



Company Role

Research Scientist

Project Role / Focus Areas

- Hydrodynamic Modeling
- Hydrologic Modeling
- Contaminant Modeling
- Machine Learning
- High-performance Computing

Education

- Ph.D. – Civil Engineering, University at Buffalo, New York – 2022
- M.S. – Water Resources Engineering, Indian Institute of Technology Guwahati / RWTH Aachen, Germany (DAAD scholar) – 2016
- B.S. – Civil Engineering, Tezpur University, India – 2013

Technical Proficiency

- Language – C, FORTRAN, MATLAB, Python, R, SQL
- Software – AutoCAD, ArcGIS, EFDC, HEC-HMS, HEC-RAS, Hydrus 1D, Plaxis, SAS, STANMOD, SWAT, SWMM, Tecplot, WinTR-55

Professional Membership

- ASCE

Experience Profile

Angshuman Saharia is a research scientist at The Water Institute of the Gulf's Coastal and Deltaic Systems Modeling group. His expertise has been in the modeling of compound flooding, hydrodynamic modeling, hydrology, water quality modeling, and environmental fluid mechanics. Dr. Saharia received his undergraduate with a Bachelor of Technology in Civil Engineering from Tezpur Central University, graduated with a Master of Technology in Water Resources Engineering from the Indian Institute of Technology, Guwahati, master's degree project at RWTH Aachen University, Germany (DAAD scholar), and Ph.D. in hydrology and water resources engineering from the University at Buffalo, New York.

Dr. Saharia has contributed to the development of compound flood model, sediment model and water quality models framework during his Ph.D. He has also coupled sewage model with river hydrodynamic model to demonstrate nanomaterial transport, and *E. coli* transport in urban coastal river. Dr. Saharia is currently working on the projects such as 'Louisiana Watershed Initiative' and 'Texas General Land Office (GLO) Combined River Basin Flood Studies' in the 'Deltaic Systems Modeling group.

Professional Experience

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| The Water Institute of the Gulf | |
| • <i>Research Scientist</i> | 2022-Present |
| University at Buffalo | |
| • <i>Research Assistant</i> | 2017-2022 |
| Indian Institute of Technology Guwahati | |
| • <i>Junior Research Fellow</i> | 2016-2017 |
| • <i>Teaching Assistant</i> | 2014-2015 |
| Gammon India Limited | |
| • <i>Intern</i> | 2011 |

Selected Projects

Texas General Land Office River Basin Flood Study (2022 – Present).

Hydrological and hydraulic modeling of tropical and non-tropical storms, joint probability methods, uncertainty and bias quantification, and development of compound flood hazard maps considered in this study.

Louisiana Watershed Initiative (2022 – Present).

Hydrological and hydraulic modeling on compound flood for tropical and non-tropical storms, joint probability methods and optimal sampling, uncertainty and bias quantification considered in this study.

Selected Projects (continued)

Modeling for Contamination and Flood Risks in Freshwater Coastal Urban River System (2017-2022). Ph.D. Thesis
Interactions among specific stressors, especially evaluating risk assessment from flood and seiche, sediment, and *E. coli* contributed by sewers from an urban city, were considered in this study. Different combinations of these stressors were modeled under the proposed evaluation of risk.

Compound flooding from lake seiche and river flow in a freshwater coastal (2017-2019). Research Assistantship Project
Compound impacts on water level caused by seiche and high flow in a freshwater coastal river were analyzed using copula-based joint probability distribution and a hydrodynamic model. The analysis framework can provide insight into the probability of occurrence of compound events.

Junior Research Fellowship Project at Indian Institute of Technology Guwahati (2016-2017).

Morphological Studies of Rivers Brahmaputra, Subansiri, and Pagladia evaluated using remote sensing and GIS. The research consisted of data collection and image processing, bank line delineation, channel evolution analysis, bank erosion/ deposition analysis, Land use/Land cover, field survey, and identification of critical and vulnerable reaches and locations.

M Tech Thesis and DAAD Scholarship Project (2015- 2016). Project 1

The project included SWAT (Soil and Water Assessment Tool) modeling for highly polluted rivers Bharalu and Basistha. The influence of climate change and hydrologic processes compared for these two rural and urban basins.

M Tech Thesis and DAAD Scholarship Project (2015- 2016). Project 2

Transport processes of engineered nanoparticles were studied in saturated aquifer materials, focusing on silver nanoparticles used in the agricultural and industrial fields. The research study consisted of a column experiment, tracer test, flow field flow fractionation (FIFFF), and mathematical modeling using Hydrus 1D.

Selected Publications

Journals

1. **Saharia, A.M.**, Zhu, Z. and Atkinson, J.F., 2021. Compound flooding from lake seiche and river flow in a freshwater coastal river. *Journal of Hydrology*, p.126969. (I.F. 5.722)
2. **Saharia, A.M.**, Zhu, Z., Aich, N., Baalousha, M. and Atkinson, J.F., 2019. Modeling the transport of titanium dioxide nanomaterials from combined sewer overflows in an urban river. *Science of the Total Environment*, 696, p.133904. (I.F. 7.963)
3. **Saharia, A.M.**, and Sarma, A.K., 2018. Future climate change impact evaluation on hydrologic processes in the Bharalu and Basistha basins using SWAT model. *Natural Hazards*, 92(3), pp.1463-1488. (I.F. 3.102)
4. Hui, Y., Zhu, Z., Atkinson, J.F. and **Saharia, A.M.**, 2021. Impacts of phosphorus loading temporal pattern on benthic algae growth in Lake Ontario. *Journal of Hydrology*, 598, p.126449. (I.F. 5.722)
5. **Saharia, A.M.**, Zhu, Z. and Atkinson, J.F., 2022. Modeling framework for microbial pollution assessment in an urban freshwater coastal river (ongoing)

Conferences

1. **Saharia, A.M.**, Zhu, Z., Farhazadeh A., and Atkinson, J.F., 2019. Modeling the effects of seiche events in Lake Erie on Buffalo River flooding. IAGLR's 62nd annual Conference on Great Lakes Research.
2. **Saharia, A.M.**, Zhu, Z. and Atkinson, J.F., 2021. Modeling the fate and transport of nanoparticles from combined sewer overflows in the Buffalo River. IAGLR's Annual Conference on Great Lakes Research.