EMILY BURCHFIELD

Assistant Professor ◇ Department of Environmental Sciences
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RESEARCH AND TEACHING INTERESTS

Food and water security, geospatial programming and analysis

APPOINTMENTS

Emory University *August 2019 - present*
Assistant Professor
Department of Environmental Sciences, Emory College of Arts and Sciences

Utah State University *May 2019 - present*
Adjunct Professor
Department of Environment and Society, Quinney College of Natural Resources

Utah State University *August 2017 - July 2019*
Assistant Professor of Geospatial Analysis
Department of Environment and Society, Quinney College of Natural Resources

EDUCATION

Vanderbilt University *May 2017*
Ph.D. in Environmental Engineering
Graduate Fellow at the Vanderbilt Institute for Energy and Environment

University of Louvain, Belgium *July 2012*
M.A. in Economics
Grande Distinction

Clemson University *May 2010*
B.A. in Economics
Magna Cum Laude, Calhoun Honors College, Phi Beta Kappa

University of Louvain, Belgium (dual-degree with Clemson) *May 2010*
B.S. in Economics and Management
Transatlantic Exchange in Economics Scholar

PUBLICATIONS

*Graduate advisee co-author, $^{+}$Graduate non-advisee co-author

Burchfield, E., Matthews-Pennanen, N.$^{+}$, Stoebner, J., Lant, C. (2019). Projected changes in yields of rainfed maize, soybeans, wheat and cotton in the Central United States under climate and technological change. t *Climatic Change*, 1-18.

Burchfield, E., Nelson, K. Spangler, K.* (2019). The impact of agricultural diversification on U.S. crop production. *Agriculture, Ecosystems & Environment. 285*:106615. https://doi.org/10.1016/j.agee.2019.106615

Tozier-de-la-Poterie, A., **Burchfield, E.**, Carrico, A. (2018). The implications of group norms for adaptation in collectively-managed agricultural systems: evidence from Sri Lankan Paddy farmers. *Ecology and Society. 23*(3):21. https://doi.org/10.5751/ES-10175-230321

Burchfield, E., Williams, N., Carrico, A. (2018). Rescaling drought mitigation in rural Sri Lanka. *Regional Environmental Change. 18*(8): 1-14. https://doi.org/10.1007/s10113-018-1374-y

Burchfield, E., Tozier-de-la-Poterie, A. (2018). Determinants of crop diversification in rice-dominated Sri Lankan agricultural systems. *Journal of Rural Studies. 61*, 206-215. https://doi.org/10.1016/j.jrurstud.2018.05.010

Nay, J., **Burchfield, E.**, Gilligan, J. (2018). A machine-learning approach to forecasting remotely sensed vegetation health, *International Journal of Remote Sensing. 39*(6), 1800-1816. https://doi.org/10.1080/01431161.2017.1410296

Nelson, K., **Burchfield, E.** (2017). Effects of the structure of water rights on agricultural production during drought: A spatiotemporal analysis of California's Central Valley. *Water Resources Research. 53*(10), 8923 - 8309. https://doi.org/10.1002/2017WR020666

Burchfield, E., Gilligan, J. (2016). Agricultural adaptation to drought in the Sri Lankan dry zone. *Applied Geography. 77*, 92-100. https://doi.org/10.1016/j.apgeog.2016.10.003

Burchfield, E., Nay, J., Gilligan, J. (2016). Application of machine learning to prediction of vegetation health. *International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences.* XLI-B2, 465-469, doi:10.5194/isprs-archives-XLI-B2-465-2016

Burchfield, E., Gilligan, J. (2016). Dynamics of individual and collective agricultural adaptation to water scarcity. *Winter Simulation Conference 2016 Proceedings.* Available at SSRN: https://ssrn.com/abstract=2807452

Gunda, T., Benneyworth, L., **Burchfield, E.** (2015). Exploring water indices and associated parameters: A case study approach, *Water Policy*, *17*(1), 98 - 111. https://doi.org/10.2166/wp.2014.022

Nwosu, O., Hennessey, E., **Burchfield, E.**, Barnes, S., Brinkley-Rubenstein, L., and Shields, S. (2013). Faculty and Student Experiences as a Model for the Academy in Action. In Barnes, S. L., Brinkley-Rubinstein, L., Doykos, B., and Martin, N. (Eds). *Academics in Action! A Model for Community-Engaged Research, Teaching, and Service.*

ARTICLES IN REVIEW

Burchfield, E., Touma, D., Stiefel, M., Zhu, R., Krapu, C. Nay, J. (2019). Crop yield response to water availability in the U.S. over the past thirty years. Revised and resubmitted at *Agricultural and Forest Meteorology.*

Burchfield, E., Schumacher, B.* (2019). Bright spots in US agriculture. Under review at *Environmental Research Letters.*

Spangler, K.*, **Burchfield, E.**, Schumacher, B. * (2019) Past and current dynamics of US agricultural land use and policy. Revised and resumbitted at *Frontiers in Sustainable Food Systems.*

GRANTS

Agricultural landscape management for improved sustainability (Co-PI, $499,949) *2020-2023*
USDA NIFA BNRE Program

Socioenvironmental indicators of Great Salt Lake desiccation (Co-PI, $34,988) *2020-2021*
Utah State University SPARC Program

Resilience of agricultural systems to climate stress (PI, $42,498) *2018-2020*
Utah Agricultural Experiment Station

Finding Balance: Diversity and Agricultural Production (PI, $19,938) *2018-2019*
Utah State University Research Catalyst Grant

Local Water Conservation Research and Education Needs (Co-PI, $19,401) *2018-2019*
Utah State University Extension Grants Program

Data-driven drought effect estimation (PI, $25,000 for travel and stipends) *2016-2017*
National Socio-environmental Synthesis Center (SESYNC) Graduate Pursuit

American Institute for Sri Lankan Studies Dissertation Planning Grant (PI, $4,500) *2015*

TEACHING

USU, GEOG 3800: Data Visualization *2018*

USU, ENVS 2000: Natural Resources Professional Orientation *2018*

USU, GEOG 49/6950: Geospatial Analysis *2018 - 2019*

Vanderbilt Programs for Talented Youth *2015 - 2016*
Developed and taught geospatial analysis to gifted middle and high school students.

Certificate in College Teaching *2014*
Vanderbilt University Center for Teaching

STUDENT ADVISING

Britta Schumacher (MS, Ecology, USU, *In progress*)
Kaitlyn Spangler (PhD, Environment and Society, USU, *In progress*)

STUDENT COMMITTEES

Morgan Christman (Ph.D., Biology, USU, *In progress*)
Jenna Keaton (MS, Watershed Sciences, USU, 2019)
Neil Matthews-Pennanen (MS, Environment and Society, USU, 2017)

PAPER PRESENTATIONS

The impact of agricultural diversification on U.S. crop production, presented at the International Association of Landscape Ecology Annual Meeting in Fort Collins, CO, April 2019.

Spatiotemporal dynamics of yield-response to climate extremes, presented at the American Association of Geographers Annual Meeting in New Orleans, LA, April 2018.

Agricultural response to changes in water availability and temperature in the coterminous U.S., presented at the American Geophysical Union Annual Meeting in New Orleans, LA, December 2017.

Application of machine learning to the prediction of vegetation health, presented at the International Society for Photogrammetry and Remote Sensing in Prague, Czech Republic, July 2016.

Agricultural adaptation in the Sri Lankan Dry Zone, presented at the IPWSD Workshop at Columbia University, NY, April 2016.

Application of machine learning to big environmental datasets to predict vegetation health, presented at the Association for American Geographers Annual Meeting in San Francisco, CA, April 2016. Session organizer, "Human-Environment Interactions: Linking Remote Sensing and the Social Sciences"

The application of PCA for the identification of adaptive agricultural systems in the tropics, presented at the Workshop on the Use of Remote Sensing for Decision-Making in Agricultural and Water Management in Colombo, Sri Lanka, August 2015.

Institutions and imagery: Mapping water management in rural Sri Lanka, presented at the Association of American Geographers Conference in Chicago, IL, April 2015.

ADAPT-SL: Agricultural Decision Making and Adaptation to Precipitation Trends in Sri Lanka, presented at the National Science Foundation Water, Sustainability and Climate PI meeting in Washington, D.C., February 2015.

Patterns of meteorological and agricultural drought in Sri Lankan agricultural areas, presented at the Gordon Research Seminar on Science, Technology and Policy, in Waterville Valley, NH, August 2014.

Resettlement and coloniality in the Mahaweli Ganga Watershed, presented at the Annual Dimensions of Political Ecology Conference on Nature/Society in Lexington, KY, February 2013.

POSTER PRESENTATIONS

Using `R-INLA` *to understand institutional moderators of drought*, presented at the `useR!` Conference in Brussels, Belgium, July 2017.

Dynamics of collective and individual agricultural adaptation to water scarcity, presented at the American Geophysical Union Conference in San Francisco, CA, December 2016.

Agricultural adaptation to water scarcity in the Sri Lankan dry zone: A comparison of two water management regimes, presented at the National Science Foundation Water, Sustainability and Climate PI meeting in Washington, D.C., February 2015.

Mapping water management: A case study from Sri Lanka, presented at the American Geophysical Union Annual Conference in San Francisco, CA, December 2014.

Patterns of meteorological and agricultural drought in the Sri Lankan Dry Zone, presented at the Gordon Research Conference on Science, Technology and Policy in Waterville Valley, NH, August 2014.

Patterns of agricultural drought in Sri Lankan paddy fields: Spatiotemporal image analysis, presented at the Borlaug Summer Institute on Global Food Security, Lafayette, IN, June 2014.

HONORS AND AWARDS

University Graduate Fellowship, Vanderbilt University *2012 - 2016*

Martin Luther King Award for Service Excellence, Clemson University *2009*

Duckenfield Scholarship, University of Oxford *2008*

PROFESSIONAL MEMBERSHIPS

American Association of Geographers
American Geophysical Union
International Association of Landscape Ecology

LANGUAGE PROFICIENCIES

English Native speaker
French Fluent written and spoken