Alyssa M. Stansfield

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Education

Stony Brook University, Stony Brook, NY 2017-2022
Ph.D. in Atmospheric Science, Advisor: Dr. Kevin Reed
Dissertation Title: An Exploration of Tropical Cyclone Precipitation under Climate Change Forcings
Science Training & Research to Inform Decisions (STRIDE) Graduate Certificate 2019-2021

Rutgers University, New Brunswick, NJ 2013-2017
B.S. in Meteorology and Marine Science (double major), *Summa Cum Laude*

Research Experience

NSF AGS Postdoctoral Research Fellow 2022-Present
Colorado State University
Mentor: Dr. Kristen Rasmussen
Project title: *Examining the Response of Tropical Cyclone Precipitation Structure to Climate Change Using Idealized and Realistic Models*

Graduate Research Assistant 2017-2022
Climate Extremes Modeling Group, Stony Brook University
Advisor: Dr. Kevin Reed
Committee Members: Drs. Hyemi Kim, Edmund Chang, Kenneth Kunkel, and Michael Wehner
Used both global climate model simulations and observations to understand how climate change is impacting tropical cyclones, with a focus on their precipitation.

Undergraduate Research Intern Summer 2016
NOAA Geophysical Fluid Dynamics Laboratory
Mentor: Dr. Xiaosong Yang
Utilized output from GFDL's FLOR model to examine the impact of ENSO on winter extreme precipitation and temperatures over North America. Presented results to the GFDL community.

Aresty Undergraduate Research Assistant 2014-2017
Rutgers University
Mentor: Dr. Benjamin Lintner
Compared vertical profiles of atmospheric humidity in the Amazon rainforest from CMIP5 model output to observational data from the GoAmazon field campaign.

Honors and Awards

NSF AGS Postdoctoral Research Fellowship Award ($190,000) 2022
AMS Tropical Conference Outstanding Oral Presentation Award 2022
Nuria Protopopescu Memorial Teaching Award 2022
Given annually to a SoMAS graduate student based on demonstrated excellence in teaching, innovation and creativity in instructional plans and materials, and engagement with and dedication to their students.
SBU Alumni Association's Dean's Choice Award for Leadership ($1,000) 2022

Finalist, SBU Three-Minute Thesis Competition 2022
AGU Precipitation Technical Committee Student Presentation Award ($200) 2021
Stony Brook University STRIDE Fellowship ($68,000) 2019-2021
Maze-Landeau Graduate Student Fund for Excellence Travel Award ($1,000) 2020
Jerry R. Schubel Graduate Fellowship Award ($3,000) 2019
Awarded to School of Marine and Atmospheric Sciences graduate students committed to translating science into forms that are accessible to the public and/or inform public policy.
Workshop on Risk Analysis for Extremes in the Earth System Travel Grant ($1,000) 2019
Columbia University Correlated Extremes Workshop Travel Grant 2019
Wu Xiangding Memorial Award for Academic Achievement 2018
Awarded to a SBU Atmospheric Science Ph.D. student for academic achievements, with particular emphasis on his/her performance in the Ph.D. qualifying exam.
Stony Brook University Graduate Council Fellowship ($50,000) 2017-2022
Awarded to exceptionally qualified incoming SBU doctoral students.
Rutgers University Matthew Leydt Society 2017
The top 2% of all 2017 RU graduates were inducted.
Rutgers University Meteorology Student of the Year 2017
Rutgers University Academic Achievement Award 2014
Rutgers University Presidential Scholarship 2013-2017
School of Environmental and Biological Sciences Honors Program 2013-2017

Refereed Publications

*Underlined names denote undergraduate students

Jones, A. D., D. Rastogi, P. Vahmani, **A. M. Stansfield**, K. A. Reed, T. Thurber, P. A. Ullrich, & J. Rice: Continental United States Climate Projections based on Thermodynamic Modification of Historical Weather. Submitted to *Scientific Data*.

Reed, K. A., **A. M. Stansfield**, W.-C. Hsu, G. J. Kooperman, A. A. Akinsanola, W. M. Hannah, A. G. Pendergrass, and B. Medeiros: Evaluating the simulation of CONUS precipitation by storm type in next-generation configurations of E3SM. Submitted to *Geophysical Research Letters*.

Stansfield, A. M. and K. A. Reed: Global Tropical Cyclone Precipitation Scaling with Sea Surface Temperature. Under Review at *npj Climate and Atmospheric Science*.

Reed, A. T., **A. M. Stansfield,** and K. A. Reed (2022): Characterizing Long Island's Extreme Precipitation and its Relationship to Tropical Cyclones. *Atmosphere*, 13(7), doi:10.3390/atmos13071070

Stansfield, A. M. and K. A. Reed (2021): Tropical Cyclone Precipitation Response to Surface Warming in Aquaplanet Simulations with Uniform Thermal Forcing. *JGR: Atmospheres,* 126, e2021JD035197, doi:10.1029/2021JD035197

Reed, K.A., M. F. Wehner, **A. M. Stansfield** and C. M. Zarzycki (2021): Anthropogenic Influence on Hurricane Dorian's Extreme Rainfall. [in "Explaining Extreme Events of 2019 from a Climate Perspective"]. *Bull. Amer. Meteor. Soc.*, 102(1), S9-S16, doi:10.1175/BAMS-D-20-0160.1

Ullrich, P.A., C.M. Zarzycki, E.E. McClenny, M.C. Pinheiro, **A.M. Stansfield** and K.A. Reed (2021): TempestExtremes v2.0: A Community Framework for Feature Detection, Tracking and Analysis in Large Datasets. *Geophys. Model Dev.*, **14**(8), 5023-5048. doi:10.5194/gmd-14-5023-2021

Stansfield, A. M., K. A. Reed, and C. M. Zarzycki (2020): Changes in Precipitation from North Atlantic Tropical Cyclones under RCP Scenarios in the Variable-Resolution Community Atmosphere Model. *Geophysical Research Letters*, 47. doi: 10.1029/2019GL086930

Stansfield, A. M., K. A. Reed, C. M. Zarzycki, P. A. Ullrich, and D. R. Chavas (2020): Assessing Tropical Cyclones' Contribution to Precipitation over the Eastern United States and Sensitivity to the Variable-Resolution Domain Extent. *Journal of Hydrometeorology*, 21, 1425-1445. doi: 10.1175/JHM-D-19-0240.1

Reed, K. A., **A. M. Stansfield**, M. F. Wehner, and C. M. Zarzycki (2020): Forecasted attribution of the human influence on Hurricane Florence. *Science Advances*, 6 (1). doi:10.1126/sciadv.aaw9253

Lintner, B. R., D. K. Adams, K. A. Schiro, **A. M. Stansfield**, A. A. Amorim Rocha, and J. D. Neelin (2017): Relationships among climatological vertical moisture structure, column water vapor, and precipitation over the central Amazon in observations and CMIP5 models. *Geophys. Res. Lett.*, 44, 1981–1989. doi:10.1002/2016GL071923

Other Publications and Reports

U.S. Department of Energy Office of Science. (2021). FY 2021 Second Quarter Performance Metric: Improve and Validate Earth System Model Simulations of Precipitation Related to Landfalling Hurricanes in the CONUS (Report No. DOE/SC-CM-21-002). https://climatemodeling.science.energy.gov/system/files/attachments/FY2021_2nd_Quarter_Metrics.pdf

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Presentations

Invited: Stansfield, A. M. How and Why Does Tropical Cyclone Precipitation Respond to Climate Change? Presentation for the NCAR Climate & Global Dynamics Lab Weekly Seminar Series and Atmosphere Model Working Group Meeting. Jan. 31, 2023.

Stansfield, A. M. and K. A. Reed. Exploring the Relationship between Tropical Cyclone Precipitation and Sea Surface Temperature on Different Time Scales. Oral presentation at the 2022 AGU Fall Meeting. Dec. 12, 2022.

Stansfield, A. M. How and Why Does Tropical Cyclone Precipitation Respond to Climate Change? Presentation for the Special Seminar Series at CIRA. Dec. 8, 2022.

Invited: Stansfield, A. M. and K. A. Reed. Understanding the Relationship between Tropical Cyclone Precipitation and Sea Surface Temperature. Virtual presentation for the AGU ECSPrecip Seminar Series. June 30, 2022.

Stansfield, A. M. and K. A. Reed. Understanding the Relationship between Tropical Cyclone Precipitation and SST Utilizing a CAM Hierarchical Framework. Virtual oral presentation at the 27th Annual CESM Workshop. June 14, 2022.

Stansfield, A. M. and K. A. Reed. Projecting Future Tropical Cyclone Precipitation Increases using a Hierarchical Modeling Framework. Oral presentation at the 2022 EGU Annual Meeting. May 25, 2022.

Stansfield, A. M. and K. A. Reed. Projecting the Response of Tropical Cyclone Precipitation to Climate Change using a Hierarchical Modeling Framework. Oral presentation at the 35th Conference on Hurricanes and Tropical Meteorology. May 9, 2022.

Stansfield, A. M. and K. A. Reed. Thermodynamic and Dynamic Contributions to Tropical Cyclone Precipitation Increases in Observations and Models. Oral presentation at the 2021 AGU Fall Meeting. Dec. 14, 2021.

Invited: Stansfield, A. M. Investigating the Impact of Climate Change on Tropical Cyclone Precipitation Using Earth-like Model Ensembles, Idealized Modeling, and Observations. Presentation for the Ocean & Climate Physics Seminar Series at Columbia/Lamont-Doherty Earth Observatory. Oct. 15, 2021.

Stansfield, A. M. and K. A. Reed. What can simplified CAM simulations reveal about the response of tropical cyclone rainfall to climate change?. Virtual oral presentation at the 26th Annual CESM Workshop. June 16, 2021.

Stansfield, A. M., K. A. Reed, and C. M. Zarzycki. Projected Changes in North Atlantic Tropical Cyclone Characteristics under Future RCP Scenarios using Climate Model Ensembles. Virtual oral presentation at the 34th Conference on Hurricanes and Tropical Meteorology. May 12, 2021.

Stansfield, A. M. and K. A. Reed. Investigating Changes in Tropical Cyclone Rainfall in Aquaplanet Simulations Under Idealized Warming. Virtual oral presentation at the 2020 AGU Fall Meeting. Dec. 14, 2020.

Stansfield, A. M., K. A. Reed, C. M. Zarzycki, P. A. Ullrich, and D. R. Chavas. Tropical Cyclones in Variable-Resolution CAM: Impacts of High-Resolution Grid Extent and Climate Change Forcing. Virtual oral presentation at the 2020 CESM Workshop. June 16, 2020.

Stansfield, A. M., K. A. Reed, C. M. Zarzycki, P. A. Ullrich, and D. R. Chavas. An Exploration of Extreme Precipitation from Tropical Cyclones over the Eastern United States in Variable-Resolution CAM. Poster presentation at the 2019 American Geophysical Union Fall Meeting in San Francisco, CA. Dec. 12, 2019.

Stansfield, A. M., K. A. Reed, C. M. Zarycki, and P. A. Ullrich. Tropical Cyclone Contribution to Extreme Precipitation over the Eastern United States. Poster presentation at the 9th Northeast Tropical Workshop in Dedham, MA. June 3, 2019.

Stansfield, A. M., K. A. Reed, C. M. Zarzycki, and M. F. Wehner. Diagnosing Potential Climate Change Impacts on Recent Major Hurricanes in Variable-Resolution CAM. Oral presentation at the 99th Annual American Meteorological Society Conference in Phoenix, AZ. Jan. 9, 2019.

Stansfield, A. M., K. A. Reed, C. M. Zarzycki, and M. F. Wehner. Verifying hindcast simulations of recent major hurricanes in variable-resolution CAM. Poster at the 33rd Conference on Hurricanes and Tropical Meteorology in Ponte Vedra, FL. April 17, 2018.

Stansfield, A. M. and B. R. Lintner. Comparison of Observed and Model-simulated Atmospheric Moisture Vertical Profiles in the Amazon Rainforest. Poster at the 16th Annual AMS Student Conference in Seattle, WA. January 2017.

Service and Outreach

Mentor, Geosciences Education & Mentorship Support — Sept. 2022-Present
Mentoring one undergraduate meteorology student who is applying to grad school for Fall 2023.

Session Convener and Chair — Dec. 2021-Present
Sessions: *Atmospheric Sciences OSPA Highlights I eLightning* at the 2021 AGU Fall Meeting, *Advancing Understanding of the Hydrological Cycle and its Extremes Through Objective Tracking of Weather Phenomena* at the 2022 AGU Fall Meeting, *Successful Proposal Writing for Early-Career Scientists in Atmospheric Sciences* Town Hall at the 2022 AGU Fall Meeting

Journal Reviewer — Oct. 2021-Present
Geophysical Research Letters, Nature Communications, Journal of Geophysical Research: Atmospheres, Quarterly Journal of the Royal Meteorological Society, Journal of Hydrometeorology, Journal of Applied Meteorology and Climatology

Creator/Instructor, "How to Apply to Grad School" Unofficial Course — Sept. 2021-Oct.2021
School of Marine and Atmospheric Sciences, Stony Brook University

Created and taught a 5-week unofficial course entitled "How to Apply to Graduate School" for undergraduate students in my department. Topics included choosing schools to apply to, contacting potential advisors, personal statements, letters of recommendation, external funding, and more.

Graduate Student Representative, Strategic Planning Committee March 2021-Aug. 2022
School of Marine and Atmospheric Sciences, Stony Brook University

Member, AGU Atmospheric Science Section Early Career Committee Jan. 2021-Present
American Geophysical Union
Founding member of the Professional Development Subcommittee. Attend monthly meetings, and plan bi-monthly PD webinars and AGU Fall Meeting sessions and town hall meetings.

Event coordinator/moderator, Virtual Incoming Student Welcome Events Summer 2020-21
School of Marine and Atmospheric Sciences, Stony Brook University
Since COVID-19 has prevented incoming graduate students from meeting current students over the summer, other grad students and I have been running virtual welcome events for incoming students, including meet-and-greets, Q&A sessions, and game nights.

Contributing Writer, GeoBites June 2020-2021
GeoBites is a grassroots scientific communication effort, supported by the American Geophysical Union, where early career scientists write short summaries of recent developments in their fields to "bring cutting-edge science to the broadest possible audience."

Guest Scientist, BioBus Live Student Town Hall on Climate Science June 4, 2020
Virtual Presentation on Zoom/Youtube Live
Answered students' questions about climate science and climate change. Questions were sent in beforehand as well as asked live during the Youtube broadcast.

Public Outreach, Meet with an Oceanographer Program Feb. 8, 2020
Long Island Aquarium, Riverhead, NY
Ran a table with other members of my research group to interest and educate children and their families about "Extreme Weather and Climate"

Invited Outreach Presentation, GRADTALKS Seminar Series Oct. 7, 2019
Physics Graduate Student Association, Stony Brook University
Presentation Title: "Hurricanes and Climate Change: Current Knowledge and Attribution Techniques"

Board Member, Graduate Student Club 2018-2022
School of Marine and Atmospheric Sciences, Stony Brook University
Help plan, organize, and run annual events for the SoMAS community. Invite and host annual student-chosen Okubo Scholar in Spring semesters.

Graduate Mentor, Women in Science and Engineering Program 2017-2021
Stony Brook University
Advise and mentor undergraduate female SBU students in STEM majors.

Teaching Experience

Guest Lecturer — Fall 2022
Colorado State University
Course: Synoptic Meteorology (ATS 640)

Instructor of Record — Spring 2022
Stony Brook University
Course: Prospects for Planet Earth (ENS 101)

Research Mentor — 2019-2022
Stony Brook University
Students: Annika Huprikar, Justin Willson, Austin Reed, Justin Bettenhauser
Helped mentor undergraduate students who work on research projects with my advisor Kevin Reed. Mainly aid them with learning to code in Python. A. Reed published a manuscript on his work in 2022.

Guest Lecturer — 2018-2020
Stony Brook University
Courses: Extreme Weather (ATM 103), Global Atmospheric Change (ATM 305)
Gave guest lectures on a variety of topics including natural climate variability, forces in the atmosphere, temperature variability, and droughts.

Teaching Assistant — 2017-2018
Stony Brook University
Courses: Extreme Weather (ATM 103), Weather and Climate (ATM 102)
Held weekly office hours, created questions for and graded homework and exams, proctored exams.

Technical Skills

Programming Languages: Python, Matlab, NCL, LaTex, JavaScript, D3.js
Other: Github, Microsoft Word, Powerpoint, and Excel

Workshops and Training

ADVANCEGeo Implicit Bias and Active Bystander Training Workshop 2021
Women in Science and Engineering Leadership Workshop Series, SBU 2021
GRD 510 - Career Planning for Graduate Students 2020
JRN 501 - Communicating Science: Distilling Your Message 2019
In this course, students learn to speak clearly and vividly about their work and why it matters, in terms that non-scientists can understand. Includes a video interview with a journalist.
JRN 503 - Communicating Science: Improvisation for Scientists 2019
This innovative course uses improvisational theatre techniques to help students communicate more directly and responsively, with particular focus on connecting with different audiences.
Workshop on Risk Analysis for Extremes in the Earth System, LBNL 2019
Research Intern, Geophysical Fluid Dynamics Laboratory 2016

Undergraduate Leadership Workshop, National Center for Atmospheric Research 2016

Professional Affiliations

2022-Present	European Geophysical Union
2018-Present	American Geophysical Union
2015-Present	American Meteorological Society
2015	Open Water Scuba Certification, Prof. Assoc. of Diving Instructors