

Matthew David Parker

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Curriculum Vitae
August 2008

PROFESSIONAL EXPERIENCE

Dept. of Marine, Earth, & Atmospheric Sciences, North Carolina State University
2008- Associate professor
2005-2008 Assistant professor

Dept. of Geosciences, University of Nebraska-Lincoln
2002-2005 Assistant professor

EDUCATION

2002 **Colorado State University**, Fort Collins, Colorado
Ph.D., Atmospheric science (Mesoscale meteorology)
1999 **M.S.**, Atmospheric science (Mesoscale meteorology)

1996 **Valparaiso University**, Valparaiso, Indiana
B.S., Meteorology, Summa Cum Laude, with honors

REFEREED JOURNAL PUBLICATIONS

16. Baker, A.K., **M. D. Parker**, and M. D. Eastin, in press: Environmental ingredients for supercells and tornadoes within Hurricane Ivan. *Wea. Forecasting*, accepted in final form July 2008.
15. French, A.J., and **M. D. Parker**, in press: The initiation and evolution of multiple modes of convection within a meso-alpha scale region. *Wea. Forecasting*, accepted in final form June 2008.
14. **Parker, M. D.**, 2008: Response of simulated squall lines to low-level cooling. *J. Atmos. Sci.*, **64**, 1323-1341.
13. **Parker, M. D.**, and D. A. Ahijevych, 2007: Convective episodes in the east-central United States. *Mon. Wea. Rev.*, **135**, 3707-3727.
12. Storm, B. A.,¹ **M. D. Parker**, and D. P. Jorgensen, 2007: A linear MCS with leading stratiform precipitation from BAMEX. *Mon. Wea. Rev.*, **135**, 1769-1785.

¹ Names of student collaborators are underlined in the publications lists. Students who were directly supervised by Prof. Parker are double-underlined.

11. **Parker, M. D.**, 2007: Simulated convective lines with parallel stratiform precipitation, I: An archetype for convection in along-line shear. *J. Atmos. Sci.*, **64**, 267-288.
10. **Parker, M. D.**, 2007: Simulated convective lines with parallel stratiform precipitation, II: Governing dynamics and associated sensitivities. *J. Atmos. Sci.*, **64**, 289-313.
9. Bryan, G. H., J. C. Knievel, and **M. D. Parker**, 2006: A multi-model assessment of RKW Theory's relevance to squall line characteristics. *Mon. Wea. Rev.*, **134**, 2772-2792.
8. Kuchera, E. L. and **M. D. Parker**, 2006: Severe convective wind environments. *Wea. Forecasting*, **21**, 595-612.
7. **Parker, M. D.**, I. C. Ratcliffe, and G. M. Henebry, 2005: The July 2003 Dakota hailswaths: Creation, characteristics, and possible impacts. *Mon. Wea. Rev.*, **133**, 1241-1260.
6. **Parker, M. D.**, and J. C. Knievel, 2005: Do meteorologists suppress thunderstorms? Radar-derived statistics and the behavior of moist convection. *Bull. Amer. Meteor. Soc.*, **86**, 341-358.
5. **Parker, M. D.**, and R. H. Johnson, 2004: Simulated convective lines with leading precipitation. Part I: Governing dynamics. *J. Atmos. Sci.*, **61**, 1637-1655.
4. **Parker, M. D.**, and R. H. Johnson, 2004: Simulated convective lines with leading precipitation. Part II: Evolution and maintenance. *J. Atmos. Sci.*, **61**, 1656-1673.
3. **Parker, M. D.**, and R. H. Johnson, 2004: Structures and dynamics of quasi-2D mesoscale convective systems. *J. Atmos. Sci.*, **61**, 545-567.
2. **Parker, M. D.**, S. A. Rutledge, and R. H. Johnson, 2001: Cloud-to-ground lightning in linear mesoscale convective systems. *Mon. Wea. Rev.*, **129**, 1232-1242.
1. **Parker, M. D.** and R. H. Johnson, 2000: Organizational modes of midlatitude mesoscale convective systems. *Mon. Wea. Rev.*, **128**, 3413-3436.

OTHER FORMAL PUBLICATIONS

- Parker, M. D.**, 2004: Chasing and observing storms in the High Plains. *Colorado Climate*, Summer 2002 edition (Vol. 3, No. 3, publ. in 2004), 11-13.
- Parker, M. D.**, 2003: Why is the Park Range Colorado's snowfall capital? *Colorado Climate*, Winter 2001-2002 edition (Vol. 3, No. 1, publ. in 2003), 1-3.
- Parker, M. D.**, 2002: Quasi-two-dimensional convective lines with leading precipitation: Dynamics inferred from idealized numerical simulations. Atmospheric Science Paper No. 726, Colorado State University, 168 pp.
- Parker, M. D.**, 1999: May 1996 and May 1997 linear mesoscale convective systems of the Central Plains: synoptic meteorology and a reflectivity-based taxonomy. Atmospheric Science Paper No. 675, Colorado State University, 185 pp.

MANUSCRIPTS IN PROGRESS

- Kiefer, M. T., **M. D. Parker**, and J. J. Charney, 2008: Regimes of dry convection above wildfires: Idealized numerical simulations and dimensional analysis. *J. Atmos. Sci.*, submitted July 2008.

CONFERENCE ABSTRACTS

- Baranowski, B. C., and **M. D. Parker**, 2008: The presence of thermal wind balance in MCS environments. *24th Conference on Severe Local Storms*, AMS², 27-31 October 2008, Savannah, GA.
- French, A. J., and **M. D. Parker**, 2008: Response of nocturnal convective systems to low-level jets and morning surface heating. *24th Conference on Severe Local Storms*, AMS, 27-31 October 2008, Savannah, GA.
- Letkewicz, C. E., and **M. D. Parker**, 2008: An observational investigation of mesoscale convective systems crossing the Appalachian Mountains. *24th Conference on Severe Local Storms*, AMS, 27-31 October 2008, Savannah, GA.
- Kiefer, M. T., **M. D. Parker**, and J. J. Charney, 2008: A numerical modeling study of dry convective regimes above wildland fires. *The '88 Fires: Yellowstone and Beyond*, International Assoc. of Wildland Fire, 22-27 September 2008, Jackson Hole, WY.
- Parker, M.D.**, 2007: Response of convective storms to low-level cooling. *Fourth European Conference on Severe Storms*, 10-14 September 2007, Trieste, Italy.
- Baranowski, B.C., **M. D. Parker**, and B.A. Storm, 2007: Gravity waves trapped under the leading anvil of an MCS during BAMEX. *12th Conference on Mesoscale Processes*, AMS, 6-9 August 2007, Waterville Valley, NH.
- Parker, M. D.**, 2007: Response of simulated squall lines to low-level cooling. *12th Conference on Mesoscale Processes*, AMS, 6-9 August 2007, Waterville Valley, NH.
- Parker, M. D.**, and D.A. Ahijevych, 2007: Convective episodes in the east-central United States. *12th Conference on Mesoscale Processes*, AMS, 6-9 August 2007, Waterville Valley, NH.
- Billings, J. M., and **M. D. Parker**, 2006: Evolution and maintenance of the 22-23 June 2003 nocturnal convection during BAMEX. *23rd Conference on Severe Local Storms*, AMS, 6-10 November 2006, St. Louis, MO.
- French, A. J., and **M. D. Parker**, 2006: Multiple modes of convection in moderate-to-high shear environments. *23rd Conference on Severe Local Storms*, AMS, 6-10 November 2006, St. Louis, MO.
- Houston, A. L., and **M. D. Parker**, 2006: Precipitation-independent supercell tornadogenesis. *23rd Conference on Severe Local Storms*, AMS, 6-10 November 2006, St. Louis, MO.
- Parker, M. D.**, 2006: Idealized simulations of nocturnal severe wind-producing convective systems. *23rd Conference on Severe Local Storms*, AMS, 6-10 November 2006, St. Louis, MO.
- Parker, M. D.**, 2006: Adiabatic lapse rates in tornadic environments. *Symposium on the Challenges of Severe Convective Storms*, AMS, 29 January-2 February 2006, Atlanta, GA.
- Parker, M. D.**, 2005: Convective evolution in along-line shear. *11th Conference on Mesoscale Processes*, AMS, 24-28 October 2005, Albuquerque, NM.
- Halligan, E. A., and **M. D. Parker**, 2005: Investigation of the BAMEX IOP 10 MCS with parallel stratiform precipitation. *Second Workshop on the Bow Echo and MCV Experiment (BAMEX)*, 11-12 April 2005, Fairview Heights, IL.

² AMS = American Meteorological Society

- Storm, B. A., and **M. D. Parker**, 2005: Investigation of the BAMEX IOP 3 MCS with leading stratiform precipitation. *Second Workshop on the Bow Echo and MCV Experiment (BAMEX)*, 11-12 April 2005, Fairview Heights, IL.
- Bryan, G. H., J. C. Knievel, and **M. D. Parker**, 2004: An evaluation of "RKW Theory" using a model intercomparison. *22nd Conference on Severe Local Storms*, AMS, 4-8 October 2004, Hyannis, MA.
- Halligan, E. A., and **M. D. Parker**, 2004: 22 June 2003 BAMEX observations of a convective line with parallel precipitation. *22nd Conference on Severe Local Storms*, AMS, 4-8 October 2004, Hyannis, MA.
- Kuchera, E. L., and **M. D. Parker**, 2004: Using RUC-2 analysis parameters to identify severe convective wind environments. *22nd Conference on Severe Local Storms*, AMS, 4-8 October 2004, Hyannis, MA.
- Parker, M. D.**, 2004: Simulated convective lines with parallel precipitation. *22nd Conference on Severe Local Storms*, AMS, 4-8 October 2004, Hyannis, MA.
- Storm, B. A., and **M. D. Parker**, 2004: Investigation of the 31 May 2003 MCS with leading stratiform precipitation from BAMEX. *22nd Conference on Severe Local Storms*, AMS, 4-8 October 2004, Hyannis, MA.
- Ratcliffe, I. C., G. M. Henebry, and **M. D. Parker**, 2004: Hailstreak identification and persistence using MODIS data: A case study of events in the northern Great Plains, July 2003. *2004 AmericaView Conference*, U.S. Geological Survey, 20-22 September 2004, Sioux Falls, SD.
- Ratcliffe, I. C., G. M. Henebry, and **M. D. Parker**, 2004: Hailstreak identification and persistence using MODIS data: A case study of events in the northern Great Plains, July 2003. *2004 Annual Conference*, American Society for Photogrammetry & Remote Sensing, 23-28 May 2004, Denver, CO.
- Parker, M. D.**, and J. C. Knievel, 2004: Are there weather holes? An objective analysis. *20th Conference on Weather Analysis and Forecasting/16th Conference on Numerical Weather Prediction*, AMS, 12-15 January 2004, Seattle, WA.
- Parker, M. D.**, and J. C. Knievel, 2003: Are there mesoscale, convective "weather holes"? *Tenth Conference on Mesoscale Processes*, AMS, 23-27 June 2003, Portland, OR.
- Parker, M. D.**, 2003: Is Lincoln a "weather hole"? Is Grand Island a "weather hot spot"? *123rd Annual Meeting*, Nebraska Academy of Sciences, 25 April 2003, Lincoln, NE.
- Parker, M. D.**, 2002: Dynamics of convective lines with leading precipitation. *21st Conference on Severe Local Storms*, AMS, 12-16 August 2002, San Antonio, TX, 5-8.
· Highlighted in Nowcast conference notebook, *Bull. Amer. Meteor. Soc.*, **83**, 1125-1126.
- Parker, M. D.**, 2001: Simulated gravity waves produced by MCS-like heating profiles: MCS geometry and its effects on the environment. *Ninth Conference on Mesoscale Processes*, AMS, 30 July-2 August 2001, Fort Lauderdale, FL, 514-518.
- Parker, M. D.**, and R. H. Johnson, 2001: Simple numerical simulations of convective lines with leading stratiform precipitation. *Ninth Conference on Mesoscale Processes*, AMS, 30 July-2 August 2001, Fort Lauderdale, FL, 283-287.
- Johnson, R. H., and **M. D. Parker**, 2001: Mesoscale convective systems and floods: A review. *Precipitation Extremes: Prediction, Impacts, and Responses*, AMS, 14-18 January 2001, Albuquerque, NM, 102-106.
· Invited paper

Parker, M. D., R. H. Johnson, and S. A. Rutledge, 2000: Cloud-to-ground lightning in linear MCS archetypes without trailing stratiform precipitation. *20th Conference on Severe Local Storms*, AMS, 11-15 September 2000, Orlando, FL, 158-161.

Johnson, R. H., P. E. Ciesielski, J. C. Knievel, and **M. D. Parker**, 1999: Preliminary results from the South China Sea Monsoon Experiment sounding network. *23rd Conference on Hurricanes and Tropical Meteorology*, AMS, 10-15 January 1999, Dallas, TX, 969-972.

Parker, M. D., and R. H. Johnson, 1999: On the organization of midlatitude mesoscale convective systems. *Eighth Conference on Mesoscale Processes*, AMS, 28 June-1 July 1999, Boulder, CO, 8-13.

· Awarded best student presentation

ADDITIONAL PRESENTATIONS

Invited Presentations

Apr. 2008 T. Mylan Stout lecture series, University of Nebraska-Lincoln.
 Feb. 2008 Department of Geography and Earth Sciences, University of North Carolina-Charlotte.
 Oct. 2007 Institute for Terrestrial and Planetary Atmospheres, Stony Brook University, NY.
 Mar. 2007 Dept. of Geological and Atmospheric Sciences, Iowa State Univ.
 Sep. 2005 Central North Carolina Chapter of the AMS.
 Mar. 2005 University of Nebraska-Lincoln Student Chapter of the AMS.
 Mar. 2004 Department of Meteorology, The Pennsylvania State University.
 Oct. 2003 Department of Atmospheric Sciences, University of California, Los Angeles.
 Oct. 2003 T. Mylan Stout lecture series, University of Nebraska-Lincoln.
 Aug. 2003 High Plains Chapter of the AMS.
 Mar. 2003 Omaha-Offutt Chapter of the AMS.
 May 2002 Herbert Riehl Memorial Seminar, Dept. of Atmospheric Science, Colorado State Univ.
 Feb. 2002 Mesoscale and Microscale Meteorology Division, NCAR³.

Invited Instruction of Short Courses

Apr. 2008 COMET⁴ Mesoscale Analysis and Prediction (COMAP) course, NCAR.
 Jun. 2007 COMET Mesoscale Analysis and Prediction (COMAP) course, NCAR.
 Mar. 2007 Dept. of Geological and Atmospheric Sciences, Iowa State Univ.

Other Research Presentations (job interview talks excluded)

Oct. 2008 Scope Academy, PAMS⁵, North Carolina State Univ.
 Jun. 2007 Department of Atmospheric Science, Colorado State University
 Aug. 2006 CSTAR⁶ conference call presentation, National Weather Service-Raleigh, NC.
 Jun. 2006 Workshop on Warm Season Precipitation, NCAR
 Oct. 2005 CSTAR Regional Workshop, National Weather Service-Raleigh, NC.

³ NCAR=National Center for Atmospheric Research

⁴ COMET=Cooperative Program for Operational Meteorology, Education and Training

⁵ PAMS=College of Physical and Mathematical Sciences

⁶ CSTAR=Collaborative Science, Technology, and Applied Research program

FUNDED PROPOSALS

- 2008-2011 **Parker, M. D.**: *VORTEX2: Mobile Upsonde Measurements and Studies of Lower Tropospheric Processes*. National Science Foundation, Physical and Dynamic Meteorology Program. \$448,105.
- 2007-2010 Lackmann, G. M., L. Xie, and **M. D. Parker**: *Improving Understanding and Prediction of Warm Season Precipitation Systems in the Southeastern and Mid-Atlantic Regions*, National Weather Service/NOAA, CSTAR program. \$375,000.
- 2006-2009 Lackmann, G. M., and **M. D. Parker**: *Improving the Representation of Organized Convection in Numerical Weather Prediction (NWP) Models*. National Science Foundation, Physical and Dynamic Meteorology Program. \$323,000.
- 2006-2007 **Parker, M. D.**: *Tornadoes in Landfalling Hurricanes: A Pilot Study*. Faculty Research and Professional Development Fund, North Carolina State University. \$4,000.
- 2004-2009 **Parker, M. D.**: *CAREER: Integrated Studies of Recurring, Non-Traditional Mesoscale Convective Systems*. Faculty Early Career Development (CAREER) award, National Science Foundation, Mesoscale Dynamic Meteorology Program. \$598,444.

PROFESSIONAL COMMITTEES AND EDITORIAL BOARDS

- 2008-2011 AMS *Committee on Mesoscale Processes*
- 2008-2009 Program Committee for the 13th *Conference on Mesoscale Processes*, AMS
- 2007- Associate editor, *Weather and Forecasting*, AMS
- 2006-2008 Co-chair, Program Committee for the 24th *Conference on Severe Local Storms*, AMS
- 2004-2008 AMS *Committee on Severe Local Storms*
- 2004-2006 Associate editor, *Monthly Weather Review*, AMS
- 2004-2006 Joint Program Committee for *Symposium on the Challenges of Severe Convective Storms* and 23rd *Conference on Severe Local Storms*, AMS

SELECTED AWARDS AND HONORS

- 2005 Inducted into Sigma Xi, The Scientific Research Society
- 2004 National Science Foundation Faculty Early Career Development (CAREER) Award
- 2002 Herbert Riehl Memorial Award (best published manuscript by a graduate student), *Department of Atmospheric Science, Colorado State University*
- 1999 Best student presentation, *Eighth Conf. on Mesoscale Processes*, AMS, Boulder, CO
- 1996-1997 AMS Graduate Fellowship
- 1995 Selected participant, *Summer Institute on Atmospheric and Hydrospheric Sciences, NASA Goddard Space Flight Center*

OTHER RECENT PROFESSIONAL ACTIVITIES

2007-2010	Coordinator for ground-based mobile soundings, VORTEX-2 ⁷		
2007	Session chair, 12 th Conference on Mesoscale Processes, AMS		
2006	Session chair, 23rd Conference on Severe Local Storms, AMS		
2006	Review of NWS ⁸ -Raleigh procedures for MCS forecasting and warning		
2006	Session chair, <i>Symposium on the Challenges of Severe Convective Storms</i> , AMS		
2005-2006	Reviewer of two chapters from textbook: <i>Mesoscale Dynamics</i> , by Y.-L. Lin		
2005	Part-time visiting scientist, <i>Hazardous Weather Testbed</i> , Storm Prediction Center and National Severe Storms Laboratory		
2005	Scholarship review panelist, National Weather Association, Central Iowa chapter		
2004	Session chair, 22nd Conference on Severe Local Storms, AMS		
2001-	Reviewer of proposals and journal articles (4-8 per year):		
	National Science Foundation: Atmospheric Sciences (ATM)		
	<i>Ann. Geophysicae</i>	<i>Atmos. Res.</i>	<i>Bull. Amer. Meteor. Soc.</i>
	<i>Geophys. Res. Lett.</i>	<i>Int. J. Climatol.</i>	<i>J. Appl. Meteor. Climatol.</i>
	<i>J. Atmos. Sci.</i>	<i>J. Geophys. Res.</i>	<i>J. Hydrometeorol.</i>
	<i>Meteor. Atmos. Phys.</i>	<i>Mon. Wea. Rev.</i>	<i>Wea. Forecasting</i>

PROFESSIONAL SOCIETIES

1997-	American Geophysical Union
1995-	American Meteorological Society

TEACHING EXPERIENCE

	Dept. of Marine, Earth, & Atmospheric Sciences, North Carolina State University
2009, spring	Special topics: VORTEX2 field course (MEA 493/593), instructor
2007, fall	Dynamics of mesoscale precipitation systems (MEA 715), co-instructor
2006-2008	Atmospheric convection (MEA 714), co-instructor (2 times)
2006-2007	Mesoscale numerical modeling (MEA 712), instructor (2 times)
2005-2009	Mesoscale weather analysis and forecasting (MEA 444), instructor (4 times)
	Dept. of Geosciences, University of Nebraska-Lincoln
2005, spring	Special topics: Mesoscale meteorology (METR 498/898), instructor
2004, spring	Graduate seminar: Dynamics of clouds (METR 953), instructor
2003-2005	Dynamic meteorology II (METR 458/858), instructor (3 times)
2002-2004	Dynamic meteorology I (METR 456/856), instructor (3 times)
2002-2004	Special problems in geosciences (GEOS 898), independent study supervisor (4 times)
	Dept. of Atmospheric Science, Colorado State University
2001, fall	Introduction to weather and climate (AT 351), laboratory instructor

⁷ Verification of the Origin of Rotation in Tornadoes Experiment, 2nd field campaign

⁸ NWS=National Weather Service

GRADUATE THESES SUPERVISED

- 2008 William Booth (M.S., North Carolina State University)
Climatology of Summertime Convective Storms along the Carolina Coastline
- 2007 Adam French (M.S., North Carolina State University)
The Initiation and Evolution of Multiple Modes of Convection Within a Meso-Alpha Scale Region
- 2007 Jerilyn Billings (M.S., North Carolina State University)
Evolution and Maintenance of the 22-23 June 2003 Nocturnal Convection during BAMEX
- 2005 Brandon Storm (M.S., University of Nebraska-Lincoln)
Investigation of 31 May 2003 MCS with Leading Stratiform Precipitation from BAMEX
- 2004 Evan Kuchera (M.S., University of Nebraska-Lincoln)
Identifying Severe Convective Wind Environments

OTHER GRADUATE RESEARCH ADVISEES

Dept. of Marine, Earth, & Atmospheric Sciences, North Carolina State University

- 2008- Matthew Morin (M.S., current)
- 2008- Katherine Rojowsky (M.S., current, co-advised with Dr. Sandra Yuter)
- 2007- Michael Kiefer (Ph.D., current)
- 2007- Casey Letkewicz (M.S., current)
- 2006- Ben Baranowski (Ph.D., current)
- 2005- Adam French (M.S. 2005-2007, Ph.D. current)

Dept. of Geosciences, University of Nebraska-Lincoln

- 2003-2005 Eve Halligan (M.S., remained at UNL following Dr. Parker's departure)
- 2003-2005 Jeramie Lippman (M.S., remained at UNL following Dr. Parker's departure)

UNDERGRADUATE RESEARCH ADVISEES

Dept. of Marine, Earth, & Atmospheric Sciences, North Carolina State University

- 2006-2007 Adam Baker

University Honors Program, University of Nebraska-Lincoln

- 2004-2005 Andrew Hulme (co-advisor)

UNIVERSITY SERVICE

North Carolina State University

- 2008- Atmospheric Measurements Faculty Search Committee, MEAS⁹
2008 Panelist, "New Faculty Workshop" Research Panel, PAMS¹⁰
2007-2008 Mesoscale Dynamicist Faculty Search Committee, MEAS
2006- Atmospheric Sciences Undergraduate Program Coordinator
2006- Social Committee chair, MEAS
2006- Undergraduate Curriculum and Programs Committee, MEAS
2005-2007 Faculty Co-advisor, Student Chapter of the AMS
2005 Tropical Meteorologist Faculty Search Committee, MEAS

University of Nebraska-Lincoln

- 2005 Panelist, "NSF CAREER Award Roundtable", Office of Proposal Development
2004-2005 Climate Modeling Faculty Search Committee, Department of Geosciences
2004-2005 Committee on Unified Meteorology/Climatology Program, Department of Geosciences
2004 Panelist, "The Job Talk", Career Development Series, Office of Graduate Studies
2003-2005 Scholarship and Awards Committee, Department of Geosciences
2003-2005 Grading Appeals Committee, College of Arts and Sciences

⁹ Department of Marine, Earth, and Atmospheric Sciences

¹⁰ College of Physical and Mathematical Sciences