# Michael S. Diamond

*Curriculum Vitae*

*Assistant Professor*
*Florida State University*
*Earth, Ocean, & Atmospheric Science*
✉ *msdiamond@fsu.edu*

## Statement of Research Interests

**Clouds confound our understanding of climate change**. Questions about how clouds interact with small airborne particles (aerosols) are the largest source of uncertainty in how much human activities have already affected Earth's energy balance and questions about how clouds will respond to a warming world are the largest source of uncertainty in Earth's future climate sensitivity. Clouds influence and are influenced by processes occurring on scales ranging from nanometers and seconds to hundreds of kilometers and years, making **causal interpretation of cloud changes** extremely challenging. I am particularly interested in identifying cases of (presumably) clear causality, or "natural experiments," and learning both what they can teach us and the limits of applying those lessons more broadly. I am also interested in addressing urgent policy-relevant questions related to proposals for deliberate marine cloud brightening to offset some effects of global warming. To address these issues, **my group utilizes a diverse set of tools ranging from in situ aircraft observations to geostatistical analyses of satellite retrievals to numerical modeling at the cloud, regional, and global climate scales**.

## Education

2018–2020 **Doctor of Philosophy**, *Atmospheric Sciences*, University of Washington

- Dissertation: On the role of natural laboratories and natural experiments in elucidating cloud-aerosol-climate interactions: A story of ships, smoke, and shutdowns

2018–2019 **Graduate Certificate in Climate Science**, *UW Program on Climate Change*

- Capstone: Geoengineering as a means of teaching the fundamentals of climate change through problem-based learning

2015–2018 **Master of Science**, *Atmospheric Sciences*, University of Washington

- Thesis: $N_{\mathrm{d}}$ or not $N_{\mathrm{d}}$? To what extent are biomass burning aerosols modulating cloud microphysics in the southeast Atlantic?

2011–2015 **Bachelor of Arts**, *Earth & Environmental Sciences*, Vanderbilt University

- Senior Thesis: Rethinking the "canonical" El Niño

## Professional Experience

2023– **Assistant Professor**, *Meteorology & Environmental Science*, Department of Earth, Ocean, and Atmospheric Science, Florida State University

2021–2022 **CIRES Postdoctoral Visiting Fellow**, *Advisors: Graham Feingold & Jennifer Kay*, Cooperative Institute for Research in Environmental Sciences, NOAA Chemical Sciences Laboratory & CU Boulder Department of Atmospheric and Oceanic Sciences

2015–2020 **Graduate Research Fellow**, *Advisor: Robert Wood*, Department of Atmospheric Sciences, University of Washington

2012–2015 **Undergraduate Research Assistant**, *Advisors: Ralf Bennartz, Steven Goodbred, & Daniel Morgan*, Department of Earth & Environmental Sciences, Vanderbilt University

## Field Experience

2016–2018 **ORACLES (ObseRvations of Aerosols above CLouds and their intEractionS)**, *NASA Earth Venture Suborbital-2*, Swakopmund and Walvis Bay, Namibia (Sept. 2016), & São Tomé, São Tomé e Príncipe (Aug. 2017, Oct. 2018)

- Served in forecasting, flight planning, and ground and assistant flight scientist roles.

2014 **BanglaPIRE: Life on a Tectonically-Active Delta**, *NSF Partnerships for International Research and Education*, Dhaka, Khulna, & Polder 32, Bangladesh

- Participated in field work in rural Bangladesh studying salt water intrusion and differential subsidence between inhabited areas and the Sundarbans mangrove forest.

## Funded Grants

2024–2026 **Principal Investigator**, *Generalizability of ship tracks to historical aerosol-cloud interactions and marine cloud brightening: Are there differences between sulfur, soot, and salt tracks?*, NOAA Climate Program Office Earth's Radiation Budget (ERB), Atmospheric Chemistry, Carbon Cycle, & Climate (AC4), and Climate Variability & Predictability (CVP) Programs, Grant NA23OAR4310297
Co-Investigators: T. Yuan (UMBC/NASA), H. Song (SSAI/NASA)

- $736,494

Summer 2024 **Principal Investigator**, *Demystifying the role of smoke in delaying drizzle-driven cloud transitions*, FSU Council on Research and Creativity First-Year Assistant Professor Program

- $20,000

## Teaching Experience

Fall 2023, 2024 **Instructor of Record**, *MET 5455: Cloud Physics*, Department of Earth, Ocean & Atmospheric Science, Florida State University

Spring 2024 **Instructor of Record**, *MET 4400C: Meteorological Instrumentation & Observations*, Department of Earth, Ocean & Atmospheric Science, Florida State University

Fall 2021 **Guest Lecturer**, *Climate Change and the Global Response: A Multidisciplinary Perspective*, Department of Earth & Environmental Sciences, Vanderbilt University

Spring 2021 **Guest Lecturer**, *AP Environmental Sciences*, Sammamish High School, Bellevue, WA

Fall 2020 **Seminar Organizer**, *Justice and Equity in Academia and Beyond*, Department of Atmospheric Sciences, University of Washington

Winter & Summer 2020 **Guest Lecturer**, *Exploring the Atmospheric Sciences*, Department of Atmospheric Sciences, University of Washington

Summer 2019 **Instructor of Record**, *Climate & Climate Change*, Department of Atmospheric Sciences, University of Washington

2018–2019 **Guest Lecturer**, *Frontiers of Science & AP Environmental Science*, Sammamish High School, Bellevue, WA

Spring 2017 **Teaching Assistant**, *Climate & Climate Change*, Department of Atmospheric Sciences, University of Washington

Fall 2013 & 2014 **Teaching Assistant**, *Global Climate Change*, Department of Earth & Environmental Sciences, Vanderbilt University

## Students Mentored

**PhD Students**

- *Lili Boss*, FSU EOAS, Cloud adjustments from shipping aerosol, 2023–

**Masters Students**

- *Tony Freveletti*, FSU EOAS, Aerosol forcing of Atlantic Multidecadal Variability, 2024–

**Undergraduate Students**

- *Elizabeth O'Meara*, FSU EOAS, Pattern effect and marine cloud brightening, 2024–
- *Jake Chisholm*, FSU EOAS, Ship compliance with anti-pollution regulations, 2024–
- *Miranda Coffey*, FSU EOAS, Web-scraping algorithms for geophysical data, 2024 (Co-advised with Lisa Herbert)
- *David Johnson*, FSU EOAS, Aircraft observations of smoke-cloud interactions, 2024; Aerosol influence on tropical cyclones, 2024– (Co-advised with Chelsea Nam)
- *Matthew McTamney*, FSU EOAS, Equivalent potential temperature changes under stratospheric aerosol injection, 2024
- *Caroline Seidman*, FSU EOAS, Ship compliance with anti-pollution regulations, 2024
- *Jay Brunellli*, FSU Undergraduate Research Opportunity Program (UROP) & EOAS, Climate zone shifts under stratospheric aerosol injection, 2023–
- *Mark Irby-Gill*, Significant Opportunities in Atmospheric Research and Science (SOARS), University Corporation for Atmospheric Research, Cloud radiative effect-cloud fraction relationships by cloud type, 2022
- *Christine Neumaier*, Department of Atmospheric Sciences, University of Washington, Aerosol enhancement of lightning, 2020 (Advisor: Joel Thornton)

**Graduate Committees**

- **FSU PhD in Meteorology**: *Graham O'Donnell*, 2024–
- **FSU Masters in Meteorology**: *Aachal Bhakta*, 2023–2024; *Shiv Bhakta*, 2024; *Sophie Bignault*, 2024; *Alice Brennan*, 2023–2024; *Justin Gonzalez*, 2024–; *Jarrett Starr*, 2023–2024

## Awards, Fellowships, & Honors

2023 **ACP Paul Crutzen Publication Award**, *Atmospheric Chemistry and Physics*, European Geosciences Union

2021–2022 **CIRES Postdoctoral Visiting Fellowship**, *Cooperative Institute for Research in Environmental Sciences*, University of Colorado Boulder and the NOAA Earth System Research Laboratories

2020 **Best Student Oral Presentation**, *22nd Conference on Planned and Inadvertent Weather Modification*, 100th American Meteorological Society Annual Meeting, Boston, MA

2019 **NASA Group Achievement Award**, *ORACLES (ObseRvations of Aerosols above CLouds and their intEractionS) Team*

2018–2020 **Duck Family Graduate Fellow in Environmental Politics & Governance**, *University of Washington Center for Environmental Politics*

2018 **Best Student Poster Presentation**, *15th AMS Conference on Atmospheric Radiation*, Vancouver, BC

2018 **Husky 100 Honoree**, *University of Washington*

2017–2020 **NASA Earth & Space Sciences Fellowship**, *Earth Science Division*

2017 **Best Student Oral Presentation**, *Ninth Symposium on Aerosol-Cloud-Climate Interactions*, 97th AMS Annual Meeting, Seattle, WA

2016–2017 **PCC Graduate Fellowship**, *University of Washington Program on Climate Change*

2015–2016 **AMS Graduate Fellowship**, *sponsored by NASA Earth Science*

2015 **Astrobiology Fellowship**, *University of Washington Astrobiology Program*

2015 **College of Arts & Science Banner Bearer**, *Vanderbilt University Commencement*

2014 **Udall Scholarship**, *Morris K. Udall and Stewart L. Udall Foundation*

2014 **Phi Beta Kappa**, *Alpha Chapter of Tennessee*

2011–2015 **Cornelius Vanderbilt Scholarship**, *Vanderbilt University*

## Peer-Reviewed Publications

25 Lee, Walker, **M. Diamond**, P. Irvine, J. Reynolds, & D. Visioni (In press). What causes a risk? Informative analyses of radiative forcing geoengineering require proper counterfactuals. Pre-print at *ESS Open Archive*; accepted in *Communications Earth & Environment*. doi:10.22541/essoar.171820776.68876549/v1

24 **Diamond, Michael**, J. Gristey, & G. Feingold (2024). Testing cloud adjustment hypotheses for the maintenance of Earth's hemispheric albedo symmetry with natural experiments. *Geophysical Research Letters*, 51(20), e2024GL111733. doi:10.1029/2024GL111733

23 Gettelman, Andrew, M. Christensen, **M. Diamond**, E. Gryspeerdt, P. Manshausen, P. Stier, D. Watson-Parris, M. Yang, M. Yoshioka, & T. Yuan. (2024). Has reducing ship emissions brought forward global warming? *Geophysical Research Letters*, 51(15), e2024GL109077. doi:10.1029/2024GL109077

22 Tilmes, Simone, D. Visioni, E. Bednarz, T. Felgenhauer, W. Smith, C. Lennard, **M. Diamond**, M. Henry, C. Harrison, & C. Thompson. (2024). Research criteria towards an interdisciplinary Stratospheric Aerosol Intervention assessment. *Oxford Open Climate Change*, 4(1), kgae010. doi:10.1093/oxfclm/kgae010

21 Baró-Pérez, Alejandro, **M. Diamond**, et al. (2024). Comparing the simulated influence of biomass burning plumes on low-level clouds over the southeastern Atlantic under varying smoke conditions. *Atmospheric Chemistry and Physics*, 24(8), 4591–4610. doi:10.5194/acp-24-4591-2024

20 Feingold, Graham, V. Ghate, L. Russell and others including **M. Diamond** (2024). Physical science research needed to evaluate the viability and risks of marine cloud brightening. *Science Advances*, 10(12), eadi8594. doi:10.1126/sciadv.adi8594

19 **Diamond, Michael**. (2023). Detection of large-scale cloud microphysical changes within a major shipping corridor due to the International Maritime Organization 2020 marine fuel sulfur regulations. *Atmospheric Chemistry and Physics*, 23(14), 8259–8269. doi:10.5194/acp-23-8259-2023

- Recipient of 2023 ACP Paul Crutzen Publication Award
- Selected as an ACP Letter/Editor's Highlight and Nature Research Highlight

18 **Diamond, Michael**, K. Wanser, & O. Boucher. (2023). "Cooling credits" are not a viable climate solution. *Climatic Change*, 176, 96. doi:10.1007/s10584-023-03561-w

17 Chang, Ian, and others including **M. Diamond** (2023). On the differences in the vertical apportionment of modeled aerosol optical depth over the southeastern Atlantic. *Atmospheric Chemistry and Physics*, 23(7), 4283–4309. doi:10.5194/acp-23-4283-2023

16 **Diamond, Michael**, P. Saide, P. Zuidema, A. Ackerman, S. Doherty, A. Fridlind, H. Gordon, C. Howes, J. Kazil, T. Yamaguchi, J. Zhang, G. Feingold, & R. Wood (2022). Cloud adjustments from large-scale smoke-circulation interactions strongly modulate the southeast Atlantic stratocumulus-to-cumulus transition. *Atmospheric Chemistry and Physics*, 22(18), 12113–12151 doi:10.5194/acp-22-12113-2022

- Editor's Highlight

15 **Diamond, Michael**, J. Gristey, J. Kay, & G. Feingold (2022). Anthropogenic aerosol and cryosphere changes drive Earth's strong but transient clear-sky hemispheric albedo asymmetry. *Communications Earth & Environment*, 3, 206, doi:10.1038/s43247-022-00546-y

14 **Diamond, Michael**, A. Gettelman, M. Lebsock, A. McComiskey, L. Russell, R. Wood, & G. Feingold (2022). To assess marine cloud brightening's technical feasibility, we need to know what to study—and when to stop. *Proceedings of the National Academy of Sciences of the United States of America*, 119(4), e2118379119. doi:10.1073/pnas.2118379119

- Featured on the homepage of Climate.gov and NOAA Research

13 Christensen, Matthew, A. Gettelman, and others including **M. Diamond** (2022). Opportunistic experiments to constrain aerosol effective radiative forcing. *Atmospheric Chemistry and Physics* 22(1), 641–674. doi:10.5194/acp-22-641-2022

12 Bates, Amanda, and others including **M. Diamond** (2021). Global COVID-19 lockdown highlights humans as both threats and custodians of the environment. *Biological Conservation*, 263, 109175. doi:10.1016/j.biocon.2021.109175

11 Pistone, Kristina, R. Wood, P. Zuidema, **M. Diamond**, et al. (2021). Exploring the elevated water vapor signal associated with biomass burning aerosol over the southeast Atlantic Ocean. *Atmospheric Chemistry and Physics*, 21(12), 9643-9668. doi:10.5194/acp-21-9643-2021

10 Chang, Ian, and others including **M. Diamond** (2021). Spatiotemporal heterogeneity of aerosol and cloud properties over the southeast Atlantic: An observational analysis. *Geophysical Research Letters*, 48(7), e2020GL091469. doi:10.1029/2020GL091469

9 Redemann, Jens, R. Wood, P. Zuidema, S. Doherty, B. Luna, S. LeBlanc, **M. Diamond**, Y. Shinozuka, I. Chang, R. Ueyama, L. Pfister, J.-M. Ryoo, et al. (2021). An overview of the ORACLES (ObseRvations of Aerosols above CLouds and their intEractionS) project: Aerosol–cloud–radiation interactions in the southeast Atlantic basin. *Atmospheric Chemistry and Physics*, 21(3), 1507-1563. doi:10.5194/acp-21-1507-2021

8 **Diamond, Michael**, & R. Wood (2020). Limited regional aerosol and cloud microphysical changes despite unprecedented decline in nitrogen oxide pollution during the February 2020 COVID-19 shutdown in China. *Geophysical Research Letters*, 47(17), e2020GL088913. doi:10.1029/2020GL088913

- Within top 10% of most downloaded articles in all AGU journals for 2020

7 **Diamond, Michael**, H. Director, R. Eastman, A. Possner, & R. Wood (2020). Substantial cloud brightening from shipping in subtropical low clouds. *AGU Advances*, 1(1), e2019AV000111. doi:10.1029/2019AV000111

- Editor's Highlight

- Within top 10 most downloaded papers from *AGU Advances* (2019-2020)

6 Pennypacker, Samuel, **M. Diamond**, & R. Wood (2020). Ultra-clean and smoky marine boundary layers frequently occur in the same season over the southeast Atlantic. *Atmospheric Chemistry and Physics*, 20(4), 2341-2351. doi:10.5194/acp-20-2341-2020

- Editor's Highlight

5 LeBlanc, Samuel, and others including **M. Diamond** (2020). Above cloud aerosol optical depth from airborne observations in the southeast Atlantic. *Atmospheric Chemistry and Physics*, 20(3), 1565-1590. doi:10.5194/acp-20-1565-2020

4 **Diamond, Michael**, A. Dobracki, S. Freitag, J. Griswold, A. Heikkila, S. Howell, M. Kacarab, J. Podolske, P. Saide, & R. Wood (2018). Time-dependent entrainment of smoke presents an observational challenge for assessing aerosol–cloud interactions over the southeast Atlantic Ocean. *Atmospheric Chemistry and Physics*, 18(19), 14623-14636. doi:10.5194/acp-18-14623-2018

3 Pickering, Jennifer, **M. Diamond**, S. Goodbred, C. Grall, J. Martin, L. Palamenghi, C. Paola, T. Schwenk, R. Sincavage, & V. Spieß (2018). Impact of glacial-lake paleofloods on valley development since glacial termination II: A conundrum of hydrology and scale for the lowstand Brahmaputra-Jamuna paleovalley system. *The Geological Society of America Bulletin*, 131(1-2), 58-70. doi:10.1130/B31941.1

2 Grosvenor, Daniel, and others including **M. Diamond** (2018). Remote sensing of droplet number concentration in warm clouds: A review of the current state of knowledge and perspectives. *Reviews of Geophysics*, 56(2), 409-453. doi:10.1029/2017RG000593

- Editor's Highlight

1 **Diamond, Michael**, & R. Bennartz (2015). Occurrence and trends of eastern and central Pacific El Niño in different reconstructed SST data sets. *Geophysical Research Letters*, 42(23), 10375-10381, doi:10.1002/2015gl066469

## Government Reports

November 2022 Feingold, Graham, V. Ghate, L. Russell and others including **M. Diamond** (2022). DOE-NOAA Marine Cloud Brightening Workshop Report. *U.S. Department of Energy and U.S. Department of Commerce NOAA*; DOE/SC-0207; NOAA Technical Report OAR ESRL/CSL-1

## Publications in Preparation/Under Review

**Diamond, Michael**, et al. (In prep). Drizzle drives model differences in the Southeastern Atlantic Stratocumulus Transitions with Aerosol-Rain-Radiation interactions (SEA STARR) large eddy simulation intercomparison project. To be submitted to *Atmospheric Chemistry and Physics*.

Eastham, Sebastian, including **M. Diamond** (In prep). Addressable gaps in scientific knowledge that can improve the accuracy of climate intervention assessments. To be submitted to *JAMES*.

Harrison, Cheryl, and others including **M. Diamond** (In prep). A FishMIP protocol for assessing impacts of climate intervention and internal climate variability on fisheries and marine ecosystems. To be submitted to *Earth's Future*.

Roberts, Kelsey, and others including **M. Diamond** (In prep). Towards estimating marine ecosystem impacts of geoengineering. To be submitted to *Earth's Future*.

Yuan, Tianle, H. Song, *L. Boss*, & **M. Diamond** (In prep). Detectable ship-tracks are tips of the iceberg in the aerosol indirect forcing of ship emissions. To be submitted to *Geophysical Research Letters*.

## Invited Presentations and Panels

September 2024 *University of Washington Program on Climate Change Summer Institute: Science and Ethics of Climate Intervention Approaches*. Friday Harbor, WA.

August 2024 *Telluride Science workshop on Aerosols and Clouds: Connections from the Laboratory to the Field to the Globe*. Telluride, CO.

April 2024 *Sharing Sámi Experiences: Indigenous Voices on Climate Intervention Research*. Permanent Mission of Finland to the United Nations, New York, NY.

April 2024 *CERES Science Team Meeting*. NASA Langley Research Center, Hampton, VA.

January 2024 *AMS Presidential Session panel discussion on Climate Intervention: Strategies and Urgency*. Baltimore, MD.

November 2023 *NASA Goddard Space Flight Center Climate and Radiation Laboratory Seminar*. Greenbelt, MD.

October 2023 *Florida State University Dept. of Earth, Ocean & Atmospheric Science*. Tallahassee, FL.

September 2023 *NCAR Climate & Global Dynamics Seminar*. Boulder, CO.

September 2023 *University of Utah Department of Atmospheric Sciences*. Salt Lake City, UT.

June 2023 *National Academies of Sciences, Engineering, & Medicine: Climate Intervention in an Earth Systems Science Framework Workshop*. Remote.

March 2023 *AGU Atmospheric Sciences Early Career Seminar*. Remote.

January 2023 *Colorado State University Dept. of Atmospheric Science & Cooperative Institute for Research in the Atmosphere*. Fort Collins, CO.

December 2022 *AGU Fall Meeting Session A046 "Convection Processes and Their Environmental and Aerosol Interactions: Theory, Observation, and Modeling"*. Chicago, IL.

November 2022 *Goethe University Institute for Atmos. and Environmental Sciences*. Frankfurt, Germany.

November 2022 *Scripps Institution of Oceanography Climate Journal Club*. La Jolla, CA.

August 2022 *MEERTALK: Learn the Science, Take Action*. Remote.

July 2022 *Gordon Research Conference on Climate Engineering*. Newry, ME.

April 2022 *Purdue University Dept. of Earth, Atmos., & Planetary Sciences*. West Lafayette, IN.

March 2022 *University of Miami College of Engineering & Rosenstiel School of Marine and Atmospheric Science*. Miami, FL.

February 2022 *Florida State University Dept. of Earth, Ocean & Atmospheric Science*. Tallahassee, FL.

September 2021 *Vanderbilt University Dept. of Earth & Environmental Sciences*. Nashville, TN.

May 2021 *NASA Ames Earth Science Division*. Mountain View, CA.

December 2019 *Marine Cloud Brightening Scientific and Technical Research Meeting*. San Francisco, CA.

June 2019 *NASA Goddard Institute for Space Studies*. New York, NY.

May 2019 *Stanford Climate Dynamics Seminar*. Stanford, CA.

## Contributed Oral Presentations

May 2024 *ACPC Workshop*. London, UK.

January 2024 *104th Annual Meeting of the American Meteorological Society*. Baltimore, MD.
July 2023 *CFMIP-GASS Conf. on Clouds, Precip., Circulation & Climate Sensitivity*. Paris, France.
July 2023 *13th GeoMIP Meeting*. Exeter, UK.
May 2023 *TRacking Aerosol Convection interactions ExpeRiment/ACPC Workshop*. Houston, TX.
January 2023 *103rd Annual Meeting of the American Meteorological Society*. Denver, CO.
October 2022 *FishMIP Workshop*. St. John's, Newfoundland and Labrador, Canada.
June 2022 *Gordon Research Seminar on Climate Engineering*. Newry, ME.
January 2022 *102nd Annual Meeting of the American Meteorological Society*. Remote.
December 2021 *American Geophysical Union Fall Meeting*. New Orleans, LA.
May 2021 *Aerosols, Clouds, Precipitation and Climate (ACPC) Workshop*. Remote.
June 2020 *DOE ARM/ASR Principal Investigators Meeting*. Remote.
May 2020 *International SE Atlantic Workshop/ORACLES Science Team Meeting*. Remote.
May 2020 *UW Program on Climate Change Spring Symposium Series*. Remote.
April 2020 *Aerosols, Clouds, Precipitation and Climate (ACPC)* Workshop. Remote.
January 2020 *100th Annual Meeting of the American Meteorological Society*. Boston, MA.
December 2019 *American Geophysical Union Centennial Fall Meeting*. San Francisco, CA.
June 2019 *UW Center for Environmental Politics Duck Family Retreat*. Whidbey Island, WA.
May 2019 *ATM S 523 Seminar in Atmospheric Physics and Chemistry*. Seattle, WA.
May 2019 *ORACLES Science Team Meeting 2019*. Miami, FL.
April 2019 *Aerosols, Clouds, Precipitation and Climate (ACPC) Workshop*. Nanjing, China.
April 2019 *AEROCLO-sA/CLARIFY/LASIC/ORACLES Joint Meeting*. Paris, France.
June 2018 *ORACLES Science Team Meeting 2018*. NASA Ames Research Center, CA.
April 2018 *European Geosciences Union General Assembly 2018*. Vienna, Austria.
June 2017 *ORACLES Science Team Meeting 2017*. NASA Ames Research Center, CA.
January 2017 *97th Annual Meeting of the American Meteorological Society*. Seattle, WA.
July 2016 *XVII International Conference on Clouds and Precipitation*. Manchester, UK.

## Selected Poster Presentations

August 2020 Limited Regional Aerosol and Cloud Microphysical Changes Despite Unprecedented Decline in Nitrogen Oxide Pollution During the February 2020 COVID-19 Shutdown in China. *World Meteorological Organization Symposium on Climatological, Meteorological and Environmental Factors in the COVID-19 Pandemic*. Remote.

September 2019 Did Eunice Newton Foote discover the greenhouse effect? *UW Program on Climate Change Summer Institute*. Friday Harbor Laboratories, San Juan Island, WA.

## Leadership & Service Activities

2024–2026 **Co-Chair**, *Gordon Research Conference on Climate Engineering*

2024–2025 **Lead Program Chair**, *17th Symposium on Aerosol-Cloud-Climate Interactions*, American Meteorological Society Annual Meeting

2024 **Review Panelist**, *Advanced Research + Invention Agency*, United Kingdom
- Exploring Climate Cooling Programme

2023–2024 **Scientific Advisory Board Member**, *Arctic Sea Ice Repair Roadmap*, Ocean Visions

2024– **Faculty Advisor**, *North Florida Chapter of the American Meteorological Society and National Weather Association*

2024 **Review Panelist**, *Atmospheric System Research*, Department of Energy

2023–2025 **Co-Convener**, *"Cloud and precipitation responses to aerosol pollution, weather modification, and climate intervention" session*, Conference on Planned and Inadvertent Weather Modification & Symposium on Aerosol-Cloud-Climate Interactions, AMS Annual Meeting

2022–2025 **Co-Convener**, *"Mesoscale cloud organization: the role of meteorology and aerosols" session*, Symposium on Aerosol-Cloud-Climate Interactions, AMS Annual Meeting

2024 **Co-Convener**, *"Hemispheric (A)symmetries in Earth's Climate" session*, AGU

2023 **Science Advisor**, *Earth's Radiation Budget Science Meeting*, NOAA

2023–2029 **Member**, *Committee on Atmospheric Chemistry*, American Meteorological Society Scientific and Technological Activities Commission

2023–2024 **Program Chair**, *16th Symposium on Aerosol-Cloud-Climate Interactions*, American Meteorological Society Annual Meeting

2023 **Member**, *Marine Cloud Brightening Task Team*, Geoengineering Modelling Research Consortium

2023– **Member**, *Graduate Admissions Committee*, FSU Department of Earth, Ocean, & Atmospheric Science, Meteorology Curricular Group

2022–2024 **Vice-Chair**, *Gordon Research Conference on Climate Engineering*

2022 **Review Panelist**, *Earth's Radiation Budget Inaugural External Grant Competition*, NOAA Climate Program Office

2021 **Co-Chair**, *"Large Ensemble Climate Model Simulations as Tools for Exploring Natural Variability, Change Signals, and Impacts" oral session*, AGU Fall Meeting

2021–2022 **Lead Convener**, *"Smoke-Cloud-Radiation-Climate Interactions" oral and poster sessions*, 13th and 14th Symposia on Aerosol-Cloud-Climate Interactions, AMS Annual Meeting

2020 **Lead Convener**, *"Boundary Layer Clouds and Climate Change" oral, poster, and e-Lightning sessions*, AGU Fall Meeting

2018–2020 **Executive Senator**, *UW Graduate and Professional Student Senate*

2018 **Co-Chair**, *Graduate Climate Conference*

2018– **Peer Reviewer**, *Journals and grant-making agencies including Advanced Research + Invention Agency (UK), AGU Books, Alfred P. Sloan Foundation, Atmospheric Chemistry & Physics, Climate Policy, Climatic Change, Communications Earth & Environment, Dept. of Energy Atmospheric System Research, Earth's Future, Geophysical Research Letters, Geoscientific Model Development, Israel Science Foundation, Journal of Climate, Journal of Geophysical Research: Atmospheres, Journal of Geophysical Research: Machine Learning and Computation, National Science Foundation, Nature, Nature Geoscience, NOAA Climate Program Office, Scientific Reports, and Swiss National Science Foundation*

## Public-facing Writing

June 21, 2024 Amid deadly heat, why is critical climate research being halted?. *CNN*. Co-authored with Anna Bershteyn.

September 27, 2022 Cloud adjustments from large-scale smoke–circulation interactions affect marine cloud transitions. *US Department of Energy ASR Research Highlights*.

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| September 12, 2022 | The rise and fall of Earth's strong clear-sky hemispheric albedo symmetry: What it is and why it matters. *Nature Portfolio Earth and Environment Community: Behind the Paper*. |
| August 28, 2021 | Bedrooms Are For People: A step toward less emissions. *Boulder Daily Camera*. |
| February 7, 2020 | Testimony in support of SHB 2311: Amending state greenhouse gas emission limits for consistency with the most recent assessment of climate change science. *Submitted to the WA House Appropriations Committee on behalf of the UW Graduate and Professional Student Senate Legislative Advisory Board*. |
| July 15, 2019 | How do you solve a problem like (teaching) climate change? Through problem-based learning! *UW Program on Climate Change News & Blog*. |
| October 18, 2018 | Chasing clouds and smoke over the southeast Atlantic. *NASA Earth Expeditions Blog*. |
| October 15, 2018 | Fires in Africa affect clouds and climate over the Atlantic Ocean. *UW Program on Climate Change Research Highlights*. |
| March 21, 2018 | Drizzle drives seasonal aerosol changes in the northeast Pacific. *UW Program on Climate Change Research Highlights*. |
| March 2, 2018 | Building Relationships to Promote Science-Based Decision Making. *Union of Concerned Scientists "The Equation" Blog*. Co-authored with Taryn Black & Emma Kahle. |
| December 1, 2017 | Experiencing the Antarctic through art: PCC grads go on a field trip. *UW Program on Climate Change News & Blog*. |
| September 13, 2017 | Up in Smoke (and Clouds) over the Southeast Atlantic. *NASA Earth Expeditions Blog*. |
| September 7, 2016 | ORACLES in Flight. *NASA Earth Observatory Notes from the Field Blog*. |

## Selected Media

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| November 14, 2024 | *Mongabay*: "Shipping emissions reduction sheds light on marine cloud geoengineering" by Claire Asher |
| October 8, 2024 | *Politifact*: "Politifact Truth-O-Meter Pants on Fire! rating for Instragram post "Video shows 'geoengineering happening' as Hurricane Milton approaches Florida."" Loreben Tuquero |
| September 30, 2024 | *Persuasion*: "The Next Climate Conversation Is About Marine Clouds" by Quico Toro |
| August 12, 2024 | *Mongabay*: "Cloud brightening over oceans may stave off climate change, but with risk" by Sean Mowbray |
| July 18, 2024 | *Grist*: "How cleaning up shipping cut pollution — and warmed the planet" by Syris Valentine |
| June 26, 2024 | *Washington Post*: "We've been accidentally cooling the planet — and it's about to stop" by Shannon Osaka |
| June 3, 2024 | *ClimateWire/E&E News by Politico*: "Shipping rules took aim at pollution. Did they backfire on climate?" by Chelsea Harvey |
| May 30, 2024 | *New Scientist*: "Cleaner ship emissions may warm the planet far faster than expected" by James Dinneen |
| May 30, 2024 | *elDiario.es*: "Sí, reducir el azufre emitido por los barcos aumentó el calentamiento, pero no basta para explicar las temperaturas récord" by Antonio Martínez Ron |
| April 11, 2024 | *MIT Technology Review*: "The inadvertent geoengineering experiment that the world is now shutting off" by James Temple |

February 14, 2024 *The Wall Street Journal*: "Scientists Resort to Once-Unthinkable Solutions to Cool the Planet" by Eric Niiler

January 26, 2024 *CNN*: "The world successfully tackled a dangerous pollutant. But did it accidentally warm the planet in the process?" by Laura Paddison

January 17, 2024 *Florida State University News*: "Changing the sky: FSU researchers examine how aerosols from ships affect cloud formation, climate change" by Bill Wellock

January 9, 2024 *Science*: "2023 was the hottest year on record—and even hotter than expected" by Paul Voosen doi:10.1126/science.ztj60l9

November 3, 2023 *CBC*: "Scientists warn Earth warming faster than expected — due to reduction in ship pollution" by Nicole Mortillaro

November 2, 2023 *Reuters*: "Climate's 'Catch-22': Cutting pollution heats up the planet" by Jake Spring and David Stanway

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