

Wenzhe Jiao

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EDUCATION

Indiana University	
Ph.D. in Applied Earth Sciences	2022
Minor: Statistics	
University of Chinese Academy of Sciences	
Ph.D. in Geography Information System (GIS)	2017
China University of Mining and Technology	
MS. in Geodesy and Surveying Engineering	2014
North China Institute of Science and Technology	
BS. in Geodesy and Surveying Engineering,	2011

RESEARCH EXPERIENCE

Texas A&M University	
ACES Assistant Professor	08/2023- present
Massachusetts Institute of Technology	
Postdoctoral Researcher	04/2022 -07/2023
Indiana University-Purdue University, Indianapolis	
Graduate Research Assistant	09/2017 - 04/2022
University of Chinese Academy of Sciences	
Research Assistant	07/2014 - 06/2017
China University of Mining and Technology	
Research Assistant	07/2011 - 06/2014

TEACHING

2024 Spring	ECCB-407	Programming for Spatial Data Application
2021 Spring	GEOL-G 117-22308	Environmental Geology Laboratory, 15 weeks, Online.
2021 Spring	GEOL-G 117-21348	Environmental Geology Laboratory, 15 weeks, Online.
2020 Fall	GEOL-G 117-23944	Environmental Geology Laboratory, 15 weeks, Online.
2020 Fall	GEOL-G 117-26702	Environmental Geology Laboratory, 15 weeks, Online.
2019 Fall	GEOL-G 117-26702	Environmental Geology Laboratory, 15 weeks, In-person.
2019 Fall	GEOL-G 117-27070	Environmental Geology Laboratory, 15 weeks, In-person.
2019 Spring	GEOL-G 117-25248	Lab: Earth and our Environment, 15 weeks, In-person.
2018 Spring	GEOL-G 117-22989	Lab: Earth and our Environment, 15 weeks, In-person.

HONORS AND AWARDS

- 2023 University Distinguished Ph.D. Dissertation Award (the Highest honor for research that Indiana University bestows upon its graduate students)
- 2022 Sherry Queener Graduate Student Excellence, Finalist, Indiana University-Purdue University, Indianapolis
- 2022 Chancellor's Scholar Award, Finalist, Indiana University-Purdue University, Indianapolis
- 2021-2022 Dr. Arthur Mirsky Geology Fellowship, Indiana University-Purdue University, Indianapolis
- 2021 Sino-Eco "Best Student Paper" award
- 2019 School of Science IUPUI travel grant
- 2018 School of Science IUPUI travel grant
- 2017 Outstanding graduate student University of Chinese Academy of Sciences (Top 1%)

PEER-REVIEWED JOURNAL ARTICLES ([ResearchGate](#), [Google Scholar](#))

- 2023 Bell, S. M., Raymond, S. J., Yin, H., **Jiao, W.**, Goll, D. S., Ciais, P., & Terrer, C. Quantifying the recarbonization of post-agricultural landscapes. *Nature Communications*, 14(1), 2139.
- 2023 Zhang, Y., Liu, X., **Jiao, W.**, Wu, X., Zeng, X., Zhao, L., ... & Hong, Y. (2023). Spatial heterogeneity of vegetation resilience changes to different drought types. *Earth's Future*, 11(4), e2022EF003108.
- 2023 Wang, S., Fu, B., Wei, F., Piao, S., Wang, L., **Jiao, W.**, Liu, Y., Li, Y., Zhao, W. Drylands amplified productivity increase than greening by enhanced light use efficiency. *Science Bulletin*. 2095-9273.
- 2023 Chang, Q., Ficklin, D. L., **Jiao, W.**, Denham, S. O., Wood, J. D., Brunsell, N. A., et al. Earlier ecological drought detection by involving the interaction of phenology and eco-physiological function. *Earth's Future*, 11.
- 2023 Tian, C., Wang, L., .. **Jiao, W.**, The moisture origin of dew: insights from three sites with contrasting climatic conditions. *Hydrological Processes*.
- 2022 Wang, L., **Jiao, W.**, MacBean, N., Rulli, M., Manzoni, S., Vico, G., D'Odorico, P. Dryland productivity under a changing climate. *Nature Climate Change*. pp. 1-14.
- 2022 **Jiao, W.**, Wang, L., Wang, H., Lanning, M., Chang, Q., & Novick, K. A. Comprehensive quantification of the responses of ecosystem production and respiration to drought time scale, intensity and timing in humid environments: A FLUXNET synthesis. *Journal of Geophysical Research: Biogeosciences*, e2021JG006431.

- 2022 Farella, M. M., Fisher, J. B., **Jiao, W.**, Key, K. B., & Barnes, M. L. Thermal remote sensing for plant ecology from leaf to globe. *Journal of Ecology*, 110, 1996– 2014.
- 2022 Zhang, Q., Miao, C., Gou, J., Wu, J., **Jiao, W.**, Song, Y., Xu, D., Spatiotemporal characteristics of meteorological to hydrological drought propagation under natural conditions in China. *Weather and Climate Extremes*, 100505.
- 2022 Song, Y., **Jiao, W.**, Wang, J., & Wang, L. Increased global vegetation productivity despite rising atmospheric dryness over the Last Two Decades. *Earth's Future*, 10(7), e2021EF002634.
- 2022 Zhang, Y., Liu, X., **Jiao, W.**, Zhao, L., Zeng, X., Xing, X., ... & Lu, Q. A new multi-variable integrated framework for identifying flash drought in the Loess Plateau and Qinling Mountains regions of China. *Agricultural Water Management*, 265, 107544.
- 2022 Tian, C., Du, K., Wang, L., Zhang, X., Li, F., **Jiao, W.**, Beysens, D., Kaseke, K.F. and Medici, M.G., Stable isotope variations of dew under three different climates. *Scientific Data*, 9(1), pp.1-7.
- 2022 Zhao, X., Xia, H., Liu, B., & **Jiao, W.** Spatiotemporal comparison of drought in Shaanxi–Gansu–Ningxia from 2003 to 2020 Using Various Drought Indices in Google Earth Engine. *Remote Sensing*, 14(7), 1570.
- 2021 **Jiao, W.**, Wang, L., Smith, W., Chang, Q., Wang, H., D’Odorico, P. (2021). Observed increasing water constraint on vegetation growth over the last three decades. *Nature Communications*, 12, 3777.
- 2021 **Jiao, W.**, Wang, L. & McCabe, M. F. Multi-sensor remote sensing for drought characterization: current status, opportunities and a roadmap for the future. *Remote Sensing of Environment*, 256, 112313.
- 2021 Zhang, Y., Liu, X., **Jiao, W.**, Zeng, X., Xing, X., Zhang, L. & Hong, Y. Drought monitoring based on a new combined remote sensing index across the transitional area between humid and arid regions in China. *Atmospheric Research*, 105850.
- 2021 Chang Q., Xiao X., Wu X., Doughty R., **Jiao, W.**, Qin Y. Assessing variability of optimum air temperature for photosynthesis across site-years, sites and biomes and their effects on photosynthesis estimation. *Agricultural and Forest Meteorology* 298-299, 108277.
- 2021 Yuan, Y., Wang, L., Wang, H., Lin, W., Jiao, W., & Du, T. A Modified Isotope-based Method for Potential High-Frequency Evapotranspiration Partitioning. *Advances in Water Resources*, 104103.
- 2021 Tian, C., **Jiao, W.**, Beysens, D., Kaseke, K. F., Medici, M. G., Li, F., & Wang, L. Investigating the role of evaporation in dew formation under different climates using ¹⁷O-excess. *Journal of Hydrology*, 125847.
- 2020 Qiao, N., Zhang, L., Huang, C., **Jiao, W.**, Maggs-Kölling, G., Marais, E., & Wang, L. Satellite observed positive impacts of fog on vegetation. *Geophysical Research Letters*, 47.

- 2020 Chang Q., Xiao X., Wu X., Doughty R., **Jiao, W.**, Bajgain R., Qin Y., Wang J. Estimating site-specific optimum air temperature and assessing its effect on the photosynthesis of grasslands in mid-to high-latitudes. *Environmental Research Letters*. Mar 6;15(3):034064.
- 2020 Tian, C., Wang, L., **Jiao, W.**, Li, F., Tian, F., & Zhao, S. Triple isotope variations of monthly tap water in China. *Scientific Data*, 7(1), 1-6.
- 2020 Baig, M. H. A., Abid, M., Khan, M. R., **Jiao, W.**, Amin, M., & Adnan, S. Assessing Meteorological and Agricultural Drought in Chitral Kabul River Basin Using Multiple Drought Indices. *Remote Sensing*, 12(9), 1417.
- 2019 **Jiao, W.**, Tian, C., Chang, Q., Novick, K.A., Wang, L. A new multi-sensor integrated index for drought monitoring. *Agricultural and Forest Meteorology*, 268: 74-85.
- 2019 **Jiao, W.**, Q. Chang, L. Wang. The Sensitivity of Satellite Solar-Induced Chlorophyll Fluorescence to Meteorological Drought. *Earth's Future* 7, 558-573.
- 2019 Lei, S., Xu, J., Li, Y., Li, L., Lyu, H., Liu, G., ... & **Jiao, W.** A semi-analytical algorithm for deriving the particle size distribution slope of turbid inland water based on OLCI data: a case study in Lake Hongze. *Environmental Pollution*, 116288.
- 2019 **Jiao, W.**, L. Wang, K. A. Novick, Q. Chang. A new station-enabled multi-sensor integrated index for drought monitoring. *Journal of Hydrology* 574, 169-180.
- 2019 Wang, L., Kaseke, K. F., Ravi, S., **Jiao, W.**, Mushi, R., Shuuya, T., & Maggs-Kölling, G. Convergent vegetation fog and dew water use in the Namib Desert. *Ecohydrology*, 12(7), e2130.
- 2019 Chang, Q., Xiao, X., **Jiao, W.**, Wu, X., Doughty, R., Wang, J., ... & Qin, Y. Assessing consistency of spring phenology of snow-covered forests as estimated by vegetation indices, gross primary production, and solar-induced chlorophyll fluorescence. *Agricultural and Forest Meteorology*, 275, 305-316.
- 2018 Tian, C., Wang, L., Tian, F., Zhao, S., & **Jiao, W.** Spatial and temporal variations of tap water ^{17}O -excess in China. *Geochimica et Cosmochimica Acta*, 260, 1-14.
- 2018 Kaseke, K. F., Wang, L., Wanke, H., Tian, C., Lanning, M., & **Jiao, W.** Precipitation origins and key drivers of precipitation isotope (^{18}O , ^2H , and ^{17}O) compositions over Windhoek. *Journal of Geophysical Research: Atmospheres*, 123(14), 7311-7330.
- 2018 Chang, Q., Zhang, J., **Jiao, W.**, & Yao, F. A comparative analysis of the NDVIg and NDVI3g in monitoring vegetation phenology changes in the Northern Hemisphere. *Geocarto International*, 33(1), 1-20.
- 2017 **Zhang, L***, **Jiao, W***, Zhang, H., Huang, C, Tong, Q. Studying drought phenomena in the Continental United States in 2011 and 2012 using various drought indices. *Remote Sensing of Environment*, 190, 96-106. (*co-first author)
- 2016 **Jiao, W.**, Zhang, L., Chang, Q., Fu, D., Cen, Y., & Tong, Q. Evaluating an enhanced vegetation condition index (VCI) based on VIUPD for drought monitoring in the continental United States. *Remote Sensing*, 8(3), 224.

- 2016 Chang, Q., Zhang, J., **Jiao, W.**, Yao, F., & Wang, S. Spatiotemporal dynamics of the climatic impacts on greenup date in the Tibetan Plateau. *Environmental Earth Sciences*, 75(20), 1343.

CONFERENCE PRESENTATIONS

- 2023 Jiao, W., Big Data for Climate Risks: a Multi-sensor Remote Sensing Characterization from Global to Local Scales. Department of Geosciences, The Pennsylvania State University.
- 2022 Jiao, W., Wang, L., McCabe, M., Drought characterization based on multi-sensor remote sensing observations. 102th American Meteorological Society (AMS) (Oral presentation).
- 2022 Jiao, W., Multi-sensor remote sensing drought characterization, challenges and opportunities. Hydro90. (Invited talk).
- 2021 Jiao, W., Observed increasing water constraint on vegetation growth over the last three decades. AGU Fall Meeting 2021, New Orleans, USA (Oral presentation)
- 2021 Jiao, W., Observed increasing water constraint on vegetation growth over the last three decades. GeoInsider. (Invited talk)
- 2021 Jiao, W., Wang, L., Observed increasing water constraint on vegetation growth on Northern Hemisphere over the last 30 years. International Association of Chinese Youth in Water Sciences (CYWater) (Oral presentation).
- 2021 Jiao, W., Wang, L., McCabe, M., The role of multi-sensor remote sensing for drought characterization: challenges and opportunities. European Geosciences Union (EGU) (Oral presentation).
- 2021 Jiao, W., Wang, L., Quantifying the responses of ecosystem production and respiration to drought time scale, intensity, timing and lagged response: A FLUXNET synthesis. European Geosciences Union (EGU) (Oral presentation).
- 2019 Jiao, W., Wang, L., Novick, K., Chang, Q., A new remote sensing framework for drought monitoring. AGU Fall Meeting 2019, San Francisco, USA (Oral presentation).
- 2018 Jiao, W., Wang, L., Use of Satellite Solar-induced Chlorophyll Fluorescence for Meteorological Drought Assessing: Merits and Limitations. The Geological Society of America (GSA) 2018, Indianapolis, Indiana, USA (Oral presentation).
- 2018 Jiao, W., Wang, L., Sensitivity of Satellite Solar-induced Chlorophyll Fluorescence to drought monitoring. AGU Fall Meeting 2018, Washington DC, USA (Poster).
- 2017 Jiao, W., Wang, L., A new multi-sensor index for drought monitoring. AGU Fall Meeting 2017, New Orleans, USA (Poster).
- 2017 Jiao, W., Studying drought phenomena in the Continental United States in 2011 and 2012 using various drought indices. Nagoya University, Japan. (Invited talk)

2017 Jiao, W., Drought monitoring using multi-sensor remote sensing data, Chinese Academy of Sciences, China (Invited talk).

SERVICES

Journal Referee

Agricultural and Forest Meteorology;
Agricultural Water Management;
Communications Earth & Environment;
Earth's Future;
Environmental Research Letters;
Environmental Modelling and Software;
Environmental Science and Pollution Research;
Frontiers of Earth Sciences ;
Geocarto International;
Geomatics Natural Hazards and Risk;
IEEE Access;
International Journal of Applied Earth Observation and Geoinformation;
International Journal of Remote Sensing;
Journal of Geophysical Research: Biogeosciences ;
Journal of Arid Environments;
Journal of Arid Land;
Land Degradation & Development;
New Phytologist;
Hydrology and Earth System Sciences;
Remote Sensing;
Remote Sensing of Environment;
Scientific Data;
Science of The Total Environment;
Theoretical and Applied Climatology;
The Innovation;
Transactions on Geoscience and Remote Sensing.

Grant Proposal Referee

National Science Center Poland (NCN)

Invited public talks

2021 Jiao, W., Multi-sensor remote sensing drought monitoring. Beyond Boundaries - Indiana Academies Symposium.

2018 Jiao, W., Remote sensing for drought monitoring. Summer Teacher Training Program.