

Yaping Xu, Ph.D.

Assistant Professor

Department of Geography and Institute of Artificial Intelligence, University of Georgia

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EDUCATION

Louisiana State University, Ph.D. in Geography 08/2019

Dissertation: *Mapping Soil Moisture from Remotely Sensed and In-situ Data with Statistical Methods*;

Committee: **Lei Wang (chair), Edward Bush, Barry Keim, Bin Li, Robert Rohli**

Supported by the Louisiana State University Graduate School Dissertation Fellowship

University of Chinese Academy of Sciences, M.S. Cartography and GIS 01/2013

Thesis: *Long Time Series Remote Sensing Monitoring and Analysis on Cultural and Natural Heritage Sites-Case Study on Dunhuang Oasis and Sumatra Rainforest*;

Advisor: **Changlin Wang and Xinyuan Wang**

Guizhou University, China, B.E. in Geographic Information System 07/2009

APPOINTMENTS

Assistant Professor, Department of Geography and Institute of Artificial Intelligence, **University of Georgia** 08/2026 - present

Assistant Professor of GIScience, Department of Environment and Geosciences, **Sam Houston State University** 08/2023 – 07/2026

Postdoc Researcher, **University of Tennessee Knoxville/ Oak Ridge National Laboratory**.

Advisor: **Neal Stewart, Jr.**, Racheff Chair of Excellence 11/2020 – 07/2023

Postdoc Researcher, Center for Global Discovery & Conservation Science, **Arizona State University**. Advisor: **Greg Asner**, member of National Academy of Science 09/2019 - 10/2020

Research Consultant, Center for Geographic Analysis/Harvard Medical School, **Harvard University** 02/2019 - 06/2019

Research Assistant/Teaching Assistant, Geography & Anthropology, **Louisiana State University**, 08/2014 - 05/2019

Research Consultant, Team Lead, **NASA DEVELOP**, 06/2016 - 08/2016

Project Manager, Team Lead, **Beijing Hangtian Tianhui Geospatial Technology Inc. (Aerors Inc.)**, 08/2012 - 07/2014

Research Assistant, **Chinese Academy of Sciences/ UNESCO - Center for World Heritage** 06/2010 - 06/2012

RESEARCH INTEREST

- UAV imaging systems and machine learning
- Satellite remote sensing and GeoAI
- Soil moisture and nutrients modeling, precision agriculture, and agroecosystems
- Soil surface process and impact on environmental health
- Climate variability on soil fertility/carbon/moisture
- Coupled human-environment system and land-water interactions

PUBLICATIONS

2026

- He, Y., and Xu, Y., Deep learning-based detection of rust disease in switchgrass using UAV-derived multispectral imagery. Timeline: submit by September 2026. Target journal: IJRS.

2025

- Li, L., Lin, X., Fang, Y., Hou, Z.J., Leung, L.R., Wang, Y., Mao, J., **Xu, Y.**, Massoud, E. and Shi, M., 2025. A unified ensemble soil moisture dataset across the continental United States. *Scientific Data*, 12(1), p.546. DOI: <https://doi.org/10.1038/s41597-025-04657-x>.
- Zhang, J., Han, Y., Fang, Y., **Xu, Y.**, Chen, C., Liu, Z., Wang, F., Zhuang, L. and Huang, F., 2025. Impact of drought on farmers' livelihood vulnerability: A case study of county-level units in Western Jilin Province, China. *Chinese Geographical Science*, 35, pp.279–294. DOI: <https://doi.org/10.1007/s11769-025-1490-9>.
- Mazarei, M., Harman-Ware, A.E., Pendergast, T.H. IV, Shrestha, V., **Xu, Y.**, Piasecki, C., Millwood, R.J., Devos, K.M. and Stewart, C.N. Jr., 2025. Variation in biomass yield and cell wall composition in switchgrass natural variants under two nitrogen regimes. *BioEnergy Research*, 18, p.35. DOI: <https://doi.org/10.1007/s12155-025-10838-8>.

2024

- Wang, F., Han, Y., **Xu, Y.**, Zhu, R., Qu, C., Zhang, P., Martin, S., Zhuang, L., Liu, Z., Zhang, J. and Huang, F., 2024. Spatial-temporal variation and influencing factors of ecological environment quality in Jilin Province (China). *Frontiers in Environmental Science*, Volume 12 - 2024, 1-19. DOI: <https://doi.org/10.3389/fenvs.2024.1446313>.
- Liu, Z., Han, Y., Zhu, R., Qu, C., Zhang, P., **Xu, Y.**, Zhang, J., Zhuang, L., Wang, F., Huang, F. Spatio-Temporal Land-Use/Cover Change Dynamics Using Spatiotemporal Data Fusion Model and Google Earth Engine in Jilin Province, China. *Land* 2024, 13, 924. DOI: <https://doi.org/10.3390/land13070924>.
- Happs, R.M., Hanes, R.J., Bartling, A.W., Field, J.L., Harman-Ware, A.E., Clark, R.J., Pendergast IV, T.H., Devos, K.M., Webb, E.G., Missaoui, A. and **Xu, Y.**, 2024. Economic and Sustainability Impacts of Yield and Composition Variation in Bioenergy Crops: Switchgrass (*Panicum virgatum* L.). *ACS Sustainable Chemistry & Engineering*. 12(5), 1897-1910. DOI: <https://doi.org/10.1021/acssuschemeng.3c05770>.

2023

- Ge, H., Han, Y., **Xu, Y.**, Zhuang, L., Wang, F., Gu, Q., Xiaojie, L., 2023. Estimating soil salinity using multiple spectral indexes and machine learning algorithm in Songnen Plain, China. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 16, pp. 7041-7050, 2023. DOI: <https://doi.org/10.1109/JSTARS.2023.3274579>.
- Zhou, J., **Xu, Y.**, Gu, X., Chen, T., Sun, Q., Zhang, S., Pan, Y., 2023. High-Precision Mapping of Soil Organic Matter Based on UAV Imagery Using Machine Learning Algorithms. *Drones*. 2023; 7(5):290. DOI: <https://doi.org/10.3390/drones7050290>.

2022

- **Xu, Y.**, Liu, C., Wang, L. and Zou, L., 2022. Exploring the Spatial Autocorrelation in Soil Moisture Networks: Analysis of the Bias from Upscaling the Texas Soil Observation Network (TxSON). *Water*, 15(1), p.87. DOI: <https://doi.org/10.3390/w15010087>.
- Gu, Q. , Han, Y., **Xu, Y.**, Ge, H., Li, X., 2022. Extraction of Saline Soil Distributions Using Different Salinity Indices and Deep Neural Networks. *Remote Sensing*. 2022; 14(18):4647. DOI: <https://doi.org/10.3390/rs14184647>.
- Shrestha, V., Chhetri, H.B., Kainer, D., **Xu, Y.**, Hamilton, L., Piasecki, C., Wolfe, B., Wang, X., Saha, M., Jacobson, D. and Millwood, R.J., 2022. The Genetic Architecture of Nitrogen Use Efficiency in Switchgrass (*Panicum virgatum* L.). *Frontiers in Plant Science*, 13, p.893610. DOI: <https://doi.org/10.3389/fpls.2022.893610>.
- Wang, C., Wang, X., **Xu, Y.**, Zhang, B., Jiang, M., Xiong, S., Zhang, Q., Li, W. and Li, Q., 2022. A New Likelihood Function for Consistent Phase Series Estimation in Distributed Scatterer Interferometry. *IEEE Transactions on Geoscience and Remote Sensing*, vol. 60, pp. 1-14, 2022. DOI: <https://doi.org/10.1109/TGRS.2022.3170567>.
- Liu, C., Wang, C., **Xu, Y.**, Liu, C., Li, M., Zhang, D., Liu, G., Li, W., Zhang, Q. and Li, Q., 2022. Correlation Analysis between Nighttime Light Data and Socioeconomic Factors on Fine Scales. *IEEE Geoscience and Remote Sensing Letters*, vol. 19, pp. 1-5, 2022, DOI: <https://doi.org/10.1109/LGRS.2022.3166281>.
- Gu, Q., Han, Y., **Xu, Y.**, Yao, H., Niu, H. and Huang, F., 2022. Laboratory Research on Polarized Optical Properties of Saline-Alkaline Soil Based on Semi-Empirical Models and Machine Learning Methods. *Remote Sensing*, 14(1), p.226. DOI: <https://doi.org/10.3390/rs14010226>.

2021

- **Xu, Y.**, Shrestha, V., Piasecki, C., Wolfe, B., Hamilton, L., Millwood, R.J., Mazarei, M. and Stewart, C.N., 2021. Sustainability Trait Modeling of Field-Grown Switchgrass (*Panicum virgatum*) Using UAV-Based Imagery. *Plants*, 10(12), p.2726. DOI: <https://doi.org/10.3390/plants10122726>.
- Liu, C., Tang, Q., **Xu, Y.**, et al. High-Spatial-Resolution Nighttime Light Dataset Acquisition Based on Volunteered Passenger Aircraft Remote Sensing. *IEEE Transactions on Geoscience and Remote Sensing*. Accepted on December 30, 2021. DOI: <https://doi.org/10.1109/TGRS.2021.3139011>.

- Zhang, X., Meng, X., Li, C., Shang, N., Wang, J., **Xu, Y.**, Wu, T. and Mugnier, C., 2021. Micro-Topography Mapping through Terrestrial LiDAR in Densely Vegetated Coastal Environments. *ISPRS International Journal of Geo-Information*, 10(10), p.665. DOI: <https://doi.org/10.3390/ijgi10100665>.
- Carlson, R.R., Evans, L.J., Foo, S.A., Grady, B.W., Li, J., Seeley, M., **Xu, Y.** and Asner, G.P., 2021. Synergistic Benefits of Conserving Land-Sea Ecosystems. *Global Ecology and Conservation*, 28, p.e01684. DOI: <https://doi.org/10.1016/j.gecco.2021.e01684>.

2020 and Before

- **Xu, Y.**, Vaughn, N.R., Knapp, D.E., Martin, R.E., Balzotti, C., Li, J., Foo, S.A. and Asner, G.P., 2020. Coral Bleaching Detection in The Hawaiian Islands Using Spatio-Temporal Standardized Bottom Reflectance and Planet Dove Satellites. *Remote Sensing*, 12(19), p.3219. DOI: <https://doi.org/10.3390/rs12193219>.
- **Xu, Y.**, Wang, L., Ma, Z., Liu, C., Bartels, R., Liu, C., Zhang, X. and Dong, J., 2019. Spatial Explicit Model for Statistical Downscaling of Satellite Passive Microwave Soil Moisture. *IEEE Transactions on Geoscience and Remote Sensing*, 58(2), pp.1182 – 1191. <https://doi.org/10.1109/TGRS.2019.2944421>.
- **Xu, Y.**, Wang, L., Ross, K., Liu, C., and Berry, K., 2018. Standardized Soil Moisture Index for Agricultural Drought Monitoring in the Southeast United States Based on SMAP Observations and 36 Years of NLDAS Data. *Remote Sensing*, 10(2), p.301. DOI: <https://doi.org/10.3390/rs10020301>.
- Liu, C., **Xu, Y.**, Wang, F., 2019. Population Distribution Patterns and Changes in China 1953-2010: a Regionalization Approach. *Journal of Geographical Sciences*, 29 (11), pp.1908-1922. DOI: <https://doi.org/10.1007/s11442-019-1696-9>.
- Ma, Z., **Xu, Y.**, Peng, J., Chen, Q., Wan, D., He, K., Shi, Z. and Li, H., 2018. Spatial and Temporal Precipitation Patterns Characterized by TRMM TMPA Over the Qinghai Plateau and Surroundings. *International Journal of Remote Sensing*, 39(12), pp.3891-3907. DOI: <https://doi.org/10.1080/01431161.2018.1441565>.
- Wang, F., Liu, C., and **Xu., Y.**, 2019. Analyzing Population Density Disparity in China with GIS-automated Regionalization: The Hu Line Revisited. *Chinese Geographical Science*, 29(4), pp.541–552. DOI: <https://doi.org/10.1007/s11769-019-1054-y>.
- Liu, C., Wang, F., and **Xu, Y.**, 2019. Habitation Environment Suitability and Population Density Patterns in China: a Regionalization Approach. *Growth and Change: A Journal of Urban and Regional Policy*, 50(1), pp.184–200. DOI: <https://doi.org/10.1111/grow.12283>.
- Wang, F., Liu, C., and **Xu., Y.**, 2019. Mitigating the Zonal Effect in Modeling Urban Population Density Functions by Monte Carlo Simulation. *Environment and Planning B: Urban Analytics and City Science*, 46(6), pp.1061–1078. DOI: <https://doi.org/10.1177/2399808317749832>.
- **Xu, Y.**, Wang, L., Liu, C. and Liu, C., 2017. Identifying Unlawful Constructions in Cultural Relic Sites Based on Subpixel Mapping - a Case Study in Mangshan Tombs, China, *AIMS Geosciences*, 3(2), pp.268-283. DOI: <https://doi.org/10.3934/geosci.2017.2.268>.

- **Xu, Y.**, Wang X. and Wang, C., Dynamic Change Analysis of Dunhuang Oasis Based on Long Time Landsat Images Series (**in Chinese**). *Arid Land Geography*, 2013, 36(5), 168-175.
- Liu, C. and **Xu, Y.**, 2013. Soil Salinization Extraction Research in Dunhuang Oasis Based on TM Data (**in Chinese**). *Journal of Capital Normal University (Natural Science Edition)*, (03), pp. 68-76.
- **Xu, Y.**, 2008. Application of Remote Sensing in Unpredictable Natural Disasters - from the Wenchuan Earthquake (in Chinese). *Guizhou Geology*, 25 (4), pp.306-310.

Data Products

- **Xu, Y.**, Shrestha, V., Piasecki, C., Wolfe, B., Hamilton, L., Millwood, R.J., Mazarei, M., Stewart, C.N., *Sustainability Trait Modeling of Field-Grown Switchgrass (Panicum virgatum) Using UAV-Based Imagery*. United States: N. p., 2022. DOI:[10.25983/1862866](https://doi.org/10.25983/1862866).
- Happs, R., Hanes, R., Bartling, A., Field, J., Harmon-Ware, A., Clark, R., Pendergast, T., Devos, K., Webb, E., Missaoui, A., **Xu, Y.**, Makaju, S., Shrestha, V., Mazarei, M., Stewart, C., Millwood, R. and Davison, B., 2023. *Yield, chemistry, and TEA/LCA data for 84 switchgrass (Panicum virgatum L.) variants*. Data Repository. DOI: <https://doi.org/10.25983/2217356>

In Preparation

- **Xu, Y.**, Brabson H., Hamilton L., Millwood R., and Stewart Jr N., Indicative Species Identification and Evidence from Hyperspectral Response for Human Decomposition. Timeline: submit by December 2026. Target journal: *Nature Communications*.
- **Xu, Y.**, Hamilton L., Shrestha V., Wolfe B., Millwood R., Mazarei M., and Stewart Jr N., Rust Disease Detection with Airborne Hyperspectral Camera for 2021-2022 Field-Grown Switchgrass. Timeline: submit by December 2026; Target journal: *Remote Sensing of Environment*.
- **Xu, Y.**, Shrestha V., Hamilton L., Wolfe B., Millwood R., Mazarei M., and Stewart Jr N., Nitrogen Modeling with Airborne Multispectral/Hyperspectral Data for a 2020-2021 Field-Grown Switchgrass. Timeline: submit by December 2026. Target journal: *Frontiers in Plant Science*.

FUNDED GRANTS, HONORS, AND AWARDS

Funded Grants

- P.I., FARMGO: Enhancing Climate Resilience through NASA Data Integration and AI Geovisualization. NASA MUREP ESSR., **\$1.2 Million** (August 2025 to July 2028). Co-Is: Dr. Joshua Gilliland (SHSU), Dr. Hannah Kerner (ASU), and Dr. Awal Ripendra (PVAMU)
- Co-PI, "Mapping Cool Corridors: Thermal Exposure and Shade Dynamics for a Walkable TAMU", sponsored by Texas A&M Institute of Data Science (TAMIDS), 2024 Seed Program for AI, Computing, and Data Science (SPAICD) award, **\$20,000**. January 2025.
- Xu, Y., "Texas General Land Office grant," Sponsored by Texas General Land Office, State, **\$6,000**. (May 2024 - August 2024).

- Xu, Y., "Ramps into Research," Sponsored by SHSU STEM Center, Sam Houston State University, **\$1,000**. (May 20, 2025 - July 20, 2025).
- Xu, Y., "Ramps into Research," Sponsored by SHSU STEM Center, Sam Houston State University, **\$1,000**. (June 1, 2024 - July 31, 2024).
- Oak Ridge National Lab Fellowship award, Department of Energy, **\$15,000**. Award date: April 2023.
- Co-PI. Tennessee Soybean Promotion Board Grant, UAV studies for soybean health, total award: **\$18,000**. Award date: February, 2022 – July 2023.
- Co-PI. Tennessee Soybean Promotion Board Grant, soybean yield study, total award: **\$25,000**. Award date: February, 2022 – July 2023.
- PI. LSU Department of Geography and Anthropology Graduate Research Materials Award (**\$600**), April 2018.
- PI. Louisiana State University 2017-2018 Dissertation Year Fellowship (**\$18,000**), April 2017.
- PI. Robert C. West and R.J. Russell Field Research Fund (**\$500**), November 2014.

Honors and Awards

- Oak Ridge National Laboratory, Early Career Fellow. April 1, 2023.
- The Global Association for Research Methods and Data Science, 2020 COVID-19 Computational Challenge. Certificate of Appreciation. June 12, 2020.
- Innovative Application of ESRI GIS Technology Poster Competition at the 2019 AAG Meeting Winner. April 2019.
- Louisiana State University Graduate Travel Award, \$850, April 2019.
- The 35th Annual Louisiana Remote Sensing & GIS Workshop Student Poster Competition, First Prize. March 2019.
- Certificate of Completion Early Career Training by South Central Climate Adaptation Science Center, August 2018.
- 2018 AAG Student Honors Paper Competition (Remote Sensing Specialty Group), Finalist, April 2018.
- South Central Climate Science Center Travel Grant, February 2018.
- Louisiana Sea Grant Coastal Connection Competition Thesis Presentation 2nd Place, September 2017.
- Louisiana Sea Grant Research Travel Award, September 2017.
- Louisiana State University 2017-2018 Dissertation Year Fellowship, April 2017.
- South Central Arc User Group & LA RS/GIS Map Competition 3rd Prize, March 2017.
- NASA Applied Remote Sensing Training Program (ARSET) Certificate “Applications of Remote Sensing to Soil Moisture and Evapotranspiration”, October 2016.
- NASA Applied Remote Sensing Training Program (ARSET) Certificate “Fundamentals of Satellite Remote Sensing for Health Monitoring”, September 2016.
- NASA Southeast US Agriculture Project Contribution of Project Lead Award, August 2016.
- Louisiana State University Teaching Recommendation, January 2015.
- Chinese Academy of Science Sci-tech English Speech Contest Excellence Award, March 2010.

Grants Under Review/ Not Funded

- Xu, Y., "GeoAI for Riparian Resilience: LiDAR Mapping of Flood and Vegetation Dynamics", Sponsored by SHSU ORSP, Sam Houston State University, **\$18,787.27**. Under review.

- Cool corridor evaluation in aged neighborhoods in the Houston Metropolitan area. Sponsored by NIH, **\$299,700**. Under review.
- Xu, Y., "Optimizing Site Assessment and Construction with Drone-borne Sensors," Sponsored by Quanta Systems, Inc., **Amount TBD by Quanta Systems**. Under review.
- PI. NASA A.39 Early Career Investigator Program (**\$300,000**), not funded.
- Co-I. National Institute of Food and Agriculture (NIFA) (**\$500,000**) grant, not funded.
- PI. Tennessee Plant Research Center grant (**\$10,000**), not funded.
- PI. NSF NEON Postdoctoral Fellows 2020 Proposal (**\$127,800, not funded**), June 2020.
- PI. National Fish and Wildlife Foundation – Coral Reef Conservation Fund 2020 (**\$100,000, not funded**), March 2020.
- PI. Hurricane Floods Vulnerability Assessment in the Carolinas Using a Soil Moisture and WRF-Hydro based Flood Resilience Framework, NOAA Climate & Global Change (C&GC) 2019 Fellowship Proposal (**\$135,420, not funded**), February 2019.
- PI. Lei Wang and Yaping Xu, NASA Earth and Space Science Fellowship (**\$35,000, not funded**), January 2018.

STUDENT MENTORSHIP AND RESEARCH TRAINING

Graduate and Research Projects:

- Ratul Debnath – GeoAI for Biofuel Crop Phenotyping. August 2023 – August 2025.
- Yetty Adesiyen – Biofuel Crop Phenotyping. August 2023 – present.
- Gage Stone – Explainable GeoAI for UAV Agriculture Models. August 2023 – August 2025.
- Saugat Khattri – Solar Energy Suitability. August 2023 – July 2025.
- Sydney Patrick – Multispectral & Hyperspectral Remote Sensing. January 2024 – December 2025.
- Kelsey Williams – Solar Energy Suitability. August 2024 – Present.
- Alejandra Garcia – Open-Source Trends in UAV Remote Sensing Software. January 2024 – December 2025.
- Andrew Arnold - Explainable GeoAI for UAV Agriculture Models. August 2024 – Present.

Undergraduate Research and Honors Projects:

- Lindsay Hollis – Honors Contract (Flood Monitoring Spatial Distribution). January 2025 – May 2025.
- Lindsay Hollis – Honors Contract (Flood Monitoring Analysis using GIS). August 2025 – December 2025.
- Nicholas Freedman – Honors Contract (Sustainable Agriculture), January 2026 – May 2026.
- Sarah-Hope Carter – Honors Contract (Trail tracking with GPS in Esther Thompson Park). August 2023 - December 2023.

Undergraduate Research & Training Programs:

- UAV Training and Protocol Development (Ramps-into-research Program, team-based mentorship: Ratul Debnath, Anna Maloney, and Lindsay Hollis)

- NASA MUREP ESSR (FARMGO) – supports up to 3 student researchers and includes stakeholder engagement with agricultural communities in Arizona, Texas, and Hawaii

Graduate & Undergraduate Mentorship (Pre-SHSU):

- One master student from LSU on soil moisture data collection, analysis, and thesis writing;
- One master student from the LSU on data collection and pre-processing for crop-yield modeling using Louisiana regional rice yield data from 1980 to 2018;
- One Ph.D. student from the LSU on remote sensing mapping and analysis on ancient sites;
- One master student from UTK on Hyperspectral phenotyping.
- One undergraduate student on water pipeline system modeling using GIS.

TEACHING EXPERIENCES AND INTERESTS

Courses Offered at UGA:

- Intro to GeoAI Fall 2026

Courses Offered at SHSU and LSU:

- Computer Cartography Spring 2025 & Spring 2026
- Spatial Analysis Spring 2025
- Selected Topics in Geography: Novel RS and Geospatial Applications Fall 2024
- Cartography and Geovisualization (online course, class size: 8) Spring 2024
- Intro to GIS, Sam Houston State University (class size: 16) Fall 2023 – Spring 2026
- Remote Sensing, Sam Houston State University (class size: 14) Fall 2023 – Spring 2026
- GIS, Louisiana State University (class size: 34) Fall 2018

Courses Taught as a Teaching Assistant, Department of Geography and Anthropology, Louisiana State University Fall 2014 - Spring 2018

- Human Geography Europe (class size: 98) Spring 2017
- Urban Geography (class size: 20) Fall 2016
- Geographic Information Systems Fall 2014, 2015, Spring 2016
- Remote Sensing of The Environment Spring and Fall 2015

Teaching Interests

- Introduction to GIS (undergraduate and graduate level);
- Soil Remote Sensing (undergraduate and graduate level);
- WebGIS (undergraduate and graduate level);
- Spatial Statistics in Geography (undergraduate and graduate level);
- Remote Sensing for Environment (undergraduate and graduate level);
- Sustainable Agriculture (undergraduate and graduate level);
- High-performance Computing (graduate level);
- New and innovative courses: data mining, big data analysis for urban/environmental/agricultural studies (graduate level).

SERVICES

National and International Level Services

Grant Reviewer Board

- USDA/NIFA 1890 Capacity Research Panel, January 17-20, 2023.
- USDA/NIFA A1551 Engineering for Precision Water and Crop Management review panel, March 27 - 29, 2023.
- NASA FINESST Water Energy and Cycle Panel, April 24-25, 2023.

Journal Editors

- MDPI Plants, Special Issue "Modeling of Biofuel Plants Phenotyping and Biomass (July 2023 - July 2025).
- MDPI Applied Sciences, Special Issue "Soil Organic Matter and Carbon Content Analysis Using Machine Learning" (March 2024 - March 2026).

Board Of Advisors

- Lone-star GIS Advisory Committee. (November 2024 - Present).

Conference/Workshop Organizing Committee

- Workshop Organizer, S1090 Multistate Association. (August 6, 2024 - Present).
- Committee Member, USDA S1090 Multistate Committee. (April 2024 - Present).
- Co-chair, "UAS Sympothium Paper Session", and "UAS Sympothium Poster Session", AAG 2026 Annual Meeting, March 2026.

Journal Reviewer

- Water; Land; Remote Sensing; Sustainability; Sensors; Journal of Hydrology; IEEE TGRS; AGU Earth and Space Science.

Journal Reviewer Board

- MDPI *Remote Sensing*.

Research Consultant

- **NASA DEVELOP** 06/2016 - 08/2016
Provided professional service on integrating satellite observations into the regional agriculture monitoring system.
- **Harvard University Center for Geographic Analysis/Harvard Medical School** 02/2019 - 04/2019
Provided GIS and spatial modeling expertise for tumor cell pattern recognition using multi-channel tissue images to better understand the mechanisms of disease progression and therapeutic response.

Other Services

- GIS Day department booth. (November 22, 2024 - Present).
- Drone flight field trip organizer. (September 23, 2024 - Present).
- Judge, 2024 AI for Ag Meeting Student Poster Competition, College Station, TX. (April 2024 - Present).
- Guest Speaker, University of Tennessee Knoxville, Knoxville, TN. (July 23, 2024).

University Level Services

Grant Reviewer Board

- Faculty Research Council, August 2025 – Present.

Teaching Innovation and Curriculum Development

- Revise Existing Course. GEOG 4374: Geostats. April 1, 2025 - October 31, 2025.
Revise the course description to include the spatial analysis components into the course.
Revise the course title to reflect the change of the course description.

Community Service

- LSU GIScience Club, founder, and president, September 2017 to present.
- Kingsport Maker Faire. NASA DEVELOP booth attendant. July 2016, Kingsport, TN.
- Volunteered in 2018 National Geography Bee. Certificate of Appreciation Award by National Geography Society. April 2018, Baton Rouge, LA.
- Volunteered in AAG Meeting 2017 and 2018.

INVITED TALKS AND PRESENTATIONS

- **Xu, Y.**, Advancing Precision Agriculture with AI and UAV Remote Sensing. **ASPRS Mid-South Annual Conference**, ORNL Conference Center, April 25, 2025.
- Xu, Y., UAV-based High-Throughput Phenotyping for Sustainable Switchgrass Production, **Prairie View A&M University**, Land Grant Seminar Series: Celebrating Excellence. College of Agriculture, Food, and Natural Resources, September 19, 2024.
- UAV-based phenotyping and sustainability traits modeling of field-grown switchgrass. Presented at the **Center for Bioenergy Innovation (CBI) Sustainable Switchgrass Domestication Meeting, Oak Ridge National Lab**. Invited by Katrien Devos, Prof. of University of Georgia. October 28, 2022.
- UAV-based Sustainability Traits Modeling of Field-grown Switchgrass GWAS Population. **Center for Bioenergy Innovation (CBI) 2021 Annual Review Meeting**, virtual, November 2021.
- Mapping Soil Moisture with Statistics and Spatial Analysis Methods. **Harvard University Center for Geographic Analysis Invited Talk**, May 2019.
- My Pursuit of Teaching and Research Excellence in GIS. **University of Illinois at Urbana-Champaign Invited Talk**, NHB 2019, April 2019.
- SMAP Soil Moisture Downscaling Based on Random Forests and Regression Kriging. 2018 **Peking University Remote Sensing Forum**, May 2018.
- Downscaling SMAP Soil Moisture Using Geoinformation and Geostatistics. **2018 East China Normal University Early Career Scholar Forum**, April 2018.

- **Yaping Xu.** Determine Soil Moisture through Satellite and Geoinformation Data to Predict Floods in Louisiana. Louisiana Sea Grant Coastal Connection Competition Thesis Presentation, September 2017. (*2nd Place*)
- **Yaping Xu,** Yousra Benchekroun, Kimberly Berry, Grant Bloomer. Southeast United States Agriculture: Incorporating NASA Earth Observations into the USDA Southeast Regional Climate Hub Lately Identified Geospecific Heightened Threat System to Assist Farmers in Making Informed Decisions on Water and Crop Management. Presented at DEVELOP Summer Closeout. Asheville, NC, August 2016.

CONFERENCE PRESENTATIONS

- He, Y., & **Xu, Y.**, Deep learning-based detection of rust disease in switchgrass using UAV-derived multispectral imagery. AGU25. New Orleans, LA, December 18, 2025.
- **Xu, Y.**, Tiller Nitrogen Content Modeling of Field-Grown Switchgrass (*Panicum virgatum*) with UAV Multispectral Datasets and Machine Learning, American Association of Geographers, AAG Annual Meeting, Detroit, MI, United States. March 27, 2025.
- Nitrogen Content Modeling of Field-Grown Switchgrass (*Panicum virgatum*) with UAV Datasets and Machine Learning. Invited by Kati Migliaccio, Professor & Chair of Agricultural and Biological Engineering, University of Florida. Presented at the **USDA NIFA AI in Agriculture: Innovation and Discovery to Equitably meet Producer Needs and Perceptions Conference.** Orlando, FL, April 17 – 19, 2023.
- Sustainability trait modeling of field-grown switchgrass (*Panicum virgatum*) using UAV-based imagery” at **American Association of Geographers (AAG) Annual Meeting**, Denver, CO, March 23 – 28, 2023.
- UAV-based phenotyping and sustainability traits modeling of field-grown switchgrass. Presented at the **Center for Bioenergy Innovation (CBI) Sustainable Switchgrass Domestication Meeting, Oak Ridge National Lab.** Invited by Katrien Devos, Prof. of University of Georgia. October 28, 2022.
- UAV-based Sustainability Traits Modeling of Field-grown Switchgrass GWAS Population. **Center for Bioenergy Innovation (CBI) 2021 Annual Review Meeting**, virtual, November 2021.
- **Yaping Xu,** Vivek Shrestha, Lance Hamilton, Reginald J. Millwood, Mitra Mazarei, C. Neal Stewart Jr. Leaf Nitrogen Content Modeling and Rust Disease Detection of Field-Grown Switchgrass (*Panicum virgatum*) with UAV-Based Hyperspectral Imagery and Machine Learning, "Envisioning 2050 in the Southeast: AI-Driven Innovations in Agriculture" Meeting, Auburn, AL, March 2022.
- **Yaping Xu,** Vivek Shrestha, Cristiano Piasecki, Benjamin Wolfe, Lance Hamilton, Reginald J. Millwood, Mitra Mazarei, C. Neal Stewart Jr. UAV-based Sustainability Traits Modeling of Field-grown Switchgrass GWAS Population. Center for Bioenergy Innovation (CBI) 2021 Annual Science Meeting, Asheville, NC (virtual), June 2021.

- **Yaping Xu**, Cristiano Piasecki, Ben Wolfe, Reginald J. Millwood, Mitra Mazarei, C. Neal Stewart Jr., and Gerald A. Tuskan. Field Experiments of Switchgrass GWAS Population for Increased Sustainability: Nitrogen-Use Efficiency and Rust Disease Resistance. Center for Bioenergy Innovation (CBI) - DOE Genomic Science Meeting 2021, March 2021.
- Lei Wang and **Yaping Xu**. Soil moisture Downscaling Using Space-Time Geospatial Statistics and Localized Methods. 2019 AAG Annual Meeting, Washington D.C., April 2019.
- Steven Namikas, Xuelian Meng, Nan Shang, **Yaping Xu**, Hui Sheng. Development of a UAV-Mounted Remote Sensing System for Mapping of Beach Surface Moisture at Intermediate Scales. 2019 AAG Annual Meeting, Washington D.C., April 2019.
- **Yaping Xu** and Lei Wang. Stepwise Downscaling of SMAP Satellite Soil Moisture Data Using Random Forests and Spatial Statistic Models. 2018 AGU Fall Meeting, Washington D.C., December 2018.
- **Yaping Xu**, Lei Wang, Chengliang Liu, Cuiling Liu. Identifying Unlawful Constructions in Cultural Relic Sites Based on Subpixel Mapping: A Case Study in Mangshan Tombs, China. Presented at SWAAG. Huntsville, TX, October 2017.
- **Yaping Xu**, Lei Wang, and Kenten Ross. Agricultural Drought Monitoring Based on SMAP Observations and NLDAS Data: Analysis of Standardized Soil Moisture Index in Southeast United States. 2017 AAG Annual Meeting. Boston, MA, April 2017.
- **Yaping Xu**, Yousra Bencheekroun, Kimberly Berry, Grant Bloomer. Southeast United States Agriculture: Incorporating NASA Earth Observations into the USDA Southeast Regional Climate Hub Lately Identified Geospecific Heightened Threat System to Assist Farmers in Making Informed Decisions on Water and Crop Management. Presented at DEVELOP Summer Closeout. Asheville, NC, August 2016.
- **Yaping Xu**. Research of the Monitoring and Protection System for Cultural Relics Based on Spatial Information Technology. 2015 AAG Annual Meeting. Chicago, IL, April 2015.

PROFESSIONAL MEMBERSHIPS

- Member of ASPRS, AGU, AAG, and IEEE LSU

MEDIA COVERAGE & NEWS RELEASES

- Campbell Atkins, SHSU Awarded \$1.2 Million NASA-Funded Project for Farming Innovation. <https://www.shsu.edu/news/2025-news-stories/nasa-grant-farming>
- Feed & Grain Staff, NASA gives \$1.2 million grant to help farmers navigate climate challenges. <https://www.feedandgrain.com/business-markets/news/15770573/nasa-gives-12-million-grant-to-help-farmers-navigate-climate-challenges>
- Yaping Xu Wins Award for Louisiana Sea Grant Annual Coastal Connections Competition. <https://www.lsu.edu/ga/news/2018/03/01-xu.php>

- Sea Grant Newsroom: Coastal Connections Cultivates Science Communicators. <https://www.laseagrant.org/2017/coastal-connections-cultivates/>
- Paulina Gerstner. Allen Coral Atlas through the years. <https://prezi.com/p/rjwkq4weotl6/allen-coral-atlas-through-the-years/>
- LARAGIS. Brent Yantis, RAC presents the 2019 winners of the Student Poster Contest, Yaping Yu, Theresa Harriord, Kendall Lee, and Coy LeBlanc. <https://larsgis.org/call-for-papers/student-poster-contest/>

SKILLS AND EXPERTISE

Laboratory Equipment

- HOBO RX3000 weather station
- HOBO by Onset soil moisture sensor
- Delta-T Theta Probe soil moisture sensor
- Opti-science CCM-200 plus handheld, chlorophyll concentration meter
- Fluorescence-inducing laser projector (FILP) imaging operation
- DVS 600 gravity convection oven
- Kestrel 4500 weather meter
- Trimble R10 GNSS receiver with TSC3 controller
- Garmin handheld GPS

Uav Sensors

- Resonon Pika XC2 hyperspectral camera
- Airborne LiDAR made by LiDARUSA (Velodyne Puck 16 channels)
- FLIR Duo Pro thermal imaging camera
- MicaSense RedEdge-M 5-band multispectral camera
- ASD UV/VNIR FieldSpec Gen 2/Gen4 handheld spectroradiometer
- LiDAR RIEGL VZ-1000 3D terrestrial laser scanner

Modeling And Mapping Tools

- Machine learning and data mining with R and Python
- Use of MATLAB for plant canopy extraction and GIS mapping
- GIS and remote sensing software: ArcGIS/Pro, QGIS, Mapinfo, AutoCAD, ERDAS IMAGINE, ENVI, Agisoft PhotoScan, Pix4Dmapper, Google Earth, QT Modeler, Global Mapper, Inertial Explorer, SpectronPro, Adobe Photoshop, etc.
- Eco-hydrology model: WRF-Hydro
- Evapotranspiration models: MOD16, METRIC, and ALEXI.
- Land surface model: Noah-MP, NLDAS, GLDAS
- RCP and CMIP climate models
- High-performance computing skills with NoMachine, PuTTY, WinSCP, slurm, sbatch, and rclone to access ASU Agave computer clusters
- Google Earth Engine for ocean water depth correction and classification
- FEMA Hazus-MH
- UNESCO- Institute for Water Education vulnerability framework
- NOAA/National Weather Service Flash Flood Guidance

Data Analysis

- GIS data including population, elevation, land cover, vegetation, climate, hydro, soil, GPS, nighttime lights, etc.
- High spatial resolution remote sensing imagery
- Multispectral/hyperspectral remote sensing datasets
- Radar and radiometer datasets
- LiDAR datasets
- UAV-based remote sensing datasets
- Biological imaging data (fluorescent image)
- Field data and sensors (soil moisture)

Field Experience

East Tennessee AgResearch and Education Center 12/2020 - present

- UAV weekly flights;
- GPS station deployment and data collection;
- Ground switchgrass traits measurements with chlorophyll meter;
- Soil moisture probe installation and maintenance;
- Switchgrass harvesting;
- Image scanning with tripod-based hyperspectral camera.

University of Tennessee Anthropological Research Facility 12/2020 - 10/2021

- Leaf collection from the candidate species;
- Spectral data collection with FieldSpec 4 spectroradiometer;
- Phenology data collection with time-lapse cameras;
- Soil property investigation and EC measurement with soil team;
- UAV flights over ARF with a hyperspectral camera.

Louisiana Transportation Research Center Soil Measurements, LSU 11/2018 - 05/2019

- Soil sample transportation;
- Soil UAS Camera Image and spectrum collection, and process;
- Soil moisture sensor deployment;
- Soil sample lab processing and analysis.

Field Trips Exploring Louisiana's Climate Challenges 08/2018

- Bonnet Carre Spillway;
- Houses affected by subsidence;
- New Orleans -Pump System;
- Mandeville Wastewater Treatment Plant;
- Bluebonnet Swamp;
- ExxonMobil Refinery;
- The Water Institute of the Gulf.

Buras Island Surveying, Buras, LA 11/2015

Worked on biodiversity surveying to measure the percentage cover of vegetation species on the island.

- Quadrat sampling method for percentage cover of vegetation;
- Using LIDAR to scan the island to get point cloud.

Dunhuang Oasis Field Trip, Dunhuang, China Spring 2011

Worked on salinized soil ground surveying for remote sensing interpretation.

- Soil sampling and vegetation cover surveying;
- Coordinates collection with GPS.