

Tiffany G. Wilson

Doctoral Candidate
Durham, NC, USA

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EDUCATION

Duke University

Ph.D. in Civil and Environmental Engineering

May 2016 (Expected)

Durham, NC

Advisor: Dr. John D. Albertson

Dissertation topic: Effects of changing seasonality of temperature and precipitation on vegetation and water dynamics in semi-arid climates

Certificate in Wireless Sensor Networks, requiring courses in Environmental Sensing, Artificial Intelligence, and Intelligent Sensors, along with participation in the annual WISeNet workshop.

Certificate in College Teaching Program, requiring practical teaching experience and peer evaluation, two courses relating to topics in college teaching, and development of an online teaching portfolio.

Research interests: Semiarid hydrology and ecohydrology, evolution of soil moisture, effects of changing seasonality of precipitation and temperature on vegetation and the water cycle, watershed hydrology.

Relevant Courses: Land Atmosphere Interactions, Ecohydrology, Hydrology Modeling for Water Quality and Quantity Assessment, Groundwater Hydrology, Intermediate and Advanced Fluid Mechanics, Pollutant Transport Systems, The Climate System, Scientific Computing, Numerical Analysis

Princeton University

B.S.E. in Civil and Environmental Engineering, Magna Cum Laude

June 2007

Princeton, NJ

Certificate in Geological Engineering

Undergraduate Thesis: Effects of Climate Change on the New York City Water Supply

Relevant courses: Hydrology, Environmental Engineering Laboratory, Rivers and the Regional Environment, Earth Surface Processes, Water Quality, Environmental and Civil Engineering Systems Planning and Design, Structural Geology

TEACHING EXPERIENCE

Hydrology and Water Resources

Graduate Teaching Assistant

Fall 2012

Duke University

Description: Undergraduate course (16 students) in the Pratt School of Engineering on topics including the water cycle, flood routing, groundwater, frequency analysis, ground water, water supply, and hydrologic design.

Prepared homework assignments and laboratory materials.

Graded homework assignments and lab reports.

Held weekly recitation sessions to present additional relevant material to students and answer course-work questions.

Held weekly office hours to improve student comprehension on labs and homework.

Gave guest lectures on storm frequency analysis, flood routing, and groundwater well hydraulics.

Fluid Mechanics

Graduate Teaching Assistant

Fall 2011

Duke University

Description: Undergraduate course (30 students) in the Pratt School of Engineering on fluid statics and dynamics.

Graded homework assignments and lab reports.

Led bi-weekly hands-on lab sessions including review of equipment and relevant concepts. Lab topics included surface tension, viscosity, Bernoulli's theorem, hydraulic jumps, and laminar/turbulent flow.

Held weekly office hours to answer student questions on labs and homework.

SAT Solutions

Teacher and Tutor

August 2005 – October 2006

Medford, NJ

Taught two weekly 90-minute classes preparing high school students for the mathematics sections of the SAT exam.

Created lesson plans, homework solution guides, and review of course materials.

Held individual math tutoring sessions.

INDUSTRY EXPERIENCE

Malcolm Pirnie, Inc.

Engineer

July 2007 – July 2009

Plantation, FL

Contributed to projects and reports for the Municipal Water Environment business unit of an Environmental Engineering consulting firm.

Project experience: water treatment plant chemical system design, development of water conservation plans, water supply planning, emergency groundwater remediation, gravity sanitary sewer design, and regulatory compliance.

Regularly analyzed data using Excel, Access and ArcMap to produce graphs, charts, and maps for consulting reports.

AWARDS

Duke University Department of Civil and Environmental Engineering

Jeffrey Taub Award

2015

Duke University Graduate and Professional Student Council

Student Impact Award

2015

Wireless Intelligent Sensor Networks (WISeNet) Integrative Graduate Education and Research Training Fellowship (\$30,000/year)	2012 – 2015
James B. Duke Fellowship (\$20,000)	2009 – 2013
Pratt-Gardner Fellowship (\$9,000)	2009 – 2010
Peter W. Stroh '51 Environmental Senior Thesis Prize (\$500)	2007
W. Taylor Thom Jr. Prize in Geological Engineering (\$100)	2007
Malcolm Pirnie/UNCF Corporate Scholar (Paid Summer Internship)	2006

WORKSHOPS, CONFERENCES, AND POSTER PRESENTATIONS

Workshop on Wireless Intelligent Sensor Networks (WISeNet) June 9–10, 2014
Duke University *Durham, NC*

Poster and Presentation: **T.G. Wilson**. Use of state-dependent precipitation distributions in 15-minute Markov chain rainfall generation.

Workshop on Wireless Intelligent Sensor Networks (WISeNet) June 4–5, 2013
Duke University *Durham, NC*

Poster and Presentation: **T.G. Wilson**. Towards optimal placement and operation of soil moisture sensors based on land surface features and topography.

GradX Talks April 2, 2013
Duke University *Durham, NC*

Presentation: **T.G. Wilson**. Climate Change, Vegetation, and Water Supply.

Ecohydrology and Sustainability in Seasonally Dry Ecosystems June 13–14, 2011
NSF-CBET and Pratt School of Engineering, Duke University *Durham, NC*

Poster: **T.G. Wilson**, C. Cortis, R. Corona, N. Montaldo, J.D. Albertson. Design and testing of a low-cost plot-scale rainfall simulator in Sardinia, Italy, for calibration of a distributed hydrologic model

AGU Fall Meeting 2010 December 13–17, 2010
American Geophysical Union *San Francisco, CA*

Poster: **T.G. Wilson**, C. Cortis, R. Corona, N. Montaldo, J.D. Albertson. Design and testing of a low-cost plot-scale rainfall simulator in Sardinia, Italy, for calibration of a distributed hydrologic model

Presentation: J. D. Albertson, **T.G. Wilson**, N. Montaldo. Interannual rainfall variability, vegetation dynamics, and runoff controls in Mediterranean climates.

PUBLICATIONS

Wilson, T. G., Albertson, J. D., and Montaldo, N.: Implications of a temporally variable saturated hydraulic conductivity for local scale hydrology and vegetation (*in prep*).

Wilson, T. G., Albertson, J. D., and Porporato, A.: Use of occurrence-conditioned precipitation depths in Markov generation of 15-minute rainfall (*in prep*).

Wilson, T. G. and Albertson, J. D.: Effects of drought timing and severity on grassy vegetation in a semi-arid climate with temporally variable saturated hydraulic conductivity (*in prep*).

Wilson, T. G., Cortis, C., Montaldo, N., and Albertson, J. D.: Development and testing of a large, transportable rainfall simulator for plot-scale runoff and parameter estimation, *Hydrol. Earth Syst. Sci.*, 18, 4169-4183, doi:10.5194/hess-18-4169-2014, 2014.

Vico, G; Thompson, SE; Manzoni, S; Molini, A; Albertson, JD; Almeida-Cortez, JS; Fay, PA; Feng, X; Guswa, AJ; Liu, H; **Wilson, TG**; Porporato, A, Climatic, ecophysiological, and phenological controls on plant ecohydrological strategies in seasonally dry ecosystems, *Ecohydrology*, 8(4), pp. 660-681, doi:10.1002/eco.1533, 2015.

R. Corona, **T.G. Wilson**, L.P. D'Adderio, F. Porcu, N. Montaldo, and J.D. Albertson, 2013. On the estimation of surface runoff through a new plot scale rainfall simulator in Sardinia, Italy. *Procedia Environmental Sciences*, 19, pp. 875-884, doi:10.1016/j.proenv.2013.06.09, 2013.

SERVICE

CEE Students Advocating for Graduate Education (SAGE) August 2015–Present
Inaugural Member Department of Civil & Environmental Engineering, Duke University

Group of faculty-nominated students tasked with representing graduate students, bringing concerns to the faculty, and participating in the implementation of improved CEE graduate student development.

GPSC Basketball Committee September 2013–Present
Secretary, Subcommittee Chair, Graduate Student Usher Duke University

Designed and implemented an electronic system to keep track of over 2,000 students for the annual Basketball Ticket Campout, a weekend-long event for graduate and professional students; planned food and entertainment for the Campout event. During the basketball season, volunteered as an usher to help students enter Cameron Indoor Stadium for men's basketball games.

Dean's Award for Excellence in Mentoring Selection Committee 2015
Graduate School, Duke University

Graduate and Professional Student Council April 2013–April 2015
Director of Student Life, Executive Secretary Duke University

Acted as advocate for graduate and professional students at Duke through planning with the rest of the Executive Board, meetings with University administration, etc.; assembled and maintain a roster of over 100 graduate student representatives; organized events for over 7,000 graduate and professional students; managed a budget of over \$30,000.

CEE Graduate Student Council

March 2011–May 2012

*Board Member**Duke University*

Plan academic, professional, and social events for graduate students in Duke University's Department of Civil and Environmental Engineering.

Florida Section AWWA

June 2008 – July 2009

*Board Member**Broward County, FL*

As a Region 6 Board Member and Young Professionals Chair, planned events for the water industry professionals of South Florida, including a half-day seminar and bowling tournament.

Christmas in July

2006 – 2009

*Board Member**Ft. Lauderdale, FL*

Helped plan Christmas in July, an annual event for nearly 1,000 children from homeless shelters in Broward County, Florida.

SKILLS**Programming and Markup Languages**C/C++, L^AT_EX, JavaScript**Software**

MATLAB, Mathematica, MS Office, ArcMap

Technology Platforms

Google sites, Blackboard, Sakai, Qualtrics

PROFESSIONAL ORGANIZATIONS AND LICENSES

American Geophysical Union

2010 – 2014

Sigma Xi, Scientific Research Society

2007 – Present

Engineer in Training (F.E. Exam), State of Florida

October 2008

Florida Section AWWA, Broward County, Florida

2007 – 2009