

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

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|------------------------------|-----------------------------|----------|
| Ph.D. Meteorology | University of Oklahoma | Aug 2010 |
| M.S. Meteorology | University of Oklahoma (OU) | Aug 2006 |
| B.S. Meteorology | Lyndon State College | May 2004 |
| B.A. Mathematics | Lyndon State College | May 2004 |
| A.S. Computer Science | Lyndon State College (LSC) | May 2004 |

POSITIONS HELD

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|----------------------|---|
| Sept 2014 – present | Adjunct Assistant Professor, OU School of Meteorology |
| 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 School of Meteorology |

REFEREED PUBLICATIONS (25)

* = co-author is a student or postdoc that I mentored during the work

- 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.
- McGovern, A., C. K. Potvin, and R. A. Brown, 2017: Using large-scale machine learning to improve our understanding of the formation of tornadoes. *Large-scale Machine Learning in the Earth Sciences*, A. N. Srivastava, R. Nemani, K. Steinhäuser, Eds., CRC Press, 95–112.
- North, K. W.*, M. Oue, P. Kollias, S. E. Giangrande, S. M. Collis, and C. K. Potvin, 2017: Vertical air motion retrievals in deep convective clouds using the ARM scanning radar network in Oklahoma during MC3E. *Atmos. Meas. Tech.*, **10**, 2785-2806.
- Dokken, D., P. Belik, C. K. Potvin, K. Scholz, and M. Shvartsman, 2017: Applications of vortex gas models to tornadogenesis and maintenance. *Open Journal of Fluid Dynamics*, **7**, 596-622.
- DiGangi, E. A.*, D. R. MacGorman, C. L. Ziegler, D. Betten*, M. Biggerstaff, M. Bowlan, and C. K. Potvin, 2016: 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.

- 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.**, 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, 2013a: Correcting fast-mode pressure errors in storm-scale ensemble Kalman filter analyses. *Advances in Meteorology*, **2013**, 1-14.
- Potvin, C. K.**, and L. J. Wicker, 2013b: 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, 2012a: 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, 2012b: 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, 2012c: 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.

MANUSCRIPTS IN PREPARATION

*** = co-author is a student or postdoc that I mentored during the work**

- Potvin, C. K.**, C. Broyles, P. S. Skinner, and H. E. Brooks: Modeling and correcting reporting biases in the SPC tornado database. *In preparation for 2017 submission to Wea. and Forecasting (internal review).*
- Flora, M. L.*, **C. K. Potvin**, and L. J. Wicker: Supercell predictability: Exploring ensemble forecast sensitivity to initial condition spread. *In preparation for 2017 submission to an AMS journal.*
- Stratman, D.*, **C. K. Potvin**, and L. J. Wicker: Correcting storm displacement errors in ensembles using the Feature Alignment Technique (FAT). *In preparation for 2017 submission to an AMS journal.*
- Weinhoff, Z. B.*, H. B. Bluestein, L. J. Wicker, J. C. Snyder, A. Shapiro, **C. K. Potvin**, J. B. Houser, and D. W. Reif: Applications of a spatially variable advection correction technique for temporal correction of dual-Doppler analyses of tornadic supercells. *In preparation for 2017 submission to an AMS journal.*

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)
Coordinated NSSL 10-year science strategic plan contributions (2014)
Participant, NOAA Hazardous Weather Testbed Spring Experiments (2011-2013, 2016-2017)
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)
President, Collaborative Adaptive Sensing of the Atmosphere (CASA) OU Student Leadership Council (2008-09); Social Activities Director and Treasurer (2006-07); Member (2005-10)
Chair, 29th Northeastern Storm Conference (> 300 attendees), Saratoga Springs, NY (2003-04)

SELECTED RESEARCH GRANTS

Co-PI, "Improving vertical velocity retrievals from Doppler radar observations of convection"; PI: Alan Shapiro; \$599K; 1/1/2017 – 12/31/2019.

Co-PI, "Evaluating scale-aware stochastic PBL schemes in the Southeast"; PI: David Turner; \$780K; 10/1/2017 – 9/30/2019.

FORMAL SUPERVISION

Ph.D. Research Advisor, Montgomery Flora, May 2017 - present

Chair, M.S. Committee, Montgomery Flora, graduated May 2017

NRC Postdoctoral Supervisor, Derek Stratman, 2016-2017

Postdoctoral Co-supervisor, Nathan Dahl, 2017-present

REU Mentor, Elisa Murillo, 2015

REU Mentor, Montgomery Flora, 2014

Graduate Committee member, Thea Sandmael, M.S., defended Nov 2017

Graduate Committee member, Stefan Rahimi, M.S., graduated Dec 2014