



Fa Li

Postdoctoral Scholar, Earth System Science

Bio

BIO

My research combines advanced data-driven approaches (e.g., GeoAI and causality inference), process-based terrestrial biosphere/Earth system models, and big datasets and techniques of remote sensing, in-situ measurements, geographical information science (GIS), and high-performance computing, to investigate critical processes related to natural greenhouse gas emissions (e.g., CO₂ and CH₄) and nature-based climate solution, wildfire-human-climate interactions, human-environment interactions, and biosphere-atmosphere interactions of carbon-water-energy fluxes affecting climate change.

PROFESSIONAL EDUCATION

- Researcher, Lawrence Berkeley National Lab , Earth System Modeling (2021)
- Ph.D., Wuhan University , Remote Sensing and GIS (2021)
- Bachelor, Wuhan University , Remote Sensing (2016)

STANFORD ADVISORS

- Rob Jackson, Postdoctoral Faculty Sponsor

PATENTS

- Hongxu Ma, Kunxiaojuan Yuan, Fa Li, Charlotte Leroy, Grigory Bronevetsky. "United States Patent 11668856 Predicting climate conditions based on teleconnections", Jun 6, 2023

LINKS

- My ResearchGate: <https://www.researchgate.net/profile/Li-Fa>
- My Google Scholar: <https://scholar.google.com/citations?user=IOAXHLwAAAAJ&hl=en>

Publications

PUBLICATIONS

- **Boreal-Arctic wetland methane emissions modulated by warming and vegetation activity** *NATURE CLIMATE CHANGE*
Yuan, K., Li, F., McNicol, G., Chen, M., Hoyt, A., Knox, S., Riley, W. J., Jackson, R., Zhu, Q.
2024
- **Global impacts of vegetation clumping on regulating land surface heat fluxes** *AGRICULTURAL AND FOREST METEOROLOGY*
Li, F., Hao, D., Zhu, Q., Yuan, K., Braghieri, R. K., He, L., Luo, X., Wei, S., Riley, W. J., Zeng, Y., Chen, M.
2024; 345
- **Structural complexity biases vegetation greenness measures.** *Nature ecology & evolution*
Zeng, Y., Hao, D., Park, T., Zhu, P., Huete, A., Myneni, R., Knyazikhin, Y., Qi, J., Nemani, R. R., Li, F., Huang, J., Gao, Y., Li, et al

2023

- **AttentionFire_v1.0: interpretable machine learning fire model for burned-area predictions over tropics** *GEOSCIENTIFIC MODEL DEVELOPMENT*
Li, F., Zhu, Q., Riley, W. J., Zhao, L., Xu, L., Yuan, K., Chen, M., Wu, H., Gui, Z., Gong, J., Randerson, J. T.
2023; 16 (3): 869-884
- **Vegetation clumping modulates global photosynthesis through adjusting canopy light environment.** *Global change biology*
Li, F., Hao, D., Zhu, Q., Yuan, K., Braghiere, R. K., He, L., Luo, X., Wei, S., Riley, W. J., Zeng, Y., Chen, M.
2023; 29 (3): 731-746
- **Causality guided machine learning model on wetland CH₄ emissions across global wetlands** *AGRICULTURAL AND FOREST METEOROLOGY*
Yuan, K., Zhu, Q., Li, F., Riley, W. J., Torn, M., Chu, H., McNicol, G., Chen, M., Knox, S., Delwiche, K., Wu, H., Baldocchi, D., Ma, et al
2022; 324
- **Wetter California Projected by CMIP6 Models With Observational Constraints Under a High GHG Emission Scenario** *EARTHS FUTURE*
Li, F., Zhu, Q., Riley, W. J., Yuan, K., Wu, H., Gui, Z.
2022; 10 (4)
- **Building a machine learning surrogate model for wildfire activities within a global Earth system model** *GEOSCIENTIFIC MODEL DEVELOPMENT*
Zhu, Q., Li, F., Riley, W. J., Xu, L., Zhao, L., Yuan, K., Wu, H., Gong, J., Randerson, J.
2022; 15 (5): 1899-1911
- **Uncertain Spatial Pattern of Future Land Use and Land Cover Change and Its Impacts on Terrestrial Carbon Cycle Over the Arctic-Boreal Region of North America** *EARTHS FUTURE*
Luo, M., Li, F., Hao, D., Zhu, Q., Dashti, H., Chen, M.
2023; 11 (10)
- **Detection and attribution of long-term and fine-scale changes in spring phenology over urban areas: A case study in New York State** *INTERNATIONAL JOURNAL OF APPLIED EARTH OBSERVATION AND GEOINFORMATION*
Li, L., Li, X., Asrar, G., Zhou, Y., Chen, M., Zeng, Y., Li, X., Li, F., Luo, M., Sapkota, A., Hao, D.
2022; 110
- **Understanding and reducing the uncertainties of land surface energy flux partitioning within CMIP6 land models** *AGRICULTURAL AND FOREST METEOROLOGY*
Yuan, K., Zhu, Q., Riley, W. J., Li, F., Wu, H.
2022; 319
- **LSI-LSTM: An attention-aware LSTM for real-time driving destination prediction by considering location semantics and location importance of trajectory points** *NEUROCOMPUTING*
Gui, Z., Sun, Y., Yang, L., Peng, D., Li, F., Wu, H., Guo, C., Guo, W., Gong, J.
2021; 440: 72-88
- **Deforestation reshapes land-surface energy-flux partitioning** *ENVIRONMENTAL RESEARCH LETTERS*
Yuan, K., Zhu, Q., Zheng, S., Zhao, L., Chen, M., Riley, W. J., Cai, X., Ma, H., Li, F., Wu, H., Chen, L.
2021; 16 (2)
- **Evaluating three evapotranspiration estimates from model of different complexity over China using the ILAMB benchmarking system** *JOURNAL OF HYDROLOGY*
Wu, G., Cai, X., Keenan, T. F., Li, S., Luo, X., Fisher, J. B., Cao, R., Li, F., Purdy, A. J., Zhao, W., Sun, X., Hu, Z.
2020; 590
- **A hierarchical temporal attention-based LSTM encoder-decoder model for individual mobility prediction.** *Neurocomputing*
Li, F., Gui, Z., Zhang, Z., Peng, D., Tian, S., Yuan, K., Sun, Y., Wu, H., Gong, J., Lei, Y.
2020; 403: 153-166
- **A quad-tree-based fast and adaptive Kernel Density Estimation algorithm for heat-map generation** *INTERNATIONAL JOURNAL OF GEOGRAPHICAL INFORMATION SCIENCE*
Yuan, K., Cheng, X., Gui, Z., Li, F., Wu, H.
2019; 33 (12): 2455-2476
- **Big enterprise registration data imputation: Supporting spatiotemporal analysis of industries in China** *COMPUTERS ENVIRONMENT AND URBAN SYSTEMS*

Li, F., Gui, Z., Wu, H., Gong, J., Wang, Y., Tian, S., Zhang, J.
2018; 70: 9-23

PRESENTATIONS

- Human-caused more frequent weather conditions for large fires in the western US - RUBISCO group at Lawrence Berkeley National Lab (6/21/2023 - 6/21/2023)
- Vegetation clumping modulates global photosynthesis through adjusting canopy light environment - NASA Jet Propulsion Laboratory (11/17/2022 - 11/17/2022)
- Understanding and projecting wildfires using deep learning - CPGIS community (10/20/2023 - 10/20/2023)