RAJAT JOSHI

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EDUCATION

Princeton University 2021-present
PhD Candidate in Program in Atmospheric and Oceanic Sciences
Committee Members: **Dr. Rong Zhang** (Advisor), Dr. Leo Donner, Dr. Ming Zhao, and Dr. David Paynter

Indian Institute of Science 2019-2021
Master of Technology in Climate Science (Distinction)

G. B. Pant University of Agriculture and Technology 2015-2019
Bachelor of Technology in Mechanical Engineering (Distinction)

FELLOWSHIP, AWARDS AND GRANTS

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 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 2016-2017

PUBLICATIONS

Joshi, R., 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) (Link)

Joshi, R., Zhang, R. Tropical Impacts of the Weakening of the Atlantic Meridional Overturning Circulation. **In prep.**

Joshi, R., Borah P.J, and Venugopal, V. Indian Monsoon Floods: If it Rains, When does it pour? **In prep.**

ORAL AND POSTER PRESENTATIONS

Joshi, R., Zhang, R. Wintertime Atmospheric Response over the Extratropical North Pacific to the North Atlantic Biases. *Ocean Sciences Meeting*, (2024) [Poster] (Link)

Joshi, R., Zhang, R. Wintertime Atmospheric Response over the Extratropical North Pacific to the North Atlantic Biases. *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)

RESEARCH PROJECTS/EXPERIENCE

- **Impact of the North Atlantic Biases on the Upper Troposphere/Lower Stratosphere (UTLS) Over the Extratropical North Pacific:** Conducted Robust Diagnostic Calculations (RDC) in a fully coupled high-resolution climate model (GFDL CM2.5) for the first time to correct the North Atlantic ocean circulation biases in the model. Studied the impacts of the North Atlantic ocean biases on the atmosphere. Conducted comprehensive thermodynamic analysis to examine the processes sustaining this response. Published findings in npj Climate and Atmospheric Science. (Link)

- **Tropical Impacts of the Weakening of the Atlantic Meridional Overturning Circulation (AMOC):** Used high resolution fully coupled climate model (GFDL CM4) to study the poorly understood tropical impacts of the weakening of the AMOC. Identified pathways that drive these tropical response. Currently preparing findings for publication in an academic journal.
- **Subseasonal Characteristics of Rainfall during Indian Monsoon Floods:** Identified two distinct types of Indian Monsoon Floods. Employed diagnostic analysis using ERA reanalysis product to identify the drivers of these floods. Currently preparing findings for publication in an academic journal.
- **Space and Time Discretization of the Shallow Water Equations:** Investigated various grid configurations for one and two dimensional shallow water equations including staggered and unstaggered, as well as Arakawa grids (A, B, and C) for space discretization. Implemented two- and three-level schemes for time discretization. Part of a term project.
- **Global Distribution of Precipitable Water Column using CESM Aquaplanet Model:** Used CESM aquaplanet model in a term project to examine the global distribution of total precipitable water with varying sea surface temperatures.

RELEVANT COURSEWORK

Geophysical Fluid Dynamics, Atmospheric Dynamics, Ocean Dynamics, Atmospheric Radiation, Physical Oceanography, Atmospheric Thermodynamics, Numerical Prediction of the Atmosphere and Ocean, Earth's Climate, Environmental Fluid Dynamics and Mathematical Methods for Climate Science.

TECHNICAL SKILLS

Programming Languages and mathematical packages: MATLAB, C, Python, and FORTRAN (Basic Introductory Level)

Other: HPC, Linux, Windows OS

OTHER EXPERIENCE

AOS Program Summer Workshop Organising Committee, Princeton University 2024

Volunteer, National Service Scheme, Government of India 2016-2020

Technical Head, University Go Kart Design Team
G. B. Pant University of Agriculture and Technology 2017-2019

REFERENCES

Dr. Rong Zhang
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Dr. V. Venugopal
Associate Professor
Indian Institute of Science, Bengaluru, India
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