NATALIE G. NELSON

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PROFESSIONAL APPOINTMENTS

Assistant Professor Aug 2017 – Present
North Carolina State University
Department of Biological & Agricultural Engineering
Raleigh, NC

NSF Graduate Research Fellow Aug 2012 – Aug 2017
University of Florida
Department of Agricultural and Biological Engineering
Gainesville, FL

Research Affiliate and NSF Graduate Research Intern Jun 2015 – Aug 2016
Smithsonian Environmental Research Center
Edgewater, MD

EDUCATION

PhD, Agricultural and Biological Engineering, University of Florida Aug 2017
Interdisciplinary concentration in Hydrologic Sciences
Dissertation: *Quantifying the spatiotemporal importance of fresh-brackish water quality drivers using aquatic data analytics and models*

BSc, Agricultural and Biological Engineering, University of Florida May 2012

PUBLICATIONS

Peer-reviewed:

NG Nelson, R Muñoz-Carpena, EJ Phlips, D Kaplan, P Sucsy, J Hendrickson, Revealing biotic and abiotic controls of harmful algal blooms in a shallow subtropical lake through statistical machine learning, *Environmental Science & Technology,* in press

NG Nelson, R Muñoz-Carpena, PJ Neale, M Tzortziou, JP Megonigal (2017), Temporal variability in the importance of hydrologic, biotic, and climatic descriptors of dissolved oxygen dynamics in a shallow tidal-marsh creek, *Water Resources Research*, 52. doi:10.1002/2016WR020196

NG Nelson, R Muñoz-Carpena, and EJ Phlips (2017), A novel quantile method reveals spatiotemporal shifts in phytoplankton descriptors between bloom and non-bloom conditions in a subtropical estuary, *Marine Ecology Progress Series,* 567:57-78. doi:10.3354/meps12054

Under review:

EJ Phlips, S Badylak, R Chamberlain, L Hall, J Hart, C Jacoby, M Lasi, J Lockwood, J Miller, L Morris, and **NG Nelson**, Cyclical patterns and a regime shift in phytoplankton blooms in a restricted sub-tropical lagoon: A 20-year perspective. Submitted to *Limnology & Oceanography*, Jan 2018.

Y Rong, AV Padron, KJ Hagerty, **NG Nelson**, S Chi, NO Keyhani, J Katz, S Datta, C Gomes, and ES McLamore, Post hoc support vector machine learning for biosensors based on weak protein-ligand interactions. Submitted to *Analyst,* Jan 2018.

In preparation for peer review:

NG Nelson, R Muñoz-Carpena, EJ Phlips, P Sucsy, Important factors in freshwater eutrophication simulations identified through global sensitivity and uncertainty analysis of a 3D coupled hydrodynamic-biogoechemical model, *in preparation for Environmental Modelling & Software*

Technical reports (non-refereed):

NG Nelson, S Ward, and D Ward (2017), Implications of altered freshwater flows on estuarine fish and shellfish: a case study of the Lower Suwannee River. White paper prepared for the Florida Climate Institute, UF Levin College of Law, and UF/IFAS Nature Coast Biological Station.

R Muñoz-Carpena and **NG Nelson** (2017), Lake George Water Quality Modeling: EFDC and CE-QUAL-ICM Platform Compatibility and Evaluation of Sensitivity Analysis Methodologies. Report to the St. Johns River Water Management District, Palatka, FL. Contract # 28650.

ADDITIONAL PROFESSIONAL TRAINING

Sea level rise and coastal ecology: science, policy, and practice 2017
University of Florida, Cedar Key, FL

Google Earth Engine User Summit 2016
Google Headquarters, Mountain View, CA

Norman A. Borlaug Summer Institute on Global Food Security 2013
Purdue University, West Lafayette, IN

SELECT NATIONAL & INTERNATIONAL AWARDS

Presidential Management Fellows Finalist 2017
U.S. Office of Personnel Management

Outstanding Student Paper Award 2016
American Geophysical Union, Hydrology Section

Outstanding Oral Presentation Award 2016
Annual International Meeting of the American Society of Agricultural and Biological Engineers, Natural Resources & Environmental Systems Division

Outstanding Teaching Assistant Award 2015
National Association of Geoscience Teachers

Graduate Research Internship 2015
National Science Foundation

Campus RainWorks Challenge: 1st Place, Master Plan Category (team award) 2014
Environmental Protection Agency

Campus RainWorks Challenge: 1st Place, Large Institution Category (team award) 2013
Environmental Protection Agency

Graduate Research Fellowship 2012
National Science Foundation

SYNERGISTIC ACTIVITIES

Guest Associate Editor, Journal of the American Water Resources Association 2018
Managing the peer review process for 4-5 manuscripts submitted for publication in a featured collection on "The Emerging Science of Aquatic System Connectivity."

Session convener, American Geophysical Union 2017
Coordinating and moderating a session on "Wetland and Floodplain/Riparian Zone Effects on Water Quality, Quantity, and Ecology in Downstream Waters" for the 2017 Fall Meeting of the American Geophysical Union in New Orleans, LA.

Session convener, American Society of Agricultural & Biological Engineers 2017 – 2018
Introduced and moderated a session on "Leveraging Big Data and Computational Tools for Tackling Water Resources Problems" for the 2017 Annual International Meeting of the American Society of Agricultural & Biological Engineers in Spokane, WA.

Unit developer, Science Education Research Center (SERC) 2016
Contributed an educational unit titled "Analyzing dissolved oxygen data across a fresh-estuarine gradient of the Lower St. Johns River using a Python-enabled Jupyter notebook" to SERC in collaboration with the NSF-supported Consortium of Universities for the Advancement of Hydrologic Sciences, Inc. Assignment is online at: http://serc.carleton.edu/hydromodules/units/154130.html

Guest blogger, IrriGator Extension Program 2014 – 2017
Published blog posts to showcase water-related conferences and emerging technologies. Blog readership includes water resources professionals and practitioners, primarily in Florida.
http://ufifasirrigator.blogspot.com

Co-creator & instructor, Interdisciplinary Honors Seminar 2014
Co-developed a course on "Navigating the murky waters of science, society, and wetlands," and delivered material on watershed hydrology and water quality to a course of 10 dual-enrolled high school students participating in the Student Scientist Training Program at the University of Florida.