Colin M. Zarzycki

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Boulder, CO 80307

Project Scientist I
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UPDATED   October 10, 2018

EDUCATION   ◇ **University of Michigan**, Ann Arbor, MI, USA.
Ph.D. in Atmospheric Science, May 2014
Adviser: Dr. Christiane Jablonowski

◇ **University of Illinois**, Urbana, IL, USA.
M.S. in Environmental Engineering, August 2010
Adviser: Dr. Tami C. Bond

◇ **Cornell University**, Ithaca, NY, USA.
B.S. in Atmospheric Science, *Magna Cum Laude*, May 2008

PROF.
EXPERIENCE
◇ **Project Scientist I**, Climate & Global Dynamics, Mesoscale & Microscale Meteorology
(joint appointment), National Center for Atmospheric Research (September 2016 – present)

◇ **Advanced Study Program (ASP) Postdoctoral Fellow**, National Center for Atmospheric
Research (September 2014 – August 2016)

◇ **Postdoctoral Associate**, University of Michigan (May 2014 – August 2014)

◇ **Graduate Research Assistant**, University of Michigan (August 2010 – May 2014)

◇ **Visiting Fellow**, Isaac Newton Institute for Mathematical Sciences, University of Cambridge (August 2012 – November 2012)

◇ **Graduate Research Assistant**, University of Illinois at Urbana-Champaign (August 2008 – August 2010)

◇ **Undergraduate Research Assistant**, Hobart and William Smith Colleges (May 2007 – August 2007)

PUBLICATIONS   26. Markus Gross, [...], **Colin M. Zarzycki**, *et al.* (2018). "Physics-dynamics coupling in
weather, climate, and earth system models: challenges and recent progress," *Mon.
Wea. Rev.*, **146**, 3505–3544, doi:10.1175/MWR-D-17-0345.1.

25. Alan M. Rhoades, Paul A. Ullrich, **Colin M. Zarzycki**, Hans Johansen, Steven A. Margulis, Hugh Morrison, Zexuan Xu, William D. Collins (2018). "Sensitivity of mountain hydroclimate simulations in variable?resolution CESM to microphysics and horizontal resolution," *J. Adv. Model. Earth Syst.*, **10**, 1357–1380, doi:10.1029/2018MS001326.

24. Peter H. Lauritzen, [...], **Colin M. Zarzycki**, *et al.* (2018). "NCAR release of CAM-SE
in CESM2.0: A reformulation of the Spectral-Element dynamical core in dry-mass
vertical coordinates with comprehensive treatment of condensates and energy," *J.
Adv. Model. Earth Syst.*, **10**, 1537–1570, doi:10.1029/2017MS001257.

23. Andrew Gettelman, Patrick Callaghan, Vince E. Larson, **Colin M. Zarzycki**, Julio
Bacmeister, Peter H. Lauritzen, Peter Bogenschutz, Richard Neale (2018). "Regional
climate simulations with the Community Earth System Model," *J. Adv. Model. Earth
Syst.*, **10**, 1245–1265, doi:10.1002/2017MS001227.

22. Justin Small, Rym Msadek, Young-Oh Kwon, James Booth, **Colin M. Zarzycki** (2018). "Atmosphere surface storm track response to resolved ocean mesoscale in two sets of global climate model experiments," *Clim. Dyn*, 1–23, doi:10.1007/s00382-018-4237-9.

21. Fei He, Derek J. Posselt, Naveen N. Narisetty, **Colin M. Zarzycki**, Vijay Nair (2018). "Application of multivariate sensitivity analysis techniques to AGCM-simulated tropical cyclones." *Mon. Wea. Rev*, **146**, 2065–2088, doi:10.1175/MWR-D-17-0265.1.

20. Alan M. Rhoades, Paul A. Ullrich, **Colin M. Zarzycki** (2018). "Projecting 21st century snowpack trends in western USA mountains using variable-resolution CESM." *Clim. Dyn.*, **50**(1–2), 261–288, doi:10.1007/s00382-017-3606-0.

19. **Colin M. Zarzycki**, Paul A. Ullrich (2017). "Assessing sensitivities in algorithmic detection of tropical cyclones in climate data," *Geophys. Res. Lett.*, **44**(2), 1141–1149, doi:10.1002/2016GL071606

18. **Colin M. Zarzycki**, Diana R. Thatcher, Christiane Jablonowski (2017). "Objective tropical cyclone extratropical transition detection in high-resolution reanalysis and climate model data," *J. Adv. Model. Earth Syst.*, **9**(1), doi:10.1002/2016MS000775.

17. Elizabeth A. Burakowski, Andrew Ouimette, Ahmed Tawfik, Lucie Lepine, Kimberly Novick, Scott Ollinger, **Colin M. Zarzycki**, Gordon Bonan (2017). "The role of surface roughness, albedo, and Bowen ratio on ecosystem energy balance in the Eastern United States," *Agr. Forest Meteorol*, doi:10.1016/j.agrformet.2017.11.030.

16. Paul A. Ullrich, [...], **Colin M. Zarzycki**, *et al* (2017). "DCMIP2016: A Review of Nonhydrostatic Dynamical Core Design and Intercomparison of Participating Models," *Geosci. Model Dev.*, doi:10.5194/gmd-2017-108.

15. Chenglai Wu, Xiaohong Liu, Alan M. Rhoades, Paul A. Ullrich, **Colin M. Zarzycki**, Zheng Lu, Stefan R. Rahimi-Esfarjani (2017). "Exploring a variable-resolution approach for simulating regional climate in the Rocky Mountain region using the VR-CESM," *J. Adv. Model. Earth Syst.*, doi:10.1002/2017JD027008.

14. Paul A. Ullrich, **Colin M. Zarzycki** (2017). "TempestExtremes: A framework for scale-insensitive pointwise feature tracking on unstructured grids," *Geosci. Model Dev.*, **10**, 1069–1090, doi:10.5194/gmd-10-1069-2017.

13. **Colin M. Zarzycki** (2016). "Tropical cyclone intensity errors associated with lack of two-way ocean coupling in high-resolution global simulations," *J. Clim.*, **29**(23), 8589–8610, doi:10.1175/JCLI-D-16-0273.1.

12. **Colin M. Zarzycki**, Kevin A. Reed, Julio T. Bacmeister, Anthony P. Craig, Susan C. Bates, Nan A. Rosenbloom (2016). "Impact of surface coupling grids on tropical cyclone extremes in high-resolution atmospheric simulations." *Geosci. Model Dev.*, **9**, 779–788, doi:10.5194/gmd-9-779-2016.

11. Xingying Huang, Alan M. Rhoades, Paul A. Ullrich, **Colin M. Zarzycki** (2016). "An evaluation of the variable-resolution CESM for modeling California's climate." *J. Adv. Model. Earth Syst.*, **8**, 345–369, doi:10.1002/2015MS000559.

10. Alan M. Rhoades, Xingying Huang, Paul A. Ullrich, **Colin M. Zarzycki** (2016). "Characterizing Sierra Nevada snowpack using variable-resolution CESM." *J. Appl. Meteorol.*, **55**(1), 173–196, doi:10.1175/JAMC-D-15-0156.1.

9. **Colin M. Zarzycki**, Christiane Jablonowski (2015). "Experimental tropical cyclone forecasts using a variable-resolution global model." *Mon. Wea. Rev.*, **143**(10), 4012–4037, doi:10.1175/MWR-D-15-0159.1.

8. Kevin J.E. Walsh, [...], **Colin M. Zarzycki**, *et al.*, (2015), "Hurricanes and climate: the U.S. CLIVAR working group on hurricanes." *B. Am. Meteorol. Soc.*, **96**(6), 997–1017, doi:10.1175/BAMS-D-13-00242.1.

7. Fei He, Derek J. Posselt, **Colin M. Zarzycki**, Christiane Jablonowski (2015). "A balanced tropical cyclone test case for AGCMs extended with background vertical wind shear." *Mon. Wea. Rev*, **143**(5), 1762–1781, doi:10.1175/MWR-D-14-00366.1.

6. **Colin M. Zarzycki**, Christiane Jablonowski, Diana R. Thatcher, Mark A. Taylor (2015), "Effects of localized grid refinement on general circulation and climatology in the Community Atmosphere Model." *J. Clim*, **28**(7), 2777–2803, doi:10.1175/JCLI-D-14-00599.1.

5. **Colin M. Zarzycki**, Christiane Jablonowski (2014), "A multidecadal simulation of Atlantic tropical cyclones using a variable-resolution global atmospheric general circulation model." *J. Adv. Model. Earth Syst.*, **6**(3), 805–828, doi:10.1002/2014MS000352.

4. **Colin M. Zarzycki**, Michael N. Levy, Christiane Jablonowski, Mark A. Taylor, James Overfelt, Paul A. Ullrich (2014), "Aquaplanet experiments using CAM's variable-resolution dynamical core." *J. Clim.*, **27**(14), 5481–5503, doi:10.1175/JCLI-D-14-00004.1.

3. **Colin M. Zarzycki**, Christiane Jablonowski, Mark A. Taylor (2014), "Using variable-resolution meshes to model tropical cyclones in the Community Atmosphere Model." *Mon. Wea. Rev.*, **142**(3), 1221–1239, doi:10.1175/MWR-D-13-00179.1.

2. Tami C. Bond, **Colin Zarzycki**, Mark G. Flanner, Dorothy M. Koch (2011), "Quantifying immediate radiative forcing by black carbon and organic matter with the Specific Forcing Pulse", *Atmos. Chem. Phys.*, **11**, 1505–1525, doi:10.5194/acp-11-1505-2011.

1. **Colin M. Zarzycki**, Tami C. Bond (2010), "How much can the vertical distribution of black carbon affect its global direct radiative forcing?", *Geophys. Res. Lett.*, **37**, L20807, doi:10.1029/2010GL044555.

SUBMITTED AND IN REVISION

Colin M. Zarzycki. "Projecting changes in societally-impactful northeastern U.S. snowstorms." *revised, Geophys. Res. Lett*.

Colin M. Zarzycki and 32 co-authors. "DCMIP2016: the splitting supercell test." *submitted, Geosci. Model Dev*.

Andrew Gettelman, Hugh Morrison, Katherine Thayer-Calder, **Colin M. Zarzycki**. "The impact of rimed hydrometeors on global and regional climate." *submitted, J. Adv. Model. Earth Syst*.

Elizabeth A. Burakowski, Ahmed Tawfik, Andrew Ouimette, Lucie Lepine, **Colin M. Zarzycki**, Kimberly Novick, Scott Ollinger, Gordon Bonan. "Simulating surface energy fluxes using uncoupled and coupled Earth System Models and eddy covariance tower clusters," *submitted, Theor. Appl. Climatol*.

BOOKS AND BOOK CHAPTERS

Michael F. Wehner, **Colin M. Zarzycki**, and Christina Patricola. "Estimating the human influence on tropical cyclone intensity as the climate changes." In J. M. Collins, K. Walsh (Eds.), *Hurricanes and Climate Change, Vol. 4*. Springer Books, *in press*.

Michael F. Wehner, Kevin A. Reed, **Colin M. Zarzycki** (2017). "High-resolution multi-decadal simulation of tropical cyclones." In J. M. Collins, K. Walsh (Eds.), *Hurricanes and Climate Change, Vol. 3* (pp. 187-211). Springer Books, ISBN: 978-3-319-47592-9

NON PEER-REVIEWED, PROCEEDINGS, AND EXTENDED ABSTRACTS

Paul A. Ullrich, **Colin M. Zarzycki** (2016). "Variable and adaptive resolution climate modeling with applications in subseasonal to seasonal extreme weather prediction." *Variations*, U.S. CLIVAR, Winter 2016 issue

Colin M. Zarzycki (2014). "Variable-resolution frameworks for the simulation of tropical cyclones in global atmospheric general circulation models." *Doctoral thesis*, University of Michigan, 224 pages, 2027.42/108788

Colin M. Zarzycki, Christiane Jablonowski (2012). "Using variable-resolution meshes to model tropical cyclones in NCAR's CAM general circulation model." *Proceedings of the 30th American Meteorological Society Conference on Hurricanes and Tropical Meteorology*, extended abstract, 6D.4.

Colin M. Zarzycki (2010). "Effects of incomplete combustion on atmospheric chemistry: Black carbon climate forcing and global carbon monoxide emissions." *Master's thesis*, University of Illinois, 77 pages, 2142/17014

FUNDED
GRANTS

Paul Ullrich, Richard Grotjahn, Alex Hall, Sara Rauscher, Kevin Reed, Chaopeng Shen, Dana Veron, Shih-Yu Wang, David Yates, **Colin Zarzycki**, William Collins, Andrew Jones, Ruby Leung, Travis O'Brien, Bill Riley. "Project Hyperion: An integrated evaluation of the simulated hydroclimate system of the continental U.S." *Department of Energy, Office of Biological and Environmental Research*, 2016-2019 ($6,000,000)

Paul Ullrich, Richard Grotjahn, **Colin Zarzycki**, Weile Wang, Ramakrishna Nemani. "TempestExtremes: Indicators of change in the characteristics of extreme weather." *NASA Strategic Research Objectives (ROSES-2014)*, 2016-2018 ($518,000)

Colin M. Zarzycki. "Development and implementation of next-generation variable-resolution general circulation models." *NCAR Advanced Study Program*, 2014-2016 (approximately $300,000)

OTHER
SUCCESSFUL
PROPOSALS

Andrew Gettelman, **Colin Zarzycki**, Bill Skamarock, Julio Bacmeister, Peter Lauritzen, Richard Neale, Jean-Francois Lamarque, David Lawrence. "CESM2 Regional Climate Community Simulations." *National Science Foundation, National Center for Atmospheric Research, Accelerated Scientific Discovery (ASD)*, 2017 (13.7M core hour computing allocation)

CONFERENCE
AND
SEMINAR
PRESENTA-
TIONS

* denotes presenter

—— **INVITED** ——

Colin M. Zarzycki*. [*invited*] "Breakthroughs and challenges simulating extreme weather at beyond weather timescales" *Seminar presentation at Penn State University in Department of Meteorology*, State College, PA, USA, February 2018 (talk)

Colin M. Zarzycki*. [*invited*] "How can we identify extreme weather features in next-generation global climate models?" *Noble Seminar Series at University of Toronto in Department of Physics*, Toronto, Ontario, Canada, October 2017 (talk)

Colin M. Zarzycki*. [*invited*] "Capturing extreme weather with next-generation climate models" *NCAR Day of Networking and Discovery*, Boulder, CO, April 2017 (talk)

Colin M. Zarzycki*. [*invited*] "Improving our understanding of climate extremes with next-generation global modeling frameworks" *Seminar presentation at University of Colorado Boulder in Department of Atmospheric and Oceanic Sciences*, Boulder, CO, USA, April 2016 (talk)

Colin M. Zarzycki*. [*invited*] "Next-generation atmospheric modeling using variable-resolution global grids" *Seminar presentation at University of Kansas in Department of Geography and Atmospheric Science*, Lawrence, KS, USA, January 2016 (talk)

Colin M. Zarzycki*. [*invited*] "Blurring the separation between weather and climate scales with variable-resolution global modeling." *Meteorology and Climate - Modeling for Air Quality*, Sacramento, CA, September 2015 (talk)

Colin M. Zarzycki*. [*invited*] "Bridging the gap: Improving weather and climate simulations with variable-resolution global models" *Seminar presentation at Purdue University in Department of Earth, Atmospheric, and Planetary Sciences*, West Lafayette, IN, USA, January 2015 (talk)

Colin M. Zarzycki*, Christiane Jablonowski, Mark A. Taylor. [*invited*] "Variable-resolution CAM-SE: A tool to both achieve and assess high regional resolution." *NCAR Climate and Global Dynamics Seminar Series*, Boulder, CO, December 2014 (talk)

Colin M. Zarzycki*, Christiane Jablonowski, Mark A. Taylor. [*invited*] "Physics scaling in multi-resolution CAM simulations." *Physics Dynamics Coupling in Geophysical Models - Bridging the Gap*, Ensenada, Mexico, December 2014 (talk)

Christiane Jablonowski*, **Colin M. Zarzycki**, Mark A. Taylor. [*invited*] "Advancing the frontiers of tropical cyclone modeling with the variable-resolution general circulation model CAM-SE." *World Weather Open Science Conference*, Montreal, Canada, August 2014 (talk)

Christiane Jablonowski*, **Colin M. Zarzycki**. [*invited*] "New frontiers: Tropical cyclone modeling with NCAR's variable-resolution general circulation model CAM-SE." *European Geoscience Union (EGU) General Assembly*, Vienna, Austria, April 2014 (talk)

Colin Zarzycki*. [*invited*] "Application of a variable-resolution global model to simulate tropical cyclones at weather and climate timescales." *Seminar presentation in Naval Research Lab Marine Meteorology Division*, Monterrey, CA, USA, April 2014 (talk)

Christiane Jablonowski*, **Colin Zarzycki**, Mark A. Taylor, Hans Johanson, Phillip Colella. [*invited*] "Pushing the frontiers of high-resolution climate modeling." *University of Michigan CyberInfrastructure (CI) Days*, Ann Arbor, MI, November 2013 (keynote talk)

Colin M. Zarzycki*, Christiane Jablonowski, Mark A. Taylor. [*invited*] "Application of variable-resolution CAM-SE to simulate extreme weather events in a global model." *Traversing New Terrain in Meteorological Modeling*, Davis, CA, September 2013 (talk)

Colin M. Zarzycki*, Christiane Jablonowski. [*invited*] "Utilizing grid refinement in the cubed-sphere spectral element option of CAM to model tropical cyclones." *Society for Industrial and Applied Mathematics Conference on Computational Science and Engineering*, Boston, MA, February 2013 (talk)

—— **SELECTED CONTRIBUTED** ——

First author only

Colin M. Zarzycki*. "Domain size: how big is "big enough" to accurately simulate Atlantic hurricane climatology?" *NCAR Community Earth System Model Workshop*, Boulder, CO, June 2018 (poster)

Colin M. Zarzycki*. "What can real-time weather forecasts using SE and MPAS teach us about CAM?" *CESM Atmospheric Model Working Group Meeting*, Boulder, CO, USA, February 2018 (talk)

Colin M. Zarzycki*, Andrew Gettelman, Sang-Hun Park. "North American extreme weather in CESM2: Regionally-refined simulations with next generation dynamical cores" *31st Conference on Climate Variability and Change, 98th Annual American Meteorological Society Meeting*, Austin, TX, January 2018 (talk)

Colin M. Zarzycki*. "Finding snowmageddon: Detecting and quantifying northeastern U.S. snowstorms in a multi-decadal global climate ensemble" *American Geophysical Union Fall Conference*, New Orleans, LA, December 2017 (talk)

Colin M. Zarzycki*. "Early investigations of climate extremes in variable-resolution CESM2 experiments" *NCAR Community Earth System Model Workshop*, Boulder, CO, June 2017 (talk)

Colin M. Zarzycki*. "Hurricane prediction using initialized high-resolution CESM" *NCAR Community Earth System Model Workshop*, Boulder, CO, June 2017 (talk)

Colin M. Zarzycki*, Kevin A. Reed, Christiane Jablonowski, Paul A. Ullrich, James D. Kent, Peter H. Lauritzen, Ram D. Nair. "The Dynamical Core Model Intercomparison Project (DCMIP-2016): Results of the Supercell Test Case" *American Geophysical Union Fall Conference*, San Francisco, CA, December 2016 (poster)

Colin M. Zarzycki*. "Tracking extremes in climate data: community defragging and understanding uncertainty" *NCAR Climate and Global Dynamics Seminar Series*, Boulder, CO, October 2016 (talk)

Colin M. Zarzycki*, Kevin A. Reed, Julio T. Bacmeister, Anthony P. Craig, Susan C. Bates, Nan A. Rosenbloom. "Errors in extreme winds due to choice of physics computation grid in high-resolution atmospheric simulations" *Physics Dynamics Coupling in Weather and Climate Models*, Richland, WA, USA, September 2016 (talk)

Colin M. Zarzycki*. "The sensitivity of objectively-tracked east coast winter storms to horizontal resolution in variable-resolution CAM" *NCAR Community Earth System Model Workshop*, Breckenridge, CO, June 2016 (poster)

Colin M. Zarzycki*. "Tropical cyclone intensity errors associated with lack of two-way ocean coupling in high-resolution global simulations" *32nd AMS Conference on Hurricanes and Tropical Meteorology*, San Juan, Puerto Rico, USA, April 2016 (talk)

Colin M. Zarzycki*. "Using the CESM Large Ensemble to project future changes in the distribution and impacts of eastern North American snowstorms" *CESM Climate Variability and Change Model Working Group Meeting*, Boulder, CO, USA, February 2016 (talk)

Colin M. Zarzycki*, Pete Bogenschutz, Patrick Callaghan, Julio Bacmeister, Andrew Gettelman, John Truesdale. "Preliminary changes in high-resolution tropical cyclone climatology in CAM5.5" *CESM Atmospheric Model Working Group Meeting*, Boulder, CO, USA, February 2016 (talk)

Colin M. Zarzycki*. "Assessing the sensitivity of simulated east coast winter storms to horizontal resolution using variable-resolution CAM" *American Geophysical Union Fall Conference*, San Francisco, CA, December 2015 (poster)

Colin M. Zarzycki*. "Using an idealized slab ocean to diagnose tropical cyclone intensity biases associated with prescribed SSTs in CAM-SE" *NCAR Community Earth System Model Workshop*, Breckenridge, CO, USA, June 2015 (poster)

Colin M. Zarzycki*. "Do tropical cyclone cold wakes impact storm climatology in a high-resolution global model?" *5th International Summit on Hurricanes and Climate Change*, Crete, Greece, June 2015 (talk)

Colin M. Zarzycki*. "Why are tropical cyclones so intense in CAM5 at ultra-high resolutions?" *CESM Atmospheric Model Working Group Meeting*, Boulder, CO, USA, February 2015 (talk)

Colin M. Zarzycki*, Christiane Jablonowski. "Improving tropical cyclone track and intensity in a global model with local mesh refinement." *American Geophysical Union Fall Conference*, San Francisco, CA, December 2014 (talk)

Colin M. Zarzycki*. "Enhancing regional climatology in a global atmospheric model with variable-resolution." *4th Annual Young Scientist Symposium on Atmospheric Research (YS-SAR)*, Fort Collins, CO, October 2014 (talk)

Colin Zarzycki*. "Evaluating the impact of localized grid refinement on global climatology in CAM." *NCAR Community Earth System Model Workshop*, Breckenridge, CO, June 2014 (talk)

Colin Zarzycki*, Christiane Jablonowski, Mark A. Taylor, Michael N. Levy. "Using idealized tests to diagnose the impact of physical parameterizations on atmospheric simulations." *Department of Energy Principal Investigators Meeting*, Potomac, MD, USA, May 2014 (poster)

Colin Zarzycki*, Michael N. Levy, Christiane Jablonowski, Mark A. Taylor. "The impact of localized grid refinement on sub-grid parameterization in idealized climate experiments." *Solutions to Partial Differential Equations on the Sphere*, Boulder, CO, USA, April 2014 (poster)

Colin Zarzycki*, Christiane Jablonowski. "Deterministic forecasts of tropical cyclones using a variable-resolution global model." *31st American Meteorological Society Conference on Hurricanes and Tropical Meteorology*, San Diego, CA, USA, April 2014 (talk)

Colin Zarzycki*, Christiane Jablonowski, Diana Thatcher, Michael Levy, and Mark Taylor (2014). "The impacts of high-resolution refinement in variable-resolution CAM-SE on regional climate in CESM." *CESM Atmospheric Model Working Group Meeting*, Boulder, CO, USA, February 2014 (talk)

Colin M. Zarzycki*, Christiane Jablonowski (2013). "Evaluating the impact of localized GCM grid refinement on regional tropical cyclone climatology and synoptic variability using variable-resolution CAM-SE." *American Geophysical Union Fall Conference*, San Francisco, CA, December 2013 (talk)

Colin M. Zarzycki*, Christiane Jablonowski. "High-resolution tropical cyclone climate simulations in NCAR's variable-resolution general circulation model, CAM-SE." *4th International Summit on Hurricanes and Climate Change*, Kos, Greece, June 2013 (poster)

Colin M. Zarzycki*, Christiane Jablonowski, Mark A. Taylor. "Assessing the ability of variable-resolution global models to forecast tropical cyclones." *Special Symposium on Advancing Weather and Climate Forecasts: Innovative Techniques and Applications, 93rd Annual American Meteorological Society Meeting*, Austin, TX, January 2013 (talk)

Colin M. Zarzycki*, Christiane Jablonowski, Mark A. Taylor. "Using the variable-resolution general circulation model CAM-SE to simulate regional tropical cyclone climatology." *American Geophysical Union Fall Conference*, San Francisco, CA, December 2012 (talk)

Colin M. Zarzycki*, Christiane Jablonowski. "Improving weather prediction and regional climate modeling through the use of variable-resolution global atmospheric models." *University of Michigan Engineering Graduate Symposium*, Ann Arbor, MI, November 2012 (poster)

Colin M. Zarzycki*, Christiane Jablonowski, Mark A. Taylor. "Evaluating variable-resolution CAM-SE with high-resolution forecast simulations." *Weather and Climate Prediction on Next Generation Supercomputers*, UK Met Office, Exeter, UK, October 2012 (talk)

Colin M. Zarzycki*, Christiane Jablonowski, Mark A. Taylor. "Improving tropical cyclone representation in general circulation models through the use of variable resolution." *Solutions to Partial Differential Equations on the Sphere*, Cambridge, UK, September 2012 (talk)

Colin M. Zarzycki*, Christiane Jablonowski, Mark A. Taylor, Michael N. Levy. "Tropical cyclone modeling using CAM-SE's variable-resolution option." *NCAR Community Earth System Model Workshop*, Breckenridge, CO, June 2012 (poster)

Colin M. Zarzycki*, Christiane Jablonowski. "Using variable-resolution meshes to model tropical cyclones in NCAR's CAM general circulation model." *30th American Meteorological Society Conference on Hurricanes and Tropical Meteorology*, Ponte Vedra Beach, FL, April 2012 (talk)

Colin M. Zarzycki*, Christiane Jablonowski, Mark A. Taylor, Michael N. Levy. "Modeling tropical cyclones in NCAR's general circulation model with variable-resolution meshes." *American Geophysical Union Fall Conference*, San Francisco, CA, December 2011 (talk)

Colin M. Zarzycki*, Tami C. Bond. "How much can the vertical distribution of black carbon affect its global direct radiative forcing?." *University of Michigan Engineering Graduate Symposium*, Ann Arbor, MI, November 2010 (poster)

Colin Zarzycki*, Tami C. Bond. "The contribution of black carbon above clouds to global average forcing." *University of Illinois at Urbana-Champaign Environmental Engineering and Science Symposium*, Urbana, IL, April 2010 (talk)

Colin Zarzycki*, Tami C. Bond. "The contribution of black carbon above clouds to global average forcing." *American Geophysical Union Fall Conference*, San Francisco, CA, December 2009 (poster)

Colin Zarzycki*, Tami C. Bond. "A multi-model assessment of black carbon effects on high-latitude warming in the Arctic." *University of Illinois at Urbana-Champaign Environmental Engineering and Science Symposium*, Urbana, IL, April 2009 (talk)

Colin Zarzycki*, Gena Renninger, Stina Bridgeman, Neil Laird. "Weather conditions associated with rapid variations in Lake Erie ice cover." *Annual Lake Effect Weather Conference*, Oswego, NY, October 2007 (talk)

STUDENTS
ADVISED

Kimberly Brothers, Significant Opportunities in Atmospheric Research and Science (SOARS) student, science mentor, NCAR, 2018.

Adam Herrington, Ph.D. student, Stony Brook University, dissertation committee member, 2017 – present.

Nkosi 'Kos' Muse, Significant Opportunities in Atmospheric Research and Science (SOARS) student, science mentor, NCAR, 2017.

Benjamin 'David' Dillahunt, NSF Research Experiences for Undergraduates (REU) student, science mentor, University of Michigan, 2014.

TEACHING
EXPERIENCE

◇ **Lecturer**, DCMIP Summer School (2016)
  · Lectured approximately 50 invited graduate students during multi-week summer school on global numerical modeling and climate data analysis.

◇ **Lecturer**, University of Michigan (2013 – 2014)
  · AOSS 321 (Atmospheric Dynamics) - Delivered lectures on forces in the atmosphere.
  · AOSS 589 (The Art of Climate Modeling) - Delivered lectures on high- and variable-resolution climate modeling, physical parameterizations, and parallel computing.

◇ **Grader**, University of Michigan (2011 – 2014)
  · Graded homework and exams for various undergraduate and graduate courses in the Department of Atmospheric, Oceanic, and Space Sciences.

◇ **Teaching Assistant**, Cornell University (2008)
  · EAS 134 (Weather Analysis and Forecasting), weekly 2-hour lecture series taught by three undergraduate students. Independently prepared and delivered lectures regarding lake effect snow, supercells and tornados, and mesoscale convective systems (MCSs).

SERVICE AND
OUTREACH

Member, High Resolution Model Intercomparison Project (HighResMIP)

Member, Working Group on Hurricanes and Climate Change, U.S. Climate Variability and Predictability Research Program (CLIVAR)

Member, NOAA Next Generation Global Prediction System (NGGPS) Nesting (Dynamics) Team

Co-Organizer, Dynamical Core Model Intercomparison Project (DCMIP)

Associate Editor, Monthly Weather Review (2016 – present)

Panel Reviewer, Department of Energy, Office of Science

Journal Reviewer, Atmosphere, Climate Dynamics, Geophysical Model Development, Geophysical Research Letters, Journal of Advances in Modeling Earth Systems, Journal of Climate, Journal of Geophysical Research: Atmospheres, Michigan Journal of Sustainability, Monthly Weather Review, Nature, Science of the Total Environment, Quarterly Journal of the Royal Meteorological Society

Proceedings Reviewer, International Conference on Computer Science

Session Convener, Chair, OSPA Liason, AGU Fall Meeting

Session Co-Convener, EGU Annual Meeting

Model Mentor (CAM-SE), Dynamical Core Model Intercomparison Project (DCMIIP)

Committee Chair, NCAR Thompson Lecture Series

Science Teacher, NCAR Super Science Saturday

Forecaster and Meteorological Liaison, Jackson (MI) Hot Air Balloon Jubilee

HONORS
AND
AWARDS

CGD Special Recognition Award, National Center for Atmospheric Research, December 2017

AGU Editors' Highlight, for 'Assessing sensitivities in algorithmic detection of tropical cyclones in climate data,' American Geophysical Union, January 2017

NSF Early Career Travel Grant, National Science Foundation, June 2015 ($1,505)

Advanced Study Program (ASP) Postdoctoral Fellowship, National Center for Atmospheric Research, September 2014 – September 2016

AGU Publication Highlight, for 'A multidecadal simulation of Atlantic tropical cyclones using a variable-resolution global atmospheric general circulation model,' American Geophysical Union, November 2014

ProQuest Distinguished Dissertation Honorable Mention, University of Michigan, November 2014

University of Michigan Rackham Predoctoral Fellowship, University of Michigan, May 2013 – April 2014

· "Supports outstanding doctoral students working on dissertation[s] that are unusually creative, ambitious and risk-taking."

Student Travel Grant, Aegean Conferences, June 2013 ($1,000)

University of Michigan Rackham Travel Grant, University of Michigan, 2011 - 2012 ($700), 2012 - 2013 ($950), 2013 – 2014 ($700)

AMS Weather and Forecasting Symposium Competition: 1st place, Best Oral Presentation, American Meteorological Society, Austin, TX, January 2012

Engineering Graduate Symposium Competition: 1st place, Best Paper Award, Earth Science and Remote Sensing Session, University of Michigan, November 2012

University of Michigan Rackham Graduate Student Research Grant, University of Michigan, August 2012 ($3,000)

University of Michigan College of Engineering Dean's Fellowship, University of Michigan, August 2010 – May 2011

Ivan Racheff Fellowship, University of Illinois, August 2008 – June 2009

Frank and Rosa Rhodes Scholarship, Cornell University, October 2007

· "Rewards and encourages one outstanding scholar annually from each of the seven undergraduate colleges."

MEDIA

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