

DAHL WINTERS

Dahl Winters is an environmental scientist in RTI International's Global Climate Change and Environmental Sciences Division. Ms. Winters provides technical support to the U.S. Environmental Protection Agency's Climate Change Division (CCD) under the Greenhouse Gas Reporting Program (GHGRP). In this role Ms. Winters developed new software tools and databases to verify extensive multi-year emissions data from over 10,000 facilities. She has also worked to increase the level of collaboration between multiple RTI groups in the areas of mobile technology and big data analytics.

Areas of Technical Expertise

Data Management and Analytics. Managed both relational and NoSQL databases, to include SQL Server, Oracle, PostgreSQL, MySQL, MongoDB, HBase, and Titan on Hadoop. Skilled at exploratory data analysis using Excel and R; recent analytics tools include Apache Mahout and scikit-learn.

Software Programming. Experienced in Java, Python, VBA, and R. The most recent programming experience includes Java MapReduce, Gremlin/Groovy, and Android.

Web Development. More than 12 years of experience in Web design and development, recently to include HTML5 and D3.js visualization. Currently the webmaster of the South Atlantic States Section of the Air and Waste Management Association.

GIS. Performed environmental/ecological research for 3 years using ESRI ArcGIS; developed an Android mapping application with a Python backend that is run from the ArcGIS environment and currently developing geospatial classification/clustering algorithms for use with Hadoop.

Selected Project Experience

Institutional Research and Development Proposals in Text and Geospatial Analytics (2012 to date)—*Data Management/Analytics Task Leader.* Researched, designed, and implemented Java and Python-based text mining and graph algorithms that predict likely or optimal business connections. Implemented a virtualized Hadoop cluster with HBase/Titan on which to develop geospatial classification/clustering algorithms for a geodemographic use case.

Support for Development of GHGRP Verification Process (2012 to date)—*Task Leader for Analytics.* Spearheaded the development of a custom VBA software application that automated the process for finding patterns in reported GHG emissions, for the purpose of assessing the quality of the national emissions inventory. The application organizes GHGRP data from thousands of facilities into tables amenable to analysis. The same program also searches for and graphs correlations in Excel between emissions data and production-related data elements within these tables, allowing RTI analysts to develop additional statistical and algorithm verification checks across all GHGRP subparts to ensure data quality.

CCD Refineries Support (2011 to date)—*Project Coordinator.* Coordinated all aspects of GHG report verification for petroleum refineries and hydrogen plants. Designed and implemented the software tools used by RTI verification staff to track the status of all verification messages for reporting year 2011, including a multi-user verification tracking database. Performed regular updates, queries, and maintenance of that database.

Support of Biofuel Lifecycle Analysis Calculations (2012-2013)—*Programmer/Analyst.* Worked to simplify biofuel lifecycle analysis for EPA's Office of Transportation and Air Quality through conceptualization and development of the Biofuel Lifecycle Analysis Streamlining Tool (BLAST). This VBA tool tied together the results of several models to enable the performance of data quality checks.

Education

MS (Ph.D program), Ecology, University of North Carolina at Chapel Hill, Chapel Hill, NC, 2009.
BS, Biology, Duke University, Durham, NC, 2003.

National Science Foundation Predoctoral Fellowship, a 3-year award, 2009
Reginaldo Howard Scholarship, a 4-year full tuition merit and leadership award, Duke University, 2003

Professional Experience

2011 to date RTI International, Research Triangle Park, NC.

Environmental Scientist. Provides technical support to EPA for petroleum refineries and the continued development of data verification tools for the Greenhouse Gas Reporting Program.

2011 Sundogs Solutions, Durham, NC.

Solar Specialist. Served as the lead solar employee. Researched, designed, and installed solar power systems. Performed solar site analyses to determine shading. Undertook all necessary calculations to design a solar photovoltaic/thermal system. Analyzed existing environmental and structural conditions to confirm compatibility of proposed solar systems. Facilitated estimate review meetings, communicated with architects and engineers to complete structural and electrical designs, and revised the company's safety policy.

2004 to 2011 HiViz.com, Durham, NC.

Co-Manager. Maintained an electronics laboratory for the construction, testing, and use of photographic trigger circuits. Was responsible for parts inventory, organization, circuit assembly, testing, troubleshooting, and shipment. Redesigned the company's Web site (<http://www.hiviz.com>) and authored most of the extensive online tutorials for assembling HiViz trigger circuits.

2005 to 2009 University of North Carolina, Chapel Hill, NC.

National Science Foundation Predoctoral Fellow, Department of Geography. For 2 years, used ESRI ArcGIS to manage and analyze environmental data. This work included using vegetation data from field studies to validate a biome model predicting climate change-driven plant redistributions. For 1 year, used geographic information systems to manage and analyze data for a NASA-funded project on factors affecting plant species diversity in a tri-state area. Additionally, was responsible for conducting land-use/land-cover change and climate change analyses to develop written input for the U.S. Forest Service's management plan for the Uwharrie National Forest. Submitted a successful preproposal to the National Institute of Climate Change Research.

2000 to 2004 Duke University, Durham, NC.

Teaching Assistant, Department of Biology (2003 to 2004). Managed two sections of 15 students each, as part of an introductory biology course of more than 120 students. Supervised and guided students through weekly 2.5 hour laboratory and 50-minute seminar sections. Coordinated with eight other teaching assistants to plan and prepare weekly assignments.

Web Designer, Department of Community Affairs (2002 to 2004). Used Dreamweaver and Photoshop to create two new Web sites for the organization. Managed the entire design process, which involved requesting content and images, creating the Web site layout and graphics, working with clients to ensure the new site met quality standards, uploading the final product to the server, and being available for Web site maintenance.

Web Designer/Technical Support (2000 to 2002). Constructed and maintained several Web sites for the John Hope Franklin Center and for its conferences and events. Offered videoconferencing and technical support for staff and information technology interns during Center events.
