Curriculum Vitae

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Pengfei Xue

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EDUCATION

Ph.D. in Marine Science, University of Massachusetts Intercampus Marine Science (IMS) graduate program (2012)

B.Sc. in Mathematics and Applied Mathematics, East China Normal University (2004)

RESEARCH INTERESTS

- Hydrodynamic modeling
- Bio-physical processes in the Great Lakes
- Regional climate modeling
- Integrated regional earth modeling system
- Estuary and coastal ocean processes
- Data assimilation and machine learning

ACADEMIC EMPLOYMENT

2021 – Present: Visiting Professor, Department of Civil and Environmental Engineering, Massachusetts Institute of Technology

2020 – Present: Geophysical Scientist, Joint Appointment with Environmental Science Division, Argonne National Laboratory

2019 – Present: Associate Professor, Michigan Technological University

2018 – Present: Director, Numerical Geophysical Fluid Dynamics Lab, Great Lakes Research Center, Michigan Technological University

2013 – 2019: Assistant Professor, Michigan Technological University

2012 – 2013: Postdoctoral Associate, Massachusetts Institute of Technology

2006 – 2012: Research Assistant, University of Massachusetts-Dartmouth (School for Marine Science Technology)

2005 – 2006: Visiting Scholar, University of Massachusetts (School for Marine Science & Technology)

2004 – 2005: Research Assistant, State Key Laboratory of Estuarine and Coastal Research, China

PEER-REVIEWED JOURNAL PUBLICATIONS ([†]student advisee and [♣]postdoctoral publications using the First–Last (*Corresponding) Author Emphasis (FLAE)]

1. [†]Huang, C., Zhu, L., Ma, G., Meadows, G. A., *Xue, P. (2021). Wave Climate Associated with Changing Water Level and Ice Cover in Lake Michigan. *Frontiers in Marine Science*, 8, 1574. doi:10.3389/fmars.2021.74691

2. [†]Huang, C., Anderson, E.J.,Liu, Y., Ma, G., Mann, G., *Xue, P. (2021). Evaluating Essential Processes and Forecast Requirements for Meteotsunami-induced Coastal Flooding. *Natural Hazards*, 1-26. https://doi.org/10.1007/s11069-021-05007-x

3. [†]Zhou, X., Auer, M.T., *Xue, P. (2021). Open Lake Phosphorus Forcing of Cladophora Growth: Modeling the Dual Challenge in Great Lakes Trophic State Management. *Water*, 13, 2680. https://doi.org/10.3390/w13192680

4. Notaro, M., Zhong, Y., Xue, P., Peters-Lidard, C., Cruz, C., Kemp, E., Kristovich, D., Kulie, M., Wang, J., Huang, C., Vavrus, S. (2021). Cold Season Performance of the NU-WRF Regional Climate Model in the Great Lakes Region. *Journal of Hydrometeorology*, Early online release, https://doi.org/10.1175/JHM-D-21-0025.1.

5. Chaffin J. et al. (29 authors) (2021). The Lake Erie HABs Grab: A binational collaboration to characterize the western basin cyanobacterial harmful algal blooms at an unprecedented high-resolution spatial scale. *Harmful Algae,* 108, https://doi.org/10.1016/j.hal.2021.102080.

6. Auer, M.T.; McDonald, C.P.; Kuczynski, A.; Huang, C.; **Xue, P.** (2021) Management of the Phosphorus–*Cladophora* Dynamic at a Site on Lake Ontario Using a Multi-Module Bioavailable P Model. *Water, 13*, 375. https://doi.org/10.3390/w13030375

7. Ibrahim, H., ****Xue, P.,** & Eltahir, E. A. (2020). Multiple Salinity Equilibria and Resilience of Persian/Arabian Gulf Basin Salinity to Brine Discharge. *Frontiers in Marine Science*7:573. doi: 10.3389/fmars.2020.00573

8. Feng, X., Ma, G., Su, S., Huang, C., Boswell, M., **Xue, P.** (2020). A multi-layer perceptron approach for accelerated wave forecasting in Lake Michigan. *Ocean Engineering,* 211, 107526

9. ***Xue, P.,** Malanotte-Rizzoli, P., Wei, J., Eltahir, E. A. (2020), Coupled Ocean-Atmosphere Modeling over the Maritime Continent: A Review. *Journal of Geophysical Research-Oceans*, 125, doi:10.1029/2019JC014978

10. Zhang, Y., Chen, C., **Xue, P.,** Beardsley, R. C., & Franks, P. J. (2020). A view of physical mechanisms for transporting harmful algal blooms to Massachusetts Bay. *Marine Pollution Bulletin,* 154, 111048.

11. **†**Ye, X., Chu, P. Y., Anderson, E. J., Huang, C., Lang, G. A., & ****Xue, P.** (2020). Improved thermal structure simulation and optimized sampling strategy for Lake Erie using a data assimilative model. *Journal of Great Lakes Research*, 46, 144-158, DOI: 10.1016/j.jglr.2019.10.018

12. **♣**Shi, Q., & ****Xue, P.** (2019). Impact of lake surface temperature variations on lake effect snow over the Great Lakes region. *Journal of Geophysical Research-Atmosphere,* 124, 12,553–12,567, DOI:10.1029/2019JD031261

13. **†**Huang, C., Kuczynski, A., Auer, M. T., O'Donnell, D. M., & ****Xue, P.** (2019). Managing the Phosphorus-Cladophora Dynamic in Lake Ontario: Insights from Hydrodynamics. *J. Mar. Sci. Eng.* 2019, 7(5), 129; https://doi.org/10.3390/jmse7050129

14. **†**Ye, X., Anderson, E. J., Chu, P. Y., Huang, C., & ****Xue, P.** (2019). Impact of water mixing and ice formation on the warming of Lake Superior: a model-guided mechanism study. *Limnology and Oceanography*, doi: 10.1002/lno.11059

15. ***Xue, P.**, Schwab, D.J., Zhou, X., Huang, C., Kibler, R., Ye, X. (2018). A Hybrid Lagrangian–Eulerian Particle Model for Ecosystem Simulation. *J. Mar. Sci. Eng.* 2018, 6, 109. doi: 10.3390/jmse6040109

16. Niroomandi, A., Ma, G., Ye, X., Lou, S., & **Xue, P.** (2018), Extreme Value Analysis of Wave Climate in Chesapeake Bay, *Ocean Engineering*, 159, 22-36, doi: https://doi.org/10.1016/j.oceaneng.2018.03.094

17. Bao, T., Liu, Z., Meldrum, J., Green, C., **Xue, P.**, & Vitton, S. (2018). Field tests and multiphysics analysis of a flooded shaft for geothermal applications with mine water. *Energy Conversion and Management*, 169, 174-185.

18. ***Xue, P.**, Schwab, D. J., Sawtell, R. W., Sayers, M. J., Shuchman, R. A., & Fahnenstiel, G. L. (2017), A Particle-tracking Technique for Spatial and Temporal Interpolation of Satellite Images Applied to Lake Superior Chlorophyll Measurements, *J. Great Lakes Res.,* 43(3), 1-13.

19. ***Xue, P.**, J. S. Pal, X. Ye, J. D. Lenters, C. Huang, P. Y. Chu (2017), Improving the Simulation of Large Lakes in Regional Climate Modeling: Two-way Lake-atmosphere Coupling with a 3-D Hydrodynamic Model of the Great Lakes, *J. Climate,* 30, 1605–1627, doi: 10.1175/JCLI-D-16-0225.1

20. ***Xue, P.**, Schwab, D. J., and Hu S.(2015), An investigation of the thermal response to meteorological forcing in a hydrodynamic model of Lake Superior, *J. Geophys. Res. Ocean*s, 120, 5233–5253, doi:10.1002/2015JC010740.

21. ***Xue, P.** and Eltahir E. A. (2015), Estimation of the Heat and Water Budgets of the Persian Gulf Using A Regional Climate Model, *J. Climate.*, 28(13), 5041-5062 doi: http://dx.doi.org/10.1175/JCLI-D-14-00189.1

22. Wang, Z., Song, H., Watkins, D. W., Ong, K. G., **Xue, P.,** Yang, Q., & Shi, X. (2015), Cyber-physical systems for water sustainability: challenges and opportunities, *Communications Magazine*, IEEE 53 (5), 216-222, doi: 10.1109/MCOM.2015.7105668

23. ***Xue, P.**, Eltahir, E. A., Malanotte-Rizzoli, P., & Wei, J. (2014), Local feedback mechanisms of the shallow

water region around the Maritime Continent, *J. Geophys. Res. Oceans*, 119(10), 6933-6951, doi: 10.1002/2013JC009700

24. ***Xue, P.**, Chen, C., Qi, J., Beardsley, R. C., Tian, R., Zhao, L., & Lin, H. (2014). Mechanism studies of seasonal variability of dissolved oxygen in Mass Bay: A multi-scale FVCOM/UG-RCA application, *J. Mar. Syst.*, 131, 102-119. doi:10.1016/j.jmarsys.2013.12.00

25. Li, Y., Chen, X., Chen, C., Ge, J., Ji, R., Tian, R., **Xue, P.** and Xu, L. (2014), Dispersal and survival of chub mackerel (*Scomber Japonicus*) larvae in the East China Sea, *Ecol. Model., 283, 70-84.*, doi:10.1016/j.ecolmodel.2014.03.016

26. Wei, J., Malanotte-Rizzoli, P., Eltahir, E. A., **Xue, P.,** & Xu, D. (2013). Coupling of a regional atmospheric model (RegCM3) and a regional oceanic model (FVCOM) over the Maritime Continent, *Clim. Dyn.,* 43(5-6), 1575-1594, doi:10.1007/s00382-013-1986-3.

27. ***Xue, P.**, Chen, C., Beardsley, R.C. (2012). Observing System Simulation Experiments (OSSEs) of dissolved oxygen monitoring in Massachusetts Bay, *J. Geophys. Res.*, 117, C05014, doi:10.1029/2011JC007843.

28. Chen, C., Limeburner, R., Gao, G., Xu, Q., Qi, J., **Xue, P.,** Lai, Z., Lin, H., Beardsley, R., Owens, B. and Carlson, B., 2012, FVCOM model estimate of the location of Air France 447 Topical Collection on Advances in Search and Rescue at Sea, *Ocean Dyn.*, 62(6),943-952.

29. ***Xue, P.**, Chen, C., Beardsley, R.C., Limeburner, R. (2011). Observing System Simulation Experiments (OSSEs) with Ensemble Kalman Filters in Nantucket Sound, Massachusetts, *J. Geophys. Res.*, doi: 10.1029/2010JC006428

30. **Xue, P.**, Chen, C., Ding, P., Beardsley, R. C., Lin, H., Ge, J., & Kong, Y. (2009). Saltwater intrusion into the Changjiang River: A model-guided mechanism study. *J. Geophys. Res,* 114, C02006, doi:10.1029/2008JC004831.

31. Chen, C., Malanotte-Rizzoli, P., Wei, J., Beardsley, R.C., Lai, Z., **Xue, P.,** Lyu, S., Xu, Q., Qi, J. and Cowles, G.W., (2009). Application and comparison of Kalman filters for coastal ocean problems: An experiment with FVCOM, *J. Geophys. Res.*, 114, C05011, doi:10.1029/2007JC004548.

32. Chen, C., **Xue, P.,** Ding, P., Beardsley, R.C., Xu, Q., Mao, X., Gao, G., Qi, J., Li, C., Lin, H. and Cowles, G. (2008). Physical mechanisms for the offshore detachment of the Changjiang diluted water in the East China Sea, *J. Geophys. Res.*, 113, C02002, doi: 10.1029/2006JC003994.

SELECTED PRESENTATIONS (†student and ♣postdoctoral advisee, <u>presenter</u>)

Presentations at national and international conferences:

A) Podium Presentation (**since 2019**)

1. <u>**Xue, P**</u>., Ye, X., Pal J., Chu, P., Kayastha, M. (2022) Changing Climate Over the Great Lakes Region: Projections Using Two-way Coupling of a Regional Climate Model With a 3-d Lake Model. Ocean Sciences Meeting (OSM2022, Virtual), February 24 - March 4, 2022

2. †<u>Kayastha, M</u>., **Xue, P**., Ye, X. (2022) Predicting the impacts of climate change on the Great Lakes water levels using a two-way coupled 3D regional climate modeling system. Ocean Sciences Meeting (OSM2022, Virtual), February 24 - March 4, 2022

3. ♣<u>Zhu, L.</u>, **Xue, P**., Huang, C., Ma, G., & Meadows, G. A. (2022). Wave Climate and Water Level Changes in Lake Michigan. *In Ocean Sciences Meeting 2022 (OSM2022).* Online, Feb 27, 2022 – Mar 4, 2022.

4. <u>**Xue, P**</u>., (2022) Lake-Atmosphere-Land Coupling: Towards a Better Predictive Understanding of the Great Lakes Hydroclimate, Great Lakes Adaptive Management-Hydroclimate Priority Setting Workshop (Virtual), February 16, 2022

5. Wang, J., **Xue, P.,** Pringle, W.J., Yang, Z., Qian, Y. (2022) Lake Surface Temperature Impacts on Regional Climate over Great Lakes Basin. 102nd American Meteorological Society (AMS) Annual Meeting, Houston, Texas, January 23-27, 2022.

6. **Xue, P.**, C. Huang, M. Notaro, Y. Zhong, C. Peters-Lidard, C. Cruz, E. Kemp, D. Kristovich, M. Kulie, J. Wang, S. Vavrus (2021). Importance of Coupling the 3D Lake Model to the Regional Climate Model in Simulating the Great Lakes System. AGU fall meeting, New Orleans, Louisiana, December 13-17, 2021

7. ♣Zhu, L., **Xue, P.,** Huang, C., & Meadows, G. A. (2021). Sediment Transport in Lake Michigan under a Changing Wave Climate. *In 26th Biennial CERF Conference (CERF2021)*. Online, 1–4 and 8–11 November 2021.

8. [†]Huang, C., **Xue, P.**, Anderson, E., Liu, Y., Ma, G., & Mann, G. (2021). Evaluating essential processes and forecast requirements for meteotsunami-induced coastal flooding. *In 26th Biennial CERF Conference (CERF2021)*. Online, 1–4 and 8–11 November 2021

9. [†]Zhou, X., **Xue, P.**, Rowe, M. D., & Liu, Q. (2021). Inter-comparison of Three HAB Transport Models in Short-term Forecasting of Lake Erie CHABs Event. *In 26th Biennial CERF Conference (CERF2021)*. Online, 1–4 and 8–11 November 2021.

10. **Xue, P.**, Huang, C., Anderson, E., Liu, Y., Mann, G. (2021) Enhancing Great Lakes coastal flooding forecasting for meteorologically-induced tsunamis. 30th International Tsunami Symposium, Sendai, Japan, July 1-3, 2021

11. **Xue, P.** (2021) Connecting Observations and Modeling: Part 1: Integrated Regional Earth System Model (IRESM), Northeastern Association of Marine & Great Lakes Laboratories Summer Meeting (Virtual), July 26, 2021

12. Kraucunas, I., Bailey, V., Hetland, R., Bridgeman, T., **Xue, P.** (2021) New U.S. DOE project on coastal observations, mechanisms, and predictions across systems and scales. International Association for Great Lakes Research, Houghton, MI, May 17-21, 2021

13. Notaro, M., Zhong, Y., **Xue, P.**, Peters-Lidard, C., Cruz, C., Kemp, E., Kristovich, D., Kulie, M., Wang, J., Huang, C., Vavrus, S., Briley, L. (2021) Performance of the NU-WRF Regional Climate Model in the Great Lakes Region. International Association for Great Lakes Research, Houghton, MI, May 17-21, 2021

14. **Xue, P.**, Huang, C., Notaro, M., Zhong, Y., Peters-Lidard, C., Cruz, C., Kemp, E., Kristovich, D., Kulie, M., Wang, J., Vavrus, S., Wang, J., Qian, Y., Yang, Z. (2021) Assessment of the two-way coupling of FVCOM and NU-WRF in the Great Lakes Region. International Association for Great Lakes Research, Houghton, MI, May 17-21, 2021

15. [†]Kayastha, M., **Xue, P.**, Huang, C., Ye, X., Meadows, G., Miller, Z., Hunter, T., Fry, L., Chu, P. (2021) Projections of Great Lakes' water level based on a 3D regional climate modeling system. International Association for Great Lakes Research, Houghton, MI, May 17-21, 2021

16. Chaffin, J., Bratton, J., Verhamme, E., Bridgeman, T., Davis, T., Westrick, J., Dick, G., **Xue, P.**, McKay, R., Binding, C., Zastepa, A. (2021) The HABs Grab: A binational characterization of the Lake Erie cyanobacterial blooms. International Association for Great Lakes Research, Houghton, MI, May 17-21, 2021

17. Wang, J., **Xue, P.**, Yang, Z., Qian, Y. (2021) Impacts of Great Lakes on warm season precipitation using high resolution simulations. International Association for Great Lakes Research, Houghton, MI, May 17-21, 2021

18. [†]Huang, C., **Xue, P.**, Anderson, E., Liu, Y., Mann, G. (2021) Modeling the coastal flooding: a study case in Ludington, Michigan. International Association for Great Lakes Research, Houghton, MI, May 17-21, 2021

19. [†]Wagh, A., **Xue, P.**, Wang, Y., Huang, C., Yang, Y. (2021) Using Long short-term memory networks to improve hydrodynamic modeling. International Association for Great Lakes Research, Houghton, MI, May 17-21, 2021

20. Yang, Z., Qian, Y., Wang, J., **Xue, P.**, Pringle, W. (2021) Convection Systems and Summer Storms over the Great Lakes Region. International Association for Great Lakes Research, Houghton, MI, May 17-21, 2021

21. Ye, X., **Xue, P.**, Chu, P., Anderson, E., Mason, L. (2021) Improved lake surface temperature analysis in Lake Michigan through data assimilation. International Association for Great Lakes Research, Houghton, MI, May 17-21, 2021

22. Lenters, J., Lenard, C., **Xue, P.**, Meadows, G., Huang, C. (2021) Waves and circulation on Lake Superior during an intense autumn gale: The Halloween storm of 2020. International Association for Great Lakes Research, Houghton, MI, May 17-21, 2021

23. ♣Shi, Q and **Xue. P.** (2019) Impact of Lake Surface Temperature Variations on Lake Effect Snow over the Great Lakes Region. American Geophysical Union (AGU) fall meeting, San Francisco, CA December 9-13, 2019

24. **Xue, P**, Chu, P., Ye, X. Huang, C., Pal, J. (2019) Two-way Atmosphere-Lake-Ice Coupled Regional Climate Simulation over the Great Lakes Region Lakes2019 workshop, October 22-24, 2019 Toulouse, France

25. **Xue, P**., Ye, X., Huang, C. (2019) Climate projections over the Great Lakes region using the GLARM. International Association for Great Lakes Research, Brockport, New York, June 10-14, 2019

26. †Huang, C. **Xue, P.** (2019) Three-way Coupled Modeling System for Storm Wave: A Case Study in Lake Superior. International Association for Great Lakes Research, Brockport, New York, June 10-14, 2019

27. **Xue, P**., Ye, X., P. Chu, E. Anderson, Huang, C., G. Lang (2019) Using data assimilation to improve thermal structure prediction in Lake Erie. International Association for Great Lakes Research, Brockport, New York, June 10-14, 2019

28. Chaffin, J., J. Bratton, T. Bridgeman, T. Davis, K. Meyer, E. Verhamme, J. Westrick, **P. Xue** (2019). Forecasting Microcystin Concentrations in Western Lake Erie. International Association for Great Lakes Research, Brockport, New York, June 10-14, 2019

29. **Xue, P**., Ye, X., Huang, C. (2019). Impact of Climate Change on Thermal Variability and Ecosystem Vulnerability of the Great Lakes, ASLO aquatic sciences meeting, Puerto Rico February 23- March 2, 2019

B) Poster Presentation (**since 2019**)

1. †Zhou, X., **Xue, P**., Auer, M. T. Offshore P-forcing of Cladophora growth in the Lake Michigan nearshore: a 1D modeling approach (2020). International Association for Great Lakes Research (IAGLR), June 9–11, 2020.

2. E. J. Anderson, L. Read, J. Kessler, *C. Huang, **P. Xue**, L. Mason, L. Fry, Y. Hong (2019). Linking Watershed Hydrology and Coastal Hydrodynamic Models for Improved Water Level and Inundation Prediction in the Great Lakes, American Geophysical Union (AGU) fall meeting, San Francisco, CA December 9-13, 2019

3. †Ye, X., **Xue, P.,** P. Y. Chu, E. J. Anderson, *C. Huang, G. Lang (2019). A Step Toward Incorporating Data Assimilative Capability into the NOAA Great Lakes Operational Forecasting System (GLOFS), CIGLR Annual Meeting, Ann Arbor, September 23-24, 2019

4. †Huang C., and **Xue, P**. (2018). Improve the Wave Simulation in the Great Lakes Using a Three-way Coupled Modeling System, AGU Fall Meeting, Washington D.C. December 10-14, 2018

5. Shi, Q and **Xue, P.** (2018), "Surface water temperature and wind divergence variability over the Great Lakes region", State of Lake Superior Conference, International Association for Great Lakes Research. Houghton, MI, October 9-12, 2018.

6. **Xue, P.**, Ye, X., Pal, J. S., Chu, P. Y. (2018) "Improve Regional Climate Modeling using the Great Lakes–Atmosphere Regional Model (GLARM)," Ocean Sciences Meeting 02-2018, American Geophysical Union, Portland, Oregon. February 12-16, 2018.

ii. Invited Presentations (presenter):

1. **Xue, P.** (2022) "Climate Change and Coastal Hazards: a Better Predictive Understanding of the Great Lakes System", Massachusetts Institute of Technology, Cambridge, MA, February 4, 2022

2. **Xue, P.** (2021) "Climate Change and Coastal Hazards: Learning from Integrated Great Lakes Regional Modeling", University at Buffalo, Buffalo, New York, December 10, 2021

3. **Xue, P.** (2020) "Hydrodynamic Model Development and Collaboration", Cooperative Institute for Great Lakes Research, Ann Arbor, MI. December 14, 2020

4. **Xue, P.** (2019). "Towards an Integrated Regional Earth System Modeling Platform for the Great Lakes Region" University of Notre Dame, Notre Dame, IN. November 19, 2019

5. **Xue, P.** (2019). "Two-way Atmosphere-Lake-Ice Coupled Regional Climate Simulation over the Great Lakes Region" Argonne National Lab, Lemont, IL. June 24, 2019

6. Auer, M. T.**, Xue, P.**, Kuzincski, A. (2018),"Managing Nuisance Cladophora Growth in the Great Lakes: Causes and Cures," US EPA, Ann Arbor, MI. March 13, 2018

7. **Xue, P.** (2016). "Improving the Simulation of Great Lakes in Regional Climate Modeling using Two-way Atmosphere-3D Lake Coupling." University Wisconsin-Madison, Madison, WI. February 4, 2016

8. **Xue, P.** (2016). "Simulation of Large Lakes in Regional Climate Modeling," NOAA - Great Lakes Environmental Research Laboratory, Ann Arbor, MI. January 29, 2016

9. **Xue, P.** (2015), EPA-Lake Superior Environmental Monitoring Collaborative meeting, "Hydrodynamic modeling of Lake Superior," Environmental Protection Agency, Houghton, MI. March 19, 2015

10. Meadows, G. A., Huckins, C. J., Marcarelli, A. M., **Xue, P.**, Group presentation: "USEPA-Great Lakes Restoration Initiative: Arresting the Spread of Eurasian Watermilfoil in Lake Superior," Great Lakes Research Center, Michigan Technological University Houghton, MI.

11. **Xue, P.** (2014), "Local feedback mechanisms of the shallow water regions around the Maritime Continent," Singapore MIT Alliance for Research and Technology Advisory Board Meeting, National University of Singapore, Singapore. July 12, 2014

12. **Xue, P.** (2014), "A Coupled regional ocean/atmosphere model for the Maritime Continent and local feedback mechanism in shallow water," Singapore MIT Alliance for Research and Technology, National University of Singapore, Singapore. July 24, 2014

13. **Xue, P.** (2012) Observing System Simulation Experiments (OSSEs) for Massachusetts Coastal Waters. College of Marine Sciences, Shanghai Ocean University, Shanghai, China. October 10, 2012

14. **Xue, P.** (2012) Ensemble-based Data Assimilation Technique and its Application to Massachusetts Coastal Waters. Department of Atmospheric and Oceanic Sciences, Peking University, Beijing, China. August 11, 2012.

RESEARCH GRANTS

A. Current Projects:

1. **Xue, P.** (PI for MTU) "Evaluating and Advancing the Representation of Lake-Atmosphere Interactions and Resulting Heavy Lake-Effect Snowstorms Across the Laurentian Great Lakes Basin Within the NASA-Unified Weather Research and Forecasting Model." National Aeronautics and Space Administration (NASA). Period Covered: 7/26/2017-7/25/2022. Collaborative project with UW-Madison, NASA, UIUC.

2. **Xue, P.** (Institutional Lead) "Linking Process Model and Field Experiments to Forecast Algal Bloom Toxicity in Lake Erie." National Oceanic and Atmospheric Administration (NOAA) ECOHAB Program. Period Covered: 9/1/2017-8/31/2022. A multi-institutional collaborative project led by OSU.

3. **Xue, P.** (PI) "Developing downscaled climate models to understand and forecast potential recruitment of Lake Michigan fishes" United States Geological Survey (USGS), period Covered: 03/25/2021-3/24/2023.

4. **Xue, P.** (Institutional Lead) "Coastal Observations, Mechanisms, and Predictions Across Systems and Scales – Great Lakes Modeling (COMPASS-GLM)" Department of Energy (DOE) pass through National Labs (led by PNNL) period Covered: 04/15/2021-04/14/2023.

5. **Xue, P.** (Single PI) "Funded Joint Appointment with Argonne National Lab", Argonne National Laboratory. Period Covered 8/3/2020-8/2/2022.

6. **Xue, P.** (PI) "Using Ensemble-based data assimilation to improve hydrodynamic modeling for the Great Lakes" Cooperative Institute for Great Lakes Research (CIGLR). Period Covered 07/01/2021-06/30/2022.

7. **Xue, P.** (Co-PI) "An Integrated Physical-Social-Community (PSC) Approach for Sustainable Shore Protection, Beach Integrity, and Bluff/Dune Stabilization Along Lake Michigan". Period Covered 2/1/2020-1/31/2022. Collaborative Wisconsin -Michigan- Illinois/Indiana Joint Sea Grant Proposal

8. **Xue, P.** (Co-PI) "Enabling the Pickering Advanced Algae Warning System to Reach Operational Status: A Phase 2.5 Project" Ontario Power Generation. Period Covered: 04/01/2021-05/31/2022.

9. **Xue, P.** (Co-PI) "Implementing the Darlington Advanced Algae Warning System (D-AAWS): Phase 2" Ontario Power Generation. Period Covered: 05/01/2021-12/31/2022.

B. Completed Projects:

10. **Xue, P.** (PI) "Coastal Coupling in Large Lakes for Total Water Prediction" National Oceanic and Atmospheric Administration (NOAA) pass through Cooperative Institute for Great Lakes Research (CIGLR). Period Covered: 07/01/2019-02/28/2022.

11. **Xue, P.** (Single PI) "Long-term Data Assimilative, Temperature and Currents Database for the Great Lakes: Lake Michigan" National Oceanic and Atmospheric Administration (NOAA) pass through Cooperative Institute for Great Lakes Research (CIGLR). Period Covered: 10/01/2019-09/30/2021.

12. **Xue, P.** (Co-PI), "Adaptation of the Advanced Algae Warning System to Darlington Nuclear Generating Station: Phase 1" Ontario Power Generation. Period Covered: 07/20/2020-05/01/2021.

13. **Xue, P.** (Co-PI) "Integration of the Advanced Algae Warning System GUI into OPG Operations" Ontario Power Generation. Period Covered: 03/01/2020-03/31/2021.

14. **Xue, P.** (Co-PI) "Advancing Coastal Hazard Knowledge on Resiliency Alternatives" Michigan Department of Environment, Great Lakes, and Energy. Period Covered: 1/1/2020-12/31/2020.

15. **Xue, P.** (PI) "Cladophora, Mussels and the Nearshore Phosphorus Shunt in Lake Michigan." Michigan Sea Grant. Period Covered: 2/1/2018-1/31/2021.

16. **Xue, P.** (Co-PI) "An Early Warning System Targeting Water Intake Fouling by Cladophora at the OPG Pickering Nuclear Generating Station" Ontario Power Generation. Period Covered: 04/01/2019-03/01/2020.

17. **Xue, P.** (PI) "Long-term Data Assimilative, Temperature and Currents Database for the Great Lakes: Lake Erie" National Oceanic and Atmospheric Administration (NOAA) pass through Cooperative Institute for Great Lakes Research (CIGLR). Period Covered: 10/01/2018-09/30/2019.

18. **Xue, P.** (Chief Scientist for section B: transport and fate of oil.), "Independent Risk Analysis for the Straits Pipelines" State of Michigan. Period Covered: 01/12/2018-10/31/2018.

19. **Xue, P.** (Co-PI) "Lake Water Quality Modeling of Consent Decree Scenarios-Phase1". Wade Trim Group, Inc. Period Covered: 08/15/2018 - 10/30/2018.

20. **Xue, P.** (PI) "Modeling the Mussel-Phosphorus-Cladophora Dynamic in Lake Ontario." Town of Ajax, Ontario, Canada. Period Covered: 05/01/16-12/31/17.

21. **Xue, P.** (PI). "Development of FVCOM model of Sandusky Bay to support restoration design." LimnoTech. Period Covered: 09/01/2017 -08/31/2018.

22. **Xue, P.** (Co-PI) "*Cladophora* Monitoring and Modeling at Ajax, Ontario - Phase 3." Town of Ajax, Ontario, Canada. Period Covered: 8/13/2017-08/17/2018.

23. **Xue, P.** (Co-PI) "Integrated Clean Water Act Planning Evaluation, Northeast Ohio Regional Sewer District, Phases II-III." Northeast Ohio Regional Sewer District. Period Covered: 09/01/2013-04/30/2016.

24. **Xue, P.** (Co-PI) "Phosphorous and Cladophora in Lake Ontario." Town of Ajax, Ontario, Canada. Period Covered: 9/1/2014-12/31/2015.

25. **Xue, P.** (Co-PI) "Lake Erie Phosphorus Modeling." Environmental Protection Agency administered by Battelle Memorial Institute. Period Covered: 8/1/2014-07/15/2015.

26. **Xue, P.** (senior personnel), *et al.* "Category: B.1 Invasive Species Prevention and Control: Arresting the Spread of Eurasian Watermilfoil in Lake Superior. 2014-2015." Environmental Protection Agency. Period Covered: 01/01/2014-10/31/2016

27. **Xue, P.** (PI) "Development of a Hydrodynamic Modeling System for Lake Superior". Michigan Technological University Research Excellence Fund. Period Covered: 7/31/2014-12/31/2015.

PROFESSIONAL SERVICE

Associate Editor: Frontiers in Marine Science: Coastal Ocean Processes (2014-present)

Guest Editor: Journal of Marine Science and Engineering. Special Issue "Selected Papers from the 16th Estuarine and Coastal Modeling Conference" (2021)

Conference Co-chair: 16th Estuarine and Coastal Modeling (ECM) Conference (2021)

Conference Organizing Committee: 15th Estuarine and Coastal Modeling (ECM) Conference (2018)

Conference Scientific Program Committee: 26th Coastal & Estuarine Research Federation (CERF) Biennial Conference (2021)

Conference Program Committee: 64th International Association for Great Lakes Research (IAGLR) Annual Conference (2021)

Conference Planning Committee: State of Lake Superior Conference, International Association for Great Lakes Research (IAGLR) (2018)

Conference Session Convener: Coastal & Estuarine Research Federation (CERF) biannual conference (2015, 2021), International Association for Great Lakes Research (IAGLR) annual conference (2015, 2017, 2018, 2019, 2021)

Proposal Reviewer/Panel Member: Sea Grant, NOAA, NSF

Reviewer for Journals: 1) Climate Dynamics 2) Environmental Modelling & Software, 3) Advances In Water Resources, 4) Science of the Total Environment, 5) Journal of Hydrometeorology, 6) Journal of Geophysical Research-Oceans 7) Journal of Physical Oceanography, 8) PLOS ONE, 9) Journal of Hydrology, 10) Journal of Advances in Modeling Earth Systems, 11) Earth System Dynamics, 12) Journal of Marine Systems, 13) Journal of Great Lake Research, 14) Estuarine, Coastal and Shelf Science, 15) Journal of Applied Meteorology and Climatology, 16) Journal of Atmospheric and Oceanic Technology, 17) Ocean Dynamics, 18) Stochastic Environmental Research and Risk Assessment, 19) Applied Ocean Research, 20) Meteorology and Atmospheric Physics, 21)Journal of Coastal Research 22) Natural Hazards 23) Ocean Modelling

PROFESSIONAL SOCIETIES

- American Geophysical Union (AGU)
- American Meteorological Society (AMS)
- Association for the Sciences of Limnology and Oceanography (ASLO)
- The Oceanography Society (TOS)
- International Association for Great Lakes Research (IAGLR)
- International Association for Hydro-Environment Engineering and Research (IAHR)
- Asia Oceania Geosciences Society (AOGS)
- American Society for Engineering Education (ASEE)

COURSE TAUGHT

1. CEE 5520: Hydrodynamic Modeling (Graduate course)

2. ATM/PH/CEE5680: Geophysical Fluid Dynamics (Graduate course)

3. CEE3620: Water Resources Engineering (Undergraduate core course)

STUDENT SUPERVISED AS PRINCIPAL ADVISOR

1. Xinyu Ye (PhD, graduated) 2014 -2019

2. Chenfu Huang (PhD graduated) 2014 - 2021

3. Xing Zhou (PhD Candidate) started Fall 2017 – Present

4. Miraj Kayastha (PhD student) 2021 – Present

5. Aradea Hakim (PhD student) 2021-Present

6. Miraj Kayastha (MS, graduated) 2019-2021

7. Jiaqi Chen (MS, graduated) 2015- 2017

MEMBER OF THESIS COMMITTEES

1. Hamed Dare Ibrahim, PhD (2018) (CEE@MIT [Massachusetts Institute of Technology])

2. Anika Kuczynski, PhD (2017) (CEE@MTU)

3. Ting Bao, PhD (2018) (CEE@MTU)

4. Mohammad Alizadeh Fard, PhD student in-progress: (CEE@MTU)

5. Ankita Bakshi, MS (2018), CEE@MTU)

6. Nathan Zgnilec, MS (2015) (CEE@MTU)

7. Megan MacNeill, MS (2015) (CEE@MTU)

8. Michael Foster, MS (2019): (CEE@MTU)

9. Kevin Mcgee, MS (2020): (CEE@LMU [Loyola Marymount University])

10. Aditya Wagh, MS (2020): (MEEM@MTU)
11. Mahta Naziri Saeed, MS (2020): (CEE@MTU)

OTHER SUPERVISION

A. Postdoc Supervision:

i. Chenfu Huang, Postdoc Associate, January 2020- Present

ii. Longhuan Zhu, Postdoc Associate, January 2020- Present

iii. Qi Shi, Postdoc Associate, May 2018-March 2020.

B. Undergraduate Supervision:

iv. Eva Mullen, Undergraduate Research Assistant, February 2021-present

v. Ryan Kibler, Undergraduate Research Assistant, 2014-2018.

vi. Lily Kraft, Undergraduate Research Assistant, 2019.