

## Daniel T. Dawson II

Assistant Professor  
Department of Earth, Atmospheric, and Planetary  
Sciences  
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## EDUCATION

- 2009 Ph.D.**, University of Oklahoma, School of Meteorology (advisor Ming Xue)  
**2004 M.S.**, University of Oklahoma, School of Meteorology (advisor Ming Xue)  
**2002 B.S.** (with highest distinction), Department of Earth and Atmospheric Sciences, Purdue University

## PROFESSIONAL APPOINTMENTS

- 2015 – present** Assistant Professor, Department of Earth, Atmospheric, and Planetary Sciences (EAPS), Purdue University
- 2014** NSF Postdoctoral Research Fellow, Center for Analysis and Prediction of Storms (CAPS)
- 2013 – 2015** Research Scientist, CAPS
- 2012, 2013** Visiting Scientist, Mesoscale and Microscale Meteorology (MMM) division, National Center for Atmospheric Research (NCAR)
- 2012** National Science Foundation (NSF) Postdoctoral Research Fellow, National Severe Storms Laboratory (NSSL)
- 2011 – 2012** Research Scientist at the Cooperative Institute for Mesoscale Meteorological Studies (CIMMS)
- 2009 – 2011** National Research Council (NRC) Postdoctoral Research Associate, NSSL
- 2009** Postdoctoral Research Scientist, CAPS
- 2002 – 2009** Graduate Research Assistant, School of Meteorology (SoM), University of Oklahoma (OU)

## FUNDING

### Current:

- **Co-principal investigator:** *Flexible, Portable Kit-Based Laboratory Instruction in Atmospheric Science*, \$14,962, Provost Instructional Equipment, February 2021.
- **Co-principal investigator:** *VORTEX-SE: Characterization of microphysical processes in potentially tornadic Southeast U.S. storms via polarimetric radar - disdrometer - lightning synthesis*, NOAA/DOC award NA19OAR4590209, \$227,901, November 2019 – October 2021.
- **Principal investigator:** *VORTEX-SE: Understanding the influence of microphysical processes on the environment and behavior of southeastern-U.S. potentially tornadic storms*, NOAA/DOC award NA18OAR4590313, \$295,864, September 2018 – August 2021.
- **Principal investigator:** *Investigation of microphysical processes in SE-US tornadic QLCSs through in situ surface disdrometer observations in support of PERiLS*, NOAA/DOC contract #1305M320PNRMA0628SEP, \$111,981, September 2020 – September 2021

**Pending:**

- **Co-principal investigator:** *Robust Analysis and Deployment Testbed for Efficient and Safe Transformation*, NASA/Robust Analytics. \$33,000. May 2021 – November 2021
- **Principal investigator:** *Investigating how changing environmental conditions favor tornadoes shifting eastward over North America*, NASA FINESST. \$135,000. September 2021 – August 2024
- **Co-principal investigator:** *CIF: The X-band Teaching and Research Radar (XTRRA) at Purdue University in Northwest Indiana*, National Science Foundation. **\$956,988**. August 2020 – July 2026
- **Co-principal investigator:** *Research and development for direct assimilation of dual-polarized radar data for short-term ensemble prediction system*, Korean Meteorological Institute.
- **Investigator:** *ATMOSPHERIC REMOTE SENSING WITH COOPERATIVE LIDAR, RADAR AND PASSIVE SENSORS: Applications over land and sea for weather observation and for off-shore for wind-energy (ARS)*, Agencia Estatal de Investigación

**Past:**

- **Principal investigator:** *Ross Graduate Fellowship-Assistantship: Qin Jiang*. \$30,428.00. August 2019 – August 2020
- **Principal Investigator:** *Development of a Numerical Storm-scale Ensemble Forecasting System for High-Impact Weather in the Midwest U.S.*, Purdue College of Science Summer PRF Faculty Award, \$10,400, Summer 2018.
- **Co-principal investigator:** *X-band, Polarimetric, Doppler Weather Radar*. Award from Executive Vice President for Research for installation of a weather radar at Purdue University. \$312,000, June 2017 – May 2018.
- **Lead principal investigator:** *Improved Understanding of Tornado Development and Risk using Models and Observations from VORTEX-SE 2017*, NOAA/DOC, \$173,981, September 2016 – August 2018.
- **Co-principal investigator:** *Improved Understanding of Tornado Development and Risk using Models and Observations from VORTEX-SE*, NOAA/DOC, \$192,901, September 2015 – August 2017.
- **Co-principal investigator:** *Integration of Modern Meteorological Instrumentation and Hands-on Laboratory Equipment into the Atmospheric Science Curriculum*. Purdue Instructional Innovation Program. \$16,965.73. Spring 2016 – Spring 2017

**TEACHING****Purdue University**

- 2021** Spring: Instructor, EAPS 53200 Atmospheric Physics I
- 2020** Fall: Instructor, EAPS 53900 Mesoscale Meteorology
- 2020** Spring: Instructor, EAPS 53200 Atmospheric Physics I
- 2019** Fall: Instructor, EAPS 53600 Mesoscale Meteorology
- 2019** Spring: Instructor, EAPS 53200 Atmospheric Physics I
- 2018** Fall: Instructor, EAPS 49700 Undergraduate Research Experience (2 students)
- 2018** Spring: Instructor, EAPS 49700 Undergraduate Research Experience (2 students)

- 2018 Spring: Instructor, EAPS 53200 Atmospheric Physics I  
 2017 Fall: Instructor, EAPS 42100 Atmospheric Thermodynamics  
 2017 Fall: Instructor, EAPS 22600 Introduction to Atmospheric Science Research  
 2017 Summer: Co-Instructor, EAPS 59100 Severe Storms Field Work  
 2017 Spring: Guest Lecturer, EAPS 13700 Freshman Seminar  
 2016 Fall: Instructor, EAPS 59100 Mesoscale Meteorology  
 2016 Summer: Co-Instructor, EAPS 59100 Severe Storms Field Work  
 2016 Spring: Co-Instructor, EAPS 40900 Application of Computers to Meteorology  
 2016 Spring: Instructor, EAPS 39100 Special Topics: ATMS Modeling  
 2016 Spring: Co-Instructor, EAPS 39100 Special Topics: VORTEX-SE Field Research  
 2016 Spring: Guest Lecturer, EAPS 13700 Freshman Seminar  
 2015 Fall: Guest Lecturer, EAPS 32700 Climate Science and Society  
**University of Oklahoma**  
 2014 Fall: Guest Lecturer, METR 5303 Objective Analysis  
 2013 Fall: Guest Lecturer, METR 5344 Computational Fluid Dynamics I  
 2005 Spring: Co-Instructor, METR 4433 Mesoscale Meteorology
- Responsible for 50% of lecturing and 50% developing and grading of assignments and exams.

#### STUDENTS ADVISED (BOLD = MAIN ADVISOR)

- 2020 – present **Qin Jiang, Purdue, Ph.D. Thesis advisor.**  
 2019 – 2021 **Connor Belak, Purdue, M.S. Thesis advisor, graduated Spring 2021**  
 2019 – present **Marcus Terrell, Purdue, M.S. Thesis advisor.**  
 2019 – present Kuan-yu Lu, Purdue, Ph.D. Committee  
 2019 – present Susan Beveridge, Purdue, M.S. Committee  
 2019 – present Funing Li, Purdue, Ph.D. Committee  
 2019 – present Geeta Nain, Purdue, Ph.D. Committee  
 2019 – present Logan Downing, Purdue, M.S. Committee  
 2018 – present Allison LaFleur, Purdue, Ph.D. Committee  
 2018 – present Matthew Asel, Joshua Gable, J. P. Cole: Undergraduate research advisor  
 2019 – 2020 **Zachary Burman, Purdue: Undergraduate research advisor**  
 2018 – 2019 **J. P. Cole, Purdue: Undergraduate research advisor**  
 2018 – 2019 **Matthew Asel, Purdue: Undergraduate research advisor**  
 2018 **Joshua Gable, Purdue, Undergraduate research advisor**  
 2017 – present Jie Chen, Purdue, Ph.D. Committee  
 2017 – present Milind Sharma, Purdue, Ph.D. Committee  
 2018 Daniel Dietz, Purdue, M.S. Committee  
 2017 – 2018 Patrick Saunders, Purdue, M.S. Committee  
 2017 Logan Dawson, Purdue, Ph.D. Committee  
 2016 – 2018 **Jessica Bozell, Purdue; M.S. Thesis advisor, graduated Spring 2018**  
 2016 – 2018 **Mingyang Guo, Purdue; M.S. Thesis advisor, graduated Summer 2018**  
 2014 – 2016 Marcus Johnson, OU; Member of M.S. Thesis Committee  
 2013 – 2016 Brett Roberts, OU; Member of Ph.D. Dissertation Committee  
 2012 – 2014 Theo Kuhn; high school science project mentor  
 2009 Informal advisement of Charlotte Wainwright's M.S. research

## RESEARCH INTERESTS

- Dynamics and numerical modeling of severe convective storm and tornadoes
- Cloud and precipitation microphysics and their parameterizations in numerical models
- EnKF radar data assimilation and ensemble prediction on convective scales
- Disdrometer and polarimetric radar measurements of precipitation systems
- Computational fluid dynamics, numerical methods, NWP model development and improvement

## PUBLICATIONS

### Peer-reviewed publications

As of 03/25/2021 (citation information from

<https://scholar.google.com/citations?user=kJtkwjoAAAAJ&hl=en>):

- h-index: 16
  - i10-index: 18
  - Total number of citations: 1022
1. **Dawson, D. T., II**, and M. Xue, 2006: Numerical forecasts of the 15-16 June 2002 Southern Plains severe MCS: Impact of mesoscale data and cloud analysis, *Monthly Weather Review*, **134**, 1607-1629, doi: <http://dx.doi.org/10.1175/MWR3141.1>, citations: 43
  2. Zhang, G., M. Xue, Q. Cao, and **D. T. Dawson II**, 2008: Diagnosing the intercept parameter for exponential raindrop size distribution based on video disdrometer observations, *Journal of Applied Meteorology and Climatology*, **47**, 2983-2992, doi: <http://dx.doi.org/10.1175/2008JAMC1876.1>, citations: 65
  3. **Dawson, D. T., II**, M. Xue, J. Milbrandt, and M. K. Yau, 2010: Comparison of Evaporation and Cold Pool Development between Single-Moment and Multimoment Bulk Microphysics Schemes in Idealized Simulations of Tornadic Thunderstorms. *Monthly Weather Review*, **138**, 1152-1171, doi: <http://dx.doi.org/10.1175/2009MWR2956.1>, citations: 194
  4. **Dawson, D. T., II**, L. Wicker, E. Mansell, and R. Tanamachi, 2012: Impact of the environmental low-level wind profile on ensemble forecasts of the 4 May 2007 Greensburg, KS tornadic storm and associated mesocyclones. *Monthly Weather Review*, **140**, 696-712, doi:<http://dx.doi.org/10.1175/MWR-D-11-00008.1>, citations: 83
  5. Stensrud, D. J., L. J. Wicker, M. Xue, **Dawson, D. T., II**, N. Yussouf, D. M. Wheatley, T. E. Thompson, N. A. Snook, T. M. Smith, A. D. Schenkman, C. K. Potvin, E. R. Mansell, T. Lei, K. M. Kuhlman, Y. Jung, T. A. Jones, J. Gao, M. C. Coniglio, H. E. Brooks, and K. A. Brewster, 2012: Progress and Challenges with Warn-on-Forecast. *Atmospheric Research*, **123**, 2-16, doi:<http://dx.doi.org/10.1016/j.atmosres.2012.04.004>, citations: 135
  6. Tanamachi, R. L., L. J. Wicker, D. C. Dowell, H. B. Bluestein, **D. T. Dawson II**, and M. Xue, 2013: EnKF Assimilation of High-Resolution, Mobile Doppler Radar Data of the 4 May 2007 Greensburg, Kansas, Supercell into a Numerical Cloud Model. *Monthly Weather Review*, **141**, 625-648, doi: <http://dx.doi.org/10.1175/MWR-D-12-00099.1>, citations: 29
  7. Reeves, H. D., and **D. T. Dawson II**, 2013: The Dependence of QPF on the Choice of Microphysical Parameterization for Lake-Effect Snowstorms. *Journal of Applied Meteorology and Climatology*, **52**, 363-377, doi: <http://dx.doi.org/10.1175/JAMC-D-12-019.1>, citations: 27
  8. **Dawson, D. T., II**, L. Wicker, E. Mansell, Y. Jung, and M. Xue, 2013: Low-level Polarimetric

Radar Signatures in EnKF Analyses and Forecasts of the 8 May 2003 Oklahoma City Tornadoic Supercell: Impact of Multi-moment Microphysics and Comparisons with Observations, *Advances in Meteorology*, vol. 2013, Article ID 818394, 13 pages, doi: <http://dx.doi.org/10.1155/2013/818394>, citations: 12

9. **Dawson, D. T., II**, E. Mansell, Y. Jung, L. Wicker, M. Kumjian, and M. Xue, 2014: Low-level  $Z_{DR}$  Signatures in Supercell Forward Flanks: the Role of Size Sorting and Melting of Hail. *Journal of the Atmospheric Sciences*, **71**, 276-299, doi: <http://dx.doi.org/10.1175/JAS-D-13-0118.1>, citations: 110
10. Wainwright, C. E., **D. T. Dawson II**, M. Xue, and G. Zhang, 2014: Diagnosing the Intercept Parameters of the Exponential Drop Size Distributions in a Single-Moment Microphysics Scheme and Impact on Supercell Storm Simulations. *Journal of Applied Meteorology and Climatology*, **53**, 2072-2090, doi: <http://dx.doi.org/10.1175/JAMC-D-13-0251.1>, citations: 27
11. **Dawson, D. T., II**, E. Mansell, and M. Kumjian, 2015: Does Wind Shear Cause Hydrometeor Size Sorting? *Journal of the Atmospheric Sciences*, **72**, 340-348, doi: <http://dx.doi.org/10.1175/JAS-D-14-0084.1>, citations: 43
12. **Dawson, D. T., II**, M. Xue, J. Milbrandt, and A. Shapiro, 2015: Sensitivity of Real-data Simulations of the 3 May 1999 Oklahoma City Tornadoic Supercell and Associated Tornadoes to Multi-moment Microphysics. Part I: Storm- and Tornado-scale Numerical Forecasts. *Monthly Weather Review*, **143**, 2241-2265, doi:<http://dx.doi.org/10.1175/MWR-D-14-00279.1>, citations: 42
13. **Dawson, D. T., II**, M. Xue, A. Shapiro, J. Milbrandt, and A. Schenkman, 2016: Sensitivity of Real-data Simulations of the 3 May 1999 Oklahoma City Tornadoic Supercell and Associated Tornadoes to Multi-moment Microphysics. Part II: Analysis of Buoyancy and Dynamic Pressure Forces in Simulated Tornado-Like Vortices. *Journal of the Atmospheric Sciences*, **73**, 1039-1061, doi: <http://dx.doi.org/10.1175/JAS-D-15-0114.1>, citations: 16
14. Schenkman, A. D., M. Xue, **D. T. Dawson II**, 2016: The Cause of Internal Outflow Surges in a High-Resolution Simulation of the 8 May 2003 Oklahoma City Tornadoic Supercell. *Journal of the Atmospheric Sciences*, **73**, 353-370, doi: <http://dx.doi.org/10.1175/JAS-D-15-0112.1>, citations: 31
15. Johnson, M., Y. Jung, **D. T. Dawson II**, and M. Xue, 2016: Comparison of Simulated Polarimetric Signatures in Idealized Supercell Storms using Two-moment Bulk Microphysics Schemes in WRF. *Monthly Weather Review*, **144**, 971-996, doi: <http://dx.doi.org/10.1175/MWR-D-15-0233.1>, citations: 41
16. Roberts, B., M. Xue, A. D. Schenkman, and **D. T. Dawson II**, 2016: The Role of Surface Drag in Tornadogenesis within an Idealized Supercell Simulation. *Journal of the Atmospheric Sciences*, **73**, 3371-3395, doi: <http://dx.doi.org/10.1175/JAS-D-15-0332.1>, citations: 39
17. Snyder, J. C., H. B. Bluestein, **D. T. Dawson II**, and Y. Jung, 2017: Simulations of Polarimetric, X-Band Radar Signatures in Supercells. Part I: Description of Experiment and Simulated  $\rho_{hv}$  Rings. *Journal of the Atmospheric Sciences*, **56**, 1977-1999, <https://doi.org/10.1175/JAMC-D-16-0138.1>, citations: 15
18. Snyder, J. C., H. B. Bluestein, **D. T. Dawson II**, and Y. Jung, 2017: Simulations of Polarimetric, X-Band Radar Signatures in Supercells. Part II: ZDR Columns and Rings and K-DP Columns. *Journal of the Atmospheric Sciences*, **56**, 2001-2026, <https://doi.org/10.1175/JAMC-D-16-0139.1>, citations: 16

19. Johnson, M., Y. Jung, **D. T. Dawson II**, T. Supinie, M. Xue, J. Park, and Y.-H. Lee, 2018: Evaluation of Unified Model microphysics in high-resolution NWP simulations using polarimetric radar observations. *Adv. Atmos. Sci.*, 35, 771-784, <https://doi.org/10.1007/s00376-017-7177-0>, citations: 6
20. **Dawson, D. T., II**, B. Roberts, and M. Xue, 2019: A method to control the environmental wind profile in idealized simulations of deep convection with surface friction. *Monthly Weather Review*, 147(11), 3935–3954. <https://doi.org/10.1175/MWR-D-18-0462.1>, citations: 3
21. Tanamachi, R. L., **Dawson, D. T., II**, & Parker, L. C. (2020). Students of Purdue Observing Tornadoic Thunderstorms for Research (SPOTTR): A severe storms field work course at Purdue University. *Bulletin of the American Meteorological Society*, BAMS-D-19-0025.1. <https://doi.org/10.1175/BAMS-D-19-0025.1>
22. Roberts, B., Xue, M., & **Dawson, D. T., II** (2020). The effect of surface drag strength on mesocyclone intensification and tornadogenesis in idealized supercell simulations. *Journal of the Atmospheric Sciences*, JAS-D-19-0109.1. <https://doi.org/10.1175/JAS-D-19-0109.1>, citations: 3
23. Rocadenbosch, R. B., S. J. Frasier, J. Waldinger, D. D. Turner, R. L Tanamachi, **D. T. Dawson II**, 2020. Ceilometer-Based Rain-Rate Estimation: A Case-Study Comparison With S-Band Radar and Disdrometer Retrievals in the Context of VORTEX-SE. *IEEE Transactions on Geoscience and Remote Sensing*, 58, 8268-8284. <https://doi.org/10.1109/TGRS.2020.2984458>
24. Tanamachi, R. L., **D. T. Dawson II**, & L. C. Parker, 2020. Students of Purdue Observing Tornadoic Thunderstorms for Research (SPOTTR) A Severe Storms Field Work Course at Purdue University, *Bulletin of the American Meteorological Society*, 101(6), E847-E868. Retrieved Feb 24, 2021, from <https://journals.ametsoc.org/view/journals/bams/101/6/bamsD190025.xml>
25. Li, F., Chavas, D. R., Reed, K. A., & **Dawson II, D. T.** (2020). Climatology of Severe Local Storm Environments and Synoptic-Scale Features over North America in ERA5 Reanalysis and CAM6 Simulation, *Journal of Climate*, 33(19), 8339-8365. Retrieved Feb 24, 2021, from <https://journals.ametsoc.org/view/journals/clim/33/19/jcliD190986.xml>
26. Mansell, E. R., **Dawson II, D. T.**, & Straka, J. M. (2020). Bin-Emulating Hail Melting in Three-Moment Bulk Microphysics, *Journal of the Atmospheric Sciences*, 77(10), 3361-3385. Retrieved Feb 24, 2021, from <https://journals.ametsoc.org/view/journals/atsc/77/10/jasD190268.xml>
27. Chavas, D. R., & **Dawson II, D. T.** (2021). An Idealized Physical Model for the Severe Convective Storm Environmental Sounding, *Journal of the Atmospheric Sciences*, 78(2), 653-670. Retrieved Mar 12, 2021, from <https://journals.ametsoc.org/view/journals/atsc/78/2/JAS-D-20-0120.1.xml>
28. Milbrandt, J. A., Morrison, H., **Dawson II, D. T.**, & Paukert, M. (2021). A Triple-Moment Representation of Ice in the Predicted Particle Properties (P3) Microphysics Scheme, *Journal of the Atmospheric Sciences*, 78(2), 439-458. Retrieved Mar 12, 2021, from <https://journals.ametsoc.org/view/journals/atsc/78/2/jas-d-20-0084.1.xml>

### Peer-reviewed Papers Submitted or in Preparation

29. Li, F., Chavas, D. R., Reed, K., Rosenbloom, N., **Dawson II, D. T.** (2021). The role of elevated terrain and the Gulf of Mexico in the production of severe local storm environments over North America. *Journal of Climate*, accepted pending revisions.
30. **Dawson, D. T., II**, Jessica Lee, and Guifu Zhang, 2021: Comparing Disdrometer-measured Raindrop Size Distributions from VORTEX-SE with Distributions from Polarimetric Radar Retrievals Using the Constrained Gamma Method. *Journal of Applied Meteorology and Climatology*, in preparation.
31. **Dawson, D. T., II**, Glen Romine, George Bryan, Katja Friedrich, Edward R. Mansell, 2021: Comparison of simulated and observed rain drop size distributions in supercell storms from VORTEX-2. *Monthly Weather Review*, in preparation.
32. Allison T. LaFleur, Robin L. Tanamachi, **Daniel T. Dawson II**, David D. Turner, 2021. The roles of direct insolation and near-surface moisture advection in the recovery of CAPE on 31 March 2016 during VORTEX-Southeast, *Monthly Weather Review*, in preparation.

### Conference Papers

- Li, F., Chavas, D. R., Reed, K., Rosenbloom, N., **Dawson II, D. T.** (2020). The role of elevated terrain and the Gulf of Mexico in the production of severe local storm environments over North America. AGU Fall Meeting 2020, American Geophysical Union, A160-02, <https://agu.confex.com/agu/fm20/meetingapp.cgi/Paper/741052>
- Jiang, Q, & **Dawson II, D. T.** (2020). The impact of surface drag on the low-level structure of tornadic storms in idealized simulations. AGU Fall Meeting 2020, American Geophysical Union, A134-04, <https://agu.confex.com/agu/fm20/meetingapp.cgi/Paper/741496>
- Belak, C., **Dawson II, D. T.**, & Mansell, E. (2020). Verification of simulated DSDs and sensitivity to CCN concentration in EnKF analyses and ensemble forecasts of the 30th April 2017 tornadic QLCS during VORTEX-SE. AGU Fall Meeting 2020, American Geophysical Union, A134-07. <https://agu.confex.com/agu/fm20/meetingapp.cgi/Paper/738655>
- **Dawson II, D. T.**, Tanamachi, R. L., and Coauthors, 2020: Comparison of Simulated Rain DSDs and Polarimetric Signatures with Disdrometer and Radar Observations in the 31 March 2016 Southeast U.S. Tornado Outbreak during VORTEX-SE. Severe Local Storms Symposium, 100th Annual Meeting of the American Meteorological Society, Boston, Massachusetts, American Meteorological Society, P928, <https://ams.confex.com/ams/2020Annual/meetingapp.cgi/Paper/369570>.
- Chavas, D. R., & **Dawson II, D. T.** (2020): Testing a Physics-Based Model of the Thermodynamic Environment in Supercell Simulation Experiments. 100th Annual Meeting of the American Meteorological Society, Boston, Massachusetts, American Meteorological Society, P943, <https://ams.confex.com/ams/2020Annual/meetingapp.cgi/Paper/365640>
- Li Funing, Daniel Robert Chavas, Kevin A Reed, **Daniel T Dawson**, 2019: Geographic Controls of Severe Local Storm Environments over North America: Role of the Rocky Mountains and the Gulf of Mexico. *AGU Fall Meeting 2019*, San Francisco, CA, AGU, A33K-3001.
- Mansell, E. R. and **D T. Dawson II**, 2019: Bin-Emulating Melting in a Bulk Microphysics Scheme. *AGU Fall Meeting 2019*, San Francisco, CA, AGU, A41Q-2890.

- **Dawson II, D. T.**, R. L. Tanamachi, and Coauthors, 2019: Using EnKF radar data assimilation to analyze the impact of microphysical processes on the evolution of the 31 March 2016 Southeast-U.S. tornado outbreak during VORTEX-SE. *39th Int. Conf. on Radar Meteorology*, Nara, Japan, American Meteorological Society, 9B – 06.
- Tanamachi, R. L., L. Warner, M. Sharma, A. T. LaFleur, and **D. T. Dawson**, 2019: The X-band Teaching and Research RADar (XTRRA) at Purdue University, U.S.A.: Updates and new initiatives. *39th Int. Conf. on Radar Meteorology*, Nara, Japan, American Meteorological Society, P3-22.
- Sharma, M., R. L. Tanamachi, **D. T. Dawson**, Y. Jung, and K. Thomas, 2019: Analysis of the Edmond-Carney Tornadic Supercell by EnKF Assimilation of S-band Radar Data. *39th Int. Conf. on Radar Meteorology*, Nara, Japan, American Meteorological Society, P1-69.
- LaFleur, A. T., R. L. Tanamachi, **D. T. Dawson**, R. E. Nelson, and B. Coffey, 2019: Automated identification of ZDR arcs in simulated radar data: A comparative study. *39th Int. Conf. on Radar Meteorology*, Nara, Japan, American Meteorological Society, P2-72.
- John Cole, M. Asel, S. Harrel, **D. T. Dawson II**, and M. E. Baldwin, 2019: Analyzing the Role of a Long-Lived Mesoscale Convective Vortex in Mesoscale Ensemble Analyses of the 24 August 2016 Indiana-Ohio-Ontario Tornado Outbreak. *18th Annual Student Conference, 99<sup>th</sup> American Meteorological Society Annual Meeting*, Phoenix, Arizona, American Meteorological Society, S173.
- **Daniel T. Dawson II**, M. E. Baldwin, L. J. Wicker, and K. H. Knopfmeier, 2019: Exploring the "Surprise" 24 August 2016 Indiana–Ohio–Ontario Tornado Outbreak with Meso- and Storm-Scale Ensemble Simulations. *Special Symposium on Mesoscale Meteorological Extremes: Understanding, Prediction, and Projection, 99<sup>th</sup> American Meteorological Society Annual Meeting*, Phoenix, Arizona, American Meteorological Society, P366
- Tanamachi, R. L., **D. T. Dawson II**, and L. Carleton Parker, 2019: Students of Purdue Observing Tornadic Thunderstorms for Research (SPOTTR): An update. *28th Symp. on Education*, Phoenix, Arizona, American Meteorological Society, 8.2.
- Tanamachi, R. L., **D. T. Dawson II**, and L. Carleton Parker, 2019: Observations of Severe Storms by a Low-Power, Polarimetric, Phased-Array Mobile Radar. *Phased Array Radar Symp. at the 99th American Meteorological Society Annual Meeting*, Phoenix, Arizona, American Meteorological Society, 1.3.
- Barragan, R., F. Rocadenbosch, J. Waldinger, S. J. Frasier, D. D. Turner, R. L. Tanamachi, and **D. T. Dawson II**, 2018: Rain-rate estimation from ceilometer measurements: A comparative case study using S-band radar and disdrometer retrievals. *10th European Conf. on Radar in Meteorology and Hydrology*, The Netherlands, Wageningen University and Research, 7.5.
- LaFleur, A. T., R. Tanamachi, **D. T. Dawson II**, S. Frasier, J. Waldinger, and D. D. Turner, 2018: The Role of Direct Insolation and Near-Surface Moisture Advection in the Recovery of CAPE on 31 March 2016 During VORTEX-Southeast. *29th Conf. on Severe Local Storms*, Stowe, Vermont, American Meteorological Society, P100.
- LaFleur, A. T., R. L. Tanamachi, **D. T. Dawson II**, and B. E. Coffey, 2018: Simulated ZDR arcs and tornadogenesis: A preliminary study. *29th Conf. on Severe Local Storms*, Stowe, Vermont, American Meteorological Society, P159.
- Tanamachi, R. L., **D. T. Dawson II**, E. M. Agee, and M. Baldwin, 2018: A new, polarimetric,



X-band Teaching and Research Radar (XTRRA) at Purdue University. *29th Conf. on Severe Local Storms*, Stowe, Vermont, American Meteorological Society, P98.

- Tanamachi, R. L., **D. T. Dawson II**, M. E. Baldwin, L. Carleton Parker, 2018: Students of Purdue Observing Tornadoic Thunderstorms for Research (SPOTTR): A severe storms field work course at Purdue University. *27th Symp. on Education*, Austin, Texas, American Meteorological Society, P123.
- Guo, Mingyang, **D. T. Dawson II**, M. E. Baldwin, and E. R. Mansell, 2017: Aerosol Effects on Microphysical Processes, Storm Structure, and Cold Pool Strength in Simulated Supercell Thunderstorms from VORTEX-2 and VORTEX-SE. Abstract A13E-2122 presented at 2017 Fall Meeting, AGU, New Orleans, Louisiana, 11-15 Dec. 2017.
- Bozell, J., **D. T. Dawson II**, R. L. Tanamachi, and S. J. Frasier, 2017: Comparing disdrometer measured raindrop size distributions from VORTEX-SE with distributions from polarimetric radar retrievals using the constrained gamma method. *38th Conf. on Radar Meteorology*, Chicago, Illinois, American Meteorological Society, 7A.5.
- **Dawson, D. T., II**, M. E. Baldwin, J. Bozell, J. Buckingham, D. R. Chavas, W. L. Downing, M. Guo, R. L. Tanamachi, A. N. Griffin, H. M. Mallinson, S. J. Frasier, W. Heberling, J. Waldinger, M. I. Biggerstaff, and S. M. Waugh, 2017: Overview of Purdue's mobile disdrometer operations during VORTEX-SE 2016-2017. *38th Conf. on Radar Meteorology*, Chicago, Illinois, American Meteorological Society.
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- **Dawson, D. T., II**, J. Bozell, J. Buckingham, W. L. Downing, D. R. Chavas, H. M. Mallinson, M. I. Biggerstaff, and S. Waugh, 2016: Overview of Purdue's mobile disdrometer operations during VORTEX-SE. 28th Conference on Severe Local Storms, 7-11 November 2016, Portland, OR, 16A.2.
- Roberts, B., M. Xue, A. D. Schenkman, and **D. T. Dawson II**, 2016: The Role of Surface Drag in Tornadogenesis within an Idealized Supercell Simulation. 28th Conference on Severe Local Storms, 7-11 November 2016, Portland, OR, 10.4.
- Snyder, Jeffrey C., A. V. Ryzhkov, **D. T. Dawson II**, Y. Jung, and A. Khain, 2016: Sensitivities of Polarimetric Radar Forward Operators. 28th Conference on Severe Local Storms, 7-11 November 2016, Portland, OR, P75.
- Bozell, Jessica, **D. T. Dawson II**, R. Tanamachi, and S. J. Frasier, 2016: Preliminary Analyses of Disdrometer Observations in the 2016 VORTEX-SE Field Campaign. 28th Conference on Severe Local Storms, 7-11 November 2016, Portland, OR, P123.
- **Dawson, D. T. II**, M. Guo, M. E. Baldwin, and E. R. Mansell, 2016: Aerosol Sensitivities in Idealized Simulations of VORTEX-2 and VORTEX-SE Supercells. 28th Conference on Severe Local Storms, 7-11 November 2016, Portland, OR, P124.
- Johnson, Marcus R., Y. Jung, **D. T. Dawson II**, and M. Xue, 2015: Comparison of Polarimetric Signatures Simulated using Two-Moment Bulk Microphysics Schemes in WRF in Idealized Supercell Storms. *37th Conference on Radar Meteorology*, 14-18 September 2015, Norman, OK, 3A.6.
- **Dawson, D. T., II**, G. H. Bryan, K. Friedrich, Y. Jung, E. R. Mansell, G. Romine, and M. Xue,

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- Snyder, Jeffrey C., Y. Jung, **D. Dawson**, A. V. Ryzhkov, and A. P. Khain, 2015: Examining polarimetric forward operators for use with numerical models. 37<sup>th</sup> Conference on Radar Meteorology, 14-18 September 2015, Norman, OK, P282.
- Supinie, Timothy A., **D. T. Dawson II**, and Y. Jung, 2015: A Python-Based Plotter for Model-Derived Polarimetric Radar Variables. 5<sup>th</sup> Symposium on Advances in Modeling and Analysis Using Python, 95<sup>th</sup> American Meteorological Society Annual Meeting, 4-8 January 2015, Phoenix, AZ, P411.
- Schenkman, Alexander D., M. Xue, **D. T. Dawson II**, and M. Hu, 2014: Internal Momentum Surges in a High-Resolution Simulation of the 8 May 2003 Oklahoma City Tornadoic Supercell. 27<sup>th</sup> Conference on Severe Local Storms, 3-7 November 2014, Madison, WI, 12A.3.
- **Dawson, Daniel T., II**, M. Xue, A. Shapiro, and J. A. Milbrandt, 2014: Analysis of vertical momentum forcing in real data numerical simulations of tornado-like vortices: sensitivity to microphysics and outflow thermodynamics. 27<sup>th</sup> Conference on Severe Local Storms, 3-7 November 2014, Madison, WI, 16A.2.
- **Dawson, Daniel T., II**, E. R. Mansell, M. R. Kumjian, 2014: Does wind shear cause hydrometeor size sorting? 27<sup>th</sup> Conference on Severe Local Storms, 3-7 November 2014, Madison, WI, P12.
- **Dawson, Daniel T., II**, E. R. Mansell, Y. Jung, L. J. Wicker, M. R. Kumjian, and M. Xue: Comparisons of numerically-simulated and observed low-level polarimetric signatures in supercells. 36<sup>th</sup> Conference on Radar Meteorology, 16-20 September 2013, Breckenridge, CO, 12B.6.
- Snyder, Jeffrey C., H. B. Bluestein, D. T. Dawson II, and Y. Jung, 2013: Examining the effect of the vertical wind shear environment on polarimetric signatures in numerically-simulated supercells. 36<sup>th</sup> Conference on Radar Meteorology, 16-20 September 2013, Breckenridge, CO, 13B.4.
- **Dawson, Daniel T., II**, G. H. Bryan, G. Romine, and K. Friedrich, 2012: Characterizing rain drop size distributions in supercell hook echoes: results from VORTEX2. 26<sup>th</sup> Conference on Severe Local Storms, 5-8 November 2012, Nashville, TN, P14.5.
- David J. Stensrud, L. J. Wicker, E. R. Mansell, J. Gao, M. C. Coniglio, H. E. Brooks, M. Xue, **D. T. Dawson II**, N. Yussouf, D. M. Wheatley, T. A. Jones, R. M. Belobraydich, T. M. Smith, K. M. Kuhlman, A. Clark, and D. Dowell: Progress and Challenges with Warn-on-Forecast, 2012. 26<sup>th</sup> Conference on Severe Local Storms, 5-8 November 2012, Nashville, TN, 7.1.
- Karen A. Kosiba, J. Wurman, P. Robinson, C. Schwarz, D. W. Burgess, E. R. Mansell, and **D. T. Dawson II**, 2012: Mobile radar observations and damage assessment of the 24 May 2011, Canton Lake, OK tornado. 92<sup>nd</sup> American Meteorological Society Annual Meeting, 22-26 January 2012, New Orleans, LA, P646.
- Karen A. Kosiba, J. Wurman, P. Robinson, C. Schwarz, D. W. Burgess, E. R. Mansell, and **D. T. Dawson II**, 2012: Mobile radar observations and damage assessment of the 24 May 2011, Canton Lake, OK tornado. 26<sup>th</sup> Conference on Severe Local Storms, 5-8 November 2012, Nashville, TN, P102.
- Wicker, Louis J., E. Mansell, **D. Dawson**, and D. Dowell, 2011: Initial results from convective-

scale analysis and prediction of the 14 June 2011 Norman Oklahoma macroburst using conventional and rapid-scan weather Doppler radar data. *6<sup>th</sup> European Conference on Severe Storms*, 3-7 October 2011, Palma de Mallorca, Spain.

- Reeves, Heather D., and **D. T. Dawson II**, 2011: Numerical model forecast sensitivity to microphysical parameterization for lake effect snow. *14<sup>th</sup> Conference on Mesoscale Processes/15<sup>th</sup> Conference on Aviation, Range, and Aerospace Meteorology*, American Meteorological Society, Los Angeles, CA, 2.1.
- Wicker, Louis J., E. Mansell, D. Dowell, and **D. Dawson**, 2010: High-resolution storm-scale numerical weather prediction using EnKF for the 8 May 2003 Moore Oklahoma tornadic supercell., *25<sup>th</sup> Conference on Severe Local Storms*, American Meteorological Society, Denver, CO, 12B.5.
- **Dawson, Daniel T., II**, and G. Romine, 2010: A preliminary survey of DSD measurements collected during VORTEX2., *25<sup>th</sup> Conference on Severe Local Storms*, American Meteorological Society, Denver, CO, 8A.4.
- Wainwright, Charlotte, E., M. Xue, G. Zhang, and **D. Dawson**, 2009: Microphysics schemes based on DSD-parameter constraints and their impact on convective storm forecasts, *89<sup>th</sup> AMS Annual Meeting, 16<sup>th</sup> Conference on Satellite Meteorology and Oceanography*, American Meteorological Society, Phoenix, AZ, JP6.5.
- Bluestein, Howard B., I. PopStefanija, V. Venkatesh, P. S. Tsai, R. L. Tanamachi, M. M. French, J. C. Snyder, J. Houser, **D. T. Dawson**, C. Baldi, B. Seeger, S. J. Frasier, J. Knorr, and R. Bluth, 2008: Severe-storm data collected in the Southern Plains by three mobile Doppler radars during the spring, 2007 and 2008, *24<sup>th</sup> Conference on Severe Local Storms*, American Meteorological Society, Savanna, GA, 5.3.
- **Dawson, Daniel T., II**, 2008: High resolution real-data simulations of the 3 May 1999 tornadic storms with multi-moment microphysics, *24<sup>th</sup> Conference on Severe Local Storms*, American Meteorological Society, Savannah, GA, 14.7.
- **Dawson, Daniel T., II**, M. Xue, and J. A. Milbrandt, 2008: Improvements in the treatment of evaporation and melting in multi-moment versus single-moment bulk microphysics: results from numerical simulations of the 3 May 1999 Oklahoma tornadic storms, *24<sup>th</sup> Conference on Severe Local Storms*, American Meteorological Society, Savannah, GA, 17B.4.
- Zhang, Guifu, M. Xue, Q. Cao, and **D. Dawson**, 2007: Diagnosing the intercept parameter for exponential raindrop size distribution based on video disdrometer observations., *22<sup>nd</sup> Conference on Weather Analysis and Forecasting/18<sup>th</sup> Conference on Numerical Weather Prediction*, American Meteorological Society, Salt Lake City, UT, 10B.3.
- **Dawson, Daniel T., II**, M. Xue, J. A. Milbrandt, M. K. Yau, and G. Zhang, 2007: Impact of multi-moment microphysics and model resolution on predicted cold pool and reflectivity intensity and structures in the Oklahoma tornadic supercell storms of 3 May 1999., *22<sup>nd</sup> Conference on Weather Analysis and Forecasting/18<sup>th</sup> Conference on Numerical Weather Prediction*, American Meteorological Society, Salt Lake City, UT, 10B.2.
- **Dawson, Daniel T., II**, M. Xue, and G. Zhang, 2006: High resolution simulations of the 3 May 1999 Oklahoma tornado outbreak: impact of microphysics on cold pool intensity and storm morphology, *23<sup>rd</sup> Conference on Severe Local Storms*, American Meteorological Society, St. Louis, MO, 16.1.
- Snyder, Jeffrey C., **D. T. Dawson**, and H. B. Bluestein, 2006: Tornadoes associated with cold-

core, closed 500mb lows: The 20 March 2006, northwestern Oklahoma tornadoes, *23rd Conference on Severe Local Storms*, American Meteorological Society, St. Louis, MO, P1.2.

- **Dawson, Daniel T., II**, and M. Xue, 2005: Analysis of the development and evolution of the 15-16 June 2002 Southern Plains severe MCS through high-resolution numerical forecasts, *32nd Conference on Radar Meteorology/11th Conference on Mesoscale Processes*, American Meteorological Society, Albuquerque, NM, P4M.1.
- **Dawson, Daniel T., II** and M. Xue, 2004: Impact of mesoscale data, cloud analysis on the explicit prediction of a MCS during IHOP 2002, *20th Conference on Weather Analysis and Forecasting/16th Conference on Numerical Weather Prediction*, American Meteorological Society, Seattle, WA, P1.36.

### Theses and Other Manuscripts

- **Dawson, Daniel T., II**, 2009: *Impacts of single- and multi-moment microphysics on numerical simulations of supercells and tornadoes of the 3 May 1999 Oklahoma tornado outbreak*. Ph.D. Dissertation, School of Meteorology, University of Oklahoma. 173pp.
- **Dawson, Daniel T., II**, 2004: *Numerical Forecasts of the 15-16 June 2002 Southern Plains Severe MCS: Impact of Mesoscale Data and Cloud Analysis*, M. S. Comprehensive Examination, School of Meteorology, University of Oklahoma, 49 pp.

### SEMINARS AND INVITED TALKS

- 2020** “Q&A With A Storm Chaser,” Children’s Museum of Indianapolis. [Cancelled owing to COVID-19.]
- 2019** “Interactions between Microphysical and Dynamical Processes in Supercell Thunderstorms as Revealed through Observations and High-resolution Numerical Simulations”, *Department of Mathematical Sciences Colloquium, University of Wisconsin-Milwaukee*, Milwaukee, Wisconsin, 02-22-19.
- 2018** “Microphysical-dynamical interactions in supercell thunderstorms as revealed through high-resolution numerical simulations”, Kyungpook National University, Daegu, South Korea, 11-26-18
- 2018** “Microphysical-dynamical interactions in supercell thunderstorms as revealed through high-resolution numerical simulations”, National Institute for Meteorological Studies, Jeju Island, South Korea, 11-30-18
- 2018** “The 24 August 2016 Tornado Outbreak in Indiana”. 2018 Central Indiana Severe Weather Symposium, IUPUI, Indianapolis
- 2016** *28th Conf. on Severe Local Storms*, Portland, Oregon, American Meteorological Society: “Research Tools Tutorial” (convective-scale modeling section)
- 2016** “An Introduction to Tornado Science”, Public lecture, Imagination Station, Lafayette, Indiana.
- 2009** “The Impact of Single- And Multi-moment Microphysics on Numerical Simulations of Supercells And Tornadoes of The 3 May 1999 Oklahoma Tornado Outbreak”. Ph.D. Departmental Seminar, SoM, OU.
- 2008** “High-resolution numerical simulations of the 3 May 1999 tornadic supercell storms using multi-moment bulk microphysics: improvements over the single-moment approach”. MMM, NCAR.
- 2004** “Numerical Forecasts of the 15-16 June 2002 Southern Plains Severe MCS: Impact of Mesoscale Data and Cloud Analysis”. M.S. Departmental Seminar, SoM, OU.

## MEMBERSHIPS AND PROFESSIONAL ACTIVITIES

### Committee Service

2020 – present	PERiLS Planning Committee
2019 – present	Outreach Committee and Undergraduate Committee, EAPS
2018 – 2019	Planetary Atmospheres and Physics Faculty Search Committee, EAPS
2018 – 2019	Alumni and Corporate Relations Committee, EAPS, Purdue
2018 – present	Non-Classic Tornadoic Storms Field Program Planning Committee
2017 – present	LowCAPE Field Program Planning Committee
2017	Program Committee, 38 <sup>th</sup> Conference on Radar Meteorology
2016	Program Committee, 28 <sup>th</sup> Conference on Severe Local Storms
2016 – present	VORTEX-SE Scientific Steering Committee
2015 – 2018	Graduate Committee, EAPS, Purdue.
2015 – present	Computing Committee, EAPS, Purdue
2014	Program Committee, 27 <sup>th</sup> Conference on Severe Local Storms

### Field Operations

2019	<i>Ad hoc</i> participant with EAPS SPOTTR course in TORUS field campaign
2017	Participant with joint Purdue/NSSL/OU field operations in Hurricane Irma; in situ observations with portable instrumented probes
2016 – 2017	PI participant in VORTEX-SE; in situ observations with portable instrumented probes.
2012	Participant in Deep Convective Clouds and Chemistry (DC3) field operations with NSSL
2011	Participant in local storm field operations with NSSL
2010	Participant in VORTEX2 (mobile mesonet and disdrometer probes) with Glen Romine of NCAR
2009	Volunteer Driver for University of Massachusetts (UMASS) X-pol radar truck in support of VORTEX2 operations
2004 – 2008	Volunteer driver, navigator, logistics, and backup operator for Dr. Howard Bluestein during several severe convective storm intercepts with mobile Doppler radars.
2003 – 2004	Volunteer driver, navigator, logistics, and backup operator for Dr. Joshua Wurman of Center for Severe Weather Research (CSWR) during a Doppler on Wheels research mission into Hurricanes Isabel (2003) and Frances (2004).

### Peer Review Activity

2016 – present Associate Editor, *Monthly Weather Review*

- Reviewer for *Monthly Weather Review*, *Journal of Applied Meteorology and Climatology*, *Journal of the Atmospheric Sciences*, *Journal of Geophysical Research: Atmospheres*, *Atmospheric Research*, *Electronic Journal of Severe Storms Meteorology*, *Weather and Forecasting*, *Advances in Atmospheric Science*, *Journal of Atmospheric and Oceanic Technology*, *Geophysical Research Letters*
- Proposal reviewer for NSF and the National Aeronautics and Space Administration (NASA)

### Other Professional Services

2019	Session Chair, 99 <sup>th</sup> AMS Annual Meeting
2017	Session Chair, 38 <sup>th</sup> Conference on Radar Meteorology

**2016** Session Chair, 28<sup>th</sup> Conference on Severe Local Storms  
**2015** Session Chair, 37<sup>th</sup> Conference on Radar Meteorology  
**2014** Storm Video Night Co-chair, 27<sup>th</sup> Conference on Severe Local Storms.  
**2014** Session Chair, 27<sup>th</sup> Conference on Severe Local Storms  
**2012** Storm Video Night Co-chair, 26<sup>th</sup> Conference on Severe Local Storms.  
**2012** Session Chair, 26<sup>th</sup> Conference on Severe Local Storms  
**2010** Storm Video Night Co-chair, 25<sup>th</sup> Conference on Severe Local Storms.

#### **SELECTED HONORS AND AWARDS**

**2012 – 2014** NSF Atmospheric and Geospace Sciences Postdoctoral Research Fellowship (AGS-PRF), awarded at NSSL. Title: “*Impacts of Microphysics and Cold Pool Thermodynamics on Supercell Tornadogenesis: Comparisons of Numerical Simulations with VORTEX2 Observations*”. Award transferred to the Center for Analysis and Prediction of Storms for **2014**.

**2009 – 2011** National Research Council (NRC) Postdoctoral Fellowship, Awarded at NSSL.

**2005 – 2007** NSF Graduate Research Fellowship, awarded at OU.

**2002 – 2005** National Defense Science and Engineering Graduate (NDSEG) Fellowship, American Society for Engineering Education (ASEE), awarded at OU.

**2002** American Meteorological Society (AMS) Graduate Fellowship (awarded but declined due to time overlap with NDSEG/NSF Fellowship).

**2002 – 2007** Alumni Fellowship, awarded at OU

#### **PROFESSIONAL MEMBERSHIP INFORMATION**

- American Meteorological Society
- American Geophysical Union
- Phi Beta Kappa and Phi Kappa Phi Honor Societies