLICATIONS: PEER REVIEWED

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*\*Indicates Schreiner lab student*

- Ryan, M\*, **Schreiner, K.M.**, Swenson, J.\*, Kennedy, P.G., & Gagne, J. (*in revision*). Chemical analysis shows dynamic changes during the degradation of ectomycorrhizal fungal necromass. *Fungal Ecology*.
- Garcia-Tigeros, F., **Schreiner, K. M.**, Sparrow, K., & Kessler, J (*in revision*). Assessing acidification from the remineralization of dissolved organic carbon and methane in the coastal Beaufort Sea, Alaska. *Geophysical Research Letters*.
- Van Allen, R.\*, **Schreiner, K.**, Carlin, J., & Guntenspergen, G (*in revision*). Effects of sea level rise and coastal marsh transgression on soil organic matter in a Chesapeake Bay salt marsh. *Estuarine, Coastal, and Shelf Science*.
- Peters, C.A., Hendrickson, E., Minor, E.C., **Schreiner, K.M.**, Halbur, J., & Bratton, S.P. (2018). Pyr-GC/MS analysis of microplastics extracted from the stomach content of benthivore fish from the Texas Gulf Coast. *Marine Pollution Bulletin*, 137, 91-95.
- Hendrickson, E.\*, Minor, E. C., & **Schreiner, K. M.** (2018) Microplastic abundance and composition in western Lake Superior as determined by microscopy, Pyr-GCMS, and FTIR. *Environmental Science and Technology*.
- Hanna, A. J.M., Shanahan, T. M., Allison, M. A., Bianchi, T. S., & **Schreiner, K. M.** (2018). A multi-proxy investigation of Late Holocene temperature change and climate-driven fluctuations in sediment sourcing: Simpson Lagoon, Alaska. *Holocene*.
- Sparrow, K. J., Kessler, J. D., Southon, J. R., Garcia-Tigeros, F., **Schreiner, K. M.**, Leonte, M., . . . Xu, X. (2018). Limited contribution of ancient methane to surface waters of the U.S. Beaufort Sea shelf. *Science Advances*.
- Zhang, X., Bianchi, T. S., Cui, X., Rosenheim, B., Ping, C.-L., Hanna, A. J.M., **K.M. Schreiner**, Allison, M. A. (2017). Permafrost organic carbon mobilization from the watershed to the

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Colville River delta: Evidence from 14C ramped pyrolysis and lignin biomarkers.

*Geophysical Research Letters*.

- Schreiner, K. M.**, Katsev, S., Steinman, B., Sterner, R., Williams, J., & Zak, K. (2017). Advancing Graduate Limnology Education Through Active Learning and Community Partnerships: A Pilot Program at the Large Lakes Observatory. *Limnology and Oceanography Bulletin*.
- J. L. Yost, L. Egerton-Warburton, **K. M. Schreiner**, C.E. Palmer, and A. E. Hartemink (2016). "Impact of restoration and management on aggregation and organic carbon accumulation in urban grasslands" *Soil Science Society of America Journal*.
- T. S. Bianchi, **K. M. Schreiner**, R. W. Smith, R. Burdige, and S. Woodard (2016). "The effects of human-induced and natural redox changes on organic matter storage in coastal sediments during the Holocene: A biomarker perspective" *Annual Reviews in Earth and Planetary Sciences*.
- K. M. Schreiner**, T. S. Bianchi, and B. E. Rosenheim (2014). "Evidence for permafrost thaw and transport from an Alaskan North Slope watershed" *Geophysical Research Letters*. 10.1002/2014GL059514.
- K. M. Schreiner**, N. Blair, L. Egerton-Warburton, and W. Levinson (2014). "Contribution of fungal macromolecules to soil carbon sequestration" for Springer special volume *Soil Carbon*. A.E. Hartemink and K. McSweeney, eds.
- K. M. Schreiner**, T. S. Bianchi, T. I. Eglinton, M. A. Allison, and A.M. Hanna (2013). "Sources of terrigenous inputs to surface sediments of the Colville River Delta and Simpson's Lagoon, Beaufort Sea, Alaska." *Journal of Geophysical Research: Biogeosciences*. 10.1002/jgrg.20065.
- T. Bianchi, L. A. Wysocki, **K. M. Schreiner**, T. R. Filley, D. R. Corbett, and A. Kolker (2011). "Sources of terrestrial organic carbon in the Mississippi plume region: Evidence for the importance of coastal marsh inputs." *Aquatic Geochemistry*, **17**: 431-456.
- T. Bianchi, S. DiMarco, R. Smith, and **K. M. Schreiner** (2009). "Export of dissolved lignin from coastal wetlands to the Louisiana shelf." *Marine Chemistry*, **117**(1-4, special issue), 32-41.
- K. M. Schreiner**, T. Filley, B. Beitler-Bowen, R. Blanchette, R. Bolskar, W. C. Hockaday, C. A. Masiello, and J. W. Raebiger (2009). "White rot basidiomycete mediated decomposition of C<sub>60</sub> fullerol." *Environmental Science and Technology*, **43**(9), 3162-3168.

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### AWARDED GRANTS

- 02/2020 – 01/2022 "Molecular screening tool to rapidly assess toxic cyanobacterial blooms in Minnesota lakes," Minnesota Sea Grant. Co-PI. \$151,888.
- 02/2020 – 01/2022 "Microplastics in Lake Superior: An investigation of size, composition, and weathering," Minnesota Sea Grant. Co-PI. \$210,301.
- 07/2019-06/2021 "A Survey of Microplastics in Minnesota's Inland Lakes" Legislative and Citizen's Commission for Minnesota Resources. Lead PI. \$200,000.
- 08/2018-07/2021 "Does Organic Sulfur Make a Significant and Overlooked Contribution to Sediment Sulfate Reduction in Low-Sulfate Environments?" National Science Foundation Low Temperature Geochemistry and Geobiology. Co-PI. \$530,997
- 07/2018-06/2019 "Upgrade and Reinvestment in the University of Minnesota Duluth Stable Isotope Laboratory," University of Minnesota Office for the Vice President for Research. Sole PI. \$371,567
- 01/2018-06/2018 "Acquisition of TA Instruments Discovery 550 Advanced Thermogravimetric Analyzer," University of Minnesota Grant-in-Aid of Research. Co-PI. \$30,890.
- 07/2017-06/2019 "Synthesis of highly-branched isoprenoid membrane lipids: An interdisciplinary approach to identify the genetic and biochemical basis of branched lipids in a modern diatom," University of Minnesota Advanced Materials Center. Lead PI. \$25,000.

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- 09/2015-08/2019 “Flipping a foundational interdisciplinary graduate curriculum while strengthening connections outside academia,” National Science Foundation Division of Graduate Research: Innovations in Graduate Education. Lead PI. \$369,579.
- 09/2015-08/2017 “Coastal marsh transgression and the fate of soil organic carbon under rising sea level,” USGS Great Lakes Northern Forest CESU. Sole PI. \$59,950.
- 01/2015-12/2016 “Organic carbon flux from a high-Arctic North American river and its fate in a changing climate,” University of Minnesota Grant-in-Aid of Research. Sole PI. \$40,636.

### **PENDING GRANTS**

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- 03/2020 – 02/2025 “CAREER: The impacts of sea level rise on coastal wetland carbon stores,” National Science Foundation Division of Ecosystem Biology Ecosystem Science Cluster. Sole PI. \$1,459,286.

### **INVITED PRESENTATIONS**

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- 2019 Texas A&M University Department of Oceanography seminar series, November 2019  
“The Source and Fate of Organic Carbon from Land to Sea”
- 2019 Undergraduate Research in the Molecular Sciences Symposium, Minnesota State University Moorhead, October 2019: Keynote Invited Speaker  
“The Source and Fate of Organic Carbon from Land to Sea”
- 2019 University of Minnesota Morris Department of Chemistry Seminar Series, October 2019  
“The Importance of Microbially-Sourced Organic Carbon in Soils”
- 2019 University of Minnesota Duluth Water Resources Science Seminar Series, September 2019  
“The Source and Fate of Organic Carbon from Land to Sea”
- 2019 University of Minnesota Duluth R/V Blue Heron Science on Deck outreach event, July 2019  
“Microplastics in Lake Superior: Their source and fate”
- 2019 University of Minnesota Duluth Institute on the Environment Symposium, April 2019  
“Carbon storage and cycling in riparian and wetland environments: Considerations for Lake Superiors North Shore streams”
- 2018 European Center for Research and Education in Environmental Geosciences (CEREGE), Aix en Provence, France, May 2018  
“Sources and storage of organic carbon in coastal wetland ecosystems: organic geochemical insights”  
“Flipping an interdisciplinary graduate curriculum: Lessons from a pilot program at the Large Lakes Observatory, University of Minnesota Duluth”
- 2017 University of Minnesota Duluth Swenson College of Science & Engineering Faculty Colloquium, November 2017  
“A new model of interdisciplinary graduate education: A pilot program at the Large Lakes Observatory”
- 2016 University of Michigan Department of Geological Sciences, Ann Arbor, MI, October 2016  
“Sources and reactivity of terrestrial organic carbon to the Colville River delta, Beaufort Sea, Alaska.”
- 2016 North Shore Stream Symposium, Duluth, MN, January 2016  
“Carbon storage and cycling in riparian environments: Considerations for Lake Superior’s North Shore watershed.”
- 2015 University of St. Thomas Department of Chemistry, Minneapolis, MN, October 2015  
“Carbon storage and cycling at coastal margins: Considerations, confounding factors, and other questions”
- 2015 University of Rochester Department of Geosciences, Rochester, NY, February 2015  
“Sources and reactivity of terrestrial organic carbon to the Colville River delta, Beaufort Sea, Alaska”

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### CONFERENCE PRESENTATIONS (2014 to present)

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2019 American Chemical Society Central Regional Meeting, Midland, MI, June 2019

**K. Schreiner**, E. Minor, A. Burrows\*, E. Hendrickson\*, M. Ryan\*, J. Swenson\*. “Pyrolysis GC/MS for the analysis of natural organic matter and anthropogenic pollutants.” Invited oral presentation.

2018 Fall American Geophysical Union National Meeting, Washington, DC, December 2018

**K. Schreiner**, M. Ryan\*, J. Swenson\*, and P. Kennedy. “Chemical changes during ectomycorrhizal fungal tissue decomposition in forest soils.” Oral presentation.

**K. Schreiner**, S. Katsev, B. Steinman, R. Sterner, J. Williams. “Preparing young geoscientists for workforce success with active learning and community engagement in the graduate classroom.” Oral presentation.

2018 American Chemical Society Midwest Regional Meeting, Ames, IA, October 2018

M. Ryan\*, **K. Schreiner**, P. Kennedy, J. Swenson. “Analysis of chemical changes throughout fungal tissue degradation using thermochemolysis GCMS.” Poster presentation.

J. Swenson\*, **K. Schreiner**, M. Ryan\*, P. Kennedy. “The effect of melanin on the degradation of ectomycorrhizal fungi.” Poster presentation.

2018 Organic Geochemistry Gordon Research Conference, Holderness, NH, August 2018

Sachs, G\*, **K. Schreiner**, L. Meierhoff\*, J. Sieber, and C. Sheik. “Highly branched isoprenoids in the Western Lake Superior Region.” Poster presentation

2018 Ocean Sciences Meeting, Portland, OR, February 2018

J. Carlin, **K. Schreiner**, T. Dellapenna, L. Sayers\*, J. Swenson\*, and A. McGuffin.

“Identifying recent flood deposits within a mid-shelf mud blanket along a low-gradient passive margin.” Poster presentation.

2017 Fall American Geophysical Union National Meeting, New Orleans, LA, December 2017

E. Bye\*, **K. Schreiner**, H. Abdulla, E. Minor, and G. Guntenspergen. “Chemical characterization of soil organic matter in a Chesapeake Bay salt marsh: Analyzing microbial and vegetation inputs to SOM.” Poster presentation.

**K. Schreiner**, J. Carlin, L. Sayers\*, J. Swenson\*, and T. Dellapenna. “The impacts of episodic storm and flood events on carbon and sediment delivery to Gulf of Mexico sediments.” Poster presentation.

**K. Schreiner**, S. Katsev, B. Steinman, R. Sterner, J. Williams, and K. Zak. “Advancing graduate limnology education through active learning and community partnerships: A pilot program at the Large Lakes Observatory.” Poster presentation.

2016 Fall American Geophysical Union National Meeting, San Francisco, CA, December 2016

**K. Schreiner**, V. Bruner\*, and J. Kessler. “Organic carbon delivery from a high-Arctic North American watershed: Implications for Beaufort Sea carbon cycling in a changing climate.” Oral presentation.

V. Bruner\*, **K. Schreiner**, N. Blair, and L. Egerton-Warburton. “Chemical characterization of the degradation of necromass from four Ascomycota fungi: Implications for soil organic carbon turnover and storage.” Poster presentation.

R. Van Allen\*, **K. Schreiner**, and G. Guntenspergen. “Effects of sea level rise and coastal marsh transgression on soil organic matter in a Chesapeake Bay salt marsh. Poster presentation.

2016 Cryosphere-Carbon-Climate Interactions in the Siberian Arctic Ocean Partner conference, Tomsk, Russian Federation, November 2016

K. Sparrow, J. Kessler, J. Southon, F. Garcia-Tigeros, **K. Schreiner**, M. Leonte, K. Walter Anthony, J. Miller, S. Lehman, and X. Xu. “Limited contribution of ancient carbon-sourced methane to the modern atmosphere from the Alaskan Arctic Ocean.” Oral presentation.

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- 2016 Ocean Sciences Meeting, New Orleans, LA, February 2016  
L. Vetter, **K. Schreiner**, *Brooke Carlson\**, B. Rosenheim. “Coastal marsh succession and organic carbon stores during early Holocene sea-level rise.” Poster presentation.  
**K. Schreiner**, A. Bramburger, T. Ozersky, C. Sheik, B. Steinman. “The biological pump and lower trophic level controls on carbon cycling in Lake Superior: insights from a multi-pronged study.” Poster presentation
- 2015 Goldschmidt Geochemistry Conference, Prague, Czech Republic, August 2015  
L. Vetter, **K. Schreiner**, B. Rosenheim, B. Kohl, B. Steinmetz, L. Newsom, and T. Tornqvist. “Paleoenvironmental reconstruction of coastal marsh successions during early Holocene sea-level rise.” Poster presentation.
- 2014 Fall American Geophysical Union National Meeting, San Francisco, CA, December 2014  
*Invited*: **K. Schreiner**, T. Bianchi, B. Rosenheim. “Sources and reactivity of terrestrial organic carbon to the Colville River delta, Beaufort Sea, Alaska.” Oral presentation.  
**K. Schreiner**, B.S.T. Morgan, J. Schultz, N. Blair, and L. Egerton-Warburton. “Coupled metagenomic and chemical analyses of degrading fungal necromass and implications for microbial contributions to stable soil OC.” Poster presentation.  
L. Vetter, **K. Schreiner**, A. Fernandez, B. Rosenheim, T. Tornqvist. “Analysis and characterization of organic carbon in early Holocene paleosols using ramped pyrolysis <sup>14</sup>C and biomarkers.” Oral presentation.
- 2014 Goldschmidt Geochemistry Conference, Sacramento, CA, June 2014  
**K. Schreiner**, N. Blair, L. Egerton-Warburton. “The degradation chemistry of fungal necromass and its potential contributions to long-lived soil carbon.” Oral presentation.
- 2014 Ocean Sciences Meeting, Honolulu, HI, February 2014  
**K. Schreiner**, T. Bianchi, M. Allison, T. Eglinton, L. Wacker. “Changes to the Alaskan North Slope carbon cycle over the Late Holocene: Evidence from Colville Delta sediments, Beaufort Sea, Alaska.” Oral presentation.

### **FIELD AND CRUISE EXPERIENCE**

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- Summer 2019 (various dates): Minnesota Sentinel Lakes microplastics monitoring in collaboration with the MN Department of Natural Resources (**chief scientist**)
- May 30 – June 1, 2019: Organic sulfur biogeochemistry cruise in Lake Superior aboard the R/V *Blue Heron* (**chief scientist**)
- May 15 – 24, 2018: Coastal coral reef community research at a multi-university interdisciplinary research station in Tofo, Mozambique
- May 29 – June 1, 2016: Western Lake Superior primary production and early carbon diagenesis cruise aboard the R/V *Blue Heron* (**chief scientist**)
- August 29 – September 6, 2015: Investigating Sources of Methane in the Alaskan Beaufort Sea cruise aboard the R/V *Ukpik*
- July 20 – 23, 2015: Western Lake Superior primary production and early carbon diagenesis cruise aboard the R/V *Blue Heron* (**chief scientist**)
- May 18 – 21, 2015: Chesapeake Bay coastal marsh migration and sea level rise field campaign
- April 24 – May 1, 2011: Methods Controlling Hypoxia (MCH) cruise 17 to the northern Gulf of Mexico on the R/V *Pelican*
- August 9 – 15, 2010: Simpson Lagoon / Colville River delta cruise on the R/V *Annika Marie*
- February 14 – March 12, 2009: ACROSS (Antarctic CRossroads of Slope Streams) cruise to Drake Passage and Antarctic peninsula during International Polar Year 2009

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### AWARDS AND HONORS

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Chosen as the Swenson College of Science and Engineering nominee for the University of Minnesota award in Outstanding Graduate Teaching (only one nominee from each University of Minnesota system college)

Swenson College of Science and Engineering *Young Teacher Award*, University of Minnesota Duluth, Spring 2018

University of Minnesota Duluth Outstanding Faculty Award nomination, Spring 2017

Visiting Scholar, Swiss Federal Institute of Technology (ETH) Zurich, Switzerland in the laboratory of Dr. Timothy Eglinton, April 2012 to August 2012

### COURSES TAUGHT

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*\* denotes co-instructed course, Professor Schreiner was lead instructor of 4 for these courses*

Chem 2212: Environmental Chemistry (with laboratory)

Chem 2222: Quantitative Analysis

Chem 5150: Stable Isotope Biogeochemistry

\*Lim 5010: Limnology I

\*Lim 5011: Limnology Practice I

\*Lim 5012: Limnology II

\*Lim 5013: Limnology Practice II

### CURRICULUM DEVELOPMENT

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Attended multiple NSF-funded workshops for Teaching in Analytical Chemistry, led by Prof Thomas Wenzel from Bates College, Maine. Curriculum development for Chem 2212 and 2222 was started in these workshops.

*LIM 5010 – 5013* Led curriculum development for the new first-year graduate student course series targeted at incoming Water Resources Science graduate students. The instructor team included three other professors in different disciplines. Schreiner was lead PI for the NSF IGE grant that funded this innovative curriculum development. Activities included writing in-class and pre-class activities as part of the flipped classroom approach, writing rubrics for in-class presentations and writing assignments, and working with an educational assessment expert to determine the success of our new program.

*Chem 5150* Completely rewrote curriculum for this course and offered it for the first time in ~5 years to graduate students from multiple programs.

*Chem 2212* Rewrote and updated weekly laboratories for this course and added materials for an end-of-the-semester project for students.

*Chem 2222* Added in multiple POGIL activities for students, leading to a semi-flipped classroom environment for Quantitative Analysis students from the previous lecture-led curriculum.

### GRADUATE MENTEES

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#### Graduated MS students advised

*Maeve Ryan:* Chemistry MS, 2019

*Erik Bye:* Water Resources Science MS, 2018

*Valerie Bruner:* Chemistry MS, defended 2018 (did not deposit thesis)

*Rachel Van Allen:* Water Resources Science MS, 2017

#### Current MS student advisees

*Janna Quick:* Chemistry MS, predicted 2021

*Peter Conowall:* Water Resources Science MS, predicted 2021

*Collin Murphy:* Geology MS, predicted 2020

*Madeline Petersen:* Chemistry MS, predicted 2020

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### Master's committee service

*Emily Hyde*: Water Resources Science MS, predicted 2020  
*Emma Burgeson*: Water Resources Science MS, predicted 2020  
*Thomas Mudhenke*: Chemistry MS, predicted 2020  
*Alvin Burrows*: Chemistry MS, 2019  
*Faith Murphy*: Chemistry MS, 2019  
*Kathryn Vall*: Geology MS, 2018  
*Claire Rabine*: Geology MS, 2018  
*Erik Hendrickson*: Water Resources Science MS, 2017  
*Christopher Shea*: Geology MS, 2017  
*Kaila Hanson*: Chemistry MS, 2016  
*Cody Tennant*: Water Resources Science MS, 2016

### Doctoral committee service

*Devin Edge*: Water Resources Science PhD, predicted 2022  
*Audrey Huff*: Water Resources Science PhD, predicted 2022  
*Dr. Mojitaba Fakhraee*: Water Resources Science PhD, 2018

### UNDERGRADUATE MENTEES

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Undergraduate research projects: UROPs (Undergraduate Research Opportunities Program), SURPs (Summer Undergraduate Research Program – Department of Chemistry), and directed research

Bennett Hanson: UROP, 2019 to present  
Alexander Kohl: UROP, 2019 to present  
Grace Bishop: UROP & SURP, 2018 to present  
Jenna Swenson: UROP & SURP, 2017 to present  
Robert (Hunter) Nickeloff: directed research, 2017-2018  
Marissa Wheeler: directed research, 2017-2018  
Shawn Bourgeois: UROP, 2016-2018  
Lydia Sayers: SURP, 2017  
Christy Atkinson: directed research, 2016-2017  
Kaelt Simpson: SURP, 2016  
Brooke Carlson: SURP, 2015  
Megan Nelson: directed research, 2014-2015

### SERVICE TO THE DISCIPLINE, UNIVERSITY, AND PUBLIC

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#### Manuscript Reviewer:

*Biogeochemistry*  
*Chemical Geology*  
*Estuarine, Coastal, and Shelf Science*  
*Earth & Planetary Science Letters*  
*Geochimica Cosmochimica Acta*  
*Geophysical Research Letters*  
*Journal of Geophysical Research: Biogeoscience*  
*Journal of Marine Systems*  
*Limnology & Oceanography*  
*Marine & Freshwater Research*  
*Marine Chemistry*  
*Organic Geochemistry*  
*Palaeogeography, Palaeoclimatology, Palaeoecology*

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### **Review Editor:**

*Frontiers: Environmental Science*

### **Proposal Reviews:**

NSF Arctic Natural Sciences  
NSF Chemical Oceanography  
NSF Innovations in Graduate Education

### **National Science Foundation panel participation:**

Geosciences Directorate, Polar Programs, Arctic Natural Sciences  
Human Resources and Education Directorate, Division of Graduate Education

### **University Service:**

University of Minnesota Water Resources Science Executive Committee, 2019 to present  
Summer Undergraduate Research Program committee member, Department of Chemistry,  
2018 to present  
University of Minnesota Duluth Study Away program head, 2017 to present  
University of Minnesota Water Resources Science Curriculum Committee, 2017-2019  
Graduate Studies Committee member, Department of Chemistry, 2016 to present  
Swenson College Teaching & Learning committee member, 2016 to present  
Chemistry Department seminar series organizer, 2014 – 2016

### **Public Service and Outreach:**

Chief editor, [www.studywater.org](http://www.studywater.org), a public-facing website featuring first-year graduate  
Limnology curriculum from our NSF-funded limnology curriculum project.  
Workshop facilitator, Swenson College Science & Engineering Day, 2015 to present. This  
involves running a workshop room for an annual Saturday recruitment open campus  
event for northern Minnesota high school and middle schoolers.  
Invited talk at the State of Minnesota Clean Water Council meeting, May 2019  
Co-sponsored a high school teachers' workshop at the Duluth Great Lakes Aquarium focused  
on environmental plastics, 2017  
Participated in interviews for the Duluth, Minnesota Fox affiliate, CBS affiliate, and the  
Minneapolis *Star Tribune* newspaper

### **PROFESSIONAL AFFILIATIONS**

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*Member,* American Chemical Society

*Member,* American Society of Limnology and Oceanography

*Member,* American Geophysical Union