NICOLE M. SAMU, M.S., GISP
Cartographer & GIS Analyst
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EDUCATION

M.S. in Geography, University of Tennessee, Knoxville, 2012
- Thesis: Spatial Discrepancies between NHDPlus and LIDAR-Derived Stream Networks
- Advisor: Dr. Liem Tran

B.A. in Geography, University of Tennessee, Knoxville, 2008
- 3-week study abroad course (Beijing, Xi'an, and Shanghai): The Geography and Culture of China, 2007

B.A. in Psychology, University of Tennessee, Knoxville, 2005

CAREER TRAINING HIGHLIGHTS

Data Visualization & Infographics with D3 (Online Course), Knight Center for Journalism in the Americas, 2015
Geographic Information Systems Professional (GISP) Certification, GIS Certification Institute, 2014
- License: 67702, Dec 2014 – Dec 2019

PROFESSIONAL EXPERIENCE

GIS Analyst & Cartographer, Feb 2014 - Present
Oak Ridge National Laboratory - Environmental Sciences Division, Oak Ridge, TN
- Manage geospatial data through all phases of the data management life cycle and provide data stewardship to ensure that datasets are handled ethically and responsibly, and used appropriately for intended purposes; Track, document, and report data usage for programmatic and strategic planning purposes.
- Provide technical support for project-specific needs and ad-hoc requests from management, project leads, team members, and sponsors.
- Create and manage digital maps and maps for print that effectively convey complex analytical information in an easily digestible and visually engaging manner for both expert and general audiences.
- Develop map templates, production methods, and design techniques to streamline mapping workflows and produce a cohesive look and feel to maps for research projects and sponsor activities.
- Leverage and advocate the use of advanced visualization tools and techniques for collaborative information sharing and knowledge discovery.
- Identify GIS data needs and challenges, research solutions, and recommend actions to program managers and project leads.
- Contribute to project scoping, proposal writing, budget planning, and ensuring that deadlines are met within time and budgetary constraints.
- Provide oversight for website technical operations, contribute front-end development, and create/manage content to allow for continuous uninterrupted external access to information, data, reports, maps, and tools for integrated energy-water-environmental research and data initiatives; Respond to and ensure that all website inquiries are addressed and archived.

Post-Master's Research Associate, Jun 2012 - Feb 2014
Oak Ridge National Laboratory - Environmental Sciences Division, Oak Ridge, TN

- Contributed GIS data management from analysis through archival and produced 200+ maps for the New Stream-Reach Development project—team received the ***Significant Event Award* for its significant contribution to the ORNL's National Hydropower Asset Assessment Program (national-scale data integration project).
- Designed the first prototype for The National Hydropower Map to visualize and characterize the geospatial distribution of the U.S. existing hydropower fleet; received **Awards for Best Cartography* on both the 2014 and 2016 versions at the East TN Geographic Information Council Annual Meeting.
- Coordinated with management, project leads, team members, and sponsors to support the development of website content such as web pages, applications, and data resources for energy-water-environmental research and data initiatives.

Graduate Research & Teaching Assistant, Sep 2009 - May 2012
University of Tennessee - Department of Geography, Knoxville, TN

- Fall 2011, Spring 2012 (RA) — U.S. EPA's ReVA project. Processed Land Use Land Cover GIS data to support U.S. water quality modeling research.
- Fall 2010, Spring & Fall 2011 (Head GTA) — Introduction to GIS.
- Fall 2009 & Spring 2010 (TA) — Introduction to Physical Geography.

GIS Intern, Jan 2008 - Aug 2011
Oak Ridge National Laboratory - Geographic Information Science & Technology Group, Oak Ridge, TN

- Collaborated with GIS team members to compile, analyze, and report ad-hoc estimates and 90-meter resolution visualizations of potentially affected populations for real-time national emergency response simulations.
- Used GIS analysis and remote sensing techniques to validate and verify large geospatial infrastructure and high-resolution population database models used to address critical emergency response situations.
- Stayed atop organizational and other relevant data management standards and handled all data ethically and responsibly to ensure research integrity and appropriate handling of pre-publication and protected geospatial information.
- Managed data licenses for ORNL's LandScan Global project.
- Led a case study on extending LandScan's USA model to better account for geospatial-temporal distributions of business and leisure travel populations and presented findings at the 2009 American Association of Geographers Annual Meeting.
- Collected spatial and temporal data on holiday populations and used ArcGIS software to organize the information into a flexible and user-friendly geodatabase.

Laboratory Technician, Aug 2007 - Apr 2008
University of Tennessee - Laboratory of Tree-Ring Science, Knoxville, TN

- Prepared and analyzed core samples and data on a master whitebark pine chronology for Arkansas Game and Fish Commission vs. the United States; Funded by the United States Department of Justice, Environment and Natural Resources Division, Natural Resources Section. Hiked off-trail to collect core samples and fire history data to support various dendrochronology research initiatives within the Department of Geography.

Student Conservation Association Botany Intern, Jun 2007 - Aug 2007
National Park Service - Great Smoky Mountains National Park, TN & NC

- Used GPS units to navigate off-trail to remote sites, set up sample plots, and collect ecological and soil data to monitor the status and trends of vegetation communities throughout the Great Smoky Mountains National Park. Prepared soil samples for analysis and input vegetation data into an Access database system.

PUBLICATIONS

[7] Kao, S.-C., M. Ashfaq, B.S. Naz, R. Uria Martinez, R. Deeksha, R. Mei, Y. Jager, N. M. Samu, M.J. Sale (2017). "Effects of Climate Change on Federal Hydropower - The Second Report to Congress." GPO DOE/EE-1063. Oak Ridge National Laboratory, Oak Ridge, TN.

[6] McManamay, R. A., M. J. Troia, C. R. DeRolph, and N. M. Samu (2016). "Stream Classification Tool User Manual: For Use in Applications in Hydropower-Related Environmental Mitigation." No. ORNL/TM-2015/670. Oak Ridge National Laboratory, Oak Ridge, TN.

[5] DeNeale, S. T., P.W. O'Connor, D. R. Chalise, E. E. Centurion, A. R. Maloof, N. M. Samu (2015). "Parametric Cost Modeling for National-scale Hydropower Feasibility." Conference paper, HydroVision International, Portland, OR (2015).

[4] McManamay, R. A., N. M. Samu, S.-C. Kao, M. S. Bevelhimer, and S. C. Hetrick (2015). "A Multi-scale Spatial Approach to Address Environmental Effects of Small Hydropower Development." Environmental Management 55, no. 1: 217-243.

[3] Kao, S.-C., R. A. McManamay, K. M. Stewart, N. M. Samu, B. Hadjerioua, S. T. DeNeale, D. Yeasmin, M. F. K. Pasha, A. A. Oubeidillah, and B. T. Smith (2014). New Stream-Reach Development: A Comprehensive Assessment of Hydropower Energy Potential in the United States, GPO DOE/EE-1063, Wind and Water Power Program, Department of Energy, Washington, DC.

[2] Hadjerioua, B., S.-C. Kao, R.A. McManamay, M.F.K. Pasha, D. Yeasmin, A.A. Oubeidillah, N.M. Samu, K.M. Stewart, M.S. Bevelhimer, S.L. Hetrick, Y. Wei, B.T. Smith (2013). "An assessment of energy potential from new stream-reach development in the United States: Initial Report on Methodology." ORNL/TM-2012/298. Oak Ridge National Laboratory, Oak Ridge, TN.

[1] Jager, H. I., B. Elrod, N. M. Samu, Ryan A. McManamay, and Brennan T. Smith (2013). "ESA Protection for the American Eel: Implications for US Hydropower." No. ORNL/TM2013/361. Oak Ridge National Laboratory, Oak Ridge, TN.

DATA PRODUCTS

[6] N.M. Samu, S.-C. Kao, P.W. O'Connor, M.M. Johnson, R. Uria-Martinez, and R.A. McManamay, National Hydropower Plant Dataset, Version 2 (FY18Q3). Existing Hydropower Assets [series] FY18Q3. National Hydropower Asset Assessment Program. Oak Ridge National Laboratory, Oak Ridge, TN. https://dx.doi.org/10.21951/1454737

[5] N.M. Samu, S.-C. Kao, P.W. O'Connor, M.M. Johnson, R. Uria-Martinez, and R.A. McManamay, National Hydropower Plant Dataset, Version 1, Update FY18Q2 (2018). Existing Hydropower Assets [series] FY18Q2.

National Hydropower Asset Assessment Program. Oak Ridge National Laboratory, Oak Ridge, TN, Retrieved from: http://nhaap.ornl.gov. https://dx.doi.org/10.21951/1326801

[4] McManamay, R.A., M.S. Bevelhimer, S.C. Hetrick, S-C. Kao, E.A. Frimpong, W. Yaxing, M. Martinez Gonzalez, N. Samu (2013), U.S. Maps of Fish Traits Potentially Vulnerable to Hydropower Development, Oak Ridge National Laboratory National Hydropower Asset Assessment Environmental Attribution, available at: http://nhaap.ornl.gov/content/environmental-attribution

[3] McManamay, R.A., M.S. Bevelhimer, S.C. Hetrick , S-C. Kao, W. Yaxing, M. Martinez Gonzalez, N. Samu (2013). U.S. Maps of Fish Species of Concern. Oak Ridge National Laboratory, Oak Ridge, TN, Retrieved from: https://nhaap.ornl.gov/content/environmental-attribution

[2] McManamay, R.A., M.S. Bevelhimer, S.C. Hetrick, S-C. Kao, W. Yaxing, M. Martinez Gonzalez, N. Samu (2013), U.S. Maps of Water Use. Oak Ridge National Laboratory, Oak Ridge, TN, Retrieved from: https://nhaap.ornl.gov/content/environmental-attribution

[1] McManamay, R.A., M.S. Bevelhimer, S-C. Kao, W. Yaxing, M. Martinez Gonzalez, N. Samu (2013), U.S. Maps of Hydrologic Classes. Oak Ridge National Laboratory, Oak Ridge, TN, Retrieved from: https://nhaap.ornl.gov/content/environmental-attribution

SELECT TECHNICAL SKILLS

GIS: ArcGIS (11 years of experience), familiar with QGIS
Cartographic: Adobe Illustrator, Photoshop, Lightroom, Natural Scene Designer Pro 7.0; familiar with Blender, InDesign, MAPublisher
Languages: HTML, CSS; familiar with Javascript (D3), Python, VBA, SQL
Content Management Systems: Drupal, Wordpress, Wix
Microsoft Office: Word, Excel, PowerPoint, Access, Visio,
Statistical: SPSS, ArcGIS Geostatistical Analyst; familiar with R, GeoDa

RESEARCH EXPERIENCE

Watershed dynamics, renewable energy, hydropower (existing assets, new potential technology, licensing and regulation, markets and trends, environmental mitigation, climate changes impacts), environmental conservation, terrain analysis and modeling, spatio-temporal population distribution modeling, scenario-based analysis of affected populations, remote sensing, dendrochronology, biogeography.

AWARDS

*Best Cartography Award for the '2016 National Hydropower Map' – 2016 East TNGIC Conference
Best Technical Paper (2nd Place) – 2015 HydroVision International Conference
**Significant Event Award for the National Hydropower Asset Assessment Program – 2014, issued by ORNL
*Best Cartography Award for the '2014 National Hydropower Map' – 2014 East TNGIC Conference

PROFESSIONAL MEMBERSHIPS & COMMITTEES

North American Cartographic Information Society (NACIS)
American Association of Geographers (AAG)
Visualization Facility Committee - Renewable Energy Systems Group, ORNL