Tyler Waterman

806 Gregson St. APT 103, Durham, NC 27701

Phone: 314-221-0827 E-Mail: tyler.waterman@duke.edu

Education

University of California, Berkeley

B.S Civil and Environmental Engineering, Cumulative GPA: 3.70, May 2019

Duke University

PhD Hydrology and Fluid Dynamics, Cumulative GPA: 3.94, Expected Summer 2024

Research and Teaching Experience

Duke: Dr. Nathaniel Chaney Hydrology Lab **August 2019 – Present**

Researcher

* Created a publicly accessible codebase to complete preprocessing workflow for the Weather Research and Forecasting Hydrologic Model Hydrologic Model (WRF-Hydro)
* Analyzed a large database of eddy flux measurements across the United States to improve the surface boundary conditions of turbulent temperature variance in atmospheric models
* Developing a two column implementation of Cloud Layers Unified by Binormals (CLUBB) to parameterize the effect of heterogeneity induced secondary circulations in Earth System Models
* Evaluating the relationship between land surface temperature heterogeneity and errors in the surface energy balance and measurements from eddy covariance towers

Duke Civil and Environmental Engineering **August 2019 – Present**

Teaching Assistant (F2021)

* Assisted in teaching Environmental Spatial Data Analysis (CEE690) to graduate students, including creating homeworks, five total hours personally conducting lectures, and helping students with coursework

Teaching Assistant (F2022)

* Managed undergraduate Fluid Mechanics (CEE301) lab experiments, in addition to holding office hours, and grading coursework

Berkeley: Dr. Sally Thompson Ecohydrology Lab **May 2018 – January 2019**

Undergraduate Researcher

* Developed an independent honors research project to create an improved model framework for interception of precipitation by tree canopies
* Collected environmental samples, including basic meteorological data, soil moisture and fuel moisture, in field sites in Yosemite National Park

CEE 98 International Water Development **January 2018 – May 2018**

Student Instructor

* Established and created the curriculum for a lower division Berkeley undergraduate course on water systems in developing countries
* Taught basic computer aided design and principles of water development, water systems, and the design process to Berkeley undergraduate students

Community Service and Leadership Experience

Duke Hydrology Fluid Dynamic (HFD) Seminar **January 2022 – Present**

Lead Organizer/Student Founder

* Facilitating a biweekly space for students and postdocs in the HFD program to practice research talks

Engineers Without Borders (EWB) UC Berkeley Chapter **Fall 2015 – Spring 2019**

Chapter Education Director (November 2017 – November 2018)
Chapter Vice President (May 2017 – January 2018)
Project Manager (May 2016 – May 2017)

* Managed a 1500-person water project for a developing community including basic research, finances, design, planning, construction scheduling, and coordination between 30+ project members and professional contacts
* Traveled to Panama to collect geospatial data, conduct water quality testing and lead water demand analysis
* Successfully authored numerous grant applications to receive funding for the Panama Project

UC Berkeley New Student Orientation **January 2016 – March 2019**

* Organized events and trained orientation leaders including intensive diversity and mentorship training

Publications, Talks, Posters and Presentations

Waterman, T., Bragg, A., Katul, G., Chaney, N. (2022) "Examining Parameterizations of Potential Temperature Variance Across Varied Landscapes for use in Earth System Models" Journal of Geophysical Research: Atmospheres, 127, https://doi.org/10.1029/2021JD036236

"Capturing the Effects of Surface Flux Heterogeneity on the Lower Sub-grid Atmosphere in Earth System Models with a Multi-Column Approach" American Geophysical Union Fall Meeting, Poster, In person, 2021

"A Multi-Column Approach to Resolving Heterogeneity Induced Secondary Circulations" Coupling of Land and Atmospheric Sub-grid Parameterizations (CLASP) Fall Project Meeting, Talk, Via Zoom, 2021

"Evaluating and Improving Parameterizations of the Variance of Temperature Fluctuations Over Heterogeneous Landscapes for Surface Boundary Conditions in Atmospheric Models", European Geophysical Union General Assembly, Talk, Remote via Zoom, 2021

"Parameterizing the Variance of Temperature Fluctuations Over Heterogeneous Landscapes for Surface Boundary Conditions in Atmospheric Models", American Geophysical Union Fall Meeting, Talk, Remote Via Zoom, 2020

"Improving Higher Order Surface Turbulence Statistics for CLUBB", Coupling of Land and Atmospheric Sub-grid Parameterizations (CLASP) Fall Project Meeting, Remote Via Zoom, 2020

Skills and Certifications

Proficiency with Python, MATLAB, Java, R, C#, C, ArcGIS
Certificate in College Teaching (in progress)

Honors, Awards, Scholarships and Memberships

NSF Graduate Research Fellowship Program – Honorable Mention (2020)
Member UC Berkeley Chi Epsilon Civil Engineering Honors Society (2016 – 2019)
Member Society of Duke Fellows (2019 – present)
Pratt Gardner Fellowship Recipient (2019)
Slottman award winner for excellence in new student orientation (2018)