

MD ZAKARIA SALIM

GIS & Flood Risk Analyst

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PROFESSIONAL SUMMARY

GIS Analyst with over 6 years of experience in spatial modeling and geostatistics, excelling in the use of ArcGIS Pro, Python, and R for advanced disaster analysis. Demonstrates innovative solutions in flood risk assessment and environmental resilience, leveraging expertise in machine learning to enhance predictive models. Passionate about integrating high-resolution geospatial data to drive informed decision-making and policy development in environmental research.

CORE COMPETENCIES

Technical Skills: ArcGIS Pro, QGIS, ENVI, Python, R, SNAP, SeaDAS, Illustrator, InDesign, Photoshop

Research Areas: [Flood Risk Assessment](#) • [Environmental Justice](#) • [Machine Learning](#) • [Geostatistics](#) • [Health Applications](#)

Academic Profiles: [ResearchGate](#) • [Google Scholar](#) • [ORCID](#) • [GitHub](#)

PROFESSIONAL EXPERIENCE

Graduate Research Associate

University of South Florida | Tampa, FL | Aug 2024 - Present

- Design and implement cutting-edge GIS frameworks to enhance flood risk visualization and strengthen decision-making processes
- Develop advanced spatial analysis frameworks for flood risk assessment, integrating multi-source data to enhance prediction accuracy and inform policy decisions
- Lead cross-functional research initiatives with faculty members to optimize flood modeling methodologies and strengthen data-driven decision-making processes

Research Internship

University of South Florida | Tampa, FL | May 2024 - Jun 2024

- Integrated multiple data sources to build comprehensive water quality analytics platform, ensuring accurate environmental reporting
- Automated statistical analysis procedures for water quality parameters, reducing manual processing time and improving data accuracy
- Partnered with environmental teams to develop and implement data-driven solutions for water quality monitoring and assessment

Graduate Teaching Assistant

University of South Florida | Tampa, FL | Aug 2022 - May 2024

- Provided academic support to students by addressing queries related to lab and course materials during designated office hours
- Mentored undergraduate students through complex course materials, implemented innovative teaching methods, and fostered an inclusive learning environment

Associate GIS Analyst

Tiller Easing Spatial Solution | Dhaka, Bangladesh | Nov 2019 - Jun 2022

- Led a team of surveyors for physical feature surveys, including report writing to document findings and recommendations
- Coordinated with cross-functional teams to analyze spatial patterns and develop solutions for complex urban planning challenges

EDUCATION

Ph.D. in Geography, Environmental Science & Policy

University of South Florida | Tampa, FL | Aug 2024 - Present

Fellowship Award 2024-25

M.A. in Geography

University of South Florida | Tampa, FL | Aug 2022 - May 2024

Graduate Assistantship 2022-24 | GPA: 3.8/4.0

Bachelor of Urban and Regional Planning

Khulna University of Engineering & Technology | Bangladesh | Apr 2015 - May 2019

Technical Scholarship 2015-16

RESEARCH PROJECTS

Current PhD Research

"Beyond the Block Group: A Machine Learning Framework for Predicting Socioeconomic Vulnerability at the Parcel Level"

University of South Florida | 2025-Now

- Developing a novel downscaling methodology to disaggregate census data for hyper-local disaster vulnerability analysis.
- The final output is a high-resolution parcel dataset with socioeconomic attributes to identify disadvantaged communities for equitable flood-risk communication

Upcoming Research

"From Vulnerability to Justice: A Parcel-Level Framework for Environmental Justice Assessment"

University of South Florida | 2025-Now

- This planned study aims to conduct a definitive environmental justice assessment by comparing the socioeconomic profile of populations inside and outside of flood hazard areas
- It aims to reveal overlooked high-risk residential areas to deliver a precise data-based solution for transition of coastal communities from disaster response to planned resilience and development strategies

Past Research

"Did Official Flood Maps Really Worked in Hurricane Helene? Systematical Evaluation of Official Flood Maps with Groundtruth Observation"

University of South Florida | 2024-Now

- This PhD research evaluates official flood maps during Hurricane Helene against NSF-funded real-time water level monitoring camera simulation models in Tampa Bay, Florida, part of [CRIS-HAZARD](#) system.
- The study reveals significant discrepancies in flood extents and affected populations, especially in socioeconomically vulnerable areas, raising concerns over the equity of current flood risk communication and need for localized flood modeling approaches.

SELECTED PUBLICATIONS

1. **Salim, M. Z.**, Qiang, Y., Dixon, B., & Collins, J. (2024). A disparate disaster: spatial patterns of building damage caused by Hurricane Ian and associated Socio-Economic factors. *Remote Sensing*, 16(20), 3792. <https://doi.org/10.3390/rs16203792>
2. **Salim, M. Z.**, Rahman, M. H., Kafy, A. A., Altuwaijri, H. A., Fattah, M. A., & Choudhari, N. (2025). Automated geospatial workflow for spatiotemporal assessment of urban expansion influence on deforestation in Northeast Florida. *Kuwait Journal of Science*, 100453. <https://doi.org/10.1016/j.kjs.2025.100453>
3. **Salim, M. Z.**, Choudhari, N., Kafy, A. A., Nath, H., Alsulamy, S., Rahaman, Z. A., Aldosary, A. S., Rahmand, M. T., & Al-Ramadan, B. (2024). A comprehensive review of navigating urbanization induced climate change complexities for sustainable groundwater resources management in the Indian subcontinent. *Groundwater for Sustainable Development*, 25, 101115. <https://doi.org/10.1016/j.gsd.2024.101115>
4. **Salim, M. Z.**, Kafy, A. A., Altuwaijri, H. A., Miah, M. T., Jodder, P. K., & Rahaman, Z. A. (2024). Quantitative evaluation of damage assessment of Hurricane Ian on urban vegetation dynamics utilizing Landsat 9 in Fort Myers, Florida. *Physics and Chemistry of the Earth Parts a/B/C*, 103750. <https://doi.org/10.1016/j.pce.2024.103750>

5. Han, L., Qiang, Y., Ma, C., Li, X., **Salim, Z.**, Bhandari, R., Alsharif, K. A., & Jin, H. (2025). Spatial pattern and socioeconomic factors of 2022 monkeypox outbreak in the United States. *The Professional Geographer*, 1–12. <https://doi.org/10.1080/00330124.2025.2474445>
6. **Salim, M. Z.** (2022). Delineation of Flooded Areas using Remote Sensing Technology. *2nd International Conference on Urban and Regional Planning (ICURP), Bangladesh*. <https://doi.org/10.5281/zenodo.15707857>
7. **Salim, M. Z.**, Qiang, Y., Dixon, B., Sahagún-Covarrubias, S. & Eugene, Y. (2025). Did Official Flood Maps Work in Hurricane Helene? Systematic Evaluation of Official Flood Maps with Ground-Truth Observations. *International Journal of Disaster Risk Reduction (In Revision)*.

PROFESSIONAL SERVICE & CONTRIBUTIONS

Peer Reviewer for Academic Journals

- Communications Earth & Environment
- Environmental Monitoring and Assessment
- Environmental Research and Technology
- Economics of Disasters and Climate Change
- Discover Geoscience
- Journal of Geovisualization and Spatial Analysis
- Theoretical and Applied Climatology
- Earth Science Informatics

Professional Affiliations

- Media Officer, ASPRS Student Chapter, University of South Florida, Tampa (2025-Present)
- Treasurer, GIS Club, University of South Florida, Tampa (2024-Present)
- Member, Phi Kappa Phi Society (2023-Present)

Professional Development & Certifications

- HTML Essential Training - LinkedIn Learning (Jan 2025)
- CSS Essential Training - LinkedIn Learning (Jan-Feb 2025)
- JavaScript Essential Training - LinkedIn Learning (Feb 2025)
- Python for Everyone - Esri (Jul 2024-Jul 2025)
- Convolutional Neural Networks - deeplearning.ai (Feb-Mar 2024)
- GIS Data Formats, Design, and Quality - UC Davis (Sep-Oct 2022)