

Diana Oviedo Vargas, PhD

Stroud Water Research Center
Avondale, Pennsylvania

Phone: (610) 910-0043
E-mail: doviedo@stroudcenter.org

EDUCATION

- 2013 Ph.D. Indiana University, School of Public and Environmental Affairs.
Environmental Sciences
- 2011 M.S. Indiana University, School of Public and Environmental Affairs.
Environmental Sciences
- 2007 B.S. University of Costa Rica, *Chemistry*

PROFESSIONAL EXPERIENCE

- 2018-present Adjunct Professor, Plant and Soil Sciences Department, University of Delaware
- 2017-present Assistant Research Scientist, Stroud Water Research Center
- 2013-2017 Postdoctoral Research Associate, Department of Marine Earth and Atmospheric Sciences, North Carolina State University
- 2011-2013 Associate Instructor, School of Public and Environmental Affairs, Indiana University, Bloomington
- 2004-2007 Teaching Assistant, Analytical and organic chemistry laboratories, University of Costa Rica
- 2004-2007 Research Assistant, Natural Products Research Center, University of Costa Rica

RESEARCH INTERESTS AND EXPERTISE

My research seeks to improve our knowledge about the elemental cycles in streams, rivers, and estuaries and how they are linked to each other, to the water cycle, and to the terrestrial ecosystem at the surface and the subsurface level. Some of my current research interests include (i) the nitrogen and phosphorus transport and transformation in fluvial systems and how human activities such as agriculture and urbanization can affect these processes; (ii) the quantification and characterization of the multiple carbon pools and fluxes in aquatic ecosystems and their role in global climate change; and (iii) the effects of emerging contaminants, like salts and per- and poly-fluoroalkyl substances (PFAS), and pesticide residues on the health of water bodies. My expertise includes aquatic ecosystems in temperate and tropical zones and along the full river continuum, from headwaters, to large rivers, to estuaries and the coastal ocean.

SCIENTIFIC PUBLICATIONS AND BOOK CHAPTERS

- Oviedo-Vargas, D.**, M. Peipoch, and C. Dow. 2022. Metabolism and soil water viscosity control diel patterns of Nitrate and DOC in a low order temperate stream. *Journal of Geophysical Research: Biogeosciences*, p.e2021JG006640.
- Bertuzzo, E., E.R., Hotchkiss, A. Argerich, J.S. Kominoski, D. **Oviedo-Vargas**, P. Savoy, R. Scarlett, D. von Schiller, J.B. Heffernan. 2022. Respiration regimes in rivers: Partitioning source-specific respiration from metabolism time series. *Limnology and Oceanography*, 67(11), pp.2374-2388.

- Arellano, A. R., T. S. Bianchi, C. L. Osburn, E. J. D'Sa, N. D. Ward, **D. Oviedo-Vargas**, I. D. Joshi et al. 2019. Mechanisms of organic matter export in estuaries with contrasting Carbon Sources. *Journal of Geophysical Research: Biogeosciences* doi.org/10.1029/2018JG004868
- Montgomery, M. T., G. E. Collins, T. J. Boyd, C. L. Osburn, **D. Oviedo-Vargas**, and Q. Lu. 2019. Eco-friendly organic nanotubes encapsulating alkaline phosphatase and ecotoxicology of nanotubes to natural bacterial assemblages in coastal estuarine waters. *ACS Omega* 4:2196-2205.
- Bianchi T.S., Morrison E., Barry S., Arellano A.R., Feagin R.A., Hinson A., Eriksson M., Allison M., Osburn C.L. and **Oviedo-Vargas D.**, 2018. The fate and transport of allochthonous blue carbon in divergent coastal systems. In *A Blue Carbon Primer* (pp. 27-49). CRC Press.
- Joshi, I. D., N. D. Ward, E. J. D'Sa, C. L. Osburn, T. S. Bianchi, and **D. Oviedo-Vargas**. 2018. Seasonal trends in surface $p\text{CO}_2$ and air-sea CO_2 fluxes in Apalachicola Bay, Florida, from VIIRS ocean color. *Journal of Geophysical Research: Biogeosciences* 123: 2466-2484.
- Joshi I.D., E.J. D'Sa, C.L. Osburn, T.S. Bianchi, D.S. Ko, **D. Oviedo-Vargas**, A.R. Arellano, and N.D. Ward. 2017. Assessing chromophoric dissolved organic matter (CDOM) distribution, stocks, and fluxes in Apalachicola Bay using combined field, VIIRS ocean color, and model observations. *Remote Sensing of Environment* 191:359-372.
- Osburn C. L., **D. Oviedo-Vargas**, E. Barnett, D. Dierick, S. F. Oberbauer, and D. P. Genereux. 2018. Regional groundwater and storms are hydrologic controls on the quality and export of dissolved organic matter in two tropical rainforest streams, Costa Rica. *Journal of Geophysical Research: Biogeosciences* 123:850-866.
- Oviedo-Vargas D.**, D. Dierick, D.P. Genereux, and S.F. Oberbauer. 2016. Chamber measurements of high CO_2 emissions from a rainforest stream receiving old C-rich regional groundwater. *Biogeochemistry* 130:69-83.
- Oviedo-Vargas D.**, D.P. Genereux, D. Dierick, and S.F. Oberbauer. 2015. The effect of regional groundwater on carbon dioxide and methane emissions from a lowland rainforest stream in Costa Rica, *Journal of Geophysical Research: Biogeosciences* 120:2579–2595.
- Oviedo-Vargas D.**, and T.V. Royer. 2015. The role of dissolved organic nitrogen in a nitrate-rich agricultural stream. *Journal of Environmental Quality* 44:668-675.
- Warner, D., **D. Oviedo-Vargas**, and T.V. Royer. 2015. Evaluation of passive samplers for the collection of dissolved organic matter in streams. *Environmental Monitoring and Assessment* 187:1-9.
- Oviedo-Vargas D.**, T.V. Royer, and L.T. Johnson. 2013. Dissolved organic carbon manipulation reveals coupled cycling of carbon, nitrogen and phosphorus in a nitrogen-rich stream. *Limnology & Oceanography* 58:1196-1206.

FIRST AUTHOR ORAL PRESENTATIONS AT NATIONAL AND REGIONAL CONFERENCES

- Oviedo-Vargas D.**, D. Bressler, J. Jackson, S. Ensign, M. Peipoch. Advancing Freshwater Science and Conservation with Near-continuous Real-time Data collection by Community Scientists. National Water Quality Monitoring Conference, Virginia Beach, VA. 2023
- Oviedo-Vargas D.**, M. D. Daniels, J. Kan, M. Peipoch. Organic Matter Dynamics in Upland Soils under Different Agricultural Practices during Simulated Rainfall Events. Joint Aquatic Sciences Meeting, Grand Rapids, MA. 2022
- Oviedo-Vargas D.**, M. Peipoch, J. Jackson, D. Bressler, D. Arscott, C. Dow. Spatio-temporal patterns of specific conductivity in streams and rivers of the Delaware River Basin. Delaware Watershed Research Conference, Philadelphia, PA. 2019
- Oviedo-Vargas D.** High-resolution spatio-temporal DOM dynamics in White Clay Creek, Pennsylvania. Society for Freshwater Science, Salt Lake City, UT. 2019

- Oviedo-Vargas D.**, C.L. Osburn, T.S. Bianchi, E.J. D'Sa, D.S. Ko, N.D. Ward, A. Arellano, I.D. Joshi, and J.D. Kinsey. Examining the relative contribution of 'blue carbon' to coastal shelf environments via optical properties of dissolved and base-extracted particulate organic matter. Ocean Sciences Meeting, New Orleans, LA. 2016.
- Oviedo-Vargas D.**, T.V. Royer, and L.T. Johnson. Ecoenzymatic activity in sediments and water of rivers across the western and midwestern United States. Society for Freshwater Sciences, Jacksonville, FL. 2013.
- Oviedo-Vargas D.**, T.V. Royer, and L.T. Johnson. Characterization of dissolved organic nitrogen in a stream draining a heavily modified agricultural landscape. Association for the Science of Limnology and Oceanography, New Orleans, LA. 2013.
- Oviedo-Vargas D.**, T.V. Royer, and L.T. Johnson. Temporal and spatial variation of the nature of dissolved organic matter in a stream network dominated by agricultural activities. Society for Freshwater Science, Louisville, KY. 2012.
- Oviedo-Vargas D.**, T.V. Royer, and L.T. Johnson. Coupling between carbon and phosphorus cycling in a nitrate-rich stream in Indiana, USA. North American Benthological Society, Providence, RI. 2011.

GRANTS AND AWARDS FUNDED

- Diana Oviedo-Vargas (PI)**, Evaluating the Effectiveness of a Biofilter for On-farm Adaptive Management, 2023, Lancaster Clean Water Partners, \$80,000.
- Diana Oviedo-Vargas (PI)**, The effectiveness of restoration practices in an agricultural watershed within MS4, 2022, Pennsylvania Department of Environmental Protection, \$85,000.
- Diana Oviedo-Vargas (PI)**, LTREB Research Experience for Undergraduates: Trajectory for the Recovery of Stream Ecosystem Structure and Function during Reforestation, 2021, National Science Foundation, \$9,523.
- Diana Oviedo-Vargas (PI)**, Scott Ensign, Melinda D. Daniels, Marc Peipoch, JinJun Kan) Analyzing long-term water quality data for the National Park Service, 2021, National Park Service, \$311,000.
- Diana Oviedo-Vargas (PI)**, Evaluating the risk for PFAS contamination of surface and groundwater through application of biosolids in agroecosystems, 2020, Foundation for Food and Agriculture Research, \$316,000
- Melinda D. Daniels (PI), JinJun Kan, **Diana Oviedo-Vargas**, Marc Peipoch. Mitigating agricultural pollution of fresh water and combating climate change by restoring soil health through conservation and organic agricultural practices, 2018, Prince Albert of Monaco II Foundation, €237,405.
- Matthew Ehrhart (PI), David B. Arscott, Melinda D. Daniels, Scott H. Ensign, John K. Jackson, JinJun Kan, Steve Kerlin, **Diana Oviedo-Vargas**, Marc Peipoch. Technical support for DRWI Phase 2 monitoring, citizen science, data loggers, modeling & agricultural restoration, 2018, William Penn Foundation, \$1,450,000.
- JinJun Kan (PI), David B. Arscott, Melinda D. Daniels, Matthew Ehrhart, **Diana Oviedo-Vargas**, Bernard W. Sweeney. Evaluating How Conventional, Conservation, and Organic Farming Management Practices Enhance Soil Health and Improve Water Quality, 2017, William Penn Foundation, \$2,590,000.
- John Jackson (PI), David B. Arscott, Melinda D. Daniels, Charles Dow, JinJun Kan, Steve Kerlin, **Diana Oviedo-Vargas**, Marc Peipoch. LTREB Renewal: Trajectory for the recovery of stream ecosystem structure and function during reforestation, 2016, National Science Foundation, \$450,000.

- Melinda D. Daniels (PI), JinJun Kan, **Diana Oviedo-Vargas**. Transforming Water Quality in the Sharitz Headwaters of Brandywine Creek, 2015, Pennsylvania Department of Environmental Protection, \$874, 244.
- Todd V. Royer (PI) and **Diana Oviedo-Vargas**, Doctoral Dissertation Improvement Grant: Extracellular enzyme activity in large rivers and its relationship to dissolved organic matter quality and inorganic nutrient uptake, 2012, National Science Foundation, \$14,406.
- Diana Oviedo-Vargas (PI)**, Grant-in-aid of Doctoral Research: Quality assurance and inter-laboratory comparison of fluorescence techniques for the characterization of dissolved organic matter, 2011, IU Graduate School, \$930.
- Diana Oviedo-Vargas (PI)**, Dissolved organic carbon in Sycamore Creek: A comparison to agriculturally impaired streams, 2010, IU Research and Teaching Preserve Student Research Grant, \$500.
- Diana Oviedo-Vargas (PI)**, Whole-stream metabolism and characterization of dissolved organic carbon sources in agricultural streams in central Indiana, 2009, Indiana Academy of Science Senior Research Grant, \$2,500.

WORKSHOPS AND SHORT COURSES ATTENDED

- 2017 Stream Pulse Heterotrophic Regimes Workshop. Martigny, Switzerland.
- 2016 Thermal analysis of organic matter (Ramped Pyrolysis). Woods Hole Oceanographic Institution, Woods Hole, MA
- 2014 Portal to the public (communicating science to the public). Association of Science-Technology Centers, Raleigh, NC
- 2014 Effective teaching with technology. North Carolina State University, Raleigh, NC
- 2013 Linking optical and chemical properties of dissolved organic matter in natural waters. Association for the Sciences of Limnology and Oceanography, New Orleans, LA
- 2012 New developments in fluorescence spectroscopy to characterize dissolved organic matter. Geological Society of America Meeting, Charlotte, NC
- 2011 Seminar in teaching public and environmental affairs. Indiana University, Bloomington, IN
- 2009 Fluorescence Workshop. University of Colorado, Boulder, CO. Organized by Dr. Dianne McKnight

SERVICE

Peer Reviews: Journal and Monograph Manuscripts

EGU Biogeosciences
 AGU Journal of Geophysical Research-Biogeosciences
 Biogeochemistry
 Estuaries and Coasts
 Freshwater Biology
 ACS Environmental Science and Technology
 Ecosystems
 Hydrology and Earth System Sciences
 Limnology & Oceanography

Institutional Service and Outreach

- 2022-present Member of the Board of Trustees of The Nature Conservancy Pennsylvania/Delaware Chapter
- 2018-present Member of the International Committee, Society for Freshwater Science
- 2017-present Co-chair of the Stroud Center Workplace Safety Committee
- 2017-present Environmental/Watershed member of the Toxics Advisory Committee of the Delaware River Basin Commission
- 2011-2012 Environmental Science Outreach Chair. Association of SPEA PhD students
- 2010-2012 Member of the Undergraduate Travel Award Committee, Society for Freshwater Science

TEACHING EXPERIENCE

University of Pennsylvania-Philadelphia

BIO415 Introduction to Freshwater Ecology (co-taught with Stroud Center Science Team)

Indiana University-Bloomington

E260 Introduction to Water Resources
E355 Introduction to Limnology
E262 Environmental Problems and Solutions

UNDERGRADUATE AND GRADUATE STUDENTS MENTORED

- Luisana Rodriguez Sequeira. Undergraduate student. National Science Foundation Research Experience for Undergraduate Internship. 2021
- Johanna Klein. Undergraduate student. National Science Foundation Research Experience for Undergraduate Internship. 2020
- Nicholas Marzolf. Doctoral student. North Carolina State University. 2020
- Teresa Sauer, Fairfield University. Undergraduate student. National Science Foundation Research Experience for Undergraduate Internship. 2019
- Paul Cöckson, Wake Technical Community College. MEAS Summer Research Internship. 2016
- Chiao-Wen Lin, North Carolina State University. Graduate student. 2014-2015
- Angela Cole, North Carolina State University. Undergraduate laboratory assistant. 2013
- Andrew Madison, Indiana University. Graduate laboratory assistant. 2012
- Cora Lewis, Indiana University. Undergraduate laboratory assistant. 2012
- Daniel Warner, Indiana University. Senior thesis. Utilization of passive samplers for the characterization of dissolved organic matter. 2011

MEMBERSHIPS IN PROFESSIONAL ASSOCIATIONS

- Society for Freshwater Science
- Association for the Sciences of Limnology and Oceanography