

# Gary R. Huffines

## Curriculum Vita

Current as of 26 June 2007

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- Position:** Assistant Professor of Meteorology  
Earth Sciences Program  
School of Chemistry, Earth Sciences, and Physics  
College of Natural and Health Sciences  
University of Northern Colorado  
Greeley, CO 80639
- Home Address:** 904 52<sup>nd</sup> Avenue  
Greeley, CO 80634
- Telephone**
- Office: (970) 351-1071
  - Home: (970) 346-0150
  - Cell: (970) 518-7605
- Education:** 1999  
PhD  
Texas A&M University  
Meteorology
- Work Experience:** 1983 – 2003  
United States Air Force Officer (multiple locations)  
Responsibilities: Training, Research, Forecasting, Development of  
Operational Techniques, Direct supervision of junior officers and  
enlisted personnel, Budget management
- Professional Academic:** 2003 – Present  
University of Northern Colorado  
Assistant Professor of Meteorology  
Responsibilities: Teaching, Research, Lab and Curriculum  
Coordination
- 1998 – 2003  
Air Force Institute of Technology (AFIT), Wright-Patterson Air  
Force Base, Dayton, Ohio  
Instructor and Assistant Professor of Atmospheric Physics  
Responsibilities: Teaching, Research, Lab Coordination  
(UNIX/LDM)
- Area of Specialization:** Physical Meteorology  
Atmospheric Electricity  
Space Physics

**Research  
Areas/Interests:**

Lightning phenomena  
Severe weather events  
Undergraduate research experiences  
Applied weather research for aviation and public safety  
    Latest effort is in identifying when the last flash has occurred in a  
    thunderstorm, allowing people to go back outside without being  
    struck by lightning.  
Large dataset manipulation

**Publications:**

Juried:  
Rakov, V.A. and G.R. Huffines: Return-Stroke Multiplicity of Negative  
Cloud-to-Ground Lightning Flashes. *Journal of Applied  
Meteorology*, **42**, Oct 2003, 1455-1462.  
Orville, R.E., G.R. Huffines, W.R. Burrows, R.L. Holle, and K.L.  
Cummins: The North American Lightning Detection Network  
(NALDN) first results: 1998-2000. *Monthly Weather Review*, **130**,  
Aug 2002, 2098-2109.  
Steiger, S.M., R.E. Orville, and G. Huffines, 2002: Cloud-to-ground  
lightning characteristics over Houston, Texas: 1989-2000. *Journal  
of Geophysical Research*, *107*(11), Jun 2002,  
10.1029/2001JD001142.  
Bond, D.W., R. Zhang, X. Tie, G. Brasseur, G. Huffines, R.E. Orville, and  
D.J. Boccippio, 2001: Nox production by lightning over the  
continental United States. *Journal of Geophysical Research*, **106**,  
Nov 2001, 27701-27710.  
Orville, R.E., G. Huffines, J. Nielsen-Gammon, R. Zhang, B. Ely, S.  
Steiger, S. Phillips, S. Allen, and W. Read, 2001: Enhancement of  
Cloud-to-Ground Lightning over Houston, Texas. *Geophysical  
Research Letters*, **28**, Jun 2001, 2597-2600.  
Orville, R.E. and G.R. Huffines, 2001: Cloud-to-ground lightning in the  
Unites States: NLDN results in the first decade, 1989-98. *Monthly  
Weather Review*, **29**, May 2001, 1179-1193.  
Murray, N.D., R.E. Orville, and G.R. Huffines, 2000: Effect of pollution  
from Central American fires on cloud-to-ground lightning in May  
1998. *Geophysical Research Letters*, **27**, Aug 2000, 2249-2252.  
Orville, R.E. and G.R. Huffines, 1999: Lightning ground flash  
measurements over the contiguous United States: 1995-97.  
*Monthly Weather Review*, **127**, Nov 1999, 2693-2703.  
Huffines, G.R. and R.E. Orville, 1999: Lightning ground flash density and  
thunderstorm duration in the continental United States: 1989-96.  
*Journal of Applied Meteorology*, **38**, Jul 1999, 1013-1019.

**Professional  
Presentations:**

Juried:

- Felix, M. O., Huffines, G. R., and Orville, R. E. (2007), The Cause of the Positive Cloud to Ground Lightning Anomaly over the Midwest United States: An Exploratory Survey from 2000 to 2005, *14th Symposium on Meteorological Observation and Instrumentation*, American Meteorological Society, San Antonio, Texas, 15-18 January, 2007.
- Lyons, W. A., Cummer, S. A., Huffines, G. R. (2006), Characterizing intense convection using conventional and advanced lightning metrics, including charge moment change, 1<sup>st</sup> International Lightning Meteorology Conference, Tucson, Arizona, 26-27 April, 2006.
- Huffines, G. R. (2006), Thunderstorm Visualization in 3-D, *Second Conference on Meteorological Applications of Lightning Data*, American Meteorological Society, Atlanta, Georgia, 30 January – 2 February, 2006.
- Lyons, W. A., Anderson, L., Nelson, T. E., Huffines, G. R., Characteristics of sprite-producing electrical storms in the STEPS 2000 domain, *Second Conference on Meteorological Applications of Lightning Data*, American Meteorological Society, Atlanta, Georgia, 30 January – 2 February, 2006.
- Lyons, W. A., Andersen, L. M., Nelson, T. E., Cummer, S. A., Jauget, N. C., Huffines, G. R. (2005), Mesoscale Convective Systems Which Do and Do Not Produce Sprites: Results From STEPS 2000, , **Eos Trans. AGU, 86(52)**, Fall Meet. Suppl. Abstract AE32A-04.
- Huffines, G. R. and Orville, R. E. (2004), Electrically Active Storms in the Appalachian Mountains, *Eos Trans. AGU, 85(47)*, Fall Meet. Suppl. Abstract AE42A-06.
- Lyons, W.A., Nelson, T.E., Anderson, L., Cummer, S.A., Huffines, G. R., and Rodger, C. J., Statistical Characterizations of TLEs and Their Parent Lightning Discharge, *Eos Trans. AGU, 85(47)*, Fall Meet. Suppl. Abstract AE31A-0153.
- Huffines, G.R. and R.E. Orville, 2003: The Appalachian Lightning Jump. *American Geophysical Union Fall Meeting*, American Geophysical Union, San Francisco, California, 8-12 Dec 2003.
- Nelson, L.A., T.M. McNamara, D.R. Vollmer, and G.R. Huffines, 2002: Determining the distance lightning travels from a thunderstorm using ground based radar, the National Lightning Detection Network, and a 3-D lightning mapping system. *Sixth Symposium on Integrated Observing Systems*, American Meteorological Society, Orlando, Florida, 13-17 Jan 2002.

- Walters, M.K. and G.R. Huffines, 2002: Comparison of MM5 convective precipitation forecasts with cloud-to-ground lightning information in the CONUS Intermountain West. *Sixth Symposium on Integrated Observing Systems*, American Meteorological Society, Orlando, Florida, 13-17 Jan 2002.
- Vollmer, P.A. and G.R. Huffines, 2002: GPS-derived integrated precipitable water compared with AFWA MM5 moisture fields. *Sixth Symposium on Integrated Observing Systems*, American Meteorological Society, Orlando, Florida, 13-17 Jan 2002.
- Vollmer, D.R. and G.R. Huffines, 2001: The distance lightning travels from a thunderstorm based on altitude and atmospheric temperature. *American Geophysical Union Fall Meeting*, American Geophysical Union, San Francisco, California, 10-14 December 2001.
- McNamara, T.M. and G.R. Huffines, 2001: The horizontal distance of cloud-to-ground lightning. *American Geophysical Union Fall Meeting*, American Geophysical Union, San Francisco, California, 10-14 December 2001.
- Ely, B.L., S.M. Steiger, S.E. Phillips, R.E. Orville, and G.R. Huffines, 2001: Twelve years of cloud-to-ground lightning characteristics, 1989-2000: Small scale results. *American Geophysical Union Fall Meeting*, American Geophysical Union, San Francisco, California, 10-14 December 2001.
- Orville, R.E. and G.R. Huffines, 2001: North American Lightning Detection Network (NALDN) first results: 1998-2000. *American Geophysical Union Fall Meeting*, American Geophysical Union, San Francisco, California, 10-14 December 2001.
- Vollmer, P.A. and G.R. Huffines, 2001: GPS-derived integrated precipitable water compared with AFWA MM5 model output. *11<sup>th</sup> Conference on Satellite Meteorology and Oceanography*, American Meteorological Society, Madison, Wisconsin, 15-18 October 2001.
- Orville, R.E. and G.R. Huffines, 2001: Lightning and climate modification within, near, and downwind of urban areas. *15<sup>th</sup> Weather Modification Conference*, American Meteorological Society, Albuquerque, New Mexico, 14-19 January 2001.
- Huffines, G.R. and R.E. Orville, 2000: Cloud-to-ground lightning characteristics associated with tornadoes on 15 May 1998. *American Geophysical Union 2000 Fall Meeting*, American Geophysical Union, San Francisco, California, 15-19 December 2000.
- Huffines, G.R. and R.E. Orville: Peak current variations in cloud-to-ground lightning over the continental United States: 1995-99. *Int. Lightning Detection Conference*, Vaisala, Inc., Tucson, Arizona, 7-8 November 2000.

- Orville R.E. and G.R. Huffines, 2000: Eleven years of cloud-to-ground lightning in the continental United States, 1989-1999: Large scale and small scale results. *Int. Lightning Detection Conference*, Vaisala, Inc., Tucson, Arizona, 7-8 November 2000.
- Parsons, T.L., G.R. Huffines, and C.C. Cox, 2000: Distance criteria for safe operations when lightning is present. *2<sup>nd</sup> Symposium on Environmental Applications*, American Meteorological Society, Long Beach, California, 9-14 January 2000.
- Huffines, G.R. and R.E. Orville, 2000: Cloud-to-ground lightning characteristics associated with tornadoes on 15 May 1998. *Symposium on the Mystery of Severe Storms: A tribute to the work of T. Theodore Fujita*, American Meteorological Society, Long Beach, California, 9-14 January 2000.
- Murray, N.D., R.E. Orville, and G.R. Huffines, 2000: Effect of pollution from Central American fires on cloud-to-ground lightning in the spring of 1998. *3<sup>rd</sup> Symposium on Fire and Forest Meteorology*, American Meteorological Society, Long Beach, California, 9-14 January 2000.
- Orville R.E. and G.R. Huffines, 2000: Eleven years of cloud-to-ground lightning in the continental United States, 1989-1999: Large scale and small scale results. *American Geophysical Union 2000 Fall Meeting*, American Geophysical Union, San Francisco, California, 15-19 December 2000.
- Orville R.E. and G.R. Huffines, 1999: Lightning ground flash measurements over the contiguous United States: A ten-year summary 1989-1998. *11<sup>th</sup> Int. Conference on Atmospheric Electricity*, Guntersville, Alabama, 7-11 June 1999.
- Biggerstaff, M.I., J. Guynes, S. Hristova-Veleva, E-K. Seo, B. Karl, Z. Shields, R. Toricinta, J. Santarpia, G. Huffines, and M. Gillmore, 1997: The Texas A&M University Convection and Lightning Experiment – TEXACAL 97. *28<sup>th</sup> Conference on Radar Meteorology*, Austin, Texas, American Meteorological Society, 7-12 September 1997.

**Funded Projects:**

2006 – Present

Unidata Equipment Grant (co-PI with Paul Nutter and Lucinda Shellito)  
*Advancing Education and Research in Meteorology at UNC Using the Unidata IDD*

\$20,000

2004-2005

Grant Development Incentive Program

Lightning Cessation Study

Sponsored Programs & Academic Research Center (UNC)

\$12,500

2001-2003  
Dayton Area Graduate Studies Institute (DAGSI) Grant  
*Electromagnetic Interferences by High Power Electric Pulses:  
Theoretical and Experimental Simulations and Analysis for  
Aerospace Airframes*  
\$400,000  
Funded by the State of Ohio

**Professional  
Consultation:**

2005 – Present  
FMA Research, Inc.  
Ft Collins, CO  
Locating Transient Luminous Events (TLE) and developing  
forecasting guidelines for occurrences  
2004  
National Lightning Safety Institute  
Dallas, Texas  
Determining the meteorological concerns associated with lightning at  
the DFW airport

**Professional  
Association  
Participation:**

American Meteorological Society  
1997 – Present  
Reviewer  
American Geophysical Union  
1997 – Present  
Reviewer  
National Weather Association  
1997 – Present  
Faculty Advisor

**Community  
Service:**

2003 – Present  
Direct liaison with Greeley Tribune for weather related news  
2003 – 2005  
Person in Charge of the National Weather Service Cooperative  
Observing site at UNC

**University  
Service:**

2006 – Present  
McNair Scholar Advisor  
2006 – Present  
Earth Sciences Advisor for Honors Program  
2006 – Present  
Chair, Faculty Search Committee (Earth Sciences Educator)  
2006 – Present  
Faculty Advisor to Mortar Board  
2005 – Present  
Program Coordinator for Earth Sciences

- 2004 – 2006  
Co-Chair, Policy and Procedure Task Force (College of Natural and Health Sciences)
- 2003 – Present  
Advisor to over 20 Meteorology Undergraduate Students (Earth Sciences)
- 2003 – 2005  
Member, General Education Council
- 2003 – 2005  
Member of the University Disciplinary Council
- 2003 – 2004  
Member, Academic Review Board
- 2003 – 2004  
Member, Computer Science Task Force (College of Arts & Sciences)
- 2003 – 2004  
Chair, Faculty Search Committee (2 Meteorology positions)

**Graduate Student Committees:**

- Master's:
- 2002 McNamara, Todd M. *The horizontal extent of cloud-to-ground lightning over the Kennedy Space Center* Chair
  - 2002 Nelson, Lee A. *Synthesis of 3-dimensional lightning data and weather radar data to determine the distance that naturally occurring lightning travels from thunderstorms* Chair
  - 2002 Vollmer, David R. *The horizontal extent of lightning discharges based on altitude and atmospheric temperature* Chair
  - 2002 Vollmer, Patricia A. *GPS-derived precipitable water compared with the Air Force Weather Agency's MM5 model output* Chair
  - 2002 Freestrom, Hugh J. *Designing an algorithm to predict the intensity of the severe weather season* Reader
  - 2002 Garay, David A. *Estimation of atmospheric precipitable water using the Global Positioning System* Reader
  - 2002 Visser, Harmen P. *Suitability of Unidata MetApps for incorporation in platform-independent user-customized aviation weather products generation software* Reader
  - 2001 Haeberle, Randall J. *The atmospheric mechanisms associated with lightning during snow and ice events* Chair
  - 2001 Scott, Rhonda B. *Analysis of cloud-to-ground lightning clusters with radar composite imagery* Chair
  - 2001 Seaman, Wendy L. *Evolution of cloud-to-ground lightning discharges in tornadic thunderstorms* Chair

- 2001 Budai, Jeffrey W. *Analyzing the effects of meteorology on radar measured index of refraction structure parameter* Reader
- 2001 Early, Stephen A. *Investigation of the relationship between optical turbulence and mechanical turbulence in the atmosphere* Reader
- 2001 Venzke, Kenneth C. *Development of predictors for cloud-to-ground lightning activity using atmospheric stability indices* Reader
- 2000 Boll, Elizabeth A. *Analysis in cloud-to-ground lightning flashes over land-vs-water* Chair
- 2000 Goetz, Edward C. *Descriptive and conditional climatology for specific launch commit criteria for Cape Canaveral, Florida* Chair
- 2000 Holmes, Michael W. *Techniques for forecasting the cessation of lightning at Cape Canaveral Air Station and the Kennedy Space Center* Chair
- 2000 Parsons, Tamara L. *Determining the horizontal extent of cloud-to-ground lightning* Chair
- 2000 Darwin, Michael W. *A 3-D display system for lightning detection and ranging (LDAR) data* Reader
- 2000 Renwick, Thomas G. *Timing of thunderstorm occurrence for Cape Canaveral, Florida* Reader
- 1999 Bacot, David E. *Visualizing the impact of multivariate meteorological input error on Electro-Optical Tactical Decision Aid output* Reader
- 1999 Cox, Christopher C. *A comparison of horizontal cloud-to-ground lightning flash distance using weather surveillance radar and the distance between successive lightning flashes method* Reader

**Teaching:**

1998 – 2003, Assistant Professor of Atmospheric Physics (AFIT),  
Department of Applied Physics

Graduate Courses Taught:

METG 510 General Meteorology  
METG 612 Cloud Physics  
METG 642 Radar Meteorology  
METG 644 Satellite Meteorology  
PHYS 519 The Space Environment

Graduate Course Developed:

METG 612 Cloud Physics

2003 – Present, Assistant Professor of Meteorology (UNC), Department of  
Earth Sciences

Undergraduate Courses Taught:

MET 110 Our Violent Atmosphere (on-line offerings)  
MET 205 General Meteorology  
MET 260 Mesoscale Meteorology  
MET 320 Physical Meteorology  
MET 407 Dynamic Meteorology II  
MET 421 Climatology  
MET 441 Synoptic Meteorology  
MET 465 Radar Meteorology  
MET 470 Satellite Meteorology  
MET 495 Severe Weather Forecasting  
SCI 465 Principles of Scientific Inquiry

Undergraduate Course Developed:

MET 215 Introduction to Weather Analysis  
MET 495 Severe Weather Forecasting

**Professional  
Development  
Activities:**

Sabbatical Leave: Summer and Fall Quarter 2002

Homeland Security Support at McChord AFB, WA  
Weather Officer for North American Aerospace Defense (NORAD)  
Western Air Defense Sector  
Honed forecasting skills using rapid response requirements, plans  
and procedures for weather support during attack scenarios on USA

Workshops:

Grant Seeking Seminar by David Bauer, UNC, 25-26 Sep 2006  
Academic Instructor School, Maxwell AFB, Montgomery, AL,  
2000

**Honors and  
Awards:**

2004 Selected as Graduate Faculty Member at UNC  
2002 Merewether Award Air Education and Training Command  
2001 Best Award, Officer Air Education and Training Command  
2001 Merewether Award Air Education and Training Command  
1995 Meritorious Service Medal US Air Force  
1992 Commendation Medal, 2<sup>nd</sup> Oak Leaf Cluster US Air Force  
1988 Commendation Medal, 1<sup>st</sup> Oak Leaf Cluster US Air Force  
1987 Commendation Medal US Air Force