

Curriculum Vitae - Jacob D. Carstens

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Education

7/2022 **Ph.D.**, Florida State University, Meteorology.
5/2019 **M.S.**, Florida State University, Meteorology.
5/2017 **B.S.**, Florida State University, Meteorology.

Experience

8/2024-Present **Assistant Professor** - Department of Atmospheric Sciences, University of North Dakota (UND).
9/2023-1/2025 **Consultant** - Supporting Florida Building Resilience Against Climate Effects ([FL BRACE](#)) Program.
8/2022-7/2024 **Postdoctoral Scholar** - Department of Meteorology and Atmospheric Science, Pennsylvania State University (PSU).
5/2021-8/2021 **Researcher** - Department of Geography, Florida State University (FSU). Supported FL BRACE Program.
8/2017-7/2022 **Graduate Research Assistant** - Department of Earth, Ocean, and Atmospheric Science, FSU. (Graduate Teaching Assistant in 2020-2021)
10/2015-5/2017 **Undergraduate Research Assistant** - Center for Ocean-Atmospheric Prediction Studies (COAPS). Responsible for quality control of research vessel sea surface temperature and wind data. Also produced an Undergraduate Honors Thesis.

Awards and Honors

Best Academic Advisor - UND Student Chapter of the American Meteorological Society (AMS, 2026)

Above and Beyond Award for Professionalism - UND John D. Odegard School of Aerospace Sciences (JDOSAS, December 2025, for coordination of Seminar series)

Above and Beyond Award for Entrepreneurship, Resilience, and Professionalism - UND JDOSAS (August 2025, for taking students to a national broadcast meteorology conference)

Best Junior/Senior Professor - UND AMS (2025)

7-11 Most Available Professor Award - UND AMS (2025, 2026)

Charles Hosler Diversity, Equity, and Inclusion Postdoctoral Award - PSU College of Earth and Mineral Sciences (2024)

Early Career Leadership Academy - AMS (2024)

Max A. Eaton Student Prize - Awarded for oral presentation at the 35th Conference on Hurricanes and Tropical Meteorology (2022)

James and Sheila O'Brien Graduate Fellowship - FSU Department of Earth, Ocean, and Atmospheric Science (2022)

Student Travel Award - Grant awarded for research presented at the 34th Conference on Hurricanes and Tropical Meteorology (2021)

Best Lightning Talk - Midwest Student Conference on Atmospheric Research (2020)

Local Chapter of the Year - AMS (2020, President of North Florida Chapter)

Chi Epsilon Pi Meteorology Honor Society Inductee - FSU Chapter (2017)

Local Chapter Honor Roll - AMS (2017, Vice President of North Florida Chapter)

Orville Family Endowed Scholarship - AMS (2016)

Member of the Year - North Florida Chapter of the AMS/NWA (2016)

University Freshman Scholarship - FSU (2014-2017)

Florida Academic Scholars Award - Florida Bright Futures Program (2014-2017)

Publications

1. Trujillo-Falcón, J. E., **J. D. Carstens**, E. Grow Cei, V. Alonso, J. Martucci, E. C. Wolff, & R. O. M. Gomes (2025). The emergence of digital meteorology: Certification, standards, and education for an evolving field. *Bulletin of the American Meteorological Society*, **106**, E2179-E2186, [doi:10.1175/BAMS-D-24-0235.1](https://doi.org/10.1175/BAMS-D-24-0235.1).
2. **Carstens, J. D.**, C. K. Uejio, E. Powell, J. Jung, & S. Zonka (2025). Tropical cyclones and climate change: An overview for the public health community. *Environmental Research*, **285**, 122149, [doi:10.1016/j.envres.2025.122149](https://doi.org/10.1016/j.envres.2025.122149).
3. Kopelman, M. V., A. A. Wing, & **J. D. Carstens** (2024). Spatial variability of dropsonde-derived moist static energy in North Atlantic tropical cyclones. *Geophysical Research Letters*, **51**, e2024GL111086, [doi:10.1029/2024GL111086](https://doi.org/10.1029/2024GL111086).
4. **Carstens, J. D.**, A. C. Didlake, Jr., & C. M. Zarzycki (2024). Tropical cyclone wind shear-relative asymmetry in reanalyses. *Journal of Climate*, **37**, 5793-5816, [doi:10.1175/JCLI-D-23-0628.1](https://doi.org/10.1175/JCLI-D-23-0628.1).
5. **Carstens, J. D.**, & A. A. Wing (2023). Regimes of convective self-aggregation in convection-permitting beta-plane simulations. *Journal of the Atmospheric Sciences*, **80**, 2187-2205, [doi:10.1175/JAS-D-22-0222.1](https://doi.org/10.1175/JAS-D-22-0222.1).
6. **Carstens, J. D.**, & A. A. Wing (2022). Simulating dropsondes to assess moist static energy variability in tropical cyclones. *Geophysical Research Letters*, **49**, e2022GL099101, [doi:10.1029/2022GL099101](https://doi.org/10.1029/2022GL099101).
7. **Carstens, J. D.**, & A. A. Wing (2022). A spectrum of convective self-aggregation based on background rotation. *Journal of Advances in Modeling Earth Systems*, **14**, e2021MS002860, [doi:10.1029/2021MS002860](https://doi.org/10.1029/2021MS002860).
8. **Carstens, J. D.**, & A. A. Wing (2020). Tropical cyclogenesis from self-aggregated convection in numerical simulations of rotating radiative-convective equilibrium. *Journal of Advances in Modeling Earth Systems*, **12**, e2019MS002020, [doi:10.1029/2019MS002020](https://doi.org/10.1029/2019MS002020).
9. Kopelman, M. V., A. A. Wing, & **J. D. Carstens** (in review). Observational analysis of radiative and surface enthalpy flux feedbacks in North Atlantic tropical cyclones. *Monthly Weather Review*.
10. Corrales, A. L., J. E. Trujillo-Falcón, Z. N. Caryl, S. T. Halvorson, J. A. Shumaker, E. De Jesús-Otero, R. O. M. Gomes, **J. D. Carstens**, & Z. Wang (in review). When the grid goes down, neighbors show up: Social capital as informal infrastructure during Hurricane Helene in western North Carolina. *Natural Hazards Review*.

11. Walters, S. E., & **J. D. Carstens** (in prep). A global climatology of integrated kinetic energy in tropical cyclones. *Monthly Weather Review*.

Theses and Non-Peer Reviewed Articles

1. **Carstens, J. D.** (2022). The sensitivity of convective self-aggregation and tropical cyclogenesis to planetary rotation. [Dissertation at FSU](#).
2. **Carstens, J. D.**, C. K. Uejio, & A. A. Wing (2021). Understanding past, present, and future tropical cyclone activity. [Available on Florida Climate Center website](#).
3. **Carstens, J. D.** (2019). Tropical cyclogenesis from self-aggregated convection in numerical simulations of rotating radiative-convective equilibrium. [Master's thesis at FSU](#).
4. **Carstens, J. D.** (2017). North Atlantic and Northeast Pacific tropical cyclone intensity comparison using integrated kinetic energy. [Undergraduate honors thesis at FSU](#).

Grants and Proposals

Selected (in descending order of funding start date)

1. Diagnosing ventilation of environmental air into tropical cyclones using satellite observations. Early Career Investigator Program, NASA (2027-2029, **PI, \$294,899**)
2. Updating a standardized dropsonde dataset for tropical cyclone research and applications. Student Fellowships, North Dakota Space Grant Consortium (2026, **advised Gabriella Tempia on application, \$3,300**)
3. Data-driven curriculum development with industry partners for ATSC 456: Introduction to Professional Meteorology. Summer Instructional Enhancement Grants, John D. Odegard School of Aerospace Sciences, UND (2026, **PI, \$4,000**)
4. Using aircraft observations to improve tropical cyclone tornado predictability before landfall. Research Seed Grants, UND Aerospace. (2025-2026, **PI, \$10,000**)
5. Asymmetric tropical cyclone processes in high-resolution climate models. Modeling, Analysis, Predictions, and Projections, NOAA Climate Program Office. (2024-2027, **Co-I, led proposal preparation but was unable to serve as PI due to status as postdoc at submission, \$412,183**)

Pending

1. **Carstens, J.D.** Pre-landfall characteristics influencing tornado production by tropical cyclones. Faculty Early Career Development Program, NSF (2027-2032, **PI, \$544,897**)

Not Funded (in descending order of proposed funding start date)

1. NASA Snowstorm Data Pathways: Activating community learning, experience, and contribution through undergraduate internships and public engagement in the Upper Midwest. Science Activation Program, NASA (2026-2031, **Co-I, \$3,237,805, not funded**)
2. Using TROPICS high-frequency thermodynamic retrievals to diagnose radiation feedback in tropical cyclones. TROPICS Science and Applications Team, NASA (2026-2029, **PI, \$277,461, not funded**)
3. Investigating the coupling of tropical convective storm processes with the environment using high-frequency TROPICS observations. TROPICS Science and Applications Team, NASA (2026-2029, **Co-I, Step 1 proposal not recommended to proceed**)
4. Diagnosing radiative feedback on sheared tropical cyclones with satellite observations. Student Fellowships, North Dakota Space Grant Consortium (2026, **advised Stephen Kesti on application, \$4,000**)
5. Tropical cyclone integrated kinetic energy using satellite synthetic aperture radar and high-resolution scatterometer observations. Research Seed Grants, North Dakota NASA EPSCoR (2025-2026, **PI, \$55,145, not funded**)

Presentations

Presentations at Conferences and Symposia Outside of the Department

1. **Carstens, J. D.**, D. Margolin, A. Praino, K. Savoie, & C. Finley (2027). Developing a three-credit professional meteorology course for undergraduate and graduate students. Oral presentation at the 107th AMS Annual Meeting, Denver, CO.
2. **Carstens, J. D.**, C. J. Hunter, J. Done, A. C. Didlake, Jr., C. M. Zarzycki, & D. Fu (2027). Tropical cyclone climatology and change in the MESACLIP ensemble. Oral presentation at the 107th AMS Annual Meeting, Denver, CO.
3. Walters, S. E., & **J. D. Carstens** (2027). Coverage and verification statistics of tropical cyclone wind fields by synthetic aperture radar. Poster presentation at the 107th AMS Annual Meeting, Denver, CO.
4. McGarry, Jr., M. A., & **J. D. Carstens** (2027). Tropical cyclones and vertical wind shear interactions in the high-resolution ECMWF climate model. Poster presentation at the 107th AMS Annual Meeting, Denver, CO.

5. Hunter, C. J., **J. D. Carstens**, J. Done, C. M. Zarzycki, A. C. Didlake Jr., & D. Fu (2027). The effect of vertical wind shear on tropical cyclones in a changing climate. Poster presentation at the 107th AMS Annual Meeting, Denver, CO.
6. Kesti, S. L., & **J. D. Carstens** (2027). Satellite analysis of radiative feedback in sheared tropical cyclones. Poster presentation at the 107th AMS Annual Meeting, Denver, CO.
7. Fuchs, S., S. E. Walters, & **J. D. Carstens** (2027). Evaluating UHR ASCAT for tropical cyclone intensity and wind field structure. Poster presentation at the 107th AMS Annual Meeting, Denver, CO.
8. Solseth, C. R., **J. D. Carstens**, M. Schmitt, & K. Stears (2027). Meteorological influences on mule deer migratory patterns in Wyoming. Poster presentation at the 107th AMS Annual Meeting, Denver, CO.
9. Corrales, A. L., J. E. Trujillo-Falcón, Z. Wang, T. Galarneau, & **J. D. Carstens** (2026). Finding the Rain Ahead: Toward an Objective Identification and Climatology of Tropical-Cyclone Predecessor Rain Events from Satellite Precipitation and Reanalysis. Abstract submitted to the AGU Fall Meeting, San Francisco, CA.
10. **Carstens, J. D.**, C. J. Hunter, J. Done, A. C. Didlake, Jr., C. M. Zarzycki, & D. Fu (2026). Tropical cyclone climatology and response to vertical wind shear in MESACLIP. Poster presentation at the Broadening Earth System Research Across Scales with High-Resolution Modeling Workshop, Boulder, CO.
11. **Carstens, J. D.** (2026). Tropical cyclone interactions with vertical wind shear in historical and future climates using the HighResMIP and MESACLIP ensembles. Oral presentation at the 37th Conference on Hurricanes and Tropical Meteorology, San Diego, CA.
12. McGarry, Jr., M. A., & **J. D. Carstens** (2026). Evaluating tropical cyclone-vertical wind shear interactions in the high-resolution ECMWF climate model. Poster presentation at the 37th Conf. on Hurricanes and Tropical Meteorology, San Diego, CA.
13. Thrower, K. M., & **J. D. Carstens** (2026). Atlantic tropical cyclogenesis in the IPSL high-resolution climate model. Poster presentation at the 37th Conf. on Hurricanes and Tropical Meteorology, San Diego, CA.
14. Walters, S. E., & **J. D. Carstens** (2026). A global climatology of tropical cyclone integrated kinetic energy using best track and synthetic aperture radar observations. Oral presentation at the 37th Conf. on Hurricanes and Tropical Meteorology, San Diego, CA.
15. Corrales, A. L., J. E. Trujillo-Falcón, Z. Wang, & **J. D. Carstens** (2026). Understanding risk perceptions of English and Spanish speakers in Asheville, North Carolina during

Hurricane Helene. Oral presentation at the 37th Conf. on Hurricanes and Tropical Meteorology, San Diego, CA.

16. Kjos, K. D., M. Etten-Bohm, **J. D. Carstens**, & E. Suazo-Flores (2026). Impact of active learning implementation on student performance in introductory atmospheric science laboratory classrooms. Poster presentation at the UND Graduate Research Achievement Day, Grand Forks, ND.
17. **Carstens, J. D.**, M. A. McGarry, Jr., C. J. Hunter, K. M. Thrower, A. C. Didlake, Jr., & C. M. Zarzycki (2026). Tropical cyclone response to vertical wind shear in high-resolution climate model ensembles. Poster presentation at the 106th AMS Annual Meeting, Houston, TX.
18. **Carstens, J. D.** (2026). Tomorrow's communicators today: Innovations in broadcast and digital meteorology education at the University of North Dakota. Oral presentation at the 106th AMS Annual Meeting, Houston, TX.
19. Belzer, P. W., K. J. Gillett, & **J. D. Carstens** (2026). Convective environments preceding landfall in tornado-producing tropical cyclones. Poster presentation at the 106th AMS Annual Meeting, Houston, TX.
20. Slad, C. O., J. A. Polmatier, C. R. Solseth, A. R. Tippie, & **J. D. Carstens** (2026). UND Weather Update: Increasing outreach through digital platforms. Poster presentation at the 106th AMS Annual Meeting, Houston, TX.
21. Kopelman, M. V., A. A. Wing, & **J. D. Carstens** (2026). Observational analysis of the contribution of radiative and surface flux feedbacks to the development of North Atlantic tropical cyclones. Abstract submitted to the 106th AMS Annual Meeting, Houston, TX.
22. Corrales, A. L., J. E. Trujillo-Falcón, Z. Wang, & **J. D. Carstens** (2026). Can you stand the rain? Analyzing predecessor rain events and their climatology. Poster presentation at the 106th AMS Annual Meeting, Houston, TX.
23. Polmatier, J. A., C. O. Slad, A. R. Tippie, & **J. D. Carstens** (2025). UND Weather Update: Transforming a traditional broadcast club into the digital landscape. Oral presentation at the 52nd AMS Conference on Broadcast and Digital Meteorology, Boise, ID.
24. **Carstens, J. D.**, J. E. Trujillo-Falcón, E. Grow Cei, V. Alonso, J. Martucci, & E. C. Wolff (2025). Digital meteorology in the classroom: Building a comprehensive course. Oral presentation at the 105th AMS Annual Meeting, New Orleans, LA.
25. **Carstens, J. D.**, S. Killingsworth, B. Abramowitz, & M. Ennes (2025). An atmospheric Scientist in Every Florida School. Oral presentation at the 105th AMS Annual Meeting.

26. **Carstens, J. D.** (2024). Controls of rotation on convective self-aggregation onset. ePoster presentation at the 104th AMS Annual Meeting, Baltimore, MD.
27. **Carstens, J. D.**, A. C. Didlake, Jr., & C. M. Zarzycki (2024). Tropical cyclone asymmetry and wind shear interactions under global warming in a variable-resolution climate model. Oral presentation at the 104th AMS Annual Meeting. Poster presentation at the 36th Conference on Hurricanes and Tropical Meteorology, Long Beach, CA.
28. Kopelman, M. V., A. A. Wing, & **J. D. Carstens** (2024). Dropsonde-derived moist static energy variability in Atlantic hurricanes. Oral presentation at the 104th AMS Annual Meeting; poster at the 36th Conference on Hurricanes and Tropical Meteorology.
29. Purdy, C. A., **J. D. Carstens**, K. M. Nardi, B. S. Rojas, N. R. Barron, A. C. Didlake, Jr., & C. M. Zarzycki (2024). Asymmetric structure of tropical cyclones in the Community Atmosphere Model 5 (CAM5). Poster presentation at the 104th AMS Annual Meeting.
30. **Carstens, J. D.**, C. M. Zarzycki, & A. C. Didlake Jr. (2023). Asymmetric tropical cyclone structures and processes in reanalyses and climate models. Oral presentation at the 20th Conference on Mesoscale Processes, Madison, WI. Oral presentation at the 10th Northeast Tropical Workshop, Albany, NY.
31. **Carstens, J. D.**, A. C. Didlake, Jr., & C. M. Zarzycki (2023). Tropical cyclone shear-induced asymmetry in reanalyses and climate models. Oral presentation at the 103rd AMS Annual Meeting, Denver, CO.
32. **Carstens, J. D.**, M. V. Kopelman, & A. A. Wing (2022). Tropical cyclone moist static energy structure in idealized simulations and dropsonde observations. Oral presentation at the AGU Fall Meeting, Chicago, IL.
33. **Carstens, J. D.**, & A. A. Wing (2022). Regimes of convective self-aggregation in convection-permitting beta-plane simulations. Poster presentation at Tropical Cyclones, Convection, and Climate: A Symposium in Honor of Kerry Emanuel, Cambridge, MA.
34. Kopelman, M. V., **J. D. Carstens**, A. A. Wing, M. E. O'Neill, J. P. Dunion, & D. R. Chavas (2022). Estimation of tropical cyclone moist static energy variability from dropsonde data. Oral presentation at the 35th Conference on Hurricanes and Tropical Meteorology, New Orleans, LA.
35. **Carstens, J. D.**, & A. A. Wing (2022). Convective self-aggregation, equatorial waves, and tropical cyclones in idealized beta-plane simulations. Oral presentation at the 35th Conference on Hurricanes and Tropical Meteorology. (**Max A. Eaton Award Winner**)

36. **Carstens, J. D.**, & A. A. Wing (2022). Simulating dropsondes to assess moist static energy variability in tropical cyclones. Poster presentation at the 35th Conference on Hurricanes and Tropical Meteorology, New Orleans, LA.
37. **Carstens, J. D.**, M. V. Kopelman, & A. A. Wing (2021). Estimating moist static energy and surface enthalpy flux variance in a mature hurricane: Modeling and an observational case study. Virtual presentation at the 34th Conference on Hurricanes and Tropical Meteorology.
38. **Carstens, J. D.**, & A. A. Wing (2021). Tropical cyclogenesis mechanisms in radiative-convective equilibrium simulations of varying rotation. Virtual presentation at the 34th Conference on Hurricanes and Tropical Meteorology.
39. **Carstens, J. D.**, & A. A. Wing (2020). A spectrum for convective self-aggregation based on background rotation. Virtual presentation at the 4th Midwest Student Conference on Atmospheric Research. (**Best Lightning Talk Award Winner**)
40. **Carstens, J. D.**, & A. A. Wing (2020). Pathways to tropical cyclogenesis in rotating radiative-convective equilibrium simulations. Poster presentation at the 100th AMS Annual Meeting, Boston, MA.
41. **Carstens, J. D.**, & A. A. Wing (2019). Tropical cyclogenesis from self-aggregated convection in idealized numerical simulations: Sensitivity to planetary vorticity. Poster presentation at the 99th AMS Annual Meeting, Phoenix, AZ.
42. **Carstens, J. D.**, & V. Misra (2017). North Atlantic and East Pacific tropical cyclone intensity comparison with integrated kinetic energy. Poster presentation at the 97th AMS Annual Meeting, Seattle, WA.
43. **Carstens, J. D.**, S. R. Smith, M. A. Bourassa, & J. J. Rolph (2016). Examination of SAMOS sea temperature biases. Poster presentation at the Fourth International Workshop on the Advances in the Use of Historical Marine Climate Data (MARCDAT-IV), National Oceanography Centre, Southampton, UK.

Invited Seminars

Tropical cyclone response to environmental wind shear in historical and future climates. Expertise Center for Climate Extremes, University of Lausanne, 29 September 2026.

Tropical cyclone response to vertical wind shear in global climate models. Mesoscale and Microscale Meteorology Laboratory, National Center for Atmospheric Research, 11 September 2025.

A tropical meteorologist walks into a corn field. School of Natural Resources, University of

Nebraska-Lincoln, 29 April 2024.

Hurricane asymmetry in a warming climate: Capturing the mesoscale in global climate models. College of Arts, Education, and Sciences, University of Louisiana Monroe, 27 March 2024.

New insights on hurricanes from emerging modeling and observational tools. Department of Atmospheric Sciences, University of North Dakota, 27 February 2024.

Process-level understanding of hurricanes and tropical convection in models and observations. Department of Geography and Geosciences, Salisbury University, 4 December 2023.

Organized tropical convection in idealized models, observations, and climate models. Department of Geosciences, Mississippi State University, 31 March 2023.

Radiative-convective equilibrium and tropical deep convection. Penn State Climate Dynamics Seminar, 19 October 2022.

A spectrum for convective self-aggregation based on background rotation. Florida State Meteorology Seminar, 21 January 2021.

Other Presentations and Panel Discussions

A peak-season crash course on hurricanes. Hopped Up On Science STEM Café, 23 September 2026.

Incorporating digital meteorology into the undergraduate weather communication curriculum. Joint AMS Washington Forum and Summer Community Meeting, 22 July 2026.

Making the most of the 2026 AMS Annual Meeting. AMS Board for Early Career Professionals Webinar, 13 January 2026.

Early career professionals: Effective ways to network. Unifying Innovations in Forecasting Capabilities Workshop (UIFCW25), 10 September 2025.

Academic jobs: Realities, challenges, opportunities, and setting yourself up for success. 24th AMS Student Conference, 12 January 2025.

Writing an effective abstract for the AMS Student Conference. AMS Board on Student Affairs Webinar, 12 August 2024.

Hurricane forecasting tips and tools. Presented at 2023-2024 PSU Weather Camps, and at Central Pennsylvania AMS Chapter Meeting, 28 May 2024.

Getting 1% better: Reflecting on 10 years since enrolling at Florida State. North Florida AMS/NWA Chapter Banquet, 20 April 2024.

Climate change and extreme weather. WPSU Student Climate Day, Panel Discussion on Climate Science, 2 April 2024.

Hurricanes and climate change. Presented several times from August 2021-March 2024, most recently at Vermont State University. ([Link to original recording](#))

What goes into a hurricane forecast? Tallahassee Hurricane PREP Series, 2020-2022.

Tips for the atmospheric science graduate school experience. Northeastern Storm Conference, 24 April 2021.

On the 2020 hurricane season... And enduring it as a TC-focused grad student. West Central Florida AMS Chapter Meeting, 21 January 2021.

Graduate Students Advised

Sydney Walters – M.S. 2026; Ph.D., University of North Dakota. Project: A global climatology of tropical cyclone integrated kinetic energy. (Fall 2024-Present)

Mark McGarry, Jr. – M.S., University of North Dakota. Project: Tropical cyclone asymmetry in the ECMWF-IFS climate model. (Fall 2024-Present)

Stephen Kesti – M.S., University of North Dakota. Project: Radiative feedback on tropical cyclone development relative to vertical wind shear. (Fall 2025-Present)

Carter Hunter – M.S., University of North Dakota. Project: Tropical cyclone structure and climatology in the MESACLIP climate model ensemble. (Fall 2025-Present)

Kyle Gillett – M.S. 2026; Ph.D., University of North Dakota. Project: Using aircraft observations to improve tropical cyclone tornado predictability before landfall. (Summer 2025 only; primarily advised by Catherine Finley for M.S. and Matthew Brown for Ph.D.)

Graduate Committee Member

Taylor Dolan – Ph.D., UND (Earth System Science & Policy, advised by Soizik Laguette)

Sheridan Parker – Ph.D., UND (Communications, advised by Timothy Pasch)

Kassidy Kjos – M.S., UND (Atmospheric Sciences, advised by Montana Etten-Bohm)

Ana Bolivar – Ph.D. 2026, PSU (Meteorology and Atmospheric Science, advised by Colin Zarzycki)

Iat Hin (Frederick) Tam – Ph.D., University of Lausanne (Earth Sciences, advised by Tom Beucler)

Michael Kopelman – M.S. 2026 and Ph.D., FSU (Meteorology, advised by Allison Wing)

Anthony Corrales – M.S. 2026 and Ph.D., University of Illinois (Atmospheric Sciences, advised by Joseph Trujillo-Falcón and Zhuo Wang)

Undergraduate Students Advised

Gabriella Tempia – B.S., UND. Project: Updating the Tropical Cyclone Dropsonde Research and Operations Product Suite (TC-DROPS)

Samantha Fuchs – B.S., UND. Project: Tropical cyclone intensity and integrated kinetic energy validation from Ultra High-Resolution ASCAT observations (with Sydney Walters)

Caroline Solseth – B.S., UND. Project: Weather and climate factors affecting mule deer migration patterns in Wyoming (with Melissa Schmitt and Keenan Stears from Washington State University)

Joslyn Sutton – B.S., UND (Air Traffic Management). Project: A review of radar systems used by the air traffic and atmospheric science communities (with Ella Alvey)

Katarina Nelson – B.S., UND. Project: Airborne radar observations of rainband convection in tornadic tropical cyclones preceding landfall (with Matt Gilmore)

Payton Belzer – B.S. 2026, UND. Project: Convective environments in tornadic tropical cyclones preceding landfall using dropsondes (with Kyle Gillett and Catherine Finley)

Kellie Thrower – B.S. 2026, UND. Project: Atlantic tropical cyclogenesis in the IPSL climate model (with Montana Etten-Bohm)

Chase Purdy – B.S. 2024, FSU. Project: Asymmetric tropical cyclone structure in the Community Atmosphere Model (with Kyle Nardi, Bruno Rojas, Nicholas Barron, Anthony Didlake, and Colin Zarzycki as part of the 2023 Penn State Climate Science REU)

Undergraduate Committee Member or Co-Mentor

Cole Gabos – B.S., UND. Project: Simulating tropical cyclone tornado environments in future Climates (advised by Matthew Brown)

Kayla Kenow – B.S. 2025, UND. Project: Risk management and perception of severe weather events in Upper Plains farmers (advised by Montana Etten-Bohm)

Michael Kopelman – B.S. 2024, FSU. Project: Dropsonde-derived moist static energy variability in North Atlantic tropical cyclones (advised by Allison Wing)

Cameron Chuss – B.S. 2023, PSU. Project: The diurnal cycle of rainfall over Taiwan during PRECIP (advised by Anthony Didlake, Jr.)

Teaching (organized by institution, then ascending order of course number)

Instructor of Record

MET 2507 (Weather Analysis and Forecasting, FSU) – SP 2021

ATSC 310 (Introduction to Weather Forecasting, UND) – SP 2027, SP 2026, SP 2025

ATSC 315 (Broadcast Meteorology, UND) – FA 2025

ATSC 456 (Introduction to Professional Meteorology, UND) – FA 2026

ATSC 530 (Numerical Weather Prediction, UND) – SP 2027, SP 2025

ATSC 550 (Tropical Meteorology, UND) – SP 2026 (with Montana Etten-Bohm)

ATSC 570 (Seminar, UND) – FA 2025, FA 2026

Teaching Assistant

MET 4301 (Atmospheric Dynamics I, FSU) – FA 2020

Guest Lectures

METEO 005 (Severe and Unusual Weather, PSU) – SU 2023, FA 2023

METEO 422 (Advanced Atmospheric Dynamics, PSU) – FA 2023

METEO 521 (Dynamic Meteorology, PSU) – SP 2023

METEO 597 (Tropical Meteorology, PSU) – FA 2022

ATSC 391 (Research Methods in Atmospheric Sciences, UND) – SP 2025

ATSC 492 (Senior Project I, UND) – FA 2024, FA 2025

ATSC 493 (Senior Project II, UND) - SP 2025, SP 2026

Service

Department Service

Member - Student Award Committee, UND (2025-Present)

Faculty Advisor - UND Weather Update, UND (2024-Present)

Member - Undergraduate Program Committee, UND (2024-Present)

Member - Osborne Weather Center Renovations Committee, UND (2024-2026)

Member - Search Committee for Open Rank Faculty Position, UND (2024-2025)

Member - Sustainability Green Team, PSU (2023-2024)

Educator - Weather Outreach and Education Club, PSU (2022-2024)

Host, Hurricane Specialist, and Forecaster - "Weather World" (2022-2024)

Member - Unlearning Racism in the Geosciences (URGE), PSU Meteorology and Atmospheric Science Committee on Belonging (2022-2023)

President - North Florida Chapter of the AMS/NWA (2019-2020)

President - Chi Epsilon Pi Meteorology Honor Society, FSU Chapter (2018-2020)

Local Manager (FSU) - WxChallenge National Forecasting Contest (2017-2022)

Team Leader - "FSU Weather" TV show (2016-2017). On air talent from 2015-2022.

Vice President - North Florida Chapter of the AMS/NWA (2016-2017)

University Service

Affiliate Faculty - UND Center for Engineering Education Research (CEER, 2025-Present)

Postdoc Representative - PSU EMS Graduate Student Leader Roundtable (2024)

Poster Session and Outreach Chair - PSU Postdoctoral Research Symposium (2023)

Chairperson – PSU Postdocs of EMS (PoEMS, 2022-2024)

Tutor – FSU Student-Athlete Academic Services (SAAS, 2017-2019)

Tutor – FSU Libraries (2015)

External Service

Member – AMS Mind the Gap Committee (2027-2030)

Member – AMS Board on Continuing Professional Development (2024-2027)

Member – AMS Board for Early Career Professionals (2023-2029); *2023 Secretary, 2024 Webinar Team Lead, 2025 Chair-Elect, current Chair*

Outreach Scientist – Skype a Scientist (2022-2024)

Outreach Scientist – Scientist in Every Florida School (2020-Present)

Member – AMS Student Conference Planning Committee (2021-2023)

Associate Editor – *Weather* (Royal Meteorological Society, 2024-2026)

Reviewer – *Journal of the Atmospheric Sciences, Journal of Advances in Modeling Earth Systems, Geophysical Research Letters, Weather, Climate Dynamics, Atmospheric Science Letters, Monthly Weather Review, Journal of Geophysical Research – Atmospheres, Quarterly Journal of the Royal Meteorological Society, Earth's Future, Journal of Geophysical Research – Oceans, Journal of Applied Meteorology and Climatology, Geoscientific Model Development, Journal of Climate*

Ad Hoc Reviewer – NSF (2026)

Review Panelist – NASA (2024)

Co-Chair – Student Award Committee, 36th and 37th AMS Conference on Hurricanes and Tropical Meteorology (2024, 2026)

Program Chair – 14th AMS Conference for Early Career Professionals (2026)

Session Chair – 37th AMS Conference on Hurricanes and Tropical Meteorology (2026)

Session Chair – 52nd AMS Conference on Broadcast and Digital Meteorology (2025)

Session Chair – 13th AMS Conference for Early Career Professionals (2025)

Session Chair – 12th AMS Conference for Early Career Professionals (2024)

Session Chair – 10th Northeast Tropical Workshop (2023)

Features in News Media

LiveNOW from Fox – “Recapping 2024’s busy hurricane season”. 26 November 2024.
<https://www.livenowfox.com/video/1554076>

The Miami Herald – “How strong can Cat 5 Milton get? This hurricane may approach the maximum intensity.” 7 October 2024.
<https://www.miamiherald.com/news/weather/hurricane/article293604224.html>

The Associated Press – “Misleading claims downplay climate change’s effect on hurricanes”. 6 October 2022. <https://apnews.com/article/fact-checking-307309528789>

The Weather Channel – “Watch: The 2020 hurricane season summed up in 76 seconds”. 24 November 2020. <https://weather.com/storms/hurricane/video/the-2020-hurricane-season-summed-up-in-76-seconds>

The Houston Chronicle – “Watch 2020’s record-breaking hurricane season unfold in 76 seconds”. 23 November 2020. <https://www.chron.com/weather/article/Houston-hurricane-maps-forecast-2020-15748011.php>

CBS – “The record-shattering 2020 hurricane season, explained”. 20 November 2020.
<https://www.cbsnews.com/news/atlantic-hurricane-season-2020-record-breaking/>

CNN – “This relentless Atlantic hurricane season has put nearly every mile of coastline from Texas to Maine on alert”. 13 November 2020.
<https://www.cnn.com/2020/11/13/weather/2020-hurricane-season-records-texas-to-maine/index.html>

Eos – “Storms interact but rarely merge into bigger tempests”. 26 August 2020.
<https://eos.org/articles/storms-interact-but-rarely-merge-into-bigger-tempests>

Forbes – “2 tropical storms aren’t going to merge into a megastorm – here’s why”. 22 August 2020. <https://www.forbes.com/sites/marshallshepherd/2020/08/22/2-tropical-storms-arent-going-to-merge-into-a-megastormheres-why/?sh=50f5cc74744d>

Florida State University News – “Hurricanes from scratch: FSU researchers find even small disturbances can trigger catastrophic storms”. 13 May 2020.
<https://news.fsu.edu/news/science-technology/2020/05/13/hurricanes-from-scratch-fsu-researchers-find-even-small-disturbances-can-trigger-catastrophic-storms/>

National Science Foundation Research News - "Even small disturbances can trigger catastrophic hurricanes, researchers find". 19 May 2020.

https://nsf.gov/discoveries/disc_summ.jsp?cntn_id=300610&org=GEO&from=news

WCTV Tallahassee - "Federal meteorologists unable to attend annual meeting due to shutdown". 11 January 2019. <https://www.wctv.tv/content/news/The-government-shutdown-had-a-ripple-effect-Federal-meteorologists-missed-out-on-large-annual-meeting-504239331.html>

WCTV Tallahassee - "FSU grad student attempting to solve the mystery of hurricane formation". 22 May 2020. <https://www.wctv.tv/content/news/FSU-grad-student-attempting-to-solve-the-mystery-of-hurricane-formation-570700901.html>

Other Media

Carolina Weather Group - Episode on experiences of a meteorology student (2021). Available at <https://www.youtube.com/watch?v=Lcnb2YEBaUk&t=20s>

American Meteorological Society - Clear Skies Ahead Podcast, discussing responsibilities, challenges, and benefits of graduate school (2021). Available at https://blubrry.com/clear_skies_ahead/81204574/jake-carstens-graduate-research-assistant-at-florida-state-university-in-tallahassee/

WeatherBrains - Brief cameo describing experience in AMS Early Career Leadership Academy (2024), along with others in cohort. Available at https://www.youtube.com/watch?v=leOxykgZw_Y&t=3730s

Seasoned Chaos Blog - Guest article discussing subseasonal hurricane forecasting tools (2024). Available at <https://seasonedchaos.github.io/Opening-Your-Toolbox-for-Subseasonal-Hurricane-Forecasting/>