

Dr. Matthew D. Eastin

Department of Geography and Earth Sciences
The University of North Carolina at Charlotte
9201 University City Blvd
Charlotte, NC 28223-0001 USA
Telephone: (704) 687-5914
Facsimile: (704) 687-5966
Email: mdeastin@uncc.edu

1251 Mill Race Lane
Matthews, NC 28104 USA
Telephone: (704) 726-9844

EDUCATION

- Aug. 2003 Ph.D. **Department of Atmospheric Science, Colorado State University**
Dissertation: "Buoyancy of convective vertical motions in the inner core of intense hurricanes"
Advisor: William M. Gray, Ph.D.
- Aug. 1999 M.S. **Department of Atmospheric Science, Colorado State University**
Thesis: "Instrument wetting errors in hurricanes and a re-examination of inner core thermodynamics"
Advisor: William M. Gray, Ph.D.
- May 1996 B.S. **Department of Earth and Atmospheric Science, Purdue University**
Honors Thesis: "Climatology of the kinetic energy associated with the subtropical jet stream over the Australian-South Pacific region"
Advisor: Dayton G. Vincent, Ph.D.

PROFESSIONAL EXPERIENCE

- 2006 – present **Assistant Professor of Earth Science**
University of North Carolina at Charlotte, Charlotte, NC
Teaching: Atmospheric Thermodynamics (METR 3210 / ESCI 6800)
Tropical Meteorology (METR 4320 / ESCI 5320)
Advanced Synoptic Meteorology (METR 4245 / ESCI 5251)
Mesoscale Meteorology (METR 4350 / ESCI 5350)
Statistics for the Atmospheric Sciences (ESCI 6800)
Convective Dynamics (ESCI 6800 / INES 8090)
Research Foci: Tropical cyclone structure and intensity change
Tornado-genesis during tropical cyclone landfalls
- 2004 – 2006 **Assistant Professor of Math and Environmental Science**
Central College, Pella, IA
Teaching: Introduction to Statistics (MATH 105)
Research Foci: Tropical cyclone structure and intensity change
Local wind turbine feasibility
- 2003 – 2004 **Post-doctoral Research Associate, National Research Council**
NOAA/AOML/Hurricane Research Division, Miami, FL
Research Focus: Tropical cyclone structure and intensity change
- 1996 – 2003 **Graduate Research Assistant, Tropical Meteorology Research Group**
Department of Atmospheric Science, Colorado State University, Fort Collins, CO
Research Focus: Tropical cyclone structure and intensity change

- 1998 – 2000 **Graduate Teaching Assistant**
 Department of Atmospheric Science, Colorado State University, Fort Collins, CO
Courses: Daily Weather Lab (AT 540)
 Weather Analysis and Forecasting (AT 655)
 The Tropical Atmosphere (AT 742)
Role: Prepared and gave lectures, homework, and exams; assigned grades
- 1994 – 1996 **Student Assistant / Intern**
 National Weather Service Forecast Office, Indianapolis, IN
Duties: NOAA weather radio, hourly surface observations, forecaster assistance
- 1993 – 1996 **Undergraduate Research Assistant**, Tropical Meteorology Research Group
 Department of Earth and Atmospheric Science, Purdue University, West Lafayette, IN
Research Focus: Relationships between southern hemisphere general circulation and tropical climate variability

GRANTS

- 2008 – 2009 **Surface Observations near Tornadic Rainbands in Landfalling Hurricanes**
University of North Carolina at Charlotte, Faculty Research Grant
 July 1, 2008 to December 31, 2009. PI: Eastin
- 2005 – 2009 **Collaborative Research: Impact of Externally and Internally Modulated Convection on Tropical Cyclone Evolution**
National Science Foundation (Award #: ATM-0652264 and ATM-0514214)
 September 15, 2005 to September 1, 2009. Co-PIs: Eastin, Reasor, Nolan, and Marks

SELECTED AWARDS AND HONORS

- 2007 **Outstanding Scientific Paper Award for 2007, Finalist**
NOAA Office of Atmospheric Research (OAR)
 Best published paper in a peer-review journal in the category of Weather and Climate
- 2002 **Max Eaton Award**
American Meteorological Society
 Best student paper and presentation at the 25th Conference on Hurricanes and Tropical Meteorology, San Diego, CA, May 2002
- 2001 **Herbert Riehl Memorial Award**
Department of Atmospheric Science, Colorado State University
 Best published manuscript by a graduate student
- 1997 **Father James B. Macelwane Award, First Place**
American Meteorological Society
 Best honors thesis by an undergraduate student
- 1996 **Certificate of Recognition**
NOAA National Weather Service
 For the implementation of hydrological forecasting software at the Indianapolis NWSFO
- 1996 – present **Phi Beta Kappa National Honor Society, Membership**

Golden Key National Honor Society, Membership

PEER-REVIEWED SCIENTIFIC PUBLICATIONS

- Eastin, M. D.**, T. L. Gardner, M. C. Link, and K. C. Smith, 2009: Surface cold pools observed in the outer rainbands of Tropical Storm Hanna (2008). *Monthly Weather Review*, in preparation
- Eastin, M. D.**, and P. D. Reasor, 2009: Rapidly intensifying Hurricane Guillermo (1997). Part III: Modulation of convection by eye-eyewall mesovortices. *Monthly Weather Review*, in preparation
- Reasor, P. D., and **M. D. Eastin**, 2009: Rapidly intensifying Hurricane Guillermo (1997). Part II: Vortex Resiliency. *Monthly Weather Review*, in preparation
- Lowag, A., M. L. Black, and **M. D. Eastin**, 2009: Structure and intensity changes of Hurricane Bret (1999). Part II: Internal influences. *Monthly Weather Review*, in preparation.
- Eastin, M. D.**, M. C. Link, 2009: Miniature supercells in an offshore outer rainband of Hurricane Ivan (2004). *Monthly Weather Review*, 137, 2081-2104.
- Baker, A. K., M. D. Parker, and **M. D. Eastin**, 2008: Environmental ingredients for supercells and tornadoes within Hurricane Ivan. *Weather and Forecasting*, 24, 223-244.
- Reasor, P. D., **M. D. Eastin**, and J. F. Gamache, 2009: Rapidly intensifying Hurricane Guillermo (1997). Part I: Low wavenumber structure and evolution, *Monthly Weather Review*, 137, 603-631.
- Lowag, A., M. L. Black, and **M. D. Eastin**, 2008: Structure and intensity changes of Hurricane Bret (1999). Part I: Environmental influences, *Monthly Weather Review*, 136, 4320-4333.
- Eastin, M. D.**, W. M. Gray, and P. G. Black, 2005: Buoyancy of convective vertical motions in the inner core of intense hurricanes. Part I: General statistics. *Monthly Weather Review*, 133, 188-208.
- Eastin, M. D.**, W. M. Gray, and P. G. Black, 2005: Buoyancy of convective vertical motions in the inner core of intense hurricanes. Part II: Case studies. *Monthly Weather Review*, 133, 209-227.
- Eastin, M. D.**, P. G. Black, and W. M. Gray, 2002: Flight-level thermodynamic instrument wetting errors in hurricanes. Part I: Observations. *Monthly Weather Review*, 130, 825-841.
- Eastin, M. D.**, P. G. Black, and W. M. Gray, 2002: Flight-level thermodynamic instrument wetting errors in hurricanes. Part II: Implications. *Monthly Weather Review*, 130, 842-851.
- Kossin, J. P., and **M. D. Eastin**, 2000: Two distinct regimes in the thermodynamic and kinematic structure of the hurricane eye and eyewall. *Journal of Atmospheric Science*, 58, 1079-1090.
- Eastin, M. D.**, and D. G. Vincent, 1998: A 6-yr climatology of vertical mean and shear components of kinetic energy for the Australian-South Pacific Jet Stream. *Journal of Climate*, 11, 283-291.

ADDITIONAL SCIENTIFIC PUBLICATIONS

- J. P. Dunion and **M. D. Eastin**, 2009: Tropical cyclone and AEW arc-cloud experiment, *NOAA Hurricane Research Division Annual Field Program*, 5 pp.
- Eastin, M.D.**, 2008: An assessment of past and future North Carolina climate: Impacts of tropical cyclones and tornadoes. Report was requested by the State Senate of North Carolina, 29 pp.
- Eastin, M.D.**, 2008: Tropical cyclone landfall and inland decay experiment: Offshore intense convection module, *NOAA Hurricane Research Division Annual Field Program*, 4 pp.

- Eastin, M. D.**, and M. C. Link., 2008: Mini-supercells observed in an offshore outer rainband of Hurricane Ivan (2004). Preprints, 28th *Conference on Hurricanes and Tropical Meteorology*, Orlando, FL, American Meteorological Society
- Eastin, M. D.**, M. C. Link, and H. B. Anderson, 2007: Analysis of offshore deep convection within landfalling hurricanes just prior to tornadogenesis. Preprints, 7th *Conference on Coastal Processes*, San Diego, CA, American Meteorological Society
- Eastin, M. D.**, P. D. Reasor, D. S. Nolan, F. D. Marks Jr., and J. F. Gamache, 2006: Evolution of low-wavenumber vorticity during rapid intensification: A dual-Doppler analysis. Preprints, 27th *Conference on Hurricanes and Tropical Meteorology*, Monterey, CA, American Meteorological Society
- Eastin, M. D.**, P. D. Reasor, F. D. Marks Jr., and J. F. Gamache, 2005: A dual-Doppler analysis of Hurricane Guillermo (1997): Interactions between the eye and eyewall during rapid intensification. Preprints, 32nd *Conference on Radar Meteorology*, Albuquerque, NM, American Meteorological Society
- Eastin, M. D.**, P. D. Reasor, J. F. Gamache, F. D. Marks Jr., and M. L. Black, 2004: Observed evolution of eyewall convection and low-wavenumber flow in Hurricane Guillermo (1997). Preprints, 26th *Conference on Hurricanes and Tropical Meteorology*, Miami Beach, FL, American Meteorological Society, 445-446.
- McNoldy, B. D., **M. D. Eastin**, C. M. Rozoff, and W. H. Schubert, 2004: Multiple eyewall structure of Hurricane Juliette (2001). Preprints, 26th *Conference on Hurricanes and Tropical Meteorology*, Miami Beach, FL, American Meteorological Society, 126-127.
- Eastin, M. D.**, 2003: Buoyancy of convective vertical motions in the inner core of intense hurricanes. Atmospheric Science Paper No. 744, Colorado State University, 154 pp.
- Eastin, M. D.**, 2002: Observational analysis of buoyancy in the intense hurricane eyewalls. Preprints, 25th *Conference on Hurricanes and Tropical Meteorology*, San Diego, CA, American Meteorological Society, 640-641.
- Eastin, M. D.**, 2000: Evaluation of buoyant motions within the hurricane inner core. Preprints, 24th *Conference on Hurricanes and Tropical Meteorology*, Ft. Lauderdale, FL, American Meteorological Society, 454-455.
- Eastin, M. D.**, 1999: The effects of instrument wetting errors on eyewall buoyancy in hurricanes. Preprints, 23th *Conference on Hurricanes and Tropical Meteorology*, Dallas, TX, American Meteorological Society, 885-888.
- Eastin, M. D.**, 1999: Instrument wetting errors in hurricanes and a re-examination of inner-core thermodynamics. Atmospheric Science Paper No. 683, Colorado State University, 203 pp.
- Eastin, M. D.**, and D. G. Vincent, 1997: Climatology of barotropic and baroclinic components of kinetic energy for the Australian-South Pacific jet stream. Preprints, 5th *Conference on Meteorology and Oceanography of the Southern Hemisphere*, Pretoria, South Africa, American Meteorological Society, 142-143.
- Eastin, M. D.**, and D. G. Vincent, 1997: Annual and interannual variability in the kinetic energy of the Australian-South Pacific jet stream. Preprints, 7th *Conference on Climate Variations*, Long Beach, CA, American Meteorological Society, 142-143.

ORAL AND POSTER PRESENTATIONS

- Jun. 2009 “Surface observations from the outer rainbands of Tropical Storm Hanna (2008)”, Conference on the Inland Impacts of Tropical Cyclones, Atlanta, GA, American Meteorological Society
- Oct. 2008 “Structural variability of miniature supercells in tropical cyclone rainbands”, 24th Conference on Severe and Local Storms, Savannah, GA, American Meteorological Society
- Jun. 2008 “Miniature supercells in offshore outer rainbands: Environment, structure, and implications”
Invited Talk, NOAA Hurricane Research Division
- Apr. 2008 “Evolving low-wavenumber flow and the distribution of deep eyewall convection during the rapid intensification of Hurricane Guillermo (1997)”, 28th Conference on Hurricanes and Tropical Meteorology, Orlando, FL, American Meteorological Society
- Apr. 2008 “Mini-supercells observed in an offshore outer rainband of Hurricane Ivan”, 28th Conference on Hurricanes and Tropical Meteorology, Orlando, FL, American Meteorological Society
- Nov. 2007 “Observations of offshore mini-supercells within an outer rainband of Hurricane Ivan (2004)”
Invited Talk, University of North Carolina at Asheville, Asheville, NC
- Sep. 2007 “Analysis of offshore deep convection within landfalling hurricanes just prior to tornadogenesis”
7th Conference on Coastal Processes, San Diego, CA, American Meteorological Society
- May 2006 “Aspects of Hurricane Guillermo (1997) during rapid intensification”
Invited Talk, NOAA Hurricane Research Division
- Apr. 2006 “Evolution of low-wavenumber vorticity during rapid intensification: A dual-Doppler analysis.”
27th Conference on Hurricanes and Tropical Meteorology, Monterey, CA, American Meteorological Society
- Oct. 2005 “A dual-Doppler analysis of Hurricane Guillermo (1997): Interactions between the eye and eyewall during rapid intensification”, 32nd Conference on Radar Meteorology, Albuquerque, NM, American Meteorological Society
- Apr. 2004 “Observed evolution of eyewall convection and low-wavenumber flow in Hurricane Guillermo”, 26th Conf. on Hurricanes and Tropical Meteorology, Miami, FL, American Meteorological Society
- Feb. 2003 “Observational evidence that hot towers are an integral component of intense hurricane eyewalls”
Invited Poster, Simpson Symposium, Long Beach, CA, American Meteorological Society
- Sep. 2002 “Is convection in the inner core of intense hurricanes buoyant?”
Invited Talk, NOAA Hurricane Research Division, Miami, FL
- Apr. 2002 “Observational analysis of buoyancy in intense hurricane eyewalls”, 25th Conference on Hurricanes and Tropical Meteorology, San Diego, CA, American Meteorological Society
- Feb. 2002 “Is convection in the inner core of intense hurricanes buoyant?”
Invited Talk, Mile High Hurricane Society, Fort Collins, CO
- Mar. 2001 “The quality of GPS dropsonde temperature and humidity measurements in hurricanes”
Invited Talk, NCAR/AVAPS Users Group Meeting, Boulder, CO
- Jun. 2000 “Evaluation of buoyant motions within the hurricane inner core”, 24th Conference on Hurricanes and Tropical Meteorology, Fort Lauderdale, FL, American Meteorological Society

- Jun. 2000 “Instrument wetting errors in hurricanes: Magnitude, frequency, and effects upon thermodynamic structure”, 24th Conference on Hurricanes and Tropical Meteorology, Fort Lauderdale, FL, American Meteorological Society
- Jan. 1999 “The effects of instrument wetting errors on eyewall buoyancy in hurricanes”, 23rd Conference on Hurricanes and Tropical Meteorology, Dallas, TX, American Meteorological Society
- Feb. 1997 “Annual and interannual variability in the kinetic energy of the Australian-South Pacific jet stream”, 7th Conf. on Climate Variations, Long Beach, CA, American Meteorological Society

GRADUATE ADVISING

- 2007 – present **M. Chris Link**, M.S. Thesis, Advisor
Department of Geography and Earth Science, University of North Carolina at Charlotte
Thesis: “Mini-supercells in landfalling hurricanes: Physical processes associated with offshore formation and coastline tornadogenesis
- 2007 – present **Kelly C. Smith**, M.S. Thesis, Advisor
Department of Geography and Earth Science, University of North Carolina at Charlotte
Thesis: “Vortical hot towers in a rapidly intensifying hurricane: Observations and implications”
- 2007 – present **Shelley O. Holmberg**, M.S. Thesis, Committee Member
Department of Geography and Earth Science, University of North Carolina at Charlotte
Thesis: “Assessing the impact of Atmospheric Infrared Sounder (AIRS) data in WRF model forecasts assimilated with the Ensemble Kalman Filter.
- 2008 – present **Bradley Johnson**, Ph.D. Dissertation, Committee Member
Department of Geography and Earth Science, University of North Carolina at Charlotte
Dissertation, “Geomorphic Response to Holocene Climate Change in an Alpine Setting”
- 2008 – present **Mahar Haddad**, M.S. Thesis, Committee Member
Department of Geography and Earth Science, University of North Carolina at Charlotte
Thesis: “The Distribution of Rainfall in Landfalling Hurricanes”
- 2008 **Chris Blanton**, M.S. Thesis, Committee Member
Department of Geography and Earth Science, University of North Carolina at Charlotte
Thesis: “Polygonal eyewalls in a cloud-resolving simulation of Hurricane Wilma”

UNDERGRADUATE ADVISING

- 2009 – present **Kenny Griffin**, Undergraduate Research Project, Advisor
Department of Geography and Earth Science, University of North Carolina at Charlotte
Title: “Structure and evolution of convective cells in outer rainbands of Hurricane Gustav (2008) on 31 August 2008”
- 2009 – present **Jennifer Edwards**, Undergraduate Research Project, Advisor
Department of Geography and Earth Science, University of North Carolina at Charlotte
Title: “Structure and evolution of convective cells in outer rainbands of Hurricane Gustav (2008) on 01 September 2008”
- 2008 – present **Tiffany Gardner**, Undergraduate Research Project, Advisor
Department of Geography and Earth Science, University of North Carolina at Charlotte
Title: “Evolution of surface observations during the passage of tropical cyclone rainbands.”

- 2008 – 2009 **Thomas Hinson**, Undergraduate Honors Research Project, Advisor
Department of Geography and Earth Science, University of North Carolina at Charlotte
Title: “Structure and evolution of an offshore supercell in Hurricane Jeanne (2004)”
- 2007 – 2008 **Heather B Anderson**, Undergraduate Research Project, Advisor
Department of Geography and Earth Science, University of North Carolina at Charlotte
Title: “Radar signatures prior to tornadogenesis over the Carolinas in Hurricane Francis (2004)”
- 2007 – 2008 **B. Garon Odom**, Undergraduate Research Project, Advisor
Department of Geography and Earth Science, University of North Carolina at Charlotte
Title: “Convective cell motions within a rapidly intensifying hurricane: Observations and comparisons to theory
- 2005 **Stephen Kearney**, Senior Honors Thesis, Outside Committee Member
Department of Geologic and Atmospheric Science, Iowa State University, Ames, IA
Thesis: “Relationship between hurricane intensity change and changes in eye diameter”

RESEARCH FIELD PROJECTS

- 2008 – present **Surface Observations near Tornadic Outer Rainbands in Landfalling Hurricanes**
University of North Carolina at Charlotte
Duties: Deployed five surface weather stations in Brunswick County, NC; collected and quality-controlled data.
- 2004 – 2005 **Central College Wind Turbine Feasibility Study**
Duties: Collected, quality-controlled, and analyzed meteorological data; provided estimates of electric power generation and net financial savings
- 1997 – 2004 **NOAA/AOML/HRD Hurricane Field Program**
Duties: Collected and quality-controlled data in flight; provided ground-based support of aircraft operations

PROFESSIONAL SERVICE

- 2009 – present **Associate Editor of Monthly Weather Review**
- 2001 – present **Regular Scientific Reviewer**, *Journal of Atmospheric Science*
Monthly Weather Review
Journal of Atmospheric and Oceanic Technology
Bulletin of the American Meteorological Society
National Science Foundation
Office of Naval Research
- 2007 – present **CoCoRaHS County Coordinator**, Mecklenburg and Union Counties, North Carolina
- 2007 – present **Faculty Advisor**, Student Organization of Meteorology (STORM)
Department of Geography and Earth Sciences, University of North Carolina at Charlotte
- 2004 **Chair**, Max Eaton Award Committee, American Meteorological Society
26th Conference on Hurricanes and Tropical Meteorology, Miami, FL

PROFESSIONAL DEVELOPMENT

- 2009 Selected Participant, **NOAA/SPC HWT Spring Experiment**, Norman, OK
- 2007 Selected Participant, **NSF Workshop for Early Career Faculty in the Geosciences**, “Teaching, Research, and Managing Your Career”, Williamsburg, VA
- 2005 Selected Participant, **AMS Educational Forum**, “A Primer on Radar Analysis Techniques used in Mesoscale Meteorology”, Albuquerque, NM
- 2005 Selected Participant, **Information Literacy Workshop**, Central College, Pella, IA
- 2005 Selected Participant, **Iowa College Foundation Summer Workshop**, “Technology & Education: The Integrated Classroom”, Central College, Pella, IA
- 1998 Selected Participant, **Hurricanes at Landfall Symposium**, NOAA/NCAR, Boulder, CO

PROFESSIONAL AFFILIATIONS

- 1994 – present **American Meteorological Society**
- 2001 – present **American Geophysical Union**
- 2005 – present **Royal Meteorological Society**
- 2007 – present **Sigma Xi**

COMPUTER EXPERIENCE

- Operating Systems:** Linux, UNIX, MS Windows
- Programming Languages:** C, FORTRAN, HTML
- Data Analysis Software:** GrADS, SOLOIL, GRLevelX, ASPEN, MS Excel, SPSS, ArcGIS
- Word Processing Software:** MS Word, LaTeX

PROFESSIONAL REFERENCES

Craig Allan, Ph. D.
Department Chair

Department of Geography and Earth Science
University of North Carolina at Charlotte
9201 University City Blvd
Charlotte, NC 28223
Telephone: (704) 687 – 5999
Facsimile: (704) 687 – 5966
Email: cjallan@uncc.edu

Walter Martin, Ph. D.
Associate Department Chair
Department Mentor

Department of Geography and Earth Science
University of North Carolina at Charlotte
9201 University City Blvd
Charlotte, NC 28223
Telephone: (704) 687 – 5954
Facsimile: (704) 687 – 5966
Email: wemartin@uncc.edu

Frank D. Marks Jr., Ph. D.
Post-doctoral research supervisor

Hurricane Research Division
NOAA/AOML
4301 Rickenbacker Causeway
Miami, FL 33149
Telephone: (305) 361 – 4321
Facsimile: (305) 361 – 4402
Email: Frank.Marks@noaa.gov

William M. Gray, Ph. D.
Graduate research advisor
Graduate teaching supervisor

Department of Atmospheric Science
Colorado State University
Fort Collins, CO 80523
Telephone: (970) 491 – 8681
Facsimile: (970) 491 – 8449
Email: gray@atmos.colostate.edu

Paul D. Reasor, Ph. D.
Current research collaborator

Department of Meteorology
The Florida State University
Tallahassee, FL 32306-4520
Telephone: (850) 644 – 4056
Facsimile: (850) 644 – 9642
Email: reasor@met.fsu.edu