



## Weiwei Zhan

Postdoctoral Scholar, Earth System Science

### Bio

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#### BIO

I study the coupling between the global carbon and water cycles under climate change. Specifically, I investigate how plants regulate carbon uptake and water loss as atmospheric CO<sub>2</sub> rises and water limitation intensifies, and how these responses feed back on the global environment. I develop hybrid physics-machine learning approaches and combine them with the expanding record of satellite and in situ observations to test hypotheses about ecosystem function.

#### HONORS AND AWARDS

- Presidential Fellowship, Columbia University (2019)

#### PROFESSIONAL EDUCATION

- Doctor of Philosophy, Columbia University (2026)
- Master of Science, Columbia University (2021)
- Master of Philosophy, Columbia University (2025)
- Ph.D., Columbia University , Earth and Environmental Engineering (2026)
- M.Phil., Columbia University , Earth and Environmental Engineering (2025)
- M.S., Columbia University , Earth and Environmental Engineering (2021)
- B.S., Beijing Normal University , Environmental Science (2019)

#### STANFORD ADVISORS

- Alexandra Konings, Postdoctoral Faculty Sponsor

### Research & Scholarship

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#### LAB AFFILIATIONS

- Alexandra Konings, Remote Sensing Ecohydrology Group (9/1/2026)

### Publications

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#### PUBLICATIONS

- **Reduced water loss rather than increased photosynthesis controls CO<sub>2</sub>-enhanced water-use efficiency.** *Nature ecology & evolution*  
Zhan, W., Lian, X., Liu, J., Han, J., Huang, Y., Yang, H., Zhan, C., Winkler, A. J., Gentile, P.  
2025; 9 (9): 1571-1584

- **When and where soil dryness matters to ecosystem photosynthesis.** *Nature plants*  
Liu, J., Wang, Q., Zhan, W., Lian, X., Gentine, P.  
2025; 11 (7): 1390-1400
- **Inappropriateness of space-for-time and variability-for-time approaches to infer future dryland productivity changes** *FRONTIERS IN ENVIRONMENTAL SCIENCE*  
Zhan, W., Lian, X., Liu, J., Gentine, P.  
2022; 10
- **Two for one: Partitioning CO<sub>2</sub> fluxes and understanding the relationship between solar-induced chlorophyll fluorescence and gross primary productivity using machine learning** *AGRICULTURAL AND FOREST METEOROLOGY*  
Zhan, W., Yang, X., Ryu, Y., Dechant, B., Huang, Y., Goulas, Y., Kang, M., Gentine, P.  
2022; 321