

Alexander M. Soroka | Curriculum Vitae

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About

I am here to help us understand how our everyday decisions can lead to changes in our water quality.

Areas of expertise

- Water quality: groundwater and surface water
- Agricultural practices and history in Maryland and Delaware
- Spatial analysis and computer programming
- Remote sensing of conservation practices
- Soil zone processes
- Data quality assurance
- Novel Agricultural data publication
- Project management
- Presentations

Experience

Physical Scientist — United States Geological Survey 2016-Present

My research interests are split between water quality and remote sensing of agricultural conservation practices. I co-lead a team in the USGS Chesapeake science plan focused on understanding drivers of nutrients in the bay watershed and serve as the project chief of the USGS Maryland River Input monitoring program. I am passionate about data quality and ensuring that the values we use in statistical analysis reflect ground condition.

Advisory Council member — Northeast Sustainable Agriculture Research and Education (NESARE), Maryland 2020-Present

I serve on a statutory position and provide a USGS perspective to NESARE's governing policies. NESARE provides grant funding to individuals and groups which are focused on sustainable farming in the Northeastern United states. Advisory council work includes the development of grant programs as well as reviewing grants aimed at farmers, researchers, and educators such as extension agents and other agricultural service providers. Topics of grants are wide-ranging and include topics such as increasing farmer access to legal services and funding farmers to experiment with different hoop-houses.

Hydrology intern — U.S. Geological Survey, Maryland I assisted in field studies with the USGS primarily working under the groundwater hydrologist Judy Denver. I aided in soil, plant and water sampling but also in soil texture characterization of cores taken from agricultural fields.	2014-2016
Teaching assistant — University of Delaware, Delaware I provided both lectures and developed field trips for students enrolled in meteorology, introduction to soil science, soil fertility. Class sizes varied from 6 to 50. For the soil classes I led field trips where we would do soil characterization in both forested and pastured landscapes.	2014-2015
Research assistant — University of Delaware, Delaware I assisted in daily research related to soil fertility and water quality. For one semester I worked in a lab focused on stormwater.	2013-2016
Custodian — Olean central school district, Olean New York I painted schools, cleaned floors and helped consolidate 5 schools into 3 while applying to graduate schools.	2012 (4 months)
Research Experience for Undergraduates (REU) — Hubbard Brook Experimental forest, New Hampshire I worked with Dr. Mark Green from Plymouth State University to investigate stable isotopic composition of surface water within in the Hubbard brook experimental forest. My duties included forest navigation, sample collection, field instrument calibration, report writing and presentations.	2011
Phonathon — State University of New York at Oneonta, New York I called alumni and asked for donations to university programs. I received a pittance in return.	2011
Hydrologic field assistant — Plymouth State University center for the environment in New Hampshire I collected samples and field parameters at an acid mine drainage site in rural New Hampshire. I also wrote a manual for the creation of suction lysimeters which could withstand New Hampshire's cold winter.	2010
Fishing club volunteer — Münchenstein fischerverein, Switzerland	2007-2009

I assisted the local fishing club in riverbank restoration and fish stocking programs including electrofishing, fish surveys, benthic surveys and fish reintroduction.

Education

University of Delaware — M.S. Water Science and Policy 2013-2016

I worked under Amy Shober and in the soil testing lab. I studied nitrogen use efficiency of irrigated and non-irrigated corn on the Delmarva Peninsula. This effort involved both field and lab work where I regularly took part in study design, sample collection (soil, plant and water), sample preservation, sample transport and handling (chain of custody), sample analysis, data analysis, writing and presentation of results.

SUNY Oneonta — B.S. Environmental Science 2010-2012

President of environmental science club
Student representative to environmental science faculty
Deans list all years (3.73GPA)
John G. New scholarship (2011)
John Albanese book award (2011)
Awarded water sampling research grants

Plymouth State University — Environmental Science 2009-2010

Vice president of Science Society
Microphone Controller (MC) of Earth Jam: Environmental Awareness concert
Treasurer of Environment and Social Justice organization
Lab assistant

Communication

Papers

Thieme. A., Hively, W.D., Gao. F., Jennewein. J., Mirsky, S., **Soroka A. M.**, Keppler, J., Bradley, D., Skakun, S., McCarty. T.G., Remote sensing evaluation of winter cover crop springtime performance and the impact of Delayed Termination. (In press, 2022 expected) Agronomy Journal

Gao. F., Jennewein. J., Hively, W.D., **Soroka A. M.**, Thieme. A., Bradley, D., Keppler, J., Mirsky, S., Akumaga, Uvirkaa., Near real-time detection of winter cover crop termination using harmonized Landsat and Sentinel-2 (HLS) to support ecosystem assessment., (In press, 2022 expected) Science of Remote Sensing

Rumsey, C.A., Hammond, J.C., Murphy, J., Shoda, M., **Soroka A. M.**, Spatial patterns and seasonal timing of increasing riverine specific conductance from 1998 to 2018 suggest legacy contamination in the Delaware River Basin (In press, 2022 expected) Science of the total environment

Clune, J.W., and Capel, P.D., eds., 2021, Nitrogen in the Chesapeake Bay watershed—A century of change, 1950–2050 (ver. 1.1, December 2021): U.S. Geological Survey Circular 1486, 168 p., <https://doi.org/10.3133/cir1486> . (Contributing author)

W.D. Hively, S. Lee, A.M. Sadeghi, G.W. McCarty, B.T. Lamb, **A. Soroka**, J. Keppler, I.-Y. Yeo and G.E. Moglen,. Estimating the effect of winter cover crops on nitrogen leaching using cost-share enrollment data, satellite remote sensing, and Soil and Water Assessment Tool (SWAT) modeling Journal of Soil and Water Conservation May 2020, 75 (3) 362-375; DOI:<https://doi.org/10.2489/jswc.75.3.362>

Denver, J.M., **A.M., Soroka**, B. Reyes, T.R. Lester, D.A. Bringman, and, M.S. Brownley. 2018. Monitoring the water-quality response of agricultural conservation practices in the Bucks Branch watershed, Sussex County, Delaware, 2014–16: U.S. Geological Survey Scientific Investigations Report 2018–5020, 43 p., <https://doi.org/10.3133/sir20185020>

Shober, A., J. Adkins, J. Volk, **A. Soroka**, and C. Whaley. 2018. Unpublished report. Quantifying the effects of irrigation and fertigation on nutrient use efficiency in corn: Delaware Department of Natural Resources and Environmental Control with University of Delaware Department of Plant and Soil Sciences, 50 p., https://cpb-usw2.wpmucdn.com/sites.udel.edu/dist/f/4339/files/2016/06/DNREC_IRRIGATION_FINAL_REPO_RT_SHOBER-v12dgd.pdf

Soroka, A. 2016. Effects of in-season fertilizer strategies on the yield and nitrogen use efficiency of irrigated corn. M.S. thesis. Univ. of DE, Newark.

Data

Soroka A. M., Reyes, B., and Fleming, J.B., (In press, 2022 expected), Water quality data from sampling the surficial aquifer network in the Delaware Coastal Plain in 2014 and 2019.: .

Soroka A. M., Rumsey, C.A., Hammond, J.C., Murphy, J., Shoda, M., (In press, 2022 expected), Data supporting a spatiotemporal trend analysis of specific conductivity, streamflow and landscape attributes of selected sub-basins within the Delaware River watershed 1980-2018.: , <https://doi.org/10.5066/P9SDU7C7>.

Soroka A. M., Goodling P.P., (In press, 2022 expected), Soil-Water-Balance (SWB) model archive used to simulate water budget components in Pennsylvania and Maryland, 2000-2020.:
<https://doi.org/10.5066/P9GTTX8Q>.

Staub, L.E., **Soroka, A.M.**, and Rosenbloom, N.W., 2021, Possible Cattle Access Points on Steams within the USGS Showcase Watersheds Derived from 2018 and 2019 NAIP Imagery: U.S. Geological Survey data release, <https://doi.org/10.5066/P9CBDI3Z>.

Mason, C.A., **Soroka, A.M.**, Moyer, D.L., and Blomquist, J.D., 2021, Nitrogen, phosphorus, and suspended-sediment loads and trends measured at the Chesapeake Bay River Input Monitoring stations: Water years 1985-2020: U.S. Geological Survey data release, <https://doi.org/10.5066/P93PZGMM>.

Soroka, A.M., and Blomquist, J.D., 2021, Nitrogen flux estimates in support of Chesapeake Bay Hypoxia and Anoxia forecasts, 1985-2021: U.S. Geological Survey data release, <https://doi.org/10.5066/P9N4MPIH>.

Soroka, A.M., and Blomquist, D.J., 2020, Nitrogen flux estimates in support of Chesapeake Bay Hypoxia and Anoxia forecasts, 1985-2020: U.S. Geological Survey data release,
<https://doi.org/10.5066/P9QU1DWS>.

Soroka, A.M., and Duren, Z., 2020, Poultry feeding operations on the Delaware, Maryland, and Virginia Peninsula from 2016 to 2017: U.S. Geological Survey data release, <https://doi.org/10.5066/P9MO25Z7>.

Soroka, A.M., Rosenbloom, N.W., King, A.M., Li, W., Din, A., Petenbrink, M.N., 2020, Water bodies within 500 meters of poultry feeding operations on the Delmarva Peninsula in 2016 and 2017: U.S. Geological Survey data release, <https://doi.org/10.5066/P9PSQ8IP>.

Soroka, A.M., Hively, W.D., and Lamb, B.T., 2019, Landsat-derived wintertime greenness datasets and results from cover crop performance analysis within the Tuckahoe Creek watershed, Maryland, from 1984 to 2017: U.S. Geological Survey data release, <https://doi.org/10.5066/P9OZ6ND0>

Soroka, A.M., and Denver, J.M., 2018, Chemistry analysis results for groundwater, soil-pore water, soil and plant material collected from two agricultural sites in the Nanticoke and Chester River watersheds on the Delmarva Peninsula from 2013 to 2016: U.S. Geological Survey data release, <https://doi.org/10.5066/F77H1HK5> .

Soroka, A.M., 2018, Poultry production houses in the Upper Choptank watershed identified using aerial imagery from 1968 to 2018: U.S. Geological Survey data release, <https://doi.org/10.5066/F7222T2H>.

Presentations

2022 – Poster Presentation – Alex Soroka, Dean Hively

2022 – Oral Presentation – Alex Soroka, Jimmy Webber, John Clune: Delaware Inter-Agency Watershed Implementation Plan meeting

2022 – Oral Presentation – Alex Soroka, Jimmy Webber, John Clune: Water-Quality trends on the Eastern Shore, Delmarva Land and Litter Collaborative

2021 – Oral Presentation – Alex Soroka, Jimmy Webber, John Clune: Water-Quality trends on the Eastern Shore, Water Quality Lunch at the USGS MD DE DC water science center

2021 – Oral Presentation – Alex Soroka, Dean Hively, Feng Gao and Brian Lamb: Understanding Cover Crop Biomass as observed by satellites. USGS MD DE DC Water science center all-hands

2021 – Oral Presentation – Alex Soroka: USGS Physical Scientist Alex Soroka and a bit about our work: Reservoir highschool virtual visit

2020 – Oral Presentation – Alex Soroka Irrigating Cropland on the Delmarva: Balancing water quality while producing food for 33 million people. Jug Bay Wetland sanctuary soup and science

2019 – Oral Presentation -- Alex Soroka; Irrigating Cropland on the Delmarva: Balancing water quality while producing food for 33 million people. University of Maryland Geology Department

2017 – Oral Presentation – Alex Soroka, Agriculture on the Delmarva and Recent USGS research, Early Career Scientists network. USGS Reston VA office

2017 – Oral Presentation – Alex Soroka, Judy Denver: Irrigation Accelerates Nitrate Transport Within the Growing Season. Unsaturated Zone Interest Group workshop, Gainesville Florida

2017 – Oral Presentation – Alex Soroka on behalf of Judy Denver: Irrigation as a conservation practice to reduce nitrate concentrations in coastal plain groundwater of the Eastern Shore, Chesapeake Bay. Geological Society of America in Richmond Virginia

2017 – Oral Presentation – Alex Soroka, Stories from Delmarva: Observing nitrogen at regional, field and plot scales. USGS-MD DE DC Water Science Center

2016 – Oral Presentation- Alex Soroka, Amy Shober, Richard Taylor and Joshua Duke. Thesis Defense: Nitrogen Use Efficiency and Yield in Irrigated Corn: The Impact of N rate, Timing and Historical Yields,

2015 – Oral Presentation – Elementary school Visit, Alex brought meteorological instruments and other props to explain the water cycle

2015 – Oral Presentation – University of Delaware agricultural fair day – Alex ran an interactive watershed model where participants could add water and food dyes

2015 – Oral Presentation – University of Delaware Graduate student organization research symposium. Effects of in-Season Fertilization Strategies on Nitrogen Use Efficiency and Yield of Irrigated Corn

2015 – Oral Presentation – Pitch 90, elevator pitch competition on corn irrigation, Alex won 1st place of ~50 contestants

2014 – Oral presentation - **Alexander Soroka**, Amy L. Shober, James Adkins, Jennifer Volk, Effects of in-Season Fertilization Strategies on Nitrogen Use Efficiency and Yield of Irrigated Corn. ASA, CSSA, & SSSA International Annual Meeting Long Beach, California