

Daniel R. Obenour

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Education:

- **Ph.D.** Natural Resources & Environmental Engineering 2013
University of Michigan (Ann Arbor, MI)
Advisors: Anna M. Michalak and Donald Scavia
Dissertation: Assessing the causes and severity of Gulf of Mexico hypoxia using geostatistical and mechanistic modeling
- **M.S.** Environmental & Water Resources Engineering 2004
University of Texas (Austin, TX)
Advisor: David R. Maidment
Thesis: Arc Hydro developments for the Lower Colorado River basin
- **B.S.** Civil Engineering, *summa cum laude* 2002
University of Akron (Akron, OH)
Honors Project: Disinfection by-product study for a local municipality

Positions Held:

- Professor 2025-present
 - Associate Professor 2020-2025
 - Assistant Professor 2014-2020Department of Civil, Construction, & Environmental Engineering (CCEE)
North Carolina State University
- Faculty Fellow 2018-present
Center for Geospatial Analytics
North Carolina State University
- Postdoctoral Research Fellow 2013-2014
University of Michigan Water Center
based at NOAA Great Lakes Environmental Research Laboratory
- EPA Science To Achieve Results (STAR) Fellow 2010-2013
Department of Civil & Environmental Engineering
and School of Natural Resources and Environment (SNRE)
University of Michigan
- Graduate Research Assistant 2009-2010
SNRE, University of Michigan
- Consulting Engineer 2005-2009
James Miertschin & Associates, Inc. (Austin, TX)
- Graduate Research Assistant 2002-2004
University of Texas at Austin

D. R. Obenour

- Junior Officer of Public Health Service (summers only) 2000-2002
Indian Health Service, Office of Environmental Health & Eng.

Professional Membership:

- American Geophysical Union (AGU)
- Association for the Sciences of Limnology and Oceanography (ASLO)
- Coastal and Estuarine Research Federation (CERF)
- Texas Professional Engineer: PE #100471, 2007-present.

Courses Taught:

- Environmental Spatial Data Analysis: 3-credit graduate course at University of Michigan.
- Surface Water Quality Modeling: 3-credit graduate course at NC State University.
- Hydrology and Urban Water Systems: 3-credit undergraduate course at NC State University.
- Stochastic Methods in Water and Environmental Engineering (co-taught): 3-credit graduate course at NC State University.
- Statistical Optimization of Environmental Models: 3-credit graduate course at NC State University.

Academic Service and Synergistic Activities (outside of primary department):

- Lake Erie Data and Modeling Working Group; under Great Lakes Water Quality Agreement Binational Management Task Team. (2022-present).
- Albemarle-Pamlico National Estuary Partnership (APNEP) Science and Technical Advisory Committee (STAC) member (2017-present).
- Vermont Established Program to Stimulate Competitive Research (NSF EPSCoR) External Advisory Committee. (2020-2021).
- Detroit Area Pre-College Engineering Program volunteer instructor (2013-2014).
- Journal Referee: over 100 reviews for over 20 journals. *Environmental Science and Technology* and *Water Resources Research* most frequently reviewed.
- Proposal referee: NSF, NOAA Sea Grant, NOAA National Estuarine Research Reserve System, Mitacs, Swiss NSF.

Academic Awards/Honors:

- 2024 Center For Geospatial Analytics Gladys West Award (NC State University)
- 2016 US EPA Level II Science and Technology Achievement Award (co-recipient)
- 2011 ASLO Outstanding Student Presentation Award.
- 2010 US Environmental Protection Agency (EPA) Science To Achieve Results (STAR) Fellowship.
- 2002 University of Texas Earnest & Agnes Gloyna Endowed Presidential Scholarship in Environmental and Water Resources Engineering.
- 2001 Akron ASCE C.B. Drenon Memorial Award.
- 2001 Tau Beta Pi (engineering honor society).
- 1998 University of Akron Scholarship for Excellence.

D. R. Obenour

Scholarly Works:

Notes:

- In my field, there is not a strict convention on the ordering of authors, and I often work on interdisciplinary articles with lead/co-authors from other fields. In publications with my students, I encourage the student to be the lead author(s), and I typically list myself last, as the senior author/advisor.
- Solid underline indicates my student advisee/co-advisee.
- Dashed underline indicates student for whom I serve as a committee member.
- Dotted underline indicates non-student lab members/advisees.

Journal Articles:

1. Baird, B. W., Borah, S. S., Elser, J. J., & Obenour, D. R. (2026). Probabilistic assessment of algal nutrient limitation across lakes, leveraging trends with temperature and depth. *Limnology and Oceanography*, 71(4), e70375.
2. Onwuka, I. S., Obenour, D. R., Nelson, N. G., & Duckworth, O. W. (2026). High-resolution soil total phosphorus mapping for the conterminous USA using machine learning. *Journal of Geophysical Research: Biogeosciences*, 131(1), e2025JG009098.
3. Katin, A., Craig, J.K., Obenour, D.R. (2025). A flexible modeling approach for evaluating the effects of hypoxia and other factors on the spatial distributions of Brown Shrimp and White Shrimp on the Louisiana shelf. *Marine and Coastal Fisheries*.
4. Borah, S. S., Nelson, N. G., Duckworth, O. W., & Obenour, D. R. (2025). Quantifying Summer Internal Phosphorus Loading in Large Lakes across the United States. *Environmental Science & Technology*, 59(21), 10445-10454.
5. Borah, S. S., Del Giudice, D., Aupperle, M., & Obenour, D. R. (2025). Exploring internal phosphorus loads and management interventions through Bayesian reservoir modeling. *Journal of Environmental Management*, 384, 125538.
6. Scholz, M.J., Obenour, D.R., Morrison, E.S., and Elser, J.E. (2025). A critical eutrophication–climate change link. *Nature Sustainability* (correspondence). <https://doi.org/10.1038/s41893-024-01507-3>.
7. Matli, V.R.R. & Obenour, D.R. (2024). Trends and drivers of hypoxic thickness and volume in northern Gulf of Mexico: 1985-2018. *PLOS ONE*, 19(12), e0302759.
8. Scavia, D., Ludsin, S.A., Michalak, A.M., Obenour, D.R., Han, M., Johnson, L.T., Wang, Y.C, Zhao, G., Zhou, Y. (2024). Water quality-fisheries tradeoffs in a changing climate reveal the need for adaptive ecosystem-based management. *Proceedings of the National Academy of Sciences*, 121(45), e2322595121.
9. Tang, Q., Duckworth, O.W., Obenour, D.R., Kulesza, S.B., Slaton, N.A., Whitaker, A.H., Nelson, N.,G. (2024). Relationships between soil test phosphorus and county-level agricultural surplus phosphorus. *Journal of Environmental Quality*. DOI: 10.1002/jeq2.20622.
10. Oates, C., Fajardo, H., Grieger, K., Obenour, D.R., Muenich, R.L., & Nelson, N.G. (2024) Effective nutrient management of surface waters in the U.S. requires expanded water quality monitoring in agriculturally intensive areas. *ACS Environmental Au*, 5(1), 1-11.
11. Karimi, K., & Obenour, D. R. (2024). Characterizing Spatiotemporal Variability in Phosphorus Export across the United States through Bayesian Hierarchical Modeling. *Environmental Science & Technology*, 58(22), 9782–9791.

D. R. Obenour

12. Li, K., Blackhart, K., Miller, J.W., & Obenour, D.R. (2023). An estuary stress index based on nekton relationships with thematic watershed stressors. *Ecological Indicators*, 154, 110678.
13. von Haefen, R., Van Houtven, G., Naumenko, A., Obenour, D.R., Miller, J.W. and others. (2023). Estimating the Benefits of Stream Water Quality Improvements in Urbanizing Watersheds: An Ecological Production Function Approach. *Proceedings of the National Academy of Sciences*, 120(18), e2120252120.
14. Karimi, K., Miller, J.W., Sankarasubramanian, A., & Obenour, D. R. (2023). Contrasting annual and summer phosphorus export using a hybrid Bayesian watershed model. *Water Resources Research*, e2022WR033088.
15. Scavia, D., Wang, Y. C., & Obenour, D. R. (2023). Advancing freshwater ecological forecasts: Harmful algal blooms in Lake Erie. *Science of The Total Environment*, 856, 158959.
16. Pétré, M. A., Salk, K. R., Stapleton, H. M., Ferguson, P. L., Tait, G., Obenour, D. R., ... & Genereux, D. P. (2022). Per-and polyfluoroalkyl substances (PFAS) in river discharge: Modeling loads upstream and downstream of a PFAS manufacturing plant in the Cape Fear watershed, North Carolina. *Science of The Total Environment*, 831, 154763.
17. Katin, A., Del Giudice, D., & Obenour, D. R. (2022). Temporally resolved coastal hypoxia forecasting and uncertainty assessment via Bayesian mechanistic modeling. *Hydrology and Earth System Sciences*, 26(4), 1131-1143.
18. Miller, J.W., Karimi, K., Sankarasubramanian, A., & Obenour, D. R. (2021). Assessing interannual variability in nitrogen sourcing and retention through hybrid Bayesian watershed modeling. *Hydrology and Earth System Sciences*, 25(5), 2789-2804.
19. Katin, A., Del Giudice, D., Hall, N. S., Paerl, H. W., & Obenour, D. R. (2021). Simulating algal dynamics within a Bayesian framework to evaluate controls on estuary productivity. *Ecological Modelling*, 447, 109497.
20. Del Giudice, D., Fang, S., Scavia, D., Davis, T. W., Evans, M. A., & Obenour, D. R. (2021). Elucidating controls on cyanobacteria bloom timing and intensity via Bayesian mechanistic modeling. *Science of The Total Environment*, 755, 142487.
21. Scavia, D., Wang, Y. C., Obenour, D. R., Apostel, A., Basile, S. J., Kalcic, M. M., ... & Steiner, A. L. (2021). Quantifying uncertainty cascading from climate, watershed, and lake models in harmful algal bloom predictions. *Science of The Total Environment*, 759, 143487.
22. Han, Y., Aziz, T. N., Del Giudice, D., Hall, N. S., & Obenour, D. R. (2021). Exploring nutrient and light limitation of algal production in a shallow turbid reservoir. *Environmental Pollution*, 269, 116210.
23. Matli, V. R. R., Laurent, A., Fennel, K., Craig, K., Krause, J., & Obenour, D. R. (2020). Fusion-Based Hypoxia Estimates: Combining Geostatistical and Mechanistic Models of Dissolved Oxygen Variability. *Environmental Science & Technology*, 54(20), 13016-13025.
24. Campbell, M. D., Hall, S. G., & Obenour, D. R. (2020). Application of packed bed reactor theory and Bayesian inference to upweller culture of juvenile oysters. *Aquacultural Engineering*, (90)102098.
25. Han, Y., Smithheart, J. W., Smyth, R. L., Aziz, T. N., & Obenour, D. R. (2020). Assessing Vertical Diffusion and Cyanobacteria Bloom Potential in a Shallow Eutrophic Reservoir. *Lake and Reservoir Management*, 36:169–185.
26. Del Giudice, D., Matli, V.R.R., & Obenour, D.R. (2019). Bayesian mechanistic modeling characterizes Gulf of Mexico hypoxia: 1968-2016 and future scenarios. *Ecological Applications*, 30(2):e02032.

D. R. Obenour

27. Miller, J.W., Paul, M.C., & Obenour, D.R. (2019). Assessing potential anthropogenic drivers of ecological health in Piedmont streams through hierarchical modeling. *Freshwater Science*, 38(4), 771-789.
28. Fang, S., Del Giudice, D., Scavia, D., Binding, C.E., Bridgeman, T.B., Chaffin, J.D., Evans, M.A., Guinness, J., Johengen, T.H., & Obenour, D.R. (2019). A Space-time geostatistical model for probabilistic estimation of harmful algal bloom biomass and areal extent. *Science of The Total Environment*, 695:133776.
29. Katin, A., Del Giudice, D., & Obenour, D. R. (2019). Modeling biophysical controls on hypoxia in a shallow estuary using a Bayesian mechanistic approach. *Environmental Modelling & Software*, 120:104491.
30. Scavia, D., Justic, D., Obenour, D. R., Craig, K., & Wang, L. (2019). Hypoxic volume is more responsive than hypoxic area to nutrient load reductions in the northern Gulf of Mexico—and it matters to fish and fisheries. *Environmental Research Letters*, 14:2.
31. Matli, V. R. R., Fang, S., Guinness, J., Rabalais, N. N., Craig, J. K., & Obenour, D. R. (2018). Space-Time Geostatistical Assessment of Hypoxia in the Northern Gulf of Mexico. *Environmental Science & Technology*, 52(21), 12484-12493.
32. Strickling, H. L., & Obenour, D. R. (2018). Leveraging Spatial and Temporal Variability to Probabilistically Characterize Nutrient Sources and Export Rates in a Developing Watershed. *Water Resources Research*, 54(7), 5143-5162.
33. Miller, J. W., Esselman, P. C., Alameddine, I., Blackhart, K., & Obenour, D. R. (2018). Hierarchical modeling assessment of the influence of watershed stressors on fish and invertebrate species in Gulf of Mexico estuaries. *Ecological Indicators*, 90, 142-153.
34. Nelson, C. M., Li, K., Obenour, D. R., Miller, J.W., Misenheimer, J. C., Scheckel, K., Betts, A., Juhasz, A., Thomas, J.T., & Bradham, K. D. (2018). Relating soil geochemical properties to arsenic bioaccessibility through hierarchical modeling. *Journal of Toxicology and Environmental Health, Part A*, 1-13.
35. Scavia, D., Bertani, I., Obenour, D. R., Turner, R. E., Forrest, D. R., & Katin, A. (2017). Ensemble modeling informs hypoxia management in the northern Gulf of Mexico. *Proceedings of the National Academy of Sciences*, 201705293.
36. Bradham, K. D., Nelson, C., Kelly, J., Pomales, A., Scruton, K., Dignam, T., Misenheimer, J.C., K. Li, D. R. Obenour, & Thomas, D. J. (2017). Relationship Between Total and Bioaccessible Lead on Children's Blood Lead Levels in Urban Residential Philadelphia Soils. *Environmental Science & Technology*, 51(17), 10005-10011.
37. Bertani, I., Steger, C. E., Obenour, D. R., Fahnenstiel, G. L., Bridgeman, T. B., Johengen, T. H., Sayers, M.J., Shuchman, R.A., & Scavia, D. (2017). Tracking cyanobacteria blooms: Do different monitoring approaches tell the same story? *Science of The Total Environment*, 575, 294-308.
38. Bertani, I., Obenour, D. R., Steger, C. E., Stow, C. A., Gronewold, A. D., & Scavia, D. (2016). Probabilistically assessing the role of nutrient loading in harmful algal bloom formation in western Lake Erie. *Journal of Great Lakes Research*, 42(6), 1184-1192.
39. Le, C., Lehrter, J. C., Hu, C., & Obenour, D. R. (2016). Satellite-based empirical models linking river plume dynamics with hypoxic area and volume. *Geophysical Research Letters*, 43, 2693–2699.
40. Rowe, M. D., Obenour, D. R., Nalepa, T. F., Vanderploeg, H. A., Yousef, F., & Kerfoot, W. C. (2015). Mapping the spatial distribution of the biomass and filter-feeding effect of

D. R. Obenour

invasive dreissenid mussels on the winter-spring phytoplankton bloom in Lake Michigan. *Freshwater Biology*, 60(11), 2270-2285.

41. Bradham, K. D., Nelson, C., Juhasz, A. L., Smith, E., Scheckel, K., Obenour, D. R., Miller, B.W., & Thomas, D.J. (2015). Independent data validation of an in vitro method for the prediction of the relative bioavailability of arsenic in contaminated soils. *Environmental Science & Technology*, 49(10), 6312-6318.
42. Obenour, D. R., Michalak, A. M., & Scavia, D. (2015) Assessing biophysical controls on Gulf of Mexico hypoxia through probabilistic modeling. *Ecological Applications*, 25:492–505.
43. Obenour, D. R., Gronewold, A. D., Stow, C. A., & Scavia, D. (2014). Using a Bayesian hierarchical model to improve Lake Erie cyanobacteria bloom forecasts. *Water Resources Research*, 50(10), 7847-7860.
44. Scavia, D., Evans, M.A., & Obenour, D. R. (2013). A scenario forecast model for Gulf of Mexico hypoxic area and volume. *Environmental Science and Technology*, 47(18), 10423-10428.
45. Obenour, D. R., Scavia, D., Rabalais, N. N., Turner, R. E., & Michalak, A. M. (2013). Retrospective analysis of mid-summer hypoxic area and volume in the northern Gulf of Mexico, 1985-2011. *Environmental Science and Technology*, 47(17), 9808–9815.
46. Zhou, Y., Obenour, D. R., Scavia, D., Johengen, T. H., & Michalak, A. M. (2013). Spatial and temporal trends in Lake Erie hypoxia, 1987–2007. *Environmental Science & Technology*, 47(2), 899-905.
47. Obenour, D. R., Michalak, A. M., Zhou, Y., & Scavia, D. (2012). Quantifying the impacts of stratification and nutrient loading on hypoxia in the northern Gulf of Mexico. *Environmental Science and Technology*, 46(10), 5489-5496.
48. Whiteaker, T. L., Robayo, O., Maidment, D. R., & Obenour, D. (2006). From a NEXRAD rainfall map to a flood inundation map. *Journal of Hydrologic Engineering*, 11(1), 37-45.

Academic Conference Sessions Convened/Hosted

1. Delesantro, J., Linker, L.C., Obenour, D.R. “Watershed Science and Modeling for Coastal and Estuarine Resilience.” CERF Biennial Conference. Richmond, VA. November 2025.
2. Lauritsen, D., Miralha, L., Obenour, D., Hall, N., Schnetzer, A. Reducing Nutrient Inputs to Coastal and Inland Waters: How Hard Can It Be? *ASLO 2025 Aquatic Sciences Meeting*. Charlotte, NC. March, 2025.
3. Schnetzer, A., Obenour, D.R., Cutts, B., and O’Driscoll, M., “Water Quality along the Pamlico River Estuary: State-of-the-Art Technologies and Community Partnerships” *NC Coastal Conference*. New Bern, NC, November 2024.
4. Muenich, R.L., Obenour, D.R., and Saha, A. “Convergent Research to Manage Human Interactions with the Phosphorus Cycle.” *American Geophysical Union Fall Meeting*. San Francisco, CA and online, December 2023.
5. Glendell, M., Basso, S., Finger, D., Sikorska-Senoner, A.E., Guo, D., Obenour, D., and Alameddine, I. Multi-fidelity techniques to improve prediction of hydrological and water quality models, decision support and risk analysis, and their Bayesian applications. *EGU General Assembly*. Vienna, Austria and online. April 2023.
6. Muenich, R.L. and Obenour, D.R. “Convergent Research to Manage Human Interactions with the Phosphorus Cycle.” *American Geophysical Union Fall Meeting*. New Orleans, LA and online, December 2021.

D. R. Obenour

7. Obenour, D.R. and Hall, N.S. "Understanding physical controls on cyanobacteria dominance: toward prediction and prevention." *Society for Freshwater Science Annual Meeting*. Raleigh, NC. June 2017.

Conference Oral Presentations (recent 10):

1. Onwuka, I., Nelson, N.G., Obenour, D.R., Duckworth, O.W. "Comparison of Random Forest and Inverse Distance Weighting to Map Soil Phosphorus across the Conterminous USA." *International Symposium on Soil and Plant Analysis*, Durham, NC. June 2025.
2. Obenour, D.R., Noorbeh, P., Nepal, B., Fensin, E., Schnetzer, A. "Exploring algal-nutrient relationships along the freshwater-marine continuum." *ASLO Aquatic Sciences Meeting*, Charlotte, NC. March 2025.
3. Obenour, D.R. (2024). "Predicting HAB Risks along the Freshwater-marine Gradient of the Pamlico River Estuary." *North Carolina Coastal Conference*. New Bern, NC. November 2024.
4. Fajardo H., Lee S.A., Saha A., Morrison E., Muenich R., Obenour D.R., Nelson, N.G. "Nutrient source apportionment through process-based modeling and isotopic source tracing in a sparsely monitored agricultural watershed." *Annual International Meeting ASABE*, Anaheim, CA. July 2024.
5. Borah, S.S. and Obenour, D.R. "Variability of Internal Phosphorus Loading in Large Water Bodies across the United States." *Recycle 2023 Conference*. Indian Institute of Technology Guwahati, Assam, India. Online. May 2023.
6. Tang, Q., Nelson, N., Duckworth, O., & Obenour, D. R. (2022, December). "Are Legacy Phosphorus Estimates Predictive of in situ Soil Phosphorus Concentrations?" *AGU Fall Meeting*. Chicago, IL. December 2022.
7. Karimi, K., and Obenour, D.R. "Estimating spatial and temporal variability of Phosphorus hydrologic losses across the contiguous United States." *Sustainable Phosphorus Summit*. Raleigh, NC. November 2022.
8. Karimi, K., White, C., Mitsova, H., and Obenour, D.R. "Data-driven model for assessing nutrient management efficacy at the watershed scale." *Geospatial Water Technology Conference*. Austin, TX. May 2022. First prize for student presentation.
9. Karimi, K., White, C., Mitsova, H., Obenour, D. "Assessing the efficacy of BMPs on controlling nutrient loading through Bayesian watershed modeling." *NC Water Resource Research Institute (WRRI) Annual Conference*. Raleigh, NC. March 2022.
10. Karimi, K., Miller, J., Sankarasubramanian, A., Obenour, D. "Contrasting annual versus summer phosphorus loading and retention rates using a hybrid Bayesian watershed model." *American Water Resources Association (AWRA) Annual Conference*. Online/virtual. November 2021.

Conference Poster Presentations (recent 10):

1. Noorbeh, P., Nepal, B., Fensin, E., & Obenour, D. (2025). Exploring Algal–Nutrient Patterns Across an Estuarine Biogeochemical Gradient. *Annual Southeastern Biogeochemistry Symposium*, Raleigh, NC, April 18–20, 2025. 2nd Prize in Graduate student poster competition.
2. Baird, B.W., Borah, S., Elser, J.J., Obenour, D.R. "Refining chlorophyll-nutrient relationships across the US considering the effects of depth, light availability, temperature, and trophic status." *ASLO Aquatic Sciences Meeting*, Charlotte, NC. March 2025.

D. R. Obenour

3. Oates, C.C., Fajardo H., Grieger, K., Obenour, D.R., Muenich, R., Nelson, N.G., “Nutrient monitoring in surface waters of agriculturally-intensive regions of the U.S.: Current status and needs for expansion.” *AGU Fall Meeting*. Washington, DC. December 2024
4. Fajardo, H., Saha, A., Nelson, N.G., Obenour, D.R. “Phosphorus source apportionment in a sparsely monitored agricultural watershed.” *NC Water Resources Research Institute (WRI) Annual Conference*. Raleigh, NC. March 2024.
5. Borah, S.S., Karimi, K., and Obenour, D.R.. "Assessing Uncertainties in Internal Phosphorus Loading Estimates in Large Lakes and Reservoirs across the United States." *AGU Fall Meeting*. San Francisco, CA. December 2023.
6. Karimi, K., & Obenour, D. R. “Modeling Phosphorus Export from Anthropogenic and Geogenic Sources across the United States.” *AGU Fall Meeting*. San Francisco, CA. December 2023.
7. Fajardo, H., Lee, S., Saha, Al., Morrison, E., Muenich, R., Nelson, N., Obenour, D., “Coupling process-based modeling and isotopic source tracking for phosphate source attribution in an agricultural watershed.” *American Society of Agricultural and Biological Engineers*, Omaha, NE. July 2023.
8. Tang, Q., Nelson, N.G., Duckworth, O.W., Obenour, D.R. “Are legacy phosphorus predictive of *in situ* phosphorus concentration?” *NC Commodities Conference*. Durham, NC. January 2023.
9. Borah, S.S., and Obenour, D.R.. "Quantifying Internal Phosphorus Loading in Lakes and Reservoirs across the United States." *AGU Fall Meeting*. Chicago, IL. December 2022.
10. Karimi, K., & Obenour, D. R. “Exploring spatio-temporal variability in phosphorus hydrologic losses across the contiguous United States.” *AGU Fall Meeting*. Chicago, IL. December 2022.

Invited Seminars (recent 10):

1. Obenour, D.R. “Identification of Priority Lakes and Watersheds for Nutrient Intervention.” Sustainable Phosphorus Alliance Phosphorus Forum, Raleigh, NC. September 2025.
2. Obenour, D.R. “Watershed Modeling to Inform Jordan Lake Nutrient Management.” Jordan Lake One Water/NC DEQ DWR Stakeholder meeting, Chapel Hill, NC. November 2023.
3. Obenour, D.R. “The Intersection of Machine Learning and Process-based Water Resources Modeling.” Environmental, Water Resources, and Coastal Engineering Seminar, NC State University, Raleigh, NC. August 2023.
4. Borah, S., Obenour, D.R. “Estimating and Projecting Internal Phosphorus Loading in Piedmont Reservoirs.” Falls Lake Nutrient Management Study Research Symposium, Chapel Hill, NC. April 2023.
5. Obenour, D.R. “Exploring and Forecasting Water Quality Outcomes through Bayesian Modeling.” University of Waterloo Ecohydrology Research Group Seminar, virtual presentation. November 2022.
6. Obenour, D.R. “Assessing Controls on Watershed Nutrient Loading through Data-Driven Modeling.” Falls Lake Nutrient Management Study Research Symposium, Chapel Hill, NC. April 2022.
7. Obenour, D.R., “Geostatistical modeling of dissolved oxygen and hypoxic extent.” Lake Erie Hypoxia Workshop. EPA Great Lakes National Program Office, virtual presentation. Oct 2021.

D. R. Obenour

8. Obenour, D.R., “Long-term Data and Bayesian Inference Elucidate Controls on Surface Water Quality.” Interdisciplinary Centre for Water Research (ICWaR), Bangalore India, virtual presentation. July 2021.
9. Obenour, D.R., “Long-term Data and Bayesian Inference Elucidate Controls on Water Quality in Inland and Coastal Systems.” Carnegie Department of Global Ecology, Stanford CA, virtual presentation. June 2021.
10. Obenour, D.R., “Nutrient Modeling in Piedmont Reservoirs”. Falls Lake Nutrient Management Study Research Symposium, Chapel Hill, NC, virtual presentation. May 2021.

Extension and Engagement:

- 2015-present, Gulf of Mexico Hypoxia forecast contributor, e.g., <https://eos.org/articles/connecticut-sized-dead-zone-expected-in-gulf-of-mexico>
- 2014-present, Lake Erie Harmful Algal Bloom (HAB) forecast contributor, e.g., <https://www.noaa.gov/media-release/noaa-partners-predict-significant-summer-harmful-algal-bloom-for-western-lake-erie>
- 2018-2022, Neuse Estuary Hypoxia forecast, e.g., <https://ncseagrant.ncsu.edu/currents/2019/01/tropical-systems-disrupt-neuse-river-oxygen-levels/>
- 2019 public presentation: “The case of the dead fish, the missing oxygen, and other mysteries from the Neuse River Estuary.” *Lunchtime Discovery Series*. North Carolina Museum of Natural Sciences. <https://livestream.com/naturalsciences/dailyplanet/videos/196852975>

Funded Research Projects:

1. D.R. Obenour, N.G. Nelson. “Identification of priority lakes and watersheds for nutrient intervention.” STEPS Center (NSF Prime), 2025-2026, \$104,000 (86% CCEE). Note: project likely to be extended to a second year, if STEPS Center is renewed by NSF.
2. D.R. Obenour. “An ensemble modeling approach to reassessing the GLWQA nutrient loading targets.” University of Michigan (ERB Family Foundation Prime), 2024-2026, \$53,000 (100% CCEE).
3. D.R. Obenour, J.C. Dietrich, N.G. Nelson. “Predicting Cyanotoxin Risks under Current and Future Climate along the Freshwater-to-Marine Continuum.” NC C-CAPE (NIH+NSF Prime), 2024-2029, \$1,500,000 (73% CCEE).
4. D.R. Obenour, E.Z. Berglund. “Designing model protocols to assess impacts to receiving waters that have low dissolved oxygen.” NC DEQ, 2023-2025, \$282,000 (100% CCEE).
5. D.R. Obenour, N.G. Nelson, O.W. Duckworth, and others (outside of NC State). “National Phosphorus Budget Phase II.” STEPS Center (NSF Prime), 2023-2025, \$597,000 (28% CCEE).
6. N.G. Nelson, D.R. Obenour, and others (outside of NC State). “Developing Models for Simulating Phosphorus Flows at the Triple Bottom Line Scenario Sites” STEPS Center (NSF Prime), 2023-2025, \$370,000 (0% CCEE; I am co-advising a student in BAE department).
7. D.R. Obenour, N.G. Nelson, O.W. Duckworth, and others (outside of NC State). “National Phosphorus Budget and Mapping Phase I.” STEPS Center (NSF Prime), 2021-2023, \$300,000/\$550,000 CCEE/total.
8. N.G. Nelson, D.R. Obenour, and others (outside of NC State). “Establishing Baseline Data and Tools for Simulating Phosphorus Flows at the TBLs.” STEPS Center (NSF Prime), 2021-2023, \$0/\$400,000 CCEE/total (I am co-advising a student in BAE department).

D. R. Obenour

9. A.R. Harris, R.E. Emanuel, D.R. Obenour. "Fecal contamination source tracking and forecasting to support recreational and cultural development in the Black River watershed." WRRRI, 2021-2024, \$120,000.
10. D.R. Obenour. "Scientific review of watershed and water quality modeling to support nutrient management in the Falls Lake watershed" NC Policy Collaboratory, 2020-2023, \$86,000.
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20. D.R. Obenour, T.N. Aziz. "RAPID: Effects of Enhanced Circulation on Vertical Mixing and Algal Blooms in Freshwater Reservoirs" National Science Foundation (NSF), 2015-2018, \$58,000.
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D. R. Obenour

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1. J.L. Jones, R. Sozzani, D.R. Obenour, and others. “Science and Technologies for Phosphorus Sustainability (STEPS) Center” National Science Foundation (NSF). 2021-2026. \$25,000,000.
2. A. Schnetzer, S.M. Belcher, D.R. Obenour, and others. “North Carolina Center for Coastal Algae, People, and Environment (NC C-CAPE)” NIH and NSF. 2024-2029. \$6,900,000.

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