Rajat Joshi

Academic Website: rajatjoshi8.github.io/rajatjoshi

Research Interests

Climate and Weather Modeling, Climate Dynamics, Climate Extremes (Tropical Cyclones, Extreme Precipitation, Heat Waves and Atmospheric River), and Artifical Intelligence for Extreme Weather and Climate.

Education

Ph.D. in Atmospheric and Oceanic Sciences 2021-present (*exp. 2026)*
Program in Atmospheric and Oceanic Sciences
Princeton University, Princeton, NJ, USA

Master of Technology in Climate Science (*Gold Medal and Distinction*) 2019-2021
Center for Atmospheric and Oceanic Sciences
Indian Institute of Science, Bengaluru, India

Bachelor of Technology in Mechanical Engineering (*Distinction*) 2015-2019
College of Technology
G. B. Pant University of Agriculture and Technology, Pantnagar, India

Publications

Peer-Reviewed

1. **Joshi, R.** and Zhang, R. On the Atlantic extratropical-tropical teleconnection in response to external freshwater forcing. *npj Clim Atmos Sci* **8**, 371 (2025). https://doi.org/10.1038/s41612-025-01253-z
2. **Joshi, R.** and Zhang, R. Impacts of the North Atlantic biases on the upper troposphere/lower stratosphere over the extratropical North Pacific. *npj Clim Atmos Sci* **6**, 151 (2023). https://doi.org/10.1038/s41612-023-00482-4

Submitted

1. **Joshi, R.**, Borah, P.J., and Venugopal, V. Interhemispheric footprint on Indian monsoon floods. **submitted**
2. **Joshi, R.** and Zhang, R. Impacts of AMOC weakening on upper troposphere/lower stratosphere warming over the extratropical North Pacific. **submitted**

In prep

1. **Joshi, R.** and Zhang, R. Influence of AMOC weakening on the Atlantic tropical cyclone activity. **in Prep.**

Oral and Poster Presentations

Joshi, R. and Zhang, R. On the Atlantic extratropical-tropical teleconnection in response to external freshwater forcing. *Ocean Sciences Meeting*, (2026)

Joshi, R. and Zhang, R. On the Atlantic extratropical-tropical teleconnection in response to external freshwater forcing. *EGU General Meeting*, (2025) (Link)

Joshi, R. and Zhang, R. On the Atlantic extratropical-tropical teleconnection associated with the AMOC weakening. *AGU Fall Meeting*, (2024) (Link)

Venugopal, V., **Joshi, R.** and Borah P.J. Interhemispherical footprint on Indian monsoon floods. *AOGS*, (2024)

Joshi, R. and Zhang, R. Wintertime atmospheric response over the extratropical North Pacific to the North Atlantic Biases. *Ocean Sciences Meeting*, (2024) [Poster] (Link) and *AGU Fall Meeting*, (2023) [Poster] (Link)

Joshi, R., Borah P.J, and Venugopal, V. Two distinct types of Indian monsoon floods and their subseasonal evolution. *AGU Fall Meeting*, (2021) [Oral Presentation] (Link)

Joshi, R., Borah P.J, and Venugopal, V. Subseasonal characteristics of rainfall during Indian monsoon floods. *International Symposium on Tropical Meteorology*, (2021)

Fellowships and Awards

Assistantship in Research, Princeton University 2022-present

First Year Fellowship in Natural Sciences and Engineering, Princeton University 2021-2022

Nikhil Memorial Gold Medal Award, Indian Institute of Science, Bengaluru 2021

Jeremy Grantham Fellowship, Divecha Center for Climate Change, Bengaluru 2020-2021

Graduate Aptitude Test in Engineering Scholarship, Ministry of Education, Govt. of India 2019-2021

University Merit Scholarship, G. B. Pant University of Agriculture and Technology, Pantnagar 2016

Technical Skills

Programming Languages and Mathematical Packages: Python (Xarray, Dask, PyTorch, Matplotlib, Numpy, Pandas, Scikit-learn, XGBoost, Cartopy), MATLAB, FERRET, and NCL

Other: Linux, Windows OS, Handling large climate data in HPC environments

Outreach and Volunteering

AOS Program Summer Workshop Organising Committee, Princeton University 2024

Mentor, Princeton AOS Graduate Application Mentorship Program 2024

Outreach, Open Day, Indian Institute of Science, India 2020