

DR. JESSICA S. WAN

Climate Systems Engineering initiative, University of Chicago, Chicago, IL, USA

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EDUCATION

	Scripps Institution of Oceanography, UC San Diego , La Jolla, CA
2025	<i>Ph.D. Earth Sciences</i>
2021	<i>M.S. Oceanography</i>
	Cornell University , Ithaca, NY
2020	<i>B.S. Environment & Sustainability with Distinction in Research</i>

RESEARCH EXPERIENCE

2025 - Present	University of Chicago, Climate Systems Engineering initiative , Chicago, IL <i>Postdoctoral Fellow</i> Constraining the effects of climate engineering on extremes using AI emulators Mentor: Dr. Pedram Hassanzadeh
2020 - 2025	UC San Diego, Scripps Institution of Oceanography , La Jolla, CA <i>Graduate Student Researcher</i> Modeling the far-reaching climate responses of regional geoengineering proposals Advisor: Dr. Kate Ricke
2017 - 2020	Cornell University, Dept. of Earth and Atmospheric Science , Ithaca, NY <i>Undergraduate Student Researcher</i> Improving Earth System Model representations of aerosols for estimating climate Advisors: Drs. Natalie Mahowald and Douglas Hamilton
2018	Gulf of Maine Research Institute , Portland ME <i>Ecosystem Modeling Intern</i> Investigating the ecological impacts for diadromous fish to rising temperature Advisor: Dr. Katherine Mills
2017	Occidental College, Department of Geology , Los Angeles, CA <i>Undergraduate Student Researcher</i> Analyzing apatite fission-tracks for low-temperature thermochronology Advisor: Dr. Ann Blythe

GRANTS & FUNDING

2026	Climate Systems Engineering initiative Faculty Research Grant University of Chicago. Co-PI. (~\$860,000)
2026	NSF NCAR Derecho HPC University Large Allocation University of Chicago. Co-PI. (~10,000,000 core-hours)
2026	NOAA Climate and Global Change Postdoctoral Fellowship University of Washington (declined). (~\$200,000)
2025	UChicago Climate Systems Engineering initiative Postdoctoral Fellowship

- University of Chicago. (~\$200,000)
- 2023 Achievement Rewards for College Scientists (ARCS) Foundation Scholarship**
UC San Diego; doctoral award for excellence in research. (~\$30,000)
- 2022 National Defense Science and Engineering Graduate (NDSEG) Fellowship**
UC San Diego; fully funded doctoral fellowship. (~\$160,000)
- 2020 Scripps Fellowship**
UC San Diego; awarded to outstanding incoming graduate students. (~\$45,000)

PUBLICATIONS

[GOOGLE SCHOLAR](#) | [ORCID](#) | H-INDEX: 9 | i10-INDEX: 8 | CITATIONS: 996

14. Khanna, G., Polonik, P., **Wan, J.S.**, Lunghi, J., Grigoryeva, I., & Ricke, K.: Income strongly moderates climate-driven migration. In review at *PNAS*. DOI:[10.31223/X5975H](#)
13. **Wan, J. S.**, Fasullo, J. T., Rosenbloom, N., Chen, C.-C., & Ricke, K. 2026. Targeted marine cloud brightening weakens subsequent El Niño. *Science Advances*, 12(28), eadx3012. DOI:[10.1126/sciadv.adx3012](#)
12. Kok, J. F., Gupta, A., Evan, A. T., ... & **Wan, J.** 2026. Desert dust exerts twice the longwave radiative heating estimated by climate models. *Nature Commun.* 17, 3191. DOI: [10.1038/s41467-026-70952-9](#)
11. Xing, C., Stevenson, S., Fasullo, J., Harrison, C., Chen, C., **Wan, J.**, Coupe, J., & Pflieger, C. 2025. Subtropical Marine Cloud Brightening Suppresses the El Niño–Southern Oscillation. *Earth's Future*, 13(8), e2025EF006522. DOI:[10.1029/2025EF006522](#)
10. **Wan, J.S.**, Chen, C.-C. J., Tilmes, S., Luongo, M. T., Richter, J. H., & Ricke, K. 2024. Diminished efficacy of regional marine cloud brightening in a warmer world. *Nature Climate Change*. 14, 808–814. DOI:[10.1038/s41558-024-02046-7](#)
9. Feingold, G., Ghate, V.P., Russell, L.M., Blossey, P., Cantrell, W., ... **Wan, J.S.**, ... & Zheng, X. 2024. Physical science research needed to evaluate the viability and risks of marine cloud brightening. *Science Advances*.10, eadi8594. DOI:[10.1126/sciadv.adi8594](#)
8. Shah, S. H., O'Lenick, C. R., **Wan, J. S.**, et al. 2023. Connecting Physical and Social Science Datasets: Challenges and Pathways Forward. *Environmental Research Communications*, 5, 095007. DOI:[10.1088/2515-7620/acf6b4](#)
7. Ricke, K., **Wan J.S.**, Saenger, M., & Lutsko, N.J. 2023. Hydrological Consequences of Solar Geoengineering. *Annual Review of Earth and Planetary Sciences*. 51(1). DOI:[10.1146/annurev-earth-031920-083456](#)
6. Feingold, G., Ghate, V.P., Russell, L.M., Blossey, P., Cantrell, W., ... **Wan, J.S.**, ... & Zheng, X. 2022. DOE-NOAA Marine Cloud Brightening Workshop. U.S. Department of Energy and Department of Commerce NOAA; DOE/SC-0207; NOAA Technical Report OAR ESRL/CSL-1. DOI:[10.2172/1902730](#)
5. Li, L., Mahowald, N. M., Kok, J. F., Liu, X., Wu, M., Leung, D. M., Hamilton, D. S., ... & **Wan, J.** 2022: Importance of different parameterization changes for the updated dust cycle modeling in the Community Atmosphere Model (version 6.1), *Geosci. Model Dev.*, 15, 8181–8219, DOI:[10.5194/gmd-15-8181-2022](#)
4. Kok, J. F., Adebisi, A. A., Albani, S., Balkanski, Y., Checa-Garcia, R., Chin, M., ... & **Wan, J.S.** 2021. Contribution of the world's main dust source regions to the global cycle of desert

dust. *Atmospheric Chemistry and Physics*, 21(10), 8169–8193. DOI: [10.5194/acp-21-8169-2021](https://doi.org/10.5194/acp-21-8169-2021)

3. Kok, J. F., Adebisi, A. A., Albani, S., Balkanski, Y., Checa-Garcia, R., Chin, M., ... **Wan, J.S.** & Whicker, C.A. 2021. Improved representation of the global dust cycle using observational constraints on dust properties and abundance. *Atmospheric Chemistry and Physics*, 21(10), 8127–8167. DOI:[10.5194/acp-21-8127-2021](https://doi.org/10.5194/acp-21-8127-2021)
2. **Wan, J. S.**, Hamilton, D. S., & Mahowald, N. M. 2021. Importance of Uncertainties in the Spatial Distribution of Preindustrial Wildfires for Estimating Aerosol Radiative Forcing. *Geophysical Research Letters*, 48, e2020GL089758. DOI:[10.1029/2020GL089758](https://doi.org/10.1029/2020GL089758)
1. Hamilton, D. S., Scanza, R. A., Feng, Y., Guinness, J., Kok, J. F., Li, L., ... **Wan, J. S.**, ... & Mahowald, N. M. 2019: Improved methodologies for Earth system modelling of atmospheric soluble iron and observation comparisons using the Mechanism of Intermediate complexity for Modelling Iron (MIMI v1.0), *Geosci. Model Dev.*, 12, 3835–3862. DOI:[10.5194/gmd-12-3835-2019](https://doi.org/10.5194/gmd-12-3835-2019)

PRESENTATIONS

Oral

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|-------------|---|
| 2025 | AGU Fall Meeting, GC12A: Advances in Climate Engineering Science: Benefits, Risks, and Uncertainties I Oral |
| 2025 | AMS 105th Annual Meeting, 17th Symposium on Aerosol-Cloud-Climate Interactions [invited] |
| 2024 | AGU Fall Meeting, GC009: Advances in Climate Engineering Science [invited] |
| 2024 | UChicago Dept. of the Geophysical Sciences seminar for TC Chamberlin Postdoctoral Fellowship [invited] |
| 2024 | Project Save the World, podcast Episode 621: Oceans and Spray [invited] |
| 2024 | MEERTALKS [invited] |
| 2024 | NDSEG Fellowship Program 5 th Annual Conference |
| 2024 | CESM workshop 2024 |
| 2024 | Climate Engineering Gordon Research Seminar |
| 2024 | Solar Climate Intervention Virtual Symposium [invited] |
| 2023 | Scripps Student Symposium |
| 2023 | CalGFD |
| 2022 | AGU Fall Meeting, GC16A: Advances in Solar Radiation Modification (SRM) Research |
| 2022 | NCAR Early Career Innovator Program PI Symposium |

Poster

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| 2026 | Climate Engineering Gordon Research Conference |
| 2026 | 16 th GeoMIP Workshop |
| 2025 | AGU Fall Meeting, A51U: Exploring Inadvertent and Deliberate Aerosol Perturbations on Clouds and the Climate II Poster |
| 2024 | Climate Engineering Gordon Research Conference |
| 2023 | AGU Fall Meeting, A31K: Marine Cloud Brightening: Exploring Inadvertent and Deliberate Perturbations to Understand Aerosol-Cloud Interactions Poster |
| 2023 | NCAR UCAR UCP Student Poster Symposium |

- 2022** Climate Engineering Gordon Research Conference & Seminar
- 2021** AGU Fall Meeting, GC45P: Environmental Changes and Human Migration: Advances in Modeling and Analysis II Poster [virtual]
- 2020** AGU Fall Meeting, A092: Natural Aerosols: Climate Response to Perturbations by Human Activity and Their Relevance for the Quantification of Climate Sensitivity I Posters [virtual]

SELECTED AWARDS

- 2026** 2025 Outstanding Reviewer for AGU Earth's Future
- 2025** AMS 105th Annual Meeting, 17th Symposium on Aerosol Cloud Climate Interactions Honorable Mention for Best Student Oral Presentation
- 2024** NDSEG 5th Annual Conference Honorable Mention for Presentation in Oceanography
- 2023** Scripps Student Symposium Outstanding Presenter Award

TEACHING & MENTORING

SIO 60: Experiences in Oceanic and Atmospheric Sciences, UCSD. Sep– Dec 2023.

- Teaching assistant for undergraduate laboratory course on the fundamental principles of oceanic and atmospheric science. I assisted with lab experiments, graded assignments, held weekly office hours, organized the Canvas webpage, and helped supervise a weekend cruise aboard the R/V Sproul.

GEOG 360: Human Dimensions of Climate Change, SDSU. Sep 2023.

- Guest lecturer for undergraduate course.

ESYS 102: Solid and Fluid Earth, UCSD. Mar 2023.

- Guest lecturer for undergraduate course.

Research mentor for 2 undergraduate students:

- Sarina Ghadiali (2024): Triton Research & Experiential Learning Scholars (TRELS).
- Madison Beltran (2023–2024): California Louis Stokes Alliance for Minority Participation (CAMP) program.

SERVICE

Peer review:

- Atmospheric Chemistry and Physics, Communications Earth & Environment, Earth's Future, Geophysical Research Letters, Nature Communications

Conference & workshop organization:

- Organizer for UChicago CSEi Stratospheric Aerosol Injection Research Symposium (January 2026)
- Co-organizer for Solar Geoengineering Scenarios Development Workshop in India in collaboration with The Energy and Resources Institute (TERI) and the Alliance for Just Deliberation on Solar Geoengineering (DSG) (December 2024).
- Early career convener for AGU Fall Meeting, GC100. Solar Radiation Modification for Climate Intervention (December 2023).

- Co-organizer for Scripps Institution of Oceanography Marine Geoengineering Workshop (March 2023).

Media engagement & non-peer reviewed contributions:

- Featured in the *Oceanography* podcast, [MCB: Can Brighter Clouds Cool the Planet? With Dr. Jessica Wan](#) (April 2026).
- Featured in [The BBC Science Focus: Chill out Earth](#) (July 2025).
- Featured in *The SRM360 Podcast: Climate Reflections*, [Episode: What is Marine Cloud Brightening \(MCB\)?](#) (May 2025)
- Featured in *MEERTALK*, [Marine cloud brightening in a changing climate](#) (August 2024).
- Featured in *Project Save the World* podcast, [Episode 621 Oceans and Spray](#) (August 2024).
- Featured in [The Guardian](#) (June 2024), [New Scientist](#) (June 2024), [AGU Eos](#) (July 2024), and [Mongabay](#) (August 2024) highlighting Wan et al. (2024) published in *Nature Climate Change*.

Committee memberships & outreach:

- Mentor and leadership for SIO Applicant Support and Knowledge-base program
- Mentor and leadership for Climate Science Curricular Group Peer Mentor Program
- Mentor for Undergraduate Mentorship Program at SIO
- Committee member for joint SIO/HDSI faculty hire
- Student host for SIO Open House
- Assistant coach for UC San Diego women's club ultimate frisbee team