Julia Cardwell

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Education

University of North Carolina at Chapel Hill
Ph.D. Candidate, Department of Geography and Environment *Expected May 2025*
Dissertation Title: Weather-Related Disruptions to North Carolina's Road Networks
Committee: Dr. Charles Konrad (co-advisor), Dr. Paul Delamater (co-advisor), Dr. Conge Song, Dr. Nikhil Kaza, Dr. Chris Fuhrmann

University of North Carolina at Chapel Hill
M.A. Geography *Dec 2021*
Thesis Title: Trends in Recovery Aid Concentration after Hurricane Florence in North Carolina
Committee: Dr. Charles Konrad (advisor), Dr. Paul Delamater, Dr. Conge Song

Davidson College
B.A. Environmental Studies with Honors, *Magna Cum Laude* *May 2019*
Data Science Minor
Thesis Title: Flooding and Floodplain Management as Part of the Waterscape: Flows of Water and Power in Charlotte, North Carolina
Advisor: Dr. Fuji Lozada

Teaching Experience

Introduction to Spatial Data Science
Instructor of Record *Summer 2024, Summer 2023*
- Instructed hybrid (in person + remote) course on spatial data methods using R programming language.
- Introduced students to fundamental coding concepts while focusing on finding, cleaning, exploring, and visualizing a wide variety of spatial datasets.

Teaching Assistant - Dr. Paul Delamater *Fall 2021*
- Held weekly office hours, graded assignments and assessments, and monitored course discussion forum

Introduction to Geographic Information
Teaching Assistant - Dr. Javier Arce-Nazario *Spring 2023*
- Held office hours and two recitation sessions a week that focused on applications of in class material
- Developed applied GIS portions of course assessments
- Graded assignments and assessments

Environmental Conservation and Global Change
Teaching Assistant - Dr. Aaron Moody *Spring 2022*
- Held weekly office hours, graded assignments and assessments

Course Development Experience

Introduction to Spatial Data Science

- Iteratively redeveloped existing course materials over two summer sessions to increase course focus on independent programming skills
- Introduced more advanced spatial data analytical techniques, including spatial statistics and GIS-based analysis
- Created and refined instructional approaches tailored to hybrid learning

Remote Sensing of Natural Hazards

- Developed a new course focused on leveraging Google Earth Engine to analyze remotely-sensed data related to natural hazards
- Integrated pedagogical strategies that adhere to my teaching philosophy
- Course concludes with a final project with a required GUI component, emphasizing the importance of effectively visualizing and presenting data to a general audience

Framework for Open and Reproducible Research Training

- Developed open access course material on open and reproducible science for implementation in undergraduate and graduate courses

The Blue Planet (Introduction to Physical Geography)

Graduate Research Consultant - Dr. Erika Wise

- Created course assignments that leveraged several geospatial technologies to introduce introductory physical geography topics

Pedagogical Training

Associate Level, Center for the Integration of Teaching and Learning

- Completed training program in evidence-backed undergraduate teaching strategies and leveraging student diversity to promote equal success for students
- Participated in a learning community of instructors committed to undergraduate teaching

Introduction to Evidence-Based Undergraduate STEM Teaching

- Engaged in 8-week course that introduced strategies for effective STEM teaching following evidence-based techniques, including backwards design and active learning

Teaching Fellow, UNC Summer Institute on College Teaching

- Developed actionable skills for improving student learning through five-day professional development academy

Research Experience

Graduate Research Assistant *Aug 2020 - Present*

Southeast Regional Climate Center

- Contributed to a wide variety of research projects, including a high resolution extreme wind climatology, several tornadic vulnerability projects, and extreme heat vulnerability work
- Performed web-development and data curation and analysis for a public-facing hazards dashboard
- Supervised and assisted undergraduate researchers

Graduate Research Assistant *May 2023 - Present*
Dr. Paul Delamater
- Collaborated on grant provided by the Carolina Population Center to analyze impacts of weather-related road closures on hospital access

Graduate Research Assistant *Jan 2024 - Aug 2024*
Dr. Nikhil Kaza
- Utilized a improved shape compactness metric to analyze temporal change in US metro counties

Data Verification Specialist *May 2023 - Dec 2024*
The Odum Institute for Research in Social Science
- Reviewed data and code for manuscripts accepted at various political science journals for adherence to replication standards
- Completed verification reports to offer feedback to authors on identified problems
- Advised verification team on strategies for verifying manuscripts that utilize GIS technology

Graduate Research Assistant *Jan 2021 - Dec 2021*
Data-Driven EnviroLab, Department of Public Policy
- Curated and pre-processed data for "Heat Hack 2022" a hackathon focused on solutions to extreme heat in the Triangle
- Contributed to modeling and analysis of micro-scale heat data collected by citizen scientists
- Processed and analyzed dozens of remotely sensed products to consider the impact of Chinese investment on land use change in southeast Asia

Peer Reviewed Papers

Cardwell, J., & Cowan, K. N. (2023). Local news sentiment towards FEMA recovery efforts after Hurricane Florence in North Carolina. *Disasters*, 47(4),1025-1046.

Cardwell, J. (2023). Community perceptions of a floodplain buyout program in Charlotte, North Carolina. *Natural Hazards*, 115(3),2141-2160.

Cardwell, J., & Konrad, C. E. (2023). Trends in recovery aid concentration following Hurricane Florence in North Carolina: Exploring the role of physical damage, community vulnerability, and Hurricane Matthew. *Environmental Hazards*, 22(2), 177-199.

Cardwell, J. (2022). Disruption to EMS service during flood scenarios in Western North Carolina. *Journal of Rural Social Science*, 37(3), 6.

Cardwell, J. (2022). Examining the shifting role of the human in disaster studies. *Journal of the Bulgarian Geographical Society*, 46, 51-55.

Cardwell, J. (2021). Trends in flood insurance behavior following hurricanes in North Carolina. *North Carolina Geographer*, 20, 2-12.

Other Publications

Martin, A., **Cardwell, J.**, Mundt, J., Kramer, R., & Beckham, T. (2020). Climate justice. In *North Carolina climate risk assessment and resilience plan* (Chapter 4). State of North Carolina.

Submitted Papers

Cardwell, J., Delamater, P.L., Konrad, C.E., Daily Impacts to Habitual Travel in North Carolina due to Weather-Related Road Closures from 2016-2023, Revise and Resubmit

Wang, X. Johnson, E. Manya, D. **Cardwell, J.**, Hsu, A., One Belt, Many Roads: Investigating China's Foreign Investment and Land-use Impacts in Southeast Asia, Under Review

Cardwell, J., Kaza, N., Densification, Dispersion Or Stagnation: Assessing the Changes in Urban Spatial Patterns in Metropolitan United States, Under Review

Conferences and Talks (Presenter listed first)

2024

Konrad, C., **Cardwell, J.**, & Fuhrmann, C. The development of an impacts-based high wind climatology that is tailored to social vulnerability, presented at Southern Appalachian Weather and Climate Workshop III, Roanoke, VA

Sheridan, S., Kalkstein, A., Fuhrmann, C., Silva, A., **Cardwell, J.**, & Konrad, C. Assessing the Wet-Bulb Globe Temperature as a predictor of overall mortality in summer, presented at American Association of Geographers, Honolulu, Hawaii

Brooks, C.D. & **Cardwell, J.** Poop in the air, should we care? Estimating the educational impacts of hog farm pollution in North Carolina, presented at the annual meeting of the Association of Education Finance and Policy, Baltimore, MD

Cardwell, J. Weather-related Impacts to Local Travel in North Carolina, presented at American Association of Geographers, Virtual

2023

Brooks, C.D. & **Cardwell, J.** Poop in the air, should we care? Estimating the educational impacts of hog farm pollution in North Carolina, presented at the annual meeting of the Association of Public Policy Analysis & Management, Atlanta, GA

Cardwell, J. Methods to Analyze Disruption of EMS Service During Flood Scenarios, presented at American Association of Geographers, Denver, Colorado

Cardwell, J. Exploring the Impacts of Weather-Related Road Closures in North Carolina, presented at Highway Safety Research Center, Chapel Hill, North Carolina

Cardwell, J. Impacts to Local Travel During Weather-Related Road Closures in North Carolina, presented at Southeastern Division of the American Association of Geography, Norfolk, Virginia

Brooks, C.D. & **Cardwell, J.** Poop in the air, should we care? Estimating the educational impacts of hog farm pollution in North Carolina, presented at the annual meeting of the Association of Education Finance and Policy, Denver, CO

2022
Cardwell, J. Analyzing Recovery Aid Concentration in North Carolina Following Hurricane Florence, presented at American Association of Geographers, Virtual

2021
Cardwell, J. Trends in NFIP (National Flood Insurance Program) Participation after Major Hurricanes in North Carolina, presented at Annual Meeting of the North Carolina Geographical Society, Virtual

Awards and Honors

Graduate Research Fellowship Program, National Science Foundation *2022*
Honorable Mention
Phi Beta Kappa, Davidson College *2019*

Grants, Funding, and Fellowships

Summer Research Grant, UNC Chapel Hill , $1,500 *2021*
Graduate Merit Fellow, UNC Chapel Hill, $20,000 *2020-2021*
Weiss Urban Livability Fellow, UNC Chapel Hill, $4,000 *2020-2021*

Student Inclusion Training

UNC Digital Accessibility Training
SafeZone (LGBTQ+ Awareness Training)
Mental Health First Aid
Universal Design for Learning (UDL), AHEAD
Advancing Inclusive Mentoring (AIM), National Research Mentoring Network

Skills

Languages: R, Python, VB.NET, JavaScript, Stata
Technologies: ArcGIS Pro, ArcMap, ArcGIS Online, QGIS, Google Earth Engine, SPSS, ENVI, cluster computing

University Service

Graduate Student Representative, Faculty Committee *2023-2024*
Co-President, Graduate Association of Geography Students *2022-2023*
Graduate Student Representative, Graduate Committee *2020-2022*

Affiliations

American Association of Geographers, North Carolina Geographical Society, Queer Graduate Students and Professionals (UNC Chapel Hil)