# DR. JESSICA S. WAN

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## EDUCATION

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

## RESEARCH EXPERIENCE

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| **2025 - Present** | **Climate Systems Engineering initiative, The University of Chicago**, Chicago, IL<br>*Postdoctoral Research Associate*<br>Constraining the Effects of Climate Engineering on Weather Extremes using Artificial Intelligence Emulators<br>**Mentors**: Drs. Pedram Hassanzadeh and David Keith |
| **2020 - 2025** | **Scripps Institution of Oceanography, UC San Diego**, La Jolla, CA<br>*Graduate Student Researcher*<br>Modeling the far-reaching climate responses of regional geoengineering proposals<br>**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<br>*Undergraduate Student Researcher*<br>Improving Earth System Model representations of fire and dust aerosols for estimating climate<br>**Advisors:** Drs. Natalie Mahowald and Douglas Hamilton |
| **2018** | **Gulf of Maine Research Institute**, Portland ME<br>*Ecosystem Modeling Intern*<br>Investigating the ecological impacts for diadromous fish populations to rising temperature<br>**Advisor:** Dr. Katherine Mills |
| **2017** | **Occidental College, Department of Geology**, Los Angeles, CA<br>*Undergraduate Student Researcher*<br>Analyzing apatite fission-tracks for low-temperature thermochronology<br>**Advisor:** Dr. Ann Blythe |

## AWARDS & FELLOWSHIPS

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| **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

**Published/Accepted**

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| **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 |
| **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 |
| **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 |
| **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 |
| **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 |
| **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 |

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| **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

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| **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 |

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| **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.