AARON J. HILL

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Updated 11/22/2022

EDUCATION

Ph.D., Geosciences, Texas Tech University, Lubbock, TX, August 2019
Dissertation: *Demonstration of ensemble sensitivity-based targeted observing for convective-scale applications: Perfect-model experiments*
Advisor: Christopher C. Weiss

M.S., Atmospheric Science, Texas Tech University, Lubbock, TX, December 2014
Thesis: *Mesoscale data assimilation and ensemble sensitivity analysis towards improved predictability of dryline convection*
Advisor: Christopher C. Weiss

B.S., Atmospheric Science, University of Washington, Seattle, WA, June 2012
Major: Meteorology
Minor: Applied Statistics

APPOINTMENTS

Research Scientist II, Department of Atmospheric Science, Colorado State University, 2022-present
Research Scientist I, Department of Atmospheric Science, Colorado State University, 2021-2022
Postdoctoral Research Fellow, Department of Atmospheric Science, Colorado State University, 2019-2021
Graduate Research Assistant, Department of Geosciences, Texas Tech University, 2012-2019
Graduate Student Visitor, Mesoscale and Microscale Meteorology Laboratory, National Center for Atmospheric Research, 2018
Undergraduate Research Assistant, Department of Atmospheric Science, University of Washington, 2011-2012

RESEARCH INTERESTS

Data science and statistical methods, mesoscale meteorology, predictability and data assimilation, weather and forecasting, targeted observing, innovative observing systems

HONORS AND AWARDS

WxChallenge Category 1 cumulative winner Runner-up in Cold Bay, AK and Cheyenne, WY	2019-2020
Doctoral Dissertation Completion Fellowship	2018-2019
WxChallenge final-four finalist in end-of-year tournament	2017
Student Travel Award 20th Conference on Integrated Observing and Assimilation	2017

Systems for the Atmosphere, Oceans, and Land Surface

Texas Tech University Geoscience Scholarship	2013
Jurica Fellowship, Texas Tech University	2012
Atmospheric Sciences Achievement Award, University of Washington	2012
Phil Church Award, University of Washington	2012
Naval Weather Service Association Scholar	2010-2012

PROFESSIONAL SOCIETIES

Member, American Geophysical Union	2017-present
Member, American Meteorological Society	2012-present

FIELD PROJECT EXPERIENCE

Targeted Observations by Radars and UAS of Supercells (TORUS); Assisted fieldwork operations and led numerous forecast discussions, 2019

Deploying mobile radars for interceptions of outflow boundaries, tornadoes, and mesoscale convective systems for the Texas Tech University Severe Storm Research Group, 2013-2019

National Robotics Initiative; Assisted fieldwork operations with two mobile Ka-band radars to support unmanned aircraft flights in and around supercell thunderstorms, 2018

RIvers of VORticity in Supercells (RiVorS); Assisted fieldwork operations with a mobile Ka -band radar to observe vorticity rivers, 2017

Verification of the Origins of Rotation in Tornadoes Experiment-Southeast (VORTEX-SE); Student technician responsible for: integrating solar panel hardware into the Texas Tech StickNet observing platforms, altering existing hardware and software, maintaining stationary observing sites, developing web display, and producing analysis graphics, 2016-2017

Air Force Office of Scientific Research (AFOSR) project; Assisted fieldwork operations with mobile Ka-band radars to adaptively sample baroclinic boundaries near supercells and contributed to development of computer processing techniques and communications for real-time dual-doppler analyses, 2014-2015

Assisted in the rebuilding of TTU StickNet data acquisition systems in support of the TTU Hurricane Research Team, 2013

MEETINGS AND WORKSHOPS

Session Chair, 30th Conference on Severe Local Storms, 2022

Participant, 2nd Mind the Gap Workshop: Educating the Next Generation of Atmospheric Scientists for Careers in Industry, 2022

Participant, Implicit and Explicit Bias Workshop, Department of Atmospheric Science, Colorado State University, 2021

Session Chair, Special Symposium on Global and Mesoscale Models: Updates and Center, 2021

Participant, Hydrometeorological Testbed (NOAA) Flash Flooding and Intense Rainfall Experiment, 2019-2022

Participant, Hazardous Weather Testbed (NOAA) Spring Forecast Experiment, 2014, 2018, 2021-2022

Session Chair, AMS 30th Conference on WAF/26th Conference on NWP, 2020

Participant, Workshop: Increasing Inclusivity in the Engineering Classroom, 2019

REFEREED PUBLICATIONS

SUBMITTED

9. Cheeseman, Michael, B. Ford, Z. Rosen, E. Wendt, A. DesRosiers, **A. J. Hill**, C. L'Orange, C. Quinn, M. Long, S. H. Jathar, J. Volckens, and J. R. Pierce, 2022: Investigating sub-city gradients of air quality: lessons learned with low-cost PM2.5 and AOD monitors and machine learning. *Atmospheric Chemistry and Physics*, in review.

ACCEPTED

8. **Hill, A. J.**, R. S. Schumacher, and I. L. Jirak, 2022: A new paradigm for medium-range severe weather forecasts: probabilistic random forest-based predictions. *Weather and Forecasting*, accepted.

PUBLISHED

7. **Hill, A. J**. and R. S. Schumacher, 2021: Forecasting excessive rainfall with random forests and a deterministic convection-allowing model. *Weather and Forecasting*, 36, 1693-1711, doi:10.1175/WAF-D-21-0026.1.

6. Schumacher, R. S., **A. J. Hill**, M. Klein, J. Nelson, M. Erickson, S. M. Trojniak, and G. R. Herman, 2021: From random forests to flood forecasts: A research to operations success story. *Bulletin of the American Meteorological Society*, 102, E1742-E1755, doi:10.1175/BAMS-D-20-0186.1.

5. **Hill, A. J.**, C. C. Weiss, and D. C. Dowell, 2021: Influence of a portable near-surface observing network on experimental ensemble forecasts of deep convection hazards during VORTEX-SE, *Weather and Forecasting*, 36, 1141-1167, doi:10.1175/WAF-D-20-0237.1.

4. **Hill, A. J.**, C. C. Weiss, and B. C. Ancell, 2020b: Factors influencing ensemble sensitivity-based targeted observing prediction at convection-allowing resolutions. *Monthly Weather Review,* 148, 4497-4517, doi:10.1175/MWR-D-20-0015.1.

3. **Hill, A. J.**, G. R. Herman, and R. S. Schumacher, 2020a: Forecasting severe weather with random forests. *Monthly Weather Review*, 148, 2135--2161, doi:10.1175/MWR-D-19-0344.1.

2. **Hill, A. J.**, C. C. Weiss, and B. C. Ancell, 2016: Ensemble sensitivity analysis for mesoscale forecasts of dryline convection initiation. *Monthly Weather Review*, 144, 4161-4182. doi:10.1175/MWR-D-15-0338.1

1. Rasmussen, K. L., **A. J. Hill**, V. E. Toma, M. D. Zuluaga, P. J. Webster, and R. A. Houze, Jr., 2014: Multiscale analysis of three consecutive years of anomalous flooding in Pakistan *Quart. J. Roy. Meteor. Soc.*, 141, 1259-1276. doi:10.1002/qj.2433.

OTHER PUBLICATIONS

The Conversation: "AI and machine learning are improving weather forecasts, but they wont

replace human experts", May 2022

CSU Source Article: From research to real world: CSU atmospheric scientists develop heavy rainfall forecast tool used nationwide, October 2021

DATASETS

Schumacher, R. S., **A. J. Hill**, M. Klein, J. A. Nelson, M. J. Erickson, S. M. Trojniak, and G. R. Herman, 2021: Forecast dataset associated with "From random forests to flood forecasts: A research to operations success story". Mountain Scholar repository. http://dx.doi.org/10.25675/10217/222367

GRANTS AND CONTRACTS

Pending

2023-2026: "What drives the most extreme rainstorms in the continental US?" National Science Foundation. PI: Russ Schumacher. **Co-PI: Aaron Hill**.

2023-2026: "Tornado Forecasts of Opportunity: Extended-Range Predictions with Artificial Intelligence". NOAA. **PI: Aaron Hill**

2023-2025: "Postprocessing UFS Global Ensemble Forecasts to Generate Sub-daily Probabilistic Hazardous Weather Guidance". NOAA. **PI: Aaron Hill**

2023-2026: "Predictability of Severe Convection Across Climate Regimes". NOAA. PIs: Brian Ancell (TTU), Kristen Rasmussen (CSU), Yonggang Wang (SUNY Oswego). **Co-PI: Aaron Hill**

2023-2026: "Understanding needs of broadcast meteorologists leading up to tornado-only and tornado-flash flood (TORFF) events through evaluation of innovative multi-hazard forecasts". NOAA. PIs: Jen Henderson (TTU), Russ Schumacher (CSU), Erik Nielsen (TAMU). **Co-PI: Aaron Hill**

Current

2021-2024: "Environmental and Storm-generated Controls in Modulating Quasi-linear Convective System Vertical Vorticity: Dynamics and Detection". National Oceanic and Atmospheric Administration. PIs: Christopher Weiss (TTU), Matthew Kumjian (PSU), Dan Dawson (Purdue), Vanna Chiemelwski (NSSL). **Co-PI: Aaron Hill**. $135,065.

2021-2023: "Medium-range excessive rainfall forecasts with machine learning models". National Oceanic and Atmospheric Administration Joint Technology Transfer Initiative. PI: Russ Schumacher. **Co-PI: Aaron Hill**. $338,943.

2020-2023: "Generating calibrated forecast guidance for severe weather beyond day 1", National Oceanic and Atmospheric Administration Joint Technology Transfer Initiative. PI: Russ Schumacher. **Co-PI: Aaron Hill**. $433,209.

CLASSES/WORKSHOPS/COURSES TAUGHT

at Colorado State University

ATS 780A7: Machine Learning for the Atmospheric Sciences, Guest Lecturer, 2022
ATS 641: Mesoscale Meteorology, Guest Lecturer, 2022
Department of Atmospheric Science Machine Learning Workshop, Colorado State University, Co -Instructor, 2020

at Texas Tech University (graduate student)
ATMO 3316: Severe and Hazardous Weather, Guest Lecturer, 2019
Writing Tutor: Graduate Student Writing Center, 2015, 2017-2018
ATMO 1300: Introduction to Atmospheric Science, Instructor, summer 2016, summer 2017
ATMO 1300: Introduction to Atmospheric Science, Guest Lecturer, 2015
ATMO 2301: Weather, Climate, and Human Activities, Guest Lecturer, 2014

UNDERGRADUATE STUDENT RESEARCHERS MENTORED

Hanna McDaniel, 2022 (current undergraduate student at Florida State University)

INVITED PRESENTATIONS

"Generating probabilistic machine-learned forecasts for severe weather and excessive rainfall prediction." National Weather Service Central Region Headquarters, virtual, July 2022.
"Learning from machines: High-impact weather forecasting with Artificial Intelligence." University of Florida Department of Geography, virtual interview, March 2021
"Learning from machines: improving high-impact weather forecasts with Artificial Intelligence." Northern Illinois University Department of Geographic and Atmospheric Sciences, virtual interview, March 2021
"Machine learning for convection hazard forecasts." NWS Southern Region Science and Technology Services Division Science Circle, virtual, 2020
"Forecasting our future: machine learning and AI for high-impact weather." National Weather Association Annual Meeting, virtual, 2020
"Statistical tools for high-impact weather." Naval Postgraduate School, Monterey, CA, interview, 2020
"The utility of ensemble-sensitivity analysis for targeted observing, ensemble subsetting, and investigating environmental controls on storm characteristics." Cooperative Institute for Research in the Atmosphere, Fort Collins, CO, 2018

OTHER PRESENTATIONS (in last 5 years)

**** - presentation upcoming***
_ - student advised

48. *Escobedo, J. A., R. S. Schumacher, **A. J. Hill**, 2023: Investigating Colorado State University- Machine Learning Probabilities Day-1 Excessive Rainfall Forecasts in the Southwest United States During the Summer Monsoon. 37th Conference on Hydrology, Denver, CO, poster 767.

47. ***Hill, A. J**., R. S. Schumacher, 2023: Exploring Definitions of Excessive Rainfall when Generating Machine Learning-based Probabilistic Excessive Rainfall Forecasts from a Global Reforecast Dataset. 37th Conference on Hydrology, Denver, CO, 13B.5.

46. ***Hill, A. J.**, R. S. Schumacher, and I. Jirak, 2023: Understanding and Interpreting Medium-Range Predictions of Severe Weather with Random Forests. 22nd Conference on Artificial Intelligence for Environmental Science, Denver, CO, 5A.3.

45. ***Hill, A. J**., V. A. Gensini, and R. S. Schumacher, 2023: Medium-Range Machine Learning Forecasts for Severe Convective Storms. 22nd Conference on Artificial Intelligence for Environmental Science, Denver, CO, 11A.3.

44. *James, E. P., R. S. Schumacher, and **A. J. Hill**, 2023: Random forests for prediction of excessive rainfall based on the High-Resolution Rapid Refresh (HRRR). 22nd Conference on Artificial Intelligence for Environmental Science, Denver, CO., 7B.1.

43. *Mazurek, A., R. S. Schumacher, and **A. J. Hill**, 2023: Evaluating Random Forest-Based Predictions of Tornadoes, Wind, and Hail at Two- to Three-Day Lead Times. 22nd Conference on Artificial Intelligence for Environmental Science, Denver, CO., 11A.2.

42. *McDaniel, H., **A. J. Hill**, and R. S. Schumacher, 2023: Investigating Predictor Importance for a Next-Day Severe Weather Hazard Machine Learning Model. 22nd Conference on Artificial Intelligence for Environmental Science, Denver, CO, poster 893.

41. *McDaniel, H., **A. J. Hill**, and R. S. Schumacher, 2023: Investigating Predictor Importance for a Next-Day Severe Weather Hazard Machine Learning Model. 22nd Annual Student Conference, Denver, CO, poster S9.

40. *Schumacher, R. S., **A. J. Hill**, and M. Klein, 2023: How Far Into the Medium Range Can Probabilistic Excessive Rainfall Forecasts be Extended? 22nd Conference on Artificial Intelligence for Environmental Science, Denver, CO., 7B.5.

39. *McDaniel, H., **A. J. Hill**, and R. S. Schumacher, 2022: Investigating Predictor Importance for a Next-Day Severe Weather Hazard Machine Learning Model. American Geophysical Union Fall Meeting, Chicago, IL, poster 392.

38. **Hill, A. J.**, R. S. Schumacher, I. Jirak, 2022: Medium-Range Severe Weather Predictions with Random Forests. 30th Conference on Severe Local Storms, Santa Fe, NM, 4.1B.

37. Mazurek, A., R. S. Schumacher, and **A. J. Hill**, 2022: Evaluating Random Forest-Based Predictions of Tornadoes, Wind, and Hail at Two- and Three-day Lead Times. 30th Conference on Severe Local Storms, Santa Fe, NM, 7.1A.

36. Schumacher, R. S., **A. J. Hill**, and A. Mazurek, 2022: Probabilistic Forecast Guidance for Severe Convective Storms Using GEFS Reforecasts and Machine Learning. 30th Conference on Severe Local Storms, Santa Fe, NM, 1.3.

35. Schumacher R. S. and **A. J. Hill**, 2022: Advancing high-impact weather prediction with machine learning. DARPA FORWARD Conference, Fort Collins, CO, poster.

34. Schumacher, R. S. and **A. J. Hill**, 2022: Updates and Improvements to Colorado State University-Machine Learning Probabilities Excessive Rainfall Forecasts. Hydrometeorological Testbed Flash Flood and Intense Rainfall Experiment, virtual.

33. **Hill, A. J.**, 2022: Probabilistic Predictions of Severe Weather with Machine Learning. Columbia, SC Weather Forecast Office Severe Weather Workshop, virtual.

32. Cheeseman, M., B. Ford, Z. Rosen, E. Wendt, A. J. DesRosiers, **A. J. Hill**, C. L'Orange, C. Quinn, M. Long, S. H. Jathar, J. Volckens, and J. R. Pierce, 2022: Neighborhood Scale Variability of Co-incident PM2.5 and AOD: Results from Citizen Enabled Aerosol Measurements for Satellites (CEAMS). 24th Conference on Atmospheric Chemistry, poster.

31. Escobedo, J. A., R. S. Schumacher, and **A. J. Hill**, 2022: Colorado State University Machine Learning Probabilities Day 1 Probabilistic Excessive Rainfall Forecasts: Synoptic Regimes of the Best- and Worst-Performing Forecasts. 21st Annual Student Conference, poster

30. **Hill, A. J**. and R. S. Schumacher, 2022: Medium-range Predictions of Severe Weather with Machine Learning. 31st Conference on Weather Analysis and Forecasting/27th Conference on Numerical Weather Prediction, J7.2.

29. James, E. P., **A. J. Hill**, and R. S. Schumacher, 2022: A first guess day-one Excessive Rainfall Outlook based on a skill-weighted blend of random forest prediction systems, 21st Conference on Artificial Intelligence for Environmental Science, poster.

28. Nielsen, E. R. and **A. J. Hill**, 2022: Exploring Multi-Hazard Joint Probability Forecasts Through the Lens of Tornadoes and Flash Floods. 19th Conference on Mesoscale Processes, J3.4.

27. Schumacher, R. S., **A. J. Hill**, and I. L. Jirak, 2022: Probabilistic forecast guidance for severe convective storms using GEFS reforecasts and machine learning. 31st Conference on Weather Analysis and Forecasting/27th Conference on Numerical Weather Prediction, J7.4.

26. **Hill, A. J.** and R. S. Schumacher, 2021: Medium-range forecasts of hazardous weather with machine learning. 3rd NOAA Workshop on Leverage AI in Environmental Sciences, virtual.

25. **Hill, A. J.**, R. S. Schumacher, and J. Escobedo, 2021: Extending predictions of hazardous weather into the medium-range with machine learning. 2nd Knowledge-guided Machine Learning Workshop, virtual, poster.

24. **Hill, A. J**. and R. S. Schumacher, 2021: Advancing probabilistic prediction of high-impact weather using ensemble reforecasts and machine learning. National Weather Service AI Team, virtual.

23. **Hill, A. J.**, E. James, R. S. Schumacher, M. Klein, J. Nelson, and M. J. Erickson, 2021: CSU CAM-based First Guess Excessive Rainfall Outlook Products. Hydrometeorological Testbed Flash Flood and Intense Rainfall Experiment, virtual.

22. Schumacher, R. S. and **A. J. Hill**, 2021: Advancing Probabilistic Prediction of High-Impact Weather Using Ensemble Reforecasts and Machine Learning. UFS Webinar Series, virtual.

21. **Hill, A. J**. and R. S. Schumacher, 2021: Medium-range severe weather forecasts with random forests, 20th Conference on Artificial Intelligence for Environmental Science, 3.2.

20. **Hill, A. J.** and R. S. Schumacher, 2021: Short-term excessive rainfall forecasts using random forests and a deterministic convection-allowing model, 20th Conference on Artificial Intelligence for Environmental Science, joint 12.8.

19. Schumacher, R. S., **A. J. Hill**, M. Klein, J. Nelson, M. J. Erickson, and G. R. Herman, 2021: From Random Forests to Flood Forecasts: A Research to Operations Success Story, 11th Conference on Transition of Research to Operations, 14.9.

18. **Hill, A. J.** and R. S. Schumacher, 2020: Heavy precipitation and flash flood forecasts using random forests and convection-allowing models. 30th Conference on Weather Analysis and Forecasting/26th Conference on Numerical Weather Prediction, Boston, MA, J71.2.

17. **Hill, A. J.** and R. S. Schumacher, 2020: Random-Forest Severe Guidance from the GEFS. Storm Prediction Center Fall Forecaster Training.

16. **Hill, A. J.**, C. C. Weiss, and B. C. Ancell, 2020: Factors influencing ensemble sensitivity-based targeted observing predictions at convection-allowing resolutions, 24th Conference on Integrated Observing and Assimilation Systems for the Atmosphere, Boston, MA, 10.4.

15. **Hill, A. J.**, C. C. Weiss, and D. C. Dowell, 2020: Assimilating near-surface observations from a portable mesoscale network of StickNet platforms during VORTEX-SE with the High Resolution Rapid Refresh Ensemble. Severe Local Storms Symposium, Boston, MA., 950

14. **Hill, A. J.**, R. S. Schumacher, M. Klein, J. Nelson, and M. Erickson, 2020: First-guess excessive rainfall outlooks from machine learning models. Hydrometeorological Testbed Flash Flood and Intensive Rainfall Experiment.

13. McDonald, J. M., C. C. Weiss, and **A. J. Hill**, 2020: Properties of cold pools observed during the VORTEX-SE: Meso18-19 field campaign. Severe Local Storms Symposium, Boston, MA., 946

12. Schumacher, R. S., **A. J. Hill**, G. R. Herman, M. Erickson, B. Albright, M. Klein, and J. A. Nelson Jr., 2020: If a flood falls in a (random) forest, does it get counted? Advances and challenges in predicting excessive precipitation using machine learning. 30th Conference on

Weather and Forecasing / 26th Conference on Numerical Weather Prediction, Boston, MA., J71.3

11. Ancell, B. C., A. A. Coleman, and **A. J. Hill**, 2019: Ensemble sensitivity-based subsetting overview and evaluation activities at the 2018 NOAA HWT. European Geophysical Union General Assembly 2019, Vienna, Austria, EGU2019-2435.

10. Ancell, B. C., A. A. Coleman, and **A. J. Hill**, 2019: Ensemble sensitivity-based subsetting overview and evaluation activities at the 2018 NOAA HWT. 23rd Conference on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans, and Land Surface, Phoenix, AZ, paper 2.3A.

9. Weiss, C. C., E. C. Bruning, J. Dahl, and **A. J. Hill**, 2019: Texas Tech VORTEX-SE Activities. VORTEX-SE Workshop, Huntsville, AL.

8. Weiss, C. C., D. C. Dowell, N. Yussouf, and **A. J. Hill**, 2019: Insights into mesoscale and storm-scale predictability gained through ensemble sensitivity analysis. 23rd Conference on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans, and Land Surface, Phoenix, AZ, paper 20.1.

7. Ancell, B. C., A. A. Coleman, and **A. J. Hill**, 2018: Ensemble sensitivity-based subsetting overview and evaluation activities at the 2018 NOAA HWT. American Geophysical Union Fall Meeting, Washington, D.C.

6. Ancell, B. C., A. A. Coleman, **A. J. Hill**, and C. C. Weiss, 2018: Ensemble sensitivity-based subsetting overview and evaluation activities at the 2018 NOAA HWT. 29th Conference on Severe Local Storms, Stowe, VT, paper 3A.4.

5. **Hill, A. J**., C. C. Weiss, and B. C. Ancell, 2018: Towards improving forecasts of severe convection along the dryline through targeted observing with ensemble sensitivity analysis. 29th Conference on Severe Local Storms, Stowe, VT, paper 14.2.

4. **Hill, A. J.**, C. C. Weiss, and D. C. Dowell, 2018: Exploring the utility of assimilating observations from a mesoscale network of StickNet platforms during VORTEX-SE with the High Resolution Rapid Refresh Ensemble. 29th Conference on Severe Local Storms, Stowe, VT, paper 74.

3. **Hill, A. J**., C. C. Weiss, and B. C. Ancell, 2018: Ensemble-sensitivity analysis based observation targeting experiments for mesoscale convection forecasts and factors influencing observation-impact prediction. 22nd Conference on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans, and Land Surface, Austin, TX, paper 613.

2. Weiss, C. C., D. C. Dowell, **A. J. Hill**, J. McDonald, E. C. Bruning, and J. Dahl, 2018: An update on VORTEX-SE activities at Texas Tech University. 29th Conference on Severe Local Storms, Stowe, VT, paper 3B.1.

1. Weiss, C. C., D. C. Dowell, **A. J. Hill**, and N. Yussouf, 2018: Ensemble sensitivity analysis of controls on storm-scale vertical vorticity for two southeastern U.S. tornado events. 22nd Conference on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans, and Land Surface, Austin, TX, paper 610.

PROFESSIONAL SERVICE

Member, AMS 30th Conference on Severe Local Storms Program Committee, 2022-present
Member, Research to Operations Nexus Meetup Planning Committee, 2021-present
Associate Editor, *Artificial Intelligence for Earth Systems*, 2021-present
Associate Editor, *Monthly Weather Review*, 2020-present
Member, AMS Scientific and Technological Activities Commission Committee on Weather Analysis and Forecasting, 2019-present
5-yr Strategic Planning Subcommittee, Social Media Subcommittee
Reviewer, German Federal Ministry of Education and Research ClimXtreme: Climate Change and Extreme Events funding initiative, 2022
Chair, AMS 31st Conference on WAF/27th Conference on NWP Program Committee, 2020-2022
Contributor, National Oceanic and Atmospheric Administration White Paper on exploring ways to increase the near-term operational utility of existing observations and analysis systems, 2021
Member, AMS 30th Conference on WAF/26th Conference on NWP Program Committee, 2019-2020
Team Manager, WxChallenge Competition, Texas Tech University, 2013-2019
Member, AMS 29th Conference on WAF/25th Conference on NWP Program Committee, 2017-2018
Rapporteur, 2017 NOAA R2O meeting and 2018 AMS Community Meeting
Member, 15th AMS Student Conference Planning Committee, 2015-2016
Poster Session Subcommittee and Session Chair
Member, 14th AMS Student Conference Planning Committee, 2014-2015
Secretary, American Meteorological Society Student Chapter, Texas Tech University, 2013-2015
Reviewer, Texas Tech University Undergraduate Research Conference, 2013 and 2014
President, American Meteorological Society Student Chapter, Texas Tech University, 2012-2013
President, American Meteorological Society Student Chapter, University of Washington, 2011-2012
Reviewer of scientific articles for:
Weather and Forecasting
Monthly Weather Review
Artificial Intelligence for Earth Systems
Journal of Atmospheric Sciences
Journal of Applied Meteorology and Climatology
Bulletin of the American Meteorological Society
JGR-Atmospheres
Geophysical Research Letters
Weather and Climate Dynamics
Meteorological Applications
Energies

Journal of the Air and Waste Management Association
Journal of Operational Meteorology

DEPARTMENTAL/UNIVERSITY SERVICE

Staff Representative, Department of Atmospheric Science, Colorado State University, 2021 -present
Colorado State University Research Experiences for Undergraduates (REU) Program, 2022
PROmoting Geoscience Research, Education, and SuccesS (PROGRESS) Program, 2021-2022
Atmospheric Science Department Mentoring Program, 2021-2022
Student Member, Texas Tech University College of Arts and Sciences Committee on Academic Programs, 2017-2018

OUTREACH AND ENGAGEMENT

Interview with KUNC to discuss recent flash-flood producing storms in Colorado, July 2021
Interview with Daily Toreador newspaper regarding severe storm research in the Texas Tech Atmospheric Sciences Group, September 2018
Interview with Texas Tech University Communications for the VORTEX-SE 2017 field program, February 2017
Interview with Alabama Public Radio for Texas Tech involvement with the VORTEX-SE field program, March 2016
Interview with Texas Tech University Climate Science Center Videos for Science series, February 2016
6th Grade Science Class, Tahoka Middle School, Tahoka, TX, Guest Speaker, 2015
Interview with Texas Living Magazine (online) regarding Texas weather, December 2015