

Nishan Kumar Biswas

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Area of Interest

- Hydrometeorological application of satellite remote sensing
 - Numerical weather prediction and extreme event forecasting
 - Cloud computing, big data visualization and application development
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Education**PhD in Civil and Environmental Engineering (June 2017 – December 2020)**

University of Washington, Seattle, WA, USA

Thesis: Mainstreaming multi-mission satellite observations in advancing operational water management

MSc in Civil and Environmental Engineering (January 2016 – June 2017)

University of Washington, Seattle, WA, USA

BSc in Water Resources Engineering (January 2008 – February 2013)Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh

Awards and Honors

- NASA Certificate of Appreciation (2020), SWOT Early Adopter Virtual Hackathon
 - Appreciation Award (2020) for flash flood forecasting, Bangladesh Water Development Board
 - Public Messaging and Engagement Award (2019), [UW Student Film Contest 2019](#)
 - Co-organizer of Engineering Discovery Days (2016-2018), University of Washington
 - Ivanhoe Fellowship (2015), University of Washington
 - Engineers Stipend (2011), Bangladesh University of Engineering and Technology
 - Higher Secondary School Examination Scholarship (2007), Government of Bangladesh
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Experience**Graduate Research Assistant (December 2015 - Present)**Department of Civil Engineering ([SASWE Research Group](#)), University of Washington

- A [Global Reservoir Assessment Tool \(RAT\)](#) was developed to monitor the operating pattern of 1600 reservoirs solely based on satellite observations, which showed an accuracy of more than 75%.
- A [Dynamic River Width based Altimeter Height Visualizer](#) was developed to generate near-real-time river stages of 210 virtual stations over South and South-East Asia. [News link of JPL, NASA](#)
- A skillful and computationally efficient [flash flood forecasting system](#) developed for the northeastern region of Bangladesh which has been used operationally to minimize flood risk and damage.
- [World's first operational transboundary reservoir monitoring system was developed for Mekong and Red River Basins](#) to monitor upstream dams using EO data with a promising accuracy. [EOS news link](#)
- A web analytics based real-time correction system was implemented for satellite based precipitation over the South and South-East Asia river basins which showed a significant improvement in prediction.
- A scalable and operational web interface [South Asian Surface Water Modelling System](#) was developed which connects complex back-end models with user-friendly front-end. [Earth Sciences News of NASA](#)

Student Intern (June 2017- September 2017)

Hydrological Sciences Laboratory, Goddard Space Flight Center, NASA

- An interactive web based dynamic framework [LIS-ATLAS](#) was developed to visualize Land Information System ([LIS](#)) Model outputs and quantitative evaluations of model predictions.

Junior Engineer (July 2013 – December 2015)

Flood Management Division, Institute of Water Modelling (IWM), Dhaka, Bangladesh

- A vertically integrated and automated system were designed, developed and implemented for an operational flood prediction and inundation mapping for 160 million people of Bangladesh.

- More than 6 hydrological-hydrodynamic models were developed, calibrated and validated using state of the art tools and software for river stage and flow prediction and water resources management.

Selected peer reviewed publications

1. **Biswas, N.K.**, Hossain, F., Bonnema, M., Lee, H., Chishtie, F. (2020). A Global Reservoir Assessment Tool for Predicting Hydrologic Impact and Operating Pattern of Existing and Planned Reservoirs, Environmental Modeling and Software (In revision).
2. **Biswas, N. K.**, Hossain, F., Bonnema, M., Aminul, A., Biswas, R. K., Buiyan, A., & Hossain, A. (2019). A computationally efficient flashflood early warning system for a mountainous and transboundary river basin in Bangladesh, Journal of Hydroinformatics (accepted)
3. **Biswas, N. K.**, Hossain, F., Bonnema, M., Okeowo, M. A., & Lee, H. (2019). An altimeter height extraction technique for dynamically changing rivers of South and South-East Asia. Remote Sensing of Environment, 221, 24-37. doi:10.1016/j.rse.2018.10.033
4. Hossain, F., **Biswas, N. K.**, Ashraf, M., & Bhatti, A. (2017). Growing More with Less Using Cell Phones and Satellite Data. Eos. doi:10.1029/2017eo075143
5. **Biswas, N. K.**, & Hossain, F. (2017). A scalable open-source web-analytic framework to improve satellite-based operational water management in developing countries. Journal of Hydroinformatics, 20(1), 49-68. doi:10.2166/hydro.2017.073

Google scholar link: <https://scholar.google.com/citations?user=e0y35q0AAAAJ&hl=en> (RG Score:11.98)

Computing Skills

Cloud computing and programming: Google Earth Engine, Python, C#, MATLAB, Bash, Shell

Hydrological Modelling: VIC Hydrological Model, MIKE by DHI, HEC-RAS, HEC-HMS, CCHE 2D

GIS Analysis and Database: ArcGIS, QGIS, GDAL, ENVI, Microsoft SQL Server Express, SQLite

Drafting and Documentation: AutoCAD 2D & 3D Modelling, Microsoft Office

Web and Visualization: HTML, CSS, JavaScript, WordPress, D3.js, Leaflet.js, Highcharts.js

Conferences, Workshops and Trainings

- Invited speaker on Data Science and Cloud Computing application in Remote Sensing (2020), Sensing River 2020 Workshop organized at University of Washington.
 - Presenter and hacker of [SWOT Virtual Early Adopter Hackathon \(2020\)](#), organized by NASA and the University of Washington to build deeper engagement with SWOT Early Adopters.
 - Summer school participant (2019) on using Satellite Observations to Advance Climate Models, organized by Center for Climate Sciences, Jet Propulsion Lab, NASA.
 - Led a technical training workshop (July 2018) to mainstream [decision support system](#) for Vietnam on USAID Evidence to Action project for "Application of Satellite Gravimetry, Satellite Altimetry, and VIC Hydrological Model for Water Resource Management in Vietnam".
 - Led a workshop on supporting water management in the Lower Mekong with Satellites (October 2018) at Hanoi, Vietnam supported by SERVIR-Mekong, USAID, and NASA with participants from various agencies in Vietnam, Cambodia, Lao PDR, Myanmar, and Thailand.
 - Provided more than 10 training on satellite remote sensing and hydrological modelling to the South Asian water management agencies from Pakistan, Bangladesh, Thailand, and Vietnam at University of Washington.
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Affiliations

Associate Member, American Society of Civil Engineers (ASCE)

Student Member, American Geophysical Union (AGU)

Student Member, American Meteorological Society (AMS)
