Siddik Ahmed Barbhuiya

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Location: Mandi, HP, India

Profile

Passionate and proactive Junior Research Fellow with hands-on experience in hydrological modeling, climate change impact analysis, and extreme events. Proven ability to drive collaborative research and achieve impactful results. Seeking opportunities to further contribute to hydrology and climate research.

Education

Indian Institute of Technology, Mandi — Mandi, India
PhD in Hydrology (Pursuing) — Jan 2023 – Present
Focus: Hydrological Modelling, Extreme Events, DL-Based RR Models, Climate Change

Maulana Azad National Institute of Technology (MANIT) — Bhopal, India
Master of Technology in Water Resource Engineering — July 2020 – May 2022
CGPA: 9.07
Thesis: Assessment of Streamflow in Ungauged Basin Using Physical Similarity Method

Maulana Abul Kalam Azad University of Technology — Kolkata, India
Bachelor of Technology in Civil Engineering — June 2016 – June 2020
CGPA: 8.73

Experience

Junior Research Fellow — Bhopal, India
National Institute of Hydrology (CIHRC) — May 2022 – Dec 2022

Water Availability Assessment for Project Formulation in Madhya Pradesh

- Analyzed physical characteristics of catchments using ArcGIS.
- Developed Rainfall-Runoff models using GR4J, GR5J, GR6J, and LSTM models.

Reassessment of Evapotranspiration Estimation for Irrigation Planning in MP

- Reviewed and evaluated different ETo estimation methodologies.
- Compared calculated ETo with station-based recorded ETo data.

Skills

Python (Data Analysis, Machine Learning, Deep Learning), R (Statistical Analysis), Advanced Excel (Data Visualization), ArcGIS (Geospatial Analysis), Matlab (Basic)

Languages

Bengali (Native), Hindi (Fluent), English (Fluent), Assamese (Native)

Honours & Awards

Received Google Academic Grants

Publications

Journal Papers

[16] **Assessment of streamflow in the ungauged basin by using physical similarity approach**
Barbhuiya, S., Raghuvanshi, A.S., & Tiwari, H.L.
Arabian Journal of Geosciences, 16(672), 2023.

[15] **Performance evaluation of ML techniques in hydrologic studies: Comparing streamflow simulated by SWAT, GR4J, and state-of-the-art ML-based models**
Barbhuiya, S., Manekar, A., & Ramadas, M.
Journal of Earth System Science, 133(136), 2024.

[14] **From gauged to ungauged: Large-scale deep learning rainfall–runoff modelling for reliable streamflow estimation in India's diverse basins**
Barbhuiya, S., & Gupta, V.
Environmental Modelling & Software, 194, 106696, 2025.

[13] **Understanding future precipitation, temperature, and hazard risks in India under SSP245 and SSP585 scenarios**
Barbhuiya, S., & Gupta, V.
Under review in Acta Geophysica, 2025.

[12] **Indian Climate Information Explorer (INCLINE): A web-based climate-information platform for the Indian subcontinent**
Barbhuiya, S., Kashyap, K., & Gupta, V.
Under review in Climate Services, 2025.

[11] **Hydro-meteorological and infrastructural damage analysis of the recent Ramban cloudburst event in Jammu and Kashmir, India**
Awasthi, S., Jose, A., **Barbhuiya, S.**, et al.
Under review in International Journal of Disaster Risk Reduction, 2025.

[10] **Prospective altitude-driven drought dynamics in the Indus River Basin: Long-term climate-pathway insights**
Dubey, A., Swami, D., Gupta, V., **Barbhuiya, S.**, & Joshi, N.
Under review in Earth Systems and Environment, 2025.

[9] **Dynamic modelling of landslide susceptibility in response to hydro-meteorological variability in the Himalayas**
Sharma, S., **Barbhuiya, S.**, Gupta, V., et al.
Under review in Scientific Reports, 2025.

[8] **Projections of future streamflow for India informed by CMIP6 global climate models**
Sharma, V., **Barbhuiya, S.**, & Gupta, V.
Under review in Hydrological Processes, 2025.

Book Chapters

[7] **Performance Evaluation of Lumped Conceptual Rainfall-Runoff Genie Rural (GR) Hydrological Models for Streamflow Simulation**
Raghuvanshi, A.S., **Barbhuiya, S.A.**, & Tiwari, H.L.
Hydrology and Hydrologic Modelling, LNCE vol 312, Springer, 2023.

[6] **Nonstationary Flood Frequency Analysis: Review of Methods and Models**
Barbhuiya, S., Ramadas, M., & Biswal, S.S.
River, Sediment and Hydrological Extremes, Springer, 2023.

[5] **Assessing the Impacts of Climate Change on Hydroclimatic Regimes in Beas River Basin**
Barbhuiya, S., Sharma, S., Pathania, A., & Gupta, V.
Navigating the Nexus, WSTL vol 102, Springer, 2025.

Conference Papers

[4] **Trend Analysis and Forecasting of Streamflow in the Upper Narmada Basin using RF and LSTM Models**
Barbhuiya, S., Ramadas, M., Jena, S., & Biswal, S.
EGU General Assembly 2023, Vienna, Austria.

[3] **Runoff prediction in a tropical agricultural watershed: A comparison between ML-based and conceptual hydrological models**
Barbhuiya, S., Ramdas, M., et al.
EWRA 2023, Thessaloniki, Greece.

[2] **Will Mamba Rise or Fall? A Real-World Test of Its Rainfall-Runoff Modelling in Indian Basins**
Barbhuiya, S., & Gupta, V.
AGU 2024.

[1] **Analyzing precipitation extremes in South Asia Using ETCCDI Indices**
Barbhuiya, S., Patania, A., Sayd, B., & Gupta, V.
AGU 2024.