Riasad Bin Mahbub

Senior Graduate Research Assistant, University of Arkansas
ENGR 112, University of Arkansas, Fayetteville, AR 72701,
United States of America

Google Scholar
GitHub
LinkedIn

Research Interest

• Biogeochemical flux • Carbon and methane cycling • Rice agriculture • Eddy covariance
• Remote sensing • Ecosystem modelling • Spatial analysis • Data science

Academic Degrees and Education

University of Arkansas
Ph.D. Candidate, Environmental Dynamics | 2021 – Present
Expected graduation: 2025
Advisor: Dr. Benjamin Runkle

MS, Environmental Dynamics | 2021 – 2023
Advisor: Dr. Benjamin Runkle
Thesis title: Estimation of Gross Primary Productivity of Rice in Arkansas Using the Vegetation Photosynthesis Model

North South University
Dhaka, Bangladesh
Research Assistant, Decoupling Lab, North South University | 2018– 2020
BS in Environmental Science | 2015 – 2018

Scientific communication

Publications in Peer Reviewed Journals

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

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.

Magdaleno Hernandez, G., **Mahbub, R. B**., Runkle, B. R., (July 13, 2022) "Furrow-Irrigated Rice from Space: A Case Study from Arkansas," AWRC Annual Meeting, Fayetteville, AR, United States.

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

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. 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

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). Planning to submit: Agriculture, Ecosystems & Environment (AEE)

Richardson, W. P.; Koparan, C.; **Mahbub, R**.; Carroll, S.; Guan, K.; Runkle, B. R. K. Preliminary Evaluation of an Open-Source Wide-Range Multispectral Sensor for Precision Agriculture (2025).

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

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
- NSF 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)

Technical Skills

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

Ameriflux Data submission:

I have compiled 14 site-years eddy covariance data based on Ameriflux data submission protocols

Calibration of Eddy Covariance Sensors:

I have calibrated 7500 and 7700 eddy covariance sensors for eight seasons.

Membership

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