Minhazul Islam

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SUMMARY

5+ years' experience in geospatial modeling and hydrologic/hydrodynamic systems, and passionate about AI-driven water infrastructure solutions. Expert in Python/R, GIS analysis, and urban stormwater management. Passionate about integrating advanced analytics (AI/ML) with environmental engineering to design sustainable water systems.

EDUCATION

PhD Civil, Environmental and Sustainable Engineering December 2025
Arizona State University (ASU), Tempe, AZ 4.00 iPOS GPA
Course Highlights: Contaminant Fate and Transport • Environmental Risk Assessment • Environmental Engineering Chemistry • Physical-Chemical Treatment of Water and Wastewater • Environmental Biochemistry • Environmental Data & Analysis • Surface Water Hydrology • Remote Sensing for Water Resources and Civil Engineering
Thesis: Geospatial Innovations in Drinking Water and Wastewater Treatment Using Sparse Datasets Across the United States of America.

MS Civil Engineering July 2020
Tennessee Tech University (TTU), Cookeville, TN 4.00 GPA
Course Highlights: Engineering Hydrology • Applied Environmental Chemistry • Programming GIS • Open-Channel Hydraulics • Advanced Educational Statistics • Environmental Forensics • Stormwater Management
Thesis: Development of GIS-Based Algorithm to Delineate Median Vegetated Swales Along Highways in Putnam County, Tennessee. ProQuest Link: https://tinyurl.com/yh6679v7

B.Sc. Water Resources Engineering February 2017
Bangladesh University of Engineering & Technology (BUET), Dhaka, Bangladesh 3.32 GPA
Course Highlights: Fluid Mechanics • Structural Analysis and Design - I • Design of Concrete Structures • Principles of Soil Mechanics • Open Channel Hydraulics • GIS in Water Resources Engineering • Groundwater Engineering
Thesis: Assessment of Stormwater Runoff From Chittagong Using GeoSWMM.

WORK EXPERIENCE

Graduate Research Associate - Westerhoff Lab, Arizona State University, Tempe, AZ Aug 2020 – Present

- Maintained and developed GIS modeling studies on national de facto wastewater reuse.
- Developed a GIS-based model for national-scale microbial risk assessment at surface water sources by applying the de facto reuse modeling framework in the United States.
- Developed PFAS incidence model for consumable water supply in the United States.
- Developed an ML-based groundwater data imputation model to perform a risk assessment of co-occurring contaminants and informed feasible treatment techniques.
- Developed a decennial urban phosphorus flow mass-balance model and identified key alterations in P dynamics.
- Developing optimization framework for wastewater-recovered phosphorus resources to meet agricultural phosphate fertilizer needs in the United States.

Graduate Research Assistant - TECHWARMS, Tennessee Tech University, Cookeville, TN Aug 2018 – July 2020

- Developed a GIS-based automated vegetated swale delineation model (GV-SwATH) for TDOT highways.
- Developed a preliminary framework of GIS-based Watershed Vulnerability Assessment Tool (GAVA).
- Developed a reservoir routing model using HEC-HMS for Cane Creek Lake, TN.
- Developed an EPA SWMM model for a parking lot in TN to evaluate the existing low-impact development (LID).

Research Assistant - Institute of Water and Flood Management (IWFM), Bangladesh Jan 2018 – July 2018

- Developed bias correction method for TRMM satellite rainfall dataset for building a flash flood early warning system in Meghna Basin, Bangladesh.

Research Assistant - C3ER, BRAC University, Bangladesh Sep 2017 – Dec 2017

- Developed a hydrologic model and conducted fish habitat feasibility studies on the Halda River.
- Developed a preliminary design for a floating house and conducted a social survey in flood-prone areas in Bangladesh.

PEER-REVIEWED PUBLICATIONS

1. Ruyle, B.J., Pennoyer, E.H., Vojta, S., Becanova, J., **Islam, M.**, Webster, T.F., Heiger-Bernays, W., Lohmann, R., Westerhoff, P., Schaefer, C.E. and Sunderland, E.M., **2025**. High organofluorine concentrations in municipal wastewater affect downstream drinking water supplies for millions of Americans. Proceedings of the National Academy of Sciences, 122(3), p.e2417156122. https://doi.org/10.1073/pnas.2417156122
2. Mahmood, A.U., **Islam, M. (Co-first Author)**, Gulyuk, A.V., Briese, E., Velasco, C.A., Malu, M., Sharma, N., Spanias, A., Yingling, Y.G. and Westerhoff, P., **2024**. Multiple Data Imputation Methods Advance Risk Analysis and Treatability of Co-occurring Inorganic Chemicals in Groundwater. Environmental Science & Technology, 58(46), pp.20513-20524. https://doi.org/10.1021/acs.est.4c05203
3. Ahmed, K.J., Oyshi, J.T., **Islam, M.**, Rashid, M.B., Atiqul Haq, S.M. and Tasneem, N., **2024**. Comparing household heads' perception of climate change variability with meteorological trends and understanding mitigation measures to combat the adverse effects in coastal areas of Bangladesh. SN Social Sciences, 4(9), p.168. https://doi.org/10.1007/s43545-024-00971-0
4. Baker, J., Schunk, N., Scholz, M., Merck, A., Muenich, R.L., Westerhoff, P., Elser, J.J., Duckworth, O.W., Gatiboni, L., **Islam, M.** and Marshall, A.M., **2024**. Global-to-Local Dependencies in Phosphorus Mass Flows and Markets: Pathways to Improving System Resiliency in Response to Exogenous Shocks. Environmental Science & Technology Letters, 11(6), pp.493-502. https://doi.org/10.1021/acs.estlett.4c00208
5. **Islam, M.**, Thompson, K., Dickenson, E., Quiñones, O., Steinle-Darling, E. and Westerhoff, P., **2023**. Sucralose and Predicted De Facto Wastewater Reuse Levels Correlate with PFAS Levels in Surface Waters. Environmental Science & Technology Letters, 10(5), pp.431-438. https://doi.org/10.1021/acs.estlett.3c00185
6. Saha, P., **Islam, M.**, Oyshi, J.T., Khanum, R. and Nishat, A., **2020**. A sustainability analysis on the trends and frequency of the channel flow of a carp breeding river against human interventions and governing public-private partnership (PPP) as adaptation. SN Applied Sciences, 2, pp.1-17. https://doi.org/10.1007/s42452-020-2766-4
7. Saha, P., **Islam, M.**, Oyshi, J.T., Khanum, R. and Nishat, A., **2019**. A sustainability study of the flow regulation impacts by dams in a carp breeding river using the hydrodynamic model and building block analysis. SN Applied Sciences, 1, pp.1-20. https://doi.org/10.1007/s42452-019-1417-0

CONFERENCE & PRESENTATIONS

1. **Islam, M.**, Solis, J., Earl, S., Westerhoff, P., **2025**. Decennial Phosphorus Dynamics in Central Arizona Phoenix– Long-Term Ecological Research (CAP- LTER) Site. 27th Central Arizona-Phoenix Long-Term Ecological Research (CAP-LTER) Program Annual All Scientists Meeting and Poster Symposium.
2. Saha, A., **Islam, M.**, Muenich, R., Earl, S., Obeneour, D., Morrison, E., Nelson, N. and Westerhoff, P., **2024**. Development of an Urban Watershed Modeling Framework for Arid Regions Using SWAT. American Society of Agricultural and Biological Engineers (ASABE) Annual International Meeting 2024.
3. **Islam, M.**, Solis, J., Earl, S., Westerhoff, P., **2024**. Decennial (2000-2020) P Flow Dynamics in CAP LTER. AZ Water Research Symposium, March 22 (2024).
4. **Islam, M.**, Saha, A., Muenich, R.L. and Westerhoff, P., **2023, December**. Unlocking the Potential of Wastewater Treatment Plants for Phosphorus Recovery: Identifying Optimal Locations for Technology Implementation and Fertilizer Production. In AGU Fall Meeting (Vol. 2023, No. 158, pp. H13K-158).
   iPoster Link: https://tinyurl.com/3cdbt2je, Session Link: https://tinyurl.com/5edv8ee6
5. **Islam, M.** and Westerhoff, P., **2022**. DRINCS: A GIS-based model that is used to predict de facto reuse, nutrient recovery and PFAS risk analysis. Water Quality Technology Conference - WQTC 2022.
6. **Islam, M.**, Muenich, R.L. and Westerhoff, P., **2022, December**. Quantifying the Potential Phosphorus Recovery From Municipal Wastewater Across the Contiguous United States. In Fall Meeting 2022. AGU.
7. **Islam, M.** and Westerhoff, P., **2021, December**. Microbial Risk Assessment Informed by De Facto Reuse at Public Drinking Water Systems Across Contiguous United States. AGU Fall Meeting 2021.
   iPoster Link: https://tinyurl.com/ys8hbmkx, Session Link: https://tinyurl.com/398bnj7z
8. **Islam, M.**, Cunniungham, T., Snigdha, N.J. and Kalyanapu, A., **2019**. Reservoir Routing Model for Cane Creek Lake, Cookeville, TN. Tennessee American Water Resources Association (TNAWRA) Symposium 2019. https://tinyurl.com/22hhhtds
9. Saha, P., Tasneem, J., **Islam, M.**, Khanum, R. and Nishat, A., **2019, March**. Assessment of flow regulation impacts by dams in Halda river using hydrological and hydrodynamic modelling. 7th International Conference on Water and Flood Management-ICWFM 2019. Conference Paper. https://tinyurl.com/yxypxvyb
10. Mahmood, F. and **Islam, M.**, **2017**. Analysis Of Intense Rainfall Runoff And Water Logging In Recent Years Due To Drainage Congestion In Chittagong City Using Hydrological Model. 5.

MEDIA COVERAGE

1. **The New York Times, 2025**. 'Forever Chemicals' Reach Tap Water via Treated Sewage, Study Finds. https://tinyurl.com/bde88mja
2. **The Washington Post, 2025**. These common medications could be releasing 'forever chemicals' into the environment. https://tinyurl.com/2x9pfpfw
3. **CNN, 2025**. Scientists discover concerning new source of 'forever chemicals' in drinking water. https://tinyurl.com/y9t3rm84
4. **NCSU News Release, 2024**. Machine Learning Predicts Highest-Risk Groundwater Sites to Improve Water Quality Monitoring. https://tinyurl.com/fh3kv2b3
5. **EurekAlert, 2024.** Machine learning predicts highest-risk groundwater sites to improve water quality monitoring. https://tinyurl.com/ytdttbyx

TECHNICAL SKILLS

Programming Languages: Python, R, MATLAB, C/C++, Bash
GIS Software: ArcGIS, QGIS, ENVI, Google Earth Engine (GEE)
Water Resources Modeling Software: HEC-RAS, HEC-HMS, EPA SWMM, SWAT
Experience with Dataset Types: Tabular Data, Raster, Vector, LiDAR Point Cloud
Other Software: Microsoft Office Suite, Latex
Field Survey: GPS, Streamflow Measurement, Total Station
Engineering Design Software: AutoCAD

CLUBS & LEADERSHIP

PhosForUs Podcast Team [https://steps-center.org/phosforus/] 2022 – Present

- Scripting, planning podcast recording

Student Leadership Council (SLC) Member at STEPS Center [https://steps-center.org] 2022 – 2023

- Leadership role: Secretary
- Scholar-led seminar planning
- Contributed to idea development for better science communication and engagement

Bangladesh Students Association of Arizona State University (BSA-ASU) 2022 – 2023

- Leadership role: Cultural Secretary
- Organized cultural events and social engagement

Bangladesh Students Association of Tennessee Tech University (BSA-TTU) 2019 – 2020

- Leadership role: Treasurer
- Keeping expenditure records and preparing annual expenditure reports

MORE CONTACT

ASU Email: mislam23@asu.edu
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Google Site: sites.google.com/view/minhazul-islam/home
GitHub: github.com/minhazulislam
Google Scholar: tinyurl.com/mrbzt5dv
ResearchGate: researchgate.net/profile/Minhazul-Islam