

## COREY K. POTVIN

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### PRESENT POSITION

Research Scientist at the Cooperative Institute for Mesoscale Meteorological Studies (CIMMS) and NOAA/OAR/National Severe Storms Laboratory (NSSL) since October 2012. Specializing in convective-scale analysis, prediction, and ensemble data assimilation.

### EDUCATION

**Ph.D., Meteorology** (advisor: Dr. Alan Shapiro)  
*University of Oklahoma (OU), Aug 2010*

**M.S., Meteorology** (advisor: Dr. Alan Shapiro)  
*University of Oklahoma (OU), Aug 2006*

**B.S., Meteorology; B.A., Mathematics; A.S., Computer Science;** Minor, Physics  
*Lyndon State College (LSC), May 2004*

### POSITIONS HELD

*Sept 2014 – present* Adjunct Assistant Professor, School of Meteorology, OU  
*Oct 2012 – present* Research Scientist, CIMMS/NSSL  
*Oct 2010 – Sept 2012* National Research Council Postdoctoral Research Associate, NSSL  
*Aug 2010 – Oct 2010* Postdoctoral Research Associate, CIMMS  
*Aug 2004 – Aug 2010* Graduate Research Assistant, OU

### REFEREED PUBLICATIONS

**Potvin, C. K.**, E. M. Murillo, M. L. Flora, and D. M. Wheatley, 2017: Sensitivity of supercell simulations to initial-condition resolution. *J. Atmos. Sci.*, **74**, 5-26.  
DiGangi, E. A., D. R. MacGorman, C. L. Ziegler, D. Betten, M. Biggerstaff, M. Bowlan, and **C. K. Potvin**, 2017: An overview of the 29 May 2012 Kingfisher supercell during DC3: Observations of the 29 May 2012 DC3 case. *J. Geo. Res.*, **121**, 14316-14343.  
McGovern, A., **C. K. Potvin**, and R. A. Brown, 2017: Using large-scale machine learning to improve our understanding of the formation of tornadoes. CRC Press, in press.  
**Potvin, C. K.**, and M. L. Flora, 2015: Sensitivity of idealized supercell simulations to horizontal grid spacing: Implications for Warn-On-Forecast. *Mon. Wea. Rev.*, **143**, 2998-3024.  
Thompson, T. E., L. J. Wicker, X. Wang, and **C. K. Potvin**, 2015: A comparison between the local ensemble transform Kalman filter and the ensemble square root filter for the assimilation of radar data in convective-scale models. *Quart. J. Roy. Meteor. Soc.*, **141**, 1163-1176.

- Skinner, P. S., C. C. Weiss, L. J. Wicker, **C. K. Potvin**, and D. C. Dowell, 2015: Forcing mechanisms for an internal rear-flank downdraft momentum surge in the 18 May 2010 Dumas, Texas supercell. *Mon. Wea. Rev.*, **143**, 4305-4330.
- Shapiro, A., S. Rahimi, **C. K. Potvin**, and L. Orf, 2015: On the use of advection correction in trajectory calculations. *J. Atmos. Sci.*, **72**, 4261-4280.
- Potvin, C. K.**, and L. J. Wicker, 2013: Correcting fast-mode pressure errors in storm-scale ensemble Kalman filter analyses. *Advances in Meteorology*, **2013**, 1-14.
- Potvin, C. K.**, 2013: A variational method for detecting and characterizing intense vortices in Cartesian wind fields. *Mon. Wea. Rev.*, **141**, 3102-3115.
- Potvin, C. K.**, and L. J. Wicker, 2013: Assessing ensemble forecasts of low-level supercell rotation within an OSSE framework. *Wea. and Forecasting*, **28**, 940-960.
- Potvin, C. K.**, L. J. Wicker, D. Betten, M. I. Biggerstaff, and A. Shapiro, 2013: Comparison between dual-Doppler and EnKF storm-scale wind analyses: The 29-30 May 2004 Geary, Oklahoma, supercell thunderstorm. *Mon. Wea. Rev.*, **141**, 1612-1628.
- Lakshmanan, V., K. Hondl, **C. K. Potvin**, and D. Preignitz, 2013: An improved method to compute radar echo top heights. *Wea. and Forecasting*, **28**, 481-488.
- Stensrud, D. J., L. J. Wicker, M. Xue, D. T. Dawson II, N. Yussouf, D. M. Wheatley, T. E. Thompson, N. A. Snook, T. M. Smith, A. D. Schenkman, **C. K. Potvin**, E. R. Mansell, T. Lei, K. M. Kuhlman, Y. Jung, T. A. Jones, J. Gao, M. C. Coniglio, H. E. Brooks, and K. A. Brewster, 2013: Progress and challenges with Warn-on-Forecast. *Atmos. Res.*, **123**, 2-16.
- Potvin, C. K.**, and L. J. Wicker, 2012: Comparison between dual-Doppler and EnKF storm-scale wind analyses: Observing system simulation experiments with a supercell thunderstorm. *Mon. Wea. Rev.*, **140**, 3972-3991.
- Potvin, C. K.**, D. Betten, L. J. Wicker, K. L. Elmore, and M. I. Biggerstaff, 2012: 3DVAR vs. traditional dual-Doppler wind retrievals of a simulated supercell thunderstorm. *Mon. Wea. Rev.*, **140**, 3487-3494.
- Potvin, C. K.**, L. J. Wicker, and A. Shapiro, 2012: Assessing errors in variational dual-Doppler wind syntheses of supercell thunderstorms observed by storm-scale mobile radars. *J. Atmos. Oceanic Technol.*, **29**, 1009-1025.
- Potvin, C. K.**, A. Shapiro, and M. Xue, 2012: Impact of a vertical vorticity constraint in variational dual-Doppler wind analysis: Tests with real and simulated supercell data. *J. Atmos. Oceanic Technol.*, **29**, 32-49.
- Potvin, C. K.**, A. Shapiro, M. I. Biggerstaff, and Joshua M. Wurman, 2011: The VDAC technique: A variational method for detecting and characterizing convective vortices in multiple-Doppler radar data. *Mon. Wea. Rev.*, **139**, 2593-2613.
- Shapiro, A., K. M. Willingham, and **C. K. Potvin**, 2010: Spatially variable advection correction of radar data. Part I: Theoretical considerations. *J. Atmos. Sci.*, **67**, 3445-3456.
- Shapiro, A., K. M. Willingham, and **C. K. Potvin**, 2010: Spatially variable advection correction of radar data. Part II: Test results. *J. Atmos. Sci.*, **67**, 3457-3470.
- Potvin, C. K.**, K. L. Elmore, and S. J. Weiss, 2010: Assessing the impacts of proximity sounding criteria on the climatology of significant tornado environments. *Wea. Forecasting.*, **25**, 921-930.
- Shapiro, A., **C. K. Potvin**, and J. Gao, 2009: Use of a vertical vorticity equation in variational dual-Doppler wind analysis. *J. Atmos. Oceanic Technol.*, **26**, 2089-2106.

**Potvin, C. K.**, A. Shapiro, T.-Y. Yu, J. Gao, and M. Xue, 2009: Using a low-order model to detect and characterize tornadoes in multiple-Doppler radar data. *Mon. Wea. Rev.*, **137**, 1230-1249.

### **SELECTED AWARDS AND HONORS**

2014 Presidential Early Career Award for Scientists and Engineers (PECASE)

National Research Council Postdoctoral Fellowship (2010-2012)

OU School of Meteorology Outstanding Performance as a Graduate Student Award (2010)

OU College of Atmospheric and Geographic Sciences David James Shellberg Memorial Scholarship (2010)

American Meteorological Society Industry/Government Graduate Fellowship (2004-2005)

LSC Department of Meteorology Gil Ford Award for outstanding scholarship, leadership, personal integrity, professional potential and community service (2004)

### **SELECTED PROFESSIONAL SERVICE**

VORTEX-SE Scientific Steering Committee (2016-present)

Severe Local Storms Conference Program Committee (2016)

Associate Editor, *Wea. and Forecasting* (2016-present)

AMS Severe Local Storms Committee (2015-present)

National Weather Center (NWC) Research Experiences for Undergraduates (REU) Selection Committee (2014-present)

Provide multiple-Doppler wind retrieval code and training to researchers (2013-present)

Organized NWC volunteer groups for Habitat for Humanity (2013-2015)

Provided training for NOAA Storm Prediction Center forecasters (2015)

Coordinated NSSL 10-year science strategic plan contributions (2014)

Participant, NOAA Hazardous Weather Testbed Spring Experiments (2011-2013, 2016)

Mobile radar scout vehicle driver, VORTEX-2 (field experiment, 2010)

Graduate Student Representative, AMS Board on Outreach and Pre-College Education (2006-10)

AMS Louis J. Battan Author's Award Committee (2007-10)

Graduate Student Representative, AMS Severe Local Storms Committee (2009)

Ph.D. Student Representative, OU School of Meteorology Student Affairs Committee (2008-09)

President, Collaborative Adaptive Sensing of the Atmosphere (CASA) OU Student Leadership Council (2008-09); Social Activities Director and Treasurer (2006-07); Member (2005-10)

OU School of Meteorology Visiting Student Weekend Council (2005-2009)

Chair, 29<sup>th</sup> Northeastern Storm Conference (> 300 attendees), Saratoga Springs, NY (2003-04)

## **SELECTED RESEARCH GRANTS**

Alan Shapiro (PI) and Corey Potvin (Co-PI), “Improving vertical velocity retrievals from Doppler radar observations of convection”. \$599,408, 1/1/2017 – 12/31/2019.

## **FORMAL SUPERVISION**

Graduate Research Advisor, Montgomery Flora, M.S., 2015-present.

Supervisor, Derek Stratman, NRC postdoc, 2016-present.

Co-supervisor, Nathan Dahl, postdoc, 2017-present.

REU Mentor, Montgomery Flora, 2014; Elisa Murillo, 2015.

Graduate Committee, Stefan Rahimi, M.S., graduated 2014; Thea Sandmael, M.S., 2016-present.