

YELIN JIANG

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RESEARCH INTERESTS

My research is dedicated to studying land-atmosphere-ocean interactions across multiple timescales, with a particular focus on land-surface processes. Using climate models, my objective is to deepen our process-level understanding of how land-surface conditions, in addition to atmospheric and oceanic states, can affect extreme events, such as droughts, heat waves, and extreme precipitation. My interest also extends to exploring the impacts of these extreme events on ecosystems, agriculture, and human societies in the context of anthropogenic climate change.

EDUCATION

University of Connecticut, Storrs, CT

Ph.D. in Environmental Engineering

November 2022

Nanjing University of Information Science & Technology, Nanjing, China

M.S. in Ecology with Honors

June 2018

B.S. in Ecology with Honors

June 2015

DISSERTATION TITLE

Land-atmosphere interactions and drought over tropical South America

Committee members: Dr. Guiling Wang (Advisor), Dr. Rong Fu, Dr. Emmanouil Anagnostou, Dr. Ran Feng, Dr. Richard Anyah

ACADEMIC APPOINTMENTS

Lamont-Doherty Earth Observatory of Columbia University, Palisades, NY

Postdoctoral Research Scientist | Ocean & Climate Physics Division

January 2023 - Present

Advisor: Dr. Jason E. Smerdon & Dr. Richard Seager

PENDING GRANTS

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

PEER-REVIEWED PUBLICATIONS

In Preparation:

Jiang, Y., J. E. Smerdon, R. Seager, G. Wang, B. I. Cook, C. Zheng, J. Mankin, and A. P. Williams, Attribution of the 2020-21 western US drought. (*Ready to submit*)

Jiang, Y., J. E. Smerdon, R. Seager, How does antecedent soil moisture availability impact La Niña-driven droughts in the western U.S.?

Jiang, Y., G. Wang, Y. Xue, J. E. Smerdon, R. Seager, Effects of spring Rocky Mountains land temperature anomalies on summer droughts in the U.S.

Peng, Q. and **Y. Jiang**, Anthropogenic activities dominated the eco-environmental changes in the Dongting Lake Basin over the past two decades.

Under Review:

Jiang, Y. and G. Wang, Soil moisture dominates the land surface feedback in the development of compound drought-heat extremes in tropical South America, *Journal of Hydrometeorology*.

Yin, C., M. Ting, K. Kornhuber, R. Horton, Y. Yang, and **Y. Jiang**, CETD, a global compound events detection and visualization toolbox and dataset. *Scientific Data*.

Published:

[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

Lab Course:

UCONN ENVE 4810: Engineering Hydrology Fall 2022
 Rain Gauge Calibration and Precipitation Measurements
 Infiltration and Infiltrimeters for Measurement of Soil Intake Properties

Guest Lecture:

UCONN ENVE 5811: Hydroclimatology April 2023
 Land Use Land Cover Change Impact on Hydroclimate
 Astra Nova School (a laboratory school on the campus of SpaceX) May 2023
 Land-Atmosphere Interactions under Climate Change

Mentoring:

Summer Project at UCONN:

Climate Change Assessment for the Green Energy Sector in the U.S. Northeast 2022
 Qingyu Dai (undergrad); Makduma Badhan and Tasnim Zaman (graduate)

CONFERENCE PRESENTATIONS AND INVITED TALKS

- [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 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)**

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 Ninth “CHALLENGE CUP” Chinese College Students Entrepreneurship Competition 2014

PROFESSIONAL & COMMUNITY SERVICES

Peer reviewer:

Geophysical Research Letters, Environmental Research Letters, Communications earth & environment, 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, USA 2023

PROFESSIONAL AFFILIATIONS

American Geophysical Union
American Meteorological Society

TECHNICAL SKILLS

Models: Global and Regional Climate Models (CESM and RegCM); Land Surface Model (CLM); Terrestrial Carbon Cycle Model (CASA)
Programming Language: NCL, Python, R, IDL