

# Christopher A. Davis

## Mailing Address

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## Education

1990 Ph.D. in Meteorology, Massachusetts Institute of Technology, Cambridge, MA  
1985 B.S. in Physics, University of Massachusetts, Amherst, MA

## Professional Record

2010 – present Director, NCAR Advanced Study Program  
2009 – 2010 Interim Deputy Division Director, MMM.  
2006 - present Senior Scientist, NCAR  
2003 - 2010 Group Head, Prediction Diagnostics Group , Mesoscale and Microscale Meteorology Division  
2002 - 2003 Deputy Group Head, Prediction Diagnostics Group , Mesoscale and Microscale Meteorology Division  
2002 - present Adjunct Faculty Member, Texas A&M University  
2000 - present Adjunct Faculty Member, Colorado State University  
1999 - present Adjunct Faculty Member, North Carolina State University  
1999- 2006 Scientist III, NCAR  
1998 - 2002 Deputy Group Head, Mesoscale Prediction Group, Mesoscale and Microscale Meteorology Division  
1995 -1999 Scientist II, NCAR  
1992-1995 Scientist I, NCAR  
1990-1992 Postdoctoral Research Fellow, Advanced Study Program, NCAR  
1988-1989 Research Assistant, MIT

## Honors and Awards

2010 NCAR Technology Award  
2009 Nomination for NCAR Outstanding Publication Prize  
2008 UCAR Mentoring Award  
2007 Symons Memorial Lecturer  
2006 NASA Pecora Award (TOMS Science Team)  
2005 NCAR Outstanding Publication Prize  
2003 MMM Outstanding Publication Certificate  
2001 NCAR Technology Award  
2000 MMM Outstanding Publication Certificate  
1994 First Place, Faculty/Staff, National Collegiate Weather Forecasting Contest; Second Place Overall  
1993 NCAR Outstanding Publication Prize  
1990–1992 ASP Postdoctoral Fellowship

## Professional Activities

2011-present Associate Editor, *Quarterly Journal of the Royal Meteorological Society*  
2009 Chair, NCAR Workforce Management Plan Subcommittee on Staff and Visitor Balance  
2009—present Member, SOARS steering committee  
2008--present Member, science steering committee for PRE-Depressions Investigation of Cloud systems in the Tropics (PREDICT) field program  
2006 – present Member, Steering Committee for Short-Term Explicit Prediction (STEP) program

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| 2006           | Co-Chair, Second International Conference on Quantitative Precipitation Forecasting and Hydrology |
| 2005 - 2010    | Member, NCAR Water Cycle Steering Committee   |
| 2004 - 2007    | Member, SCD Advisory Panel  |
| 2004 - 2005    | Member, program committee for 11th AMS Conference on Mesoscale Processes                          |
| 2000 - 2005    | Co-Science Director of the <i>Bow Echo and MCV Experiment</i> (BAMEX)                             |
| 2000 - present | Lead of WRF Testing and Evaluation working group (WG7)  |
| 1999           | Chair, 8th AMS Conference on Mesoscale Processes. Boulder, CO.                                    |
| 1996-1998      | Chair, AMS Mesoscale Committee  |
| 1994-2002      | Associate Editor, <i>Monthly Weather Review</i>   |
| 1995-1996      | Member USWRP, PDT's 2 and 8   |
| 1993-1998      | Member, AMS Mesoscale Committee   |
| 1993-1995      | Chair, Division Equity Committee, MMM Division, NCAR  |
| 1992-Present   | Member, AMS   |

### Teaching Experience

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| 1988 | Synoptic Lab Instructor, Massachusetts Institute of Technology |
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### Publications – Refereed

1. Sanders, F. and C.A. Davis, 1988: Patterns of thickness anomaly for explosive cyclogenesis over the west-central North Atlantic Ocean. *Mon. Wea. Rev.*, **116**, 2727-2730.
2. Davis, C.A. and K.A. Emanuel, 1988: Observational evidence for the influence of surface heat fluxes on rapid maritime cyclogenesis. *Mon. Wea. Rev.*, **116**, 2649-2659.
3. Davis C.A. and K.A. Emanuel, 1991: Potential vorticity diagnostics of cyclogenesis. *Mon. Wea. Rev.*, **119**, 1930-1953.
4. Davis, C.A., 1992: Piecewise potential vorticity inversion. *J. Atmos. Sci.*, **49**, 1397-1411.
5. Davis, C.A., 1992: A potential vorticity diagnosis of the importance of initial structure and condensational heating in observed extratropical cyclogenesis. *Mon. Wea. Rev.*, **120**, 2409-2428.
6. Rivest, C., C.A. Davis, and B.F. Farrell, 1992: Upper-tropospheric synoptic-scale waves. Part I: Maintenance as eady normal modes. *J. Atmos. Sci.*, **49**, 2108-2119.
7. Davis, C.A., 1992: Comments on decomposing the atmospheric flow using potential vorticity framework. *J. Atmos. Sci.*, **50**, 2065-2067.
8. Davis, C.A., M.T. Stoelinga, and Y.-H. Kuo, 1993: The integrated effect of condensation in numerical simulations of extratropical cyclogenesis. *Mon. Wea. Rev.*, **121**, 2309-2330.
9. Whitaker, J.S., and C.A. Davis, 1994: Cyclogenesis in a saturated environment. *J. Atmos. Sci.*, **51**, 889-907.
10. Davis, C. A., and M. L. Weisman, 1994: Balanced dynamics of mesoscale vortices produced in simulated convective systems. *J. Atmos. Sci.*, **51**, 2005-2030.
11. Davis, C.A., 1995: Observations and modeling of a mesoscale cold surge during WISPIT. *Mon. Wea. Rev.* **123**, 1762-1780.
12. Davis, C.A., E.D. Grell, and M.A. Shapiro, 1996: The balanced dynamical nature of a rapidly intensifying oceanic cyclone. *Mon. Wea. Rev.*, **124**, 3-26.
13. Davis, C.A., 1997: The modification of baroclinic waves by the Rocky Mountains. *J. Atmos. Sci.*, **54**, 848-868.

14. Davis, C.A., 1997: Mesoscale anticyclonic circulations in the lee of the central Rocky Mountains. *Mon. Wea. Rev.*, **125**, 2838-2855.
15. Hartley, D., J. Villarin, R. Black and C. Davis, 1997: A new perspective on the dynamical link between the stratosphere and troposphere. *Nature*, **391**, 471-474.
16. Manning, K.W., and C.A. Davis, 1997: Verification and sensitivity experiments of the WISP-94 MM5 forecasts. *Wea. Forecasting*, **12**, 719-735.
17. Weisman, M. L. and C. A. Davis, 1998: Mechanisms for the generation of mesoscale vortices within quasi-linear convective systems. *J. Atmos. Sci.* **55**, 2603-2622.
18. Davis, C. A. and M. T. Stoelinga, 1999: Interpretation of the effect of mountains on synoptic-scale baroclinic waves. *J. Atmos. Sci.*, **56**, 3303-3320.
19. Davis, C. A. and M. T. Stoelinga, 1999: The transition to topographic normal modes. *J. Atmos. Sci.*, **56**, 3321-3330.
20. Davis, C.A., T. Warner, E. Astling and J. Bowers, 1999: Development and application of an operational, relocatable, mesogamma-scale weather analysis and forecasting system. *Tellus*, special issue on the Rossby-100 Symposium, **51A**, 710-727.
21. Davis, C.A., S. Low-Nam, M.A. Shapiro, X. Zou and A.J. Krueger, 1999: Direct retrieval of wind from total ozone mapping spectrometer (TOMS) data: Examples from FASTEX. *Quart. J. Royal Meteor. Soc.*, FASTEX special issue, 3375-3391.
22. Davis, C and F. Carr, 2000: Summary of the 1998 workshop on mesoscale model verification, *Bull. Amer. Meteor. Soc.*, **81**, 809-819.
23. Davis, C.A., S. Low-Nam and C.F. Mass, 2000: Dynamics of a Catalina eddy revealed by numerical simulation. *Mon. Wea. Rev.*, **128**, 2885-2904.
24. Zhang, F., S.E. Koch, C.A. Davis, and M.L. Kaplan, 2000: A survey of unbalanced flow diagnostics and their application. *Advances in atmospheric sciences. Adv. Atmos. Phys.*, **17**, 165-183.
25. Trier, S.B., C.A. Davis, and W. C. Skamarock, 2000 : Long-lived mesoconvective vortices and their environment. Part I: Observations from the central United States during the 1998 warm season. *Mon. Wea. Rev.*, **128**, 3376-3395.
26. Trier, S.B., C.A. Davis, and J.D. Tuttle, 2000 : Long-lived mesoconvective vortices and their environment. Part II: Induced thermodynamic destabilization in idealized simulations. *Mon. Wea. Rev.*, **128**, 3396-3414.
27. Davis, C.A. and L.F. Bosart, 2001: Numerical simulations of the genesis of hurricane Diana (1984). *Mon. Wea. Rev.* **129**, 1859-1881.
28. Zhang, F., S.E. Koch, C.A. Davis, M.L. Kaplan, and Y.-L. Lin, 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.
29. Davis, C.A., D.A. Ahijevych and S.B. Trier, 2002: Detection and prediction of warm season, midtropospheric vortices by the rapid update cycle. *Mon. Wea. Rev.*, **130**, 24-42.
30. Trier, S. B., and C. A. Davis, Influence of balanced motions on heavy precipitation within a long-lived convectively generated vortex. 2002: *Mon. Wea. Rev.*, **130**, 877-899.

31. Powers, J. G., and C. A. Davis, 2002: A Cloud-Resolving, Regional Simulation of Tropical Cyclone Formation. *Atmos. Sci. Lett.*, doi.10.1006/asle.2002.0054
32. Davis, C. A., and L. F. Bosart, 2002: Numerical Simulations of the Genesis of Hurricane Diana (1984). Part II: Sensitivity of Track and Intensity Prediction. *Mon. Wea. Rev.*, **130**, 1100-1124.
33. Davis, C. A., and S. B. Trier, 2002: Cloud-resolving simulations of mesoscale vortex intensification and its effect on a serial mesoscale convective system. *Mon. Wea. Rev.*, **130**, 2839-2858.
34. Jang, K-I, X. Zou, M. S. F. V. De Pondeca, M. Shapiro, C. Davis, and A. J. Krueger, 2003: Incorporating TOMS ozone measurements into the prediction of the Washington, C. D., winter storm during 24-25 January 2000. *J. Appl. Meteor.*, **42**, 797-812.
35. Davis, C. A., K. W. Manning, R. E. Carbone, S. B. Trier, and J. D. Tuttle, 2003: Coherence of warm-season continental rainfall in numerical weather prediction models. *Mon. Wea. Rev.*, **131**, 2667-2679.
36. Davis, C. A., and L. F. Bosart, 2003: Baroclinically induced tropical cyclogenesis. *Mon. Wea. Rev.*, **131**, 2730-2747.
37. Hendricks, E. A., M. T. Montgomery, and C. A. Davis, 2004: On the role of vortical hot towers in hurricane formation. *J. Atmos. Sci.*, **61**, 1209–1232.
38. Davis, C., N. Atkins, D. Bartels, L. Bosart, M. Coniglio, G. Bryan, W. Cotton, D. Dowell, B. Jewett, R. Johns, D. Jorgensen, J. Knievel, K. Knupp, W.-C. Lee, G. McFarquhar, J. Moore, R. Przybylinski, R. Rauber, B. Smull, J. Trapp, S. Trier, R. Wakimoto, M. Weisman, and C. Ziegler, 2004: The Bow-Echo And MCV Experiment (BAMEX): Observations and Opportunities, *Bull. Amer. Meteor. Soc.*, **85**, 1075-1093.
39. Done, J., C. Davis, and M. Weisman, 2004: The Next Generation of NWP: Explicit Forecasts of Convection Using Weather Research and Forecast (WRF) Model. *Atmos. Sci. Lett.*, DOI: 10.1002/asl.72.
40. Rife, D. L., T. T. Warner, Y. Liu, and C. A. Davis, 2004: Predictability of low-level winds by mesoscale meteorological models. *Mon. Wea. Rev.*, **132**, 2553–2569.
41. Davis, C. A., and L. F. Bosart, 2004: The TT Problem: Forecasting the Tropical Transition of Cyclones. *Bull. Amer. Meteor. Soc.* (Map Room). **85**, 1657-1662.
42. Ahijevych, D. A., C. A. Davis, R. E. Carbone, and J. D. Tuttle, 2004: Initiation of precipitation episodes relative to elevated terrain. *J. Atmos. Sci.*, **61**, 2763–2769.
43. Rife, D. L., and C. A. Davis, 2005: Verification of temporal variations in mesoscale numerical wind forecasts. *Mon. Wea. Rev.*, **133**, 3368-3381.
44. Davis, C., B. Brown, and R. Bullock, 2006: Object-based verification of precipitation forecasts, Part I: Methodology and application to mesoscale rain areas. *Mon. Wea. Rev.*, 1782-1784.
45. Davis, C., B. Brown, and R. Bullock, 2006: Object-based verification of precipitation forecasts, Part II: Application to convective rain systems. *Mon. Wea. Rev.*, 1785-1795.
46. Davis, C. A., and L. F. Bosart, 2006: The Formation of Hurricane Humberto (2001): The importance of extra-tropical precursors. *Quart. J. Royal Meteor. Soc.*, **132**, 2055-2085.
47. Tuttle, J., and C. A. Davis, 2006: Corridors of warm-season precipitation in the Central United States. *Mon. Wea. Rev.* **134**, 2297-2317.

48. Wakimoto, R. M., H. V. Murphey, C. A. Davis, and N. T. Atkins, 2006: High winds generated by bow echoes. Part II: The relationship between the mesovortices and damaging straight-line winds. *Mon. Wea. Rev.*, **134**, 2813-2829.
49. Trier, S. B., C. A. Davis, D. A. Ahijevych, M. L. Weisman, and G. H. Bryan, 2006: Mechanisms Supporting Long-lived Episodes of Propagating Nocturnal Convection within a 7-day WRF Model Simulation. *J. Atmos. Sci.*, **63**, 2437-2461.
50. McTaggart-Cowan, R. L. F. Bosart, C. A. Davis, E. H. Atallah, and J. R. Gyakum, and K. A. Emanuel, 2006: Analysis of Hurricane Catarina (2004). *Mon. Wea. Rev.*, **134**, 3029-3053.
51. Conzemius, R. J., R. W. Moore, M. T. Montgomery, and C. A. Davis, 2007: Mesoscale Convective Vortex Formation in a Weakly Sheared Moist Neutral Environment. *J. Atmos. Sci.*, **64**, 1443-1466.
52. Hawblitzel, D., F. Zhang, and C. A. Davis, 2007: Probabilistic Evaluation of the Dynamics and Predictability of a Mesoscale Convective Vortex Event of 10-13 June 2003. *Mon. Wea. Rev.*, **135**, 1544-1563.
53. Davis, C. A., and S. B. Trier, 2007: Mesoscale Convective Vortices Observed During BAMEX, Part I: Kinematic and Thermodynamic Structure. *Mon. Wea. Rev.*, **135**, 2029-2049.
54. Trier, S. B., and C. A. Davis, 2007: Mesoscale Convective Vortices Observed During BAMEX, Part II: Influences on Secondary Deep Convection. *Mon. Wea. Rev.*, **135**, 2051-2075.
55. McTaggart-Cowan, R., G. D. Deane, L. F. Bosart, C. A. Davis, and T. J. Galarneau, Jr., 2008: Climatology of tropical cyclogenesis in the North Atlantic (1948-2004). *Mon. Wea. Rev.*, **136**, 1284-1304.
56. Musgrave, K. D., C. A. Davis, and M. T. Montgomery, 2008: Numerical simulations of the formation of Hurricane Gabrielle (2001). *Mon. Wea. Rev.*, **136**, 3151-3167.
57. Davis, C. A., S. C. Jones, and M. Riemer, 2008: Hurricane vortex dynamics during Atlantic Extratropical Transition. *J. Atmos. Sci.*, **65**, 714-736.
58. Trenberth, K. E., C. A. Davis and J. Fasullo, 2008: The water and energy budgets of hurricanes: Case studies of Ivan and Katrina. *J. Geophys. Res.*, **112**, D23106.
59. Davis, C., W. Wang, S. Chen, Y. Chen, K. Corbosiero, M. DeMaria, J. Dudhia, G. Holland, J. Klemp, J. Michalakes, H. Reeves, R. Rotunno, and Q. Xiao, 2008: Prediction of landfalling hurricanes with the advanced hurricane WRF model. *Mon. Wea. Rev.*, **136**, 1990-2005.
60. Riemer, M., S. C. Jones, and C. A. Davis, 2008: The impact of extratropical transition on the downstream flow: an idealized modelling study with a straight jet. *Quart. J. Royal Meteor. Soc.* **134**, 69-91.
61. Young, L.-H., J. C. Wilson, D. R. Benson, W. M. Montanaro, S.-H. Lee, L. L. Pan, D. C. Rogers, J. Jensen, J. Stith, C. A. Davis, T. L. Campos, K. P. Bowman, W. A. Cooper, and L. R. Lait, 2008: Enhanced New Particle Formation Observed in the Northern Midlatitude Tropopause Region. *J. Geophys. Res.*, **112**, D10218.
62. Pan, L. L., K. P. Bowman, M. Shapiro, W. J. Randel, R. Gao, T. Campos, C. Davis, S. Schauffler, B. A. Ridley, J. C. Wei, and C. Barnett, 2008: Chemical behavior of the tropopause observed during the Stratosphere-Troposphere Analyses of Regional Transport (START) experiment. *J. Geophys. Res., American Geophysical Union*, **112**, D18110.
63. Weisman, M. L., C. A. Davis, W. Wang, and K. Manning, 2008: Experiences with 0-36h Explicit Convective Forecasts with the WRF-ARW Model. *Wea. And Forecasting*, **23**, 407-437.

64. Liu, Y., J. F. Bowers, L. P. Carson, F. Chen, C. A. Clough, C. A. Davis, C. H. Egeland, S. Halvorson, T. W. Huck, Jr., R. E. Malone, D. L. Rife, R.-S. Sheu, S. P. Swerdlin, T. T. Warner, and D. S. Weingarten, 2008: The operational mesogamma-scale analysis and forecast system of the U. S. Army Test and Evaluation Command. Part I: Overview of the modeling system and forecast products. *J. Appl. Meteor. Clim.*, **47**, 1077-1093.
65. Liu, Y., T. T. Warner, E. G. Astling, J. F. Bowers, C. A. Davis, S. Halvorson, D. L. Rife, R.-S. Sheu, S. P. Swerdlin, and M. Xu, 2008: The operational mesogamma-scale analysis and forecast system of the U. S. Army Test and Evaluation Command. Part II: Inter-range comparison of the accuracy of model analyses and forecasts. *J. Appl. Meteor. Clim.* **47**, 1093-1104.
66. Davis, C. A., C. S. Snyder, and A. C. Didlake, Jr., 2008: A vortex-based perspective of eastern Pacific tropical cyclone formation. *Mon. Wea. Rev.*, **136**, 2461-2477.
67. Trier, S. B., F. Chen, K. W. Manning, M. A. LeMone, and C. A. Davis, 2008: Sensitivity of the simulated PBL and precipitation to land-surface conditions during a 12-day warm-season convection period in the central United States. *Mon. Wea. Rev.*, **136**, 2321-2343.
68. Davis, C. A., and T. J. Galarneau, Jr., 2009: The vertical structure of mesoscale convective vortices. *J. Atmos. Sci.*, **66**, 686-704.
69. Galarneau, T. J. Jr., L. F. Bosart, C. A. Davis, and R. M<sup>c</sup>Taggart-Cowan, 2008: Baroclinic transition of a long-lived mesoscale convective vortex. *Mon. Wea. Rev.*, **137**, 562-584.
70. Rotunno, R., Y. Chen, W. Wang, C. Davis, J. Dudhia, and G. J. Holland, 2009: Resolved turbulence in a three-dimensional model of an idealized tropical cyclone. *Bull. Amer. Meteor. Soc.*, **90**, 1783-1788.
71. Rife, D., J. Knievel, and C. A. Davis, 2009: Temporal changes in wind as objects for evaluating numerical weather prediction. *Wea. Forecasting*, **24**, 1373-1389.
72. Xiao, Q., Zhang, X., C. Davis, J. Tuttle, G. Holland, and P. J. Fitzpatrick, 2009: Experiments of hurricane initialization with airborne Doppler radar data for the Advanced Hurricane-research WRF (AHW) model., *Mon. Wea. Rev.*, **137**, 2758-2777.
73. **Davis, C. A.**, B. G. Brown, R. Bullock, and J. Halley-Gotway, 2009: The method for object-based diagnostic evaluation (MODE) applied to WRF forecasts from the 2005 SPC spring program. *Wea. Forecasting*, **24**, 1252-1267.
74. Trier, S.B., **Davis, C.A.**, Ahijevych, D. 2010: Environmental controls on the simulated diurnal cycle of warm-season precipitation in the Continental United States. *J. Atmos. Sci.*, **67**, 1066-1090, 10.1175/2009JAS3247.1.
75. **Davis, C. A.**, 2010: Simulations of subtropical cyclones in a baroclinic channel model. *J. Atmos. Sci.* **67**, 2871-2892.
76. Rife, D. L., J. O. Pinto, A. J. Monaghan, **C. A. Davis**, and J. R. Hannan, 2010: Global distribution and characteristics of diurnally-varying low-level jets. *J. Climate*. **23**, 5041-5064.
77. Monaghan, A. J., D. L. Rife, J. O. Pinto, **C. A. Davis**, and J. R. Hannan, 2010: Global precipitation extremes associated with diurnally-varying LLJs. *J. Climate*. **23**, 5065-5084.
78. Schumacher, R. S., **C. A. Davis**, 2010: Ensemble-Based forecast uncertainty analysis of diverse heavy rainfall events. *Wea. Forecasting*, **25**, 1103-1122.
79. Lai, H.-W., **C. A. Davis**, and B. J.-D. Jou, 2011: A subtropical mesoscale convective vortex observed during SoWMEX/TiMREX. *Mon. Wea. Rev.*, 2367-2385.

80. **Davis, C.**, W. Wang, S. Cavallo, J. Done, J. Dudhia, S. Fredrick, J. Michalakes, G. Caldwell, T. Engel, and R. Torn, 2010: High-resolution Hurricane Forecasts. *Comput. Sci. Eng.* **13**, 22.
81. **Davis, C. A.**, W. Wang, J. Dudhia, and R. Torn: 2010: Does Increased Horizontal Resolution Improve Hurricane Wind Forecasts? *Wea. Forecasting.* **25**, 1826-1841.
82. Trier, S. B., J. H. Marsham, **C. A. Davis**, and D. A. Ahijevych, 2011: Numerical simulations of the post-sunrise reorganization of a nocturnal mesoscale convective system during 13 June IHOP\_2002. *J. Atmos. Sci.* **68**, 2988-3011.
83. Montgomery, M. T., **C. Davis**, T. Dunkerton, I. Z. Wang, C. Velden, R. Torn, S. Majumdar, F. Zhang, R. K. Smith, L. Bosart, M. M. Bel, J. S. Haase, A. Heymsfield, J. Jensen, T. Campos and M. A. Boothe, 2011: The Pre-Depression Investigation of Cloud Systems in the Tropics (PREDICT) Experiment: Scientific Basis, New Analysis Tools and Some First Results. *Bull. Amer. Meteorol. Soc.*, **93**, 153-172.
84. **Davis, C. A.**, and W.-C. Lee, 2012: Mesoscale Analysis of Heavy Rainfall Episodes from SoWMEX/TiMREX. *J. Atmos. Sci.*, **69**, 521-537.
85. Krishnamurti, T. N., A. Simon, M. Kanti Biswas, and **C. Davis**, 2012: Impacts of Cloud Flare-ups on Hurricane Intensity resulting from Departures from Balance Laws. *Tellus*. In Press.
86. **Davis, C. A.**, and D. A. Ahijevych, 2012: Mesoscale Structural Evolution of Three Tropical Weather Systems Observed during PREDICT. *J. Atmos. Sci.*, **69**, 1284-1305.
87. Torn, R. L., and **C. A. Davis**, 2012: The influence of shallow convection on tropical cyclone track forecasts. *Mon. Wea. Rev.* **140**, 2188-2197.
88. Laing, A. G., S. B. Trier, and **C. A. Davis**, 2012: Numerical Simulation of Episodes of Organized Convection in Tropical Northern Africa. *Mon. Wea. Rev.*, **140**, 2874-2886.

### **Refereed Publications – Pending**

89. Galarneau, T. J., Jr., and **C. A. Davis**, 2012: Diagnosing forecast errors in tropical cyclone motion. *Mon. Wea. Rev.*, In press.
90. Rife, D. L., E. Vanvyve, J. O. Pinto, A. J. Monaghan, **C. A. Davis**, and G. S. Poulos, 2012: Selecting representative days for more efficient dynamical climate downscaling: Application to wind energy. *J. Appl. Meteor. Clim.*, In press.
91. Cavallo, S. M., R. D. Torn, C. Snyder, C. Davis, W. Wang and J. Done, 2012: Evaluation of the Advanced Hurricane WRF data assimilation system for the 2009 Atlantic hurricane season. *Mon. Wea. Rev.*, In review.

### **Refereed Publications – In Preparation**

Davis, C. A., and D. A. Ahijevych, 2012: Thermodynamic Environments of Deep Convection in Atlantic Tropical Disturbances. *J. Atmos. Sci.*, In preparation.

### **Other Externally Refereed Publications [Book Chapters]**

Davis, C.A., 1996: Potential Vorticity. *The Encyclopedia of Weather and Climate*. S. Schneider, Ed., 602-608.

### **Publications – Nonrefereed (First author only, last 5 years)**

- Davis, C.; Trier, S.; Jorgensen, D.; Tuttle, J.; Murphey, H., 2006: Organized Convection and Mesoscale Vortices: Observations from BAMEX (2003). *EGU Atmospheric Dynamics Session*. Invited.
- Davis, C. A., and L. F. Bosart, 2006: Tropical transition: possible mechanisms and observational needs. *27th Conference on Hurricanes and Tropical Meteorology*, Paper 10B.1.
- Davis, C. A., J. Walters and K. Knupp, 2006: Convection Initiation on 4 July during BAMEX. Warm-season Convection Workshop. Boulder, June 2006.
- Davis, C. A., L. F. Bosart, and R. McTaggart-Cowan, 2006: The Tropical Transition of Cyclones: Science Issues and Critical Observations. *International Conference on Mesoscale Convective Systems*. Boulder, October, 2006.
- Davis, C. A., and S. B. Trier, 2006: Mesoscale Convective Vortices. *International Conference on Mesoscale Convective Systems*. Boulder, October, 2006.
- Davis, C. A., S. C. Jones, and M. Riemer, 2006: WRF Simulation and Diagnosis of the Extratropical Transitions of Irene and Wilma (2005). *Second THORPEX International Science Symposium*. Landshut, Germany, December 2006.
- Davis, C. A., B. G. Brown, and R. Bullock, 2006: Object-based Verification of Precipitation Forecasts from Different Models. *Second THORPEX International Science Symposium*. Landshut, Germany, December 2006.
- Davis, C. A., B. G. Brown, and R. Bullock, 2007: Developments in Object-based Verification: Model Intercomparison and Incorporation of the Time Dimension. 3rd International Verification Methods Workshop. ECMWF, Reading, UK, February, 2007.
- Davis, C. A. and co-authors: 2007: WRF Hurricane Forecasts: A Critical Need for RAINEX Observations. *RAINEX Workshop*, Boulder, Feb. 2007.
- Davis, C., and G. Holland, 2007: Realistic Simulations of Intense Hurricanes with the NCEP/NCAR WRF Modeling System. 10th International Symposium on Wave Hindcasting, Forecasting and Coastal Hazards, O'ahu, Hawai'i.
- Davis, C. A., 2007: Real-time and Retrospective Hurricane Simulations using the Advanced Hurricane WRF Model. AGU Symposium on Tropical Cyclone Modeling, December, San Francisco (Invited).
- Davis, C. A., S. C. Jones, and M. Riemer, 2007: Hurricane Vortices in Shear: Dynamics of Extratropical Transition. 12th AMS Conference on Mesoscale Processes, Waterville Valley, NH, Paper 4.6.
- Davis, C. A., and S. C. Jones, 2008: Hurricane Vortices in Baroclinic Environments. 28th AMS Conference on Hurricanes and Tropical Meteorology, Orlando, FL, 14C.1.
- Davis, C. A., 2008: Mountain or plain, where will it rain? First SoWMEX/TiMREX Workshop, Taipei, Taiwan. November, 2008.
- Davis, C. A., B. G. Brown, and R. Bullock, 2009: MODE, in 3-D. Second STEP Workshop, Boulder, CO. January, 2009.
- Davis, C. A., and S. C. Jones, 2009: Dynamics of moist-neutral vortices in shear. CSU-NCAR Tropical Cyclone Meeting, Boulder, CO, January, 2009.
- Davis, C. A., B. G. Brown, and R. Bullock, 2009: Spatial and temporal object-based evaluation of numerical precipitation forecasts. *23rd Conference on Weather Analysis and Forecasting/19th Conference on Numerical Weather Prediction*. Omaha, NE.
- Davis, C. A., and T. J. Galarneau, Jr., 2009: The development of surface signatures of mesoscale convective vortices. 13<sup>th</sup> AMS Conference on Mesoscale Processes, Salt Lake City, UT, paper 16.2.



## Invited Seminars (last 5 years)

|                   |   |
|-------------------|---|
| January, 2007     | Formation of Tropical Cyclones. Seminar at Leeds University, UK.  |
| May, 2007         | Symons Memorial Lecture, Royal Meteorological Society, London, UK   |
| May, 2007         | The emergence of balanced, larger-scale circulations from convection. ETH Zurich.   |
| October, 2007     | Modeling and Measurement of Precipitation on Multiple Time Scales. Geomorphology Workshop, Boulder,   |
| November, 2007    | Real-Time Prediction of Atlantic Hurricanes. University of Hawai'i.   |
| June, 2008        | Hurricane Vortices in Shear: Dynamics of Extratropical Transition. National Taiwan University, Taipei, Taiwan.  |
| June, 2008        | The Vertical Structure of Mesoscale Convective Vortices. Central Weather Bureau, Taipei, Taiwan.  |
| September, 2008   | Little Whirls Making Bigger Whirls: Mesoscale Vortices from Moist Convection. MIT, Cambridge, MA.   |
| November, 2008    | The Vertical Structure of Mesoscale Convective Vortices. University of Wisconsin, Madison, WI.  |
| March, 2010       | Predicting Atlantic Tropical Cyclones, University of California, Davis, California.   |
| March-June, 2011: | Observations of Atlantic Tropical Weather Systems from PREDICT, North Carolina A&T, Penn State, University of Illinois, Karlsruhe Institute of Technology and ETH, Zurich |

## Funded Grants (Lead or Co-PI)

1994-1996: ONR: Numerical studies of coastal fog  
1997-1999: ONR: Coastally trapped disturbances  
1998-2000: NASA – USWRP: Mesoscale Convective Vortices  
1998-2001: Air Force Weather Agency: MM5 Model development and enhancement  
2001-2004: NASA: TOMS Ozone for analysis and data assimilation  
2001-2008: USWRP/STEP: Verification of high-resolution numerical forecasts  
2002-2006: NSF Water Cycle  
2003-2008: USWRP: Episodes of propagating convection  
2005-2007: NASA TCSP: Prediction and data assimilation for hurricane genesis  
2005-2008: NCAR Opportunity Fund: Doppler radar data assimilation for landfalling hurricanes  
2008-2012: NOAA HFIP, Real-time and retrospective hurricane prediction  
2009-2012: STEP, Analysis of TiMREX Rainfall: What determines mountain vs. plains rainfall maximum?