

# Alyssa M. Stansfield

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## Education

- 2022 Ph.D. in Atmospheric Science, Stony Brook University  
*Doctoral Advisor: Dr. Kevin Reed*  
*Dissertation Title: An Exploration of Tropical Cyclone Precipitation under Climate Change Forcings*
- 2021 Science Training & Research to Inform Decisions Graduate Certificate
- 2017 B.S. in Meteorology and Marine Science (*Summa Cum Laude*), Rutgers University

## Professional Appointments

- 2024-Present Tenure-track Assistant Professor, University of Utah  
Department of Atmospheric Sciences
- 2024-Present Wilkes Climate Science and Policy Center Fellow, University of Utah
- 2022-2024 NSF AGS Postdoctoral Research Fellow, Colorado State University  
Mentor: Dr. Kristen Rasmussen, Department of Atmospheric Science  
Project Title: Examining the Response of Tropical Cyclone Precipitation Structure to Climate Change Using Idealized and Realistic Models
- 2017-2022 Graduate Research Assistant, Stony Brook University  
Advisor: Dr. Kevin Reed, School of Marine and Atmospheric Sciences  
Committee Members: Drs. Hyemi Kim, Edmund Chang, Kenneth Kunkel, and Michael Wehner
- 2016 Research Intern, NOAA Geophysical Fluid Dynamics Laboratory  
Mentor: Dr. Xiaosong Yang
- 2014-2017 Undergraduate Research Assistant, Rutgers University  
Advisor: Dr. Benjamin Lintner, School of Environmental and Biological Sciences

## Research Interests

*Climate modeling, extreme weather, climate change and variability, machine learning, compound extremes, tropical meteorology, climate change impacts and adaptation, model assessment, climate science communication*

## Peer-Reviewed Publications

\*Underlined names denote undergraduate students that I have helped mentor.

15. **Stansfield, A. M.** and K. L. Rasmussen. The Response of Tropical Cyclone Inner Core and Outer Rainband Precipitation to Warming in Idealized Convection-Permitting WRF. Submitted to *JGR: Atmospheres*
14. Thonis, A., **A. M. Stansfield**, and H. Akcakaya (2024). Unraveling the role of tropical cyclones in shaping present species distributions. *Global Change Biology*, 30, e17232. doi: [10.1111/gcb.17232](https://doi.org/10.1111/gcb.17232)
13. Silvers, L. G., **A. M. Stansfield**, and K. A. Reed (2024): The impact of rotation on tropical climate, the hydrologic cycle, and climate sensitivity. *Geophysical Research Letters*, 51, e2023GL105850. doi: [10.1029/2023GL105850](https://doi.org/10.1029/2023GL105850)

12. **Huprikar, A., A. M. Stansfield,** and K. A. Reed (2024): A Storyline Analysis of Hurricane Irma's Precipitation Under Various Levels of Climate Warming. *Environmental Research Letters*, 19, 014004, doi:[10.1088/1748-9326/ad0c89](https://doi.org/10.1088/1748-9326/ad0c89)
11. Jones, A. D., D. Rastogi, P. Vahmani, **A. M. Stansfield,** K. A. Reed, T. Thurber, P. A. Ullrich, & J. Rice (2023): Continental United States Climate Projections based on Thermodynamic Modification of Historical Weather. *Sci Data*, 10, 664, doi:[10.1038/s41597-023-02485-5](https://doi.org/10.1038/s41597-023-02485-5)
10. Reed, K. A., **A. M. Stansfield,** W.-C. Hsu, G. J. Kooperman, A. A. Akinsanola, W. M. Hannah, A. G. Pendergrass, and B. Medeiros (2023): Evaluating the simulation of CONUS precipitation by storm type in next-generation configurations of E3SM. *Geophysical Research Letters*, 50, e2022GL102409, doi:[10.1029/2022GL102409](https://doi.org/10.1029/2022GL102409)
9. **Stansfield, A. M.** and K. A. Reed (2023): Global Tropical Cyclone Precipitation Scaling with Sea Surface Temperature. *npj Climate and Atmospheric Science*, 6(60), doi:[10.1038/s41612-023-00391-6](https://doi.org/10.1038/s41612-023-00391-6)
8. **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](https://doi.org/10.3390/atmos13071070)
7. **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](https://doi.org/10.1029/2021JD035197)
6. 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](https://doi.org/10.1175/BAMS-D-20-0160.1)
5. 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](https://doi.org/10.5194/gmd-14-5023-2021)
4. **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](https://doi.org/10.1029/2019GL086930)
3. **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](https://doi.org/10.1175/JHM-D-19-0240.1)
2. 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](https://doi.org/10.1126/sciadv.aaw9253)

1. 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](https://doi.org/10.1002/2016GL071923)

## Published Datasets

1. Stansfield, A., & Reed, K. (2021). CAM Global RCE simulations TC track, radial profiles, and filtered precipitation files [Data set]. Zenodo. <https://doi.org/10.5061/dryad.x3ffbg7jv>

## Other Publications and Reports

U.S. Department of the Interior Bureau of Ocean Energy Management (2023). Effects of Greenhouse Gas Emissions and Climate Change on U.S. Coastal and Marine Environments: A High-level Harm Summary (Report No.: OCS Study BOEM 2023-009 and ANL-22/87. )

[https://espis.boem.gov/final%20reports/BOEM\\_2023-009.pdf](https://espis.boem.gov/final%20reports/BOEM_2023-009.pdf)

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](https://climatemodeling.science.energy.gov/system/files/attachments/FY2021_2nd_Quarter_Metrics.pdf)

## Grants and Fellowships

4. NOAA Climate Program Office Modeling, Analysis, Predictions, and Projections

\*Stansfield was a major contributor to the conception, design, and writing of the proposal but was unable to be a co-PI due to university restrictions.

Title: *Storm Mode Classification as a Process-Oriented Tool to Diagnose Precipitation Biases in Climate Models*

Role: Project Participant, PI: Dr. Kristen Rasmussen (CSU)

Period: Sept. 2024-Aug. 2027

3. NSF Atmospheric and Geospace Sciences Postdoctoral Research Fellowship (Award #2204138)

Title: *Examining the Response of Tropical Cyclone Precipitation Structure to Climate Change Using Idealized and Realistic Models*

Role: PI, Mentor: Dr. Kristen Rasmussen (CSU)

Obligated amount: \$190,000

Period: Sept. 2022 - Aug. 2024

2. Stony Brook University Science Training & Research to Inform Decisions (STRIDE) Fellowship

Obligated amount: \$68,000

Period: Aug. 2019 - Aug. 2021

1. Stony Brook University Graduate Council Fellowship

Obligated amount: \$50,000

Period: Aug. 2017 - May 2022

## Teaching and Mentoring Experience

2023-2024	Mentor, PROMoting Geoscience, Research, Education, and SuccesS (PROGRESS)
2023-2024	Mentor, CIRA-ATS Mentoring Program (CAMP), Colorado State University
2022-Present	Mentor, <u>Geosciences Education &amp; Mentorship Support</u>
2022-2024	Guest Lecturer, Colorado State University Department of Atmospheric Science Courses: Synoptic Meteorology (ATS 640), Tropical Meteorology (ATS 742)
Spring 2022	Head Instructor, Stony Brook University Course: Prospects for Planet Earth (ENS 101)
2019-2024	Research Mentor, Stony Brook University Students: Annika Huprikar, Justin Willson, Austin Reed, Justin Bettenhauser
2018-2020	Guest Lecturer, Stony Brook University Courses: Extreme Weather (ATM 103), Global Atmospheric Change (ATM 305)
Fall 2021	Course Developer and Instructor, Stony Brook University Course: "How to Apply to Grad School" Unofficial Seminar Course
2017-2021	Women in Science and Engineering Program Mentor, Stony Brook University
2017-2018	Teaching Assistant, Stony Brook University Courses: Extreme Weather (ATM 103), Weather and Climate (ATM 102)

## Honors and Awards

2023-2024	Colorado State University SoGES Sustainability Leadership Fellow
2022	American Meteorological Society Hurricanes & Tropical Meteorology Conference Outstanding Oral Presentation Award
2022	Stony Brook University Nuria Protopopescu Memorial Teaching Award (\$1,000)
2022	Stony Brook University Alumni Association's Dean's Choice Award for Leadership (\$1,000)
2022	Finalist in the Stony Brook University Three-Minute Thesis Competition
2021	American Geophysical Union Precipitation Technical Committee Student Presentation Award
2020	Stony Brook University Maze-Landau Graduate Student Fund for Excellence Travel Award
2019	Stony Brook University Jerry R. Schubel Graduate Fellowship Award (\$3,000)
2019	Workshop on Risk Analysis for Extremes in the Earth System Travel Grant
2019	Columbia University Correlated Extremes Workshop Travel Grant (\$1,000)
2018	Stony Brook University Wu Xiangding Memorial Award for Academic Achievement
2017	Rutgers University Matthew Leydt Society
2017	Rutgers University Meteorology Student of the Year
2014	Rutgers University Academic Achievement Award
2013-2017	Rutgers University Presidential Scholarship
2013-2017	Rutgers University School of Environmental and Biological Sciences Honors Program

## Invited Presentations

2023	Departmental Seminar, Department of Earth, Geographic, and Climate Sciences, University of Massachusetts Amherst
2023	Departmental Seminar, Department of Atmospheric and Oceanic Science, University of Maryland (virtual)
2023	Meteorology Seminar Series, Department of Earth, Ocean, & Atmospheric Science, Florida State University (virtual)
2023	Climate & Global Dynamics (CGD) Lab Weekly Seminar Series, NCAR

- 2022 Special Seminar Series, Cooperative Institute for Research in the Atmosphere (CIRA)
- 2022 AGU ECSPrecip Seminar Series (virtual)
- 2021 Ocean & Climate Physics Seminar Series, Lamont-Doherty Earth Observatory
- 2019 GRADTALKS Physics Grad Student Association Seminar Series, Stony Brook University

## Conference Presentations

### *Talks*

- 2024 TROPICANA Workshop, “Temporal Trends in Tropical Cyclone Inner Core and Outer Rainband Precipitation with Climate Change”, Paris, France
- 2024 36th Conference on Hurricanes and Tropical Meteorology, “High-Resolution Simulations of the Changes in Tropical Cyclone Inner Core and Outer Rainband Precipitation with Idealized Warming”, Long Beach, California
- 2024 EGU General Assembly, “Investigating Changes in Tropical Cyclone Inner Core and Outer Rainband Precipitation in Models under Warming Scenarios”, Vienna, Austria
- 2022 AGU Fall Meeting, “Exploring the Relationship between Tropical Cyclone Precipitation and Sea Surface Temperature on Different Time Scales”, Chicago, Illinois
- 2022 27th Annual CESM Workshop, “Understanding the Relationship between Tropical Cyclone Precipitation and SST Utilizing a CAM Hierarchical Framework” (virtual)
- 2022 EGU General Assembly, “Projecting Future Tropical Cyclone Precipitation Increases using a Hierarchical Modeling Framework”, Vienna, Austria
- 2022 35th Conference on Hurricanes and Tropical Meteorology, “Projecting the Response of Tropical Cyclone Precipitation to Climate Change using a Hierarchical Modeling Framework”, New Orleans, Louisiana
- 2021 AGU Fall Meeting, “Thermodynamic and Dynamic Contributions to Tropical Cyclone Precipitation Increases in Observations and Models”, New Orleans, Louisiana
- 2021 26th Annual CESM Workshop, “What can simplified CAM simulations reveal about the response of tropical cyclone rainfall to climate change?” (virtual)
- 2021 34th Conference on Hurricanes and Tropical Meteorology, “Projected Changes in North Atlantic Tropical Cyclone Characteristics under Future RCP Scenarios using Climate Model Ensembles” (virtual)
- 2020 AGU Fall Meeting, “Investigating Changes in Tropical Cyclone Rainfall in Aquaplanet Simulations Under Idealized Warming” (virtual)
- 2020 25th Annual CESM Workshop, “Tropical Cyclones in Variable-Resolution CAM: Impacts of High-Resolution Grid Extent and Climate Change Forcing” (virtual)
- 2019 AMS Annual Meeting, “Diagnosing Potential Climate Change Impacts on Recent Major Hurricanes in Variable-Resolution CAM”, Phoenix, Arizona

### *Posters*

- 2024 36th Conference on Hurricanes and Tropical Meteorology, “Using a Convolutional Neural Network to Disentangle Environmental Differences between Developing and Non-Developing African Easterly Waves”, Long Beach, California

- 2023 AGU Annual Meeting, “Tropical Cyclone Precipitation Structure Response to Warming in High-Resolution Idealized WRF”, San Francisco, California
- 2023 ICMCS-XV, “Tropical Cyclone Precipitation Structure Response to Sea Surface Temperature Warming in Idealized WRF”, Fort Collins, Colorado
- 2019 AGU Fall Meeting, “An Exploration of Extreme Precipitation from Tropical Cyclones over the Eastern United States in Variable-Resolution CAM”, San Francisco, California
- 2019 9<sup>th</sup> Northeast Tropical Workshop, “Tropical Cyclone Contribution to Extreme Precipitation over the Eastern United States”, Dedham, Massachusetts
- 2018 33<sup>rd</sup> Conference on Hurricanes and Tropical Meteorology, “Verifying hindcast simulations of recent major hurricanes in variable-resolution CAM”, Ponte Vedra, Florida
- 2017 16<sup>th</sup> Annual AMS Student Conference, “Comparison of Observed and Model-simulated Atmospheric Moisture Vertical Profiles in the Amazon Rainforest”, Seattle, Washington

## Professional Service

- 2024-Present U of Utah UCAR Member Representative
- 2024-Present U of Utah Department of Atmospheric Sciences Grad Student Affairs Committee
- 2024 AGU Atmospheric Science Section Executive Board Early Career Representative
- 2023-2024 AMS 36th Conference on Hurricanes and Tropical Meteorology Student Awards Committee Co-Chair

### Conference session co-convening and chairing:

- 2024 AGU Annual Meeting (*Bridging the Gap Between Climate and Extreme Events, A Discussion with Program Managers for Early-Career Scientists Town Hall, AS Holten and Ascent Award Winners Session*)
- 2024 AMS 36th Conference on Hurricanes and Tropical Meteorology (*Climate Variability and Change in the Tropics*)
- 2024 EGU General Assembly (*Tropical Meteorology and Tropical Cyclones*)
- 2023 AGU Fall Meeting (*Bridging the Gap Between Climate and Extreme Events, A Discussion with Program Managers for Early-Career Scientists Town Hall*)
- 2023 Natural Hazards Researchers Meeting
- 2023 EGU General Assembly (*Tropical Meteorology and Tropical Cyclones*)
- 2022 AGU Fall Meeting (*Advancing Understanding of the Hydrological Cycle and its Extremes Through Objective Tracking of Weather Phenomena, Successful Proposal Writing for Early-Career Scientists in Atmospheric Sciences Town Hall*)
- 2021 AGU Fall Meeting (*Atmospheric Sciences OSPA Highlights I eLightning*)

Journal Reviewer: *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, Journal of Advances in Modeling Earth Systems, Journal of Climate, Science Advances, Bulletin of the American Meteorological Society, npj Climate and Atmospheric Science, Climate Services, Earth's Future, Scientific Reports*

- 2021-Present AGU Atmospheric Science Section Early Career Committee
  - 2021-2023: Chair of Professional Development Subcommittee
  - 2024: Full Committee Chair

- 2023            Presenter and Panelist, Professional Development Events for Grad Students on Networking and Postdoc Positions  
Department of Atmospheric Science, Colorado State University
- 2021-2022      Graduate Student Representative, Strategic Planning Committee  
School of Marine and Atmospheric Sciences, Stony Brook University
- 2018-2022      Board Member, Graduate Student Club  
School of Marine and Atmospheric Sciences, Stony Brook University

## Science Communication Outreach

- 2023            Guest Writer, CSU School of Global Environmental Sustainability Human Nature Blog
- 2023-2024      Writer and Mentor, Letters to a Pre-Scientist Program
- 2020-2021      Contributing Writer, American Geophysical Union GeoBites
- 2020            Guest Scientist, BioBus Live Student Town Hall on Climate Science (virtual)
- 2020            Meet with an Oceanographer Program at the Long Island Aquarium, Riverhead, NY

## Media Coverage

- Pulver, D. V. (2022, Oct. 13). Is climate change fueling massive hurricanes in the Atlantic? Here's what science says. *USA TODAY*.
- Dunaief, D. (2020, June 28). Stony Brook University storm model predicts wetter, less frequent hurricanes. *TBR News Media*.
- Snider, L. (2018, Sept. 18). Attributing the Impact of Climate Change on Florence in Near Real Time. *NCAR & UCAR News*.
- Ludescher, S. (2016, Dec. 8). Alyssa Stansfield (SEBS '17): Exemplifying Leadership In Meteorology. *Rutgers Newsroom*.

## Workshops and Training

- 2024            University of Utah Snowbird Faculty Retreat
- 2024-2025      University of Utah S.T.A.R. Program Participant
- 2024-2025      University of Utah NSF Cohort Program Participant
- 2024            University of Utah's Center for Teaching Excellence Annual Teaching Symposium
- 2024            Tropical Cyclones in Anthropocene: Physics, Simulations, & Attribution (TROPICANA) Workshop, Paris, France
- 2023            Alan Alda Center 2-day Science Communication Workshop, Colorado State University
- 2023            Best Practices in Teaching at Colorado State University: Critical Thinking
- 2023            Best Practices in Teaching at Colorado State University: First Four Weeks
- 2021            ADVANCEGeo Implicit Bias and Active Bystander Training Workshop
- 2021            Women in Science and Engineering Leadership Workshop Series, Stony Brook University
- 2020            GRD 510 - Career Planning for Graduate Students, Stony Brook University
- 2019            JRN 501 - Communicating Science: Distilling Your Message, Stony Brook University
- 2019            JRN 503 - Communicating Science: Improvisation for Scientists, Stony Brook University
- 2019            Workshop on Risk Analysis for Extremes in the Earth System, LBNL
- 2016            Undergraduate Leadership Workshop, National Center for Atmospheric Research

## **Field Campaign Experience**

2024 Testing INCUS Methods Experiment — Suborbital preLaunch Investigations of Convective Evolution (TIME-SLICE), Northeast Colorado  
Roles: Forecaster and Radiosonde Team

## **Professional Affiliations**

2022-Present	European Geophysical Union
2018-Present	American Geophysical Union
2015-Present	American Meteorological Society