Dr. Louis J. Wicker
Curriculum Vitae

Last Updated 02/27/2025

Present Position (June 1999 – present)

Senior research meteorologist specializing in severe storm dynamics, convective-scale data assimilation, storm-scale prediction, and computational physics at NOAA's National Severe Storms Laboratory in Norman, Oklahoma.

Current Professional Activities

- Meteorologist, NOAA National Severe Storm Laboratory (June 1999 – present)
- Chief Scientist for the NOAA/NSSL Warn on Forecast Program (June 2016 - present)
- Co-chair of UFS CAM working group (August 2018 – present)
- CIRWO Fellow, Cooperative Institute for Mesoscale Meteorological Studies, University of Oklahoma (1999 - present)
- WRF/MPAS Research Advisory Board and MPAS Science Advisory Committee (Sept 2023 – present)
- American Meteorological Fellow (Jan, 2024 - present)

Previous Professional Activities

- Affiliate Professor, School of Meteorology, University of Oklahoma (2000 - 2023).
- Editor, AMS Journal of Atmospheric Sciences (January 2018 – December 2020)
- Weather Research and Forecasting Model's Science Advisory Board (2012 - 2019)
- Member of the Science Advisory Board, Developmental Test Center (March 2018-September 2019)
- Project Manager, NOAA/NSSL Warn on Forecast Project (August 2012 - May 2016)
- Chief Scientist for the NOAA/NSSL Warn on Forecast Project (2011 - July 2012)
- Member of the scientific steering committee for the second Verification of the Origins of Rotation in Tornadoes Experiment (VORTEX-II, 2007-2010).
- Visiting Scientist, Deutsche Wetterdienst, Frankfurt Germany, October 1997
- Associate Adjunct Professor, Department of Meteorology, Texas A&M University (1999-2005)
- Associate Professor, Texas A&M Meteorology Department, August 1998 through May 1999
- Assistant Professor, Texas A&M Meteorology Department, August 1992 through July 1998

- Visiting Associate Research Scientist, National Center for Supercomputer Applications and the Department of Atmospheric Sciences, University of Illinois at Urbana-Champaign. August 1990 through August 1992.

Recent Invited Talks

Distinguished Alumni Award, Univ. of Illinois Department of Atmospheric Science, 24 September 2024

OU Supercomputing Symposium Panel Discussion, University of Oklahoma, 29 September 2021.

NSSL's Warn on Forecast System. *Virtual presentation to MIT's Lincoln Lab.* 2 April 2021.

NOAA's Warn on Forecast Program: Probabilistic Prediction of Severe Weather using High-Resolution Models. *Texas Weather Conference.* Dallas TX. 21 September 2018.

NOAA's Warn on Forecast Program: An Update on the Progress Toward Ensemble Prediction of Convective Weather Threats, *W. John and Gail M. Hussey Commemorative Lectureship in Meteorology,* Department of Meteorology and Atmospheric Sciences, Penn State University, 5 April 2017.

NOAA's Warn on Forecast Program: An Update on the Progress Toward Ensemble Prediction of Convective Weather Threats, Department of Earth, Atmospheric and Planetary Sciences, Purdue University, 2 March 2017.

Refereed Publications[1]

92. **Wicker**, **L. J.,** and Katona, B. 2025: An ensemble analysis toward understanding the sensitivity of tornadogenesis to terrain. *To be resubmitted to Mon. Wea. Rev. in 2025*.

91. **Wicker**, **L. J.,** 2025: Comparison of convective updrafts within two cloud models. *To be submitted to Mon. Wea. Rev., May, 2025*.

90. Bluestein, H., J. A. Margraf, T. A. Greenwood, S. Emmerson, J. C. Snyder, L. J. Wicker, D. J. Bodine, 2025: The Evolution of Cyclonic and Anticyclonic Tornadoes in the Selden, Kansas, Supercell of 24 May 2021: Rapid-Scan, Polarimetric, Mobile, X-Band, Doppler-Radar Observations. *Submitted to Mon. Wea. Rev., 24 Feb., 2025*.

89. Reames L.J., A.J. Clark, Y. Wang, C. Potvin, N. Yussouf, **L.J. Wicker**, E. Mansell, W.C. Skamarock, M. Duda, 2025: Development and performance of convection-allowing configurations of the Model for Prediction Across Scales during spring 2023. *Submitted to Wea. Forecasting*, January 28, 2025.

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[1] **Bold** number indicates current NOAA 2025 FY-year publication or submission, counted in descending order.

88. Potvin, C. K., L. J. Reames, A. J. Clark, D. C. Dowell, M. G. Duda, T. A. Jones, K. H. Knopfmeier E. R. Mansell, W. C. Skamarock, Y. Wang, **L. J. Wicker**, and N. Yussouf, 2025: Storm-Based Verification and Intercomparison of Warm-Season Forecasts from the HRRR, RRFS, NSSL MPAS and C-SHiELD models. *Submitted to Wea. Forecasting*, January 28, 2025.

87. Gibbs, J. A., J. G. Gebauer, **L. J. Wicker**, M. B. Ammon, and D. R. Stratman, 2024: A framework for convective-scale observing system simulation experiments using ensembles. *Wea and Forecasting., Accepted with major revisions, October 29, 2024.*

86. Martin J. L., A. J. Clark, N. Yussouf, **L. J. Wicker**, P. Heinselman, K. Knopfmeier, B. C. Matilla, P. C. Burke and Salar Adili, 2024: Cb-WoFS: Migrating the Warn-on-Forecast System to the Cloud. *Bull. Amer. Meteor. Soc.,* **105,** 1962-1971. [PDF](#)

85. Gao, J., P.L. Heinselman, M. Xue, L.J. Wicker, N. Yussouf, D.J. Stensrud, K. Droegemeier, 2024: The numerical prediction of severe convective storms: Applications, Remaining Challenges, and Outlook for the Future. Encyclopedia of Atmospheric Sciences, 3rd Edition. *In press*.

84. Carley, J., C. Alexander, **L. Wicker**, C. Jablonowski, A. Clark, J.Nelson, I. Jirak, and K. Viner, 2024: Mitigation Efforts to Address Rapid Refresh Forecast System (RRFS) v1 Dynamical Core Performance Issues and Recommendations for RRFS v2. NCEP Office Note 516. [PDF](#).

83. Heinselman, P., P. C. Burke, **L. J. Wicker**, and coauthors, 2024: Warn-on-Forecast System: From Vision to Reality. *Wea. Forecasting*, **39,** 75-95. [PDF](#).

82. McCurry, J. J. Poterjoy, K. Knopfmeier, and **L. J. Wicker,** 2023**:** An Evaluation of Non-Gaussian Data Assimilation Methods in Moist Convective Regimes**.** ***Mon. Wea. Rev.,*** 151*,* 1609–1629. [PDF](#).

81. Labriola, J., J. Gibbs, and **L. J. Wicker**, 2023: A method for generating a quasi-linear convective line suitable for observing system simulation experiments. *Geosci. Model Dev*., **16**, 1779–1799, [PDF](#).

80. Labriola, J., and **L. J. Wicker**, 2022: Creating Physically-Coherent and Spatially-Correlated Perturbations to Initialize High-Resolution Ensembles of Simulated Convection. *Quart. J. of Royal Meteor.,* 3131-3151. [PDF](#)

79. Galarneau, T. J., **L. J. Wicker**, K. H. Knopfmeier, W. Miller, P. S. Skinner, and K. A. Wilson, 2022: Short-Term Prediction of a Nocturnal Significant Tornado Outbreak Using a Convection-Allowing Ensemble. *Wea. Forecasting*, **37,** 1027-1047. **[PDF](#)**

78. Miller, W. J. S., C. K. Potvin, M. L. Flora, B. T. Gallo, **L. J. Wicker**, T. Jones, B. Matilla, K. Knopfmeier, and P. Skinner, 2022: Exploring the Usefulness of Downscaling Free Forecasts from the Warn-on-Forecast System. *Wea. Forecasting*, **37,** 181-203. [PDF](#)

77. Clark, A. J., **L. J. Wicke**r, and Coauthors, 2021: A Real-Time, Virtual Spring Forecasting Experiment to Advance Severe Weather Prediction. *Bull. Amer. Meteor. Soc.*, **102**, E814–E816, PDF.

76. Kerr, C., **L. J. Wicker**, P. Skinner, 2021: Updraft-based adaptive assimilation of radial velocity observations in a Warn-on-Forecast system. *Wea. Forecasting*, **36**, 21-37. PDF

75**.** Wienhoff, Z. B., H. E. Bluestein, D. W. Reif, R. M. Wakimoto, and **L. J. Wicker,** 2020: Analysis of debris signature characteristics and evolution in the 24 May 2016 Dodge City, Kansas, tornadoes. *Mon. Wea. Rev.* **148**, 5063-5086. PDF

74. Clark, A., **L. J. Wicke**r, and coauthors, 2020: A Real-Time, Simulated Forecasting Experiment for Advancing the Prediction of Hazardous Convective Weather. Meeting Summary. *Bull. Amer. Meteor. Soc.,* **101**, 2022-2024*.* PDF

73. **Wicker, L. J.,** and W. C. Skamarock, 2020: An Implicit-Explicit Vertical Transport Scheme for Convection Allowing Models. *Mon. Wea. Rev*., **148**, 3893-3910. PDF

72. Oliveira, M. I., M. Xue, B. Roberts, **L. J. Wicker,** and Nusrat Yussouf**,** 2019: Horizontal vortex tubes near a simulated tornado: Three-dimensional structure and kinematics. *Atmosphere*, **10,** 716**.** PDF

71. Wang, Y., J. Gao, P. S. Skinner, K. Knopfmeier, T. Jones, G. Creager, P. L. Heinselman, **L. J. Wicker**, 2019: Test of a Weather-Adaptive Dual-Resolution Hybrid Warn-on-Forecast Analysis and Forecast System for Several Severe Weather Events. *Wea. Forecasting*. **34,** 1807-1827. PDF

70. Potvin, C. K., J. R. Carley, A. Clark, **L. J. Wicker**, P. S. Skinner, A. Reinhart, B. T. Gallo, J. S. Kain, G. Romine, D. C. Dowell, L. M. Harris, I. L. Jirak, F. Kong, T. A. Supinie, K. W. Thomas, X. Wang, and M. Xue, 2019: Systematic comparison of convection-allowing models during the 2017 NOAA HWT Spring Forecasting Experiment. *Wea. Forecasting*, **5**, 1395-1416. PDF

69. Poterjoy, J., **L. J. Wicker**, and M. Buehner 2019: Progress in the development of a nonlinear data assimilation strategy for high-dimensional systems. *Mon. Wea. Rev*. **147**, 1107–1126. PDF

68. Skinner, P. S., D. M. Wheatley, K. H. Knopfmeier, A. E. Reinhart, J. J. Choate, T. A. Jones, G. J. Creager, D. C. Dowell, C. R. Alexander, T. T. Ladwig, **L. J. Wicker**, P. L. Heinselman, P. Minnis, and R. Palikonda, 2018: Object-based verification of a prototype Warn-on-Forecast system. *Wea. Forecasting*, **33**, 1225-1250*.* PDF

67. Weinhoff, Z. B., H. B. Bluestein, **L. J. Wicker**, J. C. Snyder, A. Shapiro, C. K. Potvin, J. B. Houser, D. W. Reif, 2018: Applications of a spatially variable advection correction technique for temporal correction of dual-Doppler analyses of tornadic supercells. *Mon. Wea. Rev*., **146**, 2949-2971. PDF

66. Clark A., and co-authors, 2018: The Community Leveraged Unified Ensemble (CLUE) in the 2016 NOAA/Hazardous Weather Testbed Spring Forecasting Experiment. *Bull. Amer. Meteor. Soc*., **99**, 1433-1448. PDF.

65. Flora, M. L., C. Potvin, **L. J. Wicker**, 2018: Practical Predictability of Supercells: Exploring Ensemble Forecast Sensitivity to Initial Condition Spread. *Mon. Wea. Rev*., **146,** 2361-2379. PDF

64. Stratman, D. R., C. Potvin, and **L. J. Wicker**, 2018: Correcting storm displacement errors in ensembles using the feature alignment technique (FAT). *Mon. Wea. Rev*., **145**, 2125-2145. PDF

63. Coffer, B., M. D. Parker, J. M. Dahl, **L. J. Wicker**, and A. J. Clark, 2017: Volatility of tornadogenesis: An ensemble of simulated non-tornadic and tornadic supercells in VORTEX2 environments. *Mon. Wea. Rev*., **145**, 4605-4625. PDF.

62. Betten, D. P., M. I. Biggerstaff, and **L. J. Wicker**, 2017: A trajectory mapping technique for the visualization and analysis of three-dimensional flows in supercell storms. *J. Atmos. Ocea. Tech.*, **34**, 33-49. PDF

61. Flyer, N. A., G. Barnett, and **L. J. Wicker**, 2016: Enhancing finite differences with radial basis functions: Experiments on the Navier-Stokes equations. *J. Comp. Physics*. **316**, 39-62. PDF.

60. Skinner, P. S, **L. J. Wicker**, D. M. Wheatley, and K. H. Knopfmeier, 2016: Application of two spatial verification methods to ensemble forecasts of low-level rotation. *Wea. Forecasting*, **31**, 713-735. PDF.

59. Orf, L., R. Wilhelmson, **L. J. Wicker**, 2016: Visualization of a simulated long-track EF5 tornado embedded within a supercell thunderstorm. *Para. Comp.*, **55,** 28-34. PDF

58. Skinner, P. S., C. C. Weiss, **L. J. Wicker**, C. K. Potvin, D. C. Dowell, 2015: Forcing mechanisms for an internal rear-flank downdraft momentum surge in the 18 May 2010 Dumas, Texas supercell. *Mon. Wea. Rev.*, **143**, 4305–4330. PDF

57. Sobash, R. A. and **L. J. Wicker**, 2015: On the impact of additive noise in storm-scale EnKF experiments. *Mon. Wea. Rev.,* **143**, 3067-3086. PDF

56. Yussouf, N., D. C. Dowell, **L. J. Wicker**, K. Knopfmeier, and D. M. Wheatley, 2015: Storm-scale data assimilation and ensemble forecasts for the 27 April 2011 severe weather outbreak in Alabama. *Mon. Wea. Rev*. **143***,* 3044-3066. PDF.

55. French, M. M., P. S. Skinner, **L. J. Wicker**, 2015: Documenting a rare tornado merger observed in the 24 May 2011 El Reno, Oklahoma, supercell. *Mon. Wea. Rev.*, **143**, 3025-3043. PDF

54**.** Thompson, T. E., **L. J. Wicker**, and X. Wang, 2015: A comparison between the local ensemble transform filter (LETKF) and the ensemble square-root file (EnSRF) for the assimilation of Doppler radar data in convective-scale models. *Q. J. Roy. Meteor. Soc.*, *141*, 1163-1176. PDF

53. Johnson, A., X. Wang, J. Carley, **L. J. Wicker**, and C. Karstens, 2015: A comparison of multi-scale GSI-based EnKF and 3DVar data assimilation for mid-latitude convective scale precipitation forecasts. *Mon. Wea. Rev.*, **143**, 3087-3108, PDF

52. Tanamachi, R., P. L. Heinselman, and **L. J. Wicker**, 2015: Impacts of a storm merger on the 24 May 2011 El Reno, Oklahoma tornadic supercell. *Wea. Forecasting*. **30**, 501-524, [PDF](#)

51. Jones, T., D. Stensrud, **L. Wicker**, P. Minnis, and R. Palikonda, 2015: Simultaneous radar and satellite data storm-scale assimilation using an ensemble Kalman filter approach for 24 May 2011. *Mon. Wea. Rev*. **143**, 165–194, [PDF](#)

50**.** French, M., D. Burgess, E. Mansell, and **L. J. Wicker**, 2015: Bulk hook echo raindrop sizes retrieved using mobile, polarimetric Doppler radar observations. *J. Appl. Meteor. Climatology,* **54**, 423–450*,* [PDF](#)

49. Dahl, J., M. D. Parker and **L. J. Wicker**, 2014: The roles of ambient and storm-generated vorticity in the development of near-ground rotation in a simulated supercell. *J. Atmos. Sci*., **71**, 3027-3051. [PDF](#)

48. Crowell, S., L. White, and **L. J. Wicker**, 2014: Estimation of near surface wind speeds in strongly rotating flows. *Appl. Math. Comp.,* **235C**, 201-211.

47. Dawson II, D. T., E. R. Mansell, Y. JungSun, **L. J. Wicker**, M. R. Kumjian, and M. Xue 2014: Low-level Zdr signatures in supercell forward flanks: The role of size sorting and melting hail. *J. Atmos. Sci.,* **71**, 276-299. [PDF](#)

46. Dawson II, D. T., **L. J. Wicker**, E. R. Mansell, 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*, Article ID 818394, 13 pp. [PDF](#)

45. Potvin, C. K., and **L. J. Wicker**, 2013: Correcting fast-mode pressure errors in storm-scale ensemble Kalman filter analyses. *Advances In Meteorology*, Article ID 624931, 14 pp. [PDF](#)

44. Yussouf N., E. R. Mansell, **L. J. Wicker**, D. M. Wheatley, D. C. Dowell, M. C. Coniglio, and D. J. Stensrud, 2013: The ensemble Kalman filter analyses and forecasts of the 8 May 2003 Oklahoma city tornadic supercell storm using single and double moment microphysics schemes. *Mon. Wea. Rev*., **141**, 3388-3412. [PDF](#)

43. Potvin, C. K., and **L. J. Wicker,** 2013: Assessing ensemble forecasts of low-level supercell rotation within an OSSE framework. *Wea. Forecasting*, **28**, 940–960, [PDF](#).

42. Potvin, C. K., **L. J. Wicker**, D. Betten, M. I. Biggerstaff, and A. Shapiro, 2013: Comparison between storm-scale dual-Doppler and EnKF wind analyses: The 29-30 May 2004 Geary, Oklahoma, supercell thunderstorm. *Mon. Wea. Rev*., **141**, 1612-1628, [PDF](#).

41. Stensrud, D. 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. 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, K. A. Brewster, 2013: Progress and Challenges with Warn-on-Forecast. *Atmospheric Research.* **123**, 2-16, [PDF](#)

40. Tanamachi, R., **L. J. Wicker**, D. C. Dowell, H. B. Bluestein, and M. Xue, 2013: Assimilation of high-resolution, mobile Doppler radar data into EnKF analyses of the 4 May 2007 Greensburg, Kansas supercell storm. *Mon. Wea. Rev.*, **141**, 625-648, PDF

39. Potvin, C. K., **L. J. Wicker**, 2012: Comparison between dual-Doppler and EnKF storm-scale wind analyses: Observing system simulation experiments with a supercell thunderstorm. *Mon. Wea. Rev.*, **140**, 3972–3991, PDF.

38. Potvin, C. K., D. Betten, **L. J. Wicker**, M. I. Biggerstaff, K. Elmore, 2012: 3DVAR versus traditional dual-Doppler wind retrieval of a simulated supercell thunderstorm. **140**, 3847–3494. *Mon. Wea. Rev.*, PDF

37. Dahl, J., M. Parker and **L. J. Wicker**, 2012: Uncertainties in trajectory analyses within near-surface mesocyclones of simulated supercells. *Mon. Wea. Rev.*, **140**, 2959–2966. PDF

36. Thompson, T. E., **L. J. Wicker**, and X. Wang, 2012: Impact from a volumetric radar-sampling operator for radar velocity observations within EnKF supercell assimilation. *J. Atmos. Ocea. Tech.,* **29***, 1417-1427. PDF

35. Wurman, J., D.C. Dowell, Y. Richardson, P. Markowski, E. Rasmussen, D. Burgess, **L. J. Wicker**, and H.B. Bluestein, 2012: Verification of the Origins of Rotation in Tornadoes Experiment 2: VORTEX2. *Bull. Amer. Meteor. Soc.*, 1147-1170. PDF

34. Potvin, C. K., **L. J. Wicker**, and A. Shapiro, 2012: Assessing dual-Doppler kinematical and dynamical retrieval errors in supercell thunderstorms using OSS experiments. *J. Atmos. Ocea. Tech.*, **29**, 1009-1025. PDF

33. Dawson II, D. T., **L. J. Wicker**, E. R. Mansell, and R. L. Tanamachi, 2012: Impact from the environmental wind profile on ensemble forecasts of the 4 May 2007 Greensburg tornado and its associated mesoscyclones. *Mon. Wea. Rev*. **140,** 696-712. PDF

32. Skinner, P. S., C. C. Weiss, J. L. Schroeder, **L. J. Wicker**, and M. I. Biggerstaff, 2011: Observations of the surface boundary structure within the 23 May, 2007 Perryton, Texas supercell. *Mon. Wea. Rev.*, **139,** 3730–3749. PDF

31. Dowell, D. C., **L. J. Wicker**, C. Snyder, 2011: Ensemble Kalman filter assimilation of radar observations of the 8 May 2003 Oklahoma City supercell: Influences of reflectivity observations on storm-scale analyses. *Mon. Wea. Rev.,* **139**, 272–294. PDF

30. Wandishin, M., D. Stensrud, S. Mullen, and **L. J. Wicker**, 2010: On the predictability of mesoscale convective systems: Three-dimensional simulations. *Mon. Wea. Rev.*, **138**, 863-885. PDF.

29. Stensrud, D., M. Xue, **L. J. Wicker**, K. E. Kelleher, M. P. Foster, J. T. Schaefer, R. S. Schneider, S. G. Benjamin, S. S. Weygandt, J. T. Ferree, and J. P. Tuell, 2009: Convective-scale Warn on Forecast: A Vision for 2020. *Bull. Amer. Meteor. Soc.*, **90**, 1487–1499. PDF

28. **Wicker, L. J.**, 2009: A two-step Adams-Bashforth-Moulton split-explicit integrator for compressible atmospheric models. *Mon. Wea. Rev.*, **137**, 3588-3595. PDF

27. Crowell, S., D. Williams, C. Mavriplis, and **L. J. Wicker**, 2009: Comparison of Traditional and Novel Discretization Methods for Advection Models in Numerical Weather Prediction, G. Allen et al. (Eds.): ICCS 2009, Part II, Lecture Notes in Computational Science 5545, 263–272.

26. Dowell, D. C., and **L. J. Wicker**, 2009: Additive noise for storm-scale ensemble forecasting and data assimilation. *J. Atmos. Ocea. Tech.*, **26**, 911-927. PDF

25. French, M., H. B. Bluestein, D. C. Dowell, **L. J. Wicker**, M. R. Kramer, and A. L. Pazmany, 2009: An example of the use of mobile, Doppler radar data in tornado verification. *Wea. Forecasting,* **24**, 884–891. PDF

24. French, M., H. B. Bluestein, D. C. Dowell, **L. J. Wicker**, M. R. Kramer, and A. L. Pazmany, 2008: High-resolution, mobile, Doppler observations of cyclic mesocyclogenesis in a supercell. *Mon. Wea. Rev.,* **136**, 4997–5016. PDF

23. Wandishin, M., D. Stensrud, S. Mullen, and **L. J. Wicker**, 2008: On the predictability of mesoscale convective systems: Two-dimensional simulations. *Wea. Forecasting*, **23**, 773–785. PDF

22. Fierro, A. O, M. S. Gilmore, **L. J. Wicker**, E. R. Mansell, and J. M. Straka, 2006: Electrification and lightning in an idealized boundary-crossing supercell simulation of 2 June 1995. *Mon. Wea. Rev.,* **134**, 3149-3171.

21. Coniglio, M. C., D. J. Stensrud, and **L. J. Wicker**, 2006: Role of upper-level shear on the structure and maintenance of strong quasi-linear mesoscale convective systems. *J. Atmos. Sci.,* **63**, 1231–1252.

20. Biggerstaff, M. I., **L. J. Wicker**, J. Guynes, C. Ziegler, J. M. Straka, E. N. Rasmussen, A. Doggett IV, L. D. Carey, and J. L. Schroeder, 2005: The shared mobile atmospheric research and teaching (SMART) radar: A collaboration to enhance research and teaching. *Bull. Amer. Meteor. Soc.*, **86,** 1263-1274.

19. Dowell, D. C., C. R. Alexander, J. M. Wurman, and **L. J. Wicker**, 2005: Reflectivity patterns and wind-measurement errors in high-resolution radar observations of tornadoes. *Mon. Wea. Rev.*, **133**, 1501–1524.

18. Dowell, D. C., F. Zhang, **L. J. Wicker**, C. Snyder, and N. A. Crook, 2004: Wind and thermodynamic retrievals in the 17 May 1981 Arcadia, Oklahoma supercell: Ensemble Kalman filter experiments. *Mon. Wea. Rev.*, **132**, 1982-2005.

17. Peckham, Steven E., R. B. Wilhelmson, **L. J. Wicker**, and Conrad L. Ziegler, 2004: Numerical simulation of the interaction between the dryline and horizontal convective rolls. *Mon. Wea. Rev*., **132**, 1792–1812.

16. Brooks, H., C. Doswell III, D. Dowell, R. Holle, B. Johns, D. Jorgensen, D. Schultz, D. Stensrud, S. Weiss, **L. J. Wicker**, and D. Zaras, 2003: Severe thunderstorms and tornadoes. Handbook of Weather, Climate, and Water: Dynamics, Climate, Physical Meteorology, Weather Systems, and Measurements. T. D. Potter and B. R. Colman, Eds., Wiley-Interscience, 575-619.

15. Gilmore, M. S., and **L. J. Wicker**, 2002: Influences of the local environment on supercell cloud-to-ground lightning, radar characteristics, and severe weather on 2 June 1995. *Mon. Wea. Rev.*, **130**, 2349-2372.

14. **Wicker, L. J.**, and W. C. Skamarock, 2002: Time-splitting methods for elastic models using forward time schemes. *Mon. Wea. Rev.* **130**, 2088–2097.

13. Wilhelmson, R. B, and **L. J. Wicker**, 2002: Numerical modeling of severe storms. *Meteor. Monogr*. C. A. Doswell III, Ed., American Meteorological Society, 123-166.

12. Peckham, S. E. and **L. J. Wicker**, 2000: The influence of topography and lower-tropospheric winds on dryline evolution. *Mon. Wea. Rev.,* **128**, 2165-2189.

11. Atkins, N. T., M. L. Weisman, **L. J. Wicker**, 1999: The influence of preexisting boundaries on supercell evolution. *Mon. Wea. Rev.,* **127**, 2910–2927.

10. **Wicker, L. J.**, and W. C. Skamarock, 1998: A time splitting scheme for the elastic equations incorporating second-order Runge-Kutta time differencing. *Mon. Wea. Rev.,* **126**, 1992–1999.

9. Gilmore, M., and **L. J. Wicker**, 1998: The influence of midtropospheric dryness on supercell morphology and evolution. *Mon. Wea. Rev.,* **126**, 943-958.

8. **Wicker, L. J.**, M. P. Kay, and M. P. Foster, 1997: STORMTIPE-95: A convective storm forecast experiment. *Wea. Forecasting,* **12**, 427-436.

7. Perez, A., **L. J. Wicker**, and R. E. Orville, 1997: Characteristics of cloud-to-ground lightning associated with violent tornadoes. *Weather and Forecasting*, **12**, 401-410.

6. Nielsen-Gammon, J. W., M. I. Biggerstaff, M. E. Alcorn, D. Austin, K. B. Bowman, D. Djuric, J. Guynes, R. White, and **L. J. Wicker**, 1996: Texas A&M university's laboratory for the exploration of atmospheric processes - TAMU's LEAP. *Bull. Amer. Meteor. Soc.*, **77**, 2907-2918.

5. **Wicker, L. J.**, and R. B. Wilhelmson, 1995: Simulation and analysis of tornado development and decay within a three-dimensional supercell thunderstorm. *J. Atmos. Sci.*, **52**, 2675-2703.

4. **Wicker, L. J.**, and R. B. Wilhelmson, 1993: Numerical simulation of tornadogenesis within a supercell thunderstorm. *The tornado: Its structure, dynamics, prediction, and hazards.* AGU Monograph Series, C. R. Church (Ed.). **79**, 75-88.

3. H. E. Brooks, **L. J. Wicker**, and C. A. Doswell III, 1993: STORMTIPE: A forecasting experiment using a three-dimensional cloud model. *Wea. Forecasting*, **8**, 352-362.

2. Straka, J. M., R. B. Wilhelmson, **L. J. Wicker**, J. A. Anderson, K. K. Droegemeier, 1993: Numerical solutions of a non-linear density current: A benchmark solution and comparisons. *International Journal of Numerical Methods in Fluids*, **17**, 1-22.

1. Wilhelmson, R. B., B. Jewett, C. Shaw, **L. J. Wicker**, M. Arrott, C. Bushnell, M. Bajuk, and J. Yost, 1990: A study of a numerically model severe storm. *International Journal of Supercomputing Applications*. **4, 2**. Video Edition, 20-36.

Other Invited Talks (prior to 2015)

Severe Storm NWP: the Good, the Bad, and a Possible Future, co-presentation with Dr. Morris Weisman (NCAR). *27th Conference on Severe Local Storms*, Madison WI, 3 November, 2014

Toward Developing a Storm-scale Prediction System for Hazardous Weather: An Update. *2013 European Conference on Severe Storms*, Helsinki, Finland. 4 June 2013.

The Warn-on-Forecast Project: NOAA's Vision for Severe Weather Prediction. *17th Annual Severe Storms and Doppler Radar Conference*, Ankeny, IA, 4 April 2013.

Toward a Storm-scale Prediction System for Hazardous Weather: Current Status and Challenges for "Warn-on-Forecast". *International Symposium on Data Assimilation, Deutsche Wetterdienst,* Offenbach Germany. 8 October 2012.

A Brief History of Convective Storm Research and Its Current Challenges, *Ogura Lecture*, University of Illinois Department of Atmospheric Sciences, April 2011.

VORTEX2 2009 & 2010: An overview and some of the early results. *Steamboat Weather Summit*, Steamboat Colorado, January 2011.

VORTEX2: Verification of the Origins of Rotation. *Norman Science Café*, May 2009

Improving Scientific Productivity using Python: An example from an Ensemble Data Assimilation System in Meteorology. *OU Supercomputing Symposium*, University of Oklahoma, October 2006.

Tornado Prediction: Has its time come? *Summer Advanced Study Program*, National Center for Atmospheric Research, Boulder Colorado, July 2006.

Severe Local Storms and Computational Science: What's Next? *Symposium on the Challenges of Severe Convective Storms,* American Meteorological Society Annual Meeting, Atlanta GA*,* January 2006.

The Role of Technology in Storm Science, Forecasts, and Warnings: the Past, Present, and a Possible Future, *Texas Severe Storm Association*, February 2005.

Numerical Modeling of Severe Storms, *Golden Jubilee Symposium on Tornado Forecasting*, University of Oklahoma, March 1998.

External Funding History

NSF: VORTEX-II: Multiscale Analyses of Tornadic Storms Using Multiparameter Mobile Radar, Co-PI, (PI: Mike Biggerstaff), 2008-2011, $902,000.

NSF: Development of C-band Mobile Polarimetric Radar, Co-PI, (PI: Mike Biggerstaff), 2007-2010, $441,000 (with $700,000 matching from NSSL and OU).

NSF: Collaborative Research: CMG: Adaptive High-Order Methods for Nonhydrostatic Numerical Weather Prediction, PI, 2005-2009 $431,000.

NSF: Ensemble Kalman Filter Assimilation of Multi-sensor Observations from Convection for Storm-Scale Analysis, PI, 2003-2006 $249,000.

NSF: Numerical and Observational Studies of Tornadic Supercells, PI, 1997-2000, $351,000.

NSF: A Numerical Study of Parameters Controlling Tornado Longevity and Intensity in Supercells, PI, 1994-1997, $305,000.

Major collaborations and projects

(i) Co-founded the Shared Mobile Atmospheric Research and Teaching (SMART) radar program, beginning at TAMU with Dr. Biggerstaff (TAMU) and Conrad Zeigler (NSSL) in 1998 and continued on at NSSL through the completion of the development of a dual-polarized C-band radar as well as organizing the development of a mobile polarized X-band radar system. (1998-2010).

(ii) Was a Co-PI and on the steering committee for the NSF and NOAA sponsored field program, the second Verifications of the Origins of Tornadoes Experiment (VORTEX-2). (2007-2010).

(iii) *Current outside collaborators:* Jacob Carley (EMC), David Dowell (NOAA GSL), William Skamarock (NCAR), Jon Poterjoy (Univ. of MD), Jorge Guerra (NOAA GSL).

Students supervised (7 Ph.D., 10 M.S. students)

(i) *Thesis advisor for TAMU students:* Ph.D. (2) Steven Peckham, Mathew Gilmore. M.S. (5) Anthony Perez, Mathew Gilmore, Louis Cantrell, Michael Kay, San-Ok Han.

(ii) *Thesis advisor for completed OU students:* Ph.D. (4) Sean Crowell (co-advised, OU Mathematics), Terra Thompson-Ladwig, Greg Barnett (co-advised with Colorado Univ. Applied Math), and Mauricio Ilha de Oliveira / M.S. (5) Robert Carver, Alex Fierro, Dustin Williams, Terra Thompson-Ladwig, and Joel McAulifee.

(iii) *Thesis co-advisor remote:* Ph.D. (1): Ms. Vanessa Ferreira of the Federal University of Santa Maria, Brazil.

(iv) *Post-doctoral researchers supervised*: (6) Dr. Daniel Dawson (2009-2011), Dr. Corey Potvin, (2010-2012), Dr. Michael French (2012-2014), Dr. Patrick Skinner (2013-2015), Dr. Jon Labriola (2020-2022), and Dr. Brandon Katana (2020-2022).

Service and Awards

- 2018-2020: Editor for Journal of Atmospheric Sciences, American Meteorological Society.

- 2013: Guest editor for the special issue of Storm-Scale Radar Data Assimilation and High-Resolution NWP, *Advances in Meteorology*

- 2002: Office of Oceanic and Atmospheric Research Outstanding Scientific Paper Award for the review article "Numerical modeling of severe local storms", by R. Wilhelmson and L. Wicker.

- 1989: "Study of a Numerically Modeled Severe Storm" received the First Place Visualization Award at "The Computer Graphics Film Festival 1989" held in London, England and subsequently was submitted for an Academy Award.

Synergistic Activities

(i) Co-chair of UFS CAM working group for the Unified Forecast System for NOAA. Helps in planning the development and delivery to NCEP and the community the FV3 dynamical core and modeling system for convective scale research and prediction (2019-present).

(ii) Service at the Department of Atmospheric Sciences at Texas A&M University: Graduate Studies Committee (member 1993-1996), Undergraduate Advisor (1994-1999), Departmental Infrastructure Committee (1993-1999, chair for 1996-), Member of University Committee for Supercomputing (1993-1999), taught courses in atmospheric dynamics and modeling at both graduate and undergraduate levels, courses included, Special Topics in Non-hydrostatic Modeling, Quantitative Methods for the Atmospheric Sciences, Dynamic Meteorology, Introduction to Atmospheric Science, Convection. Developed the Quantitative Methods and Convection courses. Served as chair or a member on 23 graduate student committees while at TAMU.

(iii) Professional Service: Member of the Severe Local Storms Committee for the American Meteorological Society 1993-1995, Co-Chaired the AMS 18th Conference on Severe Local Storms held in San Francisco CA, Feb. 1996, Member of the NCSA/Pittsburgh NSF Supercomputing Peer Review Allocation Committee, 1993 –1994. Participated with the NSF field experiment on the Verification of the Origins of Rotation in Tornadoes EXperiment (VORTEX) conducted during the springs of 1994-1995.

(iii) Community Service: More than 4 dozen talks given to area public schools on severe storms and severe storm safety, over 80 interviews given to local, regional and national media on severe storms and tornadoes, several talks to regional NWS forecasters about storm-scale prediction and NSSL's Warn on Forecast Program.

(iv) Other Activities: Invited visiting scientist at the Mesoscale and Microscale Meteorology division of the National Center for Atmospheric Research in Boulder, Colorado. Summer 1993-1998, invited visiting scientist to the German Meteorological Institute (DWD, Frankfurt) in Oct. 1997.

Education

- Ph.D. in Atmospheric Sciences
  University of Illinois, August 1990
  "A Numerical Study of a Tornado-Scale Vortex in a Three-Dimensional Cloud Model"
  Dissertation Advisor: Dr. Robert Wilhelmson

- M.S. in Meteorology
  University of Oklahoma, June 1986
  "A Simulation Study of a Data Assimilation Scheme Designed for VAS Temperature Soundings"
  Thesis Advisor: Dr. Tzvi Gal-Chen

- B.S. in Meteorology
  University of Oklahoma, December 1984