

William “Elliott” Foust

Department of Earth & Planetary Science, Johns Hopkins University, Baltimore, Maryland, USA
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EDUCATION

The Pennsylvania State University

University Park, Pennsylvania

Doctor of Philosophy (PhD) in Atmospheric Science

December 2025

Dissertation Title: Cooling Cities: Observing and Simulating how Urban Environments Impact Heat and Shape Adaptation Pathways

Advisor: Kenneth James Davis

Colorado State University

Fort Collins, Colorado

Master of Science (MS) in Atmospheric Science

December 2014

Thesis Title: Estimating the likelihood of significant climate change with the NCAR 40-member ensemble

Advisor: David W. J. Thompson

North Carolina State University

Raleigh, North Carolina

Bachelor of Science (BS) in Meteorology & Applied Mathematics - With Honors

December 2010

PROFESSIONAL APPOINTMENTS

Pim Postdoctoral Fellow, Department of Earth & Planetary Sciences, Johns Hopkins University

June 2026 - Present

Graduate Research Asst., Department of Meteorology and Climatology, Penn State University January 2021 - April 2026

Education Designer, Computation and Information Systems Laboratory (CISL),
National Center for Atmospheric Research (NCAR)

July 2016 - December 2020

Graduate Research Asst., Department of Atmospheric Science, Colorado State University August 2011 - December 2014

RESEARCH EXPERIENCE NARRATIVE

My research has focused on applying atmospheric science to address societally relevant climate challenges. As an undergraduate at North Carolina State University, I developed a strong foundation in meteorology and applied mathematics through research at the State Climate Office of North Carolina and NOAA’s Geophysical Fluid Dynamics Laboratory (GFDL). At GFDL, I investigated the impacts of solar shades as a means of geoengineering, which introduced me to modeling climate and evaluating potential climate interventions. During my master’s research at Colorado State University, I quantified uncertainty in future climate projections using large ensembles of climate simulations. The results of this work led to better information that supports long-term climate planning and decision-making.

After gaining experience in scientific computing and managing programs at the National Center for Atmospheric Research, I became interested in applying my climate research to scales that directly impact people and their communities. At Penn State University, my work shifted towards urban climate and extreme heat, where I used models and observations to characterize regional and neighborhood-scale temperature variability, and developed new approaches to evaluate urban heat mitigation strategies. This work provided communities with tools to identify heat exposure, assess the effectiveness of heat intervention strategies, and support climate resilience planning. I am currently expanding this work as a postdoctoral researcher at Johns Hopkins University by integrating microscale and mesoscale modeling to better understand urban temperature variability and improve tools for evaluating heat mitigation strategies.

PEER-REVIEWED PUBLICATIONS

Foust, W. E., Davis, K.J., Zaitchik, B.D., Rózański, M. (in prep Aug 2026 submission) Implementation and Impacts of Localized Urban Heat Adaptation Strategies in the WRF Model

Sznajder K. Hu Y. Bascomb R. Smith L. David K. Du M. **Foust E.** Ray M. Zhou B. (submitted) The Association Between Extreme Heat and PM2.5 with Birthweight in Maryland, USA: 2011-2021, *Scientific Reports*

Foust, W. E., Waugh, D.W., Davis, K.J., Osman, M., Collins, S.P., Zaitchik, B.D. (submitted) Mapping ambient temperature variability in a metropolitan corridor: A comparison of observations and a mesoscale model, *JGR-Atmospheres*

Foust, W. E., Kenneth, D.J., Deng, A., Horne, J.P., Miles, N.A., Richardson, S.S. (in review) The Role of Land Cover Representation and Subgrid Parameterization in Operational Urban Heat Stress Forecasting, *Journal of Applied Meteorology and Climatology*

Waugh, D. W., Smith, P. R., Baleeiro, S., Avins, M., Bader, M., Collins, S., Dittman, G., **Foust, W. E.**, et al. (2026). The Baltimore Community Weather Station Network: Filling the urban measurement desert. *Community Science*, 5, e2025CSJ000154. <https://doi.org/10.1029/2025CSJ000154>

Naylor, R.S., Kopp, M.W., Irizarry, J.I., **Foust, W.E.**, et al. Graduate student perspectives on opportunities and approaches for supporting transdisciplinary research and education. *Sustain Sci* 20, 961–974 (2025). <https://doi-org.ezaccess.libraries.psu.edu/10.1007/s11625-025-01650-6>.

Foust, W. E. (2021). An Informal Introduction to Numerical Weather Models with Low-Cost Hardware. *Bulletin of the American Meteorological Society*, 103(1), E17-E24.

Thompson, D. W. J., Barnes, E. A., Deser, C., **Foust, W. E.**, & Phillips, A. (2015). Quantifying the role of internal climate variability in future climate trends. *Journal Of Climate*, 28, 6443-6456.

OTHER EXPERIENCE

Penn State University

Teaching Assistant

University Park, Pennsylvania

Spring 2021, Fall 2021

- METEO 411 Mesoscale Meteorology - Instructor Dr. Steven Greybush
- METEO 003 Intro Meteorology - Instructor Dr. Gregory Jenkins

NOAA Geophysical Fluid Dynamics Lab

Undergraduate Research Experience

Princeton, New Jersey

Summer 2009

State Climate Office of North Carolina

Undergraduate Research Experience

Raleigh, North Carolina

Summer 2008

HONORS AND AWARDS

Young Professionals of Color - Greater Harrisburg Emerging Leader Award 2025

John Roe Sustainability Impact Award <https://tinyurl.com/psusustain> 2025

Penn State University Landscape U Fellowship Recipient <https://landscapeu.psu.edu/> 2022

Al and Betty Blackadar Graduate Scholarship in Meteorology <https://tinyurl.com/y5c66j5c> 2021

University Corporation for Atmospheric Research (UCAR) Mentoring Award 2019

National Center for Atmospheric Research (NCAR) Outstanding Service Award <https://tinyurl.com/osa17> 2017

Colorado State University Alliance for Graduate Education and the Professional Fellow 2011

North Carolina State University Undergraduate Research Award 2010

National Oceanic and Atmospheric Administration (NOAA) Ernest F. Hollings Scholarship 2008

PROFESSIONAL AFFILIATIONS

American Geophysical Union (member), American Meteorological Society (member)