

# AARON J. HILL

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## **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**

Assistant Professor, School of Meteorology, University of Oklahoma, 2023  
Research Scientist II, Department of Atmospheric Science, Colorado State University, 2022-2023  
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**

“Paper of Note” – Bulletin of the American Meteorological Society	2023
Rising Star Award - Researcher, Walter Scott Jr. College of Eng. (CSU)	2023
WxChallenge Category 1 cumulative winner	2019-2020
Runner-up in Cold Bay, AK and Cheyenne, WY	
Doctoral Dissertation Completion Fellowship	2018-2019

WxChallenge final-four finalist in end-of-year tournament	2017
Student Travel Award	2017
20th Conference on Integrated Observing and Assimilation 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 Meteorological Society	2012-present
Member, American Geophysical Union	2017-present
Member, National Weather Association	2023-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, 30<sup>th</sup> 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***

### ***ACCEPTED***

### ***PUBLISHED***

8. **Hill, A. J.**, R. S. Schumacher, and I. L. Jirak, 2023: A new paradigm for medium-range severe weather forecasts: probabilistic random forest-based predictions. *Weather and Forecasting*, 38, 251-272, doi:10.1175/WAF-D-22-0143.1.
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. Trojaniak, 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**

CSU Source Article: "CSU machine learning model helps forecasters improve confidence in storm prediction", February 2023, <https://tinyurl.com/u57ummbx>.  
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**

**Hill, A. J.**, R. S. Schumacher, and I. L. Jirak, 2022: Forecast dataset associated with “A new paradigm for medium-range severe weather forecasts: probabilistic random forest-based predictions. Dryad, Dataset, <https://doi.org/10.5061/dryad.c2fqz61cv>

Schumacher, R. S., **A. J. Hill**, M. Klein, J. A. Nelson, M. J. Erickson, S. M. Trojaniak, 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**

### ***Current***

**2023-2026:** “Collaborative Research: Mesoscale Predictability Across Climate Regimes”. National Science Foundation. PIs: Brian Ancell (TTU), Kristen Rasmussen (CSU), Yonggang Wang (SUNY Oswego). **Co-PI: Aaron Hill**

**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.

### ***Completed***

**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, March 2022  
ATS 641: Mesoscale Meteorology, Guest Lecturer, March 2022  
Department of Atmospheric Science Machine Learning Workshop, Colorado State University, Co-Instructor, January 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

## **CURRENT GRADUATE STUDENTS**

## **FORMER GRADUATE STUDENTS**

## **CURRENT UNDERGRADUATE STUDENTS**

## **UNDERGRADUATE STUDENT RESEARCHERS MENTORED**

Mitchell Green, 2023 (current undergraduate student at Central Michigan University)

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

## **CURRENT GRADUATE STUDENT COMMITTEES**

Brandon McClung (Ph.D. student, University of Oklahoma)

## **PREVIOUS GRADUATE STUDENT COMMITTEES**

## **INVITED PRESENTATIONS**

“Understanding and Improving Predictability of High-Impact Weather Hazards Through the Lens of Machine Learning.” American Geophysical Union Fall Meeting, virtual, December 2023.

“Machine Learning for Operational Weather Forecasting.” National Weather Service SOO/DOH Meeting, Denver, CO, August 2023.

“Probabilistic Predictions of Severe Weather with Machine Learning.” NWS WFO Indianapolis Regional Training, virtual, April 2023.

“Using Machine Learning to Identify Severe Weather and Excessive Rainfall Risk Areas.” NWS Central Region Spring Seasonal Symposium, virtual, March/April 2023.

“A Forest of Forecasts? Leveraging Machine Learning for High-Impact Weather Forecasting.” SUNY Albany Department of Atmospheric and Environmental Sciences, interview, March 2023.

“A Forest of Forecasts? Leveraging Machine Learning for High-Impact Weather Forecasting.” University of Oklahoma School of Meteorology, interview, March 2023.

“Advancing High-Impact Weather Hazard Forecasting with Machine Learning.” Florida State University Department of Earth, Ocean, and Atmospheric Sciences, interview, March 2023.

“Moving beyond dynamics-based weather forecasting toward machine learning.” University of Nebraska-Lincoln Stout Lecture, February 2023.

“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*

61. Clark, A. J., K. A. Hoogewind, **A. J. Hill**, B. T. Gallo, A. Berrington, and E. D. Loken, 2023: Extended Range Machine-Learning Severe Weather Guidance Based on the Operational GEFS. 28<sup>th</sup> Conference on Numerical Weather Prediction, Madison, WI.
60. **Hill, A. J.** and R. S. Schumacher, 2023: How long of an observational record is needed for skillful ML-based forecasts of excessive rainfall? 32<sup>nd</sup> Conference on Weather Analysis and Forecasting, Madison, WI.
59. **Hill, A. J.**, D. C. Dowell, and C. C. Weiss, 2023: An Initial Assessment of Environmental Influences on QLCS-tornadogenesis from PERiLS Field Campaign Datasets and High-Resolution Simulations. 28<sup>th</sup> Conference on Numerical Weather Prediction, Madison, WI.
58. James, E. P., R. S. Schumacher, and **A. J. Hill**, 2023: Testing random forests for prediction of excessive rainfall based on the High-Resolution Rapid Refresh (HRRR). 32<sup>nd</sup> Conference on Weather Analysis and Forecasting, Madison, WI.
57. Mazurek, A. C., **A. J. Hill**, and R. S. Schumacher, 2023: Making Sense of Random Forest-Based Severe Weather Forecasts Using Tree Interpreter. 32<sup>nd</sup> Conference on Weather Analysis and Forecasting, Madison, WI.
56. Schumacher, R. S., **A. J. Hill**, and M. Klein, 2023: How Far Into the Medium Range Can Probabilistic Excessive Rainfall Forecasts be Extended? 32<sup>nd</sup> Conference on Weather Analysis and Forecasting, Madison, WI.
55. Schumacher, R. S. and **A. J. Hill**, 2023: Sources of Forecast Errors for Extreme-Rain-Producing Mesoscale Convective Systems. 20<sup>th</sup> Conference on Mesoscale Processes, Madison, WI.
54. Schumacher, R. S. and **A. J. Hill**, 2023: Progress Towards Medium Range Excessive Rainfall Forecasts with the CSU-MLP. Hydrometeorology Testbed Flash Flood and Intense Rainfall Experiment Seminar Series, virtual.
53. Schumacher, R. S. and **A. J. Hill**, 2023: Sources of Forecast Errors for Extreme-Rain-Producing Mesoscale Convective Systems. 15<sup>th</sup> International Conference on Mesoscale Convective Systems, Fort Collins, CO, 10.3.

52. **Hill, A. J.** and R. S. Schumacher, 2023: Leveraging the Power of Machine Learning for Excessive Rainfall Forecasting. 15<sup>th</sup> International Conference on Mesoscale Convective Systems, Fort Collins, CO, 12.7.
51. **Hill, A. J.** and R. S. Schumacher, 2023: Predictions of Severe Weather with Random Forests and the Global Ensemble Forecast System. European Conference on Severe Storms.
50. **Hill, A. J.** and A. Mazurek, 2023: The CSU-MLP Hazardous Weather Prediction System. National Weather Service Norman Weather Forecast Office, Norman, OK.
49. **Hill, A. J.** and A. Mazurek, 2023: The CSU-MLP Severe Weather Prediction System. Storm Prediction Center Spring Forecaster Training, Norman, OK.
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 PM<sub>2.5</sub> 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 Forecasting / 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**

Co-Chair, AMS 23<sup>rd</sup> Conference on Artificial Intelligence for Environmental Science, present  
 Member, AMS Scientific and Technological Activities Commission Committee on Weather  
 Analysis and Forecasting, 2019-present  
 5-yr Strategic Planning Subcommittee, Social Media Subcommittee, Glossary  
 Subcommittee, Mitchell Award Subcommittee Chair  
 Associate Editor, *Artificial Intelligence for Earth Systems*, 2021-present  
 Associate Editor, *Monthly Weather Review*, 2020-present  
 Member, AMS 32<sup>nd</sup> Conference on WAF/28<sup>th</sup> Conference on NWP/20<sup>th</sup> Conference on  
 Mesoscale Processes Program Committee, 2023  
 Member, AMS 30th Conference on Severe Local Storms Program Committee, 2022  
 Member, Research to Operations Nexus Meetup Planning Committee, 2021-2022  
 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*  
*Atmospheric Science Letters*  
*Climate Dynamics*  
*Weather and Climate Dynamics*  
*Meteorological Applications*  
*Energies*  
*Journal of the Air and Waste Management Association*  
*Journal of Operational Meteorology*  
*Atmospheric Research Review*  
Reviewer of proposals for:  
*National Oceanic and Atmospheric Administration*  
*German Federal Ministry of Education and Research*

#### **DEPARTMENTAL/UNIVERSITY SERVICE**

Staff Representative, Department of Atmospheric Science, Colorado State University, 2021-2023  
Colorado State University Research Experiences for Undergraduates (REU) Program, 2022, 2023  
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 The Coloradoan to discuss the CSU-MLP Forecasting System, March 2023,  
<https://tinyurl.com/24c8r99k>

Interview with 9News Denver to discuss the CSU-MLP Forecasting System, March 2023  
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