

Joseph J. Fogarty

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SUMMARY

Current Ph.D. candidate enrolled in the department of Civil and Environmental Engineering (CEE) at Princeton University, specializing in environmental modeling, environmental data sciences, climate change impact and adaptation. My research utilizes atmospheric flow & transport simulations, and environmental data analysis. Despite studying in the CEE department, my doctoral work bridges disciplines, showcasing my interdisciplinary approach. Looking ahead, I am eager to leverage my skills and expertise in research, environmental science, and mathematics gained from my Ph.D. journey.

EDUCATION

Princeton University

Ph.D. in Civil and Environmental Engineering

Princeton, NJ

Sep 2018–Jan 2024

- Advisor: Elie Bou-Zeid
- M.A. in Civil and Env. Eng. Earned Apr 2021

Rutgers University

B.S. in Meteorology, *summa cum laude*

New Brunswick, NJ

Sep 2014–May 2018

- Advisor: Mark Miller
- Minors in Mathematics and Environmental Sciences

PUBLICATIONS

1. J. Fogarty & E. Bou-Zeid, “The Atmospheric Boundary Layer above the Marginal Ice Zone: Scaling, Surface Fluxes, and Secondary Circulations”, *Boundary-Layer Meteorology* (2023), <https://doi.org/10.1007/s10546-023-00825-x>
2. J. Fogarty, E. Bou-Zeid, M. Bushuk, & L. Boisvert, “How Many Parameters are Needed to Represent Polar Sea Ice Surface Patterns and Heterogeneity?”, *Cryosphere* (2024), *In Review*
3. J. Fogarty & E. Bou-Zeid, “Numerical Simulations of Satellite-Sensed Polar Surfaces”, *Geophysical Research Letters* (2024), *In Preparation*

RESEARCH EXPERIENCE

Ice-Water-Air Exchanges in the Marginal Ice Zone: Numerical Simulations of Satellite-Sensed Surface States

Oral Presentation at the 28th IUGG General Assembly

Berlin, GER

Jul 2023

Ice-Water-Air Exchanges in the Marginal Ice Zone: Numerical Simulations of Satellite-Sensed Surface States

Oral Presentation at the Annual AMS Conference

Denver, CO

Jan 2023

Turbulence-Resolving Simulations of Atmosphere-Surface Coupling in the Marginal Ice Zone: The Interacting Effects of Temperature Heterogeneity

Oral Presentation at the Annual APS-DFD Conference

Phoenix, AZ

Nov 2021

Nonlinearity of Air-Ice-Water Exchanges: Simulations of Remotely-Sensed Surface States

Poster Presentation at the Annual AGU Conference

San Francisco, CA

Dec 2019

Drizzle Evaporation in the Stratocumulus-Topped Marine Boundary Layer and its Relationship with Sub-Cloud Turbulence

Oral Presentation for George H. Cook Honors Project

New Brunswick, NJ

May 2018

Seasonal Trends in Extreme Minimum Temperatures at Six New Jersey Locations

Poster Presentation at Rutgers Climate Symposium

Piscataway, NJ

Nov 2017

PROJECTS

More details of projects on github.com/josephfogarty

- **Ice Surface energy Budget Solver** (*Python, 2019*)

IceSUBS was a program written to solve a surface energy budget of a sea ice surface with eventual implementation in a large-eddy simulation model

- **Forecast Verification** (*Python/Jupyter, 2017*)

A Jupyter notebook created with the intention to explore techniques and libraries in Python relevant to data science, using forecast verification techniques as the motivation

SKILLS

- **Languages:** Python, MATLAB, Fortran, R

- **GIS:** ArcGIS Pro, QGIS

- **Version Control:** Git

- **Other:** L^AT_EX, Microsoft Office

PROFESSIONAL EXPERIENCE

Office of the New Jersey State Climatologist

Research Assistant, 20-30 hours/week

Piscataway, NJ

Jun 2017–Sep 2018

- Regular quality control for NJ CoCoRaHS stations, a nationwide citizen science effort to observe and record daily rainfall data
- Synthesized national snow data for the 2016 Annual Snow Report, which required synthesizing multiple data sources to prepare snow reports for the State Climatologist
- Conducted multiple independent NJ climate research projects under the advice of the State Climatologist, including (1) how extreme precipitation events have increased in NJ due to anthropogenic climate change and (2) the statistical extremes of minimum temperature trends in NJ

Rutgers Environmental Sciences

Weather Observer, 2-5 hours/week

New Brunswick, NJ

Dec 2016–Aug 2018

- Conduct and record daily weather observations multiple days per week at the Cooperative Observer Network (COOP) Rutgers weather station at Rutgers Gardens
- Manage, train, and organize other student observers in the program, e.g. creating weekly schedules and finding observers to fill vacancies

Spot-On Weather

Undergraduate Intern, 10 hours/week

Marlboro, NJ

Aug - Dec 2016

- Handled operational forecasts for TV and film crews while also being on call for said production crews to call at any time for an on-the-spot weather report
- Created forensic meteorology reports by using collecting archival meteorological data for civil lawsuits

TEACHING

- **Assistant in Instruction** at Princeton University Spring 2022, Spring 2023
Hydrology: Water and Climate (CEE 306)
- **Assistant in Instruction** at Princeton University Fall 2021, Fall 2019
Environmental Fluid Mechanics (CEE 305)
- **Assistant in Instruction** at Princeton University Fall 2020, Fall 2022
The Climatological, Hydrological, & Environmental Footprints of Cities (CEE 474)
- **Rutgers Learning Center Tutor** at Rutgers University 2016-2017
Pre-Calculus, Calculus, Linear Algebra

SCHOLARSHIPS AND AWARDS

- Gordon S. Wu Scholarship 2018–Current
- Rutgers Dean’s List 2014–2018
- Meteorology Student of the Year 2018