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Research Interest

Geospatial analysis, Hydrology, Aquatic ecosystem and climate change, Soil Geography, WASH (Water, Sanitation and Hygiene), Cities and communities, Disaster management.

Academic Employment (Public Universities)

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| 1. <i>Assistant Professor</i>
Department of Environmental Science & Geography
Islamic University, Bangladesh. | 15 July 2021-Present |
| 2. <i>Lecturer</i>
Department of Environmental Science & Geography
Islamic University, Bangladesh. | 15 July 2018-14 July 2021 |
| 3. <i>Lecturer</i>
Department of Geomatics
Patuakhali Science and Technology University, Bangladesh. | 27 July 2016-12 July 2018 |
| 4. <i>Lecturer</i>
Department of Disaster & Human Security Management
Bangladesh University of Professionals, Dhaka, Bangladesh. | 18 April 2016- 25 July 2016 |

Education

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|---|------|
| 1. <i>Master of Science, Geography and Environmental Studies</i>
GPA: 3.75 out of 4 (1st position)
University of Rajshahi, Bangladesh
Thesis Title: Disaster-Induced Social Risk Governance: An Analysis of Post-Aila Situation of Coastal Bangladesh. | 2014 |
| 2. <i>Bachelor of Science, Geography and Environmental Studies</i>
GPA: 3.67 out of 4 (1st position)
University of Rajshahi, Bangladesh.
Project Title: Environmental Governance in Bangladesh: What is Right, What is Wrong. | 2013 |

Publications

1. **Ara, I.** (2025). Environmental Governance: Comparative Analysis of Public and Private Organizations. *International Journal of Environmental Protection and Policy*, 13(1), 23-31. <https://doi.org/10.11648/j.ijepp.20251301.13>
2. Ahmad, M. N., Shao, Z., Xiao, X., Fu, P., Javed, A., & **Ara, I.** (2024). A novel ensemble learning approach to extract urban impervious surface based on machine learning algorithms using SAR and optical data. *International Journal of Applied Earth Observation and Geoinformation*, 132, 104013. <https://doi.org/10.1016/j.jag.2024.104013>
3. Javed, A., Shao, Z., **Ara, I.**, Ahmad, M. N., Huq, M., Saleem, N., & Karim, F. (2023). Development of Soil-Suppressed Impervious Surface Area Index for Automatic Urban Mapping. *Photogrammetric Engineering & Remote Sensing*, 90(1), 33–43. <https://doi.org/10.14358/pers.23-00043r2>
4. Javed, A., Shao, Z., Sumari, N. S., Mardia, N., Bai, B., Yu, Z., Wang, J., **Ara, I.**, Huq, M. E., Ali, M. Y., Saleem, N., & Ahmad, M. N. (2023). Development of normalized soil area index for urban studies using remote sensing data. *Geofizika*, 40(1), 29–48. <https://doi.org/10.15233/gfz.2023.40.2>
5. Ali, M. Y., Shahrier, M., Kafy, A.-. A., **Ara, I.**, Javed, A., Fattah, M. A., Rahaman, Z. A., & Tripura, K. (2023). Environmental impact assessment of tobacco farming in northern Bangladesh. *Heliyon*, 9(3), e14505. <https://doi.org/10.1016/j.heliyon.2023.e14505>

6. Ali, M. Y., Kafy, A.-. A., Rahaman, Z. A., Islam, M. F., Rahman, M. R., **Ara, I.**, Akhtar, M. R., & Javed, A. (2022). Comparative occupational health risk between tobacco and paddy farming people in Bangladesh. *SSM - Mental Health*, 2, 100061. <https://doi.org/10.1016/j.ssmmh.2022.100061>
7. Javed, A., Cheng, Q., Peng, H., Altan, O., Li, Y., **Ara, I.**, Huq, E., Ali, Y., & Saleem, N. (2021). Review of Spectral Indices for Urban Remote Sensing. *Photogrammetric Engineering & Remote Sensing*, 87(7), 513–524. <https://doi.org/10.14358/pers.87.7.513>
8. Rabbi, M. F., **Ara, I.**, Akhtar, M. R., Akter, R., Toppo, A., Das, S., Islam, R., & Javed, A. (2019). Post-Disaster Health Condition: The Case of Coastal Population from Bangladesh. *Journal of Sociology*, 3(2), 59–64. <https://DOI:10.12691/jsa-3-2-3>
9. Ali, M. Y., Hassan, M., Rahman, M. A., Kafy, A., **Ara, I.**, Javed, A., & Rahman, M. R. (2019). Life cycle energy and cost analysis of small scale biogas plant and solar PV system in rural areas of Bangladesh. *Energy Procedia*, 160, 277–284. <https://doi.org/10.1016/j.egypro.2019.02.147>
10. Rahman, M. A., Rahman, M. R., Ali, M. Y., **Ara, I.**, Javed, A., Rahman, M. A., & Das, S. (2018). Effects of Agricultural Practices on Biodiversity in Bangladesh. *American Journal of Environmental Protection*, 6(3), 54–58. <https://doi.org/10.12691/env-6-3-1>
11. Ali, M. Y., Islam, M. F., Rahman, M. R., Akhtar, M. R., **Ara, I.**, Toppo, A., Javed, A., & Das, S. (2018). Socio-economic Impact of Tobacco Farming in Bangladesh. *Journal of Sociology*, 2(1), 31–35. <https://doi.org/10.12691/jsa-2-1-6>
12. Rahman, M. R., Sheema, M., Ali, M. Y., **Ara, I.**, & Javed, A. (2018). Socio-environmental condition of rural women in Bangladesh. *IOSR Journal of Environmental Science*, 12(2), 9-16. <https://DOI:10.9790/2402-1202020916>

Student Advising

I have supervised a total of 23 undergraduate projects, 3 graduate projects, and 13 theses to date.

2025 (Thesis)

1. GIS-Based Multi-Index Approach for Groundwater Quality and Health-Risk Assessment in High-Demanding Areas of Bangladesh.
2. A Geospatial Analysis of Urban Crime Dynamics in Rajshahi Metropolitan Jurisdictions, Bangladesh During 2023 & 2024.

Last 10 Supervised Undergraduate research projects

1. Spatiotemporal Analysis of Agricultural Drought in Northern Bangladesh Using MODIS Time Series from 2001 to 2023.
2. A Depth-Specific Approach for Mapping Soil Nutrients in Poradaha Union, Bangladesh.
3. Distribution Mapping and Spatial Variability Modeling of selected soil physicochemical properties under different landuse systems in Kushtia, Bangladesh.
4. Spatiotemporal Mapping of Noise Level and Perceptual Assessment of Health Problems: A Study of Kushtia Municipality, Bangladesh.
5. Spatial Patterns and Characteristics of Informal Economic Activities in Kushtia District, Bangladesh.
6. An Assessment of Rainwater Quality, It's Harvesting System and Community Perception in Southwestern Bangladesh: A Case Study of Koyra Upazila.
7. An Analysis of Governance Framework Effectiveness and Internal Waste Management Practices in The Hospitals of Rangpur Sadar Upazila, Bangladesh.
8. A Comprehensive evaluation of environmental literacy: A case study in Kushtia Municipality, Bangladesh.
9. Spatiotemporal Mapping of Air Pollutants of Bangladesh from 2018 to 2023.
10. An Assessment of Particulate Matter (PM2.5 & PM10), Health Risk and Associated Health Outcomes Among Rice Processing Industry Workers in Kushtia, Bangladesh.

Research Grants

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1. *“Assessment of multi-hazard vulnerability along the coast of Bangladesh: A geospatial analysis for sustainable coastal management.” (Principal Investigator)*
Funded by University Grants Commission of Bangladesh. Project Reference: 141/Edu/IU/31 (2024-2025)
 2. *“Evaluation of Farmers Knowledge and Competence in Pesticide Application and Biosafety: A Case Study in Alamdanga Upazila, Chuadanga District, Bangladesh.” (Supervisor)*
Funded by Ministry of Science and Technology Government, Bangladesh. Project ID # 208, SI-226, (2024-25)

3. *“Gendered Perspective in Agriculture: An Analysis of Men's and Women's Roles and Impact on Sustainable Farming Practices in Shajahanpur Upazila, Bogura.”* (Supervisor)
Funded by Ministry of Science and Technology Government, Bangladesh. Project ID # 73, SI- 815 (2024-25)
4. *“Quantum calculations, Docking, Molecular dynamic, QSAR, and ADMET analysis of Carica papaya L. to suppress Dengue Virus: Synthesis and in-silico study.”* (Associate Director)
Funded by Ministry of Science and Technology, Government of Bangladesh. (July 2023 – July 2024)
Ref. No.: 09.00.0000.099.99.023.23-363/638; Project ID: SRG-236638.
5. *“The In Silico Screening with Quantum Calculations and Machine Learning against Dengue Virus by the Natural Product Nano-Composition of Green Tea.”* (Associate Director)
Funded by Ministry of Science and Technology Government, Bangladesh. (July-2022- July 2023)
GO:39.00.0000.009.99.024.22-901; Project ID#SRG-226649

Conference Proceedings (Selected)

1. Eva, L. A., **Ara, I.**, Khan, M. S., Rahman, M. A., & Javed, A. (2025). An assessment of rainwater quality, it's harvesting system and community perception in southwestern Bangladesh: A case study of Koyra Upazila. In *10th International Conference on Water and Flood Management*. Institute of Water and Flood Management (IWFMM), Bangladesh University of Engineering and Technology (BUET).
2. Kakon, U. S. P., **Ara, I.**, & Raza, A. H. (2025). A depth-specific approach for mapping soil nutrients in Poradaha Union, Bangladesh. In *Proceedings of the 1st International Conference on Bangladesh Studies (ICBS-I)*. Istanbul Ticaret University, Istanbul, Turkey.
3. **Ara, I.**, & Rana, M. P. (2014, March). Environmental governance in Bangladesh: Waste Management Perspective. In *International Conference on “Environment and Development”*. Department of Geography and Environmental Studies, University of Rajshahi.

Research Skills

Throughout my undergraduate and graduate research projects, I gained experience in both qualitative and quantitative research methods. Over the past nine years, I have further developed my skills by supervising students. I am proficient in data analysis using R and Python in Colab environment, PAST, and SPSS. As an instructor for research students, I frequently utilize GIS applications such as ArcGIS, QGIS, and Surfer for geospatial data analysis. In addition, I am moderately skilled in using remote sensing applications like TerrSet, Envi and GEE. Additionally, I am familiar with regional climate modelling techniques.

Professional Development (Selected Trainings and Courses)

1. *Case Studies in Geostatistical Modeling (2025)*
Department of Materials Science and Engineering, Case Western Reserve University, USA, Online
2. *Oil & Gas Industry Operations and Markets (2025)*
Nicholas School of the Environment, Duke University, Australia, Online
3. *Climate Variability and Flood Predictability (2025)*
Institute of Water Modelling, Bangladesh.
4. *Climate-smart soil and land management (2024)*
Food and Agriculture Organization (FAO) of the United Nations eLearning Academy, Online
5. *Sustainable Soil Management Practices - Practitioner certification (2024)*
CABI Academy, UK, Online
6. *Water Management - Practitioner assessment (2024)*
CABI Academy, UK, Online
7. *Mathematical Modelling and GIS for Feasibility Study of Water Development Projects (2024)*
Institute of Water Modelling, Bangladesh.
8. *ISO 45001:2018 Occupational Health & Safety Management System Awareness (2023)*
The Knights of Safety™ Academy, Online
9. *Administrative & Financial Management for University Teachers and Officers (2017)*
Patuakhali Science & Technology University, Bangladesh.
10. *Fundamentals on GIS (2016)*
University of Dhaka, Bangladesh.

11. *Multidisciplinary Application of Geographic Information System (GIS) (2015)*
Rajshahi University of Engineering & Technology, Bangladesh.
12. *Statistical Computing (SPSS and MS-Excel, Programming with R) (2014)*
University of Rajshahi, Bangladesh.
13. *Teaching method and Curriculum Development (2014)*
University of Rajshahi, Bangladesh & University of Education Freiburg, Germany.
14. *Teaching Methodology, Learning Strategies and Didactics (2013)*
University of Rajshahi, Bangladesh & University of Education Freiburg, Germany.

Courses Taught (Selected)

Hydrology, GIS and Remote Sensing, Physical Geography, Introduction to Geology, Soil Geography, Ecology, Introduction to Human Geography, Natural Resource Management, Climate change simulation and forecasting, Research Methodology.

Language Proficiency

IELTS Score: 7, CEFR Level: C1(Advanced), Test Date: June 22, 2024.

Band Details: Listening 8, Reading 7.0, Writing 6.5, Speaking 6.5

Memberships

1. National Oceanographic and Marine Institute, Bangladesh (Life Member)
2. Bangladesh Society of Geoinformatics (General Member)
3. South Asian Meteorological Association (Life Member)
4. Scientific Foundation for Cancer Research, Bangladesh (Executive Board Member)
5. Rajshahi University Geography and Environment Students Alumni Association (Life Member)
6. Rajshahi University Alumni Association (Life Member)