

Dr. Christopher C. Weiss

Assistant Professor of Atmospheric Science
Texas Tech University

Texas Tech University – Atmospheric Science Group
Box 42101
Lubbock, TX 79409

Phone: (806) 742-4712

E-mail: Chris.Weiss@ttu.edu

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EDUCATION:

Ph.D., University of Oklahoma, Department of Meteorology, 2004
Dissertation Title: *Variational Pseudo Multiple-Doppler Analyses of a Dryline Utilizing Very-High Resolution Mobile Doppler Radar Data*
Advisor: Dr. Howard Bluestein

M.S., University of Oklahoma, Department of Meteorology, 2000
Thesis: *Airborne Doppler Analysis of a Dryline-Outflow Boundary Intersection and Subsequent Convection*
Advisor: Dr. Howard Bluestein

B.S., *summa cum laude*, University of Michigan (Ann Arbor), Dept. of Atmospheric, Oceanic and Space Sciences, 1997.
Advisor: Dr. Peter Sousounis

PROFESSIONAL EXPERIENCE:

August 2004 – present: Assistant Professor of Atmospheric Science, Texas Tech University Department of Geosciences (tenure-track).

GRANT ACTIVITY:

Principal Investigator, “Pilot Study: Pilot Study: Pioneering Measurements of Tornadogenesis and Tornado Vortex Structure Using Emerging Observational Technologies at TTU”, Texas Tech VPR Research Enrichment Fund, 2008, \$35,000

Co-principal investigator, “Innovative Technologies to Investigate Fine-Scale Atmospheric Motions and Their Impact”, Texas Tech Vice President of Research, 2006-2009, total: \$1,000,000

Co-investigator, "IGERT: Multidisciplinary Program in Wind Science and Engineering", National Science Foundation, 2003-2008, total: \$2,200,000

Co-investigator, "Cooperative Agreement for a Wind Mitigation Initiative", National Institute of Standards and Technology, 1998-2005, total: \$1,880,000

AWARDS AND HONORS:

2008 Outstanding Professor nomination by Phi Beta Kappa

2007 Graduating senior nomination for Outstanding Faculty

2003 David James Shellberg Memorial Scholarship (Oklahoma Climatological Survey) –
"in recognition of exemplary research by a student using geophysical data"

2002 Yoshi Sasaki Award (University of Oklahoma) –
"for best M.S. student publication"

2000 Best Oral Student Presentation (American Meteorological Society) –
20th Conf. On Severe Local Storms

1997 Andrew Kucher Award (University of Michigan) –
"for outstanding contributions to engineering research while at the College
of Engineering"

1994 - 1997 - Dean's List, University of Michigan, Ann Arbor.

INVITED PRESENTATIONS:

2/2007 – University of Michigan, Ann Arbor, MI, Dept. of Atmospheric, Oceanic,
and Space Sciences

9/2007 – Stout Lecture, University of Nebraska, Lincoln, NE, Dept. of
Geosciences

TEACHING EXPERIENCE:

Responsible for the following courses:

Graduate Level

ATMO 5316 – *Dynamics of Severe Storms* (Fall 2005, Fall 2007)

ATMO 5327 – *Radar Meteorology* (Spring 2006, Spring 2008)

ATMO 5101 – *Atmospheric Science Seminar* (Spring 2007)

GPH 5324 – *Radiative Transfer and Remote Sensing* (Spring 2005, Fall 2006)

Undergraduate Level

ATMO 1300 – *Introduction to Atmospheric Science* (Spring 2005, Fall 2006, Fall 2007)

ATMO 2316 – *Severe and Hazardous Weather* (Fall 2004, Spring 2007, Spring 2008)

Prior to Texas Tech University:

Fall 2003 – (OU) Designed and instructed *METR 2603 – Severe and Unusual Weather* (50 students)

Fall 2000 – Fall 2003 – (OU) Guest lectures in:

METR 6413 – Topics in Advanced Mesoscale Meteorology

METR 5423 – Advanced Topics in Synoptic Meteorology

METR 3113 – Atmospheric Dynamics I

Spring 1997 – (MICH) Teaching assistant for Dr. Peter Sousounis

RESEARCH INTERESTS:

Dryline Dynamics, Convection Initiation, Severe Thunderstorm Dynamics, Tornadogenesis, Tornado Structure, Radar Observations of Clear-Air Boundaries and Deep Convection, Variational Doppler Retrieval Techniques, Mesoscale Modeling, Data Assimilation

RESEARCH EXPERIENCE:

2006-2008 – Field Coordinator for the Multiple Observations of Boundaries in the Local Storm Environment (MOBILE) Project.

2005-2006 – Designed and participated in the Simultaneous Observations of the Near-Dryline Environment (SONDE) Project

2005 – Participated in the Wheeled Investigation of RFD Lifecycle (WIRL) Project

2004 – Participation in the Hurricanes at Landfall Experiment (HALE).

* Operated S-band SMART-R in the intercept of Hurricane Frances (Titusville, FL).

1997-2004 – Graduate Research Assistant, University of Oklahoma

1998-2004 – University of Massachusetts W-band (95 GHz) radar project

* Lead radar operator (2000-2004)

* Backup radar operator (1998-1999)

2002 – International H₂O Project (IHOP)

* Organized a strategy for high-resolution radar data collection in the vicinity of drylines.

* Collected UMass W-band data on various drylines and frontal boundaries through the course of the project. Coordinated intercomparison efforts with other ground-based and airborne-based measurement platforms.

1998 – Doppler on Wheels (DOW) project (under Dr. Joshua Wurman)

* Primarily responsible for navigation.

1998 – Sub-VORTEX project (under Dr. Erik Rasmussen)

* Responsible for driving mobile mesonet probes, navigation and data collection.

STUDENTS ADVISED:

2005-present	Jeff Beck (Ph.D. candidate, ATMO)
2007-present	Joel Dreessen (M.S. candidate, ATMO)
2006-present	Kate Horgan (M.S. candidate, ATMO)
2006-present	Patrick Skinner (M.S. candidate, ATMO)
2004-2007	Kevin Walter (Ph.D., IGERT)
2006-2007	Jaret Rogers (M.S., ATMO)
2004-2006	Michael Griesinger (M.S., ATMO)

DISSERTATION/THESIS COMMITTEES SERVED:

Jeff Beck, Ph. D. (2005-present) (chair)
Joel Dreessen, M.S. (2007-present) (chair)
Kate Horgan, M.S. (2006-present) (chair)
Patrick Skinner, M.S. (2006-present) (chair)
Kevin Walter, Ph. D. (2004-2008) (chair)
Jaret Rogers, M.S. (2005-2007) (chair)
Mike Griesinger, M. S. (2004-2006) (chair)
Archimedes Ruiz, Ph. D. (2006-present)
Candace Cyrek, M.S. (2008-present)
Matt Schmidt, M. S. (2008-present)
Suraj Harshan, M.S. (2007-present)
Brandon Storm, Ph. D. (2006-2008)
Rolando Vega, Ph. D. (2006-2008)
Ryan Opperman, M. S. (2005-2007)
Brian Hirth, M. S. (2004-2005)
Steve Latimer, M. S. (2004-2005)

ORGANIZATIONS AND SERVICE:

Associate Editor, *Monthly Weather Review*, 2008

American Meteorological Society (AMS) – student member (1998-2005)
member (2006-present)

AMS Scientific and Technological Activities Commission: member of Radar Meteorology Committee (2007-2010)

American Association for Wind Engineering (2005-present)

Collegiate Weather Forecasting Challenge (“WxChallenge”)
Local Manager (2005-present)

Texas Tech Lutheran Student Fellowship: Faculty Advisor (2005-present)

National Collegiate Weather Forecast Contest

Manager (U of Michigan 1995-1997)

Manager (U of Oklahoma 1998-2003)

* Led University of Oklahoma to 4 national titles

* Launched undergraduate discussion writing program to enhance and expand forecasting skills for inexperienced forecasters

Oklahoma Weather Lab (OWL) – shift leader (1999-2001)

* Led groups of undergraduates in semi-weekly preparation of forecasts for the state of Oklahoma, which were disseminated to newspapers.

National Weather Service Forecast Office: White Lake, MI - student intern (1996-1997)

* Recorded NOAA Weather Radio broadcasts

* Performed radiosonde launches

* Assisted in preparation of forecast products

* Assisted in spotter training

REFEREED PUBLICATIONS:

Biggerstaff, M. I., L. J. Wicker, J. Guynes, C. Ziegler, J. M. Straka, E. N. Rasmussen, A. Doggett IV, L. D. Carey, J. L. Schroeder, and C. C. Weiss, 2005: The Shared Mobile Atmospheric Research and Teaching (SMART) Radar: A collaboration to enhance research and teaching., *Bull. Amer. Meteor. Soc.*, **86**, 1263-1274.

Bluestein, H. B., C. C. Weiss, and A. L. Pazmany, 2003: Mobile Doppler radar observations of a tornado in a supercell near Bassett, Nebraska, on 5 June 1999. Part I: Tornadogenesis., *Mon. Wea. Rev.*, **131**, 2954-2967.

Bluestein, H. B., W.-C. Lee, M. Bell, C. C. Weiss, and A. L. Pazmany, 2003: Mobile Doppler radar observations of a tornado in a supercell near Bassett, Nebraska, on 5 June 1999. Part II: Tornado-vortex structure., *Mon. Wea. Rev.*, **131**, 2968-2984.

Bluestein, H. B., C. C. Weiss, and A. L. Pazmany, 2004: Doppler radar observations of dust devils in Texas. *Mon. Wea. Rev.*, **132**, 209-224.

Bluestein, H. B., C. C. Weiss, and A. L. Pazmany, 2004: The vertical structure of a tornado near Happy, Texas, on 5 May 2002: High-resolution, mobile, W-band, Doppler radar observations., *Mon. Wea. Rev.*, **132**, 2325-2337.

Bluestein, H. B., C. C. Weiss, M. M. French, E. M. Holthaus, R. L. Tanamachi, S. Frasier, and A. L. Pazmany, 2007: The structure of tornadoes near Attica, Kansas on 12 May 2004: High-resolution, mobile, Doppler-radar observations., *Mon. Wea. Rev.*, **135**, 475-506.

Hirth, B. D., J. L. Schroeder, and C. C. Weiss, 2008: Surface Analysis of the Rear-Flank Downdraft Outflow in Two Tornadic Supercells., *Mon. Wea. Rev.*, **136**, 2344-2363.

Rogers, J. W., and C. C. Weiss, 2009: The association of cell mergers with tornado occurrence., *Mon. Wea. Rev.* (submitted to *Mon. Wea. Rev.*)

Schroeder, J. L., and C. C. Weiss, 2008: Integrating research and education through measurement and analysis., *Bull. Amer. Meteor. Soc.* (in press)

Schultz, D. M., C. C. Weiss, and P. M. Hoffman, 2007: The synoptic regulation of dryline intensity., *Mon. Wea. Rev.*, **135**, 1699-1709.

Walter, K., C. C. Weiss, A. H. P. Swift, J. Chapman, N. D. Kelley, 2008: Speed and direction shear in the stable nocturnal boundary layer, *J. Solar Energy Engineering* (accepted).

Weiss, C. C., and P. J. Sousounis, 1999: A climatology of collective lake disturbances., *Mon. Wea. Rev.*, **127**, 565-574.

Weiss, C. C., and H. B. Bluestein, 2002: Airborne pseudo-dual Doppler analysis of a dryline-outflow boundary intersection., *Mon. Wea. Rev.*, **130**, 1207-1226.

Weiss, C. C., H. B. Bluestein, and A. L. Pazmany, 2006: Fine-scale radar observations of the 22 May 2002 dryline during the International H₂O Project (IHOP). *Mon. Wea. Rev.*, **134**, 273-293.

Weiss, C. C., H. B. Bluestein, R. Conzemius, and E. Fedorovich, 2007: Variational pseudo-multiple Doppler-wind retrieval in the vertical plane for ground-based mobile-radar data. *J. Atmos. Oceanic Technol.*, **24**, 1165-1185.

Weiss, C. C., H. B. Bluestein, and A. L. Pazmany, 2007: Fine-scale radar observations of a dryline during the International H₂O Project (IHOP). *Sanders Symposium Monograph* (in press).

CONFERENCE PROCEEDINGS:

Beck, J., and C. C. Weiss, 2006: The role of environmental and computational parameters in the development and impact of the forward-flank gust front in supercell thunderstorms. *Preprints, 23rd Conference on Severe Local Storms*, St. Louis, MO, paper P11.6

Bluestein, H. B., C. C. Weiss, A. L. Pazmany, 2001: Observations in supercells with a mobile, 3-mm-wavelength Doppler radar. *Preprints, 30th Conference on Radar Meteorology*, Munich, Germany, paper 5A.2

Bluestein, H. B., C. C. Weiss, A. L. Pazmany, W.-C. Lee, and M. Bell, 2002: Tornadogenesis and tornado-vortex structure in a supercell. *Preprints, 21st Conference on Severe Local Storms*, San Antonio, TX, paper 12.1

Bluestein, H. B., C. C. Weiss, and A. L. Pazmany, 2003: Doppler-radar observations of dust devils in Texas. *Preprints, 31st Conference on Radar Meteorology*, Seattle, WA, paper P4A.2

Bluestein, H. B., C. C. Weiss, and A. L. Pazmany, 2003: The vertical structure of the Happy, Texas tornado of 5 May 2002: Mobile, W-band, Doppler-radar observations. *Preprints, 31st Conference on Radar Meteorology*, Seattle, WA, paper 8A.1

Bluestein, H. B., C. C. Weiss, and A. L. Pazmany, 2004: The vertical structure of a tornado: High-resolution, W-band, Doppler-radar observations near Happy, Texas on 5 May 2002. *Preprints, 22nd Conference on Severe Local Storms*, Hyannis, MA, paper 15.2

- Bluestein, H. B., E. Holthaus, C. C. Weiss, S. Frasier, and A. L. Pazmany, 2005: High-resolution, mobile, W-band Doppler radar observations of the vertical structure of a tornado near Attica, Kansas on 12 May 2004. *Preprints, 32nd Conference on Radar Meteorology*, Albuquerque, NM, paper P15R.2
- Bluestein, H. B., C. C. Weiss, M. M. French, E. M. Holthaus, R. L. Tanamachi, S. Frasier, and A. L. Pazmany, 2006: High-resolution structure of tornadoes in south-central Kansas on 12 May 2004: Analysis of mobile Doppler radar data. *Preprints, 23rd Conference on Severe Local Storms*, St. Louis, MO, paper 15.3
- Griesinger, M. P., and C. C. Weiss, 2005: Dryline convergence and the initiation of deep moist convection. *Preprints, 11th Conference on Mesoscale Processes*, Albuquerque, NM, paper JP3J.16
- Griesinger, M. P., and C. C. Weiss, 2006: Statistical analysis of variables associated with convective initiation along the southern Plains dryline. *Preprints, 23rd Conference on Severe Local Storms*, St. Louis, MO, paper 1.5
- Hirth, B. D., J. L. Schroeder, and C. C. Weiss, 2006: Surface analysis of the rear-flank downdraft in two tornadic supercells. *Preprints, 23rd Conference on Severe Local Storms*, St. Louis, MO, paper 14.5
- Houser, J. B., H. B. Bluestein, C. C. Weiss, M. R. Kramar, J. D. Tuttle, and A. Pazmany, 2006: Observations of tornadogenesis from high-resolution reflectivity data using a W-band mobile radar: The Cordell storm of 5 May 2001. *Preprints, 23rd Conference on Severe Local Storms*, St. Louis, MO, paper P9.4
- Horgan, K. L., and C. C. Weiss, 2008: The initiation and maintenance of convection along synoptically-quiet drylines. *Seventh Annual AMS Student Conference*, New Orleans, LA.
- Junyent, F., A. L. Pazmany, H. B. Bluestein, M. R. Kramar, M. M. French, C. C. Weiss, and S. Frasier, 2004: Dual-polarization, X-band, mobile Doppler radar observations of hook echoes in supercells. *Preprints, 22nd Conference on Severe Local Storms*, Hyannis, MA, paper P11.7.
- Rogers, J. W., and C. C. Weiss, 2006: Fine-scale mobile mesonet and stick-net observations of a non-tornadic HP supercell near Scottsbluff, NE. *Preprints, 23rd Conference on Severe Local Storms*, St. Louis, MO, paper P9.8

- Schroeder, J. L., S. Lorsolo, J. Beck, and C. Weiss, 2005: Using Mobile Research Radar to Extract Hurricane Boundary Layer Wind Information, *Proceedings, 10th Americas Conference on Wind Engineering*, Baton Rouge, Louisiana.
- Schultz, D. M. and C. C. Weiss, 2007: Synoptic and Mesoscale Regulation of Dryline Intensity and Associated Convection. *22nd Conference on Weather Analysis and Forecasting*, Park City, UT, paper 7A.7
- Tanamachi, R. L., H. B. Bluestein, C. C. Weiss, M. Bell, W.-C. Lee, and A. Pazmany, 2004: The structure of a tornado: Ground-based velocity track display (GBVTD) analysis of mobile, W-band, Doppler radar data on 15 May 1999 near Stockton, Kansas. *Preprints, 22nd Conference on Severe Local Storms*, Hyannis, MA, paper P11.5
- Tanamachi, R. L., H. B. Bluestein, M. Bell, W.-C. Lee, A. L. Pazmany, and C. C. Weiss, 2005: The evolution of a tornado: Ground-based velocity track display (GBVTD) analysis of mobile, W-band Doppler radar data on 15 May 1999 near Stockton, Kansas. *Preprints, 32nd Conference on Radar Meteorology*, Albuquerque, NM, paper P15R.3
- Walter, K. R., C. C. Weiss, and A. H. Swift, 2005: The moisture route of Palo Duro Canyon. *Preprints, 11th Conference on Mesoscale Processes*, Albuquerque, NM, paper JP3J.7
- Walter, K. R., C. C. Weiss, J. Chapman, and N. D. Kelley, 2007: Tall Tower Wind Shear Observations in the Stable Nocturnal Boundary Layer. *Proceedings of the 45th American Institute of Aeronautics and Astronautics (AIAA) Aerospace Sciences Meeting*, Reno, NV, paper AIAA-2007-1224
- Walter, K., Weiss, C.C., Swift, A.H.P., Chapman, J., and N. Kelley, 2007. "Observations of Extreme Speed and Directional Wind Shear in the US Great Plains" *Proceedings of the 2007 European Wind Energy Conference and Exhibition*, Milan, Italy, 7-10 May, 2007, European Wind Energy Association, Brussels, Belgium.
- Weiss, C.C., 2007: The imperfect relationship between dryline intensity and mesoscale confluence. *12th Conference on Mesoscale Processes*, Waterville Valley, NH, paper P2.13
- Weiss, C. C., 2005: High-resolution surface and tower observations of the southern Plains dryline during Project SONDE-2005. *Preprints, 11th Conference on Mesoscale Processes*, Albuquerque, NM, paper JP3J.14

- Weiss, C. C., and J. L. Schroeder, 2008: StickNet – A new portable, rapidly-deployable, surface observing system. *Preprints, 88th Annual Meeting of the American Meteorological Society*, New Orleans, LA, paper 4A.1
- Weiss, C. C., and H. B. Bluestein, 2000: Airborne Doppler analysis of a dryline-outflow boundary intersection and subsequent convection. *Preprints, 20th Conference on Severe Local Storms*, Orlando, FL, paper 18.4
- Weiss, C. C., and H. B. Bluestein, 2002: Numerical simulation of a dryline-outflow boundary intersection. *Preprints, 21st Conference on Severe Local Storms*, San Antonio, TX, paper 17.2
- Weiss, C. C., and H. B. Bluestein, 2004: Fine-scale radar observations of a dryline during the International H₂O Project. *Preprints, 84th American Meteorological Society Conference, Sanders Symposium*, Seattle, WA, paper P1.18
- Weiss, C. C., and D. M. Schultz, 2006: Synoptic and mesoscale influences on west Texas dryline development and associated convection. *Preprints, 23rd Conference on Severe Local Storms*, St. Louis, MO, paper 2.6
- Weiss, C. C., H. B. Bluestein, and A. L. Pazmany, 2003: Fine-scale radar observations of a dryline during the International H₂O Project. *Preprints, 10th Conference on Mesoscale Processes*, Portland, OR, paper 14.1
- Weiss, C. C., H. B. Bluestein, and A. L. Pazmany, 2003: Fine-scale radar observations of a dryline during the International H₂O Project. *Preprints, 31st Conference on Radar Meteorology*, Seattle, WA, paper P5A.8
- Weiss, C. C., H. B. Bluestein, and A. L. Pazmany, 2004: Fine-scale observations of a dryline during the International H₂O Project. *Preprints, 22nd Conference on Severe Local Storms*, Hyannis, MA, paper 16A.6
- Weiss, C. C., H. B. Bluestein, and A. L. Pazmany, 2004: A variational pseudo-multiple Doppler radar analysis technique for mobile, ground-based radars. *Preprints, 22nd Conference on Severe Local Storms*, Hyannis, MA, paper P7.2