Divya Rea

Skills Summary

- Proficient in compiling and running the Weather, Research, and Forecasting model
- Experienced with Python for data analysis and visualization
- Familiar with R for statistical analysis
- Experience speaking with live audiences, television, and print media

Current Research

I will start my Ph.D this fall at MIT. I will be working with Dr. Talia Tamarin-Brodsky, and will investigate the influence of land surface on modulating temperature extremes from a Lagrangian point of view.

During my undergrad, I worked with Dr. Robert Rauber on the Seeded and Natural Orographic Wintertime Clouds: the Idaho Experiment (SNOWIE). My research focused on the impact of atmospheric rivers (AR) on orographic clouds in the western United States, specifically in Idaho. I ran the Weather, Research and Forecasting model with water vapor tracers to isolate and track water vapor being advected by atmospheric rivers. A case study of two winter storms that took place during SNOWIE indicates a significant contribution of Pacific subtropical moisture to precipitation during the AR passage, as well as a significant contribution of subtropical moisture within ARs to clouds at high altitudes during and post-AR passage. This paper is in JGR-Atmospheres. I also modeled the entire 2016-2017 winter season and calculated the water budget to quantify precipitation rate and type over the interior mountains of the US. This paper is in prep.

During the summer of 2022, I interned at the Chemical Sciences Lab at NOAA ESRL as a NOAA Hollings Scholar. I worked with Dr. Amy Butler and Dr. Dillon Elsbury to investigate the connection between Antarctic sea ice loss and the stratospheric circulation. I performed statistical analyses and wave decompositions on output from a 16-member CAM6 simulation and the Polar Amplification Model Intercomparison Project simulations. We found evidence that anomalously low Antarctic sea ice concentration in May forces an earlier transition of the Southern Hemisphere polar vortex to its summertime state. This connection may have implications for seasonal forecasts of the ozone hole.

Publications

Rea, D., Rauber, R. M., Hu, H., Tessendorf, S. A., Nesbitt, S. W., Jewett, B. F., & Zaremba, T. J. (2023). The contribution of subtropical moisture within an atmospheric river on moisture flux, cloud structure, and precipitation over the Salmon River Mountains of Idaho using moisture tracers. Journal of Geophysical Research: Atmospheres, 128, e2022JD037727. https://doi.org/10.1029/2022JD037727

Research Experience

University of Illinois at Urbana-Champaign Aug 2020 – Aug 2023
Undergraduate Research Assistant

NOAA Chemical Sciences Laboratory June 2022 – Aug 2022
2021 NOAA Hollings Scholar

National Center for Atmospheric Research May 2021 – Aug 2021
Research Applications Lab Summer Student Collaborator

University of Illinois at Urbana-Champaign Aug 2020 – Oct 2020
Undergraduate Teaching Assistant

Formal Presentations

School of Earth, Society, and Environment Research Review — Feb 2023
Oral Presentation and Poster Presentation

4th International Atmospheric River Conference — Oct 2022
Oral Presentation

Midwest Student Conference for Atmospheric Research — Oct 2022
Oral Presentation

Collective Madison Meeting — Aug 2022
16th Conference on Cloud Physics
Poster Presentation

20th Conference on Mountain Meteorology — June 2022
Oral Presentation

School of Earth, Society, and Environment Research Review — Feb 2022
Poster Presentation

102nd American Meteorological Society Annual Meeting — Jan 2022
23rd Conference on Planned and Inadvertent Weather Modification
Oral Presentation

Midwest Student Conference for Atmospheric Research — Sept 2021
Oral Presentation

National Center for Atmospheric Research Summer Poster Symposium — Aug 2021
Poster Presentation

School of Earth, Society, and Environment Research Review — March 2021
Poster Presentation

American Meteorological Society Student Conference 2021 — Jan 2021
Poster Presentation
Outstanding Undergraduate Student Poster

Awards & Scholarships

Bronze Tablet — May 2023
Top 3% of Class of 2023 at UIUC

Outstanding Senior — April 2023
Top Senior, Department of Atmospheric Sciences, UIUC

Member of Phi Beta Kappa — May 2022
Inducted Junior Year

Mankin Mak Scholarship — April 2022
Top Junior; Department of Atmospheric Sciences, UIUC

NOAA Ernest F. Hollings Undergraduate Scholarship — April 2021
Class of 2021

Outstanding Undergraduate Student Poster — Jan 2021
101st AMS Student Conference

Education

Massachusetts Institute of Technology — Beginning: Sept 2023
Ph.D in Atmospheric Science

University of Illinois Urbana-Champaign — May 2023
B.S. in Atmospheric Science; *Minor in Philosophy* — GPA: 3.99/4.00

Previous Work Experience

Kansas City Ballet II Aug 2017 - May 2019
Dancer
Houston Ballet II Aug 2015 – Aug 2017
Dancer