

MUHAMMED RASHID

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EDUCATION

PhD in Climate Studies, Indian Institute of Technology Bombay, India 2022 - present
CPI: 9.29/10

MA in Development Studies, Indian Institute of Technology Mandi, India 2019 - 2021
CPI: 8.49/10

Bachelor of Technology in Civil Engineering, APJ Abdul Kalam Technological University, India 2015 - 2019
CPI: 7.98/10

WORK EXPERIENCE

Research Scholar Jan 2022 - Present
IIT Bombay *Mumbai, India*

Project - Adaptive Pathway Planning Framework for Managing Large-Scale Water Infrastructure under Changing Climatic and Socioeconomic Conditions.

- Developed a system model for the Periyar–Muvattupuzha Basin in southern India.
- Developed a modeling framework to quantify multi-sectoral trade-offs in large-scale water infrastructure under changing climatic and socioeconomic conditions.
- Currently designing adaptive policy pathways for reservoir management under evolving climatic and socioeconomic conditions.

Project Consultant Dec 2020 - Jan 2021
Oxford Policy Advisory Group *Oxford, United Kingdom*

- Formulated manifesto policy recommendations in the theme “Urban Development and Housing; Transport: roads, Road, Rail and Water” for adoption by DMK party. This will ultimately be translated into policy on the ground level and impact the Urban development sector in the Tamil Nadu state of India.

Centre Fellow May 2018 - July 2019
U&I Trust *Thrissur, India*

- Started the Thrissur district chapter of the non-profit organization and facilitated education for underprivileged kids by implementing curriculum and child enrichment programs.
- Organized and conducted training for students and volunteers throughout the year on curriculum, soft skills, and teaching methods.

SKILLS

Research Methods:	Quantitative and Qualitative Methods, Surveys and Interviews, Policy Analysis
Programming Languages:	Python, R, TypeScript, MATLAB
Other Software:	MIKE+, ArcGIS, QGIS, CDO, Google Earth Engine, MS Office

KEY PROJECTS

Mumbai Flood Warning System mumbaiiflood.in June - Dec 2025

- Led technical development in 20+ member team for city-wide monitoring platform serving 10,000+ weekly users.
- Architected and deployed full-stack solution using NextJS (web), hosted on VPS.
- Engineered robust backend using Django for automated data processing and alerts. .

Advisor: Prof. Subimal Ghosh, Professor, Centre for Climate Studies, IIT Bombay

Marginalization and Discrimination During Post-Flood Rescue and Relief Operations: An Anthropological Analysis of the 2018 Kerala Flood

July - Nov 2022

- Analyzed the impacts of 2018 flood on Marginalized communities in Kerala.
- Studied how pre-disaster vulnerability exacerbated discrimination during times of disaster.
- Produced a comprehensive research report documenting findings and policy implications.

Advisor: Prof. Mahendra Shahare, Assistant Professor, Department of Humanities and Social Sciences, IIT Bombay

Flood Vulnerability Assessment for Districts of Kerala

Jan - Apr 2022

- Assessed the risk arising out of flood hazards and the vulnerability of Kerala's population to climate-induced hazards.
- An integrative vulnerability analysis is carried out and using the information, the spatial distribution of vulnerability is mapped to explore the vulnerability hotspots.
- Developed geophysical, socio-economic, and composite vulnerability maps to help adaptation measures and policy pathways.

Advisor: Prof. Parmeshwar D. Udmale, Assistant Professor, Centre for Technology Alternatives for Rural Area, IIT Bombay

Evaluation of Regional Climate Model IITM-RegCM4 for Kashmir Valley in India

Feb - July 2021

MA Dissertation

- Predicted and assessed the future changes in temperature in Kashmir Valley by the end of the 21st century.
- Examined the impact of these changes on the local community.
- Assessed the perception of climate change of the farmers in Kashmir Valley.
- Validated driving models (GCMs) of IITM-RegCM4 regional climate model.

Advisor: Prof. Shyamasree Dasgupta, Associate Professor, School of Humanities and Social Sciences, IIT Mandi

Highland Highways: Four lane project and its impact on the roadside settlements in Himachal Pradesh

Feb - Jun 2020

MA Practicum Project

- Assessed the issues of rehabilitation and resettlement of the roadside settlements which are affected by the four-lane construction project.
- Framed the demands by the affected and the state response.
- Analyzed the working of everyday life and economy in majorly affected areas and the major projects implemented by the government to address the emergent issues.
- Conducted semi-structured interviews and focused group discussions with various stakeholders, including government officials, and local communities to learn about challenges in rehabilitation and resettlement.

Advisor: Prof. Nilamber Chhetri, Assistant Professor, School of Humanities and Social Sciences, IIT Mandi

PUBLICATIONS

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- **Rashid M.** After the flood. *Science*. 2025 Mar 14;387(6739):1226. doi:[10.1126/science.adx2999](https://doi.org/10.1126/science.adx2999). Epub 2025 Mar 13. PMID: 40080568.
 - Sunil, A., Deepthi, B., **Rashid, M.** et al. Assessing machine learning and Physics-Informed models for Multi-Lead time sea surface temperature prediction in the Arabian sea. *Stoch Environ Res Risk Assess* 39, 4063–4082 (2025). <https://doi.org/10.1007/s00477-025-03049-2>
 - Sunil, A., Deepthi, B., **Rashid, M.** Toward Trustworthy Short-Range Forecasts with AFNO: From Skill Metrics to Conservation Checks. <https://doi.org/10.48550/arXiv.2601.15660>

- Sunil, A., **Rashid, M.**, Sivaraju, R.S. et al. Physics-Based Deep Spatiotemporal Hyperlocal Radar Nowcasting with a Multi-Variable U-Net for High-Resolution Precipitation Forecasting. <https://arxiv.org/abs/2607.16080>

PRESENTATIONS

- Rashid, M., Singh, R.(2025). Evolving Multi-sectoral Tradeoffs in a Reservoir System Under Deep Uncertainties: Investigating the Role of Seasonal Uncertainties, 12th Annual Conference of the Society for Decision Making Under Deep Uncertainty (DMDU), 17–20 November 2025, London, UK.
- Rashid, M., Singh, R., and Parthasarathy, D.(2025). Quantifying Changes in Multi-sectoral Trade-offs for a Large Multipurpose Reservoir under Changing Climatic and Socio-economic Conditions, XIIth Scientific Assembly of the International Association of Hydrological Sciences, 5-10 October 2025. Poster presentation.[Certificate](#)
- Rashid, M.; Singh, R.; Parthasarathy, D. (2024), Quantifying Changes in Multi-sectoral Trade-offs for the Idukki Reservoir, India under Changing Climatic and Socioeconomic Conditions, Abstract (GC01-97) presented at the American Geophysical Union 2024, 9-13 December 2024 (online). [Link](#)
- Rashid, M. (2023). Evaluation of Regional Climate Model IITM-RegCM4 for Kashmir Valley in India (EGU23-12350). EGU23. Copernicus Meetings (online). DOI:[10.5194/egusphere-egu23-12350](https://doi.org/10.5194/egusphere-egu23-12350)

ACADEMIC TRAINING

- IIASA Summer School for Systems Modeling, organized by International Institute for Applied Systems Analysis, Austria, Vienna.
([Certificate](#)) July 2026
- Winter School on ‘Localising Climate Governance’, organized by Technical University of Munich and IIT Bombay.
([Certificate](#)) Dec 2022
- Summer School on ‘Rejuvenation of Canals through Decentralized Solid and Liquid Waste Management’, Kerala Institute of Local Administration and IIT Bombay. ([Certificate](#)) May 2018

WORKSHOPS ATTENDED

- Climate Water Energy Nexus Workshop, IIT Bombay, India. ([Certificate](#)) July 2024
- Stanford-IIT-Bombay Workshop on Climate Change and Sustainability. September 2023
- International Climate Research Conclave by Ministry of Earth Science and Department of Science and Technology (Govt. of India) at IIT Bombay. May 2023

INTERNSHIP

Research Intern Sept 2020 - Nov 2020
CitySpeaks Vizag, India

- Worked on urban water governance and assisted the team by conducting a literature review on drinking water treatment technologies. Provided support in writing policy briefs and summaries. ([Certificate](#))

POSITION OF RESPONSIBILITY

- Volunteer at International Climate Research Conclave (ICRC-2023) at IIT Bombay.
- Volunteer, Youth for Human Rights
- Student coordinator (2019-2021), Green Committee, IIT Mandi
- Member, Organizing Team (2015-16), Dyuthi, Annual National Level Multi Fest, GEC Thrissur