ADAM L. HOUSTON

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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
Cum Laude

PROFESSIONAL EXPERIENCE

Associate Professor — 2012-Present
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

Orf, L, R. B. Wilhelmson, B. D. Lee, C. Finley, and A. L. Houston, **2016**: Evolution of a Long-Track Violent Tornado within a Simulated Supercell. *Bulletin of the American Meteorological Society,* In press. doi: 10.1175/BAMS-D-15-00073.1

Houston, A. L., R. J. Laurence III, T. W. Nichols, S. Waugh, B. Argrow, and C. L. Ziegler, **2016**: Intercomparison of unmanned aircraft-borne and mobile mesonet atmospheric sensors. *Journal of Atmospheric and Oceanic Technology*. **33**, 1569-1582, doi: 10.1175/JTECH-D-15-0178.1

Houston, A. L., **2016**: The Sensitivity of Deep Convective Ascent of Cold Pool air to Vertical Shear and Cold Pool Buoyancy. *Electronic J. Severe Storms Meteor*. **11,** 1-29.

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: 10.1175/JTECH-D-14-00118.1

Limpert, G. A. L. Houston, and N. A. Lock, **2015**: The Advanced algorithm for the tracking of objects (AALTO). *Meteorological Applications*, **22,** 694-704.

Lock N. A. and A. L. Houston, **2015**: Spatiotemporal Distribution of Thunderstorm Initiation in the US Great Plains from 2005-2007. *International Journal of Climatology*, **35**, 4047-4056, DOI: 10.1002/joc.4261.

Lock N. A. and A. L. Houston, **2014**: Empirical Examination of the Factors Regulating Thunderstorm Initiation. *Monthly Weather Review,* **142,** 240-268, doi: 10.1175/MWR-D-13-00082.1.

Houston, A. L., B. Argrow, J. Elston, J. Lahowetz, E. W. Frew, and P. C. Kennedy, **2012**: The Collaborative Colorado-Nebraska Unmanned Aircraft System Experiment. *Bulletin of the American Meteorological Society*, **93**, 39-54. doi: 10.1175/2011BAMS3073.1.

Laflin, J. M. and A. L. Houston, **2012**: A modeling study of supercell development in the presence of a preexisting airmass boundary. *Electronic J. Severe Storms Meteor.,* **7**, 1–29.

Frew, E., J. S. Elston, B. Argrow, A. L. Houston, and, E. Rasmussen, **2012**: Unmanned Aircraft Systems for Sampling Severe Local Storms and Related Phenomena. *IEEE Robotics and Automation Magazine*. **19**, 85-95.

Houston, A. L., and R. B. Wilhelmson, **2012**: The impact of airmass boundaries on the propagation of deep convection: A modeling-based study in a high-CAPE, low-shear environment. Monthly Weather Review. **140**, 167-183, doi: 10.1175/MWR-D-10-05033.1.

Houston, A. L., and R. B. Wilhelmson, **2011**: The dependence of storm longevity on the pattern of deep convection initiation in a low-shear environment. Monthly Weather Review, **139**, 3125–3138, doi: 10.1175/MWR-D-10-05036.1.

Elston, J. S., B. Argrow, E. Frew, A. L. Houston, and, J. Straka, **2011**: Evaluation of Unmanned Aircraft Systems for Severe Storm Sampling using Hardware-in-the-Loop Simulations. *Journal of Aerospace Computing, Information, and Communication,* **8**, 269-294. doi: 10.2514/1.53737.

Elston, J. S., J. Roadman, M. Stachura, B. Argrow, A. L. Houston, and, E. Frew, **2011**: The Tempest Unmanned Aircraft System for In Situ Observations of Tornadic Supercells: Design and VORTEX2 Flight Results. *Journal of Field Robotics,* **28,** 461-483. doi: 10.1002/rob.20394.

Houston, A. L., R. L. Thompson, and, R. Edwards, **2008**: The optimal bulk wind differential depth and the utility of the upper-tropospheric storm-relative flow for forecasting supercells. *Weather and Forecasting,* **23**, 825-837.

Houston, A. L., and R. B. Wilhelmson, **2007**: Observational analysis of the 27 May 1997 central Texas tornadic event. Part I: Pre-storm environment and storm maintenance/propagation. *Monthly Weather Review,* **135**, 701-726.

Houston, A. L., and R. B. Wilhelmson, **2007**: Observational analysis of the 27 May 1997 central Texas tornadic event. Part II: Tornadoes. *Monthly Weather Review,* **135**, 727-735.

Houston, A. L., and D. Niyogi, **2007**: The sensitivity of convective initiation to the lapse rate of the active cloud-bearing layer. *Monthly Weather Review,* **135**, 3013-3032.

GRANTS

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**), 2015-2016.

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

TEACHING

Weather and Climate, Survey-level	2013
Radar Meteorology, Upper-level undergraduate and graduate-level	2008, 2011, 2013, 2015
Dynamics of Severe Convective Storms, Graduate-level	2005, 2008, 2010, 2011, 2013
Mesoscale Meteorology, Upper-level undergraduate and graduate-level	2011, 2012, 2014
Dynamic Meteorology I, Upper-level undergraduate	2005-2009, 2011,2014, 2015
Dynamic Meteorology II, Upper-level undergraduate	2005-2010, 2012, 2015, 2016
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

Wolfgang Hanft, M.S. — 2015- Present
"Observations and mesoscale simulations of mesoscale airmasses with high θ_e"

Curtis Riganti, M.S. — Graduated 2015

"The Formation of Rear Flank Internal Surges: A Case Study from VORTEX2"

Eric Ahasic, M.S. 2012 –2014
"Coherent planetary boundary layer circulations on the margins of terrestrial wind farm wakes"

Cody Oppermann, M.S. 2010—Present
"A climatology of supercell thunderstorms"

Taryn Serwatowski, M.S. 2008 –Present
"The sensitivity of groundwater recharge to precipitation type"

David More, M.S. 2012 – 2013
"The representation of mesoscale atmospheric phenomena by unmanned aircraft systems"

George Limpert, Ph.D. Graduated 2013
"Thermodynamic and microphysical controls on mesovortex genesis"

Noah Lock, M.S. Graduated 2012
"The environments of deep convection initiation"

Alexander Gibbs, M.S. Graduated 2011
"Periodicities of peak current and flash multiplicity in cloud to ground lightning strikes"

Jamie Lahowetz, M.S. 2008— 2011
"A technique for developing a US climatology of thunderstorms: The ThOR algorithm"

Jennifer Laflin, M.S. Graduated 2010
"Supercells and preexisting airmass boundaries: A targeted modeling study"

Anthony Reinhart, M.S. Graduated 2009
"Numerical study of mesoscale airmasses with high equivalent potential temperature"

Brian Barjenbruch, M.S Graduated 2009
"A technique for developing an objective climatology of supercell and non-supercell thunderstorms"

GRADUATE STUDENTS – COMMITTEE MEMBER

Jose Tores, Ph.D. Present
Adrianne Engel, M.S. Present
Lena Heuscher, M.S. Present
Sabrina Jauernic, Ph.D. Present
Seth Blackwell, Ph.D. (Chemistry) Present
Scott Rentschler, M.S. Present
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

Taylor Whitney 2016
"Relation between Intensity Contrast and Magnetic Field for Active and Quiet Regions Observed on the Solar Photosphere"
(Honors thesis)

Alex Schueth 2014-2015
"UAS observations of a gust front"
(Senior research project for UNL Undergraduate Creative Activities and Research Experiences fellowship)

Bradley McCune 2009-2010
"Tornado vortex signature position error"
(Senior research project for UNL Undergraduate Creative Activities and Research Experiences fellowship)

Jeremiah Sjoberg 2007-2008
"Towards a radar-based climatology of thunderstorms"

Jamie Lahowetz 2006-2007
Visualization of multi-sensor data for use with unmanned aircraft systems

Jennifer Laflin 2006-2007
"3D initialization of convection in an idealized cloud model"
(Senior research project for UNL Undergraduate Creative Activities and Research Experiences fellowship)

POST-DOCTORAL SCIENTISTS SUPERVISED

Jason Keeler 2015-Present
- UAS OSSEs for targeted surveillance

George Limpert 2013-Present
- Development of atmospheric models for online planning
- Ensemble sensitivity analyses of supercells
- Observing system experiments for elevated convection

SYNERGISTIC ACTIVITIES

SERVICE TO PROFESSION

Member, Program Committee, Annual Conference of *International Society for Atmospheric Research using Remotely-Piloted Aircraft* 2016

Session Chair, Annual Conference of *International Society for Atmospheric Research using Remotely-Piloted Aircraft*	2015
Member, Program Committee, Annual Conference of *International Society for Atmospheric Research using Remotely-Piloted Aircraft*	2015
Co-Director, UAS and Severe Storms Research Group.	2014-Present
Associate Editor, Monthly Weather Review	2013-2014
Panel review member, NSF	2014, 2015
Panel review member, National Academy of Sciences Research Associateship Programs review	2013-Present
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 25th Severe Local Storms conference	2010
Member, Program Committee for American Meteorological Society's 23rd Conference on Weather Analysis and Forecasting and 19th Conference on Numerical Weather Prediction	2009
Member, American Meteorological Society Scientific and Technological Activities Council (STAC) Severe Local Storms Committee	2008-Present

Peer Reviewer

- *Quarterly Journal of the Royal Meteorological Society*
- *Monthly Weather Review*
- *Journal of Applied Meteorology and Climatology*
- *Journal of the Atmospheric Sciences*
- *Journal of Atmospheric and Oceanic Technology*
- *Journal of Geophysical Research – Atmospheres*
- *Weather Forecasting*
- *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

Vice-chair, Department of Earth and Atmospheric Sciences — 2014-Present

Member, University of Nebraska UAS working group – develop policy for University-level authorization of UAS operations — 2015-Present

Member, College Scholarships and Distinction Committee — 2013-Present

Member, UNL Graduate Fellowship Committee — 2009-Present

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

Member, Department Graduate Admissions Committee — 2008-2013

Member, EAS faculty search committee — 2007, 2009, 2011

Chairman, EAS faculty search committee — 2010

Reviewer, UNL Office of Research — 2009-Present

Member, Center for Great Plains Studies Scholarship Committee — 2009-2011

Panelist (of 4), UNL Preparing Future Faculty program — 2008

Member, Department Information Committee — 2008

Member, Department Salary Advisory Committee — 2007

Chairman, Strategic plan for the UNL meteorology/climatology program — 2006

Chairman, Department Web Page Committee — 2006-2007

PROFESSIONAL SERVICE TO COMMUNITY

Featured Scientist, NSF-GEO+NBC-Learn — 2015
http://www.nbclearn.com/whennaturestrikes/cuecard/103844

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, *Sunday with a Scientist*, Nebraska State Museum 2011

Presenter, Allen Middle/High School, Allen, NE 2011

Consultant, Durham museum exhibit "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), *Dinosaurs and Disasters* 2007-2015

Volunteer, *Dinosaurs and Disasters* 2006

PROFESSIONAL DEVELOPMENT

Participant, "Cutting Edge Workshop for Early Career Faculty in the Geosciences: Teaching, Research, and Managing Your Career", College of William and Mary 2007

AWARDS

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

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

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
2009 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 MEMBERSHIPS

American Meteorological Society

American Geophysical Union

MEDIA INTERVIEWS

PRINT MEDIA

AP—"Drones might help explain how tornadoes form	2014
USA Today – "Drones may help predict tornadoes in the future"	2014
Associated Press – "Okla. going nearly 250 days without tornado"	2014

Associated Press – "Power of US tornado dwarfs Hiroshima bomb" 2013

Omaha World Herald – "North High students get to check out Doppler on Wheels" 2013

Columns – "Doppler on Wheels Gives Students Rare Opportunity" 2013

Lincoln Journal Star – "Twister list snubs Nebraska" 2012

Scientific American – "Droning it in: Storm-chasing unmanned aerial vehicle makes first foray into nascent twister" 2010

Discovery News – "First unmanned aircraft in a supercell thunderstorm" 2010

USA Today – "Drone aircraft to aid tornado research study in Great Plains" 2010

Omaha World Herald – "Unexpected Data" 2010

Omaha World Herald – "Supercell Sleuths" 2010

Omaha World Herald – "Drone to probe birth of tornadoes" 2010

Omaha World Herald – "Tornado season has a slow start" 2010

Lincoln Journal Star – "UNL part of multi-state tornado project" 2009

Omaha World Herald – UAS and VORTEX-2 2009

The Scarlet– "Flying into the vortex: Houston to help probe severe storms with unmanned aircraft" 2009

TELEVISION AND RADIO

Fox News Radio – USSRG 2014

Canadian Broadcasting Corporation – 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