

# Jianhao Zhang, Ph.D.

✉ jianhao.zhang@noaa.gov

in linkedin.com/in/jianhao-zhang-6a6a2881

🌐 https://csl.noaa.gov/staff/jianhao.zhang/

## Professional Appointment

- May 2023 – present    📌 **Research Scientist II**, NOAA Chemical Sciences Laboratory & CIRES at the University of Colorado Boulder
- Sept. 2021 – Apr. 2023    📌 **Research Scientist I**, NOAA Chemical Sciences Laboratory & CIRES at the University of Colorado Boulder
- Sept. 2020 – Aug. 2021    📌 **NRC Postdoc fellowship** hosted by Graham Feingold at NOAA Chemical Sciences Laboratory










## Education

- 2020    📌 **Ph.D., University of Miami, Miami, FL, USA** in Meteorology & Physical Oceanography.  
Dissertation title: *The interactions between light-absorbing smoke and marine boundary layer clouds over the remote southeast Atlantic.*  
Committee: Paquita Zuidema (Chair), Brian Mapes, Brian Soden, Cassandra Gaston, David Turner & Takanobu Yamaguchi
- 2014    📌 **B.S., Florida State University, Tallahassee, FL, USA** in Meteorology.  
*Magna cum laude; Minor in Mathematics.*
- 📌 **joint B.S., Nanjing University of Information Science and Technology, Nanjing, China**  
in Atmospheric Science.


## Publications

### Peer-reviewed



- 1 Y.-S. Chen, **J. Zhang**, F. Hoffmann, *et al.*, “Diurnal evolution of non-precipitating marine stratocumuli in an ensemble,” *Atmos. Chem. Phys.*, pp. 1–42, accepted, 2024. 🌐 DOI: 10.5194/egusphere-2024-1033.
- 2 **J. Zhang**, Y.-S. Chen, E. Gryspeerd, T. Yamaguchi, and G. Feingold, “Large radiative forcing from the 2020 shipping fuel regulation is hard to detect,” *Commun. Earth Environ.*, pp. 1–22, accepted, 2024. 🌐 DOI: 10.21203/rs.3.rs-4552523/v1. (**news coverage in progress**)
- 3 G. Feingold, V. Ghate, L. M. Russell, *et al.*, “Community consensus on physical science research needs to evaluate the viability of Marine Cloud Brightening,” *Science Advances*, vol. 10, no. 12, eadi8594, 2024. 🌐 DOI: 10.1126/sciadv.adi8594.
- 4 **J. Zhang**, Y.-S. Chen, T. Yamaguchi, and G. Feingold, “Cloud water adjustments to aerosol perturbations are buffered by solar heating in non-precipitating marine stratocumuli,” *Atmos. Chem. Phys.*, vol. 24, no. 18, pp. 10 425–10 440, 2024. 🌐 DOI: 10.5194/acp-24-10425-2024.
- 5 C. Howes, P. E. Saide, H. Coe, *et al.*, “Biomass-burning smoke’s properties and its interactions with marine stratocumulus clouds in WRF-CAM5 and southeastern Atlantic field campaigns,” *Atmos. Chem. Phys.*, vol. 23, no. 21, pp. 13 911–13 940, 2023. 🌐 DOI: 10.5194/acp-23-13911-2023.
- 6 **J. Zhang** and G. Feingold, “Distinct regional meteorological influences on low-cloud albedo susceptibility over global marine stratocumulus regions,” *Atmos. Chem. Phys.*, vol. 23, no. 2, pp. 1073–1090, 2023. 🌐 DOI: 10.5194/acp-23-1073-2023.
- 7 P. A. Barrett, S. J. Abel, H. Coe, *et al.*, “Intercomparison of airborne and surface-based measurements during the clarify, oracles and lasic field experiments,” *Atmos. Meas. Tech.*, vol. 15, no. 21, pp. 6329–6371, 2022. 🌐 DOI: 10.5194/amt-15-6329-2022.

- 8 M. S. Diamond, P. E. Saide, P. Zuidema, *et al.*, “Cloud adjustments from large-scale smoke–circulation interactions strongly modulate the southeastern atlantic stratocumulus-to-cumulus transition,” *Atmos. Chem. Phys.*, vol. 22, no. 18, pp. 12 113–12 151, 2022.  DOI: 10.5194/acp-22-12113-2022. (ACP highlight)
- 9 J. Zhang, X. Zhou, T. Goren, and G. Feingold, “Albedo susceptibility of northeastern pacific stratocumulus: The role of covarying meteorological conditions,” *Atmos. Chem. Phys.*, vol. 22, no. 2, pp. 861–880, 2022.  DOI: 10.5194/acp-22-861-2022.
- 10 J. Zhang and P. Zuidema, “Sunlight-absorbing aerosol amplifies the seasonal cycle in low-cloud fraction over the southeast atlantic,” *Atmos. Chem. Phys.*, vol. 21, no. 14, pp. 11 179–11 199, 2021.  DOI: 10.5194/acp-21-11179-2021.
- 11 X. Zhou, J. Zhang, and G. Feingold, “On the importance of sea surface temperature for aerosol-induced brightening of marine clouds and implications for cloud feedback in a future warmer climate,” *Geophys. Res. Lett.*, vol. 48, no. 24, e2021GL095896, 2021.  DOI: <https://doi.org/10.1029/2021GL095896>.
- 12 S. J. Abel, P. A. Barrett, P. Zuidema, *et al.*, “Open cells exhibit weaker entrainment of free-tropospheric biomass burning aerosol into the south-east Atlantic boundary layer,” *Atmos. Chem. Phys.*, vol. 20, no. 7, pp. 4059–4084, 2020.  DOI: 10.5194/acp-20-4059-2020.
- 13 J. Zhang and P. Zuidema, “The diurnal cycle of the smoky marine boundary layer observed during August in the remote southeast Atlantic,” *Atmos. Chem. Phys.*, vol. 19, no. 23, pp. 14 493–14 516, 2019.  DOI: 10.5194/acp-19-14493-2019. (ACP highlight)
- 14 A. S. Chandra, P. Zuidema, S. Krueger, A. Kochanski, S. P. de Szoeke, and J. Zhang, “Moisture distributions in tropical cold pools from equatorial Indian ocean observations and cloud-resolving simulations,” *J. Geophys. Res. Atmos.*, vol. 123, no. 20, pp. 11, 445–11, 465, 2018.  DOI: 10.1029/2018JD028634.
- 15 J. Zhang, P. Zuidema, D. D. Turner, and M. P. Cadeddu, “Surface-based microwave humidity retrievals over the equatorial Indian ocean: Applications and challenges,” *J. Appl. Meteor. Climatol.*, vol. 57, no. 8, pp. 1765–1782, 2018.  DOI: 10.1175/JAMC-D-17-0301.1.
- 16 P. Zuidema, A. J. Sedlacek III, C. Flynn, *et al.*, “The Ascension island boundary layer in the remote southeast Atlantic is often smoky,” *Geophys. Res. Lett.*, vol. 45, no. 9, pp. 4456–4465, 2018.  DOI: 10.1002/2017GL076926.

## Other Publications

- 1 J. Zhang and G. Feingold, “Physical Science of Marine Cloud Brightening: Knowledge and Gaps,” in *Topical Group on the Physics of Climate*, American Physical Society, October 2024, pp. 1–4.  URL: <https://engage.aps.org/gpc/resources/newsletters>.
- 2 G. Feingold, V. Ghatge, L. M. Russell, *et al.*, “DOE-NOAA Marine Cloud Brightening Workshop,” in *U.S. Department of Energy and U.S. Department of Commerce NOAA, DOE/SC-o2o7; NOAA Technical Report OAR ESRL/CSL-1*, 2022, pp. 1–33.

## Teaching & Mentoring

- |           |  |
|-----------|--|
| Teaching  |  <b>Teaching assistant</b> for <i>Introduction to Weather and Climate</i> at University of Miami (2015)<br><b>Math tutor</b> for AP calculus and undergrad statistics (2015–2020) |
| Mentoring |  <b>Tyler Tatro</b> , co-advised Ph.D. student at University of Miami (2022)<br><b>Alexander J. Thompson</b> , mentored via the CIRES Mentoring Program (2024)                    |

## Grants & Fellowships

2023-2026	■	<b>Co-I.:</b> Aerosol-Cloud Interactions Centered on MAGIC: Insights from Measurements and Lagrangian Large Eddy Simulation (DOE ASR, P.I.: Graham Feingold)
2023-2024	■	<b>Co-I.:</b> Exploring Aerosol-Cloud Interactions in Geophysical Variable Spaces using NASA-ACTIVATE Observations (NASA, P.I.: Graham Feingold)
2020-2023	■	<b>Co-I.:</b> Evaluating Biases in Aerosol-Cloud Interaction Metrics using ARM Data and Models (DOE ASR, P.I.: Graham Feingold)
2020-2021	■	<b>P.I.:</b> National Research Council Postdoctoral Fellowship, National Academies of Sciences, Engineering, Medicine
2014-2016	■	University of Miami Graduate Fellowship (highest award of the graduate school)

## Selected Presentations

Nov. 2024	■	<b>NOAA Advancing Innovative Research Seminar Series, Online,</b> <i>Large radiative forcing from the 2020 shipping fuel regulation is hard to detect. (Contributed)</i>
Oct. 2024	■	<b>Micro2Macro Workshop by US CLIVAR, Laramie, WY, USA,</b> <i>Assessing the non-linear cloud susceptibility to <math>N_d</math> using Machine Learning: differences between GCMs and observation. (Contributed)</i>
Jun. 2024	■	<b>TU Delft, Delft, Netherlands,</b> <i>On the viability of Marine Cloud Brightening: Albedo susceptibility, cloud adjustment, and detectability. (Invited)</i>
May 2024	■	<b>ACPC Workshop 2024, London &amp; online, UK,</b> <i>Natural variability obscures the detectability of IMO2020's substantial perturbation to cloud radiative effect. (Contributed)</i>
Nov. 2023	■	<b>ACTIVATE Science Team Meeting 2023, Tucson, AZ, USA,</b> <i>Exploring emergent properties of complex aerosol-cloud-meteorology interactions over the WN Atlantic during ACTIVATE. (Contributed)</i>
Oct. 2023	■	<b>Brookhaven National Laboratory, Long Island, NY, USA,</b> <i>Aerosol-cloud interactions in marine warm clouds and implications for Marine Cloud Brightening. (Invited)</i>
May 2023	■	<b>ACPC Workshop 2023, Houston &amp; online, TX, USA,</b> <i>Time-dependent cloud adjustments to aerosol in non-precipitating stratocumulus: diurnal cycle and MCB implications. (Contributed)</i>
Dec. 2022	■	<b>2022 AGU Fall Meeting, Chicago, IL, USA,</b> <i>On the Conditionality of Marine Low Cloud Albedo Susceptibility: from Meteorological Conditions to Spatiotemporal Scales. (Invited)</i>

## Leadership & Service

Grant Reviewer	■	Department of Energy (DOE) Atmospheric System Research (ASR) University of Colorado AB Nexus Program
Peer Reviewer	■	Atmospheric Chemistry and Physics ( <b>EGU</b> ); Communications Earth & Environment ( <b>Nature</b> ), Journal of Geophysical Research: Atmosphere, Journal of Geophysical Research: Machine Learning and Computation, Geophysical Research Letters ( <b>AGU</b> ); Journal of Climate, Bulletin of the American Meteorology Society, Journal of Applied Meteorology and Climatology ( <b>AMS</b> ); Climate Dynamics ( <b>Springer</b> )
Editorship	■	Frontiers in Remote Sensing (Guest editor, 2021–2023) Atmosphere (Guest editor, 2022–)
Convener	■	<b>2024 AGU Fall Meeting, Washington D.C., USA</b> <i>Advances in Cloud and Precipitation Processes: Integrating Observations, Modeling, and Theory</i> <b>AMS's 16th Conference on Cloud Physics, Madison, WI, USA (2022)</b> <i>Aerosol-Cloud Indirect Effects</i>

## Leadership & Service (continued)

---

- |           |  |
|-----------|--|
| Committee | ■ CIRES Mentoring Program committee (2024-)<br>NOAA OAR <b>subject matter expert in <i>Satellite Data</i></b> (2022-)<br>University of Miami RSMAS Student Seminar Committee (2016)  |
| Misc.     | ■ Evaluator for Research Experience for Community College Students (RECCS) Symposium 2024<br>NOAA Hollings Undergraduate Scholarship Application reviewer (2022)<br>Judge of GLOBE International Virtual Science Symposium (2022)<br>Judge of AGU Outstanding Student Presentation Award (2020)<br>Children's book <i>UP, UP HIGH</i> , vetting for science<br>CIRES Education & Outreach, volunteer<br>Climate Literacy and Energy Awareness Network, science reviewer<br>FSU Intramural Basketball Official (2014) |

## Awards & Honors

---

- NASA's Group Achievement Award (ACTIVATE Team, 2023; ORACLES Team, 2019)
- Finalist of University of Miami Best Ph.D. Dissertation (2020)
- President's list (2012, 2013); Dean's list (2013, 2014); First Tier Scholarship (top 5%, 2011)