

# Shuaiqi Wu

Postdoctoral Researcher

Emory University

swu61@emory.edu

(347)-404-0389

## RESEARCH INTERESTS

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Assessing climate change impacts on agriculture; Developing and calibrating crop modeling; Applying machine learning techniques to crop modeling; Exploring agricultural adaptations in a changing climate.

## EDUCATION

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**Ph.D. in Atmospheric Science** 2019 – 2025  
University of California, Davis

**Visiting Ph.D. student** 2024  
MIT Center for Sustainability Science and Strategy

**M.S. in Environmental Engineering** 2018 – 2019  
University of Illinois at Urbana-Champaign

**B.S. in Civil and Environmental Engineering** 2014 – 2018  
University of Illinois at Urbana-Champaign

## RESEARCH EXPERIENCE

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**Postdoctoral Researcher** 2025 - Present  
Emory University

**Graduate Researcher** 2019 - 2025  
University of California, Davis

Developing a gridded Python-based AquaCrop and calibrating it for maize in the U.S.

Advisor: Prof. Erwan Monier

- Developed a gridded version of AquaCrop, a process-based crop model developed by the FAO to simulate crop growth and responses to water stress, in Python.
- Conducted sensitivity analysis to identify key parameters need to be calibrated for maize in the U.S.
- Calibrating the model by Bayesian Inference to enhance its performance in simulating maize production across the U.S.

Advancing the Modeling of Future Climate and Innovation Impacts on Perennial Crops to Support Adaptation: A Case Study of California Almonds.

Advisor: Prof. Erwan Monier

- Developed a statistical modeling approach with the LASSO regression method to project future almond yields and identify detailed climate damages and potential innovation gains.
- Collaborated within an interdisciplinary team of plant scientists, biometeorologists, agricultural engineers, and agronomists to analyze and identify key environmental conditions influencing almond phenology at various almond growth stages.
- Trained the model with historical climate (i.e., gridMET) and county-level almond yields to quantify climate change impacts on each phenological stage and project future almond yields in California with two large ensembles of climate projections (i.e., LOCA and MACA).

Analyzing agricultural benefits of biodiversity under climate change in the U.S.

Advisor: Prof. Erwan Monier and Prof. Bruno Lanz (University of Neuchâtel)

- Calculated county-level biodiversity index for all US counties using the Cropland Data Layer (CDL) to examine its benefits under climate change.

## Research Assistant

2017 - 2018

University of Illinois at Urbana-Champaign

Effects of Non-Antibiotic Organic Micropollutants on the Development of Antimicrobial Resistance in a Sensitive E. coli Strain.

Advisor: Prof. Yujie Men

- Inoculating and cultivating Escherichia coli bacteria.
- Conducting minimum inhibitory concentration test and analyzed experimental data.

## TECHNICAL AND RESEARCH SKILLS

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**Programming:** Python (large-scale spatial-temporal data analysis, sensitivity analysis, and model calibration)

**Crop modeling:** AquaCrop (process-based) and data-driven statistical crop modeling

**Geospatial analysis:** ArcGIS Pro

**Others:** High performance computing (HPC) cluster

## FELLOWSHIPS AND AWARDS

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ASGG Fellowship, UC Davis	2024
Henry A. Jastro Graduate Research Award, UC Davis	2024
Coulson Travel Award, UC Davis	2024
Coulson Travel Award , UC Davis	2023
Dean's list, College of Engineering, UIUC	2017

## PEER-REVIEWED PUBLICATIONS

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1. **Wu, S.**, & Monier, E.. Scaling AquaCrop for Continental Applications: A Python-Based, County-Calibrated Framework with a U.S. Maize Case Study (Manuscript in preparation for *Journal of Advances in Modeling Earth Systems*)
2. **Wu, S.**, Zikalala, P. G., Alba, S., Jarvis-Shean, K. S., Kisekka, I., Segaran, M., ... & Monier, E. (2025). Advancing the modeling of future climate and innovation impacts on perennial crops to support adaptation: A case study of California almonds. *Earth's Future*, 13(4), e2024EF005033.
3. Xing, Y., **Wu, S.**, & Men, Y. (2020). Exposure to environmental levels of pesticides stimulates and diversifies evolution in *Escherichia coli* toward higher antibiotic resistance. *Environmental science & technology*, 54(14), 8770-8778.

## CONFERENCES PROCEEDINGS

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1. **Wu, S.** and Monier, E. A Gridded Version of Python-based AquaCrop Calibrated for Maize in the U.S. *The Tenth Global Workshop of the Agricultural Model Intercomparison and Improvement Project (AgMIP 10)*
2. Ignoto, B., **Wu, S.**, Lanz, B., & Monier, E. Agricultural Benefits of Biodiversity under Climate Change: Empirical Evidence from Disaggregated Data. *2024 Conference on Sustainable Resource Use and Economic Dynamics (SURED)*
3. **Wu, S.**, Monier, E., & Alba, S. A Gridded Version of AquaCrop Calibrated by Bayesian Inference for Tomatoes in California. *2023 American Geophysical Union Meeting (AGU)*. Poster Presentation.
4. Monier, E., Alba, S., Burleyson, C. D., Jones, A. D., Lafferty, D., McManamay, R., Sriver, R. L., Ullrich, P. A., & **Wu, S.** A comprehensive assessment of high-resolution gridded observational meteorological datasets for use in multi-sector impact analyses. *2023 American Geophysical Union Meeting (AGU)*.
5. Alba, S., Monier, E., Hart, Q., Ustin, S., & **Wu, S.** Utilizing Spatial CIMIS and Machine Learning To Create a New California ETo Zones Map. *2023 American Geophysical Union Meeting (AGU)*.
6. **Wu, S.**, Zikalala, P. G., Alba, S., Segaran, M. A., Kisekka, I., Grismer, M. E., Lampinen, B., Shackel, K., Snyder, R. L., Wing, I. S., & Monier, E. Climate Change Impacts and Adaptive Capacity for California Almonds. *2022 American Geophysical Union Meeting (AGU)*. Poster Presentations.
7. Duan, S., **Wu, S.**, Monier, E., & Ullrich, P. AutoML-based Almond Yield Prediction and Projection in California. *Workshop on Tackling Climate Change with Machine Learning at the 2022 Conference on Neural Information Processing Systems (NeurIPS)*. *arXiv preprint arXiv:2211.03925*.

## ACADEMIC EXPERIENCE

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### Journal Reviewer

*Geoscientific Model Development*  
*Scientific Data*

## TEACHING EXPERIENCE

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### Teaching Assistant

Crisis in Environment (SAS 9), UC Davis	Winter 2023 - 2025
Modern Climate Change (ATM 116), UC Davis	Fall 2024
Climate Change, Water & Society (ATM 245), UC Davis	Fall 2022
Severe & Unusual Weather (ATM 10), UC Davis	Fall 2021

## WORK EXPERIENCE

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<b>Intern of Environmental Affairs</b>	2019
UN Environment Northwest Pacific Action Plan	