

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)

Iowa city, USA

Aug 2024- Till Date

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

Bangladesh Army- HQ 24 Engineer Construction Brigade

Further Development of Comilla University Project

Associate Environmental Engineer

Dhaka, Bangladesh

February 2021 – Till Date

- 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

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

Dhaka, Bangladesh
January 2020 – January 2021

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 2019-December 2019

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

AWARDS & ACHIEVEMENTS

- **Graduate Student Research Award 2025**, Martha L. Corry Fund for Geography
University of Iowa, USA
- **Best Research Project Award 2018** among all engineering departments at MIST.
Dhaka, Bangladesh
- Full Fund Scholarship from Korean Water Forum to attend the **5th Asia Pacific Youth Parliament for Water (APYPFW) 2016** at DGIST, Daegu, South Korea
Daegu, South Korea
- Full Fund Scholarship to attend the **9th Session of World Urban Forum** as a Delegate in 2017
Kuala Lumpur, Malaysia
- Cherag Roy Memorial Scholarship under Wildlife Conservation to attend Bangladesh Python Project 2016
Dhaka, Bangladesh
- Awarded as The Planter of the Week at **Green in a Bottle Recycling Campaign**, North South University, Bangladesh
Dhaka, Bangladesh
- **3rd Place** in Bangladesh at the **International Public Speaking Competition 2016** by the English-Speaking Union (ESU) of Bangladesh
Dhaka, Bangladesh
- **2nd place** at Project Showcasing in **Environment Fest 2018**, Bangladesh University of Professionals
Dhaka, Bangladesh
- **2nd place** at Project Showcasing in **Nuclear Fest 2018**, MIST
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: 2nd 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: 1st 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: 1st 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
- Statistical Data Analysis
- STATA for Statistics and Data Analysis
- Urban Climate Change Short Course on "Building Climate Resilient Migrant Friendly Cities" 7th Annual ICCCAD (Duration: 5 days, Dhaka, Bangladesh)
- Introductory E-course on Climate Change, (Duration: 1 month)
- Causes of Climate Change (Duration: 1 month)
- Mapping & Spatial Analysis with ArcGIS
- Complete Course on ArcGIS

Study Hacks, Dhaka, Bangladesh

NBICT Lab, Bangladesh

Bohubrihi, Dhaka, Bangladesh

ICCCAD, Dhaka, Bangladesh

UNCC: E-learn, Online Platform

University of Bergen, Online Platform

Bohubrihi, Dhaka, Bangladesh

Interactive Cares, Dhaka, Bangladesh

WORKSHOPS AND TRAININGS

- 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)
- City Energy & Climate Action Plan Training on How to Set Targets & Develop a Plan Action Asia (Duration: 7 days, Kuala Lumpur, 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)

Savar, Bangladesh

Kuala Lumpur, Malaysia

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

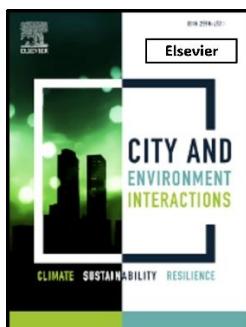
Responsibilities:

- Abstract reviewing

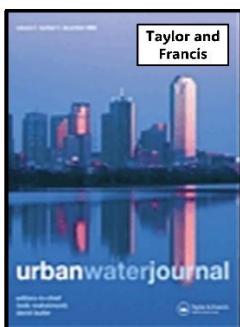
PROFESSIONAL AFFILIATION

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

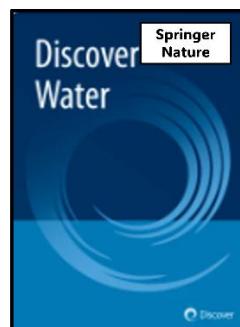
JOURNAL PEER REVIEWER ROLE



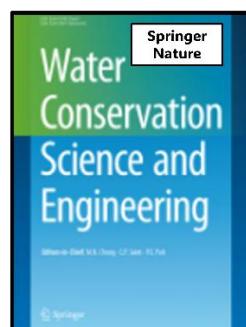
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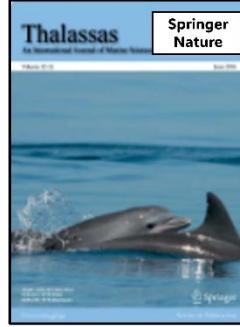
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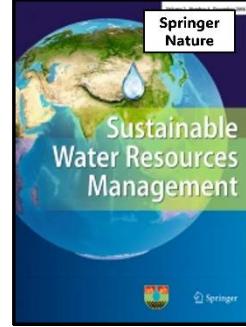
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