

CHRISTOPHER J. NOWOTARSKI

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Professional Appointments

- 2014-Present Assistant Professor, Department of Atmospheric Sciences,
Texas A&M University, College Station, Texas.
- 2013 Postdoctoral Scholar, Department of Meteorology,
Pennsylvania State University, University Park, Pennsylvania.

Education

- Ph.D. in Meteorology, Pennsylvania State University, 2013.
(Thesis: "Simulating Supercell Thunderstorms in a Convective Boundary Layer: Effects on Storm and Boundary Layer Properties")
- M.S. in Meteorology, Pennsylvania State University, 2010.
(Thesis: "The Characteristics of Numerically Simulated Supercell Storms Situated over Statically Stable Boundary Layers")
- B.S. in Meteorology (high distinction with honors), Pennsylvania State University, 2009.
(Honors Thesis: "The Effects of Varying Low-level, Environmental Stability on Low-level Rotation in Numerical Simulations of Elevated Supercells")

Research and Teaching Experience

- Graduate Research Assistant, Department of Meteorology, Pennsylvania State University;
5/2009-8/2013
- Graduate Lecturer, Department of Meteorology, Pennsylvania State University; 1/2011-5/2011
- Visitor, National Center for Atmospheric Research, Boulder, Colorado; 7/2010
- Mobile Mesonet Research Assistant, Second Verification of the Origins of Rotation in Tornadoes Experiment (VORTEX2); 5/2009-6/2009, 5/2010-6/2010

Undergraduate Research Assistant, Department of Meteorology, Pennsylvania State University;
5/2008-5/2009

Refereed Publications

* Denotes graduate student mentee

Nowotarski, C. J., and E. A. Jones,** 2018: Multivariate self-organizing map approach to classifying supercell tornado environments using near-storm, low-level wind and thermodynamic profiles. *Wea. Forecasting*. In press.

Guarriello, F. R.,* C. J. Nowotarski, and C. Epifanio, 2018: The effects of low-level wind shear orientation, depth, and magnitude on low-level rotation in simulated supercell thunderstorms. *J. Atmos. Sci.*, **75**, 731-753.

Nowotarski, C. J. and P. M. Markowski, 2016: Modifications to the near-storm environment induced by simulated supercell thunderstorms. *Mon. Wea. Rev.*, **144**, 273-293.

Nowotarski, C. J., P. M. Markowski, Y. P. Richardson, and G. H. Bryan, 2015: Supercell low-level mesocyclones in simulations with a sheared convective boundary layer. *Mon. Wea. Rev.*, **143**, 272-297.

Nowotarski, C. J., P. M. Markowski, Y. P. Richardson, and G. H. Bryan, 2014: Properties of a simulated convective boundary layer in an idealized supercell thunderstorm environment. *Mon. Wea. Rev.*, **142**, 3955-3976.

Nowotarski, C. J., and A. A. Jensen, 2013: Classifying proximity soundings with self-organizing maps toward improving supercell and tornado forecasting. *Wea. Forecasting*, **28**, 783-801.

Nowotarski, C. J., P. M. Markowski, and Y. P. Richardson, 2011: The characteristics of numerically simulated supercell storms situated over statically stable boundary layers. *Mon. Wea. Rev.*, **139**, 3139-3162.

Publications in Preparation or Review

* Denotes graduate student mentee, **Denotes undergraduate student mentee

Benoit, M. D.,* C. J. Nowotarski, D. T. Conlee, and L. Wood, 2018: Value of a university-led, on-demand sounding program to human forecasters and numerical weather prediction in an upper-air observation hole. *J. Oper. Meteor.*, In review.

Brown, M.,* and C. J. Nowotarski, 2018: The influence of Northern Hemisphere teleconnection pattern evolution on tornado likelihood in the eastern and southeastern United States. *J. Climate*. In preparation.

Vecellio, D. J.,* C. J. Nowotarski, and O. W. Frauenfeld, 2018: Simulated short term effects of permafrost degradation on surface, boundary layer, and synoptic-scale processes. *J. Geophys. Res. Atmos.* In preparation.

Nowotarski, C. J., 2018: Evolution and dynamics of near-surface vortices in quasilinear convective systems simulated in a convective boundary layer. *Mon. Wea. Rev.*, In preparation.

Extended Abstracts

Nowotarski, C. J. and A. A. Jensen, 2014: Objective classification of supercell environments using multivariate self-organizing maps for research and forecasting. Preprints, 27th *Conference on Severe Local Storms*. Madison, Wisconsin, Amer. Meteor. Soc.

Nowotarski, C. J., P. M. Markowski, Y. P. Richardson, and G. H. Bryan, 2012: The influence of horizontal convective rolls on the morphology of low-level rotation in idealized simulations of supercell thunderstorms. Preprints, 26th *Conference on Severe Local Storms*. Nashville, Tennessee, Amer. Meteor. Soc.

Jensen, A. A. and C. J. Nowotarski, 2012: Application of a self-organizing map statistical technique to a RUC supercell proximity sounding database. Preprints, 26th *Conference on Severe Local Storms*. Nashville, Tennessee, Amer. Meteor. Soc.

Nowotarski, C. J., P. M. Markowski, Y. P. Richardson, and G. H. Bryan, 2011: Interactions between simulated supercell thunderstorms and dry boundary layer convection. Preprints, 14th *Conference on Mesoscale Processes*. Los Angeles, California, Amer. Meteor. Soc.

Nowotarski, C. J., P. M. Markowski, Y. P. Richardson, and G. H. Bryan, 2010: Simulating supercell thunderstorms in a horizontally-heterogeneous convective boundary layer. Preprints, 25th *Conference on Severe Local Storms*. Denver, Colorado, Amer. Meteor. Soc.

Nowotarski, C. J. and P. M. Markowski, 2008: The effects of varying low-level, environmental stability on low-level rotation in numerical simulations of elevated supercells. Preprints, 24th *Conference on Severe Local Storms*. Savannah, Georgia, Amer. Meteor. Soc.

Invited Talks

“Job hunting experience in mesoscale meteorology” 16th *Conference on Mesoscale Processes*, American Meteorological Society, Boston, Massachusetts; 8/2015

"Assessing boundary layer influences on supercell thunderstorms through idealized simulations,"
Department of Atmospheric Sciences, Texas A&M University, College Station, Texas;
2/2013

"Improving the realism of idealized supercell simulations: starting from the ground up," Frank
Talk, Department of Meteorology, Pennsylvania State University, University Park,
Pennsylvania; 4/2012.

"A unique collaboration: VORTEX2 students and professionals-mobile mesonet," *AMS 9th
Annual Student Conference*, Atlanta, Georgia; 1/2010.

Conference and Workshop Presentations

"Effects of resolved boundary layer turbulence on near-ground rotation in quasi-linear
convective systems (QLCSs)" *AGU 2017 Fall Meeting*, New Orleans, Louisiana;
12/2017

"Influence of boundary layer turbulence on near-ground rotation in quasi-linear convective
systems (QLCSs)" *AMS 17th Conf. on Mesoscale Processes*, San Diego, California;
7/2017

"Surface layer influences on simulated supercell thunderstorms." *AMS 28th Conf. on Severe
Local Storms*, Portland, Oregon; 11/2016

"Low-level shear in the near-storm environment of simulated supercells and impacts of shear
orientation on outflow characteristics." *AMS 16th Conf. on Mesoscale Processes*, Boston,
Massachusetts; 8/2015

"Objective classification of supercell environments using multivariate self-organizing maps for
research and forecasting." *AMS 27th Conf. on Severe Local Storms*, Madison, Wisconsin;
11/2014

"Understanding the effects of horizontal convective rolls on the organization of low-level
vorticity in simulated supercell thunderstorms," *7th European Conference on Severe
Storms*, Helsinki, Finland; 6/2013.

"The influence of horizontal convective rolls on the morphology of low-level rotation in
idealized simulations of supercell thunderstorms," *AMS 26th Conf. on Severe Local
Storms*, Nashville, Tennessee; 11/2012.

"Simulating supercell thunderstorms in a convective boundary layer," *Croatian-USA Workshop
on Mesometeorology*, Zagreb, Croatia; 6/2012.

"Interactions between simulated supercell thunderstorms and dry boundary layer convection," *AMS 14th Conf. on Mesoscale Processes*, Los Angeles, California; 8/2011.

"Simulating supercell thunderstorms in a horizontally-heterogeneous convective boundary layer," *AMS 25th Conf. on Severe Local Storms*, Denver, Colorado; 10/2010.

"The effects of varying low-level, environmental stability on low-level rotation in numerical simulations of elevated supercells," *AMS 24th Conf. on Severe Local Storms*, Savannah, Georgia; 10/2008.

Conference and Workshop Posters and Presentations by Student Mentees

** Denotes graduate student mentee, ** Denotes Undergraduate student mentee*

Brown, M.,* and C. J. Nowotarski, 2018: "Influence of AO/NAO/PNA evolution on eastern and southeastern U.S. storm environment." *31st Conf. on Climate Variability and Change*, Austin, Texas.

Jones, E. A.,** C. J. Nowotarski, 2018: "Statistical comparison and simulations of supercells in environments with varying significant tornado parameters." *AMS 17th Annual Student Conference*, Austin, Texas.

Larson, K. C.,** E. A. Smith,** C. J. Nowotarski, R. E. Orville, and J. Marshall, 2018: "Spectral analysis of intracloud lightning," *AMS 17th Annual Student Conference*, Austin, Texas.

Vecellio, D. J.,* C. J. Nowotarski, and O. W. Frauenfeld, 2017: "Simulated short term effects of permafrost degradation on surface, boundary layer, and synoptic-scale processes." *AGU 2017 Fall Meeting*, New Orleans, Louisiana.

Ford, V.,* O. W. Frauenfeld, and C. J. Nowotarski, 2017: "Determination of a critical sea ice thickness threshold for the Central Arctic Ocean." *AGU 2017 Fall meeting*, New Orleans, Louisiana.

Vecellio, D. J.,* C. J. Nowotarski, and O. W. Frauenfeld, 2017: "Response of the atmospheric boundary layer and synoptic-scale circulation to varying permafrost conditions in Eurasia using WRF." *American Association of Geographers Annual Meeting*, Boston, Massachusetts.

Brown, M.,* and C. J. Nowotarski, 2017: "Development of a predictive tool for tornadoes downwind of the Appalachian Mountains using AO and NAO indices," *Severe Local Storms Symposium*, Seattle, Washington.

Spencer, T. W.,** and C. J. Nowotarski, 2017: "Idealized simulations of supercells in environments with varying LCLs," *AMS 16th Annual Student Conference*, Seattle, Washington.

- Cassel, A. L.,** E. D. Ragan, L. Wood, C. J. Nowotarski, and D. T. Conlee, 2017: “Virtual reality for collaborative weather briefings and education,” *AMS 16th Annual Student Conference*, Seattle, Washington.
- Larson, K. C. ,** E. A. Smith,** C. J. Schwartz,** C. J. Nowotarski, and R. E. Orville, 2017: “A spectral analysis of intracloud lightning,” *AMS 16th Annual Student Conference*, Seattle, Washington.
- Milton, J.,** E. K. Boynton,** D. Grabbs Jr.,** E.A. Smith,** D. Bonnette,** D. W. Koeritzer,** and C. J. Nowotarski, 2017: “Radar analysis of the May, 26 2016 Brazos Valley Tornadoes,” *AMS 16th Annual Student Conference*, Seattle, Washington.
- Toy, B. J.,** D. W. Koeritzer,** T. W. Spencer,** C. K. Landry,** D. Grabbs Jr.,** E. K. Boynton,** and C. J. Nowotarski, 2017: “Comparison of TAMU-WRF simulated lightning detectors against the HLMA (Houston Lightning Mapping Array),” *AMS 16th Annual Student Conference*, Seattle, Washington.
- Serino, M. M.,* and C. J. Nowotarski, 2016: “Radar-detected mesocyclone tilt in tornadic and nontornadic supercells,” *AMS 28th Conf. on Severe Local Storms*, Portland, Oregon.
- Benoit, M. D.,* D. T. Conlee, and C. J. Nowotarski, 2016: “Sensitivity of high-resolution WRF forecasts to radiosonde observations over central TX,” *AMS 20th Conf. on Integrated Observing and Assimilation Systems for the Atmosphere, Ocean, and Land Surface (IOAS-AOLS)*, New Orleans, Louisiana.
- Serino, M. M.,* and C. J. Nowotarski, 2016: “Radar-detected mesocyclone tilt in tornadic and nontornadic supercells,” *AMS 15th Annual Student Conference*, New Orleans, Louisiana.
- Guarriello, F. R.,* and C. J. Nowotarski, 2016: “Effects of low-level vertical wind shear orientation on low-level rotation in simulated supercell thunderstorms,” *AMS 15th Annual Student Conference*, New Orleans, Louisiana.
- Bonnette, D. S.,** C. J. Nowotarski, and L. Wood, 2016: “Clear Lake Texas extreme rain event case study,” *AMS 15th Annual Student Conference*, New Orleans, Louisiana.
- Cassel, A. L.,** J. P. McCarthy,** and C. J. Nowotarski, 2016: “Comparison of Texas A&M WRF convection-allowing forecasts with other high-resolution models,” *AMS 15th Annual Student Conference*, New Orleans, Louisiana.
- McCarthy, J. P.,** S. Vaxter,** D. Bonnette,** D. Conlee, and C. J. Nowotarski, 2016: “Non-internet meteorological data reception for emergency and remote applications,” *AMS 15th Annual Student Conference*, New Orleans, Louisiana.

Ruano, E. F.,** C. K. Landry,** T. W. Spencer,** and C. Nowotarski, 2016: “Aerosol optical depth measurements using a handheld sun photometer,” *AMS 15th Annual Student Conference*, New Orleans, Louisiana.

Toy, B. J.,** T. W. Spencer,** C. K. Landry,** and C. Nowotarski, 2016: “Comparison of the TAMU-WRF simulated reflectivity to radar observations,” *AMS 15th Annual Student Conference*, New Orleans, Louisiana.

Grants Awarded

NSF AGS-1446342, 3/1/2015-2/28/2019, \$436,503, “The dynamical influences of low-level shear and lifting condensation level on supercell tornadoes”

Academic Courses Taught

Severe Weather and Mesoscale Forecasting (ATMO 352), Texas A&M University
Radar Meteorology (ATMO 443), Texas A&M University
Student Operational ADRAD Project (high impact learning course), Texas A&M University
Introductory Meteorology for Non-Majors (METEO 003), Pennsylvania State University

Graduate Students Supervised

Matthew Brown, M.S./PhD, in progress
Michelle Serino, M.S., 2018
Mark Benoit, M.S., 2016
Felicia Guarriello, M.S., 2016

Other Graduate Student Committees

Sophie Mayne, Ph.D., in progress
Corey Howard, M.S., in progress
John Cooney, M.S., 2016; Ph.D., in progress
Adam Brainard, M.S., 2016
Keith White, M.S., 2015

Undergraduate Students Involved with Research

Charles Sassaman, 5/2016-present
Kevin Larson, 1/2016-present

Erin Jones (REU mentee), 6/2017-8/2017
Trenton Spencer, 1/2016-5/2017
David Bonnette, 6/2015-1/2016
Christine Paschal (REU mentee), 6/2015-7/2015
Cameron Batiste, 1/2015-5/2015
Liana Haddad (REU mentee), 6/2014-8/2014

University Service

University Honor Council, 8/2017-present
Atmospheric Sciences Department Graduate Committee, 1/2014-present
College of Geoscience New Building Committee, Services Working Group, 2015
Atmospheric Sciences Department Seminar Coordinator, Spring 2015

Professional Society Membership

American Meteorological Society (AMS); 2006-present
American Geophysical Union (AGU); 2016-present

Service, Outreach, and Other Activities

Co-chair, AMS 18th Conference on Mesoscale Processes; 8/2017-present

Member, AMS Scientific and Technological Activities Commission (STAC) Committee on Mesoscale Processes; 1/2017-present

Associate Editor, *Monthly Weather Review*; 2016-present

Associate Editor, *Weather and Forecasting*; 2014-2016

Conference Session Chair

17th AMS Conference on Mesoscale Processes, San Diego, California; 7/2017

28th AMS Conference on Severe Local Storms, Portland, Oregon; 11/2016

16th AMS Conference on Mesoscale Processes, Boston, Massachusetts; 8/2015

7th European Conference on Severe Storms, Helsinki, Finland; 6/2013

Planning Committee Member, Texas Weather Conference; 2015-2017

Faculty Mentor for Texas A&M Atmospheric Sciences Summer REU program, 6/2014-present

Last updated 4/2018

Substitute Member Representative at UCAR Annual Members Meeting, Boulder, Colorado;
10/2014

Workshop for Early Career Geoscience Faculty, On the Cutting Edge, NSF (participant)
College Park, Maryland; 6/201

Hazardous Weather Testbed Experimental Forecast Program (participant)
Norman, Oklahoma; 5/2014

Graduate Advisory Committee, Department of Meteorology, Pennsylvania State University;
2010-2013 (Chair from 2011-2012)

Undergraduate Academic Programs Committee (graduate student representative), Department of
Meteorology, Pennsylvania State University; 2010-2013

Proposal Ad-hoc Reviews

NSF Physical and Dynamic Meteorology Program
NOAA Office of Weather and Air Quality
NSF Lower Atmosphere Observing Facilities

Review Panels

NSF Physical and Dynamic Meteorology Program
NSF Lower Atmosphere Observing Facilities Site Visit

Article Peer Reviews

Journal of Atmospheric Science
Journal of Geophysical Research
Monthly Weather Review
Weather and Forecasting
Electronic Journal of Severe Storms Meteorology
Journal of Operational Meteorology

Textbook Chapter Reviews

Halverson & Rabenhorst, 2016: Severe Storms and their Environmental Impacts.
Ahrens, 2016: Essentials of Meteorology, an Invitation to the Atmosphere. 8th Edition.

Educational Outreach

Texas Master Naturalist, Brazos Valley Chapter, guest instructor, 11/2017, 4/2018
GeosX Summer Program, guest instructor, 6/2015, 6/2016, 6/2017
Texas A&M Youth Adventure Program (YAP), guest instructor, 7/2014, 7/2015, 7/2016
Texas Weatherfest, presenter, 2/2016
Mitchell Institute Physics Enhancement Program (MIPEP), guest instructor; 6/2014
~20 newspaper and TV interviews on severe weather and tornadoes since 2009

Last updated 4/2018

External Consulting/Expert Witness Testimony
Hanszen & Laporte Attorneys at Law, 11/2015-1/2016

Young Professionals of Aggieland, 5/2014-present

Honors and Awards

Best Student Oral Presentation, AMS 26th Conference on Severe Local Storms; 11/2012

American Meteorological Society Industry/Governmental Graduate Fellowship; 2009-2010

Best Student Oral Presentation, AMS 24th Conference on Severe Local Storms; 10/2008

Matthew J. Wilson Honors Scholarship, Earth and Mineral Science College,
Pennsylvania State University; 2007-2009

Hosler Scholarship for Meteorology, Pennsylvania State University; 2007-2008

Kruehoeffer Scholarship for Meteorology, Pennsylvania State University; 2008-2009

President's Freshman Award, Pennsylvania State University; 5/2006

Schreyer Honors Scholar, Pennsylvania State University; 2005-2009