Roshni Mathur

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EDUCATION

Ph.D., (2013 – 2021)

Centre for Atmospheric Sciences,
Indian Institute of Technology, Delhi, India

- Thesis Title: *"An Earth system model sensitivity study of the effects of Irrigation on India's Climate."*
- Supervisor: Prof. Krishna AchutaRao (Head, Centre for Atmospheric Sciences, IIT -Delhi)
- Brief Description: Quantifying the effects of varying irrigation scenarios over India's climate. I have modified the amount of irrigation required by the crop which in turn altered the hydrological feedback to study the effects of irrigation in current and future climate. I have also explored the effect of irrigation on the Indian summer monsoon (being crucial for socio-economic aspects of the Indian subcontinent), temperature and rainfall extremes.

MBA (2013-2015)

Master's in Business Administration (correspondence)
Marketing Management
Mahatma Gandhi University

Meghalaya, India

M. Tech., (July 2012 – December 2012)

Centre for Atmospheric Sciences
Indian Institute of Technology, Delhi, India

- First Semester CGPA: 8.4
- After first semester, offered to convert into a full time Ph.D. program.

B. Tech., (2012)

Civil Engineering
Department of Civil Engineering,

JSS Academy of Technical Education
Sector 62, Noida, Uttar Pradesh

AREA OF INTEREST — Irrigation induced regional and global climate change; Earth system modelling; Impact of Land-use Land cover Change (focussed on agricultural); Climate extremes; Climate geoengineering; Mechanism and feedback influencing the hydrological cycle and understanding the long term effect of irrigation in warming scenarios.

PEER REVIEW PUBLICATIONS — **Mathur, Roshni**, and Krishna AchutaRao. 2020. "A Modelling Exploration of the Sensitivity of the India's Climate to Irrigation." *Climate Dynamics* 54 (3–4): 1851–72. https://doi.org/10.1007/s00382-019-05090-8.

PRESENTATIONS PRESENTED IN CONFERENCES — Presented a PICO presentation at the **European Geosciences Union (EGU)** General Assembly, 2018 held in Vienna, Austria under the title of "*A modeling study of the impact of irrigation on India's climate*"

MODELLING AND COMPUTATIONAL SKILLS — **High performance Computing:** Worked on "*PADUM*"(Hybrid High Performance Computing (**HPC**) facility at IIT Delhi, http://supercomputing.iitd.ac.in),India, https://cdac.in/) and server "*Chandra*" (HPC facility at Centre for Atmospheric
Sciences, IIT Delhi) to simulate the Community Earth System Model (CESM version 1.2.0 and 1.2.2). I also worked on preparing a benchmarking exercises for the new users on the server "PADUM".

Models: Simulations conducted on the **CESM 1.2.0** and 1.2.2 coupled model with **CAM5; CLM4.5** with enabled crop and carbon-nitrogen module; slab-ocean model; sea-ice model for current and future (RCP8.5) scenarios. I also have experience in running standalone CAM5 and CLM4.5 models with prescribed and prognostic SST conditions.

Programming Environment: UNIX, LINUX, Window, Mac OS X

Programming Language: **Python**, **R**, FORTRAN, C
Software Packages: UV-CDAT(Ultra Visualization Climate Data Analysis Tool), Xmgrace, NCL, GrADS.

WORK EXPERIENCE — **January 2019 – December 2019**: Worked on the project: "*Dynamic downscaling to study climate change impacts on water resources in India*" funded by Ministry of Water Resources, Government of India

January 2018 - July 2018: Assistance for course work on **Advanced Data Analysis for Weather And Climate**. Python and CDAT for data analysis and visualization.

January 2012 – January 2018: **Teaching Assistant**, Centre for Atmospheric Sciences, IIT Delhi. Duties performed during this period – Student In-Charge for Computing Lab – 1, Server room at CAS: duties included monitoring of computing and storage systems and basic system administration. Assisted in various course-work throughout the period.

WORKSHOP/ TRAINING PROGRAM ATTENDED	**Authors Workshop on Scholarly Writing and Intellectual Ethics** organized by Central Library IIT Delhi and Elsevier India, held at Indian Institute of Technology, (9th October 2017)

IITD HPC Administration Training held at Indian Institute of Technology, Delhi (3rd – 6th November 2015)

HPC Awareness Workshop held at Indian Institute of Technology, Delhi (2nd November 2015)

Open House, 2015 held at Indian Institute of Technology, Delhi (18th April 2015)

Introduction and Practical/Tutorial series of CESM/CAM5 porting and Simulations National Workshop on "*Climate Modeling, Simulation and Analysis*", held at Indian Institute of Technology Delhi (23rd June – 5th Julye 2014)

International conference on "*Future Directions for Weather & Climate Research in the Tropics*" at Centre for Atmospheric Sciences, IIT Delhi (3-5 December 2012)

Foreign Language Programme, short term course under Continuing Education Programme on *German (basic -Level 1)* by Department of Humanities and Social Sciences at Indian Institute of Technology, Delhi (August to November 2012)

AWARDS AND FELLOWSHIP	**Teaching Assistantship** (January 2012 - January 2018): for PhD Research Scholars at Indian Institute of Technology, Delhi.

Research Scholar Travel Award (RSTA) grant by Indian Institute of Technology Delhi to attend European Geosciences Union General Assembly (2018)

MTech Fellowship Qualified Graduate Aptitude Test for Engineering (GATE, 2009) organized by Ministry of Human resource development (MHRD), Govt. of India, and achieved an All India Rank of 400 in Civil engineering

EXTRA-CURRICULAR ACTIVITIES	Silver Medal in **Basketball** in inter- IIT sports meet held at Indian Institute of Technology, Guwahati (25th - 29th December 2013)
	Participation in Inter -Hostel **Dance** competition held at Indian Institute of Technology, Delhi (January 2013)
	Runner up at Inter-IIT sports meet held at Indian Institute of Technology Roorkee (December 2012)
	Participation in contemporary Dance Competition in Rendezvous annual cultural fest held at Indian Institute of Technology, Delhi (October 2013 and October 2012)
	Participation in numerous Inter-school and Intra-school Basketball tournaments and Dance competitions.