

Steven Edward Koch

Tel: (520) 409-4773 email: mesosk@gmail.com

EDUCATION

Ph.D. (Meteorology), 1979

University of Oklahoma - Norman

Dissertation: "*Mesoscale gravity waves as a possible trigger of severe convection along a dryline*"

M.S. (Meteorology), 1974

University of Wisconsin - Madison

Thesis: "*Observations of mesoscale factors influencing the intensity of new cell developments in convective storm situations*"

B.S. (Meteorology), 1972

University of Wisconsin - Madison

EMPLOYMENT

2011 – 2019: Director, National Severe Storms Laboratory (retired)

NOAA/OAR

Norman, OK

2006 – 2011: Director, Global Systems Division

NOAA/OAR/Earth Systems Research Laboratory

Boulder, CO

2000 – 2005: Chief, Forecast Research Division

NOAA/OAR/Forecast Systems Laboratory

Boulder, CO

1993 – 2000: Associate Professor (tenured)

Department of Marine, Earth, and Atmospheric Sciences

North Carolina State University

Raleigh, NC

1980 – 1993: Meteorologist

Laboratory for Atmospheres

NASA/Goddard Space Flight Center

Greenbelt, MD

1979 – 1980: Postdoctoral Fellow

Cooperative Institute for Mesoscale Meteorological Studies

University of Oklahoma

CITATION INDEX

Citations of refereed journal papers: 4,241, H-Index: 37 (as of 4 February 2019)
(based on Google Scholar Citation)

MEMBERSHIPS

- American Meteorological Society
- National Weather Association
- American Geophysical Union

HONORS AND AWARDS

- 2019 – Adjunct Full Professor, Embry-Riddle Aeronautical University
- 2019 Albert Nelson Marquis Lifetime Achievement honoree
- 2017 – 2021 Affiliate Professor, Iowa State University
- 2015 National Weather Association Larry R. Johnson Award recognizing extraordinary accomplishments which significantly contributed to operational meteorology (“for helping to make the NOAA Hazardous Weather Testbed a long-term success”).
- 2013 – Affiliate Full Professor, University of Oklahoma
- 2009 – 2011 Adjunct Associate Professor, North Carolina State University
- 2009 – 2011 Adjunct External Examiner, North Carolina A&T University
- 2008 Fellow, American Meteorological Society
- 2003 Collaborating Professor, Iowa State University
- 1998 National Weather Association Research Achievement Award
“For defining, designing and implementing outstanding applied research projects, teaming with several NOAA/NWS offices leading to noteworthy improvements in weather warnings and forecasts and in sharing results with the operational meteorology community.”
- 1998 National Weather Service Award for Applied Research
- 1995 Elected to NCSU Computational Engineering and Science Faculty
- 1995 Who’s Who in Science and Engineering
- 1992 NASA/GSFC
Certificate of Outstanding Performance

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| 1991 | NASA/GSFC Exceptional Achievement Award |
| 1990 | NASA/GSFC Ten Year Service Award |
| 1990 | NASA/GSFC Certificate of Outstanding Performance |
| 1990 | NASA/GSFC Special Act or Service Award |

COMMUNITY SERVICE ACTIVITIES

- Copy Editor, *Advances in Atmospheric Science*, Institute of Atmospheric Physics, Academy of Atmospheric Sciences, 2021–
- Member, NOAA OAR Research Awards Board (OAB), 2016 – 2018
- Lead PI, NOAA Unmanned Aircraft Systems (UAS) Environmental Profiling and Initiation of Convection (EPIC) project, 2016 – 2017
- Program Manager and Chair, NOAA VORTEX-SE Interagency Executive Committee, 2015 – 2018
- Member, NOAA Storm Surge Roadmap Executive Steering Committee, 2015 – 2017
- Member, atmospheric bore science team and forecasting, PECAN project, 2015
- Member, Executive Committee, AMS Commission on Weather and Climate Enterprise Forecast Improvement Group, 2013 – 2016
- Fellow, Cooperative Institute for Mesoscale Meteorological Studies (CIMMS), 2012–
- NSF Review Panel, Management of National Center for Atmospheric Research, 2012
- CAPS External Advisory Committee, 2012–2018 (Center for the Analysis and Prediction of Storms at the University of Oklahoma)
- Chair, Executive Committee for NOAA Weather Ready Nation “Science Imperatives for Severe Local Storms Research” workshop, Birmingham, 2012
- Chair, National Weather Center Facility Security Committee, 2011 – 2015
- NCAR Earth Observing Laboratory External Advisory Committee, 2011 – 2016
- Co-chair, Organizing Committee for NOAA Weather Ready Nation “A Vital Conversation” symposium, Norman, 2011
- Technical Monitor, NOAA EPP Minority Serving Institution ISET Cooperative Science Center at North Carolina A&T University, 2006 –
- Co-convener of AMS short course “A Primer on Radar Analysis Techniques used in Mesoscale Meteorology”, 2006
- LEAD External Advisory Panel, 2006 – 2007
- Fellow, Cooperative Institute for Research in the Atmosphere (CIRA), 2006 – 2011
- Science Steering Committee, Joint Center for Satellite Data Assimilation, 2005–2008
- Co-Chair, 12th AMS Conference on Mesoscale Processes, 2006
- Deputy Director, Developmental Testbed Center, 2004 – 2011
- WRF Executive Oversight Board, 2005 – 2007
- National Research Council Advisor, 2004 –
- Lead developer of FAA aviation turbulence numerical guidance products, 2003–2008
- Lead of FAA Model Development & Enhancement PDT, 2003–2006
- Co-lead of FAA Turbulence PDT, 2002–2006
- AMS Committee on Mesoscale Processes, 2003–2006
- IHOP (2002): Principal scientist for Quantitative Precipitation Forecast (QPF) component of field program; P.I. for NOAA/FSL contributions

- Editor, *Weather and Forecasting*, 1998–2000
- AMS Committee of Judges for Undergraduate Awards, 1998–2000
- AMS Committee on Weather Analysis and Forecasting, 1997–1999
- Member, North Carolina Supercomputing Center Allocation Committee, 1997–1999
- Member, Unidata Users Committee, 1996–1999
- Member, Prospectus Development Team #2 for the U. S. Weather Research Program
- Center for Analysis and Prediction of Storms (CAPS) Advisory Panel, 1995–1997
- Chair, MEAS Meteorology Undergraduate Curriculum Committee, 1995
- Member, MEAS Undergraduate Curriculum and Programs Committee, 1996
- STORM-FEST, 1991–1992: Operations Plan co-author; organized NASA STORM-FEST Science Plan; STORM-FEST Mission Scientist, Aircraft Coordinator, and NASA ER-2 Science PI during field operations
- Principal Investigator for Cooperative Oklahoma Profiler Studies (COPS-91) field experiment, 1991: acquisition and principal responsibility for operation of Portable Automated Mesonet (PAM) system, acted as scientist on NOAA P-3 aircraft.

STUDENT THESES AND DISSERTATIONS

Chasteen, M., 2021: Tentative title: The role of physics parameterization in ensemble model prediction of storm morphology. *PhD. Dissertation*, University of Oklahoma (co-chair of advisory committee).

Haghi, K., 2017: Theory and observations of bores in the nocturnal environment of the Great Plains, *PhD. Dissertation*, University of Oklahoma (advisory committee member).

Stratman, D., 2013: Use of multiple verification methods to evaluate forecasts of convection from hot- and cold-start convection-allowing models. *M. S. Thesis*, University of Oklahoma (advisory committee member).

Jankov, I., 2006: The role of physical scheme interactions on warm season rainfall forecasts. *Ph.D. Dissertation*, Iowa State University (advisory committee member).

Grams, J. S., 2005: The use of a modified Ebert-McBride technique to evaluate quantitative precipitation forecast as a function of observed convective system morphology, *M.S. Thesis*, Iowa State University (advisory committee member).

Mitchem, J., 2000: The role of dual cold fronts aloft in the generation of a major tornado outbreak, *M. S. Thesis*, North Carolina State University.

Saleeby, S., 2000: Development and implementation of an automated system for analysis of mesoscale phenomena, *M. S. Thesis*, North Carolina State University.

Zhang, F., 2000: The role of unbalanced dynamics and topography in the generation of mesoscale gravity waves., *Ph. D. Dissertation*, North Carolina State University.

Vandersip, C., 1998: A single-Doppler radar study of kinematic and structural characteristics of mesocyclones in the Southeastern and Great Plains regions of the United States, *M. S. Thesis*, North Carolina State University.

Jin, Y., 1997: A numerical model study of the role of mesoscale gravity waves in rainband dynamics in the central United States during STORM-FEST. *Ph. D. Dissertation*, North Carolina State University.

Felton, D., 1997: Effects of vertical wind shear and a low-level jet on the evolution of the mountain-plains solenoidal circulation. *M. S. Thesis*, North Carolina State University.

Kramer, D., 1997: Real time mesoscale model evaluation during Appalachian cold air damming. *M. S. Thesis*, North Carolina State University.

Rozumalski, R. A., 1997: The role of jet streak regeneration forced by a deepening continental planetary boundary layer in the explosive surface cyclogenesis of 28 March 1984. *Ph. D. Dissertation*, North Carolina State University (advisory committee member).

Trexler, C. M., 1997: Vertical structure of a mesoscale gravity wave event during STORM-FEST: A comparative analysis between *in situ* remote sensing observations, numerical simulations, and linear theory predictions, *M. S. Thesis*, North Carolina State University.

Krogh, Tony C., 1996: Determination of frontal structure in the mid-Atlantic region from WSR-88D Doppler Radar Velocity Azimuth Display, *M. S. Thesis*, North Carolina State University.

Siedlarz, Leanne M., 1996: A climatology of mesoscale wave disturbances seen in mesonet data during STORM-FEST, *M. S. Thesis*, North Carolina State University.

Turner, Kyle D., 1996: Geosynchronous satellite infrared analysis of tornadic thunderstorms. *M. S. Thesis*, North Carolina State University.

Ray, Charles A., 1995: Detection of summertime convergence zones in central and eastern North Carolina using the WSR-88D doppler radar, *M. S. Thesis*, North Carolina State University.

COURSES TAUGHT (§ if new course developed. Courses at North Carolina State University = MEA xxx; Courses taught at University of Oklahoma = METR xxx; Courses taught at Embry-Riddle Aeronautical University = WX xxx)

§ MEA 715: Dynamics of Mesoscale Precipitation Systems

§ MEA 554: Atmospheric Convection

§ MEA 518: Radar Meteorology

MEA 444: Weather Analysis and Forecasting

§ MEA 214: Fundamentals of Meteorology

MEA 140: Natural Hazards and Global Change

§ METR 5990: Independent Study: NWP Parameterization Schemes

- § METR 5990:** Independent Study: Dynamics of Mesoscale Banded Precipitation Systems
- § METR 4433:** Mesoscale Meteorology
- § WX 363:** Thunderstorms

INVITED PAPERS AND PRESENTATIONS SINCE 1990

1. 2018: The potential of Unmanned Aircraft Systems for short-range prediction of severe thunderstorms. *UAS Tech Forum*, Broken Arrow, OK.
2. 2017: Severe local storm environmental observations from UAS. *97th Annual Meeting of the American Meteorological Society*, Seattle, WA.
3. 2016: Developing capability for UAS observations of severe storms. *USA-OK UAS Summit*, Norman, OK.
4. 2016: Developing capability for rotary and fixed-wing UAS observations of severe storms to fill critical data gaps. *NOAA Emerging Technologies Workshop*, Silver Spring, MD.
5. 2016: A review of gravity wave-convection interactions. *SPARC Gravity Wave Symposium*, State College, PA.
6. 2015: NOAA perspectives on the role of UAS for atmospheric monitoring and research. *International Society for Atmospheric Research using Remotely Piloted Aircraft (ISARRA)* meeting, Norman, OK.
7. 2014: Thunderstorm generation by bores and solitons. PECAN Planning Workshop, Boulder.
8. 2012: Thunderstorm generation by bores and solitons. University of Oklahoma, School of Meteorology, Norman, OK.
9. 2012: Observing System Simulation Experiment (OSSE) research on convective storms at the National Weather Center. *Proceedings, American Geophysical Union*, San Francisco.
10. 2006: Turbulent mixing processes in atmospheric solitons deduced from profiling systems and modeling experiments. *7th International Symp. on Tropospheric Profiling*. Boulder, CO
11. 2006: Interactions between gravity waves and turbulence in unbalanced jets. *European Geophysical Union*, Vienna, Austria.
12. 2005: Hurricane prediction, preparedness, and prevention. *Boulder Flatirons Rotary Club*, Boulder, CO.
13. 2005: Mesoscale gravity waves: theory, analysis, and prediction. *Iowa State University*, Department of Geological and Atmospheric Sciences, Ames, IA.

14. 2005: The structure and dynamics of atmospheric solitons during IHOP. *Iowa State University*, Department of Geological and Atmospheric Sciences, Ames, IA.
15. 2005: Developmental Testbed Center Winter Forecast Experiment. *UNIDATA*, Boulder, CO.
16. 2004: The structure and dynamics of atmospheric solitons during IHOP. *Colorado State University*, Department of Atmospheric Science, Ft. Collins, CO.
17. 2003: The impact of wind profiler data on short-range weather forecasting. *International Symposium on Tropospheric Profiling*. Leipzig, Germany, 14-20 September 2003
18. 2002, 2003: Mesoscale gravity waves: dynamics, analysis, and operational prediction. *COMAP-02, COMAP -03*, Boulder, CO.
19. 2002, 2003: Split fronts and cold fronts aloft: structure, dynamics, and principles of detection. *COMAP-02, COMAP -03*, Boulder, CO.
20. 2002: Forecasting severe weather associated with cold fronts aloft. *NSSL Seminar Series*, Norman, OK.
21. 2002: Mesoanalysis and forecasting of gravity waves. *NSSL Seminar Series*, Norman, OK.
22. 2001: Gravity current and undular bore structures observed within a cold frontal zone and their role in the process of triggering severe convection. *Univ. of Wyoming*, Laramie.
23. 2001: Topographic generation of propagating gravity waves and their interaction with deep convection. *Mountain Weather Workshop*, Cheyenne, WY WSO.
24. 2000: A real-time surface mesoanalysis system. *National Center for Atmospheric Research*, Ft. Collins, CO.
25. 2000: Mesoanalysis and modeling of the forcing for mesoconvective systems in the Palm Sunday tornado outbreak. *Colorado State University*, Ft. Collins, CO.
26. 2000: Topographic generation of propagating gravity waves and their interaction with deep convection. *National Center for Atmospheric Research*, Boulder, CO.
27. 2000: Potential impacts of GOES-R data on FSL mesoscale models. *Initial GOES-R Series Users Workshop*, UCAR/COMET, Boulder, CO
28. 2000: Recent developments in mesoscale analysis and prediction. Presentation at *NOAA Forecast Systems Lab*.
29. 1999: The dynamics of severe storm initiation along a nonclassical cold front revealed by remote sensing observations during COPS-91. Presentation at *Denver-Boulder Chapter of the AMS*.
30. 1998: Web-based instruction in meteorology at North Carolina State University. Presentation at *NCSU Summer Instructional Technologies Workshop*

31. 1997: The use of conceptual models in the forecast process for frontal precipitation events. Presentations at *NWS-Raleigh and NWS-Greenville-Spartanburg WSFOs*
32. 1997: Presentations at *COMET Mesoscale Analysis and Prediction COMAP 97-2 Course*, Boulder, CO:
 - “Mesoscale Gravity Waves and Precipitation Bands: Wave Dynamics, Prediction, and Detection”
 - “Sensible Heating Effects on Frontogenesis”
 - “Mesoscale Forcing for Mesoconvective Systems in the Palm Sunday Tornado Outbreak”
33. 1995: Detection and forecasting of gravity waves in extratropical cyclones. Presented at *COMET Mesoscale Analysis and Prediction COMAP 95-2 Course*, Boulder, CO.
34. 1995: The dynamics of surface frontogenesis in the presence of sensible heating. Presented at NCAR, Boulder, CO.
35. 1995: Mesoscale structure in wintertime cyclones: The role of gravity waves. Presented at *COMET Mesoscale Analysis and Prediction COMAP 95-1 Course*, Boulder, CO.
36. 1994: Drylines, gravity waves, and downslope winds. Presented at the *Unidata Workshop on Teaching Mesoscale Meteorology in the Age of the Modernized National Weather Service*, Boulder, CO.
37. 1992: Opportunities and strategies for research on scale-interactive processes in the U.S. Weather Research Program. *Fifth Conference on Mesoscale Processes*, Atlanta, GA, Amer. Meteor. Soc.

REFEREED PUBLICATIONS

1. Chasteen, M.B., and **S.E. Koch**, 2021: Multiscale aspects of the 26-27 April 2011 tornado outbreak, Part I: Outbreak chronology and environmental evolution. *Mon. Wea. Rev.* (submitted).
2. Chasteen, M.B., and **S.E. Koch**, 2021: Multiscale aspects of the 26-27 April 2011 tornado outbreak, Part II: Environmental modifications and upscale feedbacks arising from latent processes. *Mon. Wea. Rev.* (submitted).
3. Lai, A., J. Gao, **S. E. Koch**, Y. Wang, S. Pan, A. Fierro, C. Cui, and J. Min, 2019: Assimilation of radar radial velocity, reflectivity and pseudo-water vapor for convective-scale NWP in a variational framework. *Mon. Wea. Rev.*, **147**, 2877 – 2900.
4. Chasteen, M. B., **S. E. Koch**, and D. B. Parsons, 2019: Multiscale processes enabling the longevity and daytime persistence of a nocturnal Mesoscale Convective System. *Mon. Wea. Rev.*, **147**, 733 – 761.

5. **Koch, S. E.**, M. Fengler, P. B. Chilson, K. L. Elmore, B. Argrow, D. L. Andra, Jr., and T. Lindley, 2018: On the use of unmanned aircraft for sampling mesoscale phenomena in the pre-convective boundary layer. *J. Atmos. Oceanic Technol.*, **35**, 2265–2288.
6. Toms, B. A., J. M. Tomaszewski, D. D. Turner and **S. E. Koch**, 2017: Analysis of a lower tropospheric gravity wave train using direct and remote sensing measurement systems. *Mon. Wea. Rev.*, **145**, 2791–2812.
7. Jones, T. A., **S. Koch**, and Z. Li, 2016: Assimilating synthetic hyperspectral sounder temperature and humidity retrievals to improve severe weather forecasts. *Atmospheric Research*, **186**, 9–25.
8. Cintineo, R., J. A. Otkin, T. Jones, **S. Koch**, and D. J. Stensrud, 2016: Assimilation of synthetic GOES-R ABI infrared brightness temperatures and WSR-88D radar observations in a high-resolution OSSE. *Mon. Wea. Rev.*, **144**, 3159–3180.
9. **Koch, S. E.**, R. Ware, H. Jiang, and Y. Xie, 2015: Rapid mesoscale environmental changes accompanying genesis of an unusual tornado. *Wea. Forecasting*, **31**, 763–786.
10. Hwang, Y., A. Clark, V. Lakshmanan, and **S. Koch**, 2015: Improved nowcasts by blending extrapolation and model forecasts. *Wea. Forecasting*, **30**, 1201–1217.
11. Privé, N.C., Y. Xie, **S. Koch**, R. Atlas, S. J. Majumdar, and R. N. Hoffman, 2014: An Observing System Simulation Experiment for the Unmanned Aircraft System data impact on tropical cyclone track forecasts. *Mon. Wea. Rev.*, **142**, 4357–4363.
12. Ware, R., D. Cimini, E. Campos, G. Giuliani, S. Albers, M. Nelson, **S. E. Koch**, P. Joe, and S. Cober, 2013: Thermodynamic and liquid profiling during the 2010 Winter Olympics. *Atmos. Res.*, **132-133**, 278–290.
13. Tollerud, E. I., B. Etherton, Z. Toth, I. Jankov, T. L. Jensen, H. Yuan, L. S. Wharton, P. T. McCaslin, E. Mirvis, B. Kuo, B. G. Brown, L. Nance, **S. E. Koch**, and F. A. Eckel, 2013: The DTC ensembles task: A new testing and evaluation facility for mesoscale ensembles. *Bull. Amer. Meteor. Soc.*, **94**, 321–327.
14. Ralph, M., J. Intrieri, D. Andra, Jr., R. Atlas, S. Boukabara, D. Bright, P. Davidson, B. Entwistle, J. Gaynor, S. Goodman, J.-G. Jiing, A. Harless, J. Huang, G. Jedlovec, J. Kain, **S. Koch**, B. Kuo, J. Levit, S. Murillo, L.P. Riishojgaard, T. Schneider, R. Schneider, T. Smith, and S. Weiss, 2013: The emergence of weather-focused testbeds linking research and forecasting operations. *Bull. Amer. Meteor. Soc.*, **94**, 1187–1211.
15. Privé, N.C., Y. Xie, J. Woollen, **S. E. Koch**, R. Atlas, and R. Hood, 2013: Evaluation of the Earth Systems Research Laboratory's global Observing System Simulation Experiment system. *Tellus*, **65**, 19011, 1–22.
16. Stratman, D.R., M.C. Coniglio, **S. E. Koch**, and M. Xue, 2013: Use of multiple verification methods to evaluate forecasts of convection from hot- and cold-start convection-allowing models. *Wea. Forecasting*, **28**, 119–138.

17. Cimini D., E. Campos, R. Ware, S. Albers, G. Giuliani, J. Oreamuno, P. Joe, **S. Koch**, S. Cober, and E. R. Westwater, 2011: Thermodynamic atmospheric profiling during the 2010 Winter Olympics using ground-based microwave radiometry. *IEEE Trans. Geosci. Rem. Sens.*, **99**, 1–11.
18. Doyle, J. D., S. Gaberšček, Q. Jiang, L. Bernardet, J. M. Brown, A. Dörnbrack, E. Filaus, V. Grubišić, D. Kirshbaum, O. Knowth, **S. Koch**, J. Schmidli, I. M. Stiperski, S. Vosper, and S. Zhong, 2011: An intercomparison of T-REX mountain wave simulations. *Mon. Wea. Rev.*, **139**, 2811–2831.
19. Xie, Y. F., **S. Koch**, J. McGinley, S. Albers, P. E. Bieringer, M. Wolfson, and M. Chan, 2011: A Space-Time Multiscale Analysis System: A sequential variational analysis approach. *Mon. Wea. Rev.*, **139**, 1224–1240.
20. Lu, C., and **S. E. Koch**, 2008: Interaction of upper-tropospheric turbulence and gravity waves as obtained from spectral and structure function analysis. *J. Atmos. Sci.*, **65**, 2676–2690.
21. Tollerud, E., I. F. Caracena, **S. E. Koch**, B. D. Jamison, R. M. Hardesty, B. J. McCarty, C. Kiemle, R. S. Collander, D. L. Bartels, S. Albers, B. Shaw, D. L. Birkenheuer, and W. A. Brewer, 2008: Mesoscale moisture transport by the low-level jet during the IHOP field experiment. *Mon. Wea. Rev.*, **136**, 3781–3795.
22. Bernardet, L., L. Nance, M. Demirtas, **S. Koch**, T. Fowler, A. Loughe, J. L. Mahoney, J.-Y. Chuang, M. Pyle, and R. Gall, 2008: The Developmental Testbed Center and its Winter Forecasting Experiment. *Bull. Amer. Meteor. Soc.*, **89**, 611–627.
23. **Koch, S. E.**, W. Feltz, F. Fabry, M. Pagowski, B. Geerts, K. M. Bedka, D. O. Miller, and J. W. Wilson, 2008: Turbulent mixing processes in atmospheric bores and solitary waves deduced from profiling systems and numerical simulation. *Mon. Wea. Rev.*, **136**, 1373–1400.
24. **Koch, S. E.**, C. Flamant, J. W. Wilson, B. M. Gentry, and B. D. Jamison, 2008: An atmospheric soliton observed with Doppler radar, differential absorption lidar, and molecular Doppler lidar. *Journ. Atmos. Oceanic Tech.*, **25**, 1267–1287.
25. Jankov, I., P. J. Schultz, C. J. Anderson, and **S. E. Koch**, 2007: The impact of different physical parameterizations and their interactions on cold season QPF in the American River basin. *J. Hydrometeorology*, **8**, 1141–1151.
26. Jankov, I., W. A. Gallus, Jr., M. Segal, and **S. E. Koch**, 2007: Influence of initial conditions on the WRF-ARW model QPF response to physical parameterization changes. *Wea. Forecasting*, **22**, 501–519.
27. Geerts, B., **S. E. Koch**, P. Krehbiel, and D. Jorgensen, 2006: Are AMS conference practices changing for better or worse? *Bull. Amer. Meteor. Soc.* **87**, 1105–1110.
28. Grams, J. S., W. A. Gallus, Jr., L. S. Wharton, **S. E. Koch**, A. Loughe, and E. E. Ebert, 2006: The use of a modified Ebert-McBride technique to evaluate Eta QPF as a function of convective system morphology during IHOP. *Wea. Forecasting*, **21**, 288–306.

29. Jankov, I., W. A. Gallus, Jr., M. Segal, B. Shaw, and **S. E. Koch**, 2005: The impact of different WRF model physical parameterizations and their interactions on warm season MCS rainfall. *Wea. Forecasting*, **20**, 1048–1060.
30. **Koch, S. E.**, B. D. Jamison, C. Lu, T. L. Smith, E. I. Tollerud, C. Girz, N. Wang, T. P. Lane, M. A. Shapiro, D. D. Parrish, and O. R. Cooper, 2005: Turbulence and gravity waves within an upper-level front. *J. Atmos. Sci.*, **62**, 3885–3908.
31. Lu, C., **S. E. Koch**, and N. Wang, 2005: Stokes parameter analysis of turbulence-generating gravity waves combining cross-spectral analysis and wavelet transformation. *J. Geophys. Res.*, **110**, doi:10.1029/2004JD005736.
32. Dabberdt, W. F., T. W. Schlatter, F. H. Carr, E. W. Joe Friday, D. Jorgensen, **S. Koch**, M. Pirone, F. M. Ralph, J. Sun, P. Welsh, J. W. Wilson, and X. Zou, 2005: Design and development of multi-functional mesoscale observing networks in support of integrated forecasting systems. *Bull. Amer. Meteor. Soc.*, **86**, 961–982.
33. Lu, C., **S. E. Koch**, and N. Wang, 2005: Determination of temporal and spatial characteristics of atmospheric gravity waves combining cross-spectral analysis and wavelet transformation. *J. Geophys. Res.* **110**, D01109, doi:10.1029/2004JD004906.
34. Brennan, M. J., G. M. Lackmann, and **S. E. Koch**, 2004: The impact of a split front rainband on Appalachian cold-air damming erosion. *Bull. Amer. Meteor. Soc.*, **85**, 935–939.
35. Benjamin, S. G., B. E. Schwartz, E. J. Szoke, and **S. E. Koch**, 2004: The value of wind profiler data in U.S. weather forecasting. *Bull. Amer. Meteor. Soc.* **85**, 1871–1886.
36. Weckwerth, T. M., D. B. Parsons, **S. E. Koch**, J. A. Moore, M. A. LeMone, B. B. Demoz, C. Flamant, B. Geerts, J. Wang, and W. F. Feltz, 2004: An overview of the International H₂O Project (IHOP_2002) and some preliminary highlights. *Bull. Amer. Meteor. Soc.*, **85**, 253–277.
37. Zhang, F., **S. E. Koch**, and M. L. Kaplan, 2003: Numerical simulations of a large-amplitude mesoscale gravity wave event. *Meteor. Atmosph. Phys*, **84**, 199–216.
38. Brennan, M. J., G. M. Lackmann, and **S. E. Koch**, 2003: An analysis of the impact of split-front rainbands on Appalachian cold air damming. *Wea. and Forecasting*, **18**, 712–731.
39. Businger, S., M. E. Adams, **S. E. Koch**, and M. L. Kaplan, 2003: Reply to Comments on: Extraction of geopotential height and temperature structure from observed profiler and rawinsonde winds. *Mon. Wea. Rev.*, **131**, 1504–1506.
40. **Koch, S. E.**, and J. D. Mitchem, 2003: A structured process for prediction of convection associated with split cold fronts. *Bull. Amer. Meteor. Soc.*, **84**, 174–179.
41. **Koch, S. E.**, and S. Saleeby, 2001: An automated system for the analysis of gravity waves and other mesoscale phenomena. *Wea. and Forecasting*, **16**, 661–679.

42. Zhang, F., **S. E. Koch**, C. A. Davis, and M. L. Kaplan, 2001: Wavelet analysis and the governing dynamics of a large-amplitude mesoscale gravity wave event along the East Coast of the United States. *Quart. J. Roy. Meteor. Soc.*, **127**, 2209-2245.
43. Businger, S., M. E. Adams, **S. E. Koch**, and M. L. Kaplan, 2001: Extraction of geopotential height and temperature structure from observed profiler and rawinsonde winds. *Mon. Wea. Rev.*, **129**, 1729-1739.
44. **Koch, S. E.**, F. Zhang, M. L. Kaplan, Y.-L. Lin, R. Weglarz, and C. M. Trexler, 2001: Numerical simulations of a gravity wave event over CCOPE. Part III: The role of a mountain-plains solenoid in the generation of the second wave episode. *Mon. Wea. Rev.*, **129**, 909-933.
45. **Koch, S. E.**, 2001: Real-time detection of cold fronts aloft and split fronts using mesoscale models and WSR-88D radar products. *Wea. and Forecasting*, **16**, 35-55.
46. Zhang, F.-Q. and **S. E. Koch**, 2000: Numerical simulations of a gravity wave event over CCOPE. Part II: Waves generated by an orographic density current. *Mon. Wea. Rev.*, **128**, 2777-2796.
47. Trexler, C. M., and **S. E. Koch**, 2000: The life cycle of a mesoscale gravity wave as observed by a network of Doppler wind profilers. *Mon. Wea. Rev.*, **128**, 2423-2446.
48. Zhang, F., **S. E. Koch**, C. A. Davis, and M. L. Kaplan, 2000: A survey of unbalanced flow diagnostics and their application. *Adv. Atmos. Sciences*, **17**, 165-183.
49. **Koch, S. E.**, and L. M. Siedlarz, 1999: Mesoscale gravity waves and their environment in the central U. S. during STORM-FEST. *Mon. Wea. Rev.*, **127**, 2854-2879.
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