YELIN JIANG

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ACADEMIC APPOINTMENTS

Lamont-Doherty Earth Observatory of Columbia University, Palisades, NY
Postdoctoral Research Scientist | Ocean & Climate Physics Division January 2023 - Present
Advisor: Jason E. Smerdon & Richard Seager

EDUCATION

University of Connecticut, Storrs, CT
Ph.D. in Environmental Engineering November 2022
Advisor: Guiling Wang

Nanjing University of Information Science & Technology, Nanjing, China
M.S. in Ecology June 2018
B.S. in Ecology June 2015

FUNDED AND PENDING GRANTS

External:

NOAA, Climate Variability & Predictability, lead PI, with J. E. Smerdon, R. Seager, and J. S. Mankin (Dartmouth College), ***Pending (Received Strong Panel Review and Awaiting Budget Allocation)***. The impact of land surface conditions on the evolution and predictability of ocean-driven hydroclimate extremes in the western U.S. ($743,902).

NOAA, National Integrated Drought Information System, co-PI (Lead at Columbia University), with Z. Li (Lead; Indiana University Bloomington), J. E. Smerdon, R. Seager, and J. S. Mankin (Dartmouth College), ***Pending (Received Strong Panel Review, Confirmed Budget, and Awaiting Budget Allocation)***. Contextualizing drought severity benchmarked to multiple time periods. ($499,998; with $227,065 allocated to Lamont).

NASA, Modeling, Analysis, and Prediction, lead PI, with M. Ting, J. E. Smerdon, M. J. Puma, and B. I. Cook (NASA GISS), ***Declined (Preparing Resubmission to NSF)***. Quantifying land-surface controls on heat extremes using observations and models.

Internal:

LDEO Summer Intern Program, co-PI, with A. Cheung (lead) and J. E. Smerdon, *Summer 2024*, ***Funded***. How unusual was the co-occurrence of the 2023 heat extremes in North America, Europe, and China? ($7,000 & free housing for one undergraduate student).

The LDEO Climate Center, co-PI, with A. Cheung (lead) and J. E. Smerdon, ***Funded***. Concurrent Heat Extremes in the Northern Hemisphere: Underlying Causes and Future Risks ($7,970).

PEER-REVIEWED PUBLICATIONS (*Denotes research where Jiang is the corresponding author)

In Preparation:

Jiang, Y.*, J. E. Smerdon, R. Seager, B. I. Cook, and M. Ting, Preceding wet years historically buffered La Niña droughts in the U.S. Southwest, but will not in the future.

Li, S., and **Y. Jiang***, Reemergence of Late Spring Cold Atmospheric Anomalies in Summer over the Tibetan Plateau.

Wang, J., Y. Bao, and **Y. Jiang***, Climatic feedbacks of land-surface phenology over the Northern terrestrial ecosystems.

Qureshi, T., A. Cheung, **Y. Jiang**, and J. E. Smerdon, How unusual was the co-occurrence of the 2023 heat extremes in North America, Europe, and China?

Under Review:

Zhu, Y., J. Sanders, **Y. Jiang**, and J. Battles, Legacy effects under an emerging novel disturbance regime: The importance of biological memory on tree growth (In Revision; ***Journal of Ecology***).

Bo, Y., X. Li, K. Liu, S. Wang, Q. Tang, **Y. Jiang**, S. Lu, L. Wang, C. Feng, Z. Zhou, and G. Zhou, Overestimation of surface soil moisture drying in Earth system models revealed by deep learning and remote sensing (In Revision; ***Earth's Future***).

Peng, Q., **Y. Jiang**, W. Liu, and C. Li, Human activities dominated the eco-environmental changes in the Dongting Lake Basin over the past two decades.

Published:

[22] **Jiang, Y.***, J. E. Smerdon, R. Seager, G. Wang, B. I. Cook, C. Zheng, J. Mankin, and A. P. Williams (2025), Land-surface influences on the 2020-21 western US drought, ***Water Resources Research***, 61(5), https://doi.org/10.1029/2024WR038124.

[21] Yin, C., M. Ting, K. Kornhuber, R. Horton, Y. Yang, and **Y. Jiang** (2025), CETD, a global compound events detection and visualization toolbox and dataset, ***Scientific Data***, 12(356), https://doi.org/10.1038/s41597-025-04530-x.

[20] **Jiang, Y.** and G. Wang (2024), Soil moisture dominates the land surface feedback in the development of compound drought-heat extremes in tropical South America, ***Journal of Hydrometeorology***, 25(11), 1649-1664, https://doi.org/10.1175/JHM-D-24-0005.1.

[19] Guan, Y., J. Liu, D. Li, Y. Dou, P. Chen, C. Zhang, **Y. Jiang**, H. Chen, A. Chen, and E. Maeda (2024), Changes in China's snow droughts characteristics from 1990 to 2019, ***Journal of Geophysical Research: Atmospheres***, 129(2), e2023JD039297, https://doi.org/10.1029/2023JD039297.

[18] **Jiang, Y.** and G. Wang (2023), A new approach to soil initialization for studying subseasonal land-atmosphere interactions, ***Journal of Advances in Modeling Earth Systems***, 15(11), e2023MS003822, https://doi.org/10.1029/2023MS003822.

[17] **Jiang, Y.**, M. Yang, W. Liu, K. Mohammadi, and G. Wang (2022), Eco-hydrological responses to recent droughts in tropical South America, ***Environmental Research Letters***, 17(2), 024037, https://doi.org/10.1088/1748-9326/ac507a.

[16] Mohammadi, K., **Y. Jiang**, and G. Wang (2022), Flash drought early warning based on the trajectory of solar-induced chlorophyll fluorescence, ***Proceedings of the National Academy of Sciences***, 119(32), e2202767119, https://doi.org/10.1073/pnas.2202767119.

[15] Erfanian, A., **Y. Jiang**, L. Fomenko, R. Fu, A. Seth, and G. Wang (2022), Variability, trend, and extremes of the South American vegetation-climate system: results from a coupled regional model, ***Journal of Geophysical Research: Atmospheres***, 127(4), e2021JD035691, https://doi.org/10.1029/2021JD035691.

[14] Peng, Q., R. Wang, **Y. Jiang**, W. Zhang, C. Liu, and L. Zhou (2022), Soil erosion in Qilian Mountain national park: Dynamics and driving mechanisms, ***Journal of Hydrology: Regional Studies***, 42, 101144, https://doi.org/10.1016/j.ejrh.2022.101144.

[13] Guan, Y., J. Liu, A. Chen, D. Li, **Y. Jiang**, W. Cui, H. Lu, P. Pellikka, J. Heiskanen, and E. Maeda (2022), Spatial aggregation of global dry and wet patterns based on the standard precipitation index, ***Earth's Future***, 10(5), e2022EF002720, https://doi.org/10.1029/2022EF002720.

[12] Guan, Y., J. Liu, K. Wang, W. Cao, **Y. Jiang**, H. Lu, and J. Heiskanen (2022), From a spatial structure perspective: Spatial-temporal variation of climate redistribution of China based on the Köppen–Geiger classification, ***Geophysical Research Letters***, 49(15), e2022GL099319, https://doi.org/10.1029/2022GL099319.

[11] **Jiang, Y.**, G. Wang, W. Liu, A. Erfanian, Q. Peng, and R. Fu (2021), Modeled response of South American climate to three decades of deforestation, ***Journal of Climate***, 34(6), 2189-2203, https://doi.org/10.1175/JCLI-D-20-0380.1.

[10] Guan, Y., H. Lu, **Y. Jiang**, P. Tian, L. Qiu, P. Pellikka, and J. Heiskanen (2021), Changes in global climate heterogeneity under the 21st century global warming, ***Ecological Indicators***, 130, 108075, https://doi.org/10.1016/j.ecolind.2021.108075.

[9] Guan, Y., W. Cui, J. Liu, H. Lu, **Y. Jiang**, Y. Xue, and J. Heiskanen (2021), Observed changes of Köppen climate zones based on high-resolution data sets in the Qinghai-Tibet Plateau, ***Geophysical Research Letters***, 48(23), e2021GL096159, https://doi.org/10.1029/2021GL096159.

[8] Peng, Q., R. Wang, **Y. Jiang**, C. Li, and W. Guo (2021), The change of hydrological variables and its effects on vegetation in Central Asia, ***Theoretical and Applied Climatology***, 146(1-2), 741-753, https://doi.org/10.1007/s00704-021-03730-w.

[7] Peng, Q., R. Wang, **Y. Jiang**, and C. Li (2021), Contributions of climate change and human activities to vegetation dynamics in Qilian Mountain National Park, northwest China, ***Global Ecology and Conservation***, 32, e01947, https://doi.org/10.1016/j.gecco.2021.e01947.

[6] **Jiang, Y.**, J. Guo, Q. Peng, Y. Guan, Y. Zhang, and R. Zhang (2020), The effects of climate factors and human activities on net primary productivity in Xinjiang, ***International Journal of Biometeorology***, 64, 765-777, https://doi.org/10.1007/s00484-020-01866-4.

[5] Liu, W., G. Wang, M. Yu, H. Chen, and **Y. Jiang** (2020), Multimodel future projections of the regional vegetation-climate system over East Asia: comparison between two ensemble approaches, ***Journal of Geophysical Research: Atmospheres***, 125(13), e2019JD031967,

https://doi.org/10.1029/2019JD031967.

[4] Liu, W., G. Wang, M. Yu, H. Chen, **Y. Jiang,** and M. Yang (2020), Projecting the future vegetation–climate system over East Asia and its RCP-dependence, ***Climate Dynamics***, 55, 2725-2742, https://doi.org/10.1007/s00382-020-05411-2.

[3] Guan, Y., H. Lu, C. Yin, Y. Xue, **Y. Jiang**, Y. Kang, and J. Heiskanen (2020), Vegetation response to climate zone dynamics and its impacts on surface soil water content and albedo in China, ***Science of The Total Environment***, 747, 141537, https://doi.org/10.1016/j.scitotenv.2020.141537.

[2] **Jiang, Y.**, R. Wang, Q. Peng, X. Wu, H. Ning, and C. Li (2018), The relationship between drought activity and vegetation cover in Northwest China from 1982 to 2013, ***Natural Hazards***, 92, 145-163, https://doi.org/10.1007/s11069-018-3282-3.

[1] Li, C., R. Wang, J. Xu, Y. Luo, M. Tan, **Y. Jiang** (2018), Analysis of meteorological dryness/wetness features for spring wheat production in the Ili River basin, China, ***International Journal of Biometeorology***, 62, 2197-2204, https://doi.org/10.1007/s00484-018-1623-2.

TEACHING EXPERIENCE

Teaching Assistant & Lab Course Instructor:

University of Connecticut, ENVE 4810: Engineering Hydrology Fall 2022

Guest Lecture:

The University of Texas at El Paso: Overview of Climatology January 2025
Terrestrial Forcings and Feedbacks: Anthropogenic Land Use and Land-Cover Change

Indiana University Bloomington: E555 Environmental Sustainability Science November 2024
Land Cover Change Driven by Climate Change and Human Activities

Astra Nova School (an experimental school at SpaceX for students ages 10-14) May 2023
Land-Atmosphere Interactions under Climate Change

University of Connecticut: ENVE 5811 Hydroclimatology April 2023
Climatic Impact of Soil Moisture and Vegetation in South America

Mentoring:

The LDEO Climate Center, Columbia University: Concurrent Heat Extremes in the Northern Hemisphere: Underlying Causes and Future Risks. Summer 2025
Tehreem Qureshi (Undergraduate)

Lamont Summer Intern Program, Columbia University: *How unusual was the co-occurrence of the 2023 heat extremes in North America, Europe, and China?* Summer 2024
Tehreem Qureshi (Undergraduate)

Senior Thesis Advising: *Characterizing the unprecedented co-occurrence of 2023 boreal summer heat extremes in Central America, Western Europe, and Central Asia* 2024-2025
Tehreem Qureshi (***Walter C. Pitman III Award***; only one recipient awarded annually)

Summer Project at University of Connecticut: *Climate Change Assessment for the Green Energy Sector in the U.S. Northeast* Summer 2022

Qingyu Dai (Undergraduate); Makduma Zahan Badhan and Tasnim Zaman (Graduate)

PRESENTATIONS (first-author or presenter)

[22] Advancing understanding of hydroclimate extremes in a warming climate, ***Department of Environmental Sciences and Engineering at the University of North Carolina at Chapel Hill***, March 2025. (Invited talk)

[21] Advancing understanding of hydroclimate extremes in a warming climate, ***Department of Environmental Sciences at the University of Virginia***, March 2025. (Invited talk)

[20] Advancing understanding of hydroclimate extremes in a warming climate, ***Department of Physics at the University of Texas at El Paso***, January 2025. (Invited talk)

[19] Soil moisture in preceding summers modulates La Niña-induced droughts in subsequent summers in southwestern North America, ***AGU Fall Meeting***, Washington D.C., USA, December 2024. (Poster)

[18] Soil moisture dominates the land surface feedback in compound drought-heat extremes in tropical South America, ***AGU Fall Meeting***, Washington D.C., USA, December 2024. (Poster)

[17] The influence of land-surface conditions on the 2020-21 western US drought, ***DOE EESM PI Meeting***, Bethesda, USA, August 2024. (Oral)

[16] Soil moisture dominates the land surface feedback in compound drought-heat extremes in tropical South America, ***Extreme Heat Workshop***, New York City, USA, July 2024. (Poster)

[15] Soil moisture dominates the land surface feedback in compound drought-heat extremes in tropical South America, ***GEWEX Open Science Meeting***, Sapporo, Japan, July 2024. (Poster)

[14] The influence of land-surface conditions on the 2020-21 western US drought, ***The Quantitative Ecosystem Dynamics Lab at UC Berkeley & LBNL***, Berkeley, USA, May 2024. (Invited talk)

[13] Attribution of the 2020-21 western US drought, ***AGU Fall Meeting***, San Francisco, USA, December 2023. (Poster)

[12] Land-Atmosphere interaction and drought over tropical South America, ***OCP Seminar at Lamont-Doherty Earth Observatory***, Palisades, USA, September 2023. (Oral)

[11] Modeled hydrometeorological responses to extreme soil conditions in tropical South America: methodology and physical mechanisms, ***School of Atmospheric Sciences at Nanjing University***, Virtual, March 2023. (Invited talk)

[10] Disentangling the contribution of land surface conditions and internal atmospheric variability to U.S. drought development, ***AMS Annual Meeting***, Virtual, January 2023. (Poster)

[9] Modeled hydrometeorological responses to extreme soil conditions in tropical South America: methodology and physical mechanisms, ***AGU Fall Meeting***, Chicago, USA, December 2022. (Poster)

[8] A new approach to soil initialization for studying subseasonal land-atmosphere interactions, ***CESM Working Group***, Virtual, June 2022. (Oral)

[7] Modeled hydrometeorological response to extreme soil conditions during the pre-monsoon season in tropical South America, ***UCAR Land Model and Biogeochemistry Working Group***, Virtual, January 2022. (Oral)

[6] Eco-hydrological responses to recent droughts in tropical South America, ***AMS Annual Meeting***, Virtual, January 2022. (Oral)

[5] Modeled climate response to extreme soil conditions over South America, ***AGU Fall Meeting***, New Orleans, USA, December 2021. (Poster)

[4] Modeled response of South American climate to three decades of deforestation, ***Department of Civil and Environmental Engineering at the University of Connecticut***, Storrs, USA, April 2021. (Oral)

[3] Divergence in eco-hydrological responses to recent droughts in tropical South America, ***AGU Fall Meeting***, Virtual, December 2020. (Oral)

[2] Exploring the risk of climate-change-induced forest dieback in Amazonia using a regional climate-vegetation model, ***AMS Annual Meeting***, Boston, USA, January 2020. (Poster)

[1] Modeling the effects of land cover change on regional climate in South America using a coupled regional model, ***AGU Fall Meeting***, San Francisco, USA, December 2019. (Poster)

HONORS AND AWARDS

- Outstanding Graduate Thesis (University-Level) 2018
- Outstanding Graduate (Valedictorian) 2018
- Excellence Award (National-Level) - The Fourth National Innovation Tournament for Undergraduate Shared Service of Technology Resources 2017
- Merit Student (Top 10; University-Level) 2017
- Outstanding Undergraduate (University-Level) 2015
- Third Prize (National-Level) - The Seventh National University Student Social Practice and Science Contest on Energy Saving and Emission Reduction 2014
- Silver Prize (Province-Level) - The Nineth "CHALLENGE CUP" Chinese College Students Entrepreneurship Competition 2014

PROFESSIONAL & COMMUNITY SERVICES

Peer reviewer:

Geophysical Research Letters, *Water Resources Research*, *npj Climate and Atmospheric Science*, *Journal of Geophysical Research: Atmospheres*, *Earth's Future*, *Climate Dynamics*, *Communications earth & environment*, *Environmental Research Letters*, *Biogeosciences*, *Journal of Environmental Management*, *Scientific Reports*, *Theoretical and Applied Climatology*, *Ecological Indicators*, *Advances in Atmospheric Sciences*

Academic Leadership:

Judge, Outstanding Student Poster Award, AGU Fall Meeting, San Francisco 2023
Judge, Outstanding Student Poster Award, AGU Fall Meeting, Washington, D.C. 2024

PROFESSIONAL AFFILIATIONS

American Geophysical Union
American Meteorological Society

TECHNICAL SKILLS

Models: Community Earth System Model (CESM); Energy Exascale Earth System Model (E3SM); International Center for Theoretical Physics Regional Climate Model (ICTP RegCM); Land Surface Model (CLM); Terrestrial Carbon Cycle Model (CASA)

Programming Language: NCL, Fortran, Python, R, IDL