

# Mirza Md Tasnim Mukarram (He/Him)

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## EDUCATION

### University of Iowa

PhD in Geographic Information Science and Cartography

Iowa city, USA  
Aug 2024- Till Date

### United International University (UIU)

PGD in Data Science

Dhaka, Bangladesh  
March 2024

### Dhaka School of Economics, University of Dhaka

Master's in Environmental Economics

Dhaka, Bangladesh  
July 2023

### Military Institute of Science & Technology

Bachelor of Science in Civil & Environmental Engineering.

Dhaka, Bangladesh  
January 2019

## EXPERIENCE

### IOWA Technology Institute, College of Engineering

**RII FEC: Data-Advanced Research and Education to Improve Weather Intelligence and Localized Climate Change Assessment and Resilience in Agriculture-based Communities (NSF EPSCoR Project), Graduate Research Assistant (GRA)**

Iowa city, USA  
June 2025- Till Date

- Conduct advanced machine learning modeling for forecasting extreme weather events (e.g., floods, droughts, heatwaves) in the KANI region (Kansas, Arkansas, Nebraska, Iowa).
- Analyze high-resolution climate and remote sensing data to assess localized climate change impacts on agricultural resilience.
- Develop predictive frameworks integrating environmental datasets to improve regional weather intelligence systems.
- Assist in designing and delivering hands-on training workshops for undergraduate students on ML applications in climate and environmental data science.
- Collaborate with interdisciplinary teams to support NSF-funded research objectives and contribute to publications and technical reports.

### Department of Geographical & Sustainability Sciences

### School of Earth, Environment & Sustainability

### Graduate Teaching Assistant/Research (GTA/GRA)

- Facilitating Student Learning
- Assessment and Grading
- Course Preparation and Support
- Conducting research work and writing scientific articles

Iowa city, USA  
Aug 2024- Till Date

### Bangladesh Army- HQ 24 Engineer Construction Brigade

### Further Development of Comilla University Project

### Associate Environmental Engineer

- Mapping land cover, natural assets, fragile urban system, climate risk, and vulnerable hotspots.
- City profile, vulnerability assessment, and Greenhouse Gas emission report preparation.
- Developed project reports and Terms of Reference (ToR).
- Identify potential climate change and environmental protection-related projects.
- Project monitoring and management
- Preparing high-quality military maps for various projects and research works

Dhaka, Bangladesh  
February 2021 – Till Date

- Remote sensing database creation, monitoring, and ensuring the quality of datasets.
- Identify potential climate change and environmental protection-related projects.

**Climate Change Laboratory, Green Laboratory Testing Services-BEPZA  
GIS & Water Quality Specialist**

- Monitoring and conducting water and soil quality parameter tests
- Conducting field visits and survey
- Writing project reports
- Preparing confidential water quality maps
- Data acquisition from satellite and ground-based platforms.
- Land suitability analysis.
- Project completion report preparation.

Dhaka, Bangladesh  
January 2020 – January 2021

**Department of Civil Engineering, Military Institute of Science & Technology  
Graduate Research Assistant (GRA)**

- Land suitability analysis.
- Project completion report preparation.
- GIS mapping and statistical data analysis
- Land use map preparation using Rapid Eye and Landsat images.
- Data acquisition from satellite and ground-based platforms.
- Performing laboratory experiments
- Conducting field visits outside Dhaka (FGD, KII, PI, etc.)
- EIA consultancy
- Preparing PowerPoints for seminars and conferences

Dhaka, Bangladesh  
January 2019-December 2019

**AWARDS & ACHIEVEMENTS**

- **Graduate Student Research Award 2025**, Martha L. Corry Fund for Geography
- **Best Research Project Award 2018** among all engineering departments at MIST.
- Full Fund Scholarship from Korean Water Forum to attend the **5<sup>th</sup> Asia Pacific Youth Parliament for Water (APYPFW)** 2016 at DGIST, Daegu, South Korea
- Full Fund Scholarship to attend the **9<sup>th</sup> Session of World Urban Forum** as a Delegate in 2017
- Cherag Roy Memorial Scholarship under Wildlife Conservation to attend Bangladesh Python Project 2016
- Awarded as The Planter of the Week at **Green in a Bottle Recycling Campaign**, North South University, Bangladesh
- **3<sup>rd</sup> Place** in Bangladesh at the **International Public Speaking Competition 2016** by the English-Speaking Union (ESU) of Bangladesh
- **2<sup>nd</sup> place** at Project Showcasing in **Environment Fest 2018**, Bangladesh University of Professionals
- **2<sup>nd</sup> place** at Project Showcasing in **Nuclear Fest 2018**, MIST

University of Iowa, USA

Dhaka, Bangladesh

Daegu, South Korea

Kualalampur, Malaysia

Dhaka, Bangladesh

Dhaka, Bangladesh

Dhaka, Bangladesh

Dhaka, Bangladesh

Dhaka, Bangladesh

**SKILLS**

**Computer Skills:** ArcGIS, Google Earth Engine, Python, SPSS, STATA, Microsoft Office Products, Photoshop, Video Editing.

**Languages:** English (Full professional proficiency, IELTS Score: 7.5), Bangla (Native), Urdu and Hindi (Speaking)

## PEER REVIEWED PUBLICATIONS

- Al Kafy, A. A., Nowrin, M. T., Altuwaijri, H. A., & **Mukarram, M. M. T.**(2025). *Advanced hybrid ensemble learning models for atmospheric humidity prediction: an environmental monitoring solution in arid regions*. International Journal of Environmental Science & Technology (IJSET).
- Miah, M. T., Fariha, J. N., Al Kafy, A., **Mukarram, M. M. T.**, Altuwaijri, H. A., Jodder, P. K., ... & Hasan, M. M. (2025). *Geostatistical assessment of Spatial climate dynamics using mono window machine learning algorithm for decoding land cover and demographic shifts influence on thermal environment*. Theoretical and Applied Climatology, 156(10), 544.
- **Mukarram, M.Md.T.**, Rukiya, Q.U., Linderman, M. (2025). *Harnessing Machine Learning, Artificial Intelligence and Remote Sensing for Drought Severity Assessment & Prediction in USA*. Geosystems and Geoenvironment (Status: 2<sup>nd</sup> Revision, Elsevier)
- **Mukarram, M.Md.T.**, Rukiya, Q.U., Linderman, M. (2025). *AI-Driven Prediction of Microclimate Dynamics: A 20 Year Comparative Multi-Model Assessment Across the U.S. Midwest (KANI Region)*. Modeling Earth Systems and Environment (Status: Under Peer Review, Scientific Reports)
- **Mukarram, M. M. T.**, Rukiya, Q. U., & Demir, I. (2025). *GeoAI-based Urban Environmental Forecasting: A Remote Sensing Driven Hybrid Deep Learning and Machine Learning Framework*. *EarthArXiv eprints*, X54H97. Environmental Monitoring and Assessment. (Status: Under Peer Review, Springer)
- **Mukarram, M.Md.T.**, Kafy,A,A...(2025). *IoT-Enabled Smart Boat System for Integrated Water Resource Management: A Cost-Effective Real-Time Monitoring Solution with Decision Support Capabilities*. Water Resources Management (Status: 1<sup>st</sup> Revision, Water Resource and Management, Springer)
- Kafy,A,A,... **Mukarram, M.Md.T.**(2025). *Monitoring spatiotemporal changes in urban biophysical composition and land surface temperature dynamics using remote sensing and geospatial modeling in Saudi Arabia*. Environmental Monitoring and Assessment (Status: Accepted with minor revision pending)
- Kafy,A,A **Mukarram, M.Md.T.**, ...(2025). *Quantifying urban heat island dynamics in arid environments: A 20-year remote sensing analysis of land surface temperature and biophysical changes*. Geoscience Letters (Status: under peer review, Springer).
- Kafy,A,A **Mukarram, M.Md.T.**, ...(2025). *Two Decades of Urban Heat Island Evolution in Arid Cities: Remote Sensing-Based Assessment of Thermal Intensification and Biophysical Transformations in Al Taif, Saudi Arabia* (Status: 1<sup>st</sup> Revision, Scientific Reports).
- **Mukarram, M.Md.T.**, Kafy,A,A., Rukiya, Q.U., Chowdhury, Md.A., Das.(2023). *Perception of coastal citizens on prospect of community-based rainwater harvesting system for sustainable water resource management*. Resources, Conservation & Recycling (IF-13.2, Cite Score:20.3, Elsevier). <https://doi.org/10.1016/j.resconrec.2023.107196>.
- Das, A., Shuvo, R. M., **Mukarram, M. M. T.**, & Sharno, M. A. (2024). *Energy Policy Landscape in the Developing Countries: A Stern Review and Meta-Analysis of Energy Policies of Bangladesh*. Energy Strategy Reviews (IF-8.2, Elsevier)
- Khan, M.A.K., Ferdous, J., **Mukarram, M.Md.T.**, Nawshin, N. and Rahman, M.T.U. *Exploring safe water availability in southern coastal Bangladesh: An integration between insights of local people and water quality parameters*. (Not submitted yet)

## CONFERENCE PROCEEDINGS

- **Mukarram, M. M. T.**, Rukiya, Q. U., & Linderman, M. A. (2025). *Advancing Drought Prediction in Midwest US using Remote Sensing, Machine Learning Models and Explainable Artificial Intelligence (XAI)*. AGU25.
- Shahrier, M., Al Kafy, A., & **Mukarram, M. M. T.** (2025). *Predicting Future Flood Vulnerability Zones in Texas Using Explainable GeoAI: A Deep Learning Framework for Long-Term Risk Assessment and Emergency Preparedness*. AGU25.
- **Mukarram, M. M. T.**, & Das, A. (2023). *Probing the Potential of Green Markets Towards Sustainable Tourism Development of Bangladesh: An Economic and Environmental Perspective*. In Proceedings of the International Conference on Planning, Architecture and Civil Engineering. Rajshahi University of Engineering & Technology, Rajshahi, Bangladesh.
- Das, A., & **Mukarram, M. M. T** (2023). *Co-Management of Localized Common Pool Natural Resource: Proposal for a Sustainable Fisheries Management Regime in Bangladesh*. In Proceedings of the International Conference on Planning, Architecture and Civil Engineering. Rajshahi University of Engineering & Technology, Rajshahi, Bangladesh.
- Khan, M.A.K., Ferdous, J., **Mukarram, M.M.T.**, Nawshin, N. and Rahman, M.T.U. (2020). "Spatio-temporal variation of groundwater quality in Mongla Upazila using Inverse Distance Weighted Model." Proceedings of the International

Conference on Earth and Environmental Sciences & Technology for Sustainable Development (ICEEST 2020), 25-27 January 2020, Dhaka, Bangladesh

- Nawshin, N., Ferdous, J., **Mukarram, M.M.T.** and Khan, M.A.K. (2020). “Salinity Intrusion in Coastal Area of Bangladesh: Change in Crop Production System.” Proceedings of the 4th International Conference on Sustainable Development 2020, 18-19 February 2020, Dhaka, Bangladesh.
- **Mukarram, M.M.T.**, Khan, M.A.K., Ferdous, J., Rahman, M.T.U. and Nawshin, N. (2020). “Exorbitant shrimp cultivation inhibiting agro based livelihoods in Mongla Upazila of Bangladesh.” Proceedings of the 4th International Conference on Sustainable Development 2020, 18-19 February 2020, Dhaka, Bangladesh.
- Ferdous, J., **Mukarram, M.M.T.**, Khan, M.A.K. and Nawshin, N. (2020). “Local warming triggered by wetland loss in Dhaka city.” Proceedings of the 4th International Conference on Sustainable Development 2020, 18-19 February 2020, Dhaka, Bangladesh.
- Khaled, A.M., **Mukarram, M.M.T.**, Ashraf, A., Islam, A., Rafid, S.A., Rahman, M. (2020). “Sensor Based Automated Rooftop Rainwater Collection System for Residential Use and Rainwater Quality Assessment Of Dhaka City.” Proceedings of 5th International Conference on Advances in Civil Engineering (ICACE-2020), 21-23 December 2020, CUET, Chattogram, Bangladesh.

## SHORT COURSES

- |   |                                       |
|---|---------------------------------------|
| ▪ Google Earth Engine   | Study Hacks, Dhaka, Bangladesh        |
| ▪ Statistical Data Analysis   | NBICT Lab, Bangladesh                 |
| ▪ STATA for Statistics and Data Analysis  | Bohubrihi, Dhaka, Bangladesh          |
| ▪ Urban Climate Change Short Course on “Building Climate Resilient Migrant Friendly Cities” 7th Annual ICCCAD (Duration: 5 days, Dhaka, Bangladesh) | ICCCAD, Dhaka, Bangladesh             |
| ▪ Introductory E-course on Climate Change, (Duration: 1 month)  | UNCC: E-learn, Online Platform        |
| ▪ Causes of Climate Change (Duration: 1 month)  | University of Bergen, Online Platform |
| ▪ Mapping & Spatial Analysis with ArcGIS  | Bohubrihi, Dhaka, Bangladesh          |
| ▪ Complete Course on ArcGIS   | Interactive Cares, Dhaka, Bangladesh  |

## WORKSHOPS AND TRAININGS

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| ▪ Zero Hungers, Zero Emissions University Workshop hosted by International Center for Climate Change and Development (ICCCAD) as a part of project organized by the Environmental Change Institute at University of Oxford, Oxfam BD (Duration: 5 days, Savar, Bangladesh) | Savar, Bangladesh     |
| ▪ City Energy & Climate Action Plan Training on How to Set Targets & Develop a Plan Action Asia (Duration: 7 days, Kualalampur, Malaysia)  | Kualalampur, Malaysia |
| ▪ Youth Organizations Role & Youth Advocacy to Achieving Sustainable Development Goals Green Dialogue Series: Sustainable Environment for Developing World hosted by (Duration: 1 day, Dhaka, Bangladesh)  | Dhaka, Bangladesh     |

## SESSION GUEST SPEAKER & FACILITATOR

- Workshop speaker & facilitator at “VNEC Earth Carnival 2018” hosted by Viquarrunnessa Earth Club, VNC, Dhaka, Bangladesh
- Workshop speaker facilitator at “Workshop on Climate Change Resilience, Adaptation & Mitigation” hosted by Department of Environmental Water Resources & Coastal Engineering Department, MIST, Dhaka, Bangladesh
- Workshop speaker facilitator at “Workshop on Introduction to Climate Change Science” hosted by Alpha Team Organization, Bangladesh University of Professionals, Dhaka, Bangladesh

## LEADERSHIP & VOLUNTARY SKILLS

Name of the Project: **Climate Educate Project**

Designation:

- a. Regional Manager of South Asia (Nov 2018 – June 2019)
- b. Project Advocacy Head Bangladesh (Oct 2016 – Oct 2018)

Department: Climate Education and Advocacy

Responsibilities:

- Conducting climate change education related workshops, trainings and seminars in schools
- Preparing climate change education related documents
- Project Planning and Communication

Name of the Project: **Climathon | A global climate action program** (2019)

Organization: Gen Lab

Designation: Climate Mentor

Department: Program Management

Responsibilities:

- Training participants
- Event management

Name of the Event: **World Water Congress & Exhibition**

Organization: International Water Association (IWA)

Designation: Paper abstract reviewer

Department: Reviewer Committee

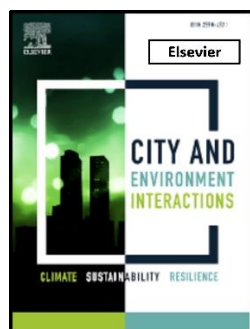
Responsibilities:

- Abstract reviewing

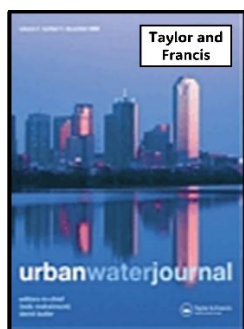
## PROFESSIONAL AFFILIATION

- Institute of Engineers Bangladesh (IEB), A-23821
- Asian Cities Climate Change Resilience Network (ACCCRN)
- Global Youth Climate Network

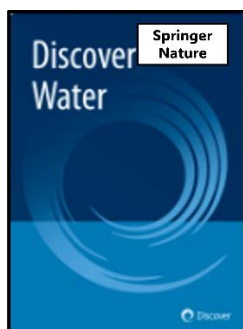
## JOURNAL PEER REVIEWER ROLE



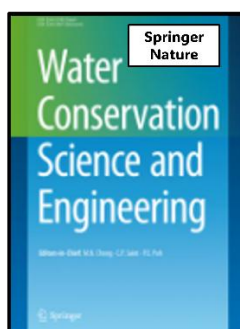
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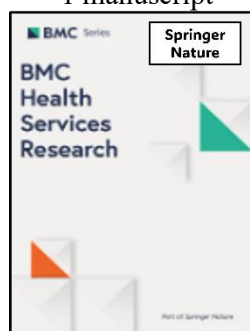
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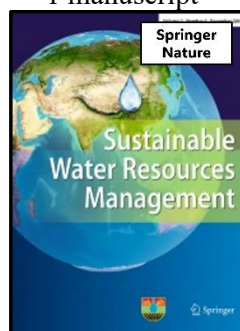
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