

Brian C. Filipiak

(847) 987-5208 • bfilipiak@albany.edu

<http://www.atmos.albany.edu/student/filipiak/Personal/>

Education

State University of New York at Albany

Albany, NY

Master of Science in Atmospheric Science

August 2020 - Present

- Thesis research: 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, Magna Cum Laude, Environmental Science

August 2016 - May 2020

- Climate Science track; GPA: 3.94 out of 4.00; Certificate in Community Engaged Scholarship

Research Experience

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 – Present

- Collaborate with the National Weather Service (NWS) on NOAA CSTAR grant
- Focus on improving prediction of uncertain winter precipitation types by utilizing machine learning to assimilate multiple data sources used by forecasters
- Develop and maintain a random forest machine learning algorithm to identify winter precipitation types: rain, snow, freezing rain and sleet
- Utilize citizen science (CoCoRaHS) reports to help identify precipitation type events from 2017-2020
- Partner with NWS stakeholders to review cases of uncertain winter precipitation events, strategize on random forest algorithm implementation and operational product design to display research results
- Foster relationships for open lines of communication between NWS collaborators and UAlbany research team
- Cultivate and maintain a website that contains the probabilistic nowcasts and forecasts from the random forest algorithm as well as other information about the project
 - Link to operation webpage: <http://www.atmos.albany.edu/student/filipiak/op/>

Ground Observation Team Member for WINTRE-MIX field campaign, Dr. Justin Minder

Feb 2022 – Mar 2022

- NSF sponsored Winter Precip Type Research Multi-Scale Experiment (WINTRE-MIX) in Plattsburgh, New York and Quebec, Canada
- Collaborated with researchers from University of Colorado, University of Illinois at Urbana-Champaign Flexible Array of Radars and Mesonets (UIUC-FARM), McGill University and University of Quebec at Montreal to study precipitation types that occur in near freezing conditions on the synoptic, mesoscale, and microscale, especially in areas of complex terrain
- Completed 7 Intense Observing Periods (IOPs) that include numerous overnight events
- Successfully launched 24 radiosondes to collect information about current vertical thermodynamic profiles
- Identified and collected ground observations of precipitation type every 10 minutes during IOP
- Assisted mobile radar trucks from UIUC-FARM with pre/post operation procedures and operations logs

Texas A&M University – NSF REU

College Station, TX

Research Assistant, Dr. Christopher Nowotarski

Jun 2019 – Aug 2019

- Researched spatial and diurnal variability of tornadogenesis and forecasting in tropical cyclones
- Created database of tornadoes and tornado warnings produced in tropical cyclones
- Generated and analyzed skewT plots to identify soundings pulled from the Rapid Refresh Model
- Examined the spatial and diurnal variability of near cell environments for tornadic and non-tornadic cells
- Utilized and produced data analyses and plots using Matlab and Python
- Participated in tornado storm chases and weather balloon launches

National Oceanic and Atmospheric Administration*Research Assistant, Dr. Paul Chittaro of Northwest Fisheries Science Center***Seattle, WA***Jun 2018 – Aug 2018*

- Studied latitudinal variability in somatic body growth of Blue Lanternfish and Pacific Hake
- Learned laboratory methods and techniques for analyzing specimens
- Conducted analyses of specimens for growth rate and hatch date via R and Excel
- Prepared research equipment and collected data for research trips on Puget Sound and Pacific Ocean

Selected Coursework and Projects*Graduate Courses*

Atmospheric Dynamics – FA 2020
 Introduction to Atmospheric Physics I– FA 2020
 Advanced Geophysical Data Analysis– FA 2020
 Synoptic-Dynamic Meteorology – SP 2021
 Renewable Energy Issues – SP 2021
 Introduction to Atmospheric Physics II – SP 2021
 Mesoscale Processes – FA 2021
 Numerical Weather Prediction- SP 2022

Undergraduate Courses

Physics of Climate – FA 2017
 Atmospheric Geochemistry – SP 2018
 Thematic Cartography and Geographic Visualization – SP 2019
 Earth Science Data Analysis – FA 2019
 Applied Boundary Value Problems – FA 2019
 Elements of Probability and Statistics – SP 2020

Related Projects

- Solar and Wind Resource Assessment and Resource Droughts in New York, SP 2021: Renewable energy resources were assessed in terms of their availability and analyzed for periods of underperformance, or drought, compared to a threshold. This project is ongoing and being expanded for publication.
- Extreme Precipitation in Rochester, NY, SP 2020: Precipitation data from ASOS stations was analyzed to see how extreme precipitation rates have changed since 1948 and what environmental factors most impacted these rates.

Invited Talks and Conference Presentations**Invited Talks**

- Filipiak, B., K. Corbosiero, A. L. Lang, R. A. Lazear, and N. P. Bassill, 2022: “Data Fusion: A Machine Learning Tool for Forecasting Winter Mixed Precipitation Events.” Albany Weather Forecasting Office Fall Meeting, 8 November, Albany, NY.
- Filipiak, B., K. Corbosiero, A. L. Lang, R. A. Lazear, and N. P. Bassill, 2022: “Data Fusion: A Machine Learning Tool for Mixed Precipitation.” New York State Mesonet Forum, 15 April, Albany, NY.
- Filipiak, B., K. Corbosiero, A. L. Lang, R. A. Lazear, and N. P. Bassill, 2021: “Data Fusion: A Machine Learning Tool for Forecasting Winter Mixed Precipitation Events.” 2021-2022 NOAA Weather Prediction Center Winter Weather Experiment Seminar Series, 7 December, Albany, NY.
- Filipiak, B., K. Corbosiero, A. L. Lang, R. A. Lazear, and N. P. Bassill, 2021: “Data Fusion: A Machine Learning Tool for Forecasting Winter Mixed Precipitation Events.” Albany Weather Forecasting Office Fall Meeting, 19 November, Albany, NY.
- Filipiak, B., K. Corbosiero, A. L. Lang, R. A. Lazear, and N. P. Bassill, 2021: “Data Fusion: A Machine Learning Tool for Mixed Precipitation.” New York State Mesonet Forum, 7 May, Albany, NY.

Oral Presentations

- Filipiak, B., K. Corbosiero, A. L. Lang, R. A. Lazear, and N. P. Bassill, 2022: “Data Fusion: A Machine Learning Tool for Forecasting Winter Mixed Precipitation Events.” 23rd Annual Northeast Regional Operational Workshop, 2–3 November, Albany, NY.
- Filipiak, B., K. Corbosiero, A. L. Lang, R. A. Lazear, and N. P. Bassill, 2022: “Data Fusion: A Machine Learning Tool for Forecasting Winter Mixed Precipitation Events.” Second Annual New York State Mesonet Symposium, 13 September, Albany, NY.

- Filipiak, B., K. Corbosiero, A. L. Lang, R. A. Lazear, and N. P. Bassill, 2022: "Data Fusion: A Machine Learning Tool for Forecasting Winter Mixed Precipitation Events." 102nd AMS Annual Meeting/31st Conference on Weather Analysis and Forecasting (WAF)/27th Conference on Numerical Weather Prediction (NWP), 26 January, Houston, TX.
- Filipiak, B., K. Corbosiero, A. L. Lang, R. A. Lazear, and N. P. Bassill, 2021: "Data Fusion: A Machine Learning Tool for Forecasting Winter Mixed Precipitation Events." 22nd Annual Northeast Regional Operational Workshop, 9–10 November, Albany, NY.

Poster Presentations

- Filipiak, B., K. Corbosiero, A. L. Lang, R. A. Lazear, and N. P. Bassill, 2021: "Data Fusion: A Machine Learning Tool for Forecasting Winter Mixed Precipitation Events." First Annual New York State Mesonet Symposium, 29 September, Albany, NY.
- Filipiak, B., C. J. Nowotarski, and J. R. Spotts, 2020: "Diurnal and Spatial Variability of Tornadogenesis and Forecasting in Tropical Cyclones." AMS 19th Annual Student Conference, 12 January, Boston, MA.
- Filipiak, B., C. J. Nowotarski, and J. R. Spotts, 2019: "Diurnal and Spatial Variability of Tornadogenesis and Forecasting in Tropical Cyclones." Undergraduate Summer Research Symposium, 31 July, College Station, TX.
- Filipiak, B., and P. Chittaro, 2018: "Latitudinal and Annual Patterns of Somatic Growth for Pacific Hake Along the U.S. Pacific Coast." JISAO Student Summer Research, 16 August, Seattle, WA.

Professional Development

3 rd NOAA Workshop on Leveraging AI in the Environmental Sciences (Virtual)	13-17 September 2021
Trustworthy Artificial Intelligence for Environmental Sciences Summer School (Virtual)	26-29 July 2021
American Meteorological Society Short Course: AI and Weather Radar (Virtual)	17 May 2021

Teaching Experience

State University of New York at Albany	Albany, NY
<i>Atmospheric Structure, Thermodynamics, and Circulation</i>	Aug 2020 – Dec 2020, Aug 2022 – Dec 2022
<i>The Atmosphere</i>	Jan 2022– May 2022
<i>Atmospheric Dynamics</i>	Aug 2021– Dec 2021
<i>Weather, Climate Change and Societal Impacts</i>	Feb 2021– May 2021
<ul style="list-style-type: none"> • Held office hours and homework review sessions to assist students with learning course material • Graded assignments, papers, and exams to assess student understanding of coursework 	

University of Rochester	Rochester, NY
<i>Calculus 2 - Workshop Teaching Assistant</i>	Aug 2019 – May 2020
<i>Chemical Concepts, Systems, and Practices 2 - Workshop Teaching Assistant</i>	Jan 2018 – May 2018
<i>Introduction to Geological Sciences - Workshop Leader</i>	Aug 2017 – Dec 2017
<ul style="list-style-type: none"> • Led workshops and held office hours to assist students with learning course material • Graded homework and exams; proctored exams 	

Leadership Experience

Department of Atmospheric and Environmental Sciences Graduate Student Organization	Albany, NY
<i>President</i>	May 2021– May 2022
<ul style="list-style-type: none"> • Provide an open line of communication between graduate students and faculty/staff to ensure issues are addressed and that important announcements are distributed in a timely fashion • Inspire and encourage other graduate students to be engaged both inside and outside of the department to encourage retention • Facilitate and assist other executive board members in program development and oversight • Revamp the graduate student recruitment webpage and expand FAQ section to increase enrollment • Promote and lead outreach events/opportunities throughout greater Albany area 	

University of Rochester and City of Rochester

Rochester, NY

Project Leader- Community Engaged Scholarship

Jan 2017- May 2020

- Developed a proposal for a community outreach center with collaboration from community members
- Facilitated discussions with community and university leaders throughout the proposal process

University of Rochester Rising Leader Class

Rochester, NY

Mentor

Aug 2017- Jan 2020

- Provided guidance and mentoring to first-year students enrolled in the leadership advancement class

Professional Affiliations, Trainings and Awards

- FEMA Independent Study Certificates: Professional Development Series (Completed July 2020)
- American Meteorological Society Member: 2019-Present
- Sigma Gamma Epsilon Member: 2020-Present
- Phi Beta Kappa Member: 2020-Present

Technical Skills

- Fluent with Microsoft Office, Google Suite, Linux computing environments, and Python
- Proficient with ArcGIS, MATLAB, and random forests
- Working understanding of HTML, CSS, JavaScript, web product development, and other machine learning techniques