

Curriculum Vitae

Yushu Xia

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EDUCATION

- Ph.D., Natural Resources and Environmental Sciences, University of Illinois at Urbana-Champaign, 2016 – 2021
- M.S., Natural Resources and Environmental Sciences, University of Illinois at Urbana-Champaign, 2014 – 2016
- B.S., Environmental Science, Zhejiang University, 2010 – 2014

RESEARCH POSITIONS

- Lamont Assistant Research Professor, Columbia University, since Feb 2024
- Affiliated Faculty, Data Science Institute, Columbia University, since Jan 2025
- Adjunct Research Assistant Professor, Department of Natural Resources and Environmental Sciences, University of Illinois at Urbana-Champaign, since Nov 2025
- Affiliated Faculty, Department of Ecology, Evolution, and Environmental Biology, Columbia University, since Oct 2024
- Affiliated Faculty, Department of Earth and Environmental Sciences, Columbia University, since Feb 2024
- Research Scientist, Woodwell Climate Research Center (formerly Woods Hole Research Center), Aug 2023 – Jan 2024
- Postdoctoral Researcher, Woodwell Climate Research Center, Aug 2021 – Aug 2023 (supervised under Dr. Jonathan Sanderman)
- Graduate Research Assistant, University of Illinois at Urbana-Champaign, Aug 2014 – Aug 2021 (supervised under Prof. Michelle Wander)

TEACHING EXPERIENCE

- Instructor, PS5360: Agroecology, Columbia University, Spring 2026 and Spring 2025.
- Co-instructor, GR9509: Directed Readings for students in Department of Ecology, Evolution, and Environmental Biology, Columbia University. Fall 2025.
- Teaching Assistant, NRES 102: Introduction to NRES, University of Illinois at Urbana-Champaign, Spring 2019
- Teaching Assistant, NRES 201: Introductory Soils, University of Illinois at Urbana-Champaign, Fall 2016

HONORS AND AWARDS

- Researcher of the Month, Columbia University, July 2025.
- iN-Net Research Fellowship, Data working group of the International Nitrogen Network, 2025-2026.
- Roland Schlich Travel Award for Early Career Scientist, EGU24 General Assembly, 2024.
- The 1st place in student oral presentation, Soil C and GHG emissions, ASA-CSSA-SSSA International Annual Meeting, 2019.
- Teachers Ranked as Excellent by their Students, University of Illinois at Urbana-Champaign, 2017.
- Travel Award for Graduate Student, University of Illinois at Urbana-Champaign, 2017.
- Graduated with Honor of Zhejiang Province, Educational Office of Zhejiang Province, 2014.
- National Scholarship, Ministry of Education in China, 2013.
- First-class scholarship for outstanding students, Zhejiang University, 2011-2013.

FUNDING AND GRANTS

After joining Columbia: \$5,966,647 in total as PI (\$5,925,931 extramural), \$6,754,753 in total as PI, Co-PI, or subaward PI

2026

- PI, Developing a Fieldwork Component for the Course Agroecology: A Natural Climate Solution (\$3,485), awarded by Columbia Climate School's Course Support Program, 2026.
- Subaward PI, Catskill Forest Preserve Visitation Data Analysis (\$18,000), awarded by NYSDEC, 2026.
- Subaward PI, MRV Support for the Grassland Resilience and Conservation Initiative (GRACI) Project (\$100,000), awarded by Cultivo, 2026.
- Co-PI, A Circular Economy Pathway for Safer Foods, Healthier Soil, and Enhanced Carbon Sequestration (\$68,000), awarded by Columbia's Seed Funding Program for Interdisciplinary Research, 2026.
- Co-PI, Long-Term Subtropical Farmland Record as a Foundation for Modeling Soil Carbon Responses to Management and Climate Change (\$8,155), awarded by the LDEO Climate Center at Columbia University, 2026.

2025

- PI, Leveraging Multi-Scale Datasets and Modeling Tools for Improved Soil Health and Carbon Management (\$443,206), Foundation for Food & Agriculture New Innovator Award, 2025.

- PI, Soil Moisture and Carbon Dynamics in Agroecosystems: Field, Lab, and Modeling Integration for Climate-Smart Land Management (\$7,820), awarded by Columbia Climate School Undergraduate Research Funding program, 2025.
- PI, Examining the Impact of Land Management on Ecosystem Services in the Hudson Valley Region (\$6,898), Columbia Climate School Seed Funding Award, 2025.
- PI, Developing a Fieldwork Component for the Course Agroecology: A Natural Climate Solution (\$2,594), awarded by Columbia Climate School's Course Support Program, 2025.
- Subaward PI, Carbon Monitoring on the Range: Continuing Support for Woodwell Climate Research Center's Rangeland Program (\$244,991 for the Columbia portion), awarded by Conscience Bay Research, 2025.
- Co-PI, Evaluating the Contributions of Nature-Based Solutions to Protecting Biodiversity and Building Resilient Communities in Rural China (\$25,000), awarded by Columbia Global, 2025.
- Co-PI, Integrated Research Project on Regional Food System Transformation (\$250,000), awarded by Neon foundation, 2025.

2024

- PI, Coordinate and Support USDA Model Intercomparison and Ensemble for Improved Assessment of Farm Management Practices (\$4,900,000), USDA NRCS (Cooperative Agreement), 2024.
- PI, Leveraging Multi-Source Datasets with Soil Survey to Improve the Spatiotemporal Evaluation of Dynamic Soil Properties (\$499,348 to be updated with expanded scope of work), awarded by USDA NRCS (Cooperative Agreement), 2024.
- PI, Quantifying Carbon and Soil Health Outcomes on Audubon's Conservation Ranching Certified Ranches (\$83,377), awarded by National Audubon Society, 2024.
- PI, Modeling High Resolution Soil Health Outcomes Tied to Climate Smart Grassland Management Practices for Hudson Valley (\$19,919), awarded by the LDEO Climate Center at Columbia University, 2024.
- Subaward PI, Pilot Monitoring and Reporting System for Tracking Carbon Benefits of Improved Grazing Management in the Northern Great Plains (\$58,000 for the Columbia portion), awarded by National Fish and Wildlife Foundation, 2024.
- Subaward PI, Develop a Plan to Improve Estimates of Carbon Sequestration in Grasslands (\$15,960 for the Columbia portion), awarded by National Fish and Wildlife Foundation, 2024.

Before joining Columbia:

- Co-PI, Robust Monitoring, Reporting and Verification for Climate-Smart Range Management, awarded by National Fish and Wildlife Foundation, 2023.
- Co-PI, Global Hotspots and Hot Moments of Nitrous Oxides, awarded by Woodwell Climate Fund for Climate Solution, 2022.
- Co-PI, Rangelands Carbon Monitoring, awarded by Mighty Arrow Foundation, 2022.
- Co-PI, Developing Woodwell's Rangeland Program for Ecosystem Carbon Monitoring and Management, awarded by J.M. Kaplan Fund, 2022.

- PI, ACES Graduate Student International Research Grant (\$3,000), University of Illinois at Urbana-Champaign, 2018.
- PI, Soil Health Institute Literature Review Grant for Graduate Students (\$8,000), Soil Health Institute, 2017.

PUBLICATIONS

Journal Articles

- Schillaci, C., Alves, G., Bayad, M., Bondi, G., Burn, C.R., ..., **Xia, Y.**, ..., and D.L. Evans. 2026. Soil diversity and climate: An overview of profile data and acquisition with the WoSIS global legacy dataset. *European Journal of Soil Science*. Accepted.
- Leschinsky, G. and **Xia, Y.** 2026. Identifying Key Management and Environmental Drivers of Organic Fertilizer-induced Soil N₂O Emissions across North America: A Meta-analysis. *Environmental Research Communications*. 8: e061002. doi: 10.1088/2515-7620/ae7251.
- Li, T., Xia, A., Dalal, R., Manning, S., Beniwal, D., ..., **Xia, Y.**, ..., and Y.P. Dang. 2026. Mid-infrared Spectroscopy for Soil Organic Carbon Estimation. Part I: Global Review and Meta-analysis. *Soil & Tillage Research*. 262: e107236. doi: 10.1016/j.still.2026.107236.
- Hosseini, F.S., Razavi-Termeh, S.V., **Xia, Y.**, Nouriani, H.M., and Choi, S.M. 2026. Multi-source Data and Decision Fusion for Enhanced Gully Erosion Susceptibility Mapping using Machine Learning. *Geomatics, Natural Hazards and Risk*. 17: e2662432. doi: 10.1080/19475705.2026.2662432.
- Schillaci, C., Alves, G., Bayad, M., Bondi, G., Burn, C.R., ..., **Xia, Y.**, ..., and D.L. Evans. 2026. Soil Profiles: A Window Into Soil Genesis and Degradation. *European Journal of Soil Science*. 77: e70322. doi: 10.1111/ejss.70322.
- Arteaga, J., Hartman, M.D., Parton, W.J., **Xia, Y.**, Duan, J., Stephenson, M., Volesky, J., Chen, M., Sharp, D., Straube, J., and Gao, W. 2026. Detecting and Modeling Topography-induced Differences in Plant Productivity Across a Grassland Ecosystem gradient. *Ecosphere*. 17: e70537. doi: 10.1002/ecs2.70537.
- **Xia, Y.**, Sanderman, J., Watts, J., Machmuller, M., Mullen, A., Rivard, C., Endsley, A., Hernandez, H., Kimball, J., S. Ewing., et al. 2025. Coupling Remote Sensing with a Process Model for the Simulation of Rangeland Carbon Dynamics. *Journal of Advances in Modeling Earth Systems*. 17: e2024MS004342. doi: 10.1029/2024MS004342.
- Obour, P., **Xia, Y.**, Ugarte, C., Grift, T., and Wander, M. 2025. Soil Physical Properties and Water Dynamics Under Contrasting Management regimes at the Morrow Plots. *Soil & Tillage Research*. 248: e106422. doi: 10.1016/j.still.2024.106422.
- **Xia, Y.**, Sanderman, J., Watts, J., Machmuller, M., Ewing, S., and Rivard, C. 2024. Leveraging Legacy Data with Targeted Field Sampling for Low-cost Mapping of Soil Organic Carbon Stocks on Extensive Rangeland Properties. *Geoderma*. 448: e116952. doi: 10.1016/j.geoderma.2024.116952.
- **Xia, Y.**, Kwon, H., and M. Wander. 2024. Estimating Soil N₂O Emissions Induced by Organic and Inorganic Fertilizer Inputs Using a Tier-2, Regression-based Meta-analytic Approach for U.S. Agricultural Lands. *Science of The Total Environment*. 927: e71930. doi: 10.1016/j.scitotenv.2024.171930.

- Bulgari, R., Demiraj, E., Schillaci, C., Tlili, A., and **Xia, Y.** 2024. Urban Agriculture & Regional Food Systems Special Section: Improving Livability in Urban Areas: Examining Urban and Peri - Urban Soil and Plant Management. *Urban Agriculture & Regional Food Systems*. 9: e20062. doi: 10.1002/uar2.20062.
- **Xia, Y.**, Watts, J. Machmuller, M., and Sanderman, J. 2022. Machine Learning Based Estimation of Field-Scale Daily, High Resolution, Multi-Depth Soil Moisture for the Western and Midwestern United States. *PeerJ*. 10: e14275. doi: 10.7717/peerj.14275.
- **Xia, Y.**, M. Wander, S. Quiring, S. Yuan, and H. Kwon. 2022. Process-based Modeling of Soil Nitrous Oxide Emissions from United States Corn Fields under Different Management and Climate Scenarios Coupled with Evaluation using Regional Estimates. *Frontiers in Environmental Science*. 9: e971261. doi: 10.3389/fenvs.2022.971261.
- **Xia, Y.**, M. Wander, and K. McSweeney. 2022. Digital Mapping of Agricultural Soil Organic Carbon Using Soil Forming Factors: A Review of Current Efforts at the Regional and National Scales. *Frontiers in Soil Science*. 7: e890437. doi: 10.3389/fsoil.2022.890437.
- **Xia, Y.** and M. Wander. 2022. Management Zone-based Estimation of Positive and Negative Nitrous Oxide Flux in Organic Corn Fields. *Soil Science Society of America Journal*. 86: 1043-1057. doi: 10.1002/saj2.20416.
- **Xia, Y.** and M. Wander. 2021. Evaluation of Indirect and Direct Scoring Methods to Relate Biochemical Soil Quality Indicators to Ecosystem Services. *Soil Science Society of America Journal*. 86: 678-702. doi: 10.1002/saj2.20370.
- **Xia, Y.** and M. Wander. 2021. Responses of β -Glucosidase, Permanganate Oxidizable Carbon, and Fluorescein Diacetate Hydrolysis to Conservation Practices. *Soil Science Society of America Journal*. 85(5): 1649-1662. doi: 10.1002/saj2.20261.
- **Xia, Y.**, Kwon, H., and M. Wander. 2021. Developing County-level Data of Nitrogen Fertilizer and Manure Inputs for Corn Production in the United States. *Journal of Cleaner Production*. 309: e126957. doi: 10.1016/j.jclepro.2021.126957.
- **Xia, Y.**, Guan, K., Copenhaver, M., and M. Wander. 2020. Estimating Cover Crop Biomass Nitrogen Credits with Sentinel-2 Imagery and Sites Covariates. *Agronomy Journal*. 113: 1-18. doi: 10.1002/agj2.20525.
- **Xia, Y.**, Ugarte, C., Guan, K., Pentrak, M., and M. Wander. 2018. Developing Near- and Mid-infrared Spectroscopy Analysis Methods for Rapid Assessment of Soil Quality in Illinois. *Soil Science Society of America Journal*. 82: 1415-1427. doi: 10.2136/sssaj2018.05.0175.

Reports

- **Xia, Y.**, Sanderman, J., Watts, J., Carr, C., Stephanie, E., Parisien, A., et al. 2025. Robust monitoring, reporting, and verification for grassland management in the Great Plains. A National Fish and Wildlife Foundation Report. doi: 10.1575/1912/71403.
- Wander, M., Darby, H., Marriott, E., Heleba, D., **Xia, Y.**, Kwon, H., and L. Ruhl. 2019. Organic decision tools to manage N for production and climate. Report for National Institute of Food and Agriculture.
- **Xia, Y.** and M. Wander. 2018. Review of novel soil indicators and environmental impacts of soil health promoting management practices. Soil Health Institute.
- **Xia, Y.**, Kwon, H., and M. Wander. 2017. Adding U.S. domestic N₂O emission factors to the Greenhouse gases, Regulated Emissions, and Energy use in Transportation (GREET) model. Final report for Argonne National Lab.

Datasets

- Leschinsky, G. and **Xia, Y.** 2025. Soil N₂O emissions in organic farming systems: A North American meta-dataset. Columbia University Academic Commons. doi: 10.7916/q0np-1w51.
- **Xia, Y.**, H. Kwon, and M. Wander. 2024. Soil nitrous oxide emissions data for “Estimating soil N₂O emissions induced by organic and inorganic fertilizer inputs using a Tier-2, regression-based meta-analytic approach for U.S. agricultural lands”. University of Illinois at Urbana-Champaign Data Bank. doi: 10.13012/B2IDB-9808669_V1.
- **Xia, Y.**, M. Wander, and H. Kwon. 2021. County-level data of nitrogen fertilizer and manure inputs for corn production in the United States. University of Illinois at Urbana-Champaign Data Bank. doi: 10.13012/B2IDB-3112432_V1.
- **Xia, Y.** and M. Wander. 2018. Response of Tier 2 Soil quality indicators β-glucosidase, fluorescein diacetate hydrolysis and permanganate oxidizable carbon. University of Illinois at Urbana-Champaign Data Bank. doi: 10.13012/B2IDB-2865725_V3.
- **Xia, Y.** and M. Wander. 2018. Correlation between Tier 2 soil quality indicators β-glucosidase, fluorescein diacetate hydrolysis and permanganate oxidizable carbon and plant productivity and greenhouse gas emissions. University of Illinois at Urbana-Champaign Data Bank. doi: 10.13012/B2IDB-4693684_V2.

Open-source codes and applications

- Downscale soil moisture estimates using a machine learning approach: <https://github.com/xiayushu/RCTM-soil-moisture>
- Develop baseline estimates of soil carbon using a digital soil mapping approach: <https://github.com/xiayushu/RCTM-soil-carbon>
- Developing a Rangeland Carbon Tracking and Monitoring System: <https://zenodo.org/records/11508223>
- A web-based interface for visualizing rangeland soil carbon dynamics: <https://rangelands.users.earthengine.app/view/app2023>

PROFESSIONAL PRESENTATIONS

Conference presentations

- **Xia, Y.** 2026. Introducing the Farm Practice Multi-Model Intercomparison and Ensemble Project (Farm-MIP). Forestry & Agriculture Modeling Forum.
- **Xia, Y.**, Sanderman, J., Watts, J., Mullen, A., Duan, J., Orfanou, A., et al. 2025. RangeStar: A remote sensing-driven process-based model for estimating rangeland productivity and carbon dynamics. AGU Meeting.
- **Xia, Y.**, Ruane, A., Keyser, A., Basso, B., Rosenzweig, C., Mencos, E., et al. 2025. A multi-model framework for simulating soil carbon and nitrogen dynamics in U.S. agricultural systems. AGU Meeting.

- Duan, J., **Xia, Y.**, Watts, J., Sanderman, J., Mullen, A., Orfanou, A. 2025. Understanding rangeland carbon dynamics using standardized observations and their application in machine learning model. AGU Meeting.
- Cohen, J., **Xia, Y.**, Duan, J., Guo, H. 2025. Investigating the drivers of site-level forest soil moisture dynamics. AGU Meeting.
- **Xia, Y.**, Sanderman, J., Watts, J., Machmuller, M., Mullen, A., Rivard, C., Endsley, A., et al. 2025. Developing a Rangeland Carbon Tracking and Management (RCTM) system by leveraging field and remote sensing datasets with modeling tools. Society for Range Management Annual Meeting.
- **Xia, Y.**, Sanderman, J., Watts, J., Machmuller, M., Mullen, A., Rivard, C., Hernandez, H., and E. Stephanie. 2023. Ranch-scale monitoring of soil carbon and rangeland productivity. AGU Meeting.
- **Xia, Y.**, Sanderman, J., Watts, J., Machmuller, M., Mullen, A., Rivard, C., Hernandez, H., and E. Stephanie. 2023. Developing a Rangeland Carbon Tracking and Monitoring tool using remote sensing imagery and process-based modeling approach. ASA, CSSA, & SSSA Annual Meeting.
- **Xia, Y.**, Sanderman, J., Watts, J., Hernandez, H., Machmuller, M., and E. Stephanie. 2022. Developing a Rangeland Carbon Tracking and Monitoring (RCTM) tool using remote sensing imagery and process-based modeling approach. AGU Meeting.
- Sanderman, J., **Xia, Y.**, Hernandez, H., Watts, J., Francesca, C., Stephanie, E., and M. Machmuller. 2022. Measuring soil organic carbon on the range: Challenges and Emerging Approaches. Society for Range Management Meeting.
- **Xia, Y.**, Kwon, H., and M. Wander. 2020. Spatially explicit nitrogen input data generated for corn production with a data fusion approach. ASA, CSSA, & SSSA Annual Meeting.
- **Xia, Y.**, M. Wander, and Kwon, H. 2020. Downscaling process-based soil organic matter model and N input data for estimation of soil N losses. AGU Meeting.
- **Xia, Y.**, Kwon, H., and M. Wander. 2019. Estimation and modeling of field-scale soil nitrous oxide emissions based on strategic sampling plans. ASA, CSSA, & SSSA Annual Meeting.
- **Xia, Y.**, Xu, H., Wander, M., and H. Kwon. 2019. Spatial crop-soil data parameterize modeling of nitrous oxide emissions from corn production for biofuel. ASA, CSSA, & SSSA Annual Meeting.
- Wander, M., Darby, H., Marriott, E., Ruhl, L., Kwon, H., and **Y. Xia**. 2019. Tools to manage nitrogen organically for crops, soils and the environment. ASA, CSSA, & SSSA Annual Meeting.
- Kwon, H., Xu, H., Cai, H., **Xia, Y.**, and M. Wander. 2019. Nitrogen fertilizer-induced N₂O emission factors for corn ethanol life-cycle analysis. Bioenergy Sustainability Conference.
- Wander, M., Darby, H., Kwon, H., **Xia, Y.**, Aves, K. Marriott, E., Ruhl, L., and P. Hobbs. 2019. Where is the N going on your farm? A workshop to help organic farmers manage nitrogen for crops, soils and the environment. Organic Grain Conference.

- **Xia, Y.**, Kwon, H., and M. Wander. 2017. Use of Rapid Assessment of U.S. Soil Carbon dataset to calibrate a surrogate Century model. ASA, CSSA, & SSSA Annual Meeting.
- **Xia, Y.**, Ugarte, C., Guan, K., and M. Wander. 2015. Rapid assessment of soil quality in Illinois using near- and mid-infrared spectroscopic method. ASA, CSSA, & SSSA Annual Meeting.

Panelist

- **Xia, Y.** 2026. Panelist for translating modeling to policy action. Forestry & Agriculture Modeling Forum.
- **Xia, Y.** Glimpact Panel for Agriculture and Food Stakeholders. NYC Climate Week. 2025
- **Xia, Y.** The Conservation-MIP project for evaluating soil health outcomes. Panelist for Mitigation and Adaptation Co-Benefits and Life Cycle Analysis. AgMIP10 Meetings. 2025
- **Xia, Y.** Integrating soil carbon and greenhouse gas monitoring into regionalized ecosystem service evaluation. Panelist for “Where” Matters! Better Measuring, Monitoring and Modeling of Carbon and GHG Cycles in Landscapes. A Community on Ecosystem Services. 2024

Invited talks

- **Xia, Y.**, Introduction of the Farm-MIP project. The Long-Term Agroecosystem Research (LTAR) Network All Call. 2026.
- **Xia, Y.** Life after leftovers: The Science of Composting. The Carbon Newbie Summit. NYC Climate Week. 2025.
- **Xia, Y.** Sanderman, J., Watts, J., Hernandez, H., Machmuller, M., and E. Stephanie. Developing a Rangeland Carbon Tracking and Monitoring system using remote sensing imagery coupled with a modeling approach. EGU Meeting. 2024.
- **Xia, Y.** A New Frontier: Data-informed soil management in a changing climate. IBM Research Seminars. 2024.
- **Xia, Y.** Monitoring soil health and the associated agroecosystem outcomes: Combining in-situ observations with remote sensing data and modeling tools. Cary Institute of Ecosystem Studies. 2024.
- **Xia, Y.** Sanderman, J., Watts, J., Hernandez, H., Machmuller, M., and E. Stephanie. Woodwell’s rangeland carbon program. JBS Beef Sustainability Summit. 2023.
- **Xia, Y.** Leveraging multi-scale data sources for sustainable soil management. Department of Environmental Science, Rutgers University. 2023.
- **Xia, Y.** Improving soil carbon monitoring through integrated data analysis and modeling. Lamont-Doherty Earth Observatory. 2023.
- **Xia, Y.** Leveraging multi-scale datasets and pedology knowledge for improving soil carbon management and assessments. Department of Crop and Soil Science, Oregon State University. 2023.
- **Xia, Y.** Synergizing integrated data analysis for advancing agroecology in sustainable soil management. Department of Plant and Soil Sciences, University of Delaware.

2023.

Guest lectures

- **Xia, Y.**, Soil-based carbon capture and storage. Guest lecture for Geoengineering: A Seminar in Biogeoscience. Department of Earth and Environmental Sciences. Columbia University. 2026.
- **Xia, Y.**, Soil, carbon, health, and climate. Guest lecture for Mailman School for Public Health's Public Health Impacts of Climate Change class. Columbia University. 2026.
- **Xia, Y.**, Understanding and improving soil health and the associated agroecosystem outcomes. Guest lecture for School of International and Public Affairs (SIPA)'s Sustainable Development graduate program. Columbia University. 2025
- **Xia, Y.**, Soil health and soil carbon. Guest lecture for Climate School's M.S. in Climate program. Columbia University. 2025
- **Xia, Y.**, Modeling soil carbon and ecosystem outcomes. Earth Observations: Conversations with Lamont Scientists Series. Lamont-Doherty Earth Observatory, Columbia University. 2025
- **Xia, Y.**, Climate change mitigation and adaptation through improved soil carbon management. Lamont 75th Anniversary Symposium: Life and Earth. Lamont-Doherty Earth Observatory, Columbia University. 2024.
- **Xia, Y.**, Evaluation of soil ecosystem services by coupling modeling tools with multi-scale datasets. Guest lecture for the Department of Ecology, Evolution, and Environmental Biology (E3B). Columbia University. 2024.
- **Xia, Y.**, Understanding and quantifying the role of soil carbon in forest and agricultural ecosystems. Guest lectures for M.S. in Sustainability Science and M.A. in E3B programs. Columbia University. 2024.
- **Xia, Y.**, Climate outcomes associated with sustainable soil management. Lamont summer intern lectures. Lamont-Doherty Earth Observatory, Columbia University. 2024.
- **Xia, Y.**, How I became a soil scientist and what is soil science. Secondary School Field Research Program. Lamont-Doherty Earth Observatory, Columbia University. 2024.

SKILLS

- Programming languages: R, Python, SAS, C, Visual Basic, Mathematica, Javascript, Matlab, Julia
- Computer software skills: ArcMap, QGIS, Google Earth, ENVI, STELLA, AutoCAD, OriginLab, Adobe Premiere Pro
- Cloud computing platforms: Google Earth Engine, Google Cloud Platform, Google Colab, Jupyter notebook
- Website design platforms: Google Earth Engine app, Wolfram, R markdown
- Modeling skills: machine learning and process-based modeling
- Field skills: soil and plant biomass sampling, greenhouse gas measurements

- Lab skills: spectroscopy, elemental analyzer, gas chromatograph, soil health assessment through the test of soil physical, chemical, and biological indicators

SERVICE

Review activities

- Reviewed for *Science*, *PNAS*, *Nature Geoscience*, *Nature Sustainability*, *Nature Climate Change*, *Global Change Biology*, *Remote Sensing of Environment*, *Environmental Research Letters*, *Geophysical Research Letters*, *Journal of Environmental Management*, *Earth System Science Data*, *Ecological Indicators*, *Soil Science Society of America Journal*, *Agronomy Journal*, *Agricultural and Forest Meteorology*, *European Journal of Soil Science*, *Applied Soil Ecology*, *Scientific Reports*, *Soil Use and Management*, *Pedosphere*, *Biogeosciences*, *Field Crops Research*, *Plant and Soil*, *Frontiers in Environmental Science*, *Frontiers in Sustainable Food Systems*, *PLOS ONE*, *Carbon Balance and Management*, *Remote Sensing Applications: Society and Environment*, *Global Change Biology Communications*, *Environmental Research Communications*, *Urban Agriculture & Regional Food Systems*, *Plant Methods*, *Biogeochemistry*, *Restoration Ecology*, *Sustainability*, *Remote Sensing*, *Agronomy*, *Agriculture*, *Sensors*, *Forests*, *Soil Systems*, *Energies*, *Ecologies*, *Applied Sciences*, *International Journal of Environmental Research and Public Health*, *Journal of Ambient Intelligence and Smart Environments*, *Discover Soil*, *Discover Sustainability*, *Environmental Research: Ecology*, and *Current Research in Environmental Sustainability*.
- Reviewed book proposals for Springer Nature and CRC Press/Taylor and Francis Group LLC.
- Review Panelist for USDA's National Institute for Food and Agriculture (programs confidential), 2024-2026.
- Reviewed ad-hoc for USDA's Climate Dashboard Project, 2024.
- Reviewed ad-hoc for NSF's Division of Environmental Biology (program confidential), 2025.
- Reviewed ad-hoc for NSF's Division of Earth Sciences (program confidential), 2025.
- Reviewed ad-hoc for the Foundation for Food & Agriculture Research (FFAR) (programs confidential), 2022 and 2026.
- Judged the student oral presentation competition for "Applications of Agricultural Systems Models to Address Emerging Issues and Climate Resilience" session at the 2023 ASA, CSSA, & SSSA Annual Meeting.

Editorial activities

- Editorial Board Member for *Discover Soil*, 2024-2026.
- Guest Editor for *Urban Agriculture & Regional Food Systems*, 2023.

Memberships and committees

- Member of the American Society of Agronomy, Soil Science Society of America, American geophysical Union, European Geosciences Union, the World Economic

Forum's Generation Restoration Youth Hub, the International Nitrogen Network, the Soil and Water Conservation Society, and the AgMIP community.

- Advisory committee member for the Research Initiative for NE Grazing Soils (RINGS). 2025-2026.
- Member of the code of conduct committee at Lamont-Doherty Earth Observatory, 2024.
- Postdoctoral liaison for Woodwell Climate Research Center, 2022-2023.

Mentorship

After joining Columbia:

- Advisor for three Postdoctoral Research Scientists at Columbia University. 2024-2026.
- Advisor for a Ph.D. student at the Department of Earth and Environmental Sciences at Columbia University. 2025-2026.
- Advisor for a visiting Zhejiang University Ph.D. student at Columbia University. 2025-2026.
- Co-advisor for a Ph.D. student at the Department of Natural Resources and Environmental Sciences, University of Illinois at Urbana-Champaign. 2025-2026.
- Committee member for two Ph.D. students at Department of Earth and Environmental Sciences at Columbia University. 2024-2026.
- Committee member for a M.A. student at Department of Ecology, Evolution, and Environmental Biology at Columbia University. 2025-2026.
- Advisor for five undergraduate senior thesis students through Columbia's Environmental Science program. 2024-2026.
- Mentor for an undergraduate student through the Research Experiences for Undergraduates (REU) program. 2025.
- Mentor for 5+ capstone and independent study student through Columbia's Environmental Science program, Columbia's Data Science Institute program, and Barnard's Environmental Science program (2024-2025).
- Trained 10+ M.S. and undergraduate research assistants in soil sampling, lab tests, data analysis, and AI-based modeling at Columbia University. 2024-2026.
- Mentor for a group of undergraduate student leaders (4) and high school students (20+) through Columbia's Secondary School Field Research Program. 2024-2026.
- Mentor for three high school students through the Senior Experience program at Bergen County Academies. 2024-2026.

Awards, honors, and grants earned by mentees at Columbia:

- Jiaming Duan (Postdoctoral Research Scientist): Travel award for attending the 2025 AmeriFlux Annual Meeting; Co-PI for Columbia Climate School Seed Funding Award (\$6,898); PI for the LDEO Climate Center award at Columbia (\$8,155).

- Alex Crookshanks (Ph.D. student): Travel award for attending the 2025 AGU Meeting; 2026 Grant Harris Fellowship Award (\$9,365); Co-PI for the LDEO Climate Center award at Columbia (\$8,155).
- Victoria Woods (Undergraduate Senior Thesis student): 2026 Departmental Honors for the Department of Earth and Environmental Sciences at Columbia University.
- Inesh Vytheswaran (Research Assistant): 2026 Catskills Science Collaborative Fellowship (\$18,000).
- Margot Grotland (Research Assistant): 2025 Comer Undergraduate Summer Research Fellowship (\$5,000).
- Kiera Bisnauth (High school intern): NOAA's Taking the Pulse of the Planet award and Association of Women Geoscientist's award for geoscience excellence at the 2026 Regeneron Westchester Science & Engineering Fair; Genius Olympiad Finalist.

Before joining Columbia:

- Mentor for a group of undergraduate students (5+) through the Office of International Programs at the University of Illinois at Urbana-Champaign (2017 to 2019).
- Mentor for a number of undergraduate and graduate students (10+) in field sampling, lab analysis, data analysis, and applied mathematical modeling at University of Illinois at Urbana-Champaign (2016 to 2021) and Woodwell Climate Research Center (2021 to 2023).

Community service and outreach activities

- Participated in the 2026 Capitol Hill Meetings as a representative of Columbia University's early-career faculty, advocating for federal support of scientific research and higher education.
- Hosted the Farm-MIP workshop in NYC in 2026. The workshop brings together AgMIP, USDA, and key agroecosystem modeling groups (DayCent, DNDC, DSSAT, APSIM, SALUS, EPIC, APEX, SWAT+, TASC).
- Co-convener of the "Modeling Food System Mitigation" session at AgMIP10 in 2025.
- Co-convener of the data working group session for the International Nitrogen Network workshop in 2025.
- Delivered presentations and engaged with stakeholders at the Stone Barns-Columbia Climate School Partners Workshops in NY in 2024-2026.
- Organized the "Carbon Secrets: Exploring Soil and Forest Carbon at Lamont Sanctuary Forest" Exhibition at the Lamont Open House: Discover Earth Science in 2024.
- Co-convener of the "Advances in Understanding Water-Energy-Carbon Interactions" session at AGU in 2024.
- Delivered a presentation and engaged with the broader research community from the Northeast at the Hudson Carbon Workshop in NY in 2025.
- Contributed to the preparation of materials and engaged with NGO representatives, research groups, and policymakers at NFWF's Grassland Carbon Monitoring Workshop in Washington DC in 2024.

- Contributed to the preparation of materials, delivered a presentation, and engaged with stakeholders at the Regenerative Ranching Workshop in Colorado, hosted by the Woodwell Climate Research Center in 2023.

MEDIA COVERAGE

- *Can methane cuts pull us back from the brink of climate breakdown?* Covered by The Guardian. <https://www.theguardian.com/environment/2025/nov/16/methane-cuts-climate-breakdown-cop30>
- *Researcher of the Month Series: Yushu Xia - What Does It Mean For Soil to Be Healthy?* Covered by Columbia Research. <https://research.columbia.edu/researcher-of-the-month>
- *Nine Climate School Researchers Honored by Leading Scientific Organizations.* Covered by State of the Planet (Columbia Climate School News): <https://news.climate.columbia.edu/2025/10/21/nine-climate-school-researchers-honored-by-leading-scientific-organizations/>
- *Celebrating the 2026 International Day of Women and Girls in Science.* Covered by State of the Planet (Columbia Climate School News): <https://news.climate.columbia.edu/2026/02/11/celebrating-the-2026-international-day-of-women-and-girls-in-science/>
- *Where Soil Meets Data: Yushu Xia's Mission to Support a Healthier Planet.* Covered by State of the Planet (Columbia Climate School News): <https://news.climate.columbia.edu/2025/10/10/where-soil-meets-data-yushu-xias-mission-to-support-a-healthier-planet/>.
- *What Does It Mean For Soil To Be Healthy?* Covered by State of the Planet (Columbia Climate School News): <https://news.climate.columbia.edu/2025/09/08/what-does-it-mean-for-soil-to-be-healthy/>.
- *FFAR Announces New Innovator in Food & Agriculture Research Awardees.* Covered by the Foundation for Food & Agriculture Research (FFAR). <https://foundationfar.org/news/ffar-announces-new-innovator-in-food-agriculture-research-awardees-2025/>
- *President's Global Innovation Fund: Meet the 2025 Recipients.* Covered by Columbia's Global Centers. <https://globalcenters.columbia.edu/content/presidents-global-innovation-fund-meet-2025-recipients>
- *Soil, Science, and Sustainability.* Covered by Columbia's School of Professional Studies News. <https://sps.columbia.edu/news/soil-science-and-sustainability>
- *Columbia Climate School's Seed Grants Advance Interdisciplinary Research.* Covered by Columbia Climate School's State of the Planet News. <https://news.climate.columbia.edu/2025/04/18/columbia-climate-schools-seed-grants-advance-interdisciplinary-research/>
- *Agricultural management practices evaluated in new nitrous oxide accounting Method.* Covered by University of Illinois at Urbana-Champaign ACES News.

<https://aces.illinois.edu/news/agricultural-management-practices-evaluated-new-nitrous-oxide-accounting-method>

- *Climate scientists and cattle ranchers meet at High Lonesome Ranch.* Covered by Woodwell Climate Research Center. <https://www.woodwellclimate.org/climate-cattle-ranchers-regenerative-agriculture-workshop/>
- *Digging into rangeland soil carbon storage with Woodwell's scientists.* Covered by Woodwell Climate Research Center. <https://www.woodwellclimate.org/rangeland-soil-carbon-storage-field-research/>
- *CSU soil scientists tapping rangelands as vast sources for carbon storage.* Covered by Colorado State University. <https://agsci.source.colostate.edu/csu-soil-scientists-tapping-rangelands-as-vast-sources-for-carbon-storage/>
- *Greenhouse gas data deep dive reaches new level of 'reasonable and true'.* Covered by University of Illinois at Urbana-Champaign ACES News. <https://aces.illinois.edu/news/greenhouse-gas-data-deep-dive-reaches-new-level-reasonable-and-true>
- *ACES PhD student Yushu Xia builds connections with French soil scientists towards managing nitrogen.* Covered by University of Illinois at Urbana-Champaign ACES News. <https://aces.illinois.edu/news/aces-phd-student-yushu-xia->