

# Sherrie Wang

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## CONTACT INFORMATION

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Cambridge, MA 02139

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*Lab Website:* <https://earthintelligence.mit.edu>

## APPOINTMENTS

**d'Arbeloff Career Development Assistant Professor**, 2023–present  
Department of Mechanical Engineering, Institute for Data, Systems, and Society,  
and Laboratory for Information & Decision Systems (LIDS)  
Massachusetts Institute of Technology, Cambridge, Massachusetts USA

**Ciriacy-Wantrup Postdoctoral Fellow**, 2021–2023  
Host: Solomon Hsiang  
Goldman School of Public Policy  
University of California, Berkeley, Berkeley, California USA

## EDUCATION

**Stanford University**, Stanford, California USA  
Ph.D., Computational and Mathematical Engineering, 2021  
Dissertation: “Machine learning for satellite imagery when labels are scarce”  
Advisor: David Lobell  
M.S., Computational and Mathematical Engineering  
**Harvard University**, Cambridge, Massachusetts USA  
A.B. Biomedical Engineering, *Magna cum laude* with high honors, 2014

## PREPRINTS

(\* denotes equal  
contribution)

1. Stefania Di Tommaso, **Sherrie Wang**, Rob Strey, and David B. Lobell. Mapping sugarcane globally at 10 m resolution using GEDI and Sentinel-2. *Under review*, 2024+
2. Mutlu Ozdogan, **Sherrie Wang**, Devaki Ghose, Eduardo Pinheiro Fraga, Ana M Fernandes, and Gonzalo Varela. Field-scale rice area and yield mapping in Sri Lanka with optical remote sensing and limited training data. *Under review*, 2024+
3. Philippe Rufin, **Sherrie Wang**, Sá Nogueira Lisboa, Jan Hemmerling, Mirela G. Tulbure, and Patrick Meyfroidt. Taking it further: leveraging pseudo labels for field delineation across label-scarce smallholder regions. *Under review*, 2024+

## PUBLICATIONS

1. Chenhui Zhang and **Sherrie Wang**. Good at captioning, bad at counting: Benchmarking GPT-4V on Earth observation data. *2024 IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW)*, 2024
2. A. Patrick Behrer and **Sherrie Wang**. Current benefits of wildfire smoke for yields in the US Midwest may dissipate by 2050. *Environmental Research Letters*, 2024
3. Jordi Laguarda, Thomas Friedel, and **Sherrie Wang**. Combining deep learning and street view imagery to map smallholder crop types. *Proceedings of the AAAI Conference on Artificial Intelligence*, 2024
4. Simon Greenhill, Hannah Druckenmiller\*, **Sherrie Wang\***, David A. Keiser, Manuela Girotto, Jason K. Moore, Nobuhiro Yamaguchi, Alberto Todeschini, and Joseph S. Shapiro. Machine learning predicts which rivers, streams, and wetlands the Clean Water Act regulates. *Science*, 2024

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Last updated June 2024

5. Marc Russwurm, **Sherrie Wang**, Benjamin Kellenberger, Ribana Roscher, and Devis Tuia. Meta-learning to address diverse earth observation problems across resolutions. *Communications Earth & Environment*, 2024
6. Stefania Di Tommaso, **Sherrie Wang**, Vivek Vajipey, Noel Gorelick, Rob Strey, and David B. Lobell. Annual field-scale maps of tall and short crops at the global scale using GEDI and Sentinel-2. *Remote Sensing*, 2023
7. **Sherrie Wang**, Francois Waldner, and David B. Lobell. Unlocking large-scale crop field delineation in smallholder farming systems with transfer learning and weak supervision. *Remote Sensing*, 2022
8. Marissa Childs, Jessica Li, Jeffrey Wen, Sam Heft-Neal, Anne Driscoll, **Sherrie Wang**, Carlos Gould, Minghao Qiu, Jennifer Burney, and Marshall Burke. Daily local-level estimates of ambient wildfire smoke PM2.5 for the contiguous US. *Environmental Science & Technology*, 2022
9. Ju Young Lee, **Sherrie Wang**, Anjuli Jain Figueroa, Rob Strey, David B. Lobell, Rosamond L. Naylor, and Steven M. Gorelick. Mapping sugarcane in central India with smartphone crowdsourcing. *Remote Sensing*, 2022
10. Christopher Yeh\*, Chenlin Meng\*, **Sherrie Wang\***, Anne Driscoll, Erik Rozi, Patrick Liu, Jihyeon Lee, Marshall Burke, David B. Lobell, and Stefano Ermon. SustainBench: Benchmarks for monitoring the Sustainable Development Goals with machine learning. *NeurIPS Datasets and Benchmarks Track*, 2021
11. Stefania Di Tommaso, **Sherrie Wang**, and David B. Lobell. Combining GEDI and Sentinel-2 for wall-to-wall mapping of tall and short crops. *Environmental Research Letters*, 2021
12. Dan M. Kluger, **Sherrie Wang**, and David B. Lobell. Two shifts for crop mapping: Leveraging aggregate crop statistics to improve satellite-based maps in new regions. *Remote Sensing of Environment*, 262:112488, 2021
13. **Sherrie Wang**, Stefania Di Tommaso, Joey Faulkner, Thomas Friedel, Alexander Kennepohl, Rob Strey, and David B. Lobell. Mapping crop types in southeast India with smartphone crowdsourcing and deep learning. *Remote Sensing*, 12(18), 2020
14. **Sherrie Wang**, Stefania Di Tommaso, Jillian M. Deines, and David B. Lobell. Mapping twenty years of corn and soybean across the US Midwest using the Landsat archive. *Scientific Data*, 7(1):307, 2020
15. Marc Rußwurm\*, **Sherrie Wang\***, Marco Körner, and David B. Lobell. Meta-learning for few-shot land cover classification. *2020 IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW)*, pages 788–796, 2020  
EarthVision 2020 Best Paper Award
16. **Sherrie Wang**, William Chen, Sang Michael Xie, George Azzari, and David B. Lobell. Weakly supervised deep learning for segmentation of remote sensing imagery. *Remote Sensing*, 12(2), 2020
17. Jillian M. Deines, **Sherrie Wang**, and David B. Lobell. Satellites reveal a small positive yield effect from conservation tillage across the US Corn Belt. *Environmental Research Letters*, 14(12):124038, 2019
18. Neal Jean, **Sherrie Wang**, Anshul Samar, George Azzari, David Lobell, and Stefano Ermon. Tile2Vec: Unsupervised representation learning for spatially distributed data. *Proceedings of the AAAI Conference on Artificial Intelligence*, 33:3967–3974, 2019
19. **Sherrie Wang**, George Azzari, and David B. Lobell. Crop type mapping without field-level labels: Random forest transfer and unsupervised clustering techniques. *Remote Sensing of Environment*, 222:303–317, 2019

20. Lo-Hua Yuan, Anthony Liu, Alec Yeh, Aaron Kaufman, Andrew Reece, Peter Bull, Alex Franks, **Sherrie Wang**, Dmitri Illushin, and Luke Bornn. A mixture-of-modelers approach to forecasting NCAA tournament outcomes. *Journal of Quantitative Analysis in Sports*, 11, 2015

CONFERENCE  
PRESENTATIONS

1. Chenhui Zhang, Sherrie Wang. “Good at captioning, bad at counting: Benchmarking GPT-4V on Earth observation data.” *CVPR EarthVision Workshop and ICLR ML4RS Workshop*, 2024 (Orals)
2. Jordi Laguarda, Thomas Friedel, Sherrie Wang. “Combining deep learning and street view imagery to map smallholder crop types.” *AAAI*, 2024 (Oral)
3. Sherrie Wang, Jordi Laguarda, Thomas Friedel. “Combining deep learning and street view imagery to map smallholder crop types.” *American Geophysical Union Fall Meeting*, 2023 (Oral)
4. Kerri Lu, Sherrie Wang, Claire Monteleoni, Anastase Charantonis. “Hyperspectral Remote Sensing of Soil Properties Using Machine Learning.” *American Geophysical Union Fall Meeting*, 2023 (Poster)
5. Simon Greenhill, Trinetta Chong, Hannah Druckenmiller, Solomon Hsiang, Joel Ferguson, Cornelia Ilin, Andreas Madestam, Hikari Murayama, Eugenio Noda, Anna Tompsett, Nicklas Nordfors, Sherrie Wang, Taylor Kee. “A window back in time: Combining aerial photography and machine learning to map urban change over the 20th century.” *American Geophysical Union Fall Meeting*, 2023 (Oral)
6. Hikari Murayama, Trinetta Chong, Hannah Druckenmiller, Simon Greenhill, Solomon Hsiang, Joel Ferguson, Cornelia Ilin, Taylor Kee, Andreas Madestam, Eugenio Noda, Anna Tompsett, Nicklas Nordfors, Sherrie Wang. “Developing high resolution, historical land cover maps in Africa using deep learning and an aerial photography archive.” *American Geophysical Union Fall Meeting*, 2023 (Oral)
7. Joel Ferguson, Trinetta Chong, Hannah Druckenmiller, Simon Greenhill, Solomon Hsiang, Cornelia Ilin, Taylor Kee, Andreas Madestam, Hikari Murayama, Eugenio Noda, Anna Tompsett, Nicklas Nordfors, Sherrie Wang. “Combining modern high resolution satellite imagery with historical aerial photography to map changes in population distribution.” *American Geophysical Union Fall Meeting*, 2023 (Oral)
8. Chenhui Zhang, Sheng Wang, Kaiyu Guan, Haozhen Zheng, Sherrie Wang, Bruce Rhoads, Shengnan Zhou, Yawen Deng, Andrew Margenot. “Quantifying streambank erosion in two watersheds of Illinois through high-resolution aerial imagery and Segment Anything Models.” *American Geophysical Union Fall Meeting*, 2023 (Poster)
9. Sherrie Wang, Stefania Di Tommaso, Vivek Vajipey, Noel Gorelick, Rob Strey, and David B. Lobell. “Global mapping of tall crops in regions without field labels using GEDI and Sentinel-2.” *American Geophysical Union Fall Meeting*, 2022 (Oral)
10. Sherrie Wang, Francois Waldner, and David B. Lobell. “Large-scale agricultural field delineation in India using deep learning and weak supervision.” *American Geophysical Union Fall Meeting*, 2022 (Poster)
11. Hikari Murayama, Sherrie Wang, Ron Cohen, and Solomon Hsiang. “Measuring CO2 emissions using deep learning and remote sensing.” *American Geophysical Union Fall Meeting*, 2022 (Poster)
12. Sherrie Wang, Francois Waldner, and David B. Lobell. “Delineating smallholder fields using transfer learning and weak supervision.” *American Geophysical Union Fall Meeting*, 2021 (Oral)

13. Sherrie Wang, Stefania Di Tommaso, and David B. Lobell. “Combining GEDI and Sentinel-2 for wall-to-wall mapping of tall and short crops.” *American Geophysical Union Fall Meeting*, 2021 (Oral)
14. Marissa Childs, Jeff Wen, Sam Heft-Neal, Jessica Li, Anne Driscoll, Sherrie Wang, Jennifer Burney, and Marshall Burke. “A tractable model of ambient particulate matter exposure from wildfire smoke.” *American Geophysical Union Fall Meeting*, 2021 (Poster)
15. Jillian M. Deines, Anthony D. Kendall, Sherrie Wang, James J. Butler, Bruno Basso, David Hyndman, and David B. Lobell. “Assessing causal relationships in agricultural soil and water management from observational satellite data.” *American Geophysical Union Fall Meeting*, 2021 (Invited Oral)
16. Christopher Yeh\*, Chenlin Meng\*, Sherrie Wang\*, Anne Driscoll, Erik Rozi, Patrick Liu, Ji-hyeon Lee, Marshall Burke, David B. Lobell, and Stefano Ermon. “SustainBench: Benchmarks for monitoring the Sustainable Development Goals with machine learning.” *NeurIPS Datasets and Benchmarks Track*, 2021 (Oral)
17. Erfan Rostami, Sherrie Wang, Stefania Di Tommaso, and David B. Lobell. “Toward global-scale field boundary delineation using deep learning.” *American Geophysical Union Fall Meeting*, 2020 (Poster)
18. Sherrie Wang and David B. Lobell. “Deep learning for label-scarce remote sensing applications.” *American Geophysical Union Fall Meeting*, 2020 (Oral)
19. Sherrie Wang\*, Marc Rußwurm\*, Marco Körner, and David B. Lobell. “Meta-learning for few-shot time series classification.” *IGARSS*, 2020 (Oral)
20. David B. Lobell, Walter T. Dado, Jillian M. Deines, Stefania Di Tommaso, and Sherrie Wang. “Landsat-based reconstruction of corn and soybean yield histories in the United States since 1999.” *IGARSS*, 2020 (Oral)
21. Marc Rußwurm\*, Sherrie Wang\*, Marco Körner, and David B. Lobell. “Meta-learning for few-shot land cover classification.” *CVPR EarthVision Workshop*, 2020 (Oral)
22. Sherrie Wang, Stefania Di Tommaso, Joey Faulkner, Thomas Friedel, Alexander Kennepohl, Rob Strey, and David B. Lobell. “Mapping crop types in India with crowdsourced data and deep learning.” *American Geophysical Union Fall Meeting*, 2019 (Oral)
23. Jillian M. Deines, Sherrie Wang, and David B. Lobell. “Investigating the yield impacts of conservation tillage in the US Corn Belt using Landsat.” *American Geophysical Union Fall Meeting*, 2019 (Oral)
24. Neal Jean, Sherrie Wang, Anshul Samar, George Azzari, David Lobell, and Stefano Ermon. “Tile2Vec: Unsupervised representation learning for spatially distributed data.” *AAAI*, 2019 (Oral)
25. Sherrie Wang, William Chen, George Azzari, and David B. Lobell. “Weakly supervised deep learning for segmentation of cropland in remote sensing imagery.” *American Geophysical Union Fall Meeting*, 2018 (Oral)
26. Zhenong Jin, George Azzari, Sherrie Wang, and David B. Lobell. “Mapping the yields of major crops in Sub-Saharan African smallholder farming system.” *American Geophysical Union Fall Meeting*, 2018 (Poster)
27. Neal Jean, Sherrie Wang, Anshul Samar, George Azzari, David Lobell, and Stefano Ermon. “Tile2Vec: Unsupervised representation learning for spatially distributed data.” *Women in Machine Learning Workshop*, 2018 (Poster)
28. Sherrie Wang, Sebastian Le Bras, George Azzari, and David B. Lobell. “Toward global crop type mapping using a hybrid machine learning approach and multi-sensor imagery.” *American Geophysical Union Fall Meeting*, 2017 (Poster)

29. Evan Wu, Adam Marblestone, Sherrie Wang, Nick Perkons, Thomas Schaus, Sun Wei, and Peng Yin. “Controllable release of gold nanoparticles from a switchable DNA box.” *10th Annual Conference, Foundations of Nanoscience*, 2013 (Poster)

SELECTED INVITED TALKS “Remote Sensing and Machine Learning for Sustainability”

Keynote, Machine Learning for Remote Sensing Workshop, ICLR. May 2024  
Agriculture and Climate Change Workshop, Harvard University. May 2024

“Planetary-Scale Insights via Remote Sensing and Machine Learning”

Workshop on AI for Science, NeurIPS. December 2023  
Microsoft Research New England. October 2023  
Department of Civil & Environmental Engineering, Tufts University. October 2023  
Department of Earth, Atmospheric and Planetary Sciences, MIT. October 2023

“Crop field boundary mapping using machine learning and very high-resolution data.” Food and Agriculture Organization of the United Nations (FAO) Webinar. May 2023

“Monitoring the SDGs via Remote Sensing and Machine Learning.” Global Engagement & Empowerment Forum on Sustainable Development (GEEF), Yonsei University. February 2023

“Planetary-Scale Digital Agriculture via Remote Sensing”

Department of Earth, Environmental & Planetary Sciences, Brown University. March 2023  
ITU-FAO Focus Group for AI and Agriculture. October 2022  
Sustainable Development Seminar, Columbia University. October 2022

“Deep learning for label-scarce remote sensing applications.” AGU Fall Meeting, Session on Solving Training Data Bottlenecks for Artificial Intelligence in Earth Science. December 2020

“Meta-learning for remote sensing.” Workshop on Knowledge-Guided Machine Learning, University of Minnesota. August 2020

“Satellites, satellites all around, but not enough ground truth labels: Lessons from crop type mapping.” Expert Workshop on Advancing Application of Machine Learning Tools for NASA Earth Observation Data, Washington, DC. January 2020

“Mapping crop types in southeast India with crowdsourced data and deep learning.” Bay Area Scientific Computing Day, Lawrence Berkeley National Lab. December 2019

“Applying machine learning to solve global food security challenges.” Women in Data Science Podcast. September 2019

“Weakly supervised learning for satellite imagery: Applications in crop mapping.” Computational Sustainability Network Webinar. March 2019

HONORS AND AWARDS

Best Paper Award, ICLR ML4RS Workshop, 2024  
Ciriacy-Wantrup Postdoctoral Fellowship, 2021–2023  
Top 5% of papers, International Geoscience and Remote Sensing Symposium (IGARSS), 2020  
Best Paper Award, CVPR EarthVision Workshop, 2020  
ICME Department Short Course Instructor Award, Stanford University, 2019  
Stanford Graduate Fellowship, 2015 – 2018  
Phi Beta Kappa, 2013

TEACHING  
EXPERIENCE

**Massachusetts Institute of Technology**, Cambridge, Massachusetts USA

*Lab Instructor, 2.086: Numerical Computation for Mechanical Engineers*

**Fall 2023**

**Stanford University**, Stanford, California USA

*Instructor, Intermediate Topics in Deep Learning (New ICME Workshop)*

**August 2021**

*Instructor, Introduction to Deep Learning (ICME Workshop)*

**August 2020 & 2021**

*Instructor, CME 250: Introduction to Machine Learning*

**Winter 2019**

**Harvard University**, Cambridge, Massachusetts USA

*Teaching Assistant, ES 53: Quantitative Physiology*

**Fall 2012**

PROFESSIONAL  
SERVICE

Organizer, Workshop on Computational Sustainability, NeurIPS, 2023

Speaker, MIT Mechanical Engineering Graduate Association of Women (MEGAWomen), 2023

Convener, Session on “Remote Sensing for Sustainable Agriculture,” AGU Fall Meeting, 2023

Speaker, UC Riverside Data Science Summer Fellowship Program, 2022

Speaker, Women in Data Science (WiDS) UC Riverside Conference, 2022

Vlogger, Women in Data Science (WiDS) High School Outreach, 2020

Mentor, Stanford Women in Math Mentoring, 2016 – 2019

Member, ICME Student Council, 2016 – 2019

Organizer, Women in Data Science (WiDS) Conference Datathon, 2018 – 2019

Mentor and judge, Stanford Big Earth Hackathon, 2018

Math and reading tutor, East Palo Alto Tennis and Tutoring (EPATT), 2016 – 2017

**Reviewer:** Remote Sensing, IEEE Transactions on Geoscience and Remote Sensing, International Journal of Applied Earth Observation and Geoinformation, NeurIPS Datasets and Benchmarks Track, NeurIPS Spatiotemporal Decision-making Workshop, NeurIPS Machine Learning for Development Workshop, ICML Computer Vision for Global Challenges Workshop, KDD Workshop on Data-driven Humanitarian Mapping

**Member:** American Geophysical Union, IEEE