

---

**JIYING LI**

2205 East 5<sup>th</sup> Street, Duluth, MN, USA  
 Tel.: +1 (218) 409 5267, Email: lixx0590@d.umn.edu

**Education**


---

<b>Ph.D.</b> University of Minnesota, USA	September 2014
---	----------------

Limnology and Oceanography – Water Resources Science

**Thesis Title:** Sediment diagenesis in large lakes Superior and Malawi, geochemical cycles and budgets and comparison to marine sediments

<b>M.Sc.</b> University of Minnesota, USA	June 2011
---	-----------

Water Resources Science

**Thesis Title:** Diagenesis and sediment-water exchanges in organic-poor sediments of Lake Superior

<b>B.Sc.</b> Shanghai Jiao Tong University, China	June 2008
---	-----------

Environmental Science and Engineering

**Professional experiences**


---

<b>Postdoctoral Researcher</b>	7/23/2018 – Present
--------------------------------	---------------------

Large Lakes Observatory, University of Minnesota Duluth  
 Advisors: Prof. Sergei Katsev and Prof. Tedy Ozersky

<b>Postdoctoral Researcher</b>	9/1/2016 – 6/30/2018
--------------------------------	----------------------

Department of Physical and Environmental Sciences, University of Toronto Scarborough  
 Advisor: Prof. Maria Dittrich

<b>Postdoctoral Researcher</b>	9/1/2014 – 7/31/2016
--------------------------------	----------------------

Department of Plant and Soil Sciences, University of Delaware  
 Advisor: Prof. Deb Jaisi

**Research experiences****Research interests**

- Aquatic biogeochemistry
- Sediment early diagenesis: carbon, nitrogen, phosphorus, iron and sulfur cycles
- Stable isotope biogeochemistry: phosphate oxygen isotopes, nitrogen isotopes
- Nutrient dynamics and plankton ecology

**Research projects**

**7/21/2018 – Present:** Postdoctoral researcher at Large Lakes Observatory, University of Minnesota Duluth (Supervisors: Prof. Sergei Katsev and Prof. Tedy Ozersky)

1. Responses of sediment C-N-P cycles to shifts in benthic communities in the upper Great Lakes: impacts of the invasive species zebra and quagga mussels
2. Planktonic polyphosphate metabolism and its role in phosphorus cycling in the upper Great

Lakes (Lakes Superior, Michigan, and Huron)

**9/1/2016 – 6/30/2018:** Postdoctoral research at Department of Physical and Environmental Sciences, University of Toronto Scarborough (Supervisor: Prof. Maria Dittrich)

1. Polyphosphate metabolisms in phytoplankton responding to nutrient variability
2. Internal loading of phosphorus in Lake of the Woods, USA/Canada: mechanisms and controls of nutrient exchanges at the sediment-water interface

**9/1/2014 – 7/31/2016:** Postdoctoral research at Department of Plant and Soil Sciences, University of Delaware (Supervisor: Prof. Deb Jaisi)

1. Phosphorus sources, limitation, and biological turnover in the Chesapeake Bay (phosphate oxygen isotope study)
2. Tracing phosphorus sources in anoxic contamination plumes in the Cape Cod Aquifer using phosphate oxygen isotopes

**9/1/2008 – 8/30/2014:** Doctoral research at Large Lakes Observatory, University of Minnesota Duluth (Advisor: Prof. Sergei Katsev)

1. Sediment carbon and nutrient cycling in Lake Superior
2. Carbon and nutrient cycling in tropical meromictic Lake Malawi, East Africa

### Fieldwork

- Lakes Michigan and Huron, USA, *R/V Blue Heron* (May-Jun. 2019, **Chief Scientist**; Aug. 2019, **Scientist**)
- Lakes Superior, Michigan, and Lake Huron, USA, *R/V Blue Heron* (Jul-Aug. 2018, **Scientist**)
- Lake of Woods, Canada (Sep. 2017, **Scientist**)
- Bay of Quinte, Lake Ontario, Canada (Oct. 2016, **Scientist**)
- Chesapeake Bay, USA), *R/V Kehrln* (4 cruises 2014 -2015, **Scientist**)
- Lake Superior, USA/Canada, *R/V Blue Heron* (8 cruises 2009- 2012, **Student Scientist**)
- Lake Malawi, Malawi, *R/V Ndunduma* (Jan. 2011, **Student Scientist**)

### Technical experiences, training, and courses

- Scanning electron microscope operation training (Hitachi S-5200 SEM), Centre for Nanostructure Imaging, University of Toronto, 03/17/2017
- Isotope ratio mass spectrometer (IRMS Delta V, TCEA, GasBench II) maintenance: Environmental Biogeochemistry Laboratory, University of Delaware, 09/01/14-07/31/2016
- Nuclear Magnetic Resonance Spectrometers equipment training (Bruker AV600, Bruker AV400), NMR laboratory, University of Delaware, 10/13/2015
- X-ray powder diffraction equipment training (Bruker Advance D-8), Materials Characterization Lab, University of Delaware, 8/10/2014
- Practical Nuclear Magnetic Resonance Spectrometry course (50 hours), Department of Chemistry and Biochemistry, University of Delaware, 9/1/2015- 10/6/2015

### Teaching and mentoring

#### Mentoring:

- Co-advisor: Master student Blandine Barthod at University of Toronto Scarborough, Sep 2017- July 2018
- Co-advisor: undergraduate work-study student Oleksandra Kashun at University of Toronto Scarborough, Sep 2016- Dec 2017
- Advisor: undergraduate volunteer student Dushara Ragavachari at University of Toronto Scarborough, July – Dec 2017

#### Teaching:

- Guest lecturer: *Limnology (Microbial redox reactions)*, University of Minnesota Duluth, Fall 2018
- Guest lecturer: *Limnology (Nutrient cycling)*, University of Toronto Scarborough, Spring 2018
- Guest lecturer: *Current Questions in Mathematics and Sciences (Questions in aquatic sciences)*, University of Toronto Scarborough, Spring 2017
- Laboratory instructor and teaching assistant: *General Physics II*, Fall 2009; *General Physics I*, Fall 2008 and Spring 2009 at University of Minnesota Duluth

## Outreach and other professional activities

### Outreach activities:

- Science on Deck, Duluth, MN, August, 30, 2019: guiding public tours for research and facilities on *R/V Blue Heron*
- Science on Deck, Duluth, MN, August, 31, 2018: guiding public tours for research and facilities on *R/V Blue Heron*
- Science on Deck at the Discovery World, Milwaukee, WI, August 4, 2018: guiding public tours on *R/V Blue Heron* and talking to public about research on invasive mussels in the Great Lakes
- Agricultural Day, Newark, DE: volunteering at education exhibits about agriculture and natural resources
- Science Friday on *R/V Blue Heron*, Duluth, MN, July 18, 2014: guiding public tours for research and facilities on *R/V Blue Heron*
- Minnesota Regional Science Fair, Duluth, MN, Feb 5, 2011: serving as judge for K-12 student science projects

**Manuscript reviewer:** Continental Shelf Research, Journal of Coastal Research, Environmental Science & Technology, Geochemica et Cosmochimica Acta, Limnology & Oceanography, PLOS ONE, Journal of Great Lakes Research, Environmental Pollution

## Fellowships and awards

- Elsevier Early Career Scientist Most Notable Paper Award (2018), International Association for the Great Lakes Research
- Water Resources Science Program Summer Fellowship (2014), \$4500, University of Minnesota Twin Cities.
- University of Minnesota Distinguished Master's Thesis Award Nomination (2011) by Water Resources Science Program, University of Minnesota Twin Cities.
- Water Resources Science Block Grant Summer Fellowship (2010, \$2300), University of Minnesota Twin Cities.
- Physics Summer Research Fellowship (2009, \$3000), Department of Physics, University of Minnesota Duluth.

## Publications

1. **Li, J.**, D. Plouchart, A. Zastepa and M. Dittrich. 2019. Picoplankton accumulate and recycle polyphosphate to support high primary productivity in coastal Lake Ontario. *Scientific Reports* 9: 19563
2. **Li, J.** and M. Dittrich. 2019. Dynamic polyphosphate metabolism in cyanobacteria responding to phosphorus availability. *Environmental Microbiology* 21: 572- 583

3. **Li, J.**, Y. Zhang, and S. Katsev. 2018. Phosphorus recycling in deeply oxygenated sediments in Lake Superior controlled by organic matter mineralization. *Limnology and Oceanography*. 63: 1372- 1385
4. **Li, J.**, E. T. Brown, S. A. Crowe, and S. Katsev. 2018. Sediment geochemistry and contributions to carbon and nutrient cycling in a deep meromictic tropical lake: Lake Malawi (East Africa). *Journal of Great Lakes Research*. 44: 1221-1234 (*2018 Elsevier Early Career Most Notable Paper Award*)
5. **Li, J.**, P. Reardon, J. P. McKinley, Y. Bai, S. Joshi, K. Bear, and D. P. Jaisi. 2017. Water column particulate matter a key contributor to phosphorus regeneration in coastal eutrophic environments, the Chesapeake Bay. *Journal of Geophysical Research – Biogeosciences*. 122: 737- 752
6. **Li, J.**, Y. Bai, K. Bear, S. Joshi, and D. P. Jaisi. 2017. Phosphorus availability and turnover in the Chesapeake Bay: Insights from nutrient stoichiometry and phosphate oxygen isotope ratios. *Journal of Geophysical Research – Biogeosciences*. 122: 811-824
7. Fakhraee, M., **J. Li** and S. Katsev. 2017. Significant role of organic sulfur in supporting sedimentary sulfate reduction in low-sulfate environments. *Geochimica et Cosmochimica Acta*. 213: 502-516
8. Katsev S., Verburg P., Lliros M., Minor E., Kruger B., and **Li J.**. 2017. Tropical meromictic lakes: Specifics of meromixis and case studies of Lakes Tanganyika, Malawi, and Matano. In *Ecology of Meromictic Lakes*, edited by R. Gulati, A. Degermendzhy, and E. Zadereev. Springer.
9. Crowe, S. A., A. H. Treusch, M. Forth, **J. Li**, C. Magen, D. E. Canfield, B. Thamdrup, S. Katsev. 2017. Novel anammox bacteria and nitrogen loss from Lake Superior. *Scientific Reports*. 7: 13757
10. **Li, J.**, and S. Katsev. 2014. Nitrogen cycling in deeply oxygenated sediments: Results in Lake Superior and implication to marine sediments. *Limnol. Oceanogr.* 59 (2): 465–481
11. **Li, J.** S. A. Crowe, D. Miklesh, M. Kistner, D. E. Canfield, and S. Katsev. 2012. Carbon mineralization and oxygen dynamics in sediments with deep oxygen penetration, Lake Superior. *Limnol. Oceanogr.* 57:1634-1650

## Presentations

1. **Li, J.**, V. Ianaiev, A. Huff, J. Zalusky, T. Ozersky, and S. Katsev. Benthic Shunt: dreissenid mussels now control phosphorus dynamics in Lake Michigan. IAGLR Conference, Brockport, NY, USA, June 10-14, 2019 (Oral)
2. **Li, J.**, A. Zastepa, S. Markovic, S. Watson, and M. Dittrich. Seasonal and spatial variability of polyphosphate in the water column of Hamilton Harbour. IAGLR Conference, Scarborough ON, Canada, June 18- 22, 2018 (Oral)
3. **Li, J.**, O. Kaskun, and M. Dittrich. Polyphosphate and intracellular Ca-carbonates in cyanobacteria in response to changing phosphorus levels. Geobiology Meeting, Banff AB, Canada. June 11- 14, 2017 (Poster)
4. **Li, J.**. Keeping up with the literature. Invited speaker for Professional Development Workshop, Department of Plant and Soil Sciences, University of Delaware. Feb. 4, 2016
5. **Li, J.**, P. Reardon, S. R. Joshi, Y. Bai, K. Bear, N. Dhakal, N. Washton, and D. P. Jaisi. Internal cycling of phosphorus in the Chesapeake Bay: Comparison of P cycling in water and sediment columns. ASA-CSA-SSSA Annual Meeting, Minneapolis MN, USA. Nov. 15 -18, 2015 (Oral)
6. **Li, J.**, P. Reardon, Joshi, S.R., Bai, Y., Bear, K., Washton, N., Jaisi, D.P. Remineralization of organic phosphorus and precipitation of authigenic phosphate in the mid-Chesapeake Bay water column. Geological Society of America Annual meeting, Baltimore MD, USA. Nov 1- 4, 2015 (Oral)
7. **Li, J.** and S. Katsev. Large lakes as analogues for sediment cycling of carbon and nitrogen in

- 
- coastal and deep Ocean. Ocean Science Meeting, Honolulu HI, USA. Feb. 23 – 28, 2014 (Oral)
8. **Li, J.** and S. Katsev. Diagenesis in freshwater vs. marine sediments: The importance of oxygen penetration for the carbon and nitrogen cycles. Gordon Research Conference, Biddeford ME, USA. August 4 – 9, 2013 (Poster)
  9. **Li, J.** and S. Katsev. Carbon and nutrient cycling in sediments of Lake Malawi. IAGLR Conference, West Lafayette IN, USA. June 2 -6, 2013 (Oral)
  10. **Li, J.**, S. A. Crowe, E. T. Brown, M. Dittrich, D. Miklesh and S. Katsev. 2011. Diagenetic mobility of Mn and Fe crusts in organic-poor sediments of Lake Superior. Goldschmidt Conference, Prague, Czech Republic. August 14- 19 (Poster)
  11. **Li, J.**, S. A. Crowe, D. Miklesh, D. E. Canfield, and S. Katsev. Migrations of sediment redox boundaries as indicators of change in oligotrophic systems, Goldschmidt Conference, Knoxville, Tennessee, USA. June 13- 18, 2010 (Oral)
  12. **Li, J.**, S. A. Crowe, D. Miklesh, S. Katsev. Nutrient fluxes and temporal and spatial variability in organic poor sediment in Lake Superior. AGU Fall Meeting. San Francisco, USA, Dec 14 -18, 2009 (Poster)