MAHJABEEN FATEMA MITU

Civil & Environmental Engineering, University of Connecticut
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EDUCATION

University of Connecticut (UConn), Storrs, CT, USA *May 2024 (anticipated)*
Doctor of Philosophy (Ph.D.) in Environmental Engineering
Research Areas: Compound Flooding (CF); Hydrodynamic Model; Geostatistics; Socio-demographic impact on coastal flooding

University of Applied Sciences Stuttgart (HfT Stuttgart), Stuttgart, Germany *December 2016*
Master of Science (M.Sc.) in Photogrammetry and Geoinformatics (MPG)
Thesis: Spatial and Temporal Precipitation Simulation

Bangladesh University of Engineering & Technology (BUET), Bangladesh *January 2012*
Bachelor of Science (B.Sc.) in Water Resources Engineering (WRE)
Thesis: Assessment of Agro-Climatic Parameters in Northwest Region of Bangladesh

RESEARCH INTERESTS

Hydraulic and hydrodynamic modeling using HEC-RAS, Stochastic modeling using R, Geospatial analysis using ArcMap and QGIS

RESEARCH EXPERIENCES

University of Connecticut (UConn) *Storrs, CT, USA*
Graduate Research Assistant (RA), Hydrometeorology and Hydrologic Remote Sensing Group, Department of Civil and Environmental Engineering *August 2019 - Present*

- Compound Flood Vulnerability Analysis in Coastal Area
  - Develop a framework to evaluate compound flood risk in coastal regions, focusing on characterizing inundation depth (ID) during compound events.
  - Propose a novel topographic index designed to capture flood ID variability from river to coast, pinpointing areas where compound events are more prevalent using this index.
  - Incorporate socio-economic and socio-demographic studies to capture complete scenario of flood vulnerability by bridging research and real-world impact in sustainable disaster management.
- Saudi Arabia Flood Forecasting and Early Warning System
  - Define homogeneous hydrological sub-units throughout Saudi Arabia to generate hydraulic models (selection of HEC-RAS potential domains) for the defined sub-basins.
  - Simulate HEC-RAS 2D domains with a reasonable computational time.
- Housatonic Valley Association (HVA) Flood Risk Evaluation
  - Determine peak flows and flood frequency (1979-2019) for selected return years.
  - Rate culverts at selected road/stream crossings using field data.
  - Simulate risk-of-failure (over-topping) information for each crossing at different recurrence intervals by verifying models' simulations with comparison to historic floods in project area.
- Evaluation of Substations Vulnerability of Flooding in Current and Climate Change Scenarios (Phase II)
  - Perform risk estimation based on past extreme events for all the Eversource substations to extract surge and flow events from the 25 years by generating the inundation maps for each event at given return years.

University of Stuttgart *Stuttgart, Germany*
Master Thesis, Institute of Water and Environmental Systems Modeling *March 2015 - November 2016*

- Simulated daily precipitation data spatially and temporally to generate a synthetic data model.
- Generated models for planning typical water resources projects, optimal planning and estimating extreme phenomena.

Bangladesh University of Engineering & Technology (BUET) *Dhaka, Bangladesh*
Undergraduate, Department of Water Resources Engineering (WRE) *March 2011 - March 2012*

- Assessed statistically the climatic parameters related to agricultural development.
- Analyzed aridity index to estimate the surplus and stress of water.

WORK EXPERIENCE

Regional Integrated Multi-Hazard Early Warning System for Asia and Africa *Dhaka, Bangladesh*

Project Engineer: Enhancing early warning system for community-based response in Bangladesh *Sep 2012 - Feb 2013*

- Trained volunteer workers in the early warning system and flood risk management.
- Collaborated in writing a manual "Flood Forecasting Technology for Community Level Response in Bangladesh".

TECHNICAL SKILLS

GIS Software:	ArcMap, QGIS, ArcGIS Diagrammer, ArcHydro
Hydrodynamic Modeling:	HEC-RAS, HEC-HMS
Hydrologic Modeling:	CREST- SVAS, CROPWAT
Hydraulic Simulation Software:	Flowmaster, WaterGEMS
Programming Languages:	R programming, MATLAB, Python, Google Earth Engine
Operating Systems:	Windows, HPC
Office Software:	MS Word, MS Excel, MS PowerPoint, LaTeX
CAD Software:	AutoCAD, WaterCAD, StormCAD
Image Processing Software:	ERDAS IMAGINE, PhotoModeler 6, SCOP++, inJECT, SAGA/LIS

JOURNAL ARTICLE

- **Mitu, M.F.**, Sofia, G., Shen, X., Anagnostou, E.N., 2023. Assessing the compound flood risk in coastal areas: Framework formulation and demonstration. J. Hydrol. 626. https://doi.org/10.1016/j.jhydrol.2023.130278

CONFERENCE PRESENTATIONS

- **Mitu, M. F.**, Sofia, G., Shen, X., and Anagnostou, E. N.: Assessing the Compound Flooding Risk and Impacts across the Coastal Areas of the United States, EGU General Assembly 2023, Vienna, Austria, 24–28 Apr 2023, EGU23-10790, https://doi.org/10.5194/egusphere-egu23-10790, 2023.
- Sofia, G., Yang, Q., Shen, X., **Mitu, M. F.**, Patlakas, P., Chaniotis, I., Kallos, A., Alomari, M. A., Alzahrani, S. S., Christidis, Z., and Anagnostou, E.: The operational flash-flood forecasting system for the Kingdom of Saudi Arabia: A case study of the 24th November 2022 flash flood in Jeddah, EGU General Assembly 2023, Vienna, Austria, 24–28 Apr 2023, EGU23-7434, https://doi.org/10.5194/egusphere-egu23-7434, 2023.
- **Mitu, M.F.**, Sofia, G., Shen, X., Anagnostou, E.N. (2022), An Assessment of Compound Flooding Impacts across the East Coast, USA, [H25B-02] presented at 2022 Fall Meeting, AGU, 12-16 Dec, Chicago, IL, USA & Online Everywhere
- **Mitu, M.F.**, Sofia, G., Shen, X., Anagnostou, E.N. (2021), A Framework to Assess the Compound Flood Risk in Coastal Areas, [H32D-01] presented at 2021 Fall Meeting, AGU, 13-17 Dec, New Orleans, LA, USA & Online Everywhere.
- **Mitu, M.F.**, Shen, X., Sofia, G., Anagnostou, E.N. (2020), An Integrated Framework to Assess Compound Flood Potential in Coastal Areas: Concurrence of River Discharge and Storm Surge Extremes, [H226-07] presented at 2020 Fall Meeting, AGU, 01-17 Dec, Online Everywhere.

PROFESSIONAL SERVICES

Journal of Hydrology *March 2021 - Present*

Peer Reviewer of 15 articles on topics including compound flood effects, flood modeling, climate change

TEACHING INTERESTS

Fluid Mechanics, Hydrology, Geostatistics

TEACHING EXPERIENCE

University of Connecticut (UConn) *Storrs, CT, USA*

Graduate Teaching Assistant (TA), Department of Civil and Environmental Engineering *August 2019 – May 2022*

Course instructed/assisted: Fluid Mechanics (ENVE-3120)

- Prepared and delivered lectures for activities to reinforce key concepts in Fluid Mechanics.
- Managed laboratory to set-up experiments, supervise lab sessions ensuring lab safety for 40 students per section.
- Participated in oral exam committees for evaluating performances.

LANGUAGE SKILLS

German: Minimum Professional Proficiency, **Bengali**: Native

AWARDS/ HONORS

- Eversource Energy Center Graduate Fellowship, Eversource Energy Center — *January 2023*
- Conference Participation Award, The Graduate School — *July 2022*
- 2022 Predoctoral Fellowship, Department of Civil and Environmental Engineering — *January 2022*
- Eversource Energy Center Graduate Fellowship, Eversource Energy Center — *April 2020*
- Scholarship Award by the Breuning Foundation – Association of the Friends of the University of Applied Science ("Verein Freunde der Hochschule für Technik Stuttgart e.V.") — *HfT Stuttgart, 2014 - 2016*
- Scholarship for the support ("Stipendium mit Betreuungsleistung") of International Student Office activities granted by German Academic Exchange Service (DAAD) — *HfT Stuttgart, 2014 - 2015*
- Technical Scholarship of Bangladesh University of Engineering & Technology — *BUET, 2007 - 2012*

LEADERSHIP AND VOLUNTEER ACTIVITIES

University of Connecticut (UConn), Storrs, CT, USA

Public Relations Director, John Lof Leadership Academy (JLLA) — *June 2023 - Present*

Social Media Director, John Lof Leadership Academy (JLLA) — *December 2022 – June 2023*

Vice President, Student Association of Graduate Engineers (SAGE) — *May 2021 - June 2023*

University of Applied Sciences Stuttgart, Stuttgart, Germany — *August 2014 - April 2017*

Support for International Student Activities, International Student Office (ISO)

PROFESSIONAL/ SOCIETY MEMBERSHIPS

- American Society of Civil Engineers (ASCE) — *2019 – Present*
- American Geophysical Union (AGU) — *2020 – Present*
- European Geophysical Union (EGU) — *2023 – Present*