

CURRICULUM VITAE  
**PAMELA L. HEINSELMAN**

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NOAA/OAR/National Severe Storms Laboratory  
Doppler Radar and Remote Sensing Group

120 David L. Boren Blvd.  
Norman, Oklahoma 73072

Phone: 405-325-6595  
E-mail: [pam.heinselmann@noaa.gov](mailto:pam.heinselmann@noaa.gov)

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## **EDUCATION**

Ph.D., School of Meteorology, University of Oklahoma

**May 2004**

M.S., Department of Earth and Atmospheric Sciences, Saint Louis University

**May 1994**

B.S., Department of Earth and Atmospheric Sciences, Saint Louis University

**May 1992**

(Summa Cum Laude)

## **EMPLOYMENT HISTORY**

*Research Scientist, Cooperative Institute of Mesoscale Meteorological Studies*

**1995 – Feb 2009**

*Research Scientist, NOAA/OAR/National Severe Storms Lab*

**March 2009 – Present**

### **Radar Research and Development Division**

**2004 – Present**

- Designing and leading Spring Phased Array Radar Experiments at the NOAA Hazardous Weather Testbed that investigate scientific and operational applications of high-temporal resolution data sampled by the National Weather Radar Testbed Phased Array Radar.
- Improving scientific understanding of hazardous weather by analyzing integrated observations from multiple platforms.
- Developing original methodologies that use radar data to estimate parameters important to forecasting and modeling

### **Worldwide Integrated Sensor Hydrometeorology Group**

**1999 – 2003**

- Investigated and clarified the role of synoptic-scale flow on intraseasonal variability of summer storm development over central Arizona (Dissertation topic; 1999–2003).

### **Severe Weather Warning and Technology Transfer Team**

**1995 – 1998**

- Illustrated limitations of the use of storm cell characteristics in forecasts of storm growth and decay.
- Evaluated and enhanced performance of WSR-88D Storm Cell Identification and Tracking Algorithm.

## AWARDS AND HONORS

- 2010 Professor Dr. Vilho Vaisala Award
- 2009 Presidential Early Career Award for Scientists and Engineers
- 2009 Outstanding Scientific Paper Award, Office of Oceanic and Atmospheric Research, National Oceanic and Atmospheric Administration, U.S. Department of Commerce
- 2008 Adjunct Assistant Professor, School of Meteorology, University of Oklahoma
- 2007 Outstanding Scientific Paper Award, Office of Oceanic and Atmospheric Research, National Oceanic and Atmospheric Administration, U.S. Department of Commerce
- 2001 Inducted into Sigma Xi
- 1999 Silver Medal, U.S. Department of Commerce, As a member of the Stormscale Research and Applications Division at the National Severe Storms Laboratory for making significant enhancements to the NEXRAD system.
- 1998 Bronze Medal, Cooperative Institute for Mesoscale Meteorological Studies, “For dramatic improvements to NEXRAD severe weather detection algorithms that have improved skill by 50% leading to reduced personal injuries and economic losses.”

## PROFESSIONAL SERVICE

- American Meteorological Society Radar Meteorology Committee (2010–Present)
- American Meteorological Society Board on Societal Impacts (2007–2010)
- National Weather Association Remote Sensing Committee (2007–2010)
- National Severe Weather Workshop Planning Committee (2007)
- NOAA Environmental Literacy Priority-2 Review Panel (2006)
- National Weather Center Diversity Committee (2005–2006)
- Associate Editor, Monthly Weather Review (2004–2005)
- NSSL 40th Anniversary Planning Committee (2004)
- Educate public about weather radar at National Weather Center Open Houses
- Provide job shadow experiences for emerging female scientists

## FORMAL PUBLICATIONS (Note previous name: P. L. MacKeen)

**Heinselman, P. L.**, and S. M. Torres, 2011: High-temporal resolution capabilities of the National Weather Radar Testbed Phased-array Radar. *J. Appl. Meteor. Climatol.*, in press.

Emersic, C., **P. L. Heinselman**, D. R. MacGorman, and E. C. Bruning, 2011: Electrical activity in a hail-producing storm observed with phased-array radar. *Mon. Wea. Rev.*, in press.

LaDue, D., **P. Heinselman**, and J. Newman, 2010: Strengths and limitations of current radar systems for two stakeholder groups in the southern plains. *Bull. Amer. Meteor. Soc.*, **91**, 899 – 910.

Bodine, D., **P. L. Heinselman**, B. L. Cheong, R. D. Palmer, D. Michaud, 2010: A case study on the impact of moisture variability on convection initiation using radar refractivity retrievals. *J. Climate Appl. Meteor.*, **49**, 1766–1778.

- Heinselman, P. L.**, B. L. Cheong, R. D. Palmer, D. Bodine, and K. Hondl, 2009: Radar refractivity retrievals from KTLX: Insights into operational benefits and limitations. *Wea. Forecasting*, 1345–1361.
- Heinselman, P. L.**, D. J. Stensrud, R. M. Hluchan, P. L. Spencer, P. C. Burke, and K. L. Elmore, 2009: Radar reflectivity-based estimates of mixed-layer depth. *J. Atmos. Oceanic Technol.*, **26**, 229–239.
- Weadon, M., **P. Heinselman**, D. Forsyth, W. E. Benner, G. S. Torok, and J. Kimpel, 2009: Meeting Summary: Multifunction phased array radar. *Bull. Amer. Meteor. Soc.*, **90**, 385–389.
- Heinselman, P. L.**, D. L. Priegnitz, K. L. Manross, T. M. Smith, and R. W. Adams, 2008: Rapid sampling of severe storms by the National Weather Radar Testbed Phased Array Radar. *Wea. Forecasting*, **23**, 808–824.
- Heinselman, P. L.**, and A. Ryzhkov, 2006: Validation of Polarimetric Hail Detection. *Wea. Forecasting*, **21**, 839–850.
- Heinselman, P. L.**, and D. M. Schultz, 2006: Intraseasonal variability of summer storms over central Arizona during 1997 and 1999. *Wea. Forecasting*, **21**, 559–578.
- Ryzhkov, A., T. Schuur, D. Burgess, **P. Heinselman**, S. Giangrande, and D. Zrnica, 2005: The Joint Polarization Experiment: Polarimetric rainfall measurements and hydrometeor classification. *Bull. Amer. Meteor. Soc.*, **86**, 809–824.
- MacKeen, P. L.**, H. E. Brooks, and K. L. Elmore, 1999: Radar reflectivity-derived thunderstorm parameters applied to storm longevity forecasting. *Wea. Forecasting*, **14**, 289–295.
- Johnson, J. T., **P. L. MacKeen**, A. Witt, E. D. Mitchell, G. J. Stumpf, M. Eilts, and K. W. Thomas, 1998: The storm cell identification and tracking algorithm: An enhanced WSR-88D algorithm. *Wea. Forecasting*, **13**, 263–276.
- Maddox, R. A., D. S. Zaras, **P. L. MacKeen**, J. J. Gourley, R. Rabin, and K. W. Howard, 1998: Echo height measurements with the WSR-88D: Use of data from single versus two radars. *Wea. Forecasting*, **14**, 455–460.

## INFORMAL PUBLICATIONS

- Heinselman, P. L.**, S. M. Torres, D. LaDue, H. Lazrus, 2011: 2010 Phased-array radar innovative sensing experiment. *Extended Abstracts, 27th Interactive Information Processing Systems*, Seattle, WA, USA, Amer. Meteor. Soc., 12B.4.
- Newman, J. F., and **P. L. Heinselman**, 2011: Evolution of a quasi-linear convective system observed by phased-array radar. *Extended Abstracts, 27th Conference on*

- Interactive Information Processing Systems*, Seattle, WA, USA, Amer. Meteor. Soc., 13B.5.
- Newman, J. F., V. Lakshmanan, **P. L. Heinselman**, T. M. Smith, 2011: Range correction for radar-derived azimuthal shear: applications to a tornado detection algorithm. *Extended Abstracts, 27th Conference on Interactive Information Processing Systems (IIPS)*, Seattle, WA, USA, AMS, 8B.4.
- Smith, A. J., P. B. Chilson, **P. L. Heinselman**, 2011: Using the NWRT PAR to evaluate temporal sampling during two rapidly evolving tornado events. Preprints, *27th Interactive Information Processing Systems*, Seattle, WA, USA, Amer. Meteor. Soc., 13B.4.
- Bodine, D., R. D. Palmer, C. Ziegler, **P. L. Heinselman**, 2010: High-resolution radar analysis during tornadogenesis from OU-PRIME on 10 May 2010. *Extended Abstracts, 25th Conference on Severe Local Storms*, Denver, CO, USA, Amer. Meteor. Soc., 15.4.
- Heinselman, P. L.**, and S. M. Torres, 2010: Exploiting NWRT PAR capabilities to improve temporal data resolution. Preprints, *26<sup>th</sup> Conf. Interactive Information Processing Systems for Meteorology, Oceanography, and Hydrology*, Atlanta, GA, Amer. Meteor. Soc., 15B.2.
- Hluchan, R., **P. L. Heinselman**, R. A. Brown, 2010: Evolution of a tornadic supercell and its environment sampled by the NWRT Phased array radar and Oklahoma City Micronet. *Extended Abstracts, 25th Conference on Severe Local Storms*, Denver, CO, USA, Amer. Meteor. Soc., 15.2.
- Michaud, D. S., R. D. Palmer, D. Bodine, **P. L. Heinselman**, B. L. Cheong, 2010: Updates on radar refractivity retrieval – Quality control improvements and 2009 field experiment to determine causes of bias. Preprints, *26th Conf. Interactive Information Processing Systems for Meteorology, Oceanography, and Hydrology*, Atlanta, GA, USA, Amer. Meteor. Soc., 11B.5.
- Smith, A., **P. L. Heinselman**, P. Chilson, 2010: Evaluation of rapid sampling rates using the National Weather Radar Testbed Phased-Array Radar. *Extended Abstracts, Sixth European Conference on Radar Meteorology and Hydrology*, Sibiu, Romania, National Meteorological Administration of Romania, 226–231.
- Torres, S. M., P. Heinselman, 2010: Multifunction phased-array radar for weather surveillance. Preprints, *6th European Conf. on Radar in Meteorology and Hydrology: Adv. in Radar Technology*, Sibiu, Romania, National Meteorological Administration, Romania, 52–58.

- Bodine, D., **P. L. Heinselman**, B. L. Cheong, R. D. Palmer, and D. S. Michaud, 2009: Radar refractivity applications for convective initiation forecasting and observations of the convective boundary layer. Preprints, *25<sup>th</sup> Conf. Inter. Interactive Information and Processing Systems (IIPS) for Meteorology, Oceanography, and Hydrology*, Phoenix, AZ, Amer. Meteor. Soc., 14.6.
- Michaud, D. S., R. D. Palmer, D. Bodine, **P. L. Heinselman**, B. L. Cheong, and P. B. Chilson, 2010: Updates on radar refractivity retrieval – Quality control improvements and 2009 field experiment to determine causes of bias. Preprints, *26<sup>th</sup> Conf. Interactive Information Processing Systems for Meteorology, Oceanography, and Hydrology*, Atlanta, GA, Amer. Meteor. Soc., Atlanta, GA, Amer. Meteor. Soc., 11B.5.
- Heinselman, P. L.**, 2009: Spring 2008 phased array radar experiment. Preprints, *25<sup>th</sup> Conf. Inter. Interactive Information and Processing Systems (IIPS) for Meteorology, Oceanography, and Hydrology*, Phoenix, AZ, Amer. Meteor. Soc., 9B.5.
- Heinselman, P. L.**, T. M. Smith, K. L. Ortega, and K. Manross, 2009: Radar sampling of low-altitude circulations by phased array radar. Preprints, *25<sup>th</sup> Conf. Inter. Interactive Information and Processing Systems (IIPS) for Meteorology*, Phoenix, AZ, Amer. Meteor. Soc., 9B.4.
- Heinselman, P. L.**, S. Torres, R. Adams, C. D. Curtis, E. Forren, I. R. Ivic, D. Priegnitz, J. Thompson, and D. A. Warde, 2009: Phased array radar innovative sensing experiment. Preprints, *34<sup>th</sup> Conf. Radar Meteor.*, Williamsburg, VA, Amer. Meteor. Soc., P6.5A.
- Bodine, D., R. D. Palmer, B. L. Cheong, P. L. Heinselman, D. S. Michaud, and G. Zhang, 2009: Can high-resolution surface moisture fields be retrieved in supercells? Preprints, *34<sup>th</sup> Conf. Radar Meteor.*, Williamsburg, VA, Amer. Meteor. Soc., P6.3.
- Hluchan, R. and **P. L. Heinselman**, 2009: Evolution of a tornadic supercell and its environment sampled by the Phased Array Radar and Oklahoma City Micronet. Preprints, *34<sup>th</sup> Conf. Radar Meteor.*, Williamsburg, VA, Amer. Meteor. Soc., P6.5
- Michaud, D., R. Palmer, D. Bodine, **P. Heinselman**, and B. Cheong, 2009: A new clutter censoring technique – Updates on radar refractivity retrieval. Preprints, *34<sup>th</sup> Conf. Radar Meteor.*, Williamsburg, VA, Amer. Meteor. Soc., P10.21.
- Newman, J. F., D. S. LaDue, and **P. L. Heinselman**, 2009: Identifying critical strengths and limitations of current radar systems. Preprints, *25<sup>th</sup> Conf. Inter. Interactive Information and Processing Systems (IIPS) for Meteorology, Oceanography, and Hydrology*, Phoenix, AZ, 11B.4.

- Priegnitz, D., **P. L. Heinselman**, S. M. Torres, and R. Adams, 2009: Improvements to the National Weather Radar Testbed Radar Control Interface. Preprints, *34<sup>th</sup> Conf. Radar Meteor.*, Williamsburg, VA, Amer. Meteor. Soc., P10.10.
- Smith, A. J., **P. L. Heinselman**, and P. B. Chilson, 2009: The impact of closely spaced elevation scans on observations obtained using the NWRT Phased Array Radar. Preprints, *34<sup>th</sup> Conf. Radar Meteor.*, Williamsburg, VA, Amer. Meteor. Soc., P10.7.
- Heinselman, P. L.**, D. L. Priegnitz, K. L. Manross, R. Adams, 2007: Comparison of storm evolution characteristics: The NWRT and WSR-88D. Preprints, *33<sup>rd</sup> Conference on Radar Meteorology*. Cairns, Australia, Amer. Meteor. Soc., CD-ROM, 5.4.
- Heinselman, P. L.**, D. Priegnitz, T. Smith, D. Andra, R. Palmer, and M. Biggerstaff, 2007: Spring 2007 National Weather Radar Testbed Demonstration. Preprints, *33<sup>rd</sup> Conference on Radar Meteorology*. Cairns, Australia, Amer. Meteor. Soc., CD-ROM, 5.7.
- Cheong, B. L., R. D. Palmer, C. Curtis, K. Hondl, **P. Heinselman**, D. Zrnice, D. Forsyth, R. Murnan, R. Reed, and R. Vogt, 2007: Real-time implementation of refractivity retrievals: Partnership between the University of Oklahoma, National Severe Storms Laboratory, and Radar Operations Center. Preprints, *33rd Conference on Radar Meteorology*, Cairns, Australia, Amer. Meteor. Soc., CD-ROM, P8B.8.
- Smith, T.M., **P.L. Heinselman**, and D. Priegnitz, 2007: Characteristics of microburst events observed with the phased array radar. Preprints, *23<sup>rd</sup> Conference on Interactive Information Processing Systems*, San Antonio, TX, USA, Amer. Meteor. Soc., CD-ROM, 7.8.
- Heinselman, P. L.**, D. L. Priegnitz, K. L. Manross, R. Adams, 2006: Comparison of storm evolution characteristics: The NWRT and WSR-88D. Preprints, *23rd Conference on Severe Local Storms*, St. Louis, MO, USA, AMS, CD-ROM, 14.1.
- Fredrickson, S. E., **P. L. Heinselman**, W. J. Gonzalez-Espada, and D. Zaras, 2006: Relative Humidity: What do students know about it? Preprints, *15<sup>th</sup> Education Symposium*, Atlanta, GA, Amer. Meteor. Soc., CD-ROM, 3.9.
- Heinselman, P. L.**, and A. Rowe, 2005: Estimating hail size using polarimetric radar. Preprints, *32<sup>nd</sup> Conference on Radar Meteorology*, Albuquerque, NM, Amer. Meteor. Soc., CD-ROM, P9R.16 .
- Heinselman, P. L.**, and A. V. Ryzhkov, 2004: Hail detection during JPOLE. Preprints, *22nd Conference on Severe Local Storms*, Hyannis, MA, Amer. Meteor. Soc., CD-ROM, J1.3.

Scharfenberg, K. A., D. J. Miller, **P. Heinselman**, D. L. Andra, Jr., and M. P. Foster, 2004: Highlights from the Joint Polarization Experiment operational demonstration. Preprints, *20th Conference on Weather Analysis and Forecasting*, Seattle, WA, Amer. Meteor. Soc., CD-ROM, 10.2.

Schuur, T. J., A. V. Ryzhkov, **P. L. Heinselman**, D. W. Burgess, and K. A. Scharfenberg, 2004: The Joint Polarization Experiment: A summary of dual-polarization WSR-88D radar data collection and analysis. *20th International Conference on Interactive Information Processing Systems (IIPS)*, Seattle, WA, Amer. Meteor. Soc., CD-ROM, 12.1.

**MacKeen, P. L.**, K. W. Howard, and D. M. Schultz, 2001: Initiation and evolution of summertime storms in central Arizona. Preprints, *30th International Conference on Radar Meteorology*, Munich, Germany, Amer. Meteor. Soc., 676–678.

**MacKeen, P. L.**, and J. Zhang, 2000: Convective climatology for central Arizona during 1999 monsoon. Postprints, *The 2nd Southwest Weather Symposium*, Tucson, AZ, NWS/COMET and Univ. of Arizona, 64–67. [Available from P. Heinselman, NSSL, 120 David L. Boren Blvd, Norman, OK 73072.]

**MacKeen, P. L.**, Andra, D., and D. Morris, 1998: The 22–23 May 1996 heatburst: A severe wind event. Preprints, *19th Conference on Severe Local Storms*, Minneapolis, MN, Amer. Meteor. Soc., 510–513.

**MacKeen, P. L.**, Brooks, H. E., and K. L. Elmore, 1997: The merit of severe and non-severe thunderstorm parameters in forecasts of thunderstorm longevity. Preprints, *28th Conference on Radar Meteorology*, Austin, TX, Amer. Meteor. Soc., 424–425.

Zaras, D. S., Rabin, R. M., Maddox, R. A., and **P. L. MacKeen**, 1998: Integration of GOES-8/9 and multiple WSR-88D for monitoring long-lived severe convective storms. Preprints, *2nd Symposium on Integrated Observing Systems (IOS)*, Phoenix, AR, Amer. Meteor. Soc., 16–19.

## TECHNICAL REPORTS

**Heinselman, P. L.**, B. L. Cheong, R. D. Palmer, D. Bodine, and K. Hondl, 2008: *Radar refractivity retrievals from KTLX: Insights into operational benefits and limitations*, Report of the National Severe Storms Laboratory, Norman, OK, 73072, 32 pp.

**Heinselman, P. L.**, B. L. Cheong, R. D. Palmer, D. Bodine, and K. Hondl, 2007: *Real-time implementation of refractivity retrievals at the Norman Weather Forecast Office*, Report of the National Severe Storms Laboratory, Norman, OK, 73072, 23 pp.

Schuur, T. J., A. Ryzhkov, **P. Heinselman**, D. Zrnić, D. Burgess, and K. Scharfenberg, 2003a: *Observation and classification of echoes with polarimetric WSR-88D radar*. Report of the National Severe Storms Laboratory, Norman, OK, 73072, 46 pp.

Schuur, T. J, **P. Heinselman**, K. Scharfenberg, A. Ryzhkov, D. Zrnić, V. Melnikov, and J. Krause, 2003b: *Overview of the Joint Polarization Experiment (JPOLE)*. Report of the National Severe Storms Laboratory, Norman, OK, 73072, 39 pp.

### **GRADUATE ADVISING**

D. Bodine, M.S. Meteorology, 2009

### **UNDERGRADUATE ADVISING**

Mentor for NOAA Hollings Scholars Summer 2007 and 2008

Mentor and Workshop Contributor for NWC Research Experience for Undergraduates (REU) Program, University of Oklahoma Summer 1999, 2004, 2005, 2008

Advisor of Senior Capstone Students, University of Oklahoma 2005 – 2006 and 2007 – 2008

Lecturer for METR 1014: Weather and Climate, University of Oklahoma Fall 2005

### **EXTERNALLY FUNDED RESEARCH**

R. Palmer, M. Xue, T.-Y. Yu, J. Brotzge, S. Torres, **P. Heinselman**, R. Doviak, D. Zrnić, 4/1/08 – 3/31/11: Radar-Derived Refractivity and Its Impact on Model Analysis and Forecasting Using Advanced Data Assimilation Methods, *National Science Foundation*, \$709,621.

**P. Heinselman** and C. Emersic, 7/15/08 – 7/14/10: High-Temporal Resolution Analysis of Electrical Activity in a Severe Hailstorm Scanned Using Phased Array Radar, *National Science Foundation*, \$56,783.

### **WORKSHOPS AWARDED FUNDING TO ATTEND**

2009 NOAA Leadership Seminar  
2006 Weather and Society Integrated Studies, National Center for Atmospheric Research  
2006 American Meteorological Society (AMS) Science Policy Colloquium, AMS.2006  
2003 Preparing for an Academic Career in the Geosciences: A Workshop for Graduate Students and Post-doctoral Fellows, Stanford University.

### **PROFESSIONAL AFFILIATIONS**

- American Meteorological Society
- National Weather Association
- Sigma Xi

### **PERSONAL**

Citizenship: United States of America