Yuchi Ma

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PROFESSIONAL APPOINTMENT

Stanford University — Stanford, USA
Woods Postdoctoral Fellow, Earth Systems Science (Advisor: David B. Lobell) — 2023 – Now

Google X — Mountain View, USA
Machine Learning Research Scientist (Intern) — 2022.05 – 2023.01

University of Wisconsin-Madison — Madison, USA
Lecturer of Record, Department of Geography — 2021

EDUCATION

University of Wisconsin-Madison — Madison, USA
Ph.D. in Agricultural Engineering (Remote Sensing) — 2019 – 2023
Minor in Electric and Computer Engineering (Machine Learning)

Purdue University — West Lafayette, USA
M.Sc. in Civil Engineering (Geomatics) — 2017 – 2019

Wuhan University — Wuhan, China
B.E. in Geomatics Engineering; Double degree in Finance — 2013 – 2017

RESEARCH INTERESTS

Scientific Areas
- Land Cover and Agroecosystem Monitoring
- Crop-Human-Environment Interactions
- Food Security and Sustainability Evaluation
- Climate Resilience and Adaptation

Technical Expertise
- Remote Sensing and Earth Observations
- Geospatial AI and Data Science
- Earth System Modeling
- Casual Inference

GRANTS & PROPOSALS

- Testing NASA's Foundation Model for Agricultural Monitoring (Co-PI/Science PI, under review, $500k) — NASA, 2025
- A Cyber-AI Framework for Fine-Scale Field Boundary Delineation and Yield Mapping in Support of U.S. Farm Management (Co-PI, under review, $650k) — USDA, 2025
- Google Earth Foundation Model Research Funds (PI, $5,000) — Google, 2025
- Food Security and the Environment Postdoc Fellowship (PI, $80,000) — Stanford, 2023
- Student Research Grants Competition - Conference Presentation (PI, $2,000) — UW-Madison, 2022

AWARDS & HONORS

- Early Career Scholars Award in Remote Sensing — American Association of Geographers, 2026
- *Remote Sensing of Environment* Top Cited Article — Elsevier, 2025
- Woods Postdoctoral Fellows — Stanford, 2023
- Biological Systems Engineering Graduate Student of the Year — ASABE, 2023
- Thomsen Wisconsin Distinguished Graduate Fellowship — UW-Madison, 2022
- Lecturer Fellowship from the Department of Geography — UW-Madison, 2021
- Dr. Leonard E. Mortenson Graduate Scholarship — UW-Madison, 2019-2021
- Roland S. Corning II Memorial Fund — Purdue University, 2017

PUBLICATIONS (Total Citations: 1650; h-index: 17; i10-index: 21; ***** indicates Corresponding author)

Under review/revision:

[30] **Ma, Y.*** and Lobell, D.B., 2025. Future bloomers: local crop yield gaps can predict future yield gains. (under 2nd round review with *Nature Food*)

[29] **Ma, Y.*** et al., 2025. Harvesting Alpha Earth: Benchmarking Geospatial Foundation Models for Agroecosystems. **(**under review with *Elsevier***)** [Preprint]

[28] **Ma, Y.*** et al., 2025. STaPL: Scale Transfer with Pseudo-Labelling for Satellite-based Mapping of Agricultural Practices. **(**under review with *Elsevier***)**

[27] Chen, S., …, **Ma, Y.** et al., 2025. Next-Generation Monitoring and Modeling of Wetland Methane Dynamics through Artificial Intelligence. **(**under review with *Nature Climate Change***)**

First-authored paper (#8):

[26] **Ma, Y.***, Chen, S., Ermon, S., Lobell, D.B.*, 2024. Transfer learning in environmental remote sensing. *Remote Sensing of Environment* 301, 113924. (Web of Science **Hot** Cited Paper, top 0.1%) [Link]

[25] **Ma, Y.***, Liang, S.Z., Myers, D.B., Swatantran, A. and Lobell, D.B.*, 2024. Subfield-level crop yield mapping without ground truth data: A scale transfer framework. *Remote Sensing of Environment*, *315*, p.114427. [Link] [QDANN Yield Maps]

[24] **Ma, Y.**, Yang, Z. and Zhang, Z., 2023. Multisource Maximum Predictor Discrepancy for Unsupervised Domain Adaptation on Corn Yield Prediction. *IEEE Transactions on Geoscience and Remote Sensing*, 61, pp.1-15. [Link]

[23] **Ma, Y.**, Yang, Z., Huang, Q. and Zhang, Z., 2023. Improving the Transferability of Deep Learning Models for Crop Yield Prediction: A Partial Domain Adaptation Approach. *Remote Sensing*, 15(18), p.4562. [Link]

[22] **Ma, Y.** and Zhang, Z., 2022. A Bayesian Domain Adversarial Neural Network for Corn Yield Prediction. *IEEE Geoscience and Remote Sensing Letters,* 19, pp 1-5. [Link]

[21] **Ma, Y.**, Zhang, Z., Kang, Y. and Özdoğan, M., 2021. Corn yield prediction and uncertainty analysis based on remotely sensed variables using a Bayesian neural network approach. *Remote Sensing of Environment*, 259, p.112408. (WoS **Highly** Cited Paper, top 1%) [Link] [Yield Prediction Cyber System]

[20] **Ma, Y.**, Zhang, Z., Yang, H.L. and Yang, Z., 2021. An adaptive adversarial domain adaptation approach for corn yield prediction. *Computers and Electronics in Agriculture*, 187, p.106314. [Link]

[19] **Ma, Y.**, Anderson, J., Crouch, S. and Shan, J., 2019. Moving Object Detection and Tracking with Doppler LiDAR. *Remote Sensing*, 11(10), p.1154. [Link]

Book Chapter (#1):

[18] **Ma, Y.*** et al., 2025. Satellite-based Mapping of Crop Yield with AI. (Book chapter in publication by **Elsevier**)

Co-authored paper (#17):

[17] Lobell, D.B., Di Tommaso, S., Zhou, Q., **Ma, Y.**, Specht, J. and Guan, K., 2025. The mixed effects of recent cover crop adoption on US cropland productivity. *Nature Sustainability* **(IF:27.1)**, pp.1-9. [Link]

[16] Liu, W., Zhou, J., Luo, Y., Chen, S., **Ma, Y.**, 2025. Reduced Crop Yield Stability Is More Likely to Be Associated with Heat than with Moisture Extremes in the US Midwest. *Earth's Future* 13, e2024EF005172. [Link]

[15] Bohra, A., Nottmeyer, S., Ren, C., Chen, S. and **Ma, Y.***, 2025. Advancing Corn Yield Mapping in Kenya Through Transfer Learning. *Remote Sensing*, 17(10), p.1717. [Link]

[14] Wang, X., **Ma, Y.**, Xu, Y., Huang, Q., Yang, Z. and Zhang, Z., 2025. Learning county from pixels: Corn yield prediction with attention-weighted multiple instance learning. *International Journal of Remote Sensing*, pp.1-31. [Link]

[13] Yin, J., …, **Ma, Y.**, et al., 2025. Estimating Soybean Yields from High-Temporal-Resolution Multi-Source Data Using Deep Learning. *Computers and Electronics in Agriculture*. (Accepted in 2025/09)

[12] Xu, Y., **Ma, Y.** and Zhang, Z., 2024. Self-supervised pre-training for large-scale crop mapping using Sentinel-2 time series. *ISPRS Journal of Photogrammetry and Remote Sensing*, 207, pp.312-325. [Link]

[11] Chen, S., Liu, L., **Ma, Y.**, Zhuang, Q., & Shurpali, N. J., 2024. Quantifying global wetland methane emissions with in-situ methane flux data and machine learning approaches. *Earth's Future*. [Link]

[10] Liu, W., Zhou, J., **Ma, Y.**, Chen, S. and Luo, Y., 2024. Unequal impact of climate warming on meat yields of global cattle farming. *Communications Earth & Environment*, *5*(1), p.65. [Link]

[9] Ren, C., He, L., **Ma, Y.**, Reis, S., Van Grinsven, H., Lam, S.K. and Rosa, L., 2024. Trade-offs in Agricultural Outcomes Across Various Farm Sizes. *Earth Critical Zone*, p.100007. [Link]

[8] Chen, S., …, **Ma, Y.** et al., 2022. Improving Spatial Disaggregation of Crop Yield by Incorporating Machine Learning with Multisource Data: A Case Study of Chinese Maize Yield. *Remote Sensing*, 14(10), p.2340. [Link]

[7] Sun, C., Zhou, J., **Ma, Y.**, Xu, Y., Pan, B. and Zhang, Z., 2022. A review of remote sensing for potato traits characterization in precision agriculture. *Frontiers in Plant Science*, 13. [Link]

[6] Zhou, J., Wang, B., Fan, J., **Ma, Y.**, Wang, Y. and Zhang, Z., 2022. A Systematic Study of Estimating Potato N Concentrations Using UAV-Based Hyper-and Multi-Spectral Imagery. *Agronomy*, 12(10), p.2533. [Link]

[5] Wang, Y., Zhang, Z., Feng, L., **Ma, Y.** and Du, Q., 2021. A new attention-based CNN approach for crop mapping using time series Sentinel-2 images. *Computers and Electronics in Agriculture*, 184, p.106090. [Link]

[4] Feng, L., Zhang, Z., **Ma, Y.**, et al., 2021. Multitask Learning of Alfalfa Nutritive Value From UAV-Based Hyperspectral Images. *IEEE Geoscience and Remote Sensing Letters*, 19, pp.1-5. [Link]

[3] Feng, L., Zhang, Z., **Ma, Y.**, et al., 2020. Alfalfa Yield Prediction Using UAV-Based Hyperspectral Imagery and Ensemble Learning. *Remote Sensing*, *12*(12), p.2028. (WoS **Highly** Cited Paper, top 1%) [Link]

[2] Sun, C., …, **Ma, Y.**, et al., 2020. Prediction of end-of-season tuber yield and tuber set in potatoes using in-season uav-based hyperspectral imagery and machine learning. *Sensors*, 20(18), p.5293. [Link]

[1] Li, Q., **Ma, Y.**, Anderson, J., Curry, J. and Shan, J., 2019. Towards Uniform Point Density: Evaluation of an Adaptive Terrestrial Laser Scanner. *Remote Sensing*, 11(7), p.880. [Link]

INVITED TALKS

[11] Bridge Ag data gaps using remote sensing and scale transfer	Elsevier, 2026
[10] AI and Earth Observation integration for environmental monitoring	Cornell University, 2025
[9] Bridge Ag data gaps using remote sensing and scale transfer	AGU Fall Meeting, 2025
[8] AI and remote sensing for sustainable agroecosystems	University of Minnesota, 2025
[7] Climate smart agriculture with remote sensing and AI	Oregon State University, 2025
[6] Geo-spatial AI for precision agriculture	Montana State University, 2025
[5] Impact of agricultural practices on cropland productivity	NASA Acres, Denver, 2025
[4] Geo-spatial AI for Sustainable Agroecosystems	University of Texas-Austin, 2024
[3] Crop yield trends in the U.S. cannot meet future demand	Stanford University, 2024
[2] Transfer learning in environmental remote sensing	Oregon State University, 2024
[1] Subfield-level yield mapping via remote sensing	NASA Acres, Missouri, 2023

CONFERENCE PRESENTATIONS

[11] **Ma, Y.** and Lobell, D., Bridging Data Gaps in Agriculture using Earth Observations and Scale Transfer. *AGU Fall Meeting* 2025. ***Oral*** [Link]

[10] **Ma, Y.**, Shen, Y., Swatantran, A., Kelly, C., Lobell, D., Advancing Satellite-based Agricultural Practices Mapping using Scale Transfer with Pseudo-Labeling. *AGU Fall Meeting* 2025. ***Poster*** [Link]

[9] Zhang, Z., Wang, X., **Ma, Y.**, et al., An Integrated Deep Learning Modeling Framework for County-Level Crop Yield Prediction in support of USDA NASS Operation. *AGU Fall Meeting* 2025. ***Oral*** [Link]

[8] **Ma, Y.**, Sadeh, Y., Baber, S., Oliinyk, O., Becker-Reshef, I., and Lobell, D.B., SCALE-Net: Satellite-based Climate-Aware Learning Estimation Network for Winter Wheat Yield Mapping in Ukraine. *ICCV 2025*. ***Poster***

[7] **Ma, Y.**, Sadeh, Y., Baber, S., Oliinyk, O., Becker-Reshef, I., and Lobell, D.B., Using Transfer Learning to Map Winter Wheat Yields in Ukraine. *AGU Fall Meeting* 2024. ***Oral*** [Link]

[6] **Ma, Y.**, Liang, S., Myers, B., Swatantran, A., and Lobell, D.B., Fine and DANNdy: Scale Transfer for fine-scale yield mapping via remote sensing and unsupervised domain adaptation. *AGU Fall Meeting* 2023. ***Oral*** [Link]

[5] **Ma, Y.**, Yang, Z, and Zhang, Z., 2022. Corn Yield Prediction Using Remote Sensing Observations and Multi-source Unsupervised Domain Adaptation, *AGU Fall Meeting* 2022. ***Poster*** [Link]

[4] **Ma, Y.**, Zhang, Z, 2022. Multi-source Unsupervised Domain Adaptation on Corn Yield Prediction. AAAI-22 AI for Agriculture and Food Systems Workshop. ***Oral*** [Link]

[3] Zhang, Z., **Ma, Y.**, Yang, H.L. and Yang, Z., 2021. An adaptive adversarial domain adaptation approach for corn yield prediction. *AGU Fall Meeting* 2021. ***Oral.*** [Link]

[2] Zhang, Z., Feng, L., **Ma, Y.**, Du, Q., Williams, P., Drewry, J. and Luck, B., 2021. Alfalfa Nutritive Value Prediction Using UAV-Based Hyperspectral Imagery and Multi-task Learning. *AGU Fall Meeting* 2021. ***Oral*** [Link]

[1] **Ma, Y.**, Kang, Y., Ozdogan, M, Zhang, Z., 2019. County-level corn yield prediction using deep transfer learning, *AGU Fall Meeting* 2019. ***Oral*** [Link]

PRODUCTS & PLATFORMS

- QDANN 30-m Yield Maps in the U.S. for Corn, Soybean, and Winter Wheat [Paper Link] [QDANN Yield Maps]
- STaPL 30-m Tillage Maps in the U.S [STaPL Tillage Maps]
- GeoAI-based Corn and Soybean Yield Prediction Platform [Paper Link] [Cyber Platform]

MEDIA OUTREACH

- Iowa Public Radio: NASA is helping farmers - how researchers are using Sat images to address big Ag issues
- NASA Map of the Month: Map of sub-field level soybean yield for 2022 across the U.S. Midwest
- ASABE Highlights: Biological Systems Engineering Graduate Student of the Year

TEACHING EXPERIENCE

University of Wisconsin-Madison

- Lecturer of Record: *Geog574-Spatial Database Design and Development* — Fall 2021
  - As the **sole lecturer**, I designed the curriculum, gave 150-min lectures per week, and supervised and advised students throughout the development of their course projects.
- Lab Instructor: *BSE405-Artificial Intelligence in Agriculture* — Spring 2022
- Teaching Assistant: *BSE 301-Land Information Management* — Spring 2021

U.S. PATENT

[1] Ma, H., **Ma, Y.**, and Wu, H., X Development LLC, 2022. *Inferring High-Resolution Imagery*. U.S. Patent.

[2] Ma, H., Qian, Y., **Ma, Y.**, and Tian, Y., X Development LLC, 2022. *Remote Sensing Interpretation*. U.S. Patent.

ACADEMIC SERVICE & Membership

- Membership
  American Geophysical Union (*AGU*), American Association of Geographer (*AAG*)
- Selected Journal Reviewer (total journals > 30)
  Nature Food, Earth System Science Data, Remote Sensing of Environment, ISPRS Journal of Photogrammetry and Remote Sensing, Science Bulletin, Agricultural and Forest Meteorology, Computers and Electronics in Agriculture, Remote Sensing, Scientific Reports
- Funding Agency Panelist/Reviewer
  - *Commercial Satellite Data Earth Science Research and Applications* — NASA, 2025
- Guest Editor for Special Issues
  - *Remote Sensing-assisted Foundation Models for Geosciences* — GIScience & Remote Sensing, 2025
  - *Streamlining Digital Agriculture* — Frontier in Plant Science, 2025
- Session Convener/Chair
  - *Advancing Ag Monitoring through Remote Sensing* — AAG Annual Meeting, 2026
  - *Advancing Machine Learning for Remote Sensing* (Link) — AGU Fall Meeting, 2025
  - *Unlocking Climate-Smart Agriculture* (Link) — AGU Fall Meeting, 2025

- *Next-Generation GeoAI for Environmental Impacts* (Link) — AGU Fall Meeting, 2025
- *Spatial Big Data and AI for Industrial Applications* — ACM SIGSPATIAL, 2025
- *Advancing Machine Learning for Remote Sensing* — AGU Fall Meeting, 2024
- *GeoAI for Sustainable and Computational Agriculture* — AGU Fall Meeting, 2024
- *GeoAI and Deep Learning Symposium* — AAG Annual Meeting, 2024