DR. JESSICA S. WAN

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

	Scripps Institution of Oceanography, University of California San Diego, La Jolla, CA
2025	*PhD Earth Sciences* GPA: 3.97
2021	*MS Oceanography* GPA: 3.97
	Cornell University, Ithaca, NY
2020	*BS Environment & Sustainability with Distinction in Research* GPA: 4.06

RESEARCH EXPERIENCE

2025 - Present	**Climate Systems Engineering initiative, The University of Chicago**, Chicago, IL *Postdoctoral Research Associate* Constraining the Effects of Climate Engineering on Weather Extremes using Artificial Intelligence Emulators **Mentors**: Dr. Pedram Hassanzadeh
2020 - 2025	**Scripps Institution of Oceanography, UC San Diego**, La Jolla, CA *Graduate Student Researcher* 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 *Undergraduate Student Researcher* 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 *Ecosystem Modeling Intern* Investigating the ecological impacts for diadromous fish populations to rising temperature **Advisor:** Dr. Katherine Mills
2017	**Occidental College, Department of Geology**, Los Angeles, CA *Undergraduate Student Researcher* Analyzing apatite fission-tracks for low-temperature thermochronology **Advisor:** Dr. Ann Blythe

AWARDS & FELLOWSHIPS

2025	17th Symposium on Aerosol Cloud Climate Interactions, AMS 105th Annual Meeting Honorable Mention for Best Student Oral Presentation
2024	NDSEG 5th Annual Conference Honorable Mention for Presentation in Oceanography
2023 - 2025	Achievement Rewards for College Scientists (ARCS) Foundation Fellowship
2023	Scripps Student Symposium Outstanding Presenter Award
2022 - 2025	National Defense Science and Engineering Graduate (NDSEG) Fellowship
2020 - 2021	Scripps Fellowship
2016	Advanced Placement Scholar with Distinction Award
2016	Washington State Seal of Biliteracy
2016	Award of Excellence, Career and Technical Education, Issaquah School District

PUBLICATIONS

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

Published/Accepted

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. Nat. Clim. Chang. 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. Sci. Adv.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. Atmospheric Chemistry and Physics, 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. Atmospheric Chemistry and Physics, 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. Geophysical Research Letters, 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), Geosci. Model Dev., 12, 3835–3862. DOI:10.5194/gmd-12-3835-2019
Submitted/In prep	
2025	**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
2025	Kok, J. F., Gupta, A., Evan, A. T., Adebiyi, A. A., Albani, S., Balkanski, Y., Checa-Garcia, R., Colarco, P., Hamilton, D., Huang, Y., Ito, A., Klose, M., Li, L., Mahowald, N. M., Miller, R., Obiso, V., García-Pando, C. P., Lima, A. R., & **Wan, J.**: Desert dust exerts a substantial longwave radiative forcing missing from climate models. In review. DOI: https://doi.org/10.31223/X53B2J
In prep	Khanna, G., Polonik, P., **Wan, J.S.**, Lunghi, J., & Grigoryeva, I., & Ricke, K.: Income strongly mediates climate-driven migration. In prep.

PRESENTATIONS

Oral	
2025	**17th Symposium on Aerosol-Cloud-Climate Interactions, AMS 105th Annual Meeting [invited]**
2024	**AGU Fall Meeting, GC009: Advances in Climate Engineering Science [invited]**
2024	**Project Save the World, podcast Episode 621: Oceans and Spray [invited]**
2024	**MEERTALKS [invited]**
2024	NDSEG Fellowship Program 5th 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

OTHER QUALIFICATIONS

Computer skills:
- Programming languages: Python, R, and Linux commands, limited proficiency in MATLAB
- Community Earth System Model (CESM; versions 1 and 2)
- Adobe Photoshop and Illustrator, Inkscape, Canva

Languages:
- English: native.
- Dutch, Spanish: proficiency in reading, writing, and speaking.