

Md Golam Rabbani Fahad, Ph.D.

Assistant Professor
Department of Environmental Health Sciences
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Scholar Profile: [Google Scholar](#), [ResearchGate](#), [LinkedIn](#)

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EXPERTISE & RESEARCH INTERESTS

Climate Change Impact Analysis, Climate Vulnerability, GIS & RS, Coastal Resiliency Against Natural Disasters, Micro and Macro Scale Flood Damage, Resiliency and Recovery, Computational Hydrology and Hydraulics, Machine Learning and Big Data Hydrology, Urban Climate & Sustainable Smart Cities, Impact of Air Quality, Urban Heat Island, and Thermal Comfortability on Vulnerable Population.

EDUCATION

The University of Alabama at Birmingham Ph.D. in Civil Engineering Thesis: <i>Towards a Resilient Community: Application of Advanced Computational Models and Big Data Analytics.</i>	December 2021
Rowan University, New Jersey M.Sc. in Civil Engineering Thesis: <i>A detailed hydrodynamic study to help community-based resiliency planning under extreme climatic and weather events.</i>	January 2018
Bangladesh University of Engineering and Technology (BUET) B.S in Civil Engineering	July 2014

PROFESSIONAL APPOINTMENTS

Assistant Professor The University of Alabama at Birmingham	September 2022-Ongoing
Assistant Professor Jacksonville State University	August 2022
Civil Associate II Michael Baker International	May 2022 – August 2022
Postdoctoral Fellow The University of Alabama at Birmingham	February 2022-May 2022
Ph.D. Research Fellow The University of Alabama at Birmingham	2019-2021
Lab Instructor & Graduate Teaching Assistant The University of Alabama at Birmingham Rowan University, New Jersey	2016-2021
Graduate Research Assistant Rowan University, New Jersey	2016-2019
Senior Research Assistant Institute of Water & Flood Management, BUET	2014-2016

TEACHING EXPERIENCE

Lab Instructor & Teaching Assistant, the University of Alabama at Birmingham <i>Courses:</i> Hydraulics, Water Supply & Drainage Design <i>Responsibilities:</i> Developing lab modules for undergrad and graduate level students, teaching lab classes, grading HWs, Exams, and Quizzes. Introduced computational H&H at the department. Developed and delivered interactive instruction & course materials through Canvas.	Fall 2019-2021 Spring 2019-2021
Graduate Teaching Assistant, Rowan University, New Jersey <i>Courses:</i> Fluid Mechanics, Water Resources Engineering <i>Responsibilities:</i> Developed and delivered two weekly one-hour lectures (60 students) for the labs. Facilitate discussion section, and develop assignments and exam questions from diverse backgrounds.	Fall 2016-2018 Spring 2016-2019

RESEARCH EXPERIENCE

Postdoctoral Scholar at the University of Alabama at Birmingham Advisor: Rouzbeh Nazari & Maryam Karimi <i>Key responsibilities:</i> Developing operational framework for Long Short-Term Memory (LSTM) based flood forecasting for coastal Alabama, Identifying the cumulative health impact of vulnerable communities in Black Belt region from Climate Change & Total Environment perspective. Collaborating with different research group to prepare proposals for NIH, NSF, USDA, NASA, EPA & FEMA.	2022-Present
Ph.D. Research Fellow at the University of Alabama at Birmingham Advisor: Rouzbeh Nazari <i>Key responsibilities:</i> Managed, performed, and coordinated water resources, hydrology, and hydraulic (HH) modeling tasks for state and federally-funded projects. Developed hurricane evacuation planning by integrating hydrodynamic modeling and dynamic evacuation routing by reducing mass vehicle evacuation time. Published 15+ peer-reviewed journal articles from projects funded by NJDCA, USDA, USDOT & NSF.	2019-2021
Graduate Research Assistant, Rowan University, New Jersey Advisor: Rouzbeh Nazari <i>Key responsibilities:</i> Used HEC-RAS 2D, TUFLOW-GPU, and ADCIRC to simulate hurricane-induced flooding in coastal New Jersey. \$875,000 project funded by NJDCA. Developed codes and routines for floodplain mapping using SWAT, HEC-HMS, ArcGIS, and WRF. Experienced in FEMA NFIP CRS program, FIRM, FIS, and related impact analysis (i.e., LOMR, CLOMR). Developed NJFloodAlert.com , a tool to improve community-based resiliency planning for the State of New Jersey.	2016-2019
Research Assistant, Institute of Water and Flood Management (IWFM) Advisor: AKM Saiful Islam <i>Key responsibilities:</i> Collaborated in High-End Climate Impacts & Extremes (HELIX) international project to assess climate change impact over South Asia using RCP8.5 scenario. Assessed hydrological response to climate change of the Brahmaputra basin using CMIP5 general circulation model ensemble. Implemented DSSAT crop modeling to assess the impact of climate change on agricultural production. Published 3+ peer-reviewed journal articles in high-impact journals.	2014-2016

PUBLICATIONS

Highlights

26+Peer reviewed journal articles, 5 International Conference Papers, 3 Technical presentations. **310+ total citations.**

Peer-reviewed publications (<https://scholar.google.com/citations?user=LkbCC-YAAAAJ&hl=en>)

Journal List:

1. **Fahad, M. G. R.**, Zech, W. C., Nazari, R., & Karimi, M. (2022). Developing a Geospatial Framework for Severe Occupational Injuries Using Moran's I and Getis-Ord Gi* Statistics for Southeastern United States. *Natural Hazards Review*, 23(3), 04022020. [https://doi.org/10.1061/\(ASCE\)NH.1527-6996.0000566](https://doi.org/10.1061/(ASCE)NH.1527-6996.0000566)
2. **Fahad, M. G. R.**, Nazari, R., Motamedi, M. H., & Karimi, M. (2022). A Decision-Making Framework Integrating Fluid and Solid Systems to Assess Resilience of Coastal Communities Experiencing Extreme Storm Events. *Reliability Engineering & System Safety*, 108388. <https://doi.org/10.1016/j.ress.2022.108388>
3. Nazari, R., & **Fahad, M. G. R.** Development of a Decision Support Framework for Multi-Hazard Resilience Assessment of Coastal Structures. *In Geo-Extreme 2021* (pp. 318-328). <https://doi.org/10.1061/9780784483688.032>
4. Nazari, R., Vasiliadis, H., Karimi, M., **Fahad, M. G. R.**, Simon, S., Zhang, T., ... & Peters, R. (2022). Hydrodynamic Study of the Impact of Extreme Flooding Events on Wastewater Treatment Plants Considering Total Water Level. *Natural Hazards Review*, 23(1), 04021056. [https://doi.org/10.1061/\(ASCE\)NH.1527-6996.0000531](https://doi.org/10.1061/(ASCE)NH.1527-6996.0000531)
5. **Fahad, M. G. R.**, Karimi, M., Nazari, R., & Sabrin, S. (2021). Developing a geospatial framework for coupled large scale thermal comfort and air quality indices using high resolution gridded meteorological and station-based observations. *Sustainable Cities and Society*, 74, 103204. <https://doi.org/10.1016/j.scs.2021.103204>
6. Sabrin, S., Nazari, R., Karimi, M., **Fahad, M.G.R.**, Everett, J., & Peters, R. (2021). Development of a Conceptual Framework for Risk Assessment of Elevated Internal Temperatures in Landfills. *Science of The Total Environment*. <https://doi.org/10.1016/j.scitotenv.2021.146831>
7. **Fahad, M. G. R.**, Nazari, R., Motamedi, M. H., & Karimi, M. E. (2020). Coupled Hydrodynamic and Geospatial Model for Assessing Resiliency of Coastal Structures under Extreme Storm Scenarios. *Water Resources Management*, 1-16. <https://doi.org/10.1007/s11269-020-02490-y>
8. **Fahad, M. G. R.**, Nazari, R., Bhavsar, P., Jalayer, M., & Karimi, M. (2019). A decision-support framework for emergency evacuation planning during extreme storm events. *Transportation research part D: transport and environment*, 77, 589-605. <https://doi.org/10.1016/j.trd.2019.09.024>
9. **Fahad, M. G. R.**, Saiful Islam, A. K. M., Nazari, R., Alfi Hasan, M., Tarekul Islam, G. M., & Bala, S. K. (2018). Regional changes of precipitation and temperature over Bangladesh using bias-corrected multi-model ensemble projections considering high-emission pathways. *International Journal of Climatology*, 38(4), 1634-1648. <https://doi.org/10.1002/joc.5284>
10. **Fahad, M.G.R.**, Nazari R, Daraio J, Lundberg DJ (2017) Regional Study of Future Temperature and Precipitation Changes Using Bias Corrected Multi- Model Ensemble Projections Considering High Emission Pathways. *J Earth Sci Clim Change* 8:409. <https://doi.org/10.4172/2329-6542.1000409>
11. Uddin, M. N., Islam, A. S., Bala, S. K., Islam, G. T., Adhikary, S., Saha, D., Haque, S., **Fahad, M.G.R.**, & Akter, R. (2019). Mapping of climate vulnerability of the coastal region of Bangladesh using principal component analysis. *Applied geography*, 102, 47-57. Sabrin, S., Karimi, M., **Fahad, M. G. R.**, & Nazari, R. (2020). <https://doi.org/10.1016/j.apgeog.2018.12.011>
12. Sabrin, S., Karimi, M., **Fahad, M. G. R.**, & Nazari, R. (2020). Quantifying environmental and social vulnerability: Role of urban Heat Island and air quality, a case study of Camden, NJ. *Urban Climate*, 34, 100699. <https://doi.org/10.1016/j.uclim.2020.100699>

13. Islam, A. K. M., Paul, S., Mohammed, K., Billah, M., **Fahad, M.G.R.**, ... & Bala, S. K. (2018). Hydrological response to climate change of the Brahmaputra basin using CMIP5 general circulation model ensemble. *Journal of Water and Climate Change*, 9(3), 434-448. <https://doi.org/10.2166/wcc.2017.076>
14. Amir H. Iranmanesh; Ureil Clark; **Md. Golam Rabbani Fahad** and Rouzbeh Nazari. Resilience Assessment of Bridges Subjected to Hurricane. *TRB 97th Annual Meeting* (January 7-11, 2018)
15. Nazari, R., Alfergani, H., Haas, F., Karimi, M. E., **Fahad, M. G. R.**, Sabrin, S., ... & Peters, R. W. (2020). Application of Satellite Remote Sensing in Monitoring Elevated Internal Temperatures of Landfills. *Applied Sciences*, 10(19), 6801. <https://doi.org/10.3390/app10196801>
16. Sabrin, S., Nazari, R., Fahad, M. G. R., Karimi, M., Everett, J. W., & Peters, R. W. (2020). Investigating Effects of Landfill Soil Gases on Landfill Elevated Subsurface Temperature. *Applied Sciences*, 10(18), 6401. <https://doi.org/10.3390/app10186401>

Conference Papers:

1. Nazari, R., & **Fahad, M. G. R.** Development of a Decision Support Framework for Multi-Hazard Resilience Assessment of Coastal Structures. In *Geo-Extreme 2021* (pp. 318-328).
2. Nazari, R., & **Fahad, M. G. R.** (2022, January). Integrated Resilience and Vulnerability Solutions for Coastal Communities at Risk. In *102nd American Meteorological Society Annual Meeting*. AMS.
3. Nazari, R., Motamedi, M. H., & **Fahad, M. G. R. H.** (2018, December). An innovative framework for high resolution quantitative assessment of flood resiliency of communities. In *AGU Fall Meeting Abstracts* (Vol. 2018, pp. NH33B-10).
4. Iranmanesh, A. H., Clark, U., **Rabbani, F.**, Lundberg, D., Motamedi, M. H., & Nazari, R. (2018). Resilience Assessment of Bridges Subjected to Hurricane (No. 18-06669).
5. **Fahad, M.G.R.**, Islam, A.S., Bala, S.K., Islam, G.M.T., Hasan, M.A. and Paul, S. (2015) Impact of High-End Climate Change on Boro Production of Bangladesh, *Proceedings of the International conference on Climate Change Impact and Adaptation*, 12-14 February 2015, DUET, Gazipur, Bangladesh.
6. **Fahad, M.G.R.**, Islam, A.S., Bala, S.K., and Islam, G.M.T (2015) The Projection of Temperature and Precipitation over Bangladesh under RCP Scenarios using CMIP5 Multi-Model Ensemble, *International Conference on Recent Innovation in Civil Engineering for Sustainable Development (IICSD-2015)*, DUET, 11-13 December Gazipur, Bangladesh.

Technical presentations:

1. **Fahad, Md Golam Rabbani**; Das, Plaban; Motamedi, Hosein and Nazari, Rouzbeh. Decision making framework for community-based resiliency planning under extreme storm events. Day of Resiliency Symposium, Friday June 16th, 2017, Rowan University, Glassboro, New Jersey.
2. **Fahad, Md Golam Rabbani**; Das, Plaban; Motamedi, Hosein, Nazari, Rouzbeh; Christman Zach; Miller Demond and Bhasvar, Parth. Impact based decision-making framework for community-based resiliency planning under extreme storm events. Department of Community Affairs New Jersey (NJCA), February 8th, 2017, Rowan University, Glassboro, New Jersey.
3. Sedlac, Thomas; Ponzio, Ryan; Wagner, Shane and **Fahad, Md Golam Rabbani**. Flood modelling to develop resiliency index. Rowan University STEM Research Symposium, April 24, 2016.

GRANTS/FUNDINGS

- New Jersey Department of Community Affairs (NJCA). Remote Sensing and Resiliency Lab. **Community Based Resiliency Framework Under Extreme Storm Scenarios**, \$875,000. PI: Dr. Rouzbeh Nazari, Assistant Professor, Department of Civil Engineering, Rowan University. (funded)
My role: Provided preliminary results, wrote the grant with Dr. Nazari, supervised students.
- National Science Foundation, NSF-ICorps. *Micro Scale Flood Damage Assessment for Coastal Communities: Assessing the Commercialization Potential for High Resolution Flood Risk Assessment Products*, \$50,000. PI: Dr. Rouzbeh Nazari, Associate Professor, Department of Civil Engineering, UAB. (funded)
My role: Entrepreneur Lead (EL)

- EPA-G2021-STAR-H1. **Identifying Climate Change Driven Cumulative Health Impacts due to Failing Sewer Infrastructures on the Vulnerable Communities of Black Belt, Alabama: A Community Based Solution for Vulnerable Populations from Total Environment Perspective**, \$1,338,200. PI: Dr. Rouzbeh Nazari, Associate Professor, Department of Civil Engineering, UAB. (submitted)
My role: Co-PI

PROFESSIONAL SERVICES

Memberships

- Institute of Transportation Engineers (ITE)
- American Society of Civil Engineers (ASCE)
- American Geophysical Union (AGU)
- Association of State Floodplain Management (ASFPM)
- Geological Society of America (GSA)

Leadership in Committee Engagements

1. Organizer of Rowan Resiliency Day. Rowan University. Glassboro. New Jersey. [May 2017]
2. Active role as volunteer in “5th International Conference on Water & Flood Management (ICWFM)”, organized by Institute of Water and Flood Management (IWFM), BUET, Dhaka. [4th Mar - 6th Mar 2015].
3. Active role as volunteer in “5th International Conference on Water & Flood Management (ICWFM)”, organized by Institute of Water and Flood Management (IWFM), BUET, Dhaka. [4th Mar - 6th Mar 2015].

Peer Reviewer

- Journal of Environmental Management – Elsevier (ISSN: 0301-4797)
- Water resource management – Springer (Electronic ISSN: 1573-1650)
- Transportation Research Board Annual Meeting – (TRBAM)
- ASCE Geo Extreme
- Building and Environment – Elsevier (ISSN: 0360-1323)

AWARDS & FELLOWSHIPS

- Awarded **Deans List** for outstanding academic achieving from Rowan University, NJ.
- **Blazerbest Scholarship**, University of Alabama, Birmingham.
- Awarded **Outstanding Graduate Student** from Department of Civil and Environmental Engineering, Rowan University, NJ.
- **Best Presenter award** from International Conference on Climate Change in Relation to Water and Environment (I3CWE 2015). DUET. Dhaka. Bangladesh.

MENTORING EXPERIENCE

Mentor for Andrew Silver, Undergraduate <i>Current status:</i> Engineer at Maser Consulting	Fall 2017
Mentor for Aishwariya Kaushal, PhD student <i>Current status:</i> Pursuing PhD in Public Health at University of Alabama at Birmingham	Spring 2020
Mentor for Mukti Patel, M.S student <i>Current status:</i> Traffic Engineer at City of Birmingham	Spring 2020
Qing Sun, M.S. Student <i>Current status:</i> Pursuing PhD	Fall 2021
Mujungu Museru <i>Current status:</i> M.S student at University of Alabama at Birmingham	Spring 2021
Kofi Opare <i>Current status:</i> Ph.D. student at University of Alabama at Birmingham	Spring 2022

TECHNICAL SKILLS

Computer Skills

- Hydraulic and hydrologic modelling tools: HEC-RAS, HEC-HMS, SWMM, ADCIRC & TUFLOW
- Highly experienced in remote sensing and GIS (ArcGIS suite, QGIS, ENVI & Terrset)
- Experienced in satellite image processing (Landsat, MODIS, Sentinel etc.)
- Storm water management: WaterCAD, SewerCAD, StormCAD
- Experienced in meteorological reanalysis product such as NLDAS, ERA INTERIM, NCEP FNL, GFS etc.
- Strong programming and machine learning skills with R & python (r neuralnet/scikitlearn packages)
- Weather modelling using WRF.
- AutoCAD, Civil3D, Microstation.

End