SARAH PORTER

U-Spatial, University of Minnesota
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Google Scholar Link

EDUCATION

Master of Arts in Geography, University of Iowa, Iowa City, Iowa	**2011**
Bachelor of Arts in Geography / Environmental Sciences University of Iowa, Iowa City, Iowa	**2008**
Bachelor of Science in Biological Sciences Southern Illinois University, Carbondale, Illinois	**2006**

Masters' thesis focused on the development of high-resolution land cover classification methodologies to analyze historic land cover change and ecosystem dynamics in Iowa. Honors Club and Deans List 2009 – 2011; G.P.A. 3.97

KNOWLEDGE AND SKILLS

- Expertise and leadership in the development and application of geospatial software that combines high-resolution terrain, pedologic, hydrologic and agronomic datasets for precision conservation planning in agricultural watersheds.
- Mastery of Geographic Information Systems (GIS) and custom programming within a Python ArcGIS environment.
- Demonstrated ability to convey complex geospatial information in the form of scientific journals, public facing reports, visual maps, tables, and documents.
- Thorough understanding of agricultural systems and their connection to ecology, hydrology, soil health, natural resources, and nutrient and sediment transport.
- Proficient with all forms of geographic data and techniques, ranging from LiDAR terrain processing to high-resolution land cover classification to database management in SQL server.

PROFESSIONAL EXPERIENCE

Geospatial Operations Director – Minneapolis, MN **2025-Current**
U-Spatial

- Plan, execute, prioritize, and oversee geospatial operations.
- Direct communications related to U-spatial, including university faculty and external research scientists.
- Supervise and mentor staff to ensure quality data products while fostering a collaborative and productive work environment.

Geographer – St. Paul, MN **2022-2025**
Agricultural Research Service, U.S. Department of Agriculture, GS Level 12-1

- Work closely with USDA scientists to translate agricultural research into custom GIS applications to support USDA Conservation Effects Assessment Project (CEAP) watershed conservation planning goals.
- Develop innovative GIS software and a detailed user guide for modeling the spatial application of manure nutrients using high-resolution data inputs in support of the USDA Long-Term Agroecosystem Research (LTAR) Manureshed Working Group.
- Provide GIS and remote sensing support to area scientists on projects ranging from solar potential in the Upper Mississippi River Basin, a novel water parcel tracking project to link conservation practices to real-time water quality data, and data management for agronomic site experiments.
- Manage a watershed nutrient tracking project for the Minnesota Pollution Control Agency aimed at enabling spatial prioritization of state conservation funding and identifying key focus areas for water quality improvement.

Director of Geospatial Analysis – Minneapolis, MN **2018 - 2022**
Environment Working Group

- Facilitated all aspects of research and report production centered on agriculture, water quality, and human health, with the goal of fostering citizen engagement and supporting national and regional policy initiatives.
- Authored high-impact geospatial reports, including an analysis of nitrate contamination in Minnesota groundwater, spatial and temporal trends of animal agriculture in several Midwestern States and the Western Lake Erie basin, and farmworker exposure to pesticide use in Ventura County, California.
- Managed a team of geospatial analysts to provide organizational support within a highly visible, fast-paced environment, including the design, management, and operation of Geographic Information Systems (GIS).

- Led a project to develop and implement the Agricultural Conservation Planning Framework (ACPF) in the Western Lake Erie Basin, including frequent communication of progress to funders, stakeholders, and local scientists.

Physical Science Technician – Ames, IA **2012 - 2018**
Agricultural Research Service, U.S. Department of Agriculture, GS Level 9-7

- Utilized GIS and agronomic expertise to develop custom precision conservation planning software that facilitates water quality improvement and best management practice placement in Midwestern watersheds.
- ACPF Lead Developer: Programmed extensively in Python to design, modify, and maintain ACPF software in support of user application and scientific field experiments geared towards ACPF tool improvement.
- Established working relationships and provided GIS advice and assistance to colleagues in the geospatial and agricultural sectors, including local watershed groups, scientists, technicians, and collaborators.
- Participated in all aspects of the research publication process, including methods development, data collection and analysis, extensive literature review, authorship, and document revision.
- Led several multi-day training sessions on ACPF software and published detailed training materials in the form of online videos, training slides, and an extensive user guide.

Education Coordinator **2011 - 2012**
Living Lands & Waters

- Assisted in the creation of a floating classroom on the Mississippi River. Coordinated and recruited volunteers for community cleanups, recycling events, and educational workshops, including outreach to high schools in 7 states.

Research Assistant, Teaching Assistant – Iowa City, IA **2009 - 2011**
University of Iowa, Department of Civil and Environmental Engineering, Department of Geography

- Obtained and analyzed MODIS satellite data for contaminant flow modelling in the state of Iowa. Responsibilities included data processing and automation of approaches for estimating evapotranspiration rates.
- Taught courses including GIS, physical geography, environmental science, and the contemporary global system.

GIS and Remote Sensing Technician – Iowa City, IA **2007 - 2011**
Iowa Geological and Water Survey

- Contributed extensively to the development and implementation of a statewide-high resolution land cover classification that combined LiDAR with multiple years of high-resolution aerial imagery.

SELECTED PUBLICATIONS

- Porter, S.A. and James, D.E. Using a Spatially Explicit Approach to Assess the Contribution of Livestock Manure to Minnesota's Agricultural Nitrogen Budget. 2020. *Agronomy*.
- Porter, S.A., Tomer, M.D., James, D.E., Boomer, K.M. Agricultural Conservation Planning Toolbox User's Manual. 2015. Available: https://acpf4watersheds.org/
- Tomer, M.D., Porter, S.A., James, D.E., Boomer, K.M.B., Kostel, J.A., McLellan, E. Combining precision conservation technologies into a flexible framework to facilitate agricultural watershed planning. 2013. *Journal of Soil and Water Conservation*. 68, 113A–120A.
- Tomer, M.D., Porter, S.A., Boomer, K.M.B, James, D.E., Kostel, J.A., Helmers, M.J., Isenhart, T.M., McLellan, E. Agricultural Conservation Planning Framework 1. Developing Multi-practice Watershed Planning Scenarios and Assessing Nutrient Reduction Potential. 2015. *Journal of Environmental Quality*, 44(3), 754-767.

SELECTED ACCOMPLISHMENTS AND COMMUNITY ACTIVITIES

- Awarded the 2017 Federal Laboratory Consortium National Technology Transfer Award for the Agricultural Conservation Planning Framework.
- Active member of 3d Geomatics, a subgroup of the Minnesota Geospatial Advisory Committee.
- Combined remotely sensed data with in-situ field sampling to analyze forest fragmentation in the Western Ghats, a biodiversity hotspot located in South India.