Department of Earth, Atmospheric, and Planetary Sciences
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Kevin Gray

Education

Ph.D.

University of Illinois Urbana-Champaign, Department of Atmospheric Sciences
Dissertation: The impact of midlevel shear vector orientation on the longevity of and streamwise vorticity current formation within simulated supercells with freeslip and semi-slip lower boundaries
Advisor: Dr. Jeffrey Frame
August 2018 – August 2023

M.S.

University of Illinois Urbana-Champaign, Department of Atmospheric Sciences
Thesis: Investigating the transition from elevated multicellular convection to surface-based supercells during the tornado outbreak of 24 August 2016 using a WRF Model simulation
Advisor: Dr. Jeffrey Frame
August 2016 – May 2018

B.S.

University of North Dakota, Department of Atmospheric Sciences (Summa Cum Laude)
Major: Meteorology
Minor: Mathematics
Advisor: Dr. Matthew Gilmore
August 2012 – December 2014

Professional Experience

Road Weather Specialist

2014 - 2016
Iteris, Inc., Grand Forks, ND

Courses Taught as Primary Instructor

ATMS-100: Introduction to Meteorology, Spring 2019, 2020

Courses Taught as a Teaching Assistant

ATMS-100: Introduction to Meteorology, Fall 2016
ATMS-303: Synoptic-Dynamic Weather Analysis, Fall 2017-2021
ATMS-306: Cloud Physics, Spring 2021
ATMS-313: Synoptic Weather Forecasting, Spring 2017, 2018, 2022
ATMS-314: Mesoscale Dynamics, Spring 2017
ATMS-324: Field Studies of Convection, Summer 2017, 2019, 2021, 2022

Publications

Gray, K. and J. Frame: Investigating the development and characteristics of streamwise vorticity currents in simulated supercell thunderstorms. Paper in review.

Gray, K. and J. Frame, 2021: The impact of midlevel shear orientation on the longevity of and downdraft location and tornado-like vortex formation within simulated supercells. *Mon. Wea. Rev*., **149**, 3739-3759, https://doi.org/10.1175/MWR-D-21-0085.1.

Gray, K. and J. Frame, 2019: Investigating the transition from elevated multicellular convection to surface-based supercells during the tornado outbreak of 24 August 2016 using a WRF model simulation. *Wea. Forecasting*, **34**, 1051-1079, https://doi.org/10.1175/WAF-D-18-0209.1.

Extended Abstracts (*)/Conference Presentations/Posters

Gray, K. and J. Frame, 2022: Investigating the Development and Characteristics of Streamwise Vorticity Currents in Simulated Supercell Thunderstorms. *30th Conference on Severe Local Storms*, Santa Fe, NM, Amer. Meteor. Soc., 16.4A.

Gray, K. and J. Frame, 2022: Investigation of Outflow Surge Characteristics in Simulated Supercell Thunderstorms. *19th Conference on Mesoscale Processes*, virtual conference, Amer. Meteor. Soc., P574.

Gray, K. and J. Frame, 2021: The impact of midlevel shear orientation on downdraft location, tornado-like vortex formation, and storm longevity in simulated supercells. *Symposium on Mesoscale Processes across Scales: Engaging with Communities in the Physical and Social Sciences*, virtual conference, Amer. Meteor. Soc., 343.

*Gray, K. and J. Frame, 2019: Impact of vertical vorticity generated along convergence boundaries and streamwise vorticity currents on near-surface vortex intensity within simulated supercells. *18th Conf. on Mesoscale Processes*, Savannah, GA, Amer. Meteor. Soc., 1.1.

*Frame, J. and K. Gray, 2018: A mesoscale analysis of the development of storms and transition to supercells during the Indiana and Ohio tornado outbreak of 24 August 2016. *29th Conf. on Severe Local Storms*, Stowe, VT, Amer. Meteor. Soc., P190.

*Gray, K. and J. Frame, 2018: Investigating the transition from elevated multicellular convection to surface-based supercells as observed in the Indiana and Ohio tornado outbreak of 24 August 2016 using a WRF model simulation and perturbation pressure decomposition. *29th Conf. on Severe Local Storms*, Stowe, VT, Amer. Meteor. Soc., 6B.6.

*Gray, K. and J. Frame, 2017: Investigating the environment of the Indiana and Ohio tornado outbreak of 24 August 2016 using a WRF model simulation. *17th Conf. on Mesoscale Processes*, San Diego, CA, Amer. Meteor. Soc. P37.

Informal Outreach Presentations

"Natural Disasters: Hurricanes and Tornadoes," virtual presentation at Gower Middle School, Burr Ridge, IL, November 2021, 2022.

Scientific Society Memberships

American Meteorological Society, 2016 – present

Awards and Honors

Dissertation Completion Fellowship, August 2022 – August 2023

Midwest Student Conference on Atmospheric Research, 1st Place Graduate Student Oral Presentation, Sept 2021

Ogura Student Teaching Award, May 2018

Field Projects

Propagation, Evolution, and Rotation in Linear Storms (PERiLS) Project, Mar-April 2022, mobile sounding team.