Brian C. Filipiak

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Education

University of Connecticut — **Storrs, CT**
Doctor of Philosophy in Environmental Engineering — *Jan 2023 – Present*

- Research funded by Eversource Energy Center, NASA
- NASA FINNEST Proposal Funded: Refinement of Snow Microphysics and Density Forecasting Using GPM Ground Validation Observations and NU-WRF

State University of New York at Albany — **Albany, NY**
Master of Science in Atmospheric Science — *Aug 2020 – Dec 2022*

- Thesis: Probabilistic Winter Mixed Precipitation Forecasts Utilizing a Random Forest in New York
- Research funded by NOAA CSTAR grant

University of Rochester — **Rochester, NY**
Bachelor of Science in Environmental Science: Climate Science track, Magna Cum Laude — *Aug 2016 – May 2020*

- Certificate in Community Engaged Scholarship

Research Experience

University of Connecticut — **Storrs, CT**
Research Assistant, Dr. Marina Astitha and Dr. Diego Cerrai — *Jan 2023 – Present*

- Investigate the efficacy of NASA's Regional Earth Modeling System, NU-WRF, for 10 winter storms in different regions across the United States with a particular focus on the radiation and microphysics schemes developed at NASA
- Compare radar-derived, gauge-corrected quantitative precipitation estimates from Stage IV and MRMS to weighing precipitation gauges during the cool season to improve understanding how the products compare and when they can be applied, particularly during winter weather
- Evaluate 10 different Snow-to-Liquid Ratio algorithms for 14 winter storms in the Northeast United States to identify what algorithm performs best as well as the factors that can impact performance
- Analyze the impact of initial and boundary conditions on Weather Research and Forecasting (WRF) model simulations for Northeast United States snowstorms to understand what variables impact precipitation processes and totals during winter storms
- Collaborate with NASA GPM Ground Validation and associated researchers to carry out winter precipitation field campaign including forecasting for two Intense Observing Periods utilizing an Unmanned Aerial System
- Prepare, evaluate, and manage data collected from NASA field campaign to be used for future research
- Provide weather expertise to improve development of machine learning models for power outage prediction for multiple electrical utility companies (Eversource, Exelon, and Dominion Energy)
- Generate and issue over 150 operational power outage forecasts for Eversource Energy
- Developed and executed summer research internship plan in 2024 and 2025 for both undergraduate and high school students, which included varied exposure to data analysis and quality control for published research projects

State University of New York at Albany — **Albany, NY**
Research Assistant, Dr. Kristen Corbosiero, Dr. Andrea Lang, Ross Lazear, and Dr. Nick Bassill — *Aug 2020 – Dec 2022*

- Focused on improving prediction of winter precipitation types by developing and maintaining a random forest machine learning that assimilated multiple common data sources to identify rain, snow, freezing rain and sleet
- Partnered with NWS stakeholders to maintain relationships; ensured open lines of communication; reviewed cases of uncertain winter precipitation events; strategized on random forest algorithm implementation and operational product design to display research results
- Fostered relationships for open lines of communication between NWS collaborators and UAlbany research team
- Cultivated and maintained a website (http://www.atmos.albany.edu/student/filipiak/op/) that contains the probabilistic nowcasts and forecasts from the random forest algorithm as well as other information about the project

Texas A&M University – National Science Foundation Research Experience for Undergraduates — **College Station, TX**
Research Assistant, Dr. Christopher Nowotarski — *Jun 2019 – Aug 2019*

- Researched spatial and diurnal variability of near cell environments for tornadic and non-tornadic cells and forecasting in tropical cyclones
- Examined the spatial and diurnal variability of near cell environments for tornadic and non-tornadic cells
- Created database of tornadoes and tornado warnings produced in tropical cyclones

Publications

- **Filipiak, B. C,** and Coauthors, 2025: Winter precipitation measurements in New England: Results from the Global Precipitation Measurement Ground Validation Campaign in Connecticut. *Earth Syst. Sci. Data*, preprint, under review, https://essd.copernicus.org/preprints/essd-2025-162/.
- **Filipiak, B. C.,** M. Astitha, and D. Cerrai, 2025: Assessing dynamic and thermodynamic variability in initial and boundary conditions for snowstorm prediction in the Northeast United States. *J. Geophys. Res. Atmos.*, under review.
- **Filipiak, B. C.,** U. Khaira, M. S. Walters, and M. Astitha, 2025: The efficacy of ten snow–to-liquid ratio algorithms to predict snowfall for impactful winter storms in the Northeast United States. *Wea. Forecasting*, under review.
- Minder, J., B. Stutsrim, C. Speciale, T. Wasula, **B. C. Filipiak,** B. Shrestra, J. Wang, N. Bassill, H. Reeves, D. Tripp, D. Thompson, and N. Stuart, 2025: Evaluating tools for diagnosis and nowcasting precipitation type and freezing rain: Results from the 3–4 February 2022 winter storm in the Hudson Valley. *Wea. Forecasting*, under review.
- Tokay, A., C. Mahone, C. N. Helms, J. Tan, D. B. Wolff, D. Cerrai, J. L. Pippitt, **B. C. Filipiak,** M. J. Boulanger, and A. V. Chibisov, 2025: Rain-to-snow transition: Evaluation of precipitation phase algorithms in southern New England. *J. Hydrometeor.*, under review.
- **Filipiak, B. C.,** N. P. Bassill, K. L. Corbosiero, A. L. Lang, and R. A. Lazear, 2023: Probabilistic forecasting methods of winter mixed precipitation events in New York State utilizing a random forest. *Artif. Intell. Earth Syst.*, https//doi.org/10.1175/AIES-D-22-0080.1.

Graduate Teaching Experience and Campus Leadership

University of Connecticut **Storrs, CT**
Air Pollution Control *Jan – May 2023, 2024, 2025*

- Held office hours to assist students with course work
- Graded assignments, papers, and exams to assess student understanding of coursework

State University of New York at Albany **Albany, NY**
Atmospheric Structure, Thermodynamics, and Circulation; The Atmosphere *Aug 2020- Dec 2022*
Atmospheric Dynamics; Weather, Climate Change and Societal Impacts

- Held office hours to assist students with course work
- Graded assignments, papers, and exams to assess student understanding of coursework

Department of Atmospheric and Environmental Sciences Graduate Student Organization **Albany, NY**
President *May 2021– May 2022*

- Served as a liaison between graduate students and University administrators, faculty, and staff
- Motivated other graduate students to be engaged both inside and outside of the department to facilitate retention
- Supervised and supported a board of peers who planned departmental gatherings, mentorship programs, and social events

Professional Affiliations, Certifications, and Awards

- 103rd AMS Annual Meeting/22nd Conference on Artificial Intelligence for Environmental Science Oral Presentation Award: Honorable Mention
- American Meteorological Society Energy Committee Student Member: 2024-Present
- American Meteorological Society Board of Enterprise Economic Development Student Member: 2023-2026
    - Maintain accurate records and notes from committee meetings
- American Geophysical Union Hydrology Precipitation Technical Committee Member: 2023-2025
- American Meteorological Society Board of Private Sector Meteorologists Student Member: 2023
    - Curated content and ran a twitter campaign promoting various private sector meteorological careers
- FEMA Independent Study Certificates: Professional Development Series: completed July 2020
- American Geophysical Union Member: 2024-Present
- American Meteorological Society Member: 2019-Present
- Phi Beta Kappa Member: 2020-Present

Technical Skills

- Fluent with Microsoft Office, Google Suite, Linux computing environments, and Python
- Proficiency with handling numerical weather model output including compile and running components of Weather Research and Forecasting (WRF) model
- Working understanding of ArcGIS, MATLAB, R, NCAR Computing Language (NCL), basics of website design and development, and various machine learning technique