

**Esther D. Mullens, PhD**  
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ResearchGate: [https://www.researchgate.net/profile/Esther\\_Mullens](https://www.researchgate.net/profile/Esther_Mullens)

Google Scholar: <https://scholar.google.com/citations?user=wGZilNUAAAAJ&hl=en>

Faculty Website: <https://people.clas.ufl.edu/emullens/>

## **RESEARCH PROFILE**

I am a climatologist, concerned with the dynamics, variability, and regional trends of precipitation in its various forms. I use geospatial data analysis, numerical weather/climate modeling, and statistical approaches to examine high-impact precipitation and how it is influenced by and reflected in anomalous atmospheric conditions on the meso-to-synoptic scale.

## **EDUCATION**

**PhD Meteorology, University of Oklahoma, Norman, OK, 2014**

Dissertation: *Moisture and thermal characteristics of Southern Plains ice storms: insights from a regional synoptic climatology and high-resolution WRF-ARW sensitivity study*

**BSc (Hons) Meteorology, University of Reading, Reading, United Kingdom, 2007**

Senior Thesis: *Greenhouse Gas Radiative Forcing*

## **RESEARCH APPOINTMENTS**

**2014-18 Postdoctoral Research Associate, South Central Climate Adaptation Science Center, Norman, OK**

*Research Themes: Applied climate science, winter weather, extreme precipitation, transportation-relevant climate projections, multi-model analysis, geospatial analysis, undergraduate mentoring, climate science translation. Mentor: Dr. Renee A McPherson*

**2008-14 Graduate Research Assistant, Cooperative Institute for Mesoscale Meteorological Studies, Norman, OK**

*Research themes: Winter weather, Ice storms, spatial climatology, regional weather modeling (WRF). Mentors: Drs Pete J Lamb & Lance M Leslie (Chairs), Drs Michael Richman, David Stensrud, May Yuan (Committee)*

## **OTHER RESEARCH**

**2010 Southern Climate Impacts Planning Program and Oklahoma Climatological Survey, Norman, OK**

*Research themes: Heavy precipitation trends in the Southern United States. Mentors: Dr Mark Shafer & Mr James Hocker*

**2007-8 University of Reading, Reading, United Kingdom**

*Research themes: Precipitation variability in central Africa. Mentors: Drs. Charles Williams and Emily Black*

**2005 UK Meteorological Office, Exeter, Devon**

*Research themes: Data digitization and quality control for HadSLP2. Mentors: Drs Rob Allan and Tara Ansell*

**Affiliate Faculty:** UF Water Institute, SE & SC Climate Adaptation Science Centers.

## **TEACHING**

### **Instructor of Record**

**“Synoptic Meteorology”** (MET4500C, Spring 2022, 2023)

**“Introduction to Weather and Climate”** (MET1010, Fall 2021, 2022, 2023)

**“Managing for a Changing Climate”** (GEO3334/6335) (Spring 2020, then GEO3334 GenEd P/N Spring/Fall 2021, Fall 2022, 2023, Spr. 2024)

**“Extreme Weather” (GEO2242)** (Fall 2018, 2019)

**Honors “Uncommon Reads: Success vs the Imposter”** (IDH2930) (Spring 2020)

Spring 2018: Instructor “in training” for GEOG4513/5513 “Applied Climatology” (University of Oklahoma)

### **Guest Lectures**

**ENS300L.** Guest presentation on my career, climate science, climate modeling, and ongoing research. *MCarty Hall B*, Sep 19 2023, March 27 2024.

**BCH2911 ‘Science for Life’** Short guest presentation entitled *‘The Earth Doctors’*. Oct 7 2021.

**CHM2051** (Angerhofer), Feb 2021. Discussed Climate Science, climate modeling, and relationships to atmospheric chemistry and the greenhouse effect.

**Environmental Change and Environmental Justice** (Sociology/Criminology, Kahler), Feb 2019, Sep 2019. Introduction to anthropogenic climate change, its causes, and its projected impacts.

GEOG1114: “Introduction to Physical geography” (University of Oklahoma)

GEOG/METR3523: “Managing for a Changing Climate” (University of Oklahoma)

GEOG4513/5513: “Applied Climatology” (University of Oklahoma)

### **Adjunct Faculty (Fall 2014)**

Rose State College, Midwest City, Oklahoma: “Introduction to Meteorology II” – A sophomore level meteorology class including topics such as synoptic, dynamics, mesoscale phenomena, global circulation, extreme weather, and climate change.

### **Graduate Teaching Assistant (Summer 2009)**

METR1014: “Introduction to Weather and Climate” Lab instructor (University of Oklahoma)

## **COURSE DEVELOPMENT**

*The following course syllabi were developed, and course codes established:*

- GEO3334/6335 – Managing for a Changing Climate
- MET4500C – Synoptic Meteorology with Lab
- MET4230 – Thermodynamics of the Atmosphere
- MET4450 – Atmospheric Physics
- IDH2930 (Quest 2) – People and Places in a Changing Climate

*The following course(s) have been developed and run at least once:* GEO3334, MET4500C

*The following course has been moved to geography and updated:* MET1010

*The following course(s) have applied for and received general education or other specific status.*  
GEO3334 (GenEd in physical science and international), IDH2930 (physical science)

*The following course(s) have applied for and been accepted to graduate cross-listing:* GEO3334, as GEO6335.

## **PROGRAM DEVELOPMENT**

**Bachelor of Science in Meteorology**, to include three tracks – “General Meteorology”, “Applied Meteorology and Global Change” and “Broadcast meteorology”. Program development incorporates three members of UF Faculty as primary team responsible for this work. The program is approved and is available as of Fall 2024, through the Department of Geography.

## **MENTORING**

### **Graduate Students (committee Chair/Advisor)**

#### **Graduated/Defended**

Meirah Williamson (2019-21), Masters

Hongsheng Wang (2019-23), PhD

Megan Borowski (2021-4), Masters.

#### **Current**

Austin Britton (2022-), PhD

### **Recent Graduate placements:**

- M. Williamson, GIS specialist, Illinois Water survey, Univ. Illinois Champaign (2021-), PhD student, University of New Mexico (2024-).
- H. Wang, Postdoctoral research associate, University of Exeter, Exeter, UK (2023-)

### **Student Committees**

Gabrielle Quadrado, PhD (2021-)  
Zainab Ali, PhD (2021-)  
Christopher Williams (PhD 2023-)  
Weikang Qian (PhD 2023-)  
Jesse Kisémbé (PhD 2023-)  
Michaela Ivey (external, MS 2023-)  
Daleen Torres Burgos (external, PhD, 2024-)

**Past student Committees:** Yu Wang (PhD); Michel Dillen (Masters); Holli Capps (Masters); Christopher Williams (Masters); Luc Olivier (IFAS, Masters); Sarah Strohminger (Geography/Arabic Studies, Masters), Caley Feemster (Masters)

### **Undergraduate Students**

- Diego Rivera (senior, Honor's Thesis, 3 CH, Spring 2024) – exploring impacts of climate change on drought and wildfire in south Florida – case study using a perturbed global warming simulation.
- Aidan Burchard (Junior, MET4911, F. 2021 1 credit, Spr. 2022 1 credit) – climate model analysis, northeast US extreme precipitation.
- Aidan Burchard – CLAS Scholar's Fellowship recipient (2022-3). Climate change literacy amongst UF students (survey analysis)
- Sabrina Cohen (graduate student, 3 credit hours, GEO6905) – climate change analysis of tropical cyclone rainfall.
- Luke Gilboy (Junior), summer C research hours (GEO4911) as part of a UF Geography REU program.
- Surya Sekar (Senior, MET4911, F. 2021 3 credits, Spr GEO4911 2022 1 credit) – climate model projections of Colorado river streamflow.
- Michael Rodelo (Senior, MET4911, Spr. 2022 2 credits) – historical variability of weather
- Katie Krigbaum (Senior, WIS4905, F. 2018, 3 credits) – climate projections and intersection with songbird migration.

**Precollegiate student Interns (2023)** (SSTP Program through the UF Center for Precollegiate Education and Training – CPET)

- Two female rising seniors conducted seven weeks of research on freezing rain trends and machine learning methods during summer 2023 within the context of Dr. Mullens NSF-funded grant.

## **REU Advisor**

### **University of Florida**

- 2023 Summer REU, Luke Gilboy (research theme: exploring precipitation ‘whiplash’ events and impacts to land surface in three SE US states).

### **University of Oklahoma**

- 2015: Ryann Wakefield (Rutgers Uni.) spatially analyzed possible co-variability and relationships between antecedent soil moisture anomalies and tornado frequency in various sub-domains east of the Rocky Mountains. Co-supervisors Dr. Harold Brooks (NSSL), Derek Rosendahl (South Central CSC). Dr. Wakefield now works as an industry atmospheric scientist in Boston.
- 2016: Kristina Mazur (Rutgers Uni.) interviewed emergency managers from three Tribal Nations and examined spatial and temporal climate projections for extreme precipitation tailored to these regions (co-mentor April Taylor, Derek Rosendahl). Dana Gillson (Mt Holyoke College) examined temperature and precipitation extremes from the CLIMDEX suite, for over 30 CMIP5 climate models, and four atmospheric reanalyses products for the South-Central U.S., and evaluated how the model variability compared with reanalysis (Co-Mentor, Derek Rosendahl).

### **Senior Capstone Project Advisor (OU, 2014-15)**

- Primary Mentor for three capstone students through their senior project, investigating the ability of the North American Regional Reanalysis dataset to replicate observed spatial and temporal distributions of severe and weak freezing precipitation events. Co-supervised by Dr. Renee McPherson.

## **PROFESSIONAL AND SERVICE**

### **Departmental Service**

*I have served on the following established committees:*

- Student Awards (2018-19)
- Graduate Student admissions (2018-20)
- Curriculum (2021-2022)
- Diversity, Equity, and Inclusion (2020-)
- Summer Graduation marshall (2021)
- Graduate student visiting weekend (2022-3)
- Undergraduate committee (2023-)

*I have served on the following special or ad-hoc committees:*

- Meteorology Program Development (2019-)
- Faculty Search – Climate and Environmental Change (2019)
- Faculty Search – AI and Climate/Weather (2-hires, 2021)

### **Professional service and development**

**Session creator and chair – “Winter Weather in a Warming World”, AMS Annual Meeting, 2023, and 2024.** Two sessions of 90 minutes each, and a poster session (in the 2023 session). High attendance rate in all sessions.

**Ad-hoc AMS committee on 2 Year College participation in the atmospheric sciences (2022-).**

**AAG Early Career Workshop June 1-5 2021 (virtual):** Teaching and research development; 3-minute peer-reviewed lectures; networking.

**Academics Committee – Second Climate Action Plan for the University of Florida (2020-2022).**

Creating and evaluating goals and activities toward fulfilling an update to UF's climate action plan  
<https://sustainable.ufl.edu/campus-initiatives>

**Member, American Association of Geographers Committee on the Status of Women in Geography**  
(invited, 2020-2023)

**Committee Member, American Meteorological Soc. Board of Higher Education (2020-).** Assist with activities to meet the vision of better equipping students and faculty for career success by helping meteorology (and related) programs become better attuned to the changing career field.

- Member of dynamics survey and educational development team sub-committee
- Member of 2-year college engagement in atmospheric sciences education sub-committee

**Reviewer: Battan K-12 and Adult book awards – Summer 2023.**

- <https://www.ametsoc.org/index.cfm/ams/about-ams/ams-awards-honors/awards/author-and-journalism-awards/the-louis-j-battan-authors-award-k-12/>
- <https://www.ametsoc.org/index.cfm/ams/about-ams/ams-awards-honors/awards/author-and-journalism-awards/the-louis-j-battan-authors-award-adult/>

**Committee Member for review and selection of AMS Lorenz Award.** American Meteorological Society Board of Higher Education (BHE), May 2020.

<https://www.ametsoc.org/index.cfm/ams/about-ams/ams-awards-honors/awards/teaching-and-mentorship-awards/>

**Co-Author, Chapter 23 of the Fourth National Climate Assessment (NCA4, Vol 2): 2016-18.** Lead the infrastructure Key Message team. Participated in conference calls, listening sessions, and other USGCRP related activities.

**Booth operator, South Central Climate Science Center at the 2015 and 2016 annual “GIS Day”.**

Provided information on the CSC as well as how I used geospatial techniques in my own research.

**Co-Developer, Climate and Transportation Seminar Series (2016-18), University of**

**Oklahoma.** Seminar series to promote cross-discipline communication of research between engineering/transportation, and the weather and climate community focused on high-impact weather hazards, and climate variability.

**Participant, Climate and Severe Weather Working Group (2015-18), University of Oklahoma.** This group, facilitated by the South-Central Climate Adaptation Science Center, involved researchers from the School of Meteorology, Storm Prediction Center, and National Severe Storms Lab. It included a short seminar series, before transitioning to developing a multi-year research proposal to investigate physical drivers of extreme precipitation. The group received a large grant award in 2017 (5-year, ~\$1.8 million) from NSF ‘PRE-EVENTS’. PI. Elinor Martin. My role was to assist in scheduling and facilitating the discussion, and in the proposal writing, as part of the broader impacts team.

**Participant, Early Career Researcher Training, Lubbock, Texas, 2016.** Week-long series of seminars, activities and engagements with local stakeholders on the topic of climate variability/change, and the agricultural sector of West Texas. Travel funding received from the South-Central Climate Adaptation Science Center.

**Facilitator, Journal Club, 2015-17, University of Oklahoma.** Organized and scheduled speakers and topics for a discussion group for students and early career researchers.

**Fellow, AMS Summer Policy Colloquium, Washington DC, June 2013.** Ten-day immersive workshop to develop knowledge in science policy and the legislative process. Received funding to attend (through competitive application process) by the National Science Foundation.

### **Journal and/or grant review service**

Ad-hoc reviewer for the following Journals: MDPI (Atmosphere, Climate, Hydrology), Springer (Climate Dynamics, Theoretical and Applied Climate), AMS (Weather and Forecasting, Journal of Climate, Bulletin of the American Met Soc., Journal of Applied Met. and Climate), Wiley (International J. of Climatology).

Panel reviewer for NOAA Climate Program Office (CPO) grants – February 2023.

### **Workshop Facilitator and/or Developer**

**Facilitator and co-developer – 1<sup>st</sup>-3<sup>rd</sup> workshops for the Prediction of Extreme Precipitation at S2S scales (PRES2iP) project.** Broader Impacts team member, facilitating discussions and activities between stakeholders and researchers involved in this NSF-sponsored 5-year project (PI Martin, University of Oklahoma). Workshops took place in July 2018 (Norman, OK), October 2021 (virtual), and February 2023 (Norman, OK).

**Facilitator – Student-Led Virtual Radar Field Experiment.** Collaboration between University of Oklahoma and University of Florida to bring their mobile dual-pol doppler radar (RaxPol) to Florida for a sea-breeze field experiment (later staying to sample outer bands of Hurricane Ian). September 2022.

**Assistant Planner, 2018 Early Career Researcher Training, Baton Rouge LA, Aug. 5-10 2018.** Assisted with planning the workshop, including the topics and themes, and assisting with the event itself.

**Facilitator, Climate Projections Training, National Adaptation Forum, 2017:** Formal training workshop at NAF in St. Paul hosted by the Climate Adaptation Science Centers on understanding uncertainty in climate projections, held Thursday May 11 3.30-5pm, entitled “Incorporating Future Climate Projections in Adaptation Planning: A layman’s guide”. Training developed by D. Rosendahl, A. Wooten, J. Blackband, R. McPherson and E. Mullens at the South-Central Climate Adaptation Science Center, A. Bryan (NE CASC) and J. Littell (Alaska CASC).

### **Service as a student**

**Senator, Graduate Student Senate, University of Oklahoma, 2009-11, 2012.** Chair of the External Affairs committee during 2009-10, Secretary and member of the executive committee 2010-2011. Acting Chair during Fall of 2010.

**Member, OU Graduate Council, University of Oklahoma, 2010-11.** Appointed by the Graduate College as one of four Student representatives. Evaluated interdisciplinary degree requests and other issues relevant to Graduate Students and the Graduate College.

**Technology Fees Budgetary Committee, Atmospheric and Geographic Sciences, University of Oklahoma, 2010-11.** Responsible for attending meetings and communicating pertinent information to Graduate Students.

**Member, Atmospheric and Geographic Sciences Environmental Stewardship Committee, University of Oklahoma 2010-11.** Committee's mission was to establish methods to improve environmental stewardship of the department in areas including recycling, transportation, and outreach.

**Forecaster, Oklahoma Weather Lab, University of Oklahoma, 2006-7.**

**Participant, Oklahoma Scholarship Enrichment Program, 2007.** A week-long immersive course in climate variability and change.

## GRANTS

### FUNDED

**2021-24 \$292,448. PI Mullens, E.D.** *Thermodynamic Modification of Winter Storms in a Warmer Climate*, Submitted to NSF AGS, Physical and Dynamic Meteorology. To fund a PhD student and two undergraduates.

**2017-18 \$61,783** Regional graduate student, postdoc, and early-career researcher training III. Held Aug 5-11 2018 in Baton Rouge, LA. PI D. Rosendahl, Co-PIs: **E. Mullens**, R. McPherson, K. DeLong, V.H. Rivera-Monroy. U.S. Geological Survey/Dept. Interior Grant award.

**2014-16 \$132,240** Trends in cold temperature extremes and winter weather for SPTC Region 6. PI McPherson, **Co-PI E. Mullens**, Co-PIs D. Rosendahl, M. Shafer, M. Richman. Southern Plains Transportation Center. Mullens was the primary author for the scientific content of this proposal.

**2013 \$10,000** Received travel award from the NSF to attend the AMS Summer Policy Colloquium in Washington DC

### IN REVIEW

**2025-30 \$757,000 PI Mullens, CAREER, NSF-AGS.**

### DECLINED

**2023 \$103,000** Instrumentation needs for a competitive undergraduate Meteorology program, **Mullens E**, Matyas, Wen, and Mullens S. University of Florida strategic Funding.

**2022 \$75,000** Sloan Fellowship. PI E. Mullens.

**2023 \$559,430** Extratropical transition of tropical cyclones: Analysis of rain field patterns, environmental conditions, and downstream impacts. PI Matyas, C., **Co-PI Mullens, E.D.** NSF AGS.



**2022-5 \$450,000 (approx.).** NASA ROSES – Connecting changes in tropical cyclone rain fields to atmospheric and surface conditions during extratropical transition. PI Matyas, C., **Co-PI Mullens, E.D.**

## AWARDS

**American Meteorological Society Outstanding Student Poster Presentation:** For poster entitled ‘Trends in Heavy Precipitation in the Southern United States’ (AMS 6<sup>th</sup> Annual Symposium on Policy and Socio-economic Research, 2011).

**University of Reading Departmental Scholarship for Academic achievement, 2004.**

## STUDENT MENTEE AWARDS

Student poster presentation award, Megan Borowski, NWA annual meeting, September 2023

American Meteorological Soc. Annual meeting Student Oral Presentation Award for M. Williamson’s presentation in the 35<sup>th</sup> Annual Conference on Hydrology (2021).

American Meteorological Soc. Annual meeting Student Oral Presentation Award for R. Wakefield, based on her REU research (2016).

## PUBLICATIONS

### Journals & Articles

#### Published

**\*Indicates graduate student, \*\*Mullens primary supervisor**  
**+indicates undergraduate student with Mullens as primary supervisor**  
**++ Indicates pre-collegiate student with Mullens as primary mentor.**

\*Cohen, S., and **Mullens E.D**, 2024. Hurricane Frances in north central Florida: Past and Future. *Southeastern Geographer*, Accepted Dec 2023.

\*\*Wang, H., and **Mullens E.D**, 2024. The role of teleconnections in modifying the evolution of extratropical cyclones in the Pacific-Atlantic region. *Int. J. Clim.* Published Jan 2024.  
<http://doi.org/10.1002/joc.8349>

\*\*Williamson, M., K. Ash, M. Erickson, and **E. Mullens**, 2023. Damages associated with Excessive Rainfall Outlooks (EROs) and missed flash floods. *Weather and Forecasting.*, 38, 971-984.  
<https://doi.org/10.1175/WAF-D-22-0035.1>

**Mullens, E.D.**, and McPherson, R.A 2023. The changing nature of hazardous weather and implications for transportation: Example from Oklahoma, USA. *MDPI Climate*, 11,  
<https://doi.org/10.3390/cli11020032>

Rogério de S. Nóia Júnior, Luc Olivier, Daniel Wallach, **Esther Mullens**, Clyde W. Fraisse, Senthold Asseng, 2023. A simple procedure for a national wheat yield forecast, *European Journal of Agronomy*, 148, <https://doi.org/10.1016/j.eja.2023.126868>

\*VanBuskirk, O, P Ćwik; R A. McPherson; H Lazrus; E Martin; C Kuster and **E Mullens**. 2021. “Listening to Stakeholders: Initiating Research on Sub-seasonal to Seasonal Heavy Precipitation Events by First Understanding What Users Need”. *Bull. Amer. Met. Soc.*, <https://doi.org/10.1175/BAMS-D-20-0313.1>. Impact factor: 8.766

*Mullens role: wrote section 3 with another co-author. Provided feedback and edits to full draft.*

**Mullens, E.D.**, 2021: Meteorological Cause and Characteristics of Widespread Heavy Precipitation days in the Texas-Gulf Watershed 2003-18. *International J. Climatology*. <http://doi.org/10.1002/joc.7046>

*Mullens role: All research/analysis and writing.*

Rosendahl, D., McPherson, R.A., Wootten, A., **Mullens, E.D.**, Blackband, J., and Bryan, A. 2019. Building Practitioner Confidence in Working with Uncertainties in Future Climate Projections, *EOS*, 100, <https://doi.org/10.1029/2019EO136493>. Impact factor: 0.545

*Mullens role: Co-developer of climate projections trainings (the topic of this paper), co-editor of the paper alongside the other coauthors.*

**Mullens, E.D.**, & McPherson, R.A. 2019. Quantitative Scenarios for Future Hydrologic Extremes in the U.S. Southern Great Plains. *International Journal of Climatology*. <https://doi.org/10.1002/joc.5979>.

Impact factor 3.609\_ *Mullens role: All research/analysis, majority of writing.*

**Mullens, E.D.**, and McPherson R.A, 2017: A Multi-algorithm reanalysis-based freezing precipitation dataset for climate studies in the South-Central U.S. *J. Appl. Meteor. Clim*, **56**, doi: [10.1175/JAMC-D-16-0180.1](https://doi.org/10.1175/JAMC-D-16-0180.1). Impact factor 2.463. *Mullens role: All research/analysis, majority of writing.*

**Mullens, E. D.**, L. M. Leslie, and P. J. Lamb, 2016: A synoptic climatology of ice and snowstorms in the Southern Great Plains 1993-2011. *Weather and Forecasting*, **31**, 1109-1136, doi:

<http://dx.doi.org/10.1175/WAF-D-15-0172.1>. Impact Factor 1.972. *Mullens role: All research/analysis, majority of writing.*

**Mullens, E. D.**, L. M. Leslie, and P. J. Lamb, 2016. Impact of Gulf of Mexico SST anomalies on Southern Plains freezing precipitation: WRF-ARW sensitivity study of the January 28-30 2010 winter storm. *Journal of Applied Meteorology and Climatology*, doi: <http://dx.doi.org/10.1175/JAMC-D-14-0289.1>. Impact Factor 2.463. *Mullens role: All research/analysis, majority of writing.*

Chen S., J. Zhang, **E. Mullens**, Y. Hong, A. Behrangi, Y. Tian, X-M. Hu, J. Hu, Z. Zhang, and X. Zhang, 2015: Mapping the precipitation type distribution over the contiguous United States using NOAA/NSSL National multi-sensor mosaic QPE. *IEEE Transactions on Geoscience and Remote Sensing*, **53**, 4434-4443. Impact Factor 3.36. *Mullens role: Cowrote a section on interpretation of results.*

Chen, S., H. Liu, Y. You, **E. Mullens**, J. Hu, Ye. Yuan, M. Huang, L. He, Y. Luo, Zeng, G. Tang, and Y. Hong, 2014: Evaluation of high-resolution precipitation estimates from satellites during July 2012 Beijing flood event using dense rain gauge observations. *Plos One*, doi: 10.1371/journal.pone.008. Impact Factor 3.234. *Mullens role: Cowrote a section on interpretation of results.*

**Mullens, E.D.**, 2014: Moisture and thermal characteristics of Southern Plains ice storms: insights from a regional synoptic climatology and high-resolution WRF-ARW sensitivity study. *PhD Dissertation, Dept. Meteorology, University of Oklahoma, Norman, OK.*

**Mullens, E. D.**, M. Shafer, and J. Hocker, 2013. Trends in Heavy Precipitation in the Southern United States. *Weather*, **68**, 311-316. Impact Factor 1.262. *Mullens role: All research/analysis, majority of writing.*

### **Publications under preparation**

\*\*Wang, H., and **Mullens E.D.**, TBD. A climatology of landfalling Atmospheric River severity across North America. *Prep. For Int. J. Clim, or Theor. Appl. Clim or similar. Anticipated submission spring 2024.*

\*\*Borowski, M. and **Mullens E.D.** TBD. Verification of HRRR QPF products during Florida sea breeze season under various synoptic wind flow regimes. *Prep. For NWA Journal of Operational Met. Anticipated submission spring/summer 2024.*

**Mullens, E.D.**, and ++Bonilla, J. TBD. Freezing rain trends across eastern North America 1941-2020 and relationships with natural variability. *Anticipated submission by spring/summer 2024, aimed at Int J. Clim, or J. Appl. Met. Clim.*

\*\*Wang, H., and **Mullens E.D.**, TBD. Extratropical Cyclone moisture and dynamical characteristics under varying modes of Pacific-North American natural variability. *This work is Mullens graduate student under Mullens supervision. Paper 3. Anticipated submission TBC.*

### **Book Chapter**

Farnsworth, A, **E.D. White**, C.J.R. Williams, E. Black and D. R. Kniveton, 2011. Understanding the Large-scale driving mechanisms of rainfall variability over Central Africa. *African Climate and Climate Change, C.J.R Williams and D.R. Kniveton (Eds)*, Advances in Global Change Research, 43, pp. 101-122. *Mullens role: Majority of project work/analysis alongside lead author and co-editing of text.*

### **Reports**

Chavas, D., and Coauthors, 2023: Summary of an Interdisciplinary Workshop on Risk-Relevant Gaps and Needs in Freezing Rain Science. *Bull. Amer. Meteor. Soc.*, **104**, E1265–E1267, <https://doi.org/10.1175/BAMS-D-23-0075.1>.

Kloesel, K., B. Bartush, J. Banner, D. Brown, J. Lemory, X. Lin, G. McManus, **E. Mullens**, J. Nielsen-Gammon, M. Shafer, C. Sorenson, S. Sperry, D. Wildcat, and J. Ziolkowska, 2018: Southern Great Plains. In *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II* [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 987–1035. doi: 10.7930/NCA4.2018.CH23. Available at: <https://nca2018.globalchange.gov/chapter/23/>. *Mullens role: Lead author on transportation/infrastructure key message section. Co-editor of final chapter.*

**Mullens, E. D.**, and McPherson, R.A, 2017: A weather and climate trends roadmap [five individual climate summary reports for Oklahoma, Texas, Arkansas, New Mexico, Louisiana], *South Central Climate Science Center*, Norman, OK. <https://climateprojections.wixsite.com/transportation>. *Mullens role: All project work, majority of writing and visualizations.*

McPherson, R.A, and **Mullens, E. D.**, 2017: Trends in cold extremes and winter weather for the SPTC Region: Historical context and future projections in transportation-relevant weather and climate extremes. *Southern Plains Transportation Center Final Report, SPTC14.1-50*. 130pp. Available by contacting [sptc@ou.edu](mailto:sptc@ou.edu)

**Mullens, E.D.**, 2016: Seasonal Predictability of Freezing Rain? *Southern Climate Monitor*, 6(11), November 2016,p 2-6. Available at:

[https://www.southernclimate.org/wp-content/uploads/SCIPP\\_Monitor\\_Novemeber\\_2016.pdf](https://www.southernclimate.org/wp-content/uploads/SCIPP_Monitor_Novemeber_2016.pdf)

**Mullens, E. D.**, R. A. McPherson and D. Rosendahl, 2015: Trends in weather extremes, new datasets for transportation safety and infrastructure research. *SPTC Newsletter, Fall 2015*, [http://www.sptc.org/publications/]

### **Media**

**Mullens, E.D.**, What is a “Bomb” Cyclone? An atmospheric scientist explains. *The Conversation*. Published Jan 27 2022. <https://theconversation.com/what-is-a-bomb-cyclone-an-atmospheric-scientist-explains-175825>. Reads as of March 16 2022 placed it in the top 8% of UF-submitted articles by viewership. *Mullens role: All writing and working with editor for content review.*

Mullens also quoted in the following Newsweek article: <https://www.newsweek.com/atmospheric-river-storm-hurricane-winds-flooding-california-1866989>

## **PRESENTATIONS & CONFERENCE PAPERS**

**\*Indicates REU/Undergraduate Student, \*\*Indicates graduate student, +\* indicates precollegiate student.**

**+Indicates invited speaker**

**Mullens, E.D.**, and J. Bonilla+\* 2024. The relationship between natural variability and freezing rain frequency over Eastern North America. *ePoster, 37<sup>th</sup> Conference on Climate Variability. AMS Annual Meeting, Baltimore MD, Feb 1 2024.*

Borowski, M\*\*., and **Mullens E.D.** 2024. Assessing the performance of the High-Resolution Rapid Refresh (HRRR) quantitative precipitation forecasts over Florida during difference sea breeze flow regime patterns. *Oral. 14<sup>th</sup> conference on R2O/40<sup>th</sup> conference on Environmental Information Processing, AMS Annual Meeting, Baltimore MD, Feb 1 2024.*

Britton, A\*\*., Vemireddy D+\*., and **Mullens E.D.** 2024. Temporal and spatial analysis of freezing rain over Eastern North America. *Oral. 37<sup>th</sup> Conference on Climate Variability. AMS Annual Meeting, Baltimore MD, Jan 31 2024.*

Praino, A., Hahnenberger M., Lazzara M., **Mullens, E.D.**, and Wilke, T.L. 2024. AMS engagement of two year college Geoscience programs. *Oral, Conference on Education. AMS Annual Meeting, Baltimore MD, Jan 31 2024.*

Schroers, M., Dickinson T., Martin, E.R., McPherson, R.A., Cwik P., and Mullens E.D. 2024. Potential Users evaluate product content and design for sub-seasonal extreme precipitation forecasts. *Oral. 12<sup>th</sup>*

*symposium on the Weather, Water, and Climate enterprise. AMS Annual Meeting, Baltimore MD, Jan 29 2024.*

**Mullens, E.D.** 2023. A synoptic climatology of precipitation ‘whiplash’ in the United States 1891-2015. *Poster, 36<sup>th</sup> Conference on Climate Variability/37<sup>th</sup> Conference on Hydrology. AMS Annual Meeting, Denver CO, Jan 10, 2023.*

**Mullens, E.D.** 2023. A tale of two storms: The evolution of mixed-phase winter weather in a perturbed global warming simulation. *Poster, 36<sup>th</sup> Conference on Climate Variability. AMS Annual Meeting, Denver CO, Jan 10, 2023.*

**\*\*Wang, H., and Mullens, E D.** 2023. A climatology of atmospheric river severity over North America. *Poster, 36<sup>th</sup> Conference on Climate Variability. AMS Annual Meeting, Denver CO, Jan 11, 2023.*

Barlow, M., Davenport C., Flynn W., Handlos Z, Klees, A., Kristovich S., and **Mullens, E.D.** 2023. What does a modern atmospheric dynamics course look like, part I: course content. *AMS 32<sup>nd</sup> conference on Education, Oral. Denver, CO. Jan 10. 2023.*

Barlow, M., Davenport C., Flynn W., Handlos Z, Klees, A., Kristovich S., and **Mullens, E.D.** 2023. What does a modern atmospheric dynamics course look like, part II: curriculum and assessments. *AMS 32<sup>nd</sup> conference on Education, Oral. Denver, CO. Jan 10. 2023. E. Mullens was presenting author.*

Yu T., Wen, Y., Bodine, D., A. Alruzeq, P. Kirstetter, Y. Derrin, L. Shedd, B. Cohen, M. Borowski, M. D. Tseng, **E. D. Mullens**, S. Mullens, R.D Palmer, and B. Cheong, 2023. The Mobile Rapid Scan X-band Polarimetric (RaXPoL) radar as a community instrument facility: Virtual radar experiment for sea breeze observations to enhance student learning. *AMS, Weather Ready Nation, Oral. Denver CO, Jan 12 2023*

**+Mullens, E.D.** Precipitation ‘whiplash’. What is it, and what causes it? *Watersheds and Wetlands Seminar, University of Florida, October 26 2022*

**\*\*VanBuskirk, O., R.A. McPherson, H. Lazrus, E. R. Martin, C.M. Kuster, E. Mullens, and P. Cwik,** 2022. Decision-making and extreme precipitation: How practitioners use and interpret sub-seasonal to seasonal extreme precipitation forecasts. *AMS Annual Meeting, 12<sup>th</sup> Conference on Research to Operations, Jan 2022.*

Barlow, M., C. Davenport, W. Flynn, Z. Handlos, A. Klees, and **E. Mullens**, 2022: How can we make teaching atmospheric dynamics more ‘dynamic’? *AMS Annual Meeting, 31<sup>st</sup> Conference on Education, Jan 2022.*

Martin, E., J. B. Basara, H. Brooks, R. Bunker, P. Cwik, T. Dickinson, J. Furtado, C. Homeyer, G. Jennrich, H. Lazrus, D. McAfee, R. McPherson, **E. Mullens**, M. Richman, D. Rosendahl, M. Schroers, and O. VanBuskirk, 2022: Lessons from the prediction of rainfall extremes at seasonal to sub-seasonal periods (PRES2iP) project. *AMS Annual Meeting, Johnson Symposium, Jan 2022.*

**\*\*Wang, H., and E. Mullens,** 2022: The role of single and compound teleconnections in extratropical cyclone characteristics. *AMS Annual Meeting, 35<sup>th</sup> Conference on Climate Variability and Change, Jan 2022*

**\*\*Wang, H., and E. Mullens,** 2021: The role of single and compound teleconnections in extratropical cyclone characteristics. *SEDAAG Annual Meeting, Poster, Nov 21 2021, Auburn, AL.*

\*\*Williamson, M., K. Ash, M. Erikson, and **E. Mullens**, 2021. How Much do Flash Flooding Events outside of an Excessive Rainfall Outlook (ERO) Matter? *AMS 35<sup>th</sup> Conference on Hydrology, AMS Annual Meeting, January 15 2021.*

+**Mullens, E.**, 2021. Air quality, Weather, and Climate Change. *Air Quality Seminar (ENV6935)*, October 27 2021.

**Mullens, E.**, 2021. What does Extreme Precipitation Mean to you? *UF Geography Colloquium, Jan 28 2021.*

\*\*Williamson, M., K. Ash, M. Erikson, and **E. Mullens**, 2021. How Much do Flash Flooding Events outside of an Excessive Rainfall Outlook (ERO) Matter? *SEDAAG Annual Meeting, Poster, Nov 7 2020.*

**Mullens, E.D.**, 2020: Meteorological Cause and Characteristics of Widespread Heavy Daily Precipitation events in the Texas-Gulf Water Resource Area. Poster. *Conference on Hydrology, American Met. Soc. Annual Meeting, Boston, MA Jan 12-16 2020.*

Cwik, P\*., E. Martin, R. McPherson, H. Lazrus, J.C. Furtado, **E. Mullens**, C.M. Kuster, and M.J. Wagner, 2020: User's perspectives and decision-making process based on S2S extreme precipitation forecast products – what we learned during the PRES2iP workshop. Oral presentation (3.5), *25<sup>th</sup> Conference on Applied Climatology, American Met. Soc. Annual Meeting, Boston, MA, Jan 12-16 2020.*

Rosendahl, D.H., A. Wootton, R.A. McPherson, E. Kuster, **E. Mullens**, A. Bryan, 2020: Encouraging Planners and Decision-Makers to Embrace Uncertainty in Climate Model projections for Adaptation Planning. Oral presentation (7B.4), *33<sup>rd</sup> Conference on Climate Variability and Change, American Met. Soc. Annual Meeting, Boston, MA, Jan 12-16 2020.*

**Mullens, E.D.**, and McPherson, R.A., 2019: Will the Extreme Rains fall mainly on the Plains? Precipitation scenarios for Oklahoma and Texas. Poster. *Southeastern Division of the American Assoc. Geographers, Annual meeting, Wilmington NC, Nov 24-26 2019.*

+**Mullens, E.D.**, The past, present, and future of precipitation in the Southern Great Plains. *Weekly seminar series, Florida State University, October 10 2019, 3.30pm.*

McPherson, R., P. Cwik, H. Lazrus, E. Martin, **E. Mullens**, C. Kuster & M. Wagner, 2019: Users perspectives on S2S forecast products for extreme precipitation events. *Presentation 10B.1, Climate Variability and Change, American Meteorological Soc. Annual Meeting.*

P. Cwik, H. Lazrus, E. Martin, R. McPherson, **E. Mullens**, C. Kuster, M. Wagner, 2018: Improving the sub-seasonal to seasonal prediction of extreme precipitation events via co-production of knowledge. *Poster, AGU Fall Meeting 2018. NH31C-0998*

**Mullens, E.D.**: Will the extreme rains fall mainly on the plains? Precipitation scenarios under climate change for Oklahoma and Texas. *UF Dept. Geography Colloquium, September 20 2018, Turlington Hall Rm 3012*

+**Mullens, E.D.**: Reflections on the fourth National Climate Assessment. *Water and Climate Alliance Meeting, Orlando, FL, Dec 20 2018.*

Bartush, B., Kloesel, K., Banner, J., Brown, D., Hayhoe, K., Lemery, J., Lin, X., Loeffler, C., McManus, G., **Mullens, E.D.**, Nielsen-Gammon, J., Shafer, M., Sorenson, C., Sperry, S., Wildcat, D., Ziolkowska, J., 2018: Impacts of a changing climate on the U.S. Southern Great Plains. *Poster, AGU Fall Meeting 2018, Washington D.C. PA31D-1172. Mullens was the presenting author.*

Rosendahl, D.H., Wootten, A., McPherson, R.A., **Mullens, E.D.**, Bryan, A., Kuster, E., Blackband, J. 2018: Helping decision makers incorporate climate model projections into their future planning. *Poster, AGU Fall Meeting 2018, Washington D.C. PA41D-1352.*

Rosendahl, D., Cwik, P, Martin, E. R., Basara, J. B, Brooks, H. E., Furtado, J, Homeyer, C., Lazrus, H., McPherson, R., **Mullens, E.**, Richman, M., and Robinson-Cook, A. 2017: Developing a framework for seamless prediction of sub-seasonal to seasonal extreme precipitation events in the United States. *Poster, AGU Annual Meeting 2017, <http://adsabs.harvard.edu/abs/2017AGUFM.H53D1480R>*

\*Mazur, K., **E. Mullens**, D. Rosendahl and A. Taylor, 2017: Extreme precipitation and flooding in Oklahoma's Tribal Nations. *Poster, American Meteorological Soc. Annual Meeting, 2017*

**Mullens, E. D.**, and R. A. McPherson, 2016: Come rain or shine: Multi-model projections of climate hazards affecting transportation in the South Central United States. *American Geophysical Union, Poster PA31A-2198, Climate Change Impacts on the Transportation Sector, San Francisco, CA, December 14, 2016.*

\*Gillson, D., D. Rosehdahl, and **E. Mullens**, 2016: Assessing future projections of Climate Extremes over the South Central USA. *American Geophysical Union, Poster, Climate Variability and Change, San Francisco, CA, December 14, 2016.*

**Mullens, E. D.**, and R. A. McPherson, 2016: Current trends and future projections of transportation-relevant temperature and precipitation extremes in the South Central U.S. Invited Keynote presentation. *South Central Climate Science Center, and Southern Plains Transportation Center Climate Transportation Summit, Norman, OK, November 14, 2016.*

**Mullens, E. D.**, and R. A. McPherson, 2016: Supporting end-user needs in the South Central U.S: Sector-specific climate change projections. *SCENARIO NERC DTP Conference, University of Reading, United Kingdom. June 11, 2016,*

**Mullens, E. D.**, and R. A. McPherson, 2016: A high-resolution freezing precipitation dataset for the South-Central U.S (Oral Presentation). *AMS 32<sup>nd</sup> Conference on Environmental Information Processing Technologies, New Orleans LA, January 14, 2016.*

**Mullens, E. D.**, and R. A. McPherson, 2016: A multi-algorithm Reanalysis-based freezing precipitation dataset for climate studies in the South-Central U.S. (Oral Presentation), *AMS 22<sup>nd</sup> Conference on Applied Climatology, New Orleans, LA, January 14, 2016.*

\*Wakefield, R., **E. Mullens**, D. Rosendahl, and H. Brooks, 2016 (Oral Presentation). The effects of antecedent soil moisture anomalies on tornado activity in the United States, *AMS 22<sup>nd</sup> Conference on Applied Climatology, New Orleans, LA, January 14, 2016.*

**Mullens, E. D.**, and R. A. McPherson, 2015: Climate trends and data resources for freezing precipitation and surface freeze-thaw cycles in DOT Region 6 (Poster), *SPTC Transportation Research day, Oklahoma City, OK, October 20, 2015.*

**Mullens, E. D.**, R. A. McPherson, D. Rosendahl, and Gaitán Ospina, C, 2015: Developing transportation-relevant climatologies and projections for the south-central U.S (Oral Presentation). *TRB First International Conference on surface transportation resilience to climate change and extreme weather impacts*. Washington D.C, September 16-18, 2015.

**Mullens, E. D.**, and R. A. McPherson, 2015: Developing a high-resolution freezing precipitation dataset for climatological research (Poster). *OU-NJU Symposium on weather and climate research*, Norman, OK, May 11 2015.

**Mullens, E. D.**, and R. A. McPherson, 2014: Weather and Climate Impacts on Transportation for SPTC Region 6 (Oral Presentation). *Southern Plains Transportation Center Research Day*, October 21, Oklahoma City, OK.

**White, E.D.**, L. M. Leslie, and P. J. Lamb, 2013: A synoptic climatology of winter storms in the Southern Plains 1993-2011 (Poster). *25<sup>th</sup> Symposium on Climate Variability and Change, AMS 93<sup>th</sup> Annual Meeting*, Austin, TX, January 7, 2013.

**White, E. D.**, M. Shafer, and J. Hocker, 2011: Trends in heavy precipitation in the southern United States (Poster). *6<sup>th</sup> Symposium on Policy and Socio-economic research, AMS 91<sup>st</sup> Annual Meeting*, Seattle, WA, January 24, 2011.

## **PUBLIC OR SERVICE PRESENTATIONS**

+Panelist –session on climate change, UNF Jacksonville, March 30 2023, 6.30-8pm.

+scientist Florida schools presentations to classes in Lee county and Bay county, Fall 2022 (details coming).

+*What do Scientists know about climate change, and how do they know it?* E. Mullens Lecture, Institute for Learning in Retirement (UF/Oak Hammock), Jan 20 2022.

+*Eastside High School lecture series – 5 periods in total (4 on climate data and modeling, and one on my career pathway)*, E. Mullens, Sep 12 2021.

+*The Earth Doctors (how, and why I study extreme weather in a changing world)*. Lecture given to summer program run by the Center for Precollegiate Training (CPET) at UF. July 13 2021.

+*'Science in Every Florida School' - "Weather Clues"* Presentation to Elementary School, St. Johns co. School district. March 12 2021.

+*'Science in Every Florida School'* – Presentation to Belle Terre Elementary School, Palm Coast, FL, on basic climatology, Oct 28 2020. <https://www.floridamuseum.ufl.edu/earth-systems/scientist-in-every-florida-school/>

+**Mullens, E.D.**, E. Martin, R. McPherson, J. Furtado, G. Jennrich, M. Schroers, P. Cwik, 2020: Causes and Predictability of Extreme Precipitation in the U.S. – Current and Future work. Oral presentation to the National Weather Service NE Florida and SE Georgia Integrated Warning Team Meeting (IWT). *Straughn IFAS Center, Gainesville, FL, Feb 27 2020*



## **PROFESSIONAL MEMBERSHIPS**

Southeastern Division of the American Association of Geographers (2019-21)

American Association of State Climatologists (2016-20)

American Geophysical Union (2016-)

American Meteorological Society (2008-)