Justin Finkel

Postdoctoral Associate
U.S. Citizen

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Employment

Massachusetts Institute of Technology, Postdoctoral Associate in the department of Earth, Atmospheric, and Planetary Sciences, beginning September 2022.
Advisor: Paul O'Gorman

Education

University of Chicago, Ph.D. in Computational and Applied Mathematics, August 2022.
Thesis topic: Atmospheric extremes through the lens of transition path theory
Advisor: Jonathan Weare (NYU)
Co-advisors: Mary Silber (UChicago), Dorian Abbot (UChicago), Edwin Gerber (NYU)

Washington University in Saint Louis, B.A. in Mathematics and Physics, *Magna Cum Laude*, May 2017.
Thesis Project: Changing World Temperature Statistics
Thesis Advisor: Jonathan Katz

Awards

- Department of Energy Computational Sciences Graduate Fellowship (DOE CSGF), 2018-2022
- Nishi Luthra award for "Outstanding students in the Physics department and the Philosophy department", 2017
- *Sigma Pi Sigma* inductee (physics honor society), 2017
- Academic Mentor of the Year (for physics mentoring), 2014-2015

Publications

In preparation

1. William J. M. Seviour **et al**. "Forecast-based attribution of the role of stratospheric variability in surface weather extremes and their impacts".
2. **Justin Finkel** and William J. M. Seviour. "Regional and statistical origins of extreme surface temperature risk following sudden stratospheric warming events."

Published

1. **Justin Finkel** and Paul A. O'Gorman. Bringing statistics to storylines: Rare event sampling for sudden, transient extreme events. *Journal of Advances in Modeling Earth Systems*, 16(6):e2024MS004264, 2024
2. **Justin Finkel**, Edwin P. Gerber, Dorian S. Abbot, and Jonathan Weare. Revealing the statistics of extreme events hidden in short weather forecast data. *AGU Advances*, 4(2):e2023AV000881, 2023. e2023AV000881 2023AV000881
3. **Justin Finkel**, Robert J. Webber, Edwin P. Gerber, Dorian S. Abbot, and Jonathan Weare. Data-driven transition path analysis yields a statistical understanding of sudden stratospheric warming events in an idealized model. *Journal of the Atmospheric Sciences*, 2022
4. **Justin Finkel**, Robert J. Webber, Edwin P. Gerber, Dorian S. Abbot, and Jonathan Weare. Learning forecasts of rare stratospheric transitions from short simulations. *Monthly Weather Review*, 149(11):3647 – 3669, 2021. https://doi.org/10.1175/MWR-D-21-0024.1. Available at https://arxiv.org/abs/2102.07760
5. **Justin Finkel**, Dorian S. Abbot, and Jonathan Weare. Path properties of atmospheric transitions: Illustration with a low-order sudden stratospheric warming model. *Journal of the Atmospheric Sciences*, 77(7):2327 – 2347, 2020. https://doi.org/10.1175/JAS-D-19-0278.1
6. Predrag Popović, **Justin Finkel**, Mary C. Silber, and Dorian S. Abbot. Snow topography on undeformed arctic sea ice captured by an idealized "snow dune" model. *Journal of Geophysical Research: Oceans*, 125(9):e2019JC016034, 2020. https://doi.org/10.1029/2019JC016034
7. **J. M. Finkel** and J. I. Katz. Changing world extreme temperature statistics. *International Journal of Climatology*, 38(5):2613–2617, 2018. https://doi.org/10.1002/joc.5342
8. **J. M. Finkel** and J. I. Katz. Changing us extreme temperature statistics. *International Journal of Climatology*, 37(13):4749–4755, 2017. https://doi.org/10.1002/joc.5115
9. C.D. Kreisch, J.A. O'Sullivan, R.E. Arvidson, D.V. Politte, L. He, N.T. Stein, **J. Finkel**, E.A. Guinness, M.J. Wolff, and M.G.A. Lapôtre. Regularization of mars reconnaissance orbiter crism along-track oversampled hyperspectral imaging observations of mars. *Icarus*, 282:136–151, 2017. https://doi.org/10.1016/j.icarus.2016.09.033
10. **J. M. Finkel**, L. M. Canel-Katz, and J. I. Katz. Decreasing us aridity in a warming climate. *International Journal of Climatology*, 36(3):1560–1564, 2016. https://doi.org/10.1002/joc.4421

Presentations

1. Cross-VESRI (Schmidt Sciences) convening, July 2024, Cambridge, UK. Contributed talk.
2. Atmospheric and Oceanic Fluid Dynamics meeting, June 2024. Poster.
3. American Physical Society March Meeting, 2022. Contributed talk. March 14, 2022.
4. Center for Atmosphere Ocean Science, New York University Courant Institute seminar. Joint with Jonathan Weare. October 13, 2021
5. University of Bristol Climate Dynamics seminar. Joint with Dorian Abbot. May 26, 2021
6. European Geophysical Union General Assembly, 2021. Contributed talk. April 28, 2021

7. SIAM conference on dynamical systems, 2021. Contributed talk. May 23, 2021
8. American Physical Society March Meeting, 2021. Contributed talk. March 18, 2021
9. Courant Institute of Mathematical Sciences student seminar, 2021. March 12, 2021
10. SIAM conference on dynamical systems, 2019. Poster. May 22, 2019
11. American Geophysical Union Fall Meeting, 2018. Contributed talk. December 10, 2018
12. Midstates Consortium for Math and Science, Nov. 5, 2016. Poster. November 5, 2016
13. Washington University Undergraduate Research Symposium. October 2014. Poster.

Teaching and mentorship

1. Supervising undergraduate research project by Jesus Lopez (Texas A&M, San Antonio) studying extreme events in passive scalar flows in two dimensions, both spatial statistics and response to perturbations.
2. Supervised undergraduate research project by James Butler (UChicago): exploring stochastic stability and transition path statistics of a low-order atmospheric blocking model.
3. Supervised a master's thesis by Matthew Shin (UChicago): "Towards time-dependent transition path theory: numerical study of periodically forced dynamics."
4. Taught a short virtual linear algebra course to 10 beginning chemistry Ph.D. students (UChicago), September 2020.
5. Online tutoring in mathematics, physics, and computer science with Varsity Tutors.

Last updated: October 3, 2024