

DR. JESSICA S. WAN

Climate Systems Engineering initiative, The 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	Climate Systems Engineering initiative, The University of Chicago , Chicago, IL <i>Postdoctoral Research Fellow</i> Constraining the Effects of Climate Engineering on Weather Extremes using Artificial Intelligence Emulators Mentors: Drs. Pedram Hassanzadeh and David Keith
2020 - 2025	Scripps Institution of Oceanography, UC San Diego , La Jolla, CA <i>Graduate Student Researcher</i> Modeling the far-reaching climate responses of regional geoengineering proposals Advisor: Dr. Katharine Ricke; Committee: Drs. Jennifer Burney, Lynn Russell, Simone Tilmes, Duncan Watson-Parris, Shang-Ping Xie
2017 - 2020	Cornell University, Dept. of Earth and Atmospheric Science , Ithaca, NY <i>Undergraduate Student Researcher</i> Improving Earth System Model representations of fire and dust 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

SELECTED AWARDS & FELLOWSHIPS

2025	UChicago Climate Systems Engineering initiative Postdoctoral Fellowship
2025	AMS 105 th Annual Meeting, 17 th 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** Achievement Rewards for College Scientists (ARCS) Foundation Fellowship
- 2023** Scripps Student Symposium Outstanding Presenter Award
- 2022** National Defense Science and Engineering Graduate (NDSEG) Fellowship
- 2020** Scripps Fellowship

PUBLICATIONS

GOOGLE SCHOLAR | ORCID: [HTTPS://ORCID.ORG/0000-0003-3757-6436](https://orcid.org/0000-0003-3757-6436)

- In review** **Wan, J.S.**, Fasullo, J.T., Rosenbloom, N., Chen, C.C., Ricke, K.: Targeted marine cloud brightening weakens subsequent El Niño. In review. DOI:[10.48550/arXiv.2406.07853](https://doi.org/10.48550/arXiv.2406.07853)
- In review** Kok, J. F., Gupta, A., Evan, A. T., Adebiyi, A. A., ..., & **Wan, J.**: Desert dust exerts a substantial longwave radiative forcing missing from climate models. In review. DOI: <https://doi.org/10.31223/X53B2J>
- 2025** Xing, C., Stevenson, S., Fasullo, J., Harrison, C., Chen, C., **Wan, J.**, Coupe, J., & Pfleger, C. 2025. Subtropical Marine Cloud Brightening Suppresses the El Niño–Southern Oscillation. *Earth’s Future*, 13(8), e2025EF006522. DOI:<https://doi.org/10.1029/2025EF006522>
- 2024** **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](https://doi.org/10.1038/s41558-024-02046-7)
- 2024** 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](https://doi.org/10.1126/sciadv.adi8594)
- 2023** 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](https://doi.org/10.1088/2515-7620/acf6b4)
- 2023** 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](https://doi.org/10.1146/annurev-earth-031920-083456)
- 2022** 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](https://doi.org/10.2172/1902730)
- 2022** 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](https://doi.org/10.5194/gmd-15-8181-2022)
- 2021** Kok, J. F., Adebiyi, 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. <i>Atmospheric Chemistry and Physics</i> , 21(10), 8169–8193. DOI: 10.5194/acp-21-8169-2021
2021	Kok, J. F., Adebiyi, 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. <i>Atmospheric Chemistry and Physics</i> , 21(10), 8127–8167. DOI: 10.5194/acp-21-8127-2021
2021	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. <i>Geophysical Research Letters</i> , 48, e2020GL089758. DOI: 10.1029/2020GL089758
2019	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), <i>Geosci. Model Dev.</i> , 12, 3835–3862. DOI: 10.5194/gmd-12-3835-2019

PRESENTATIONS

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	
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]

TEACHING & MENTORING

SIO 60: Experiences in Oceanic and Atmospheric Sciences, UCSD. September– December 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. September 2023.

- Guest lecturer for undergraduate course.

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

- Guest lecturer for undergraduate course.

Research mentor for 2 undergraduate students:

- Madison Beltran (2023–24): California Louis Stokes Alliance for Minority Participation (CAMP) program.
- Sarina Ghadiali (2024): Triton Research & Experiential Learning Scholars (TRELS).

SERVICE

Peer review:

- Earth's Future, Geophysical Research Letters, Nature Communications

Conference & workshop organization:

- 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 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