Jacqueline M. Nugent

Department of Atmospheric Science
University of Wyoming
Dept. 3038
1000 E University Ave
Laramie, WY 82071

jnugent2@uwyo.edu
(630) 261-5026
jacnugent.github.io
Laramie, WY

EDUCATION

University of Washington, Seattle, WA

2023	**Ph.D. in atmospheric sciences**, data science option Dissertation: Overshooting Convection, Cirrus, and the Cold Point Tropopause in Global Storm-Resolving Models and Satellite Observations Advisor: Dr. Chris Bretherton
2021	**M.S. in atmospheric sciences**

University of Oklahoma, Norman, OK

2018	**B.S. in meteorology**, *summa cum laude*
2018	**B.A. in mathematics**, with special distinction

RESEARCH EXPERIENCE

2024 – Present	**University of Wyoming Dept. of Atmospheric Science**, Laramie, WY **Postdoctoral Research Associate** Advisor: Dr. Daniel McCoy
2023	**University of Washington Dept. of Atmospheric Sciences**, Seattle, WA **Interim Postdoctoral Scholar** Advisor: Dr. Peter Blossey
2018 – 2023	**University of Washington Dept. of Atmospheric Sciences**, Seattle, WA **Research Assistant** Advisor: Dr. Chris Bretherton
2021	**Vulcan, Inc.** (now at Allen Institute for AI), Seattle, WA **Machine Learning Intern** Advisors: Dr. Andre Perkins and Dr. Anna Kwa
2017 – 2018	**University of Oklahoma School of Meteorology**, Norman, OK **Student Research Assistant** Advisor: Dr. Michael Biggerstaff
2016	**NOAA Earth System Research Laboratory**, Boulder, CO **Hollings Scholar** Advisor: Dr. Michael Fiorino

PUBLICATIONS

Submitted

1. Jones, D. B., Brown, H. Y., **Nugent, J. M.**, Mikkelsen, A., Song, C., Zhang, D., Burrows, S. M., Gordon, H., Kirby, A., McCoy, D. T. (2025) Surface observations from Atmospheric Radiation Measurement sites constrain the anthropogenic contribution to cloud droplet number. *ESS Open Archive*. doi:10.22541/essoar.175087280.06595777/v1 (Under review at *Geophysical Research Letters*)

2. Wu, E., Rebassoo, F. O., Paul, P., Proistosescu, C., **Nugent, J. M.**, McCoy, D. T., Caldwell, P. M., Bretherton, C. S. (2025) Applying the ACE2 Emulator to SST Green's Functions for the E3SMv3 Climate Model. *arXiv*. doi:10.48550/arXiv.2505.08742 (Under review at *JGR: Machine Learning and Computation*)

3. Aerenson, T., McCoy, D., Elsaesser, G., Wu, J., **Nugent, J.**, Brown, H., Mikkelsen, A., Zelinka, M., Burrows, S. (2025) Are we simulating clouds at the wrong time of day? (Under review at *Science Advances*)

4. **Nugent, J. M.**, Brown, H., Kirby, A., McCoy, D. T., et al. (2025). Overview of the Nephele Perturbed Parameter Ensemble for aerosol-cloud interactions in E3SMv3. *ESS Open Archive*. doi:10.22541/essoar.174907165.57104591/v1 (Under review at *Journal of Advances in Modeling Earth Systems*)

Peer-Reviewed

5. **Nugent, J. M.**, Bretherton, C. S., & Blossey, P. N. (2025). What sets the tropical cold point in GSRMs during boreal winter? Overshooting convection vs. cirrus lofting. *Earth and Space Science*, 12, e2024EA003887. doi:10.1029/2024EA003887

6. Perkins, W. A., Brenowitz, N. D., Bretherton, C. S., & **Nugent, J. M.** (2024). Emulation of Cloud Microphysics in a Climate Model. *Journal of Advances in Modeling Earth Systems*, 16(4), e2023MS003851. doi:10.1029/2023MS003851

7. **Nugent, J. M.**, & Bretherton, C. S. (2023). Tropical Convection Overshoots the Cold Point Tropopause Nearly as Often Over Warm Oceans as Over Land. *Geophysical Research Letters*, 50(21), e2023GL105083. doi:10.1029/2023GL105083

8. **Nugent, J. M.**, Turbeville, S. M., Bretherton, C. S., Blossey, P. N., & Ackerman, T. P. (2022). Tropical cirrus in global storm-resolving models: 1. Role of deep convection. *Earth and Space Science*, 9, e2021EA001965. doi:10.1029/2021EA001965

9. Turbeville, S. M., **Nugent, J. M.**, Ackerman, T. P., Bretherton, C. S., & Blossey, P. N. (2022). Tropical cirrus in global storm-resolving models: 2. Cirrus life cycle and top-of-atmosphere radiative fluxes. *Earth and Space Science*, 9, e2021EA001978. doi:10.1029/2021EA001978

SOFTWARE DEVELOPMENT

Nugent, J. M. **"PROCEED-ESM/PROCEED-PPE: Version 0."** Zenodo, October 2024. Available from https://github.com/PROCEED-ESM/PROCEED-PPE. doi:10.5281/zenodo.13887194

(Software to develop perturbed parameter ensembles (PPEs) in version 3 of the DOE E3SM model using an adaptable framework. Parameters can be varied across multiple components of the model physics to design a PPE suited to a particular research question.)

HONORS AND AWARDS

2020	NSF Graduate Research Fellowship Program Honorable Mention
2018	James Holton Endowed Graduate Support Fund, University of Washington
2018	Phi Beta Kappa, Alpha of Oklahoma Chapter
2017	American Meteorological Society Senior Named Scholarship: Liv and Walt Lyons Scholarship
2017	Kelvin and Lisa Droegemeier Endowed Scholarship for Excellence in Meteorology, University of Oklahoma
2016	Ernest F. Hollings Undergraduate Scholarship Program, National Oceanic and Atmospheric Administration
2015	Best Poster Award, University of Oklahoma First Year Research Experience
2014	American Meteorological Society Freshman Undergraduate Scholarship

TEACHING EXPERIENCE

University of Wyoming Department of Atmospheric Science

Atmospheric Science Problems: Cirrus Clouds and Ice Microphysics, **Instructor of Record** (Scheduled for Fall 2025)

University of Washington Department of Atmospheric Sciences

Current Weather Analysis, **Instructor of Record** (Spring 2021, online; Fall 2022, in-person)
Weather, **Teaching Assistant** (Winter 2020)

PROPOSAL PREPARATION

Assisted in the preparation of Department of Energy Earth and Environmental Systems Sciences Division Proposal: Improving E3SM by ARM-derived Observational Constraints of Convective Clouds and Precipitation in the Southeastern U.S. (currently under consideration; 3 years, **co-investigator**)

Assisted in the preparation of Department of Energy Established Program to Stimulate Competitive Research (EPSCoR) Renewal Proposal: Creating the framework for the next generation Energy Exascale Earth System Model (E3SM) at PROCEED (Perturbed physics ensemble Regression Optimization Center for ESM Evaluation and Development) (currently under consideration; 2 years, **co-investigator**)

PRESENTATIONS

2025	**Joint Atmospheric Radiation Measurement (ARM) User Facility and Atmospheric System Research (ASR) Principal Investigators Meeting**, Rockville, MD (Poster) PROCEEDing from the surface to the climate
2025	**American Meteorological Society Annual Meeting**, New Orleans, LA (Talk) Changes to the Brewer-Dobson Circulation and cold point tropopause in perturbed-climate global storm-resolving model simulations
2025	**American Meteorological Society Annual Meeting**, New Orleans, LA (Talk) Constraining aerosol-cloud interactions in an E3SMv3 perturbed parameter ensemble using ARM observations
2024	**Composition Air Quality Climate inTeractions Initiative (CACTI) Workshop**, San Diego, CA (Talk) Evaluating Aerosol-Cloud Interactions in E3SMv3 Using a Perturbed Parameter Ensemble
2024	**DOE Earth and Environmental Systems Modeling (EESM) Principal Investigators Meeting**, Rockville, MD (Talk) Evaluating Aerosol-Cloud Interactions in E3SMv3 Using a Perturbed Parameter Ensemble
2023	**American Geophysical Union Fall Meeting**, San Francisco, CA (Talk) Can Global Storm-Resolving Models Reproduce Observed Cold Point-Overshooting Convection?
2023	**Joint CFMIP-GASS Meeting**, Paris, France (Poster) Tropical tropopause-penetrating convection and cold point cirrus: satellite observations vs. global storm-resolving models
2022	**American Geophysical Union Fall Meeting**, Chicago, IL (Talk) Evaluating Overshooting Convection in the DYAMOND Global Storm-Resolving Models Using Outgoing Longwave Radiation (Poster) The Cold Point Tropopause in DYAMOND GSRMs: Overshooting Convection vs. Cirrus Lofting
2022	**3rd Pan-GASS Meeting: Understanding and Modeling Atmospheric Processes**, Monterey, CA (Poster) Overshooting Convection and Tropical Cirrus in the DYAMOND Global Storm-Resolving Models
2022	**Cloud Feedback Model Intercomparison Project (CFMIP) Meeting**, Seattle, WA (Talk) Overshooting Convection and Tropical Cirrus in the DYAMOND Global Storm-Resolving Models
2021	**American Geophysical Union Fall Meeting**, Virtual (Poster) Tropical Cirrus in Global Storm-Resolving Models: The Role of Deep Convection
2020	**American Geophysical Union Fall Meeting**, Virtual (Poster) The Influence of Microphysics and Convection over Land on TTL Cirrus in the DYAMOND Simulations

2020	**6th ENES High Performance Computing Workshop**, Virtual (Talk) Evaluating Convection and Tropical Tropopause Layer Cirrus in the DYAMOND Simulations

EXTERNAL SERVICE

2023 – Present	**Referee** for the following journals: *Geophysical Research Letters* *npj Climate & Atmospheric Science* *Journal of Advances in Modeling Earth Systems* *JGR: Atmospheres* *Advances in Space Research* *Earth and Space Science*
2024 – 2025	**Program Co-Chair**, American Meteorological Society Second Symposium on Cloud Physics

MENTORING EXPERIENCE

2018 – 2023	**Mentor, Graduate-Undergraduate Mentoring Program**, University of Washington Dept. of Atmospheric Sciences
2020	**Co-Supervisor, Cooperative Institute for Climate, Ocean, and Ecosystem Studies (CICOES) Undergraduate Research Internship**, Virtual

COMMUNITY AND DEPARTMENT INVOLVEMENT

2024 – Present	Member, Wyomingites in Math, Science and Engineering (WiMSE), University of Wyoming
2022 – 2023	Member, Diversity and Inclusion Group, University of Washington (UW) Atmospheric Sciences
2020 – 2023	Coordinator, Coding Club, UW Atmospheric Sciences
2020 – 2023	Volunteer, Outreach Program, UW Atmospheric Sciences
2018 – 2023	Coordinator, Atmos Women's Group, UW Atmospheric Sciences
2021	Assistant Event Supervisor, Science Olympiad National Tournament

HACKATHON PARTICIPATION

2024	**Pythia Cook-off 2024**, Virtual Created a Python Cookbook for regridding and visualizing geoscientific data (projectpythia.org/esgf-cookbook/notebooks/ex-regrid-plot.html).

2019	**Coupled Model Intercomparison Project Phase 6 (CMIP6) Hackathon**, University of Washington Branch, Seattle, WA Created a publicly available outreach tool to allow policymakers and other researchers to easily access and visualize CMIP6 data for a specified location (github.com/czarakas/local_climate_change_tool).
2019	**Second Annual DYAMOND-ESiWACE Hackathon**, Mainz, Germany

PROFESSIONAL MEMBERSHIP

American Geophysical Union
American Meteorological Society
Earth Science Women's Network