CURRICULUM VITAE

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

2003- present	Group Head, Prediction Diagnostics Group , Mesoscale and Microscale Meteorology Division
2002- 2003	Deputy Group Head, Prediction Diagnostics Group , Mesoscale and Microscale Meteorology Division
2000-present	Adjunct Faculty Member, Colorado State University
1999-present	Adjunct Faculty Member, North Carolina State University
1999- 2002	Scientist III, NCAR, Mesoscale Predication Group, Mesoscale and Microscale Meteorology Division
1998- 2002	Deputy Group Head, Mesoscale Prediction Group, Mesoscale and Microscale Meteorology Division
1995-1999	Scientist II, NCAR, Mesoscale Prediction Group, Mesoscale and Microscale Meteorology Division; and Research Applications Program
1992-1995	Scientist I, NCAR, Mesoscale Prediction Group, Mesoscale and Microscale Meteorology Division,; and Research Applications Program
1990-1992	Postdoctoral Research Fellow, Advanced Studies Program, NCAR
1988-1989	Research Assistant, MIT
1987-1990	Ph.D. research on Potential Vorticity concepts applied to cyclogenesis, MIT

Honors and Awards

2005	MMM Outstanding Publication Certificate
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

2005-present	Co-Science Director of the *Western Atlantic Tropical Transition and Genesis Experiment (WATTAGE)*
2005-present	Member, NCAR Water Cycle Steering Committee
2004-present	Co-Chair, Second International Conference on Quantitative Precipitation Forecasting (scheduled for 2006)
2004-2005	Member, program committee for 11th AMS Conference on Mesoscale Processes
2000-2005	Co-Science Director of the *Bow Echo and MCV Experiment* (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, *Monthly Weather Review*
1995-1996	Member USWRP, PDT's 2 and 8
1994	Coordinator, MM5 operational forecasting for WISP '94
1993-1998	Member, AMS Mesoscale Committee
1993-1995	Chair, Division Equity Committee, MMM Division, NCAR
1993	Forecaster, WISPIT field experiment (joint with RAP)
1992	Organized daily discussions of MM4 operational model forecasts during STORM-FEST
1992-Present	Member, AMS
1989	Participated in ERICA field program (with Professor Kerry Emanuel, MIT)

Teaching Experience

1988	Synoptic Lab Instructor, Massachusetts Institute of Technology

Publications – Refereed

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.

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.

Davis C.A. and K.A. Emanuel, 1991: Potential vorticity diagnostics of cyclogenesis. *Mon. Wea. Rev.*, **119**, 1930-1953.

Davis, C.A., 1992: Piecewise potential vorticity inversion. *J. Atmos. Sci.*, **49**, 1397-1411.

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.

Rivest, C., C.A. Davis, and B.F. Farell, 1992: Upper-tropospheric synoptic-scale waves. Part I: Maintenance as eady normal modes. *J. Atmos. Sci.*, **49**, 2108-2119.

Davis, C.A., 1992: Comments on decomposing the atmospheric flow using potential vorticity framework. *J. Atmos. Sci.*, **50**, 2065-2067.

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.

Whitaker, J.S., and C.A. Davis, 1994: Cyclogenesis in a saturated environment. *J. Atmos. Sci.*, **51**, 889-907.

Davis, C. A., and M. L. Weisman, 1994: Balanced dynamics of mesoscale vortices produced in simulated convective systems. *J. Atmos. Sci.*, **51**, 2005-2030.

Davis, C.A., 1995: Observations and modeling of a mesoscale cold surge during WISPIT. *Mon. Wea. Rev.* **123**, 1762-1780.

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.

Davis, C.A., 1997: The modification of baroclinic waves by the Rocky Mountains. *J. Atmos. Sci.*, **54**, 848-868.

Davis, C.A., 1997: Mesoscale anticyclonic circulations in the lee of the central Rocky Mountains. *Mon. Wea. Rev.*, **125**, 2838-2855.

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.

Manning, K.W., and C.A. Davis, 1997: Verification and sensitivity experiments of the WISP-94 MM5 forecasts. *Wea. Forecasting*, **12**, 719-735.

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.

Davis, C. A. and M. T. Stoelinga, 1998: Interpretation of the effect of mountains on synoptic-scale baroclinic waves. *J.Atmos. Sci.*, **56**, 3303-3320.

Davis, C. A. and M. T. Stoelinga, 1998: The transition to topographic normal modes. *J. Atmos. Sci.*, **56**, 3321-3330.

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.

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.

Davis, C and F. Carr, 2000: Summary of the 1998 workshop on mesoscale model verification, *Bull. Amer. Meteor. Soc.*, **81**, 809-819.

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.

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.

Trier, S.B., C.A. Davis, and J.D. Tuttle, 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.

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.

Davis, C.A. and L.F. Bosart, 2001: Numerical simulations of the genesis of hurricane Diana (1984). *Mon. Wea. Rev*. **129**, 1859-1881.

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.

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.

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.

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

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.

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.

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 Washintion, C. D., winter storm during 24-25 January 2000. *J. Appl. Meteor*., **42**, 797-812.

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.

Davis, C. A., and L. F. Bosart, 2003: Baroclinically induced tropical cyclogenesis. *Mon. Wea. Rev*., **131**, 2730-2747.

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.

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.

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.

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.

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.

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.

Rife, D. L., and C. A. Davis, 2005: Verification of temporal variations in mesoscale numerical wind forecasts. *Mon. Wea. Rev*., **133**, 3368-3381.

Refereed Publications – Pending

Davis, C., B. Brown, and R. Bullock, 2005: Object-based verification of precipitation forecasts, Part I: Methodology and application to mesoscale rain areas. *Mon. Wea. Rev.*, In press.

Davis, C., B. Brown, and R. Bullock, 2005: Object-based verification of precipitation forecasts, Part II: Application to convective rain systems. *Mon. Wea. Rev.*, In press.

Davis, C. A., and L. F. Bosart, 2005: The Formation of Hurricane Humberto (2001): The importance of extra-tropical precursors. *Quart. J. Royal Meteor. Soc.*, In press.

Tuttle, J., and C. A. Davis, 2005: Corridors of warm-season precipitation in the Central United States. *Mon Wea. Rev*. In Press.

Wakimoto, R. M., H. V. Murphey, C. A. Davis, and N. T. Atkins, 2005: High winds generated by bow echoes. Part II: The relationship between the mesovortices and damaging straight-line winds. *Mon. Wea. Rev*., In Review.

McTaggert-Cowan, R. L. F. Bosart, C. A. Davis, E. H. Atallah, and J. R. Gyakum, 2005: Analysis of Hurricane Catarina (2004). *Mon. Wea. Rev.*, Submitted.

Moore, R. W., R. J. Conzemius, M. T. Montgomery, and C. A. Davis, 2005: Mesoscale Convective Vortex Formation in a Weakly Sheared Moist Neutral Environment. In Preparation.

Trier, S. B., C. A. Davis, and M. L. Weisman, 2005: Mechanisms Supporting Long-lived Episodes of Propagating Nocturnal Convection within a 7-day WRF Model Simulation. Submitted.

Hawblitzel, D., F. Zhang, and C. A. Davis, 2005: Probabilistic Evaluation of the Dynamics and Predictability of a Mesoscale Convective Vortex Event of 10-13 June 2003. Mon. Wea. Rev., Submitted.

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 6 years)

Davis, C.A., S.B. Trier, J.D. Tuttle, R.E. Carbone, L.J. Miller, and R. Oye, 2000: A multi-dataset analysis of the morphology of mesoscale convective vortices. *4th Symposium on Integrated Observing Systems*, Long Beach, CA, 78-83.

Davis, C., M. Biggerstaff, G. Bryan, R. Johns, D. Jorgensen, B. Klimowski, K. Knupp, R. Przybylinski, E. Rasmussen, G. Schmocker, B. Smull, J. Trapp, S. Trier, M. Weisman, C. Ziegler, 2001: Science Overview of the Bow Echo and MCV Experiment (BAMEX). http://www.mmm.ucar.edu/bamex/science.html

Davis, C. A., 2000: Potential vorticity inversion and MM5. *The Tenth PSU/NCAR Mesoscale Model Users' Workshop*. Boulder, Colorado.

Davis, C. A., 2001: MM5 in 4DWX. http://www.mmm.ucar.edu/individual/davis/atec/training.html

Davis, C., and co-authors Science Overview of the Bow Echo and MCV Experiment (BAMEX). http://www.mmm.ucar.edu/bamex/science.html

Davis, C. A., S. B. Trier, D. A. Ahijevych and R. E. Carbone, 2001:Predictability of heavy precipitation induced by mesoscale convective vortices. AMS Conference on Precipitation Extremes, Impacts and Responses, Albuquerque, 143-146.

Davis, C. A., J. G. Powers, and L. F. Bosart, 2001: Track and Intensity Prediction of Tropical Cyclone Diana (1984): Sensitivity to MM5 Physical Parameterizations. *The Eleventh PSU/NCAR Mesoscale Model Users' Workshop .82-86.*

Davis, C. A., J. G. Powers, and L. F. Bosart, 2001: Track and intensity prediction of tropical cyclone Diana (1984): Sensitivity to MM5 physical parameterizations. *Eleventh PSU/NCAR Mesoscale Modeling System User's Workshop*. 82-85.

Davis, C. A., R. E. Carbone, D. A. Ahijevych, S. B. Trier, and J. Tuttule, 2002: Coherence of Continental Warm Season Rainfall: Implications for Statistical and Dynamical Prediction. *Preprints, Third US-Korea Joint Workshop on Weather Analysis and Prediction*. Boulder, Colorado.

Davis, C. A., J. G. Powers, and L. F. Bosart, 2001: Numerical simulations of the genesis of Hurricane Diana (1984). *Preprints, Ninth Conference on Mesoscale Processes*. Fort Lauderdale, FL, 468-469.

Davis, C. A., and L. F. Bosart, 2002: Baroclinic tropical cyclogenesis: Developing and non-developing cases. Preprints, *25th Conference on Hurricanes and Tropical Meteorology*, San Diego, CA.

Davis, C. A., D. A. Ahijevych, R. E. Carbone, K. W. Manning, and J. D. Tuttle, 2002: Statistical-dynamical forecasts of warm season rainfall over North America. *Preprints, 15th Conference on Numerical Weather Prediction*. San Antonio, TX, Amer. Meteor. Soc., Boston, MA, 152-155.*

Davis, C. A., 2002: Probing rotationally dominated mesoscale convective systems. *Preprints, 21st Conference on Severe Local Storms*. San Antonio, TX, Amer. Meteor. Soc., Boston, MA, 109-112.*

Davis. C. A., and BAMEX Investigators, 2003: An overview of the Bow Echo and MCV Experiment (BAMEX). *Observing and Understanding the Variability of Water in Weather and Climate.* Long Beach, CA. Paper 4.4.*

Davis, C. A., and BAMEX Investigators, 2003: Observations from the Bow Echo and MCV Experiment (BAMEX). *31st International Conference on Radar Meteorology*. Seattle, WA, Amer. Meteor. Soc., Boston, MA, 22-25.

Davis, C. A., A. Takacs, K. Manning, M. Chapman, R. Morss, B. G. Brown, R. Bullock, 2004: Verification techiniques appropriate for cloud-resolving NWP models. *16th Conference on Numerical Weather Prediction*. Amer. Meteor. Soc., Seattle, WA. Paper 17.4.

Davis, C. A., and L. F. Bosart, 2004: Tropical transition: tropical cyclone formation from extratropical disturbances. 26th Conference on Hurricanes and Tropical Meteorology. Amer. Meteor. Soc., Miami, FL, 30-31.

Davis, C., H.-Y. Chuang, L. Bernardet, L. Nance, and M. Pyle, 2004: WRF forecasts of recent significant weather events: a comparison of ARW and NMM cores. 5th WRF/14th MM5 Users' Workshop. Boulder, Colorado. 243-246.

Davis, C. A., and M. L. Weisman, 2004: An Overview of the Bow Echo and MCV Experiment (BAMEX). 22nd AMS Conference on Severe Local Storms. Amer. Meteor. Soc. Paper 4.1.

Davis, C. A., and S. B. Trier, 2004: Mesoscale convective vortices observed during BAMEX, Part I: Kinematic and thermodynamic structure. 22nd AMS Conference on Severe Local Storms. Amer. Meteor. Soc. Paper 5.1.

Lectures and Seminars (last 6 years)

February 2000	Organized Convection and Mesoscale Vortices (UCLA)
March 2001	Baroclinic Tropical Cyclogenesis, MMM seminar
April 2002	Baroclinic Tropical Cyclogenesis, Texas A&M
April 2002	Coherence of Warm-season Rainfall Over North America: Challenges for Weather and Regional Climate Prediction. Second Hybrid Modeling Workshop, Louisville, KY.
May 2002	Potential Vorticity in NWP, COMET lecture
November 2002	Tropical Cyclone Formation Outside the Tropics, University of Munich, Munich, Germany
November, 2002	An Overview of the Bow Echo and MCV Experiment (BAMEX), St. Louis University
March, 2003	Tropical Cyclone Formation Outside the Tropics, University at Albany, SUNY
May, 2003	An Overview of the Bow Echo and MCV Experiment (BAMEX), MMM Seminar
March, 2004	Observations and Analyes of Mesoscale Convective Vortices during BAMEX, University of Wisconsin, Madison
April, 2004	Observations and Analyes of Mesoscale Convective Vortices during BAMEX, MMM seminar
September, 2004	Organized Convection and Mesoscale Vortices: Observations from BAMEX, Laboratoire d'Aerologie, Toulouse, France, and University of Reading, Reading, U. K.
October, 2004	An Overview of the Bow Echo and MCV Experiment (BAMEX), invited talk at AMS Conference on Severe Local Storms, Hyannis, MA
December, 2004	How Does Vertical Wind Shear Affect Hurricane Formation? CSU seminar, Ft. Collins, Colorado
May, 2005	Vortical Organization of Moist Convection, University of Karlsruhe, Karlsruhe, Germany
August, 2005	Object-based Evaluation of Weather Forecasts: Application to NWP models, NCAR MMM/RAL
October, 2005	BAMEX Observations of Mesoscale Convective Vortices (MCVs), Invited talk at AMS Mesoscale Conference, Albuquerque New Mexico.

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 sssimilation
2003: NSF: BAMEX field phase
2001-present: USWRP: Verification of high-resolution numerical forecasts
2003-present: USWRP: Episodes of propagating convection
2005-present: NASA TCSP: Prediction and data Assimilation for hurricane genesis
2005-present: NCAR Opportunity Fund: Doppler radar data assimilation for landfalling hurricanes