Yi Zhang

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EMPLOYMENT

Assistant Professor of Mathematics and Atmosphere/Ocean Science — Jan 2024-
Courant Institute of Mathematical Sciences
New York University, New York, NY, USA

Miller Postdoctoral Fellow 2021-2024 — Jul 2021–Jun 2024
Miller Institute for Basic Research in Sciences
University of California, Berkeley, CA, USA.
Faculty host: William Boos

EDUCATION

Ph.D. Atmospheric and Oceanic Sciences — Jun 2021
Princeton University, Princeton, NJ, USA.
Adviser: Stephan Fueglistaler

M.A. Atmospheric and Oceanic Sciences — Sep 2018
Princeton University, Princeton, NJ, USA.

B.S. Physics (major) and Economics (minor) — Jul 2016
Peking University, Beijing, China.

PUBLICATIONS

[1] Heng, Q., Zhang, Y., Fueglistaler, S. (2025). Weakening of Tropical Free-Tropospheric Temperature Gradients with Global Warming. *Journal of the Atmospheric Sciences*. https://doi.org/10.1175/JAS-D-24-0140.1.

[2] Byrne, M.P., Hegerl, G.C., Scheff, J., *et al.* (2024). Theory and the future of land-climate science. *Nature Geoscience*. https://doi.org/10.1038/s41561-024-01553-8.

[3] Zhang, Y., *et al.* (2024). Forecasting Tropical Annual Maximum Wet-Bulb Temperatures Months in Advance From the Current State of ENSO. *Geophysical Research Letters*. 51(7), e2023GL106990, https://doi.org/10.1029/2023GL106990.

[4] Zhang, Y. and Boos, W. (2023). An upper bound for extreme temperatures over midlatitude land. *Proceedings of the National Academy of Sciences*, 120(12), e2215278120. https://doi.org/10.1073/pnas.2215278120.
(Physics Magazine —"Predicting Heatwaves' Highest Temperatures")

[5] Noyelle, R., Zhang, Y., Yiou, P., and Faranda, D. (2023). Maximal reachable temperatures for Western Europe in current climate. *Environmental Research Letters*, 18(9), 094061. https://doi.org/10.1088/1748-9326/acf679.

[6] Zhang, Y., Held, I., and Fueglistaler, S. (2021). Projections of tropical heat stress under global warming constrained by atmospheric dynamics. *Nature Geoscience*, 14, 133–137. https://doi.org/10.1038/s41561-021-00695-3.
(New York Times —"Global Warming's Deadly Combination: Heat and Humidity"
The Guardian —"Global heating pushes tropical regions towards limits of human livability")

[7] Raymond, C. *et al.* (2021). On the Controlling Factors for Globally Extreme Humid Heat. *Geophysical Research Letters*, 48(23), e2021GL096082. https://doi.org/10.1029/2021GL096082.

[8] Zhang, Y., Jeevanjee, N., and Fueglistaler, S. (2020). Linearity of outgoing longwave radiation: From an atmospheric column to global climate models. *Geophysical Research Letters*, 47(2), e2020GL089235. https://doi.org/10.1029/2020GL089235.

[9] Zhang, Y. and Fueglistaler, S. (2020). How tropical convection couples high moist static energy over land and ocean. *Geophysical Research Letters*, 47(2), e2019GL086387. https://doi.org/10.1029/2019GL086387.
(Eos Editors' Highlight—"How Does Convection Work Over the Tropics?")

[10] Zhang, Y. and Fueglistaler, S. (2019). Mechanism for increasing tropical rainfall unevenness with global warming. *Geophysical Research Letters*, 46(24), 14836-14843. https://doi.org/10.1029/2019GL086058.
(Eos Editors' Highlight—"Understanding Tropical Rainfall Projections Under Climate Change")

PREPRINTS

[11] Heng, Q., Zhang, Y., Dagan, G., and Fueglistaler, S. (2025). Periodic extreme rainfall in a warmer climate due to stronger convectively-coupled waves. *arXiv* preprint. https://doi.org/10.48550/arXiv.2511.19876.

MANUSCRIPTS IN PROGRESS

[12] Zhang, Y. An analytic approximation to the atmospheric cooling spectrum with implications for the "unity optical depth" law

[13] Zhang, Y., Pauluis, O. An analytic approximation to the downward longwave radiation spectrum with implications for surface longwave cooling.

[14] Zhang, Y., Boos, W., Simpson, I. A diagnostic framework for hot temperature trends over midlatitude land.

INVITED TALKS

- Center for Atmosphere Ocean Science (CAOS) Colloquium, Courant Institute, New York University, Nov 2025.
- Simons Symposium on Multi-Scale Physics, Krun, Germany, June 2025.
- Atmospheres, Oceans, & Climate Colloquium, Massachusetts Institute of Technology (MIT), May 2025.
- Laboratoire de Météorologie Dynamique (LMD/ENS), Nov 2024.
- EPS Colloquium, Department of Earth and Planetary Sciences, Harvard University, Oct 2024.
- Departmental Seminar, Department of Atmospheric Sciences, University of Utah, Sep 2024.
- Rossbypalooza on "Climate and Extreme Events", Univeristy of Chicago, Jul 2024.
- Workshop on "Emerging Risks from Concurrent, Compounding and Record-breaking Extreme Heat across Sectors", Columbia University, Jul 2024.
- Atmospheric and Oceanic Science Departmental Seminar, McGill University, Feb 2024.
- Ocean and Climate Physics Seminar, Lamont-Doherty Earth Observatory, Feb 2024.
- AGU Fall Meeting 2023, San Francisco, Dec 2023.
- Atmospheric sciences colloquia, University of Illinois Urbana-Champaign, Sep 2023.
- Atmospheric sciences colloquia, University of Illinois Urbana-Champaign, Sep 2023.
- Continental Climate Workshop, Harvard University Center for the Environment (HUCE), Jun 2023.
- Center for Atmosphere Ocean Science (CAOS) Colloquium, Courant Institute, New York University, Mar 2023.
- American Physical Society (APS), March Meeting, Las Vegas, Mar 2023.
- Environmental Science and Engineering (ESE) Seminar, California Institute of Technology, Mar 2023.
- Department of Atmospheric and Oceanic Sciences, University of California, Los Angeles, Feb 2023.
- Climate Seminar, Program in Atmospheric and Oceanic Sciences, Department of Geosciences, High Meadows Environmental Institute, Princeton University, Feb 2023.

- American Geophysical Union (AGU) Fall Meeting 2022, Dec 2022.
- AGU Atmospheric Section Early-Career Seminar, online, Aug 2022.
- Continental Climate Change Workshop, University of St Andrews, UK, Jun 2022.
- Atmospheric and Oceanic Sciences Seminar, University of California, Los Angeles, Oct 2021
- Earth and Planetary Science Seminar, University of California, Berkeley, Oct 2021
- Yale-NUIST Center on Atmospheric Environment, May 2021.
- Atmosphere Ocean Climate Dynamics (AOCD) Seminars, Yale University, Mar 25, 2021
- American Geophysical Union Fall Meeting 2020, Dec 2020.
- Climate Seminar Series, Princeton University, Princeton, NJ, Feb 2020.

CONFERENCE TALKS

- AGU Fall Meeting 2023, San Francisco, Dec 2023.
- CalGFD, La Jolla, Sep 2023.
- European Meteorological Society Annual Meeting 2022, virtual, Sep 2022.
- 2nd Model Hierarchy Workshop, Stanford, Aug 2022.
- European Geosciences Union General Assembly 2022, virtual, May 2022.
- American Meteorological Society's 102nd Annual Meeting, January 2022.
- American Geophysical Union Fall Meeting 2021, Dec 2021.
- American Meteorological Society's 34th Conference on Hurricanes and Tropical Meteorology, May 2021.
- European Geosciences Union General Assembly 2021, virtual, Apr 2021.
- American Geophysical Union Fall Meeting 2020, virtual, Dec 2020.
- From Spectroscopy to Climate" Virtual Workshop, Princeton, NJ, Jun 2020.
- American Geophysical Union Fall Meeting 2019, San Francisco, CA, Dec 2019.
- 22nd Atmospheric and Oceanic Fluid Dynamics Conference, Portland, Maine, Jun 2019.

POSTERS

- American Geophysical Union Fall Meeting 2024, Washington D.C., Dec 2024.
- Gordon Research Conference on Radiation and Climate, Bates College, Jul 2023.
- 23rd Conference on Atmospheric and Oceanic Fluid Dynamics, Breckenridge, CO, Jun 2022.
- GFDL Poster Expo, May 2019.
- American Geophysical Union Fall Meeting 2018, Washington D.C., Dec 2018.

TEACHING

Instructor, MATH-GA.3001-001: Geophysical Fluid Dynamics, NYU	Fall 2025
Instructor, MATH-UA.0262-007: Ordinary Differential Equations, NYU	Spring 2025
Instructor, MATH-GA.3001-001: Geophysical Fluid Dynamics, NYU	Fall 2024
Instructor, MATH-GA.3011-002: Climate Change (with Olivier Pauluis), NYU	Spring 2024