Sarah Tennille

Data Engineer
Oak Ridge National Laboratory

Contact Info

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Professional Summary

With a strong background in research, platform development, and data science, I represent a unique blend of geospatial analysis, data management, and communication expertise. I prepare, transform, and manage a wide variety of geospatial datasets, simultaneously supporting three multi-disciplinary initiatives sponsored by the Department of Energy. As a member of these three multidisciplinary teams, I excel at time management, workflow optimization, and maintaining excellent communication with our project sponsors.

Education

MS, University of Tennessee, Knoxville, TN   *Jan 2015 – May 2016*
    Majored in Geography, focusing on GIS and Climatology   4.0/4.0 GPA

BS, University of Tennessee, Knoxville, TN   *Aug 2011 – Dec 2014*
    Majored in Geography   4.0/4.0 GPA

Experience

Data Engineer   *Oct '19 – Present*
    Oak Ridge National Laboratory, Oak Ridge, TN

Post-Masters Research Associate   *Sep '16 – Sep '19*
    Oak Ridge National Laboratory, Oak Ridge, TN

Data Analyst for U.S. DOE's Regional Mobility Initiative for Smart Cities, using geospatial analysis to integrate real-time data feeds from roadway sensors into a visual platform through transformation of the existing roadway networks. Create python scripts for automation of the data processing workflow. Work with data in CSV, shapefile, and GeoJSON formats and use ArcGIS and QGIS to process, transform, and clean the transportation datasets for use in simulations.

ETL Developer for EAGLE-I, the Department of Energy's Situational Awareness platform, placed in charge of verifying a major database update. Currently in the process of implementing Data Quality reports, creating methods to analyze and report the reliability of 400+ utility companies. Identify, notate, and resolve data errors daily. Thoroughly test database and script updates for consistency and accuracy. Experienced in all project phases using Agile methodologies.

Data Quality Analyst for the Neighborhoods project, classifying urban land use through remote sensing techniques. Individually developed a novel validation workflow for evaluating deep learning results. Constructed a formal proposal for future project growth that was accepted. Commonly performed data reprojection and format conversion for reference layers such as nightlights and census data.

Modeler for the Settlement Mapping Project, creating and processing machine learning models via a Matlab interface designed to detect settlements from satellite imagery. Developed detailed deep learning training layers and verified product accuracy. Worked with NetCDF, GeoTiff, and Raster raw output files and converted, projected, and edited raw model results.

Research Intern   *May '15 – Aug '16*
    Oak Ridge National Laboratory, Oak Ridge, TN

Designed and populated the National Extreme Events Database (NEED) for the Climate Change Science Institute at ORNL. Independently created and embedded interactive maps, converting and integrating various types of geospatial layers to a suitable format for display.

Graduate Teaching Assistant   *Feb '15 – May '16*
    University of Tennessee, Knoxville, TN

Directed three weekly labs and gave guest lectures. Assisted for the following courses: Spatial Databases and Data Management; Water Resources; World Geography; Weather, Climate, and Climate Change; Introduction to GIS. Provided technical support for GIS intensive labs in which we worked with GRASS, PostgreSQL, ArcGIS, QGIS, Adobe Illustrator, and more.

National Oceanic and Atmospheric Administration Hollings Scholar   *2013 – 2015*
    National Weather Service, Buffalo, NY

Served as Social Media Focal Point during severe weather events, validated the accuracy of FEMA Floodplain maps, and improved radar precipitation estimates. Worked with meteorological and hydrologic datasets, creating maps for the weather station.

Research Intern   *May '13 – June '13*
    Texas A&M University, College Station, TX

Collected daily field samples in a Costa Rican cloud forest to study the heterogeneity of throughfall, publishing our team's results in Biotropica. Generated our own dataset for geospatial and temporal analysis and pattern detection.

Skills

<u>Technical Skills</u>: ArcGIS, QGIS, Git, SQL, JIRA, Docker, Kubectl, Python, LaTex, Statistical Analysis, RStudio, Adobe Illustrator
<u>Soft Skills</u>: Organization, Technical Writing, Time Management

Awards/Recognitions

Invited panelist for AAG Webinar *Careers Outside of Academica* (2022)
Significant Event Award for Release of Real-time Ctwin v1.1- Chattanooga Digital Twin (ORNL, 2021)
Significant Event Award for North American Energy Resilience Model contribution (ORNL, 2020)
Top Graduate – University of Tennessee, Knoxville (2014)
Annual Award for Excellence in Geography (2014)

Publications

Arndt, J.W., Lunga, D.D., Weaver, J.E., LeDoux, S.T., and **Tennille, S.A**. (2019) Characterizing and Classifying Urban Land-Use in High-Resolution Satellite Imagery. IEEE International Geoscience and Remote Sensing (Accepted).

Tennille, S.A.; Ellis, K.N. (2017), Spatial and Temporal Trends in the Location of the Lifetime Maximum Intensity of Tropical Cyclones. Atmosphere, 8: 198.

Teale, N. G., Mahan, H., **Bleakney, S.,** Berger, A., Shibley, N., Frauenfeld, O. W., Quiring, S. M., Rapp, A. D., Roark, E. B. and Washington-Allen, R. (2014), Impacts of Vegetation and Precipitation on Throughfall Heterogeneity in a Tropical Pre-Montane Transitional Cloud Forest. Biotropica, 46: 667–676.

Brown, V.M., Ellis, K.N., and **Bleakney, S.** (2016), Tennessee Tornado Climate: A Comparison of Three Cities. Southeastern Geographer, 56: 118-133.

Presentations

"What We See Versus What We Know: Detecting Slum Locations Through Satellite Imagery Analysis and Primary Source Research in the City of Johannesburg" at the AGU Fall Meeting (December 2018)

"GIS Component for the National Extreme Events Database" at Oak Ridge National Laboratory (August 2015)

"Adding FEMA Flood Layers to NWS Advanced Hydrologic Prediction Service Maps" at NOAA's 2014 Science and Education Symposium (May 2014)

"Stable Isotopic Signatures in Charcoal from a Costa Rican Sediment Core" at The University of Tennessee Department of Geography Research Symposium (February 2014)

"Canopy Influence on Throughfall in a Transitional Cloud Forest" at the South Eastern Division of the American Association of Geographers (November 2013)