Curriculum Vitae for Dr. Louis J. Wicker
Updated 10/04/06

Present Position

Research Scientist specializing in severe storm dynamics/data assimilation and computational physics at the National Severe Storms Laboratory in Norman, Oklahoma, June 1999 to present

Professional Positions

- Associate Adjunct Professor, Department of Meteorology, Texas A&M University, June 1999 to present
- CIMMS Fellow, Cooperative Institute for Mesoscale Meteorological Studies, University of Oklahoma, May 1999 to present
- Adjunct Associate Professor, School of Meteorology, University of Oklahoma, Spring 2000 to present.
- 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.

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"

- M.S. in Meteorology
  University of Oklahoma, June 1986
  "A Simulation Study of a Data Assimilation Scheme Designed for VAS Temperature Soundings"

- B.S. in Meteorology
  University of Oklahoma, December 1983

Formal Publications

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.

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.

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. *Bulletin of the Amer. Meteor. Soc.,* **86,** 1263-1274.

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.

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.

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.

Brooks, H., C. Doswell III, D. Dowell, R. Holle, B. Johns, D. Jorgensen, D. Schultz, D. Stensrud, S. Weiss, L. 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.

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.

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

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.

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.

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

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.

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

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

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.

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. *Bulletin of the Amer. Meteor. Soc.,* **77**, 2907-2918.

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

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.

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

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.

Wilhelmson, R. B., B. Jewett, C. Shaw, L. 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 Publications

French, M. M, H. B. Bluestein, D. C. Dowell, L. J. Wicker, M. R. Kramer, and A. L. Pazmany, 2005: The 15 May 2003 Shamrock, Texas, supercell: A dual-Doppler analysis and EnKF data-assimilation experiment. Paper **10R.2**, *Preprints, 11th Conf. On Mesoscale Processes*. Albuquerque, NM. Amer. Meteor. Soc.

Coniglio, M. C., D. C. Dowell, L. J. Wicker, and D. J. Stensrud, 2005: Impact of Doppler radar and mesoscale surface observations on the storm-scale analysis and prediction of a mesoscale convective system. Paper **JP1J.2**, *Preprints, 11th Conf. On Mesoscale Processes*. Albuquerque, NM. Amer. Meteor. Soc.

Weiss, S., J. Kain, L. Wicker, B. Davies-Jones, D. Bright, J. Levit, G. Carbin, M. Baldwin, 2005: Evaluating the skill of daily explicit predictions of mesocyclones in multiple high-resolution WRF model forecasts during the 2005 SPC/NSSL Spring Program. Paper **2M.2**, *Preprints, 11th Conf. On Mesoscale Processes*. Albuquerque, NM. Amer. Meteor. Soc.

Burgess, D. W., D. C. Dowell, L. J. Wicker, and A. Witt, 2005: Detailed comparison of observed and modeled tornadogenesis. Paper **10.4**, *Preprints, 32nd Conf. On Radar Meteorology*. Albuquerque, NM. Amer. Meteor. Soc.

Gilmore, M., R. Patterson, G. Romine, L. J. Wicker, R. B. Wilhelmson, Al. Betts, D. Cox, L. Cronce, M. Hall, L. Leonard, S. Levy, and M. A. Straka., 2004: Behind the "supertwister": experiences in science education at NCSA. Paper **P6.5**, *Preprints, 22nd Conf. on Severe Local Storms*, Hyannis, MA, Amer. Meteor. Soc.

Wicker, L. J., and D. C. Dowell, 2004: High-resolution analyses of the 8 May 2003 Oklahoma City storm. Part III: An ultra-high resolution forecast experiment. Paper **12.6**, *Preprints, 22nd Conf. on Severe Local Storms*, Hyannis, MA, Amer. Meteor. Soc.

Dowell, D. C., and L. J. Wicker, 2004: High-resolution analyses of the 8 May 2003 Oklahoma City storm. Part II: EnKF data assimilation and forecast experiments. Paper **P10.3**, *Preprints, 22nd Conf. on Severe Local Storms*, Hyannis, MA, Amer. Meteor. Soc.

Fierro, A., M. Gilmore, L. Wicker, E. Mansell, J. Straka, E. Rasmussen. 2004: Electrification and lightning in an idealized boundary-crossing supercell simulation of 2 June 1995. Paper 16B7, *Preprints, 22nd Conf. on Severe Local Storms*, Hyannis, MA, Amer. Meteor. Soc.

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Stensrud, D.J., and L. J. Wicker, 2004: On the predictability of mesoscale convective systems. Preprints, International Conference on Storms, Brisbane, Australia, Aust. Meteor. Ocean. Society, 62-67.

Peckham, S., R. B. Wilhelmson, L. J. Wicker, and C. L. Ziegler, 2002: Numerical simulation of the interaction between the dryline and horizontal convective rolls. *Preprints, 21st Conf. on Severe Local Storms*, San Antonio, TX, Amer. Meteor. Soc., 291-294.

Wicker, L. J., R. B. Wilhelmson, D. Dowell, Y. Richardson, 2002: A large eddy simulation of a tornadic supercell: Comparison with observations. *Preprints, 21st Conf. on Severe Local Storms*, San Antonio, TX, Amer. Meteor. Soc., 262-263.

Wilhelmson, R. B., L . J. Wicker, S. E. Peckham, P. Woodward, S. Anderson, D. Porter, and C. Shaw, 2002: High Resolution Simulation of the Development and Structure of a Tornado and Its Parent Supercell. *Preprints, 21st Conf. on Severe Local Storms*, San Antonio, TX, Amer. Meteor. Soc., 259-261.

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Wicker, L. J., M. S. Gilmore, E. N. Rasmussen, and J. M. Straka, 2001: Influences of the Local Environment on Supercell Cloud-to-Ground Lightning, Radar Characteristics, and Severe Weather on 2 June 1995, Eos Trans. AGU, 82(47), Fall Meet. Suppl., Abstract AE12A-87.

Dowell, D. C., J. Wurman, and L. J. Wicker, 2001: Centrifuging of scatterers in tornadoes. *Preprints, 30th International Conf. on Radar Meteorology*. Munich, Germany. American Meteorological Society. 307-309.

Dowell, D. C., L. J. Wicker, and A. Shapiro: 2001: Thermodynamic retrieval experiments with a 2-D model. *Preprints, 30th International Conf. on Radar Meteorology*. Munich, Germany. American Meteorological Society. 191-193.

Peckham, S. E., R. B. Wilhelmson, L. J. Wicker, and C. L. Ziegler, 2000: Numerical simulation of the interaction between the dryline and horizontal convective roles. *Preprints, 14th Conf. on Boundary Layer Turbulence* American Meteorological Society. 210-211.

Wicker, L.J., and R. Carver, 2000: The role of low-level shear, mid-level shear, and CAPE in low-level mesocyclone generation. *Preprints, 20th Conf on Severe Local Storms,* Orlando, FL., American Meteorological Society. 587-590.

Wicker, L. J., and D. C. Dowell, 2000: A numerical study of cyclic tornadogenesis: The 8 June 1995 Case. *Preprints, 20th Conf on Severe Local Storms,* Orlando, FL., American Meteorological Society. 263-264.

Gilmore, M. S. and L. J. Wicker, 2000: Influence of the local environment on 2 June 1995 supercell cloud-to-ground lightning polarity. *20th Conf. on Severe Local Storms,* Orlando, FL., American Meteorological Society. 150-153.

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Wicker, L.J., 1998: The role of low-level shear, mid-level shear, and CAPE in low-level mesocyclone generation. *Preprints, 19th Conf on Severe Local Storms,* Mineapolis, MN, American Meteorological Society. 222-225.

Weisman, M. L., Wicker, L.J., and M. Gilmore, 1998: The impact of convective storms on their local environment: What is an appropriate ambient sounding? *Preprints, 19th Conf on Severe Local Storms,* Mineapolis, MN., American Meteorological Society. 238-241.

Peckham, S. and L. J. Wicker, 1998: The influence of topography and lower-tropospheric winds on convective initiation along the dryline. *Preprints, 19th Conf on Severe Local Storms,* Mineapolis, MN., American Meteorological Society. 261-264.

Gilmore, M., and L. J. Wicker, 1998: Supercells simulated from the 2 June 1995 west Texas panhandle environments. *Preprints, 19th Conf on Severe Local Storms,* Mineapolis, MN., American Meteorological Society. 242-245.

Han, Sang-Ok, and L. J. Wicker, 1998: The sensitivity of the PSU/NCAR Model (MM5) to cumulus parameterization in simulating the mesoscale environment associated with the 2 June 1995 west Texas tornado outbreak. *Preprints, 19th Conf on Severe Local Storms,* Mineapolis, MN., American Meteorological Society. 367-368.

Kay, M. P., and L. J. Wicker, 1998: Numerical simulations of supercell interactions with thermal boundaries. *Preprints, 19th Conf on Severe Local Storms,* Mineapolis, MN., American Meteorological Society. 246-248.

Magsig, M. A., J. T. Snow, and L. J. Wicker, 1998: Preliminary modeling analysis of long-distance debris transport by tornadic thunderstorms. *Preprints, 19th Conf on Severe Local Storms*, Mineapolis, MN., American Meteorological Society. 564-567.

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Biggerstaff, M. I., J. Guynes, S. Hristova-Veleva, E. L. Seo, B. Carl, Z. Shields, R. Toricinta, J. Santarpia, G. Huffines, M. Gilmore, A. Tuttle, L. Wicker, S. Minto, K. Moncla, W. Bryant, D. Walker, J. Pafford, J. Gerlach, D. Wolff, O. Thiele, S. Allen, W. Read, and D. Smith, 1997: The Texas A&M University convection and lightning experiment: TEXACAL-1997. *Preprints, 25th Conf. on Radar Meteorology,* Austin, TX, American Meteorological Society. 588-589.

Wicker, L. J. and W. C. Skamarock, 1996: The dynamics governing surface pressure fields in mesoscale convective systems. *Preprints, 7th conference on Mesoscale Processes*, Reading, UK, American Meteorology Society. 476-478.

Wicker, L. J., 1996: The role of near surface wind shear on low-level mesocyclone generation and tornadoes. *Preprints, 18th Conf. on Severe Local Storms,* San Francisco, CA, American Meteorological Society, 115-119.

Wicker, L. J., 1996: High Resolution Studies of Tornadoes in a Supercell Thunderstorm. *Preprints, 18th Conf. on Severe Local Storms,* San Francisco, CA, American Meteorological Society, 423.

Wicker, L. J., M. Kay, and M. Foster, 1996: STORMTIPE-95: A convective storm prediction experiment for North Texas. *Preprints, 18th Conf. on Severe Local Storms,* San Francisco, CA, American Meteorological Society. 376-380.

Wicker, L. J., and L. Cantrell, 1996: The role of vertical buoyancy distributions in simulated low-topped supercells. *Preprints, 18th Conf. on Severe Local Storms,* San Francisco, CA, American Meteorological Society, 225-229.

Gilmore, M, and L. J. Wicker, 1996: The influence of DCAPE on supercell dynamics. *Preprints, 18th Conf. on Severe Local Storms,* San Francisco, CA, American Meteorological Society, 723-727.

Wilhelmson, R, M. Arrott, L. Wicker, D. Wojtowicz, C. Shaw, B. Lee, B. Jewett, M. Bajuk, M. McNeil, J. Terstriep, and V. Jaswal 1996: Visualization of storm and tornado development for an OMNIMAX film and for the CAVE. *Preprints, 12th International Conf. on Interactive Information and Processing Systems for Meteorology, Oceanography, and Hydrology*. Atlanta, GA, American Meteorological Society, 135-138.

Perez, A. H., R. E. Orville, and L. J. Wicker, 1995: Characteristics of cloud-to-ground lightning associated with violent-tornado producing supercells. *Preprints, 14th Conf. on Weather and Forecasting*, Dallas, TX, American Meteorological Society. 409-413.

Foster, M. P., A. R. Moller, L. J. Wicker, and L. Cantrell, 1995: The rapid evolution of a tornadic small supercell: Observations and simulations. *Preprints, 14th Conf. on Weather and Forecasting*, Dallas, TX, American Meteorological Society. 323-328.

Gilmore, M. S., A. H. Perez, R. E. Orville, and L. J. Wicker, 1994: XLIGHT: An interactive lightning analysis and display system. *Preprints, 10th International Conf. on Interactive Information and Processing Systems for Meteorology, Oceanography, and Hydrology*. Nashville, TN, American Meteorological Society. 44-47.

Wicker, L. J., and R. B. Wilhelmson, 1993: Recent results from numerical simulations of supercell tornadogenesis. *Preprints, 17th Conf. on Severe Local Storms,* St. Louis, MO, American Meteorological Society, 347-351.

Straka, J. M, Y. Liu, and L. J. Wicker, 1993: The influence of ice-phase microphysics on convective storm structure. *Preprints, 17th Conf. on Severe Local Storms,* St. Louis, MO, American Meteorological Society, 178-183.

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Jewett, B. F., R. B. Wilhelmson, J. M. Straka, and L. J. Wicker, 1990: Impact of ice parameterization on the low-level structure of modeled supercell thunderstorms. *Preprints, 16th Conf. on Severe Local Storms,* Kananaskis Park, Alberta, American Meteorological Society, 275-280.

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Wicker, L. J., 1984: A simulation study of a data assimilation scheme designed for VAS temperature soundings. M.S. thesis, University of Oklahoma. 136 pp.

Wicker, L. J., D. W. Burgess, and H. Bluestein, 1984: The pre-storm environment of the severe weather outbreak in western Oklahoma on May 22, 1981. *Preprints, 13th Conference on Severe Local Storms*, Tulsa, American Meteorological Society, 281-282.