

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 Junior/Senior Professor – UND Student Chapter of the American Meteorological Society (AMS, 2025)

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

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)

Membership in Professional Organizations

- American Geophysical Union
- American Meteorological Society
- National Weather Association
- Royal Meteorological Society

Publications

Underlined names indicate student co-authors.

Refereed Journal Articles

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. **Carstens, J. D.** (in prep). Vertical wind shear affecting tropical cyclones in historical and future climates using high-resolution climate model ensembles.

Theses and Other 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

Funded

1. Didlake, Jr., A. C., C. M. Zarzycki, & **J. D. Carstens**. Asymmetric tropical cyclone processes in high-resolution climate models. Modeling, Analysis, Predictions, and Projections, NOAA Climate Program Office. (2024-2027, **Co-PI, led proposal preparation but was unable to serve as PI due to role as postdoc at the time, \$412,183 to UND**)
2. **Carstens, J. D.**, & [K. J. Gillett](#). Using aircraft observations to improve tropical cyclone tornado predictability before landfall. Research Seed Grants, John D. Odegard School of Aerospace Sciences, UND. (2025-2026, **PI, \$10,000**)

Submitted

1. **Carstens, J. D.**, & [S. E. Walters](#). 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**)
2. Kroodsma, R. A., H. M. Mallinson, & **J. D. Carstens**. 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, not recommended**)

In Preparation

1. **Carstens, J. D.**, J. Robinson, L. Rutten, E. Suazo-Flores, C. Brecklin, A. Fackler, & M. Etten-Bohm. Advancing Weather and Climate Communication and Education in the Northern Plains. Climate Change and Human Health Seed Grants, Burroughs Wellcome Fund. (2026-2027, **PI, \$50,000, in prep**)

2. **Carstens, J. D., & S. E. Walters.** Tropical cyclone integrated kinetic energy using satellite synthetic aperture radar and high-resolution scatterometer observations. Research Seed Grants, North Dakota NASA EPSCoR. (2026-2027, **PI, \$60,000, in prep**)

Two additional proposals in preparation to anonymized solicitations as of 1 December 2025.

Presentations

Conference Presentations

1. **Carstens, J. D.** (2026). Tropical cyclone interactions with vertical wind shear in historical and future climates using the HighResMIP and MESACLIP ensembles. Abstract submitted to the 37th Conference on Hurricanes and Tropical Meteorology, San Diego, CA.
2. McGarry, Jr., M. A., & J. D. Carstens (2026). Evaluating tropical cyclone-vertical wind shear interactions in the high-resolution ECMWF climate model. Abstract submitted to the 37th Conference on Hurricanes and Tropical Meteorology, San Diego, CA.
3. Thrower, K. M., & J. D. Carstens (2026). Atlantic tropical cyclogenesis in the IPSL high-resolution climate model. Abstract submitted to the 37th Conference on Hurricanes and Tropical Meteorology, San Diego, CA.
4. Walters, S. E., & J. D. Carstens (2026). A global climatology of tropical cyclone integrated kinetic energy using best track and synthetic aperture radar observations. Abstract submitted to the 37th Conference on Hurricanes and Tropical Meteorology, San Diego, CA.
5. Corrales, A. L., J. E. Trujillo-Falcón, J. D. Carstens, & Z. Wang (2026). Preparing for the next PRE: Understanding risk perceptions of English and Spanish speakers in Asheville, North Carolina during Hurricane Helene. Abstract submitted to the 37th Conference on Hurricanes and Tropical Meteorology, San Diego, CA.
6. **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.
7. **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.
8. Belzer, P. W., K. J. Gillett, & J. D. Carstens (2026). Convective environments preceding landfall in tornado-producing tropical cyclones. Abstract submitted to the 106th AMS Annual Meeting, Houston, TX.

9. 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.
10. 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.
11. 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.
12. 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.
13. **Carstens, J. D.** (2025). Tropical cyclones in a warming climate: Structural insights from a variable-resolution global climate model. Oral presentation at the Seminar for Local Atmospheric Research, Grand Forks, ND.
14. Walters, S. E., & J. D. Carstens (2025). A global climatology of tropical cyclone integrated kinetic energy. Oral presentation at the Seminar for Local Atmospheric Research, Grand Forks, ND.
15. McGarry, Jr., M. A., & J. D. Carstens (2025). Asymmetric tropical cyclone processes in high-resolution climate models. Oral presentation at the Seminar for Local Atmospheric Research, Grand Forks, ND.
16. **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.
17. **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.
18. **Carstens, J. D.** (2024). Controls of rotation on convective self-aggregation onset. ePoster presentation at the 104th AMS Annual Meeting, Baltimore, MD.
19. **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.

20. 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 presentation at the 36th Conference on Hurricanes and Tropical Meteorology.
21. 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.
22. **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.
23. **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.
24. **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.
25. **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.
26. 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.
27. **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**)
28. **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.
29. **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.

30. **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.
31. **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**)
32. **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.
33. **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.
34. **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.
35. **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 vertical wind shear in global climate models. NCAR Mesoscale and Microscale Meteorology Lab, 11 September 2025.

A tropical meteorologist walks into a corn field. University of Nebraska, 29 April 2024.

Hurricane asymmetry in a warming climate: Capturing the mesoscale in global climate models. University of Louisiana at Monroe, 27 March 2024.

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

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

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

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

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

Other Presentations

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

Mark McGarry, Jr. – M.S., University of North Dakota. Project: Tropical Cyclone Asymmetry in the HighResMIP Climate Model Ensemble. (Fall 2024-Present)

Sydney Walters – M.S., University of North Dakota. Project: A Global Climatology of Tropical Cyclone Integrated Kinetic Energy. (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., University of North Dakota. Project: Using Aircraft Observations to Improve Tropical Cyclone Tornado Predictability Before Landfall. (Summer 2025)

Committee Member

Taylor Dolan – Ph.D., University of North Dakota (Earth System Science & Policy, advised by Soizik Laguerre)

Kassidy Kjos – M.S., University of North Dakota (Atmospheric Sciences, advised by Montana Etten-Bohm)

Ana Bolivar – Ph.D., Penn State University (Meteorology and Atmospheric Science, advised by Colin Zarzycki)

Michael Kopelman – M.S., Florida State University (Meteorology, advised by Allison Wing)

Anthony Corrales – M.S., University of Illinois (Atmospheric Sciences, advised by Joseph Trujillo-Falcón)

Undergraduate Students Mentored

Samantha Fuchs (UND, B.S. 2027) – Project: Tropical Cyclone Integrated Kinetic Energy from Ultra High-Resolution ASCAT Observations (Senior Project committee member TBD)

Payton Belzer (UND, B.S. 2026) – Project: Entraining CAPE in Tropical Cyclones from Aircraft Reconnaissance Dropsondes (with Kyle Gillett and Catherine Finley)

Kellie Thrower (UND, B.S. 2026) – Project: Atlantic Tropical Cyclogenesis in the IPSL High-Resolution Climate Model (with Montana Etten-Bohm)

Kayla Kenow (UND, B.S. 2025) – Project: Risk Management and Perception of Severe Weather Events in Upper Plains Farmers (PI: Montana Etten-Bohm).

Chase Purdy (FSU, B.S. 2024) – Penn State Climate Science REU. Project: Asymmetric Tropical Cyclone Structure in the Community Atmosphere Model (with Kyle Nardi, Bruno Rojas, Nicholas Barron, Anthony Didlake, and Colin Zarzycki).

Michael Kopelman (FSU, B.S. 2024) – Project: Dropsonde-Derived Moist Static Energy Variability in North Atlantic Tropical Cyclones (PI: Allison Wing).

Cameron Chuss (PSU, B.S. 2023) – Project: The Diurnal Cycle of Rainfall over Taiwan During the PRECIP Campaign (PI: Anthony Didlake).

Teaching

Instructor of Record

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

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

ATSC 315 (Broadcast Meteorology, UND) – Fall 2025

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

ATSC 530 (Numerical Weather Prediction, UND) – Spring 2025

ATSC 570 (Seminar, UND) – Fall 2025

Teaching Assistant

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

Guest Lectures

METEO 005 (Severe and Unusual Weather, PSU) – Summer 2023, Fall 2023

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

METEO 521 (Dynamic Meteorology, PSU) – Spring 2023

METEO 597 (Tropical Meteorology, PSU) – Fall 2022

ATSC 100 (Atmospheric Sciences Orientation, UND) – Fall 2024

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

ATSC 492 (Senior Project I, UND) – Fall 2024

ATSC 493 (Senior Project II, UND) – Spring 2025

ATSC 500 (Introduction to Atmospheric Research, UND) - Fall 2024

Service

Department Service

Member - Student Award Committee, UND Department of Atmospheric Sciences (2025-Present)

Member - Osborne Weather Center Renovations Committee, UND Department of Atmospheric Sciences (2024-Present)

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

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

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

Member - Sustainability Green Team, PSU Department of Meteorology and Atmospheric Science (2023-2024)

Educator - Weather Outreach and Education Club, PSU Meteorology and Atmospheric Science (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

Member - UND Aerospace Research Council (2025-Present)

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 Board on Continuing Professional Development (2024-2030)

Member - AMS Board for Early Career Professionals (2023-2029); *2023 Secretary, 2024 Webinar Team Lead, 2025 Chair-Elect, 2026 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-Present)

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*

Review Panelist - NASA ROSES (2024)

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

Program Chair - 14th AMS Conference for Early Career Professionals (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/>