

Todd Austin Murphy

Department of Atmospheric Science
University of Louisiana at Monroe
Monroe, LA 71209
Office: 318.342.3428
Cell: 251.490.0694
E-mail: murphy@ulm.edu

EDUCATION

2015 **University of Alabama in Huntsville**, Huntsville, AL
 Ph.D., Atmospheric Science
2010 **University of Alabama in Huntsville**, Huntsville, AL
 M.S., Atmospheric Science

2008 **University of South Alabama**, Mobile, AL
 B.S., Meteorology

PROFESSIONAL EXPERIENCE

2014- **Dept. of Atmospheric Science, University of Louisiana at Monroe**, Monroe, LA
 Assistant Professor

2012-2014 **Dept. of Atmospheric Science, University of Alabama in Huntsville**, Huntsville, AL
 Instructor
2008-2014 **Dept. of Atmospheric Science, University of Alabama in Huntsville**, Huntsville, AL
 Graduate Research Assistant

2007-2008 **Dept. of Earth Sciences, University of South Alabama**, Mobile, AL
 Teaching Assistant

GRANTS AND CONTRACTS

2017-20 Buban, M.S., R. Dobosy, T.R. Lee, T. P. Meyers, and **T.A. Murphy**: *Collaborative Research for PREEVENTS Track 2: Using observations from the VORTEX-SE to improve predictions of tornado formation by identifying land surface forcings responsible for convection initiation and low-level vorticity enhancement*. NSF: Prediction of and Resilience against Extreme Events (PREEVENTS) program. Collaborating institutions: NOAA/ARL/ATDD and Oak Ridge Associated Universities. \$719,895 (\$90,746 ULM part) (extramural). *submitted*

2016-18 Brown, M., **T.A. Murphy**, R.A. Wade: *Understanding the Variability of Southeastern Severe Storm Environments using Mobile Soundings during VORTEX-SE*. NOAA: FY16 VORTEX-SE program. Collaborating institutions: Mississippi State University and University of Alabama in Huntsville. \$247,750 (\$83,800 ULM part) (extramural).

2016-17 **Murphy, T.A.**, and K.D. Leppert: *AWIPS-II Infrastructure Upgrade at the University of Louisiana at Monroe*. UCAR: 2016 Unidata Equipment Awards. \$17,904 (+ \$1,068 ULM match) (extramural).

2016-17 **Murphy, T.A.**, and K.D. Leppert: *Integrating Research and Education Through Continuous Atmospheric Temperature and Moisture Profiles*. Louisiana Board of Regents: Traditional Enhancement Program. \$139,500 (+ \$21,495 ULM match) (extramural).

2015-16 Brown, M., M.D. Parker, and **T.A. Murphy**: *Understanding the Variability and Predictability of Southeastern Severe Storm Environments using Mobile Soundings during VORTEX-SE*. NOAA:

VORTEX-SE program. Collaborating institutions: Mississippi State University and North Carolina State University. \$227,038 (\$58,519 ULM part) (extramural).

- 2016 **Murphy, T.A.**, *The Weather Channel Guest Speaker*. ULM CAES: Salary Recovery Funds. \$950 (intramural)
- 2015 **Murphy, T.A.**, *Mobile Radar Truck Hands-On Exhibit & Seminar*. ULM CAES: Salary Recovery Funds. \$750 (intramural)
- 2015 **Murphy, T.A.**: *The University of Louisiana at Monroe's Polarimetric Doppler Weather Radar – Teaching, Research, and Operations*. ULM CAES: Dean's Faculty Support Fund for travel to present at 37th Conference on Radar Meteorology. \$832 (intramural).
- 2015 **Murphy, T.A.**: *ULM Synoptic Meteorology Teaching Laboratory Computer Update*. ULM CAES: Computer Refresh Funds (via proposal submitted to Salary Recovery Funds). \$3,700 (intramural).

PROPOSED (NOT FUNDED):

- 2015 Murillo, E., and **T.A. Murphy**: *Severity of Tornado Outbreaks in the Southeastern United States versus the Great Plains*. NSF/Louisiana Board of Regents (LA EPSCoR SURE). \$4,500 (extramural). *Scored 89% in reviewers; funding approval at 90%. Student led proposal.

PEER-REVIEWED PUBLICATIONS

- Murphy, T.A.**, R.A. Wade, and B.C. Carcione, 2016: Observations and operational considerations of the 4 June 2013 chaff event in north Alabama. *J. Operational Meteor.*, **4** (3), 34–45.
- Knupp K.R., **T.A. Murphy**, T.A. Coleman, R.A. Wade, S. Mullins, C.J. Schultz, E.V. Schultz, L. Carey, A. Sherrer, E.W. McCaul, B. Carcione, S. Latimer, A. Kula, K. Laws, P.T. Marsh, and K. Klockow, 2014: Meteorological overview of the devastating 27 April 2011 tornado outbreak. *Bull. Amer. Meteor. Soc.*, **95**, 1041–1062.
- Coleman, T.A., **T.A. Murphy**, K.R. Knupp, L.D. Carey, and M.E. Anderson, 2014: Extensive observations of the transition region of a winter storm. *J. Operational Meteor.*, **2** (1), 1–12.
- Murphy, T.A.**, and K.R. Knupp, 2012: An analysis of cold season supercell storms using the synthetic dual-Doppler technique. *Mon. Wea. Rev.*, **141**, 602–624.

OTHER FORMAL PUBLICATIONS

- Murphy, T.A.**, 2015: Interactions of wave-like reflectivity segments with deep convection and subsequent mesocyclogenesis and tornadogenesis. University of Alabama in Huntsville, 194 pp. (Ph.D. dissertation)
- Murphy, T.A.**, 2010: Super Tuesday storm variability. University of Alabama in Huntsville, 173 pp. (M.S. thesis)

CONFERENCE PROCEEDINGS

*Annotations: *Student Author; +Presentation Award*

- Murphy, T.A.**, T. Aydel*, I. Bordelon*, S. Kreller*, A. Melancon*, H.M. Mallinson*, and E.M. Murillo*, 2016: An Overview of ULM Participation in the VORTEX-SE Field Program. *28th Conference on Severe Local Storms*, Portland, OR, Amer. Meteor. Soc.

- *Lyza, A.W., **T.A. Murphy**, D.M. Conrad*, and K.R. Knupp, 2016: Environmental Evolution and Storm-Scale Observations of the 31 March 2016 Northern Alabama Tornado Event during VORTEX-SE. *28th Conference on Severe Local Storms*, Portland, OR, Amer. Meteor. Soc.
- *Mallinson, H.M., and **T.A. Murphy**, 2016: Comparing Environmental Conditions of Convective Storms Producing Damaging Winds and Hail. *LSU-S Student Scholars Forum*, Shreveport, LA, LSU-Shreveport.
- +*Murillo, E.M., and **T.A. Murphy**, 2016: Classification and Analysis of Tornado Outbreaks in Dixie Alley and Tornado Alley. *LSU-S Student Scholars Forum*, Shreveport, LA, LSU-Shreveport. **Awarded “Best Undergraduate Oral Presentation”**
- *Mallinson, H.M., and **T.A. Murphy**, 2016: Comparing Environmental Conditions of Convective Storms Producing Damaging Winds and Hail. *15th Annual American Meteorological Society Student Conference*, New Orleans, LA, Amer. Meteor. Soc., S99.
- *Murillo, E.M., and **T.A. Murphy**, 2016: Classification and Analysis of Tornado Outbreaks in Dixie Alley and Tornado Alley. *15th Annual American Meteorological Society Student Conference*, New Orleans, LA, Amer. Meteor. Soc., S87.
- *Lisauckis, C.A., K.R. Knupp, **T.A. Murphy**, T.A. Coleman, and A.W. Lyza*, 2016: Investigating Tornado Genesis Events within the ARMOR Domain. *15th Annual American Meteorological Society Student Conference*, New Orleans, LA, Amer. Meteor. Soc., S78.
- Murphy, T.A.**, A.T.C. Hanks, and E.A. Pani, 2015: The University of Louisiana at Monroe’s Polarimetric Doppler Radar – Teaching, Research, and Operations. *37th Conference on Radar Meteorology*, Norman, OK, Amer. Meteor. Soc.,
- *Lisauckis, C.A., K.R. Knupp, **T.A. Murphy**, and A.W. Lyza*, 2015: Storm Mode Variability over northern Alabama within the Domain of the ARMOR Radar. *37th Conference on Radar Meteorology*, Norman, OK, Amer. Meteor. Soc.,
- Wade, R., K. Knupp, D. Phillips, **T.A. Murphy**, A. Sherrer, A. Mayhew, A. Lyza*, and B. Freitag*, 2015: MIPS observations of the kinematic, thermodynamic, and microphysical characteristics of lake-effect snow bands during The Ontario Winter Lake-effect Systems (OWLeS) Field Project. *37th Conference on Radar Meteorology*, Norman, OK, Amer. Meteor. Soc.,
- *Lyza, A.W., **T.A. Murphy**, and K. Knupp, 2014: Overview of the 28-29 April 2014 Tennessee Valley Tornado Outbreak. *27th Conference on Severe Local Storms*, Madison, WI, Amer. Meteor. Soc., P120.
- Murphy, T.A.**, and K.R. Knupp, 2014: Prevalence and characteristics of atmospheric waves in severe weather environments. *94th American Meteorological Society Annual Meeting*, Atlanta, GA, Amer. Meteor. Soc., P837.
- Murphy, T.A.**, T.A. Coleman, and K.R. Knupp, 2013: Observations and analysis of atmospheric waves during the historic April 27, 2011 tornado outbreak. *38th National Weather Association Annual Meeting*, Charleston, SC, Nat. Wea. Assoc.
- Murphy, T.A.**, T.A. Coleman, and K.R. Knupp, 2013: Observations and analysis of atmospheric waves during the historic April 27, 2011 tornado outbreak. *36th Conference on Radar Meteorology*, Breckenridge, CO, Amer. Meteor. Soc., P258.
- Murphy, T.A.**, T.A. Coleman, and K.R. Knupp, 2013: Observations and analysis of atmospheric waves during the historic April 27, 2011 tornado outbreak. *11th Annual Southeast Severe Storms Symposium*, Starkville, MS, Mississippi State University.

- Murphy, T.A.**, T.A. Coleman, and K.R. Knupp, 2012: Observations and analysis of atmospheric waves during the historic April 27, 2011 tornado outbreak. *26th Conference on Severe Local Storms*, Nashville, TN, Amer. Meteor. Soc., P107.
- Murphy, T.A.**, R.A. Wade, T.A. Coleman, and K.R. Knupp, 2012: Analysis and recent observations of wave interactions in North Alabama. *9th Southeastern Coastal and Atmospheric Processes Symposium*, Mobile, AL, University of South Alabama.
- Murphy, T.A.**, R.A. Wade, T.A. Coleman, and K.R. Knupp, 2012: Analysis and recent observations of wave interactions in North Alabama. *10th Annual Southeast Severe Storms Symposium*, Starkville, MS, Mississippi State University.
- Murphy, T.A.**, T.A. Coleman, R.A. Wade, and K.R. Knupp, 2012: Radar overview and visual documentation of the 27 April 2011 tornadic outbreak. *92nd American Meteorological Society Annual Meeting*, New Orleans, LA, Amer. Meteor. Soc., J1.1.
- +Murphy, T.A.**, R.A. Wade, T.A. Coleman, and K.R. Knupp, 2011: Observations and operational importance of wave like features interacting with quasi-linear convective systems. *36th National Weather Association Annual Meeting*, Birmingham, AL, Nat. Wea. Assoc. **Awarded “Best Graduate Student Oral Presentation”**
- Murphy, T.A.**, T.A. Coleman, and K.R. Knupp, 2011: Preliminary observations of convective initiation and mesocyclone interactions with atmospheric waves on 27 April 2011. *36th National Weather Association Annual Meeting*, Birmingham, AL, Nat. Wea. Assoc.
- Murphy, T.A.**, R.A. Wade, T.A. Coleman, and K.R. Knupp, 2011: Observations of wave-like features interacting with a tornadic line-echo wave pattern. *35th Conference on Radar Meteorology*, Pittsburgh, PA, Amer. Meteor. Soc., 4B.6.
- Murphy, T. A.**, R.A. Wade, T.A. Coleman, and K.R. Knupp, 2011: Recent radar observations of wave-like features interacting with quasi-linear convective systems. *35th Conference on Radar Meteorology*, Pittsburgh, PA, Amer. Meteor. Soc., 191713.
- Murphy, T.A.**, and K.R. Knupp, 2010: Super Tuesday storm variability. *25th Conference on Severe Local Storms*, Denver, CO, Amer. Meteor. Soc., P8.20.
- Murphy, T.A.**, and K.R. Knupp, 2010: Super Tuesday storm variability. *7th Southeastern Coastal and Atmospheric Processes Symposium*, Mobile, AL, University of South Alabama.
- Murphy, T.A.**, and K.R. Knupp, 2009: Variability in the kinematic structure of Super Tuesday storms. *34th Conference on Radar Meteorology*, Williamsburg, VA, Amer. Meteor. Soc., 5B.2.
- Murphy, T.A.**, and M. Anderson, 2009: A North Alabama winter weather event: From a dual-pol perspective. *6th Southeastern Coastal and Atmospheric Processes Symposium*, Mobile, AL, University of South Alabama.

ADDITIONAL PRESENTATIONS

Invited presentations

- | | |
|-----------|--|
| Oct. 2016 | “ULM Radar Update,” NWS Shreveport Monroe SKYWARN Class |
| Jun. 2016 | “VORTEX-SE: Year 1 Review & Year 2 Preview,” Central Mississippi AMS/NWA Chapter |
| Apr. 2016 | “Tornado Climatology & the ULM Polarimetric Doppler Radar,” Louisiana Bankers Association Emergency Preparedness Meeting |
| Jul. 2015 | “ULM’s Polarimetric Doppler Weather Radar,” Southeast Texas/Southwest Louisiana AMS/NWA Chapter |
| May 2015 | “ULM’s Polarimetric Doppler Weather Radar,” Central Mississippi AMS/NWA Chapter |

- Feb. 2015 “Atmospheric Gravity Waves,” Science Speaker Series, Louisiana School for Math, Science, and the Arts
- Apr. 2014 “Atmospheric Gravity Waves,” University of Louisiana at Monroe
- Mar. 2014 “Gravity Wave Interactions with Convection,” Nashville Severe Weather Awareness Day
- Mar. 2013 “April 27, 2011 Tornado Outbreak,” Nashville Severe Weather Awareness Day
- Jan. 2013 “April 27, 2011 Tornado Outbreak,” Middle Tennessee Chapter of the NWA
- Feb. 2012 “Doppler Radar and Polarimetric Analysis,” 3rd Annual Rocket City Weather Fest
- Sep. 2011 “April 27, 2011 Tornado Outbreak,” 2nd Annual Rocket City Weather Fest

TEACHING EXPERIENCE

*Annotations: *New course development by T. Murphy,*

University of Louisiana at Monroe

- Earth Science (GEOS 1001)*: SU15
- Natural Disasters and Hazards (GEOS 1002)*: SU15, SU16
- Introduction to the Atmosphere (ATMS 1001): FA15, W16
- Introduction to Severe Weather (ATMS 1002): SP15, SU15, SP16, SU16
- Basic Meteorology Lab I (ATMS 1003): FA15
- Weather Analysis and Forecasting (ATMS 2000): FA14, FA15, FA16
- Dynamic Meteorology I (ATMS 3005): SP15
- Dynamic Meteorology II (ATMS 3006): FA14
- Intermediate Weather Forecasting (ATMS 3025)*: SP16
- Synoptic Meteorology Laboratory (ATMS 4003): FA14, FA15, FA16
- Mesoscale Meteorology (ATMS 4004): SP15, SP16
- Radar Meteorology (ATMS 4006)*: SP16

University of Alabama in Huntsville

- Severe & Hazardous Weather (ATS/ESS 112): 2012–2014 *substitute instructor*
- Synoptic Meteorology (ATS/ESS 452): SP12, SP13
- Forecasting Mesoscale Processes (ATS 454/554): SP14
- Atmospheric Thermodynamics and Cloud Physics (ATS 541): 2012–2014 *substitute instructor*
- Ground Based Remote Sensing (ATS 671): 2012–2014 *substitute instructor*

University of South Alabama

- Dynamic Meteorology I (MET 354): Fall 2007 *teaching assistant*
- Dynamic Meteorology II (MET 355): Spring 2008 *teaching assistant*
- Computer Applications in Meteorology (MET 420): Summer 2008 *teaching assistant*

LEADERSHIP, SERVICE, AND OUTREACH

University of Louisiana at Monroe

- 2016- Doctoral Committee Member, Tony Lyza, Dept. of Atmos. Science, Univ. Alabama in Huntsville
- 2016- Member, Mathematics Faculty Search Committee
- 2015- Faculty Advisor, ULM HAWCS (High Altitude Weather Collection with Soundings) balloon team
- 2014- Webmaster, Department of Atmospheric Science
- 2014- Faculty Advisor, ULM Student Chapter of the American Meteorological Society
- 2014- Student Recruitment Coordinator, Department of Atmospheric Science
- 2016 Member, College of Arts, Education, & Sciences Fundraising Committee
- Nov. 2016 Research participant and presentation, VORTEX-SE Workshop and Planning Meeting
- Sept. 2016 Interview (local TV), KNOE, Recent ATMS Grants
- June 2016 Weather Balloon Launch, Girls Power Up STEM Summer Camp
- Feb. 2016 Weather Balloon Launch, Jesus Good Shepherd School
- Feb. 2016 Interview (local TV), KNOE, Benefits of ULM Radar
- Feb. 2016 Interview (newspaper), The News Star, ULM participation in Vortex-SE
- Feb. 2016 Judge, LSU-S Student Scholars Forum

2014-15 Member, School of Sciences Scholarship and Awards Committee
 2014-15 Member, Atmospheric Science Faculty Search Committee
 Nov. 2015 Interview (local TV), KTVE, ULM participation in Vortex-SE
 Nov. 2015 Interview (local TV), KNOE, ULM participation in Vortex-SE
 Nov. 2015 Research participant, VORTEX-SE Steering Workshop and Planning Meeting
 Oct. 2015 ULM ATMS representative, STEM Recruiting at St. Fredericks Catholic High School
 Oct. 2015 ULM representative, UCAR Members Meeting
 Sep. 2015 Interview (local radio), KEDM, Vortex-SE and ULM Radar
 Jul. 2015 Instructor, Bayou Discovery Camp
 May 2015 ULM representative, WiFi Committee, National Weather Service – Jackson, MS
 Feb. 2015 Research seminar & recruiting visit, Louisiana School for Math, Science, and the Arts
 Feb. 2015 Judge, Louisiana High School Technology Online Challenge

Undergraduate Researchers Supervised at the University of Louisiana at Monroe

Fall 2016 Taylor Aydell, ULM Emerging Scholars Program (\$500 internal grant)
 Fall 2016 Devorea McMillian, ULM Emerging Scholars Program (\$500 internal grant)
 Spring 2016 John Dopieralla, ULM Emerging Scholars Program (\$500 internal grant)
 Spring 2016 Sisam Shrestha, ULM Emerging Scholars Program (\$500 internal grant)
 2015-16 Elisa Murillo, “Severity of Tornado Outbreaks in the Southeastern United States versus the Great Plains,” *unfunded research project*
 2015-16 Holly Mallinson, “Characteristics of Damaging Wind Events,” *unfunded research project*
 Fall 2015 Collin Landry, ULM Emerging Scholars Program (\$500 internal grant)
 Fall 2015 Cameron Dauterive, ULM Emerging Scholars Program (\$500 internal grant)

University of Alabama in Huntsville

2008-14 Public tour lead for UAH severe weather research vehicles
 Exhibit at 94th Annual AMS Meeting, Atlanta, GA (2014)
 STEM outreach event at Hampton Cover Middle School, Huntsville, AL (2013)
 AMS outreach event at Buckhorn High School, Huntsville, AL (2013)
 41st Conference on Broadcast Meteorology, Nashville, TN (2013)
 11th Annual Southeast Severe Storms Symposium, Starkville, MS (2013)
 9th Southeastern Coastal and Atmospheric Processes Symposium, Mobile, AL (2012)
 3rd Rocket City Weather Fest, Huntsville, AL (2012)
 2nd Rocket City Weather Fest, Huntsville, AL (2011)
 Various elementary, middle, and high school groups (2008-14)
 2011-12 Graduate Student Representative, Department of Atmospheric Science
 2011-12 Lead graduate student for new student recruiting, Department of Atmospheric Science
 2011, 12 Planning committee and volunteer, Rocket City Weather Fest
 2011 National Weather Service Emergency Response Meteorologist (ER-MET) (assisted in tornado track surveys after 27 April 2011 outbreak)

Undergraduate Researchers Supervised at the University of Alabama in Huntsville

2014 Chris Lisauckis, “A Climatology of Wave-like Reflectivity Segments,” senior capstone project
 2013 Elizabeth Lawson, “Synoptic Analysis of the 27 April 2011 Tornado Outbreak,” senior capstone project

ADDITIONAL RESEARCH OR PROFESSIONAL ACTIVITIES _____

2014- Science-PI, ULM polarimetric S-band Doppler weather radar
 2011- Member, National Weather Association
 2008- Member, American Meteorological Society

Research Field Deployments

2016- Verification of the Origins of Rotation in Tornadoes Experiment – Southeast (VORTEX-SE)
 2013-14 Ontario Winter Lake-effect Systems (OWLeS)

- 2011-13 Atmospheric Boundary Identification and Delineation Experiment III (ABIDE-III)
2008-12 UAH Tornadoes & Hurricanes, Observations, & Research (THOR)

Radar analysis experience (single and multi-Doppler) using the following software: SOLOII, SOLO3, Radx, REORDER, CEDRIC, GRLevel2 Analyst, Py-ART

Data analysis and visualization using the following software: IDL, NCL, Python, PV-Wave, Fortran

Experience operating and troubleshooting the following research instruments: S-, C-, and X-band polarimetric Doppler radars, 915 MHz Doppler wind profiler, 12-channel microwave profiling radiometer, vertically pointing X-band radars, lidar ceilometer, Doppler wind lidar, parsivel disdrometer, electric field mill, hotplate precipitation sensor, high-resolution time-lapse weather camera, iMet mobile sounding system

AWARDS AND HONORS

- 2011 Graduate Research Assistant of the Year, University of Alabama in Huntsville
2011 Best Graduate Student Oral Presentation, 36th Annual National Weather Association Meeting
2007 Dr. Bill Williams Endowment Scholarship, University of South Alabama