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# DANIEL T. DAWSON II, PH. D.

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## EDUCATION:

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

## PROFESSIONAL EXPERIENCE:

- **2014:** Program Committee Member, 27<sup>th</sup> Conference on Severe Local Storms
- **2010,2012,2014:** Storm Video Night Co-chair, 25<sup>th</sup>, 26<sup>th</sup>, and 27<sup>th</sup> Conference on Severe Local Storms.
- **Jan 2014-Present:** NSF Postdoctoral Research Fellow at CAPS (transferred from NSSL)
- **Jan 2013-Present:** Research Scientist, CAPS
- **March 2012 and April 2013:** Visiting Scientist, Mesoscale and Microscale Meteorology (MMM) division, NCAR
- **2012:** National Science Foundation (NSF) Postdoctoral Research Fellow at NSSL
- **Fall 2011-Spring 2012:** Research Scientist at the Cooperative Institute for Mesoscale Meteorological Studies (CIMMS)
- **Fall 2009-Fall 2011:** National Research Council (NRC) Postdoctoral Research Associate at the National Severe Storms Laboratory (NSSL)
- **Spring 2010:** Participant in VORTEX2 (mobile mesonet and disdrometer probes) with Glen Romine of the National Center for Atmospheric Research (NCAR)
- **Summer 2009:** Postdoctoral Research Scientist, CAPS
- **Spring 2009:** Volunteer Driver for University of Massachusetts (UMASS) X-pol radar truck in support of VORTEX2 operations
- **Fall 2002 – Spring 2009:** Research Assistant, University of Oklahoma (OU), College of Atmospheric & Geographic Sciences (CAGS), School of Meteorology (SoM) and Center for Analysis and Prediction of Storms (CAPS)
- **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).

## TEACHING EXPERIENCE:

- **Fall 2014:** Guest Lecturer, Objective Analysis, CAGS, SoM, OU
- **Fall 2013:** Substitute Instructor, Computational Fluid Dynamics, CAGS, SoM, OU
- **Spring 2005:** Co-Instructor, Mesoscale Meteorology, CAGS, SoM, OU

## STUDENT MENTORING EXPERIENCE:

- **Fall 2013-present:** Brett Roberts; Ph.D. committee member
- **Spring 2012-present:** Theo Kuhn; high school science project mentor

## EXPERTISE AND RESEARCH INTERESTS:

- Dynamics, numerical modeling, data assimilation, and prediction of severe convective storms and tornadoes
- Cloud and precipitation microphysics and parameterizations thereof
- EnKF radar data assimilation and ensemble prediction on convective scales
- Disdrometer and polarimetric radar observations in supercells

## PEER-REVIEWED PUBLICATIONS:

- Dawson, Daniel T., II, E. Mansell, and M. Kumjian, 2014: Does Wind Shear Cause Hydrometeor Size Sorting? *Journal of the Atmospheric Sciences*, Early Online Release.
- Wainwright, Charlotte 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.
- Dawson, Daniel 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 Tornadic 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>
- Dawson, Daniel T., II, E. Mansell, Y. Jung, L. Wicker, M. Kumjian, and M. Xue, 2013: 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>
- Reeves, Heather Dawn, 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>
- Tanamachi, Robin 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>
- Stensrud, David J., L. J. Wicker, M. Xue, D. T. Dawson II, N. Yussouf, D. M. Wheatley, T. E. Thompson, N. A. Snook, T. M. Smith, A. D. Shenkman, 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: [10.1016/j.atmosres.2012.04.004](https://doi.org/10.1016/j.atmosres.2012.04.004)

- Dawson, Daniel 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: [10.1175/MWR-D-11-00008.1](https://doi.org/10.1175/MWR-D-11-00008.1).
- Dawson, Daniel 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>
- Zhang, Guifu, 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>
- Dawson, Daniel 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>

## PUBLICATIONS IN REVIEW:

- Dawson, Daniel T., II, M. Xue, J. Milbrandt, and A. Shapiro, 2014: Sensitivity of Real-data Simulations of the 3 May 1999 Oklahoma City Tornadic Supercell and Associated Tornadoes to Multi-moment Microphysics. Part I: Storm- and Tornado-scale Numerical Forecasts. *Monthly Weather Review*, submitted.

## CONFERENCE PRESENTATIONS AND PUBLICATIONS

- 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: 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: 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. 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: 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, *24th 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, *24th 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, *24th 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., *22nd Conference on Weather Analysis and Forecasting/18th 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., *22nd Conference on Weather Analysis and Forecasting/18th 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, *23rd 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:

- “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, School of Meteorology, University of Oklahoma, April 2009.
- “High-resolution numerical simulations of the 3 May 1999 tornadic supercell storms using multi-moment bulk microphysics: improvements over the single-moment approach”. Mesoscale and Microscale Meteorology division, National Center for Atmospheric Research, July 2008
- “Numerical Forecasts of the 15-16 June 2002 Southern Plains Severe MCS: Impact of Mesoscale Data and Cloud Analysis”. M.S. Departmental Seminar, School of Meteorology, University of Oklahoma, July 2004

## PEER REVIEW ACTIVITY:

- *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*

## SELECTED HONORS AND AWARDS:

- **2012-2013**: National Science Foundation (NSF) Atmospheric and Geospace Sciences Postdoctoral Research Fellowship (AGS-PRF), Awarded at the National Severe Storms Laboratory (NSSL). Title: “*Impacts of Microphysics and Cold Pool Thermodynamics on Supercell Tornado Genesis: Comparisons of Numerical Simulations with VORTEX2 Observations*”. Award transferred to the Center for Analysis and Prediction of Storms for **2014-2015**.
- **2009-2011**: National Research Council (NRC) Postdoctoral Fellowship, Awarded at the National Severe Storms Laboratory (NSSL).
- **2005-2007**, NSF Graduate Research Fellowship, National Science Foundation (NSF), Awarded at the University of Oklahoma

- **2002-2005**, National Defense Science and Engineering Graduate Fellowship, American Society for Engineering Education, Awarded at the University of Oklahoma
- **2002-2007**, Alumni Fellowship, Awarded at the University of Oklahoma

## PROFESSIONAL MEMBERSHIP INFORMATION:

- American Meteorological Society
- Phi Beta Kappa
- Phi Kappa Phi

## OTHER EXPERTISE, ACTIVITIES, AND INTERESTS:

- Technician class amateur radio operator (call sign WX5DTD, exp. 2018)
- Member of the OU Amateur Radio Club
- Computer programmer in Fortran, C, C++, Java, Python
- Certified storm spotter and contributor of severe reports to the National Weather Service
- Amateur astronomer, photographer, videographer, and storm chaser