



EDUCATION

Doctor of Philosophy, Atmospheric Sciences

University of Illinois, Urbana, IL

September 2004

Advisor: Professor Robert Wilhelmson

Bachelor of Science, Meteorology

Texas A&M University, College Station, TX

May 1997

PROFESSIONAL EXPERIENCE

Professor

2019-Present

University of Nebraska – Lincoln, Department of Earth and Atmospheric Sciences

Associate Professor

2012-2019

University of Nebraska – Lincoln, Department of Earth and Atmospheric Sciences

Assistant Professor

2006-2012

University of Nebraska – Lincoln, Department of Earth and Atmospheric Sciences

Visiting Instructor

August 2005-May 2006

University of Nebraska – Lincoln, Department of Geosciences

Post-Doctoral Research Assistant

June 2005-August 2005

Purdue University, State Climate Office, West Lafayette, IN

Visiting Assistant Professor

August 2004 – May 2005

Purdue University, Dept. of Earth and Atmospheric Sciences, West Lafayette, IN

REFEREED PUBLICATIONS

[†] Denotes student that I supervised

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Kropiewnicki, C. [†], A.L. Houston, and J.M. Keeler, 2026: A Climatology of Mesoscale Airmasses with High Theta-e. *Monthly Weather Review*. **In revision for resubmission.**

Stevenson, P.B. [‡], A.L. Houston, E. Rasmussen, S. Waugh, E.R. Mansell, A.E. Reinhart, and C.L. Ziegler: **2026**: Cross-sectional study of observed left/forward-flank boundaries in supercells. *Monthly Weather Review*. **In internal review.**

Murdzek, S.S., T.L. Ladwig, A.L. Houston, E.P. James, and A. Swan[†], **2026**: Validating the Inclusion of a HRRR-like Forecast System in the Global Systems Laboratory OSSE Framework. *Journal of Atmospheric and Oceanic Technology*. **In review.**

- Houston A.L., M. De Bruin †, C. Gomez-Faulk, and B.M. Argrow, **2026**: RAAVEN data processing for TORUS and TORUS-Lite. *Earth System Science Data*. **Accepted pending revisions**.
- Moll, B.W. †, A.L. Houston, G.B.H. de Azevedo, S.C.C. Bailey, T.M. Bell, J. Bradley, A. Dachtler, G. Phillips, D.A. Rico, J. Tweedie, and T. Wiens, **2026**: The Urban Heat Island and its Role in Shaping Convective Environments: An Observational Study. *Journal of Applied Meteorology and Climatology*. **Accepted pending revisions**.
- De Bruin, M., †, A.L. Houston, B.M. Argrow, E. Frew, C. Weiss, E. Rasmussen, A. Schueth, C. Gomez-Faulk, and R. Sasse, **2026**: A UAS-Centered Investigation of Vorticity Characteristics and Cold Pool Structure Across Left/Forward-Flank Boundaries in Supercells. *Monthly Weather Review*. **Accepted pending revisions**.
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60. Pittman, K.D. †, and A.L. Houston, **2026**: The Combined Impacts of Mid-Level Humidity and Low-Level Shear on Supercell Evolution on 22 May 2019. *Monthly Weather Review*. **154**. 915-936. DOI: <https://doi.org/10.1175/MWR-D-25-0081.1>
59. Pardun, T.J., A.E. Reinhart, C. C. Weiss, E.N. Rasmussen, S.M. Waugh, and A.L. Houston, **2026**: The observed and simulated analysis of supercellular demise from 15 June 2019. *Monthly Weather Review*. **154**. 311-330. DOI: <https://doi.org/10.1175/MWR-D-25-0063.1>
58. Bell, T. M., E.N. Smith, A.L. Houston, J. Pinto, J. Jacob, G.G.H. de Azevedo, A.R. Segales, S.C.C. Bailey, and C. Swan, **2026**: Coordinating Weather Sensing UAS for Atmospheric Research: Lessons from the SCALES Campaign. *Bulletin of the American Meteorological Society*, **107**. DOI: <https://doi.org/10.1175/BAMS-D-26-0043.1>.
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55. Martz, R. †, A.L. Houston, M.S. Van Den Broeke, and S.A. Shield †, **2025**: The Impact of Urbanized Areas on the Spatial Characteristics of Deep Convection Initiation in the Central United States, *J. Appl. Meteor. Climatol.*, **64**, 1045-1061. Doi: <https://doi.org/10.1175/JAMC-D-23-0153.1>
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- Supercells on 8 June 2019. *Monthly Weather Review*, **153**, 1105–1128. Doi: <https://doi.org/10.1175/MWR-D-23-0247.1>
53. Shield, S.A. † and A.L. Houston, **2024**: A Comparison of Thunderstorm Identification Methods. *Journal of Applied Meteorology and Climatology*, **41**, 1005–1016 Doi: 10.1175/JTECH-D-23-0084.1.
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 43. Shield, S.A. † and A.L. Houston, **2022**: Diagnosing supercell environments: A machine learning approach. *Wea. Forecasting*, **37**, 771–785. DOI: <https://doi.org/10.1175/WAF-D-21-0098.1>.

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39. Jensen, A.A., J.O. Pinto, S.C.C. Bailey, R.A. Sobash, G. De Boer, A.L. Houston, P.B. Chilson, T.M. Bell, G. Romine, S.W. Smith, D. Lawrence, C. Dixon, J.K. Lundquist, J.D. Jacob, J. Elston, M. Steiner, **2021**: Assimilation of a coordinated fleet of unmanned aircraft systems observations in complex terrain using high-resolution EnKF. *Mon. Wea. Rev.*, **49**, 1459–1480. DOI: <https://doi.org/10.1175/MWR-D-20-0359.1>
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16. Houston, A. L., **2016**: The Sensitivity of Deep Ascent of Cold Pool air to Vertical Shear and Cold Pool Buoyancy. *Electronic Journal of Severe Storms Meteorology*. **11**, 1-29.
15. Houston, A. L., N. A. Lock[†], J. Lahowetz[†], B. L. Barjenbruch[†], G. Limpert[†], C. Oppermann[†], **2015**: Thunderstorm Observation by Radar (ThOR): An algorithm to develop a climatology of thunderstorms. *Journal of Atmospheric and Oceanic Technology*, **32**, 961-981. DOI: <https://doi.org/10.1175/JTECH-D-14-00118.1>.
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PUBLISHED DATASETS

14. Kropiewnicki, C. [‡], and A. L. Houston **2026**: TORUS-LitE: UNL Mobile Sounding Meteorological Data. NSF NCAR Earth Observing Laboratory, <https://doi.org/10.26023/MAYV-FZBK-NHoN>
13. Argrow, B. M., E. W. Frew, A. L. Houston, M. De Bruin[‡], and C. Gomez-Faulk **2026**: TORUS-LitE: RAAVEN UAS Data. NSF NCAR Earth Observing Laboratory, <https://doi.org/10.26023/E5PJ-5CN7-VQoT>

12. Argrow, B. M., E. W. Frew, A. L. Houston, M. De Bruin[†], and C. Gomez-Faulk **2026**: TORUS_2019: RAAVEN UAS Data. NSF NCAR Earth Observing Laboratory, <https://doi.org/10.26023/FJD8-VMV2-XWoY>.
11. Martz, R. A. [†], A. L. Houston, and S. A. Shield[†], **2025**: Deep convection initiation around urban areas. Zenodo, <https://doi.org/10.5281/zenodo.15346789>
10. Houston, A. L., and J. M. Keeler, **2025**: MITTEN-CI: Combined Mesonet and Tracker Data, 1.2. NSF NCAR Earth Observing Laboratory, <https://doi.org/10.26023/HQoT-S8ST-FSoC>
9. Shield, S. A. [†], and A. L. Houston, **2024**: Central US deep convection initiation environmental conditions 2008-2015. Zenodo, <https://doi.org/10.5281/zenodo.10945611>
8. Houston, A. L., K. L. Axon[†], A. Erwin[†], and P. Stevenson[†], **2024**: TORUS_2022: UNL Combined Mesonet and Tracker (CoMeT) Mobile Mesonet Data. NSF NCAR Earth Observing Laboratory, <https://doi.org/10.26023/X9RK-581T-AQoH>
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6. Houston, A. L., K. L. Axon[†], A. Erwin[†], and P. Stevenson[†], **2024**: TORUS_2019: UNL Combined Mesonet and Tracker (CoMeT-3) Mobile Mesonet Data. NSF NCAR Earth Observing Laboratory, <https://doi.org/10.26023/DCFo-DW77-H2oQ>
5. Houston, A. L., K. L. Axon[†], A. Erwin[†], and P. Stevenson[†], **2024**: TORUS_2019: UNL Combined Mesonet and Tracker (CoMeT-2) Mobile Mesonet Data. NSF NCAR Earth Observing Laboratory, <https://doi.org/10.26023/JWPF-o89R-8JoB>
4. Houston, A. L., K. L. Axon[†], A. Erwin[†], and P. Stevenson[†], **2024**: TORUS_2019: UNL Combined Mesonet and Tracker (CoMeT-1) Mobile Mesonet Data. NSF NCAR Earth Observing Laboratory, <https://doi.org/10.26023/B967-JN6J-AYo3>
3. Houston, A. L. **2024**: TORUS-LitE Deployment Summary IDV Bundles. NSF NCAR Earth Observing Laboratory, <https://doi.org/10.26023/YTQ1-VoS8-FYoY>
2. Houston, A. L., and A. Erwin[†], **2020**: University of Nebraska-Lincoln Mobile Mesonet files from LAPSE-RATE. Zenodo, <https://doi.org/10.5281/zenodo.4264691>
1. Houston, A. L. **2020**: TORUS_2019 Deployment Summary (IDV Bundles). NSF NCAR Earth Observing Laboratory, <https://doi.org/10.26023/6TZ9-8T5N-Y2oS>

GRANTS (Total: **\$25,221,310**; UNL total: **\$7,912,905**)

NOAA, Expanding Understanding of UAS Observation Impacts on Regional NWP using an OSSE: Sensitivity Tests and Targeted UAS Observations; Role: **co-PI**; \$935,483 (UNL: **\$335,483**), 2025

NSF, Collaborative Research: AGS-FIRP Track 1 – The 2025 Nebraska-RaXPol Education and Outreach (NREO-2025) Project; Role: **PI**; \$49,986 (UNL: **\$34,984**), 2025

NSF, Collaborative Research: Maritime to Inland Transitions Towards ENvironments for Convection Initiation (MITTEN CI); Role: **Contractor**; UNL: **\$86,116**, 2024.

NOAA, Investigating the Impact of Uncrewed Aircraft Systems Observations on Weather Forecasts from a Regional Weather Model Using Observing System Simulation Experiments; Role: **co-PI**; \$564,531 (UNL: **\$208,952**), 2023-2025

NSF, Collaborative Research: Investigation of Supercell Left-Flank Boundaries and Coherent Structures: TORUS-LItE; Role: PI; \$867,257 (UNL: **\$328,105**), 2023-2025

NSF, AGS-FIRP Track 1: 2023 University of Nebraska DOW Education and Outreach (UNDEO-2023) Project; Role: **PI**; \$49,986 (UNL: **\$49,986**), 2023

NSF, Planning Grant: Engineering Research Center for Precision Meteorology (ERC-PM); Role: **Co-PI**; \$99,946 (UNL: **\$0**), 2021-2022

NSF, Collaborative Research: Mesoscale Airmasses with High Theta-E (MAHTE); Role: **Co-PI**; \$438,795 (UNL: **\$248,795**), 2021-2024

NSF, Collaborative Research: NRI: Dispersed Autonomy for Marsupial Aerial Robot Teams; Role: **Co-PI**; \$1,500,000 (UNL: **\$454,570**), 2022-2025.

NOAA VORTEX-SE, Collaborative Research: Ensemble Sensitivity Analysis to Investigate Mesoscale Heterogeneity in Southeast US Tornado Events; Role: **Co-PI**; \$282,189 (UNL: **\$260,822**), 2020-2022.

NASA, ULI Step-B, Real-time Weather Awareness for Enhanced UTM Safety Assurance; Role: **Co-PI**; \$5,200,000 (UNL: **\$805,406**), 2020-2024.

NSF, National Robotics Initiative: Collaborative Research: Raining Drones: Mid-Air Release & Recovery of Atmospheric Sensing Systems; Role: **Co-PI**; \$ 1,047,143 (UNL: **\$643,600**), 2019-2022.

NE EPSCoR, LAPSE-RATE Workshop; Role: **PI**; **\$39,000**; 2019-2020

Black Swift Technologies, SBIR: Black Swift Technologies UAS for Atmospheric Soundings; Role: **Contractor**; **\$101,467**; 2019-2020.

NSF, Collaborative Research: Targeted Observations using Radars and UAS of Supercells (TORUS); Role: **PI**; \$2,921,526 (UNL: **\$939,784**), 2018-2023.

NASA, Investigating Soil Moisture-Convective Precipitation Feedbacks with Soil Moisture-Active Passive; Role: **Co-PI**; \$799,786 (UNL: **\$402,364**), 2016-2019.

NSF, National Robotics Initiative: Collaborative Research: Targeted Observation of Severe Local Storms Using Aerial Robots; Role: **Co-PI**; \$1,900,000 (UNL: **\$425,652**), 2015-2018.

NSF, Research Infrastructure Improvement Program: Track-2 Focused EPSCoR Collaborations: Unmanned Aircraft Systems for Atmospheric Exploration; Role: **Co-PI [UNL lead]**; \$5,995,869 (UNL: **\$1,454,757**), 2015-2019.

NSF, RAPID: Collaborative Research: Integration of UAS into the Program for Research on Elevated Convection with Intense Precipitation; Role: **PI**; \$183,944 (UNL: **\$183,944**), 2015-2017.

Unidata, A Standalone EDEX Server and Enhanced Local IDD/LDM Infrastructure at the University of Nebraska-Lincoln. Role: **PI**; \$11,050 (UNL: **\$11,050**).

Air Force Office of Scientific Research, Integrated tracker and mobile mesonet for research on energy-aware, airborne, dynamic data-driven application systems, Role: **PI**; \$81,678, (UNL: **\$81,678**), 2014-2015.

UNL Research Council, Interdisciplinary Research Grant: The Representation of Mesoscale Atmospheric Phenomena by Unmanned Aircraft Systems: A Multidisciplinary Observing System Simulation Experiment, Role: **PI**; \$19,942, (UNL: **\$19,942**), 2013.

Air Force Office of Scientific Research, Energy-Aware Aerial Systems for Persistent Sampling and Surveillance, Role: **co-PI**; \$1,512,757, (UNL: **\$381,581**), 2012-2015.

NSF, Supplement to “Criticality: A Theory for Understanding and Forecasting Deep Convective Initiation”, Role: **PI**; \$37,676, (UNL: **\$37,676**), 2011-2012.

USGS, “Towards Groundwater Recharge Forecasting: Monitoring and Modeling Episodic Recharge Responses to Weather Events”, Role: **co-PI**; \$19,644, (UNL: **\$19,644**), 2010-2011.

NSF, Supplement to “Development of an Unmanned Aircraft System for Research in a Severe Storm Environment; A Part of the Verification of the Origins of Rotation in Tornadoes Experiment 2”, Role: **co-PI**; \$13,561, (UNL: **\$13,561**), 2010-2011.

NSF, “Development of an Unmanned Aircraft System for Research in a Severe Storm Environment; A Part of the Verification of the Origins of Rotation in Tornadoes Experiment 2”, Role: **co-PI**; \$421,497, (UNL: **\$74,624**), 2009-2011.

NSF, “Criticality: A Theory for Understanding and Forecasting Deep Convective Initiation”, Role: **PI**; \$189,054, (UNL: **\$189,054**), 2008-2011.

UNL Office of Research and Economic Development, Layman Award, “The Dependence of High-Precipitation Supercells on Pre-existing Airmass Boundaries: A Targeted Modeling Study”, Role: **PI**; \$9,912, (UNL: **\$9,912**), 2008/2009.

NSF, “Collaborative Research: SGER: Unmanned Aircraft System (UAS) for In-Situ Sensing along Atmospheric Airmass Boundaries”, Role: **Co-PI**; \$99,995, (UNL: **\$48,571**), 2007-2008.

Unidata, “WAHTER: Integrating Meteorology Data in Hydrology Research and Education, and Expanding the University of Nebraska’s IDD Capabilities”, Role: **PI**, \$20,000, (UNL: **\$20,000**), 2006-2007.

FIELD PROJECTS

FIELD COORDINATOR FOR UNCREWED AIRCRAFT SYSTEMS

SCALES Small-UAS Coordination for Atmospheric Low-Level Environmental Sampling	2024
TORUS-Lite Targeted Observation by Radars and UAS of Supercells-Left-flank-Intensive Experiment	2023
TORUS Targeted Observation by Radars and UAS of Supercells	2019, 2022
Oklahoma intercomparison and rotorwash experiments	2021

LAPSE-RATE Lower Atmospheric Process Studies at Elevation - a Remotely-piloted Aircraft Team Experiment	2018
National Robotics Initiative	2016, 2018
RiVorS Rivers of Vorticity in Supercells	2017
PRECIP Program for Research on Elevated Convection with Intense Precipitation	2016
EADDDAS Energy-Aware Dynamic Data-Driven Applications Systems	2014
MET-MAP Multi-sUAS Evaluation of Techniques for Measurement of Atmospheric Properties	2014
AVIATE Airdata Verification and Integrated Airborne Tempest Experiment	2013
VORTEX2 Second Verification of the Origin of Rotation in Tornadoes Experiment	2010
CoCoNUE Collaborative Colorado-Nebraska UAS Experiment	2009
<i>FIELD COORDINATOR FOR MOBILE RADAR</i>	
NREO 2025 The 2025 Nebraska RaXPol Education and Outreach	2025
UNDEO 2023 University of Nebraska and DOW Education and Outreach	2023
UNDEO-6 Sixth University of Nebraska and DOW Education and Outreach	2019
UNDEO-5 Fifth University of Nebraska and DOW Education and Outreach	2017
UNDEO-4 Fourth University of Nebraska and DOW Education and Outreach	2015
UNDEO-3 Third University of Nebraska and DOW Education and Outreach	2013
UNDEO-2 Second University of Nebraska and DOW Education and Outreach	2011
UNDEO University of Nebraska and DOW Education and Outreach	2008

TEACHING

Dynamic Meteorology I , Upper-level undergraduate	2005-2009, 2011, 2014, 2015, 2017, 2019, 2021, 2023, 2025
Dynamic Meteorology II , Upper-level undergraduate	2005-2010, 2012, 2015, 2016, 2018, 2020, 2022, 2024
Mesoscale Meteorology , Upper-level undergraduate and graduate-level	2011, 2012, 2014, 2017, 2020, 2022, 2024
Radar Meteorology , Upper-level undergraduate and graduate-level	2008, 2011, 2013, 2015, 2017, 2019, 2021, 2023, 2025

Dynamics of Severe Convective Storms , Graduate-level	2005, 2008, 2010, 2011, 2013, 2016, 2018, 2020, 2022, 2024, 2026
Weather and Climate , Survey-level	2013, 2016, 2018, 2023
Seminar in Meteorology , The impact of environmental heterogeneities on supercells, tornadoes, and deep convection initiation	2021
Mobile Measurement System Design	2017, 2018
Weather Discussion , (Co-taught), Upper-level undergraduate and graduate-level	2009-2010
Climatology Research Forum , (Co-taught), Graduate-level	2009
Severe and Unusual Weather , (University of Illinois, Purdue University, University of Nebraska), Survey-level	2001, 2005, 2006
Weather Analysis and Forecasting , (Purdue University), Upper- level undergraduate	2005
Introduction to Atmospheric Sciences , (Purdue University), Survey-level	2005

STUDENTS SUPERVISED

GRADUATE STUDENTS – MAJOR PROFESSOR

Millicent Tsey , M.S. The Potential Impact of Targeted versus Routine UAS Observations on Numerical Weather Prediction: Observing System Simulation Experiments	2026—Present
Alex Swan , M.S. Observing System Simulation Experiments to Investigate Impacts of Deep- Tropospheric Uncrewed Aircraft System Flights on Forecasts	Graduated 2026
Robert Szot , M.S. Assessing the Impact of Assimilating Observations from the TORUS Campaign on Forecasts of Severe Convection	Graduated 2026
Ben Moll , M.S. Investigating the Effects of the Urban Heat Island on PBL Thermodynamics Relevant to Deep Convection using Uncrewed Aircraft Systems	Graduated 2025
Mark De Bruin , M.S. A UAS-Centered Investigation of Forward and Left Flank Boundaries in Supercells	Graduated 2025
Peyton Stevenson , M.S. Multi-case study of left-flank boundaries with supercells	Graduated 2024
Daniel Butler , M.S. Design and Evaluation of an ESA-based Method of Ensemble Subsetting for a WOFS (Warn on Forecast-like System)	Graduated 2024

Charles Kropiewnicki, M.S. A climatology of mesoscale airmasses with high theta-e.	Graduated 2023
Kyle Pittman, M.S. An empirical examination of the environmental variability that impacted supercell evolution, longevity, and severe weather production on 22 May 2019 in Oklahoma	Graduated 2023
Matthew Wilson, Ph.D. Using observations from TORUS to better understand and simulate the evolution of two proximate supercells on 8 June 2019	Graduated 2023
Stephen Shield, Ph.D. Leveraging “big data” to better understand and predict deep convection initiation	Graduated 2023
Kristen Axon, M.S. Using remote and in situ observations from TORUS to investigate a preexisting air mass boundary and its influence on a tornadic supercell on 28 May 2019	Graduated 2022
Alexander Erwin, M.S. Assessing Deep Convection in a Mountain-Valley System	Graduated 2021
Alexander Krull, M.S. “The role of boundary-parallel vertical wind shear in convection initiation”	Graduated 2019
Wolfgang Hanft, M.S. “Observations and mesoscale simulations of mesoscale airmasses with high θ_e ”	Graduated 2017
Curtis Riganti, M.S. “The Formation of Rear Flank Internal Surges: A Case Study from VORTEX2”	Graduated 2015
George Limpert, Ph.D. “Thermodynamic and microphysical controls on mesovortex genesis”	Graduated 2013
Noah Lock, M.S. “The environments of deep convection initiation”	Graduated 2012
Alexander Gibbs, M.S. “Periodicities of peak current and flash multiplicity in cloud to ground lightning strikes”	Graduated 2011
Jennifer Laflin, M.S. “Supercells and preexisting air mass boundaries: A targeted modeling study”	Graduated 2010
Anthony Reinhart, M.S. “Numerical study of mesoscale airmasses with high equivalent potential temperature”	Graduated 2009
Brian Barjenbruch, M.S. “A technique for developing an objective climatology of supercell and non-supercell thunderstorms”	Graduated 2009

GRADUATE STUDENTS – COMMITTEE MEMBER

Kyle Brooks , Ph.D., Central Michigan University	Present
Dessydery Mngao	Present
Daniel Rico , Ph.D. (UNL School of Computing)	Present
Isaac Arseneau , Ph.D., Texas Tech University	Graduated 2026
Jorden Gershenson , M.S., Univ. of Nebraska Omaha (Computer Science)	Graduated 2025
Eric Carothers , M.S.	Graduated 2025
Cameron Barker , M.S.	Graduated 2025
Devon Healey , Ph.D.	Graduated 2025
Robert Sasse , Ph.D., University of Colorado	Graduated 2025
Noah Began , M.S.	Graduated 2025
Raychel Nelson , M.S.	Graduated 2024
Sara McKnight Ph.D. (Math)	Graduated 2024
Benjamin Schweigert , M.S.	Graduated 2023
Michaela Wood , M.S.	Graduated 2023
Devon Healey , M.S.	Graduated 2022
Ajay Shankar , Ph.D. (Computer Science and Engineering)	Graduated 2021
Timothy Gunkel , M.S.	Graduated 2020
Kun-Yuan Lee , M.S.	Graduated 2019
Matthew Wilson , M.S.	Graduated 2019
Seth Blackwell , Ph.D. (Chemistry)	Graduated 2018
Abraham Torres , Ph.D.	Graduated 2017
Lena Heuscher , M.S.	Graduated 2016
William Silva , M.S., University of Colorado	Graduated 2015
Rebecca Duell , M.S.	Graduated 2014
Gabriel Lojero , M.S.	Graduated 2014
Jason Apke , M.S.	Graduated 2013
Jeramie Lippman , M.S.	Graduated 2012
Eric Holt , M.S.	Graduated 2011
Jack Elston , Ph.D., University of Colorado	Graduated 2011
Joshua Barnwell , M.S.	Graduated 2011
Tyler Fleming , M.S.	Graduated 2009
Natalie Umphlett , M.S.	Graduated 2008

UNDERGRADUATE STUDENTS

Josie Pettis	2025—2026
Case Study of 25 June 2024 “Whitman, NE” tornadic supercell (UCARE) ¹	
Amy Conner	2024—2025
Can Cloud-to-Ground Lightning Behavior Distinguish Between Tornadoic and Non-Tornadoic Supercells During Merger Events? (UCARE) ¹	
Kylee Matousek	2024—2025
What is the spatiotemporal distribution of deep convection initiation in the Eastern United States? (UCARE) ¹	
Anna James	2024—2025
Advancing Understanding of MAHTEs through Airmass Boundary Classification (Senior thesis)	
Logan Howard	2022—2023
Seabreeze numerical weather prediction (Senior thesis)	
Ryan Martz	2020-2023
“Impact of rotorwash on multi-rotor-based observations of temperature”	

(UCARE) ¹

The impact of urban heat islands on deep convection initiation (UCARE) ¹

Madeline Diedrichsen

2016-2020

“A radar-based thunderstorm climatology for the eastern US”

(NASA)

“Verification of Supercell Thunderstorm Hotspot found in Northeast Colorado”

(UCARE) ¹

“Development of an algorithm to extract vertical profiles from UAS flights”

(Independent Study)

Faye Shanti

2017-2019

“UAS observations of the 2017 solar eclipse”

(NSF)

“Generation of Sound Waves Associated to Merging Vorticity”

(UCARE)¹

Bryan Petersen

2017-2018

“A climatology of the San Luis Valley, Colorado”

(NASA)

Nathan Rick

2016-2018

“Tornadic Environments in Eastern Colorado”

(UCARE) ¹

Gwyneth Cross

2016-2017

“A radar-based thunderstorm climatology for the eastern US”

(NASA)

Dalton Van Stratten

2016-2017

“A radar-based thunderstorm climatology for the eastern US”

(NASA)

Taylor Whitney

2016

“Relation between Intensity Contrast and Magnetic Field for Active and Quiet Regions Observed on the Solar Photosphere”

(Honors thesis)

Brandon Centeno (University of Oklahoma)

2015-2016

“Observational examination of the relationship between boundary-normal vertical shear and CI”

(CLOUD-MAP)

Alex Schueth

2014-2016

“UAS observations of a gust front”

(UCARE) ¹

“Software development for IMeT: Data ingest and visualization”

(CLOUD-MAP)

Bradley McCune

2009-2010

“Tornado vortex signature position error”

(UCARE) ¹

Jeremiah Sjoberg

2007-2008

¹ UNL Undergraduate Creative Activities and Research Experiences fellowship.

“Towards a radar-based climatology of thunderstorms”

Jamie Lahowetz

Visualization of multi-sensor data for use with unmanned aircraft systems

2006-2007

Jennifer Laflin

“3D initialization of convection in an idealized cloud model”
(UCARE) ¹

2006-2007

POST-DOCTORAL SCIENTISTS SUPERVISED

Matthew Wilson

TORUS Observing System Experiments

2023

Jason Keeler

Unmanned Aircraft Systems Observing System Simulation Experiments for
targeted surveillance

2015-2018

George Limpert

- Development of atmospheric models for online planning
- Ensemble sensitivity analyses of supercells
- Observing system experiments for elevated convection

2013-2019

SYNERGISTIC ACTIVITIES

SERVICE TO PROFESSION

Member, UCAR Membership Committee

2025-Present

Editor, *Weather and Forecasting* (AMS)

2024-Present

Editor, *Journal of Unmanned Vehicle Systems* (CSP)

2019-Present

Member, Steering Committee, International Society for Atmospheric Research
using Remotely-Piloted Aircraft

2017-Present

Member, American Meteorological Society Scientific and Technological Activities
Council (STAC) Mesoscale Processes

2017-2025

Session Chair, AMS Mesoscale Symposium

2025

Member, WMO Scoping Planning Committee for the Uncrewed Aircraft Systems
Demonstration Campaign

2022-2024

Session Chair, AMS Severe Local Storms Conference

2024

Session Chair, ISARRA Conference

2024

Leadership team, ISARRA Flight Week

2024

Session Chair, Mesoscale Processes Conference

2023

Panel review member, National Academy of Sciences Research Associateship
Programs review

2013-2018

Session Chair , Annual Conference of <i>International Society for Atmospheric Research using Remotely-Piloted Aircraft</i>	2018
Session Chair , 28th Conference on Weather Analysis and Forecasting / 24th Conference on Numerical Weather Prediction; and the 21st Conference on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans, and Land Surface	2017
Session Chair , 21st Conference on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans, and Land Surface	2017
Session Chair , 28 th AMS Conference on Severe Local Storms	2016
Member , Program Committee, Annual Conference of <i>International Society for Atmospheric Research using Remotely-Piloted Aircraft</i>	2016
Session Chair , Annual Conference of <i>International Society for Atmospheric Research using Remotely-Piloted Aircraft</i>	2015
Member , Program Committee, Annual Conference of <i>International Society for Atmospheric Research using Remotely-Piloted Aircraft</i>	2015
Panel review member , NSF	2014, 2015
Panel review member , NOAA Climate Programs Office Climate Observations and Monitoring	2014
Co-chair , American Meteorological Society Special Symposium on Severe Local Storms: The Current State of the Science and Understanding Impacts	2014
Invited science representative , Weather Ready Nation: A Vital conversation Workshop	2011
Co-chair , American Meteorological Society 25 th Severe Local Storms conference	2010
Member , Program Committee for American Meteorological Society's 23 rd Conference on Weather Analysis and Forecasting and 19 th Conference on Numerical Weather Prediction	2009
Member , American Meteorological Society Scientific and Technological Activities Council (STAC) Severe Local Storms Committee	2008-2016
Peer Reviewer	
• <i>Bulletin of American Meteorological Society</i> • <i>Nature</i> • <i>Quarterly Journal of the Royal Meteorological Society</i> • <i>Monthly Weather Review</i> • <i>Journal of Applied Meteorology and Climatology</i> • <i>Journal of the Atmospheric Sciences</i> • <i>Journal of Atmospheric and Oceanic Technology</i> • <i>Journal of Geophysical Research – Atmospheres</i> • <i>Weather Forecasting</i>	

- *Atmospheric Science Letters*
- *International Journal of Climatology*
- *Atmospheric Measurement Techniques*
- *Geoscientific Instrumentation, Methods, and Data Systems*
- *Water Resources Research*
- *Remote Sensing*
- NSF

Member, Review panel for the Central Iowa National Weather Association Pam Daale Scholarship 2007

External Reviewer, New Mexico Climate Center climate data management 2007

SERVICE TO UNIVERSITY, COLLEGE, AND DEPARTMENT

Graduate Chair, Department of Earth and Atmospheric Sciences 2026- Present

Representative, Faculty Senate 2025-2026

Member, Search Committee College of Arts and Sciences Associate Dean of Research and Graduate Studies 2024-2025

Chairman, Department of EAS Outreach Committee 2024-2026

Member, College of Arts and Sciences Freedom of Expression and Academic Freedom Committee 2017-2019
2023-2026

Member, University Graduate Council 2019-2023

Member, Department of EAS Executive Committee 2019-2026

Member, Department of EAS Graduate Admissions Committee 2008-2013
2022-2026

Advisor, UNL student chapter of the American Meteorology Society 2007-2026

Member, College of Arts and Sciences Executive Committee 2016-2017
2020-2021

Member, College Awards committee 2020-2021

Member, Ad hoc University-level graduate grade appeal committee 2020

Chairman, Department of EAS search committee (PTF) 2020

Chairman, Department of EAS faculty search committee (RCM) 2019-2020

Member, University Grading and Examinations Committee 2017-2019

Member, Department of EAS Fellowship and Awards committee 2017-2018

Vice-chair, Department of Earth and Atmospheric Sciences (EAS) 2014-2018

Chairman, Department of EAS faculty search committee 2016-2017

Chairman , College of Arts and Sciences grade appeal (ad hoc)	2016
Member , University of Nebraska UAS working group – develop policy for University-level authorization of UAS operations	2015-2016
Member , College of Arts and Sciences Scholarships and Distinction Committee	2013-2016
Member , Department of EAS Salary Advisory Committee	2007, 2015-2016
Co-coordinator , Weather exhibits (5-6), “Dinosaurs and Disasters”	2007-2013
Reviewer , University of Nebraska Office of Research	2009-2013
Member , Center for Great Plains Studies Scholarship Committee	2009-2011
Member , Department of EAS faculty search committee	2007, 2009, 2011
Chairman , Department of EAS faculty search committee	2010
Panelist (of 4), University of Nebraska <i>Preparing Future Faculty</i> program	2008
Member , Department of EAS Information Committee	2008
Chairman , Department of EAS Web Page Committee	2006-2007

PROFESSIONAL SERVICE TO COMMUNITY

Featured Scientist , “Weather Geeks” podcast	2022
Presenter , York summer day camp (15 rising 5 th graders, 10 middle schoolers)	2022
Featured Scientist , “Weather Geeks” podcast	2019
Featured Scientist , Xploration Earth 2050 “The Future of Weather Prediction”; Season 4 Ep. 1	2017
Lead , <i>Investigate: Second Saturday Science Lab at the State Museum</i>	2017
Exhibitor , Weather Camp	2016, 2017
Exhibitor , IMeT to Allen Consolidated and Wakefield Consolidated junior high and high school students	2016
Featured Scientist , NSF-GEO+NBC-Learn http://www.nbclearn.com/whennaturestrikes/cuecard/103844	2015
Exhibitor , UNL Women in Science Conference 2015 (outreach exhibit)	2015
Presenter , Crete robotics team for the First Lego League 2013 Nature’s Fury Challenge	2013
Presenter , DOW mobile radar exhibition to Girl Scout and Brownie troops	2013

Presenter , DOW mobile radar exhibition to Omaha North STEM magnet science club	2013
Presenter , DOW mobile radar exhibition to Burke HS (Aeronautics and Space career specialty)	2013
Presenter , DOW mobile radar exhibition to FFA State Convention	2013
Presenter , Schoo Middle School, Lincoln, NE	2011
Presenter , Park Middle School, Lincoln, NE	2011
Co-Presenter , <i>Sunday with a Scientist</i> , Nebraska State Museum	2011
Presenter , Allen Middle/High School, Allen, NE	2011
Consultant , Durham museum exhibit “We Lived It: Nebraska Storm Stories”	2010
N-The-Know online video , University of Nebraska Communications office (http://www1.unl.edu/mediahub/media/871)	2009
Science fair judge , King Science and Technology’s Science Fair, Omaha	2007
Volunteer , UNL-sponsored high school Science Bowl	2007
Co-Coordinator , Weather exhibits (5), <i>Dinosaurs and Disasters</i>	2007-2015
Volunteer , <i>Dinosaurs and Disasters</i>	2006

AWARDS

UNL, Department of Earth and Atmospheric Sciences, Outstanding Faculty Member	2024
2024 Spring Nebraska Lecture Series	2024
UNL, Department of Earth and Atmospheric Sciences, Outstanding Faculty Member,	2018
UNL, Department of Earth and Atmospheric Sciences, Lawson Award for Outstanding Teaching	2017
The American Meteorological Society Severe Local Storms 2014 Committee Award	2014
UNL, Department of Earth and Atmospheric Sciences, Outstanding Faculty Member,	2012
NSF, “University of Nebraska Doppler on Wheels Education and Outreach project”	2008, 2011, 2013, 2015, 2017 2019
Fellow, Center for Great Plains Studies	2007-Present
National Center for Atmospheric Research Earth Observing Laboratory, Facilities Allocation, Role: PI, ~\$15,000	2007

Big 12 Faculty Fellowship	2006
National Center for Supercomputing Applications, Development Allocation, Role: PI, 10,000 Service Units	2006-2007

INVITED TALKS

Texas Tech University Department of Geosciences	2026
Texas A&M University Department of Atmospheric Sciences	2026
National Center for Atmospheric Research	2026
Penn State University Department of Meteorology and Atmospheric Science	2025
University of Oklahoma School of Meteorology	2025
Physics and Astronomy Summit	2024
Emergency Management & Disaster Science Open House (Panelist)	2024
Northern Illinois University Seminar Series	2023
Omaha/Valley NWS Spring Seminar Series	2021
High Plains AMS/NWA Conference	2021
Colorado State University, Department of Atmospheric Sciences	2021
LAPSE-RATE Workshop	2020
University of Kansas, Department of Geography and Atmospheric Sciences	2020
Current and Future Uses of Unmanned Aircraft Systems (UASs) for Improved Forecasts/Warnings and Other Scientific Studies, University of Oklahoma	2019
Faculty Connector – UNL	2019
University of Alabama – Huntsville, Department of Atmospheric Sciences	2017
Second Nebraska Data Analytics Workshop	2017
AMS Special Symposium on Severe Local Storms: Observation needs to advance research, prediction and communication	2017
AIAA-Aviation Conference, Characterization of the Atmospheric Environment using UAS	2016
Kansas City AMS club	2015
University of Nebraska at Kearney	2015
University of Colorado, Aerospace Engineering	2014
Iowa State University, Environmental Sciences, Atmospheric Sciences	2014
University of North Dakota Department of Atmospheric Sciences	2013
Nebraska Citizens for Science	2012
Omaha-Offutt AMS club	2011

Central Plains Severe Weather Symposium	2009, 2011
Amateur Radio Relay League Nebraska State Convection	2011
Association for Unmanned Vehicle Systems International	2010
Durham Museum, Omaha	2010
Lincoln Amateur Radio Club	2010
Nebraska Wesleyan, Introduction to Meteorology course	2010
Omaha-Offutt AMS club	2010
Severe Storms Symposium, Glen Ellyn, IL	2009
University of Nebraska at Kearney	2009
University Corporation for Atmospheric Research (UCAR) Annual Meeting break out session: Atmospheric Observing Systems in the U.S.	2007
University of Nebraska, Department of Geosciences' Stout Lecture Series	2007
Texas A&M University, Department of Meteorology	2007
University of Colorado, Research and Engineering Center for Unmanned Vehicles	2006

PROFESSIONAL DEVELOPMENT

Institutional Review Board certification	2016 - Present
WRF tutorial , NCAR	2016
Participant , "Cutting Edge Workshop for Early Career Faculty in the Geosciences: Teaching, Research, and Managing Your Career", College of William and Mary	2007

MEDIA INTERVIEWS

2024 media exposure Reach: 246M people; Equivalent ad revenue: \$0.5M Examples: MSN, Daily Mail	
2023 media exposure Reach: 191.9M people; Equivalent ad revenue: \$0.4M Examples: Knowable Magazine (picked up by MSN and Smithsonian)	
2022 media exposure for TORUS Reach: 153.7M people; Equivalent ad revenue: \$1.4M Examples: <i>New York Times</i> , <i>SBS Dateline Australia</i>	
2019 media exposure for TORUS Reach: 12M people; Equivalent ad revenue: \$0.1M Examples: <i>Axios</i> , <i>NET "What if..." series</i> , <i>The Weather Channel</i>	

PRINT MEDIA

<i>New York Times</i> – "TORUS"	2018
<i>The News & Advance</i> – "Fluctuations in storm strength made tornado forecast difficult"	2018

<i>Associated Press</i> —“Drones might help explain how tornadoes form”	2014
<i>USA Today</i> – “Drones may help predict tornadoes in the future”	2014
<i>Associated Press</i> – “Okla. going nearly 250 days without tornado”	2014
<i>Associated Press</i> – “Power of US tornado dwarfs Hiroshima bomb”	2013
<i>Omaha World Herald</i> – “North High students get to check out Doppler on Wheels”	2013
<i>Columns</i> – “Doppler on Wheels Gives Students Rare Opportunity”	2013
<i>Lincoln Journal Star</i> – “Twister list snubs Nebraska”	2012
<i>Scientific American</i> – “Droning it in: Storm-chasing unmanned aerial vehicle makes first foray into nascent twister”	2010
<i>Discovery News</i> – “First unmanned aircraft in a supercell thunderstorm”	2010
<i>USA Today</i> – “Drone aircraft to aid tornado research study in Great Plains”	2010
<i>Omaha World Herald</i> – “Unexpected Data”	2010
<i>Omaha World Herald</i> – “Supercell Sleuths”	2010
<i>Omaha World Herald</i> – “Drone to probe birth of tornadoes”	2010
<i>Omaha World Herald</i> – “Tornado season has a slow start”	2010
<i>Lincoln Journal Star</i> – “UNL part of multi-state tornado project”	2009
<i>Omaha World Herald</i> – UAS and VORTEX-2	2009
<i>The Scarlet</i> – “Flying into the vortex: Houston to help probe severe storms with unmanned aircraft”	2009

TELEVISION, CINEMA, AND RADIO

CNN, Southeast US tornadoes	2025
“Consider this...”, Nebraska Public Radio	2024
KZUM – Lincoln tornadoes	2024
Consultation with Director and Production Designer for <i>Twisters</i>	2023
WHYY <i>The Pulse</i> – TORUS	2022
<i>Dateline Australia</i> – TORUS	2022
<i>NET Radio</i> – Featured Conversation: Drones and storms	2017
<i>NBC Nightly News</i> – Storm chasing	2017
<i>Fox News Radio</i> – UAS and Severe Storms Research Group	2014
<i>Canadian Broadcasting Corporation</i> – 9 regional interviews, Moore, OK tornado	2013
WDEL (Delaware news station) – Moore, OK tornado	2013
KETV – Interview regarding value of storm chasing to research	2013

KHAS (TV Hastings)– “UNL Team Develops Technology To Track Tornadoes With Drones”	2013
KLKN (TV Lincoln)– Tornadoes	2012
KMTV (TV Omaha)– Feature story (VORTEX2)	2010
KVNO (Radio Omaha) – Interview	2009
KLKN (TV Lincoln)– UAS and VORTEX2	2009

REFERENCES

- Dr. Brian Argrow**, University of Colorado, Boulder
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