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:

- Associate Professor — 2020-present
- Assistant Professor — 2014-2020
  Department 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
- Junior Officer of Public Health Service (summers only) — 2000-2002

Indian Health Service, Office of Environmental Health & Eng.

- Intern/Co-op Engineer (various semesters) 1999-2001
  Finkbeiner Pettis & Strout, Inc. (now ARCADIS, Inc.)

Professional Membership:

- American Geophysical Union (AGU), 2013-present.
- American Society of Civil Engineers (ASCE), 1998-present.
- Association for the Sciences of Limnology and Oceanography (ASLO), 2010-present.
- North American Lake Management Society (NALMS), 2018-present.
- 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):

- Albemarle-Pamlico National Estuary Partnership (APNEP) Science and Technical Advisory Committee (STAC) member (2017-present).
- Conference session organizer: Obenour, D.R., and N.S. Hall. "Understanding physical controls on cyanobacteria dominance: toward prediction and prevention." Society for Freshwater Science Annual Meeting. Raleigh, NC. June 2017.
- Detroit Area Pre-College Engineering Program volunteer instructor (2013-2014).
- NOAA/Sea Grant Hypoxia and Harmful Algal Bloom forecast contributor for Lake Erie, Neuse Estuary, and northern Gulf of Mexico (2014-present).
- Journal Referee: over 55 reviews (not including re-reviews of the same article) 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.
- Vermont Established Program to Stimulate Competitive Research (NSF EPSCoR) External Advisory Committee. (2020-present).

Academic Awards/Honors:

- 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.

Scholarly Works:

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 member of my lab group.

Journal Articles

1. 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.
2. 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.
3. 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.
4. 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.
5. 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.
6. 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*, 102098.
7. 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*.
8. 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*, e02032.
9. 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.
10. 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.
11. 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.

12. 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.
13. 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.
14. 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.
15. 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.
16. 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.
17. 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.
18. 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.
19. 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.
20. 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.
21. 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.
22. 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 invasive dreissenid mussels on the winter-spring phytoplankton bloom in Lake Michigan. *Freshwater Biology*, *60*(11), 2270-2285.
23. 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.
24. 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.

25. 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.
26. 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.
27. 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.
28. 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.
29. 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.
30. 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.

Conference Proceedings

1. Obenour, D.R., D.R. Maidment, T. Evans, D. Yates. "An Interface Data Model for HEC-HMS." AWRA Spring Specialty Conference: GIS and Water Resources III, Nashville, TN. May 2004.

Conference Presentations (oral):

1. Obenour, D.R. Aupperle, M.B., Del Giudice, D., Arumugam, S., "Assessing multi-decadal trends in within-lake nutrient cycling through Bayesian mass-balance modeling." European Geophysical Union (EGU). Vienna, Austria. Online (COVID) presentation. May, 2020.
2. Obenour, D.R., Katin, A., Del Giudice, D. "Two years of Neuse Estuary Hypoxia Forecasts: Lessons Learned and Future Directions." *NC Coastal Conference*. Wilmington, NC, November, 2019.
3. Miller, J.W., Karimi, K., Arumugam, S., Strickling, H., Obenour, D.R. "Characterizing inter-annual variability in nutrient sources and stream loadings using a hybrid Bayesian watershed model." *American Water Resources Association*. Salt Lake City, UT. November, 2019.
4. Katin A., Del Giudice, D., Obenour, D. R. "Contrasting nutrient management implications from statistical and process-based estuary phytoplankton models." *CERF Biennial Conference*. Mobile, AL. November 2019.
5. Matli, V. R. R., Laurent, A., Sohn, D., Craig, K., Fennel, K., & Obenour, D. R. "Fusion-based hypoxia estimates: linking geostatistical and mechanistic models of dissolved oxygen variability". *CERF Biennial Conference*. Mobile, AL. November 2019.
6. Aupperle, M., Del Giudice, D., Arumugam, S., Obenour, D.R. "Multi-decadal assessment of reservoir nutrient dynamics using Bayesian mechanistic modeling." *North American Lake Management Society Conference*. Burlington, VT. November 2019.

7. Fang, S., Del Giudice, D., Obenour, D.R. “Space-time geostatistical trend analysis and risk assessment for in-lake cyanobacterial toxicity.” *International Association for Great Lakes Research Conference*. Brockport, NY. June 2019.
8. Del Giudice, D., Fang, S., Scavia, D., Obenour, D.R. Bayesian mechanistic modeling elucidates controls on bloom timing and magnitude in Western Lake Erie” *International Association for Great Lakes Research Conference*. Brockport, NY. June 2019.
9. Miller, J.W. & Obenour, D.R. “Forecasting water quality in urban streams under future management scenarios through hierarchical modeling.” *Center for Watershed Protection (CWP) Annual Conference*. Charleston, SC. May 2019.
10. Miller, J.W. & Obenour, D.R. “Forecasting water quality in urban streams under future management scenarios through hierarchical modeling.” *NC Water Resource Research Institute (WRRI) Annual Conference*. Raleigh, NC. March 2019.
11. Katin, A., Obenour, D.R., Del Giudice, D. "Development and application of a probabilistic hypoxia forecasting model for the Neuse Estuary". *NC Water Resources Research Institute (WRRI) Annual Conference*. Raleigh, NC. March, 2019.
12. Han, Y., Smithheart, J.W., Smyth, R.L., Obenour, D.R., & Aziz, T.N. "Assessing Vertical Mixing as a Potential Control on Cyanobacteria Dominance in Shallow Turbid Reservoirs." *ASLO Aquatic Sciences Meeting*. San Juan, PR. February 2019.
13. Obenour, D.R., Del Giudice, D., & Katin, A. " Exploring Oxygen Demands and Dynamics in Coastal Systems Using a Bayesian-Mechanistic Approach." *ASLO Aquatic Sciences Meeting*. San Juan, PR. February 2019.
14. Obenour, D.R., Han, Y., Smithheart, J.W., Smyth, R.L., & Aziz, T.N. “Assessing the Role of Vertical Mixing in Modulating Cyanobacteria Blooms in Shallow Reservoirs.” *North American Lake Management Society (NALMS) International Symposium*. Cincinnati, OH. November 2018.
15. Craig, J.K., Hart, R., Primrose, J., Obenour, D.R., Matli, R., & Rose, K. “Assessing the interactive effects of hypoxia and fishing on demersal shrimp in the northern Gulf of Mexico.” *American Fisheries Society.* Atlantic City, August 2018.
16. Katin, A., Del Giudice, D., Paerl, H.W., Obenour, D.R. "Modeling biophysical controls on hypoxia for the Neuse River Estuary using a Bayesian framework." *15th Estuarine and Coastal Modeling Conference (ECM15)*. Seattle, WA. June 2018.
17. Obenour, D.R., Fang, S., Guinness, J., Binding, C., Bridgeman, T., Chaffin, J., Evans, M.A., Johengen, T., Stumpf, R., Wynne, T. “Characterizing Lake Erie HAB dynamics through geostatistical synthesis of multiple sampling programs.” *International Association for Great Lakes Research Conference*, Toronto, ON. May 2018.
18. Strickling, H.L., & Obenour, D.R. “Probabilistic nitrogen source apportionment and loading trends in three North Carolina river basins.” *NC Water Resources Research Institute (WRRI) Annual Conference.* Raleigh, NC. March 2018.
19. Miller, J.W., & Obenour, D.R. “Assessing drivers of ecological health in NC piedmont streams and quantifying variations in macroinvertebrate sites and sampling programs using hierarchical modeling.” *NC Water Resource Research Institute (WRRI) Annual Meeting.* Raleigh, NC. March 2018.
20. Aziz, T. N., Han, Y., Smithheart, J.W., Mangot, A., Obenour, D. R., & Smyth, R. L. “Understanding the Effectiveness of Artificial Mixing for Harmful Algal Bloom Control." *NC Water Resource Research Institute (WRRI) Annual Meeting*. Raleigh, NC. March 2018.

21. Aziz, T. N., Han, Y., Smithheart, J.W., Mangot, A., Obenour, D. R., & Smyth, R. L. "Understanding the Effectiveness of Artificial Mixing for Harmful Algal Bloom Control." *North American Lake Management Society (NALMS) International Symposium*. Denver, CO. November 2017.
22. Nelson, C., Li, K., Obenour, D.R., Misenheimer, J., Scheckel, K., Betts, A., Thomas, D., Juhasz, A., & Bradham, K.D. "Relating Soil Geochemical Properties to Arsenic Bioaccessibility through Hierarchical Modeling." *International Society of Exposure Science Annual Meeting*. Research Triangle Park, NC. October 19, 2017.
23. Blackhart, K., Li, K., Miller, J.W., & Obenour, D.R. "Meta-Analysis Identifying Significant Anthropogenic Stressors in Pacific Coast Estuary Taxa." *Annual Meeting of the American Fisheries Society*. Tampa, FL. August 2017.
24. Aziz, T.N., Mangot, A., Schnetzer, A., & Obenour, D.R. "A Novel Water Column Reactor for Exploring the Effects of Mixing on Harmful Algal Blooms." *Society for Freshwater Science Annual Meeting*. Raleigh, NC. June 2017.
25. Obenour, D.R., Han, Y., Smithheart, J.W., Smyth, R.L., & Aziz, T.N. "Predicting cyanobacteria dominance in a shallow eutrophic reservoir." *Society for Freshwater Science Annual Meeting*. Raleigh, NC. June 2017.
26. Miller, J.W. & Obenour, D.R. "Assessing and Predicting the Biological Health of NC Piedmont streams using Bayesian Hierarchical Modeling." *Society for Freshwater Science Annual Meeting*. Raleigh, NC. June 2017.
27. Mangot, A., Aziz, T.N., Obenour, D.R., & Schnetzer, A. "Using Experimental Water Column Reactors to Explore the Effects of Mixing on Harmful Algal Blooms Suppression." *The Environmental & Water Resources Institute (EWRI/ASCE) Annual Meeting*. Sacramento, CA. May 2017.
28. Aziz, T.N. & Obenour, D.R. "Assessing the Role of Turbulent Mixing on Phytoplankton Dynamics in Piedmont Reservoirs." *NC Water Resources Research Institute (WRRI) Annual Conference*. Raleigh, NC. March 2017.
29. Davenport, J.M., Miller, J.W., & Obenour, D.R. "A hierarchical model for multi-decadal ungauged stream flow and nutrient loading estimation." *NC Water Resources Research Institute (WRRI) Annual Conference*. Raleigh, NC. March 2016.
30. Miller, J.W., Esselman, P.C., Alameddine, I., Blackhart, K., & Obenour, D.R. "Using Hierarchical Modeling to Assess Anthropogenic Watershed Stressors in Gulf of Mexico Estuaries." *Coastal and Estuarine Research Federation Conference.* Portland, OR. 12 Nov 2015.
31. Obenour, D. R.., Zhou, Y., Scavia, D, & Michalak, A. M. "Mapping and Modeling Hypoxia in Marine and Freshwater Systems." *Coastal and Estuarine Research Federation Conference*. Portland, OR. 10 Nov 2015.
32. Obenour, D. R., Rowe, M. D., Nalepa, T. F., Vanderploeg, H. A., Yousef, F., & Kerfoot, W. C. "Mapping the Dreissenid Mussel Invasion of Lake Michigan." *International Association of Great Lakes Research Conference*. Burlington, VT. 27 May 2015.
33. Blackhart, K., Esselman, P.C., Obenour, D.R., Qian, S., Alameddine, I., & Cha, Y.K., "A standardized framework to Assess the Condition and Stresses of estuary Ecosystems at Regional Scales." *Restore America's Estuaries 7th National Summit*. National Harbor, MD, November 2014.

34. Michalak, A.M., Obenour, D.R., & Zhou, Y. "Statistical approaches for assessing and predicting hypoxic extent," [Keynote address] *Computational Methods in Water Resources XX. International Conference*. University of Stuttgart, Germany. June 2014.
35. Obenour, D. R., Gronewold, A. D., Stow, C. A., & Scavia, D. "A Decision Support Model for Cyanobacteria Blooms in the Western Basin of Lake Erie." *International Association for Great Lakes Research Conference*. Hamilton, ON. May 2014.
36. Zhou, Y., Obenour, D.R., Scavia, D., & Michalak, A.M. "Advances in Hypoxic Extent Estimation through Geostatistical Modeling." *The 46th Annual Leige Colloquium*. Leige, Belgium. May 2014.
37. Obenour, D. R., Gronewold, A. D., Stow, C. A., & Scavia, D. "Exploring Lake Erie's Increasing Susceptibility to Cyanobacteria Blooms through Probabilistic Modeling." *Joint Aquatic Sciences Meeting*. Portland, OR. May 2014.
38. Obenour, D.R., Scavia, D., Rabalais, N.N., Turner, R.E., & Michalak, A.M. "New Approaches for Exploring Trends in Gulf Hypoxia Formation." *ASLO Aquatic Sciences Meeting*. New Orleans, LA. February 2013.
39. Obenour, D.R., Michalak, A.M., Zhou, Y., & Scavia, D. "Exploring the Extent of the Gulf's Dead Zone through Universal Kriging and Conditional Simulation." *AWRA Spring Specialty Conference: GIS and Water Resources VII*. New Orleans, LA. March 2012.
40. Obenour, D.R., Michalak, A.M., Scavia, D., & Zhou, Y. "Understanding the Causes of Gulf of Mexico Hypoxia: A Geostatistical Approach." *ASLO Aquatic Sciences Meeting*. San Juan, PR. February 2011.
41. Zhou, Y., Obenour, D.R., & Michalak, A.M. "Temporal Variability of Hypoxic Volume in the Chesapeake Bay." *ASLO Aquatic Science Meeting*. San Juan, PR. February 2011.
42. Obenour, D.R. & Miertschin, J. "San Antonio River Loop Hydraulics and Water Quality Modeling." *Texas Water Conference*. San Antonio, TX. March 2008.
43. Obenour, D.R. & Miertschin, J. "Nueces River Basin TDS Trends and Water Quality Standards." *Texas-Section ASCE Fall Meeting.* Ft. Worth, TX. 2007.
44. Obenour, D.R. "GIS Flood Damage Evaluation Toolset." *Texas Floodplain Management Association Spring Conference*. Del Rio, TX. April 2005.
45. Obenour, D.R., Maidment, D.R., Evans, T., & Yates, D. "An Interface Data Model for HEC-HMS." *AWRA Spring Specialty Conference: GIS and Water Resources III*. Nashville, TN. May 2004.

Conference Presentations (poster):

1. Hayes, W.O., Aziz, T.N. & Obenour, D.R. "Using Diffusion Models to Develop the Framework for a Lake Mixing Support Tool." *NC Water Resources Research Institute (WRRI) Annual Conference*. Raleigh, NC. March 2019.
2. Aupperle, M.B., Miller, J.W., Karimi, K., Del Giudice, D., Sankarasubramanian, A. & Obenour, D.R. "Multi-Decadal Assessment of Nutrient Loading and Water Quality Change in Jordan Lake." *NC Water Resources Research Institute (WRRI) Annual Conference*. Raleigh, NC. March 2019.
3. Han Y., Smithheart, J.W., Smyth, R.L., Aziz, T.N., & Obenour, D.R. "Modeling vertical diffusion and algal bloom potential in a shallow Piedmont reservoir." *NC Water Resources Research Institute (WRRI) Annual Conference*. Raleigh, NC. March 2018.
4. Smithheart, J.W., Aziz, T.N. & Obenour, D.R. "Mechanistic and Statistical Exploration of Factors Affecting Cyanobacterial Algal Blooms in Three North Carolina Reservoirs."

NC Water Resources Research Institute (WRRI) Annual Conference. Raleigh, NC. March 2018

5. Obenour, D.R. Matli, V.R., & Fang, S. "Exploring hypoxia dynamics on the LATEX Shelf through geostatistical space-time modeling." *AGU/ASLO Ocean Sciences Conference.* Portland, OR. February 2018.
6. Matli, V.R., Fang, S., Guinness, J., & Obenour, D.R. "Space-Time Geostatistical Modelling of Aquatic Systems: Examples from the Great Lakes and Gulf of Mexico." *AGU/ASLO Ocean Sciences Conference*. Portland, OR. February 2018.
7. Fang, S., Obenour, D.R., & Guinness, J. "Space-time Geostatistical Modeling of Harmful Algal Blooms Dynamics in Western Lake Erie." *US HAB Symposium.* Baltimore, MD, November 2017.
8. Aziz, T. N., Smithheart, J.W., Han, Y., Mangot, A., Schnetzer, A., Smyth, R., & Obenour, D.R. "Predicting the Effectiveness of Artificial Mixing for Harmful Algal Bloom Control." *North Carolina Lake Management Society (NCLMS) Fall Workshop*. Wilmington, NC. October 2017.
9. Han Y., Smithheart, J.W., Smyth, R.L., Aziz, T.N., & Obenour, D.R. "Modeling vertical diffusion in a shallow eutrophic reservoir." *Society for Freshwater Science Annual Meeting*. Raleigh, NC. June 2017.
10. Smithheart, J.W., Aziz, T.N., & Obenour, D.R. "Characterizing Cyanobacterial Dynamics Under Different Mixing Regimes Using Multi-Level Modeling." *Society for Freshwater Science Annual Meeting*. Raleigh, NC. June 2017.
11. Katin, A., & Obenour, D.R. "Hypoxia and algal bloom modeling for the Neuse River estuary." *North Carolina Sea Grant Conference*. Raleigh, NC. April 2017.
12. Strickling, H., & Obenour, D.R. "Modeling nitrogen loading trends in three North Carolina river basins." *NC Sea Grant Conference*. Raleigh, NC. April 2017.
13. Han Y., Smithheart, J.W., Aziz, T.N., & Obenour, D.R. "Modeling vertical diffusion and its effect on cyanobacterial algal blooms in a shallow eutrophic reservoir." *NC Water Resources Research Institute (WRRI) Annual Conference*. Raleigh, NC. March 2017.
14. Smithheart, J.W., Han, Y., Obenour, D.R., & Aziz, T.N. "Analyzing Cyanobacterial Trends in Three Piedmont Reservoirs Varying Levels of Enhanced Circulation." *NC Water Resources Research Institute (WRRI) Annual Conference*. Raleigh, NC. March 2017.
15. Mangot, A., Schnetzer, A., Obenour, D.R., Aziz, T.N. "Testing of a Novel Laboratory-based Reactor to Explore the Effects of Mixing on Cyanobacteria Suppression." *NC Water Resources Research Institute (WRRI) Annual Conference*. Raleigh, NC. March 2017.
16. Obenour, D.R., Smithheart, J.W., Han, Y., & Aziz, T.N. "Assessing vertical mixing and algal bloom potential in Jordan Lake, North Carolina." *NC Water Resources Research Institute (WRRI) Annual Conference*. Raleigh, NC. March 2016.
17. Obenour, D.R., Gronewold, A.D., Stow, C.A., Bertani, I., Steger, C.E., Ruberg, S.A., & Scavia, D. "Probabilistic Forecasting of Harmful Algal Blooms in Western Lake Erie." *AGU Fall Meeting.* San Francisco, CA. December 2014.
18. Obenour, D.R., Michalak, A.M., Scavia, D., & Zhou, Y. "Sizing up the Gulf's Dead Zone through Geostatistical Modeling." *3rd Annual Gulf of Mexico Hypoxia Research Coordination Workshop.* Bay St. Louis, MS. March 2012.

19. Obenour, D.R. "A Geostatistical Model of Hypoxia Formation in the Northern Gulf of Mexico." *EPA STAR Graduate Fellowship Conference*. Washington, D.C. September 2011.

Invited Seminars:

1. Obenour, D.R., "Assessing the Potential for Watershed Nutrient Management to Reverse Eutrophication in Jordan Lake." North Carolina Water Resources Association (NCWRA), Raleigh, NC, Online presentation, Sept, 2020.
2. Obenour, D.R., "Jordan Lake Watershed and Water Quality Modeling to Inform Eutrophication Management." Wake County Water Partnership, Raleigh, NC, Online presentation, June, 2020.
3. Obenour, D.R. Aupperle, M.B., Del Giudice, D., Arumugam, S., "Jordan Lake Bayesian-Mechanistic Water Quality Modeling to Assess Historical and Projected Eutrophication." Upper Neuse River Basin Association (UNRBA). Butner, NC, Online presentation. May, 2020.
4. Obenour, D.R. "Jordan Lake Water Quality Modeling to Assess Historical and Projected Eutrophication." NC Environmental Management Commission (EMC). Raleigh, NC. March, 2020.
5. Obenour, D.R., Aupperle, M.B., Del Giudice, D., Arumugam, S., "Jordan Lake Bayesian-Mechanistic Water Quality Modeling to Assess Historical and Projected Eutrophication." NC Nutrient Scientific Advisory Board (NSAB). Durham, NC. February, 2020.
6. Miller, J.W., Karimi, K., Arumugam, S., Obenour, D.R. "Jordan Lake Watershed Model." NC Nutrient Scientific Advisory Board (NSAB). Durham, NC. February, 2020.
7. Obenour, D.R., Katin, A., Strickling, H., Del Giudice, D. "Exploring Water Quality in the Neuse River Watershed and Estuary through Hybrid Modeling." Lower Neuse Basin Association. Clayton, NC. February, 2020.
8. Obenour, D.R., Arumugam, S., Aupperle, M.B., & Miller, J.W. "Jordan Lake Watershed & Water Quality Modeling to Assess Historical and Projected Eutrophication." Jordan Lake Nutrient Management Study Research Symposium, NC Policy Collaboratory. Chapel Hill, NC. April 2019.
9. Schnetzer A., Wiltsie D., Valera M., Green J., Vander Borgh M., Fensin E., Obenour D. and Aziz T. "Cyanotoxin Dynamics in B. Everett Jordan Reservoir, 2014-2016." Jordan Lake Nutrient Management Study Research Symposium, NC Policy Collaboratory. Chapel Hill, NC. April 2019.
10. Obenour, D.R. "Leveraging Multi-Decadal Spatial Datasets to Model Water Quality in Coastal Systems." NC State Geospatial Forum. Raleigh, NC. January 2019.
11. Miller, J.W., Arumugam, S., & Obenour D.R. "Jordan Lake Watershed and Water Quality Modeling to Assess Eutrophication Trends under Historical and Projected Scenarios." NC Nutrient Scientific Advisory Board Meeting. Durham, NC. November 2018.
12. Obenour, D.R. & Craig, J.K., "Synthesis and Integrated Modeling of Long-term Data Sets to Support Fisheries and Hypoxia Management in the Northern Gulf of Mexico." Hypoxia Effects on Fisheries Workshop. New Orleans, LA. February 2017.

13. Walker, B., Obenour, D.R., & Moorman, M.C. "Hydrologic Modeling to Improve Management Practices at Lake Mattamuskeet." Mattamuskeet Technical Working Group Meeting. Raleigh, NC. August 2016.
14. Obenour, D.R., "Enhancing Ecological Assessment and Prediction through Probabilistic Modeling: Examples from the Dead Zone." Peking University College of Environmental Sciences and Engineering Seminar. Beijing, China. June 2016.
15. Obenour, D.R., Smithheart, J.W., Han, Y., Smyth, R.L., & Aziz, T.N. "Assessing vertical mixing and its impacts on phytoplankton in Jordan Lake." Cape Fear River Assembly Annual Meeting. Fayetteville, NC. May 2016.
16. Obenour, D.R., Esselman, P.C., Miller, J.W., & Alameddine, I. "A Standardized Framework to Assess the Condition and Stresses of Estuary Ecosystems at Regional Scales." NFHP Science and Data Committee Meeting. San Marcos, TX. 16 April 2015.
17. Obenour, D.R., "Enhancing Ecological Prediction through Probabilistic Modeling." UNC Institute for Marine Sciences. Morehead City, NC. 6 February 2015.
18. Obenour, D. R., Gronewold, A. D., Stow, C. A., & Scavia, D. "Lake Erie Bloom Forecasting Model." Great Lakes Water Quality Agreement Phosphorus Load Response Modeling Meeting. Ann Arbor, MI. 9 April 2014.
19. Obenour, D.R., & Scavia, D. "Probabilistic Modeling to Assess Temporal Change in Complex Aquatic Systems." Chesapeake Bay Program Scientific and Technical Advisory Committee (STAC) Workshop. Annapolis, MD. March 2014.
20. Obenour, D.R. "Grappling with Environmental Uncertainty through Better Modeling Practices: Examples from the Dead Zone." Departmental Seminar, North Carolina State University. Raleigh, NC. January 2014.
21. Obenour, D.R., Michalak, A.M., & Scavia D. "A Parsimonious Mechanistic Model for Assessing Multiple Drivers of Gulf Hypoxia." Forum for Gulf of Mexico Hypoxia Research Coordination and Advancement. Stennis Space Center, MS. April 2013.
22. Obenour, D.R., Michalak, A.M., Scavia D., & Zhou, Y. "Sizing up the Gulf's Dead Zone through Geostatistical Modeling." Departmental Seminar, Carnegie Institution for Science. Stanford, CA. March 2012.

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-present 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. 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.” WRRI. 2021-2023. ~$100,000/$120,000 CCEE/total.
2. D.R. Obenour. “Scientific review of watershed and water quality modeling to support nutrient management in the Falls Lake watershed” NC Policy Collaboratory. 2020-2021. $30,000/$30,000 CCEE/total.
3. D.R. Obenour, S. Arumugam, H. Mitasova. “Assessing controls on nutrient loading at the watershed scale through data-driven modeling.” WRRI, 2020-2021, $59,999/$59,999 CCEE+Geospatial Analytics/total.
4. D.R. Obenour, J.K. Craig. “NGOMEX 2016: Synthesis and Integrated Modeling of Long-term Data Sets to Support Fisheries and Hypoxia Management in the Northern Gulf of Mexico.” NOAA, 2016-2021. $372,000/$692,000 CCEE/total.
5. R. von Haefen, D.R. Obenour, et al. "Estimating the Benefits of Stream Water Quality Improvements in Urbanizing Watersheds: An Ecological Production Function Approach." EPA, 2016-2021, $62,000 /$800,000 CCEE/total.
6. D.R. Obenour, S. Arumugam. “Jordan Lake Watershed and Water Quality Modeling to Assess Eutrophication Trends under Historical and Projected Scenarios.” NC Policy Collaboratory. 2018-2020. $407,000/$407,000 CCEE/total.
7. T.N. Aziz, D.R. Obenour. “Assessing physical controls on phytoplankton growth through mesocosms and modeling.” NC Policy Collaboratory. 2018-2020. $67,000/$67,000 CCEE/total.
8. T.N. Aziz, D.R. Obenour. “Predicting the Effectiveness of Artificial Mixing for Controlling Algal Blooms in Piedmont Reservoirs.” NC Water Resources Research Institute (WRRI), 2016-2018, $120,000/$120,000 CCEE/total.
9. D.R. Obenour, H.W. Paerl. “Hypoxia and Algal Bloom Forecasting for the Neuse River Estuary” NC Sea Grant, 2016-2018, $85,000/$100,000 CCEE/total.
10. T.N. Aziz, D.R. Obenour, et al. “Development of a Reservoir Column Reactor to Experimentally Evaluate the Effect of Mixing on Harmful Algal Communities” NC State Research Innovation Seed Funding (RISF), 2015-2018, $20,000/$20,000 total/CCEE.
11. 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/$58,000 CCEE/total.
12. D.R Obenour, “Gulf of Mexico and Pacific Coast Estuarine and Marine Fish Habitat Assessment: A Submission to the National Sea Grant College Program 2014 Special Project F Competition.” NOAA, 2015-2016, $60,000/$60,000 CCEE/total.
13. D. Scavia, D.R. Obenour, et al. “Transitioning to Operations NOAA-Supported Statistical Hypoxia Models and Forecasts in the Gulf of Mexico and Chesapeake Bay” University of Michigan/NOAA, 2015-2017, $50,000/$200,000 CCEE/total.
14. D.R Obenour, “Demonstration of a Bayesian Mechanistic Model for Falls Lake”, NC State FRPD, 2015-2016, $7000/$7000 CCEE/total.
15. D.R. Obenour. "Gulf of Mexico Estuarine and Marine Fish Habitat Assessment: A submission to the National Sea Grant College Program 2014 Special Project “F” competition." NOAA, 2014-2015, $32,000/$32,000 CCEE/total.

<u>Researchers Advised or Co-advised:</u>

Underline indicates current lab member

- PhD students: Smitom Borah, Shiqi Fang, Yue Han, Kimia Karimi, Alexey Katin, Rohith Matli, Jonathan Miller.
- MS students: Justin Davenport, Rohith Matli, Hayden Strickling, Jeremy Smithheart.
- Undergraduates: Bright Elijah, Wesley Hayes, Kristen McCahill, Erick Saunders, Jeremy Smithheart, Brianne Walker, Elizabeth Wallner.
- Postdocs and other non-student researchers: Dario Del Giudice, Alexey Katin, Kevin Li, Jonathan Miller, Yini Shangguan

Technical and Pedagogical Workshops Attended:

Summer School in Environmental Systems Analysis, led by Peter Reichert, Eawag, Dubendorf, Switzerland. 3-7 June 2013.

Pedagogy for the Engineering Classroom, three sessions with Michael Prince from Bucknell University. 9 April 2013.

Water Quality Analysis Simulation Program (WASP7.2) Workshop, EPA Region 4, Atlanta, GA. 23-27 July 2007.

Modeling Software Experience (used in research and/or consulting projects):

ArcGIS, HEC-HMS, HEC-RAS, HSPF, MATLAB, QUAL2K, R, Stan, Visual Basic, WaterCAD, WASP, Win/OpenBUGS.

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