Riasad Bin Mahbub

Senior Graduate Research Assistant,
University of Arkansas
Fayetteville, AR 72701,
United States of America

Google Scholar

GitHub

LinkedIn

Interests

• Spatial data • GIS • Systems thinking • Statistical analysis • Environmental data science
• Machine learning • Data visualization • Ecosystem modeling • Scientific communication

Education

University of Arkansas
PhD. Candidate, Environmental Dynamics 2021-2025
MS, Environmental Dynamics 2021-2023

North South University, Dhaka, Bangladesh
BS in Environmental Science 2015-2018

Employment

Senior Graduate Assistant, University of Arkansas 2021-2025

- Researched satellite and geospatial analysis of rice photosynthesis, greenhouse gas measurements, and rice growing season prediction using machine learning.
- Performed fieldwork including calibration of meteorological sensors and installation of Campbell Scientific dataloggers.
- Led sensor deployment trips, assisted as a TA with grading, contributed to fish-in-the-field data analysis, and managed group data pipelines.

Research Assistant, North South University 2017-2020

- Researched land use change, forest area modeling using satellite images and machine learning tools.
- Trained students in R programming language and GIS analysis, including ArcGIS ModelBuilder, mapping, and data processing.

Program Associate, Save Our Sea 2016-2017

- Arranged workshops, field trips, and meetings, and researched sea turtle nesting patterns, beach profiles, and land cover.

Intern, Cooperation for Resource Efficiency 2018-2019

- Supported research on industrial symbiotic networks and air pollution hotspot through mapping and satellite data extraction.

Technical Skills

• Python • R • ArcGIS • SPSS • Microsoft Office • Google Earth Engine • QGIS

Ecosystem Data Management:
Processed and submitted 14 site-years of greenhouse gas flux data from rice fields following standardized protocols used in a continental research network (AmeriFlux).

Calibration of Eddy Covariance Sensors:
Calibrated 7500 and 7700 eddy covariance sensors across eight field seasons to ensure accurate measurement of carbon, water, and energy exchange.

Membership

- Member, FLUXNET-Early Career Scientist Network 2018- Present
- Member, American Geophysical Union student membership 1 Jan 2022 - 31 Dec 2023

Peer Review

- Review activity for Field crops research (Elsevier, IF: 5.6). ISSN: 0378-4290
- Grant Proposal Reviewer, Research Council, University of Arkansas 2021 – 2023

Workshop Attendance

- High Performance Computing Workshop, Arkansas High Performance Computing Center, University of Arkansas, 2024
- Linking Optical and Energy Fluxes Workshop, FLUXNET Coordination Project, Boulder, Colorado, 2023
- Big Teaching Assistantship Workshop, College of Engineering, University of Arkansas, 2023
- Eddy Covariance Training at LI-COR Biosciences, Lincoln, Nebraska, 2022

Scientific communication

Publications in Peer Reviewed Journals

Mahbub, R. B., Reba, M., Runkle, B. R., (2025). Magnitude, Drivers, and Patterns of Gross Primary Productivity of Rice in Arkansas Using a Calibrated Vegetation Photosynthesis Model. *Agriculture and Forest Meteorology*. https://doi.org/10.1016/j.agrformet.2025.110583. (IF: 5.6) (ELSEVIER)

Ahmed, N., **Mahbub, R. B.,** & Rahman, R. M. (2020). Learning to extract buildings from ultra-high-resolution drone images and noisy labels. *International Journal of Remote Sensing*, *41*(21), 8216-8237 https://doi.org/10.1080/01431161.2020.1763496 (IF: 3.151) (Taylor & Francis)

Mahbub, R. B., Ahmed, N., & Yeasmin, F. (2020). Towards reducing the data gap in the conservation efforts for sea turtles in Bangladesh. *Regional Studies in Marine Science*, 35, https://doi.org/10.1016/j.rsma.2020.101151 (IF: 2.166) (ELSEVIER)

Ahmed, N., **Mahbub, R. B.**, Hossain, M. M., & Sujauddin, M. (2019). Modelling spatio-temporal changes of forest cover in the northeastern region of Bangladesh: context of traditional and co-management paradigms. *Journal of Tropical Forest Science*, 32(1) https://doi.org/10.26525/jtfs32.1.42 (IF: 0.77) (JSTOR)

Mahbub, R. B., Ahmed, N., Rahman, S., Hossain, M. M., & Sujauddin, M. (2019). Human appropriation of net primary production in Bangladesh, 1700–2100. *Land Use Policy*, 87, 104067. https://doi.org/10.1016/j.landusepol.2019.104067 (IF: 6.189) (ELSEVIER)

Conferences and Talks

Runkle, B. R. K., Reba, M. L., Moreno-García, B., Reavis, C. W., **Mahbub, R. B.**, & Richardson, W. P. (December 2025). Data-driven assessment of rice methane emissions based on the duration of inundation periods. American Geophysical Union Fall Meeting, LA, United States.

Mahbub, R. B., Reba, M. L., Tang, R., & Runkle, B. R. K. (2024). Inferring spatial information of rice growing season length and gross primary productivity from space and site-scale instruments. ASABE State Section Meeting, Fayetteville, Arkansas.

Richardson, W. P.; Koparan, C.; **Mahbub, R**.; Carroll, S.; Guan, K.; Runkle, B. R. K. (2024). Preliminary Evaluation of an Open-Source Wide-Range Multispectral Sensor for Precision Agriculture, Poster Presentation at ASABE Annual, AIM, CA, United States.

Carroll, S. R., **Mahbub, R. B.**, Moreno-Garcia, B., Reba, M. L., Runkle, B. R. (2024, January). Fish Cultivation in Fallow Season Rice Fields: Effects on CH_4 Emissions. Arkansas Soil and Water Conference and Irrigation EXPO. Jonesboro, AR.

Mahbub, R. B., Moreno-Garcia, B., Peter, B. G., Reba, M., & Runkle, B. (January 2024). Predicting planting and harvesting date of rice in Arkansas using satellite images and machine learning algorithms. American Geophysical Union, United States. [Conference presentation attended online].

Mahbub, R. B., Reba, M., Runkle, B. R., (December 2022). The potential of in-situ phenology data to estimate satellite driven gross primary productivity of rice in Arkansas, American Geophysical Union, Chicago Convention Center, Chicago, IL, United States.

Mahbub, R. B., Reba, M., Runkle, B. R., (September 2022). " Evaluating the potential of in-situ phenology data on improving the estimation of satellite driven gross primary productivity of rice in Arkansas," AmeriFlux Annual Meeting, virtual poster session.

Mahbub, R. B., Reba, M., Runkle, B. R., (January 2022) Arkansas Soil and Water Education Conference, "Estimating the gross primary productivity of rice in Arkansas using satellite-driven biogeochemical model." Fayetteville, AR, United States.

Invited Speaker to share TA experience: Big TA Training Workshop (2024, University of Arkansas, Fayetteville, AR, United States)

Manuscripts under Review

Carroll, S. R. Moreno-Garcia, B., **Mahbub, R. B.**, Reba, M., & Runkle, B. Runkle. Fish cultivation in fallow season rice fields: effects on CH_4 emissions (2025). Submitted to Agriculture and Forest Meteorology

Manuscripts under Preparation

Mahbub, R. B., Reba, M., Runkle, B. R., (2025). Evaluating the potential of vegetation indices and in-situ data in parameterizing the LUE to improve the prediction of GPP. Planning to submit: Environment Research Letters

Mahbub, R. B., Moreno-Garcia, B., Peter, B. G., Reba, M., & Runkle, B. Predicting planting and harvesting date of rice in Arkansas using satellite images and machine learning algorithms (2025). Planning to submit: Remote sensing of Environment

Funding, Proposals, and Awards

- Doctoral Academic Fellow
    - Amount: $48000
    - Funding agency: Graduate School and International Education, University of Arkansas
- Graduate Student Travel Grant Application for Linking Optical and Energy Fluxes Workshop, Boulder, Colorado, 2023
    - Amount: $1100
    - Funding agency: Graduate School and International Education, University of Arkansas
- Proposal submitted: Determining the drivers and magnitude of methane emissions of the fallow season of rice in Arkansas, Spring 2023 [Declined]
    - Amount: $1100
    - Funding agency: Graduate Professional Student Congress
- Graduate Student Travel Grant Application for American geophysical conference, 2022
    - Amount: $1100
    - Funding agency: Graduate School and International Education, University of Arkansas
- Graduate Student Travel Grant Application for Eddy Covariance Training at LI-COR Biosciences, Lincoln, Nebraska, 2022
    - Amount: $1100
    - Funding agency: Graduate School and International Education, University of Arkansas
- Graduate Student Award [2nd Author of the poster] in Arkansas Soil and Water Education Conference and Irrigation EXPO, 2024
    - Amount: $200
- National Science Foundation style proposal written for PhD comprehensive exam: Predicting spatial information of rice growing season length and gross primary productivity from space and site-scale instruments (accessible link)