Abby Hutson Ph.D.

Assistant Research Scientist

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Education

2021 **Ph.D., Geosciences**, *Texas Tech University*
Advisor: Dr. Christopher Weiss
Dissertation: *Using Ensemble Sensitivity Analysis to Identify Storm Scale Characteristics Associated with Tornadic Potential in High Resolution Simulated Supercells*

2017 **M.S., Atmospheric Science**, *Texas Tech University*
Advisor: Dr. Christopher Weiss
Thesis: *Using Doppler Radar Observations of Gust Fronts to Infer Buoyancy Deficits within Thunderstorm Outflow*

2015 **B.S., Meteorology**, *Valparaiso University*
B.S., Mathematics, *Valparaiso University*

Professional Positions

2023-Present **Assistant Research Scientist**
University of Michigan Cooperative Institute for Great Lakes Research (CIGLR)

2021-Present **Postdoctoral Research Fellow**
University of Michigan Cooperative Institute for Great Lakes Research (CIGLR)

2015-2021 **Graduate Research Assistant**, *Texas Tech University*
Advisor: Dr. Christopher Weiss

2014 **Undergraduate Research Intern**, *NASA Student Airborne Research Program*
Advisor: Dr. Timothy Bertram, UC San Diego

Publications

In Review **Hutson A.**, A. Fujisaki-Manome, R. Glassman: Historical Trends in Cold-Season Mid-Latitude Cyclones in the Great Lakes Region. *Geophysical Research Letters.*

Published

2024 **Hutson, A.**, A. Fujisaki-Manome, and B. Lofgren, 2024: Testing the Sensitivity of a WRF-based Great Lakes Regional Climate Model to Cumulus Parameterization and Spectral Nudging. *J. Hydrometeor.*, https://doi.org/10.1175/JHM-D-22-0234.1, in press.

2023 **Hutson A**., C. Weiss (2023): Using Ensemble Sensitivity Analysis to Identify Storm-Scale Characteristics Associated with Tornadogenesis in High Resolution Simulated Supercells. *Monthly Weather Review*. In press. https://doi.org/10.1175/MWR-D-22-0288.1.

2019 **Hutson, A**., C. Weiss, and G. Bryan (2019): Using the Translation Speed and Vertical Structure of Gust Fronts to Infer Buoyancy Deficits within Thunderstorm Outflow. *Monthly Weather Review*, 3575–3594. https://doi.org/10.1175/MWR-D-18-0439.1

2015 Eveler, A., T. Grashel, **A. Kenyon** (2015): Optimizing the Allocation of Vaccines in the Presence of Multiple Strains of the Influenza Virus. *Rose-Hulman Undergraduate Mathematics Journal*. **16**. 121-142. https://scholar.rose-hulman.edu/rhumj/vol16/iss1/7

Technical Skills

Programming: Python*, shell*, MATLAB*, Fortran, LabVIEW, ArcGIS

Atmospheric Models: Cloud Model version 1 (CM1)*, Weather Research and Forecasting model (WRF)*

Instrumentation: IRIS Weather Radar Software (for operation in mobile Doppler radars), CompactRIO for Data Acquisition (programming for use in data acquisition with three or more weather instruments), soldering, meteorological instrument installation, experience towing trailers for instrument deployment

(* indicates proficiency)

Invited Presentations

2024 **Hutson, A.** : From the Great Plains to the Great Lakes: Modeling the Atmosphere at Different Scales. *Great Lakes Meteorology Conference*. Valparaiso University, Valparaiso, IN

2021 **Hutson, A**.: Using a Statistical Ensemble Technique to Determine Why Some Supercells Produce Tornadoes (and Why Others Do Not). *University of Michigan CLaSP Seminar Series*, Ann Arbor, MI.

2018 **Hutson, A. L**. and D. Volchenkov, 2018: Lubbock Is Dusty: An Analysis of Wind, Soil Moisture, and Blowing Dust Reports over 10 Years. *16th Emmy Noether High School Mathematics Day,* Texas Tech University, Lubbock, TX.

Conference Presentations

2023 **Hutson A**., A. Fujisaki-Manome, and B.M. Lofgren, 2023: Testing the Sensitivity of A Great Lakes Regional Climate Model with a 1-D Lake Model. *International Association for Great Lakes Research*, Toronto, ON.

Cannon, D., **A. Hutson**, A. Fujisaki-Manome, J. Wang, M. Nakashima, 2023: Assessing Biases in Climate Models and Atmospheric Reanalysis Datasets in the Great Lakes. *International Association for Great Lakes Research.* Toronto, ON.

Glassman, R., **A. Hutson**, A. Fujisaki-Manome, 2023: Evaluating Long-Term Trend of Winter Storms in the Great Lakes. *22nd AMS Annual Student Conference.* Denver, CO., paper S264.

Hutson A., A. Fujisaki-Manome, P. Chu, B. Lofgren, 2023: Testing Cumulus Parameterizations and Moisture Nudging in a WRF-based Regional Climate Model of the Great Lakes Drainage Basin. *37th Conference on Hydrology*. Denver, CO., paper 15A.1A

2020 **Hutson, A**. and C. C. Weiss, 2020: Using Ensemble Sensitivity Analysis to Identify Storm-Scale Characteristics Associated With Tornadic Potential in High-Resolution Simulated Supercells. *Severe Local Storms Symposium,* Boston, MA., paper 951.

Hutson, A. and C. C. Weiss, 2020: Using Ensemble Sensitivity Analysis to Identify Storm-Scale Characteristics Associated with Tornadic Potential in High-Resolution Simulated Supercells. *4th Texas Weather Conference,* Lubbock, TX

2019 **Hutson, A**., C. C. Weiss, and D.C. Dowell, 2019: Using Ensemble Sensitivity Analysis to Identify Storm-Scale Characteristics Associated with Tornadic Potential in High-Resolution Idealized Supercells. *23rd Conference on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans, and Land Surface*, Phoenix, AZ, paper 20.4.

2018 **Hutson, A.**, C. C. Weiss, D. C. Dowell, and G. H. Bryan, 2018: The Relationship Between RFD Thermodynamic Deficit and RFGF Vertical Structure in High-Resolution Simulated Supercells. *29th Conference on Severe Local Storms*, Stowe, VT, paper 3B.5

Weiss, C. C., A. L. Houston, E. W. Frew, B. Argrow, **A. L. Hutson,** and A. Schueth, 2018: Preliminary Results from the 2018 National Robotics Initiative Field Project. *29th Conference on Severe Local Storms*, Stowe, VT, paper 196.

Hutson, A. L., C. C. Weiss, and D. C. Dowell, 2018: The Relationship Between RFD Thermodynamic Deficit and RFGF Vertical Structure in High-Resolution Simulated Supercells. *3rd Texas Weather Conference*, Austin, TX.

2017 **Kenyon, A. L.**, C. C. Weiss, and G. H. Bryan, 2017: Using Mobile Doppler Radar Observations to Infer Buoyancy Deficits within Thunderstorm Outflow. *38th Conference on Radar Meteorology*, Chicago, IL, paper 19A.2

Kenyon, A. and Hill, A. J., 2017: Using Python to Process and Visualize Real-Time Atmospheric Data During VORTEX-SE. *16th Scientific Computing with Python Conference*, Austin, TX.

Kenyon, A. L., C. C. Weiss, and G. H. Bryan, 2017: Using Mobile Doppler Radar Observations to Infer Buoyancy Deficits within Thunderstorm Outflow. *Special Symposium on Meteorological Observations and Instrumentation*, Seattle, OR, paper 1476

2016 **Kenyon, A. L.**, C. C. Weiss, and G. H. Bryan, 2016: Using Mobile Doppler Radar Observations of Rear Flank Gust Fronts to Infer Outflow Buoyancy Deficits. *28th Conference on Severe Local Storms*, Portland, OR, paper 5A.5.

2015 **Kenyon, A. L.**, S. R. Schill, and T. Bertram, 2015: Ozone in the Free Troposphere: The Impact of Synoptic Meteorology on Ozone Transport to Southern California. *14th Annual Student Conference*, Phoenix, AZ, paper S181.

2014 **Kenyon, A. L.**, S. R. Schill, N. Heath, G. A. Morris, B. L., Lefer, and T. H. Bertram, 2014: Ozone in the Free Troposphere: The Impact of Synoptic Meteorology on Ozone Transport to Southern California. *American Geophysical Union Fall Meeting*, San Francisco, CA, paper A53M-3406.

Kenyon, A., K. Wagner, and M. Becker, 2014: The Effect of Lightning on Tropospheric Ozone Concentrations over Valparaiso, Indiana in 2006 and 2007. *Symposium on Undergraduate Research and Creative Expression*, Valparaiso, IN, paper 337.

2013 **Kenyon, A.**, A. Eveler, T. Grashel, J. Richardson, 2013: Optimizing the Allocation of Vaccines in the Presence of Multiple Strains of the Influenza Virus. *Symposium on Undergraduate Research and Creative Expression*, Valparaiso, IN, paper 237.

Professional Service

Students

2024 Sydnie Hansen (University of Louisville). "Teleconnections and Great Lakes Extratropical Cyclones". CIGLR Summer Fellowship. May-August 2024.

2024 Roshni Sahu (University of California Berkley). "Mesoscale Dynamics of Lake Effect Precipitation on the Great Lakes". CIGLR Summer Fellowship. May-August 2024.

2022 Ryan Glassman (Valparaiso University). "Historical Trends in Great Lakes Storms". CIGLR Summer Fellowship. May-August 2024.

Journal Reviewer Journal of the Atmospheric Sciences

Grant Reviewer Ohio Sea Grant

Other Professional Achievements and Activities

2024 **Workshop**: OAR Marine Boundary Layer Workshop. Atlantic, Oceanographic, and Meteorological Laboratory. Miami, FL.

2024 **Session Chair**: *Climate Impacts on Hydrodynamics, Ecosystems, Floods, Droughts and other Precipitation Extremes in the Great Lakes Basin.* IAGLR 2024. Windsor, ON.

2023 **Session Chair**: *The Climate Systems of Large Lakes from Seasons to Millenia.* IAGLR 2023. Toronto, ON.

2022 **Workshop**: *Diversity, Equity, and Inclusion Workshop: Implementing Restorative Practices.* University of Michigan Postdoctoral Association.

2019-2021 **Team Manager and Participant:** WxChallenge, Texas Tech University

2016 **Reviewer:** Texas Tech University Undergraduate Research Conference

2014-2015 **President:** Chi Epsilon Pi Meteorological Honor Society, Valparaiso University

2013-2014 **Treasurer:** Chi Epsilon Pi Meteorological Honor Society, Valparaiso University

2013-2014 **New Student Orientation Assistant:** Valparaiso University

Honors and Awards

2018 TxWx Conference Award for Best Student Oral Presentation

2015-2017 Texas Tech University AT&T Chancellors Scholarship

2015 Valparaiso University Meteorology Department Eugene M. Rasmussen Award for Service and Academic Excellence

2015 Valparaiso University Athletic Department Finishing At the Top

2015 Nancy Wehmeier Nagel & Robert B. Nagel Prize

2015 Horizon League Post-Graduate Scholarship Nominee

2014-2015 American Meteorological Society Karen Hauschild Friday Scholarship

2013 Martin David Mundt Scholarship

2011-2015 Valparaiso University Division-I Women's Soccer Athletic Scholarship

Field Work Participation

2019, 2021 Targeted Observations by Radars and Unmanned Aircraft Systems of Supercells (**TORUS**)
Mobile Ka-band radar operator, Forecaster

2019 Texas Tech University Hurricane Research Team - Hurricane Dorian
Mobile Ka-band radar operator; StickNet deployment and maintenance

2016-2019 Verification of the Origins of Rotation in Tornadoes EXperiment-Southeast (**VORTEX-SE**)
StickNet development and deployment; field tech for deployment and emergency maintenance

2018 National Robotics Initiative (**NRI**)
Mobile radar operator for support of unmanned aircraft flights

2017 RIvers of VORticity in Supercells (**RiVorS**)
Mobile Ka-band radar operator

2015-2016 Kinematic Texture And Lightning (**KTAL**) experiment
Mobile Ka-band radar operator

2015 Air Force Office of Scientific Research (**AFOSR**) project
Mobile radar driver

2014 NASA Student Airborne Research Program (**SARP**)
Collected atmospheric aerosol concentration aboard NASA DC8

Membership

2023 International Association for Great Lakes Research

2013 American Meteorological Society

2014 American Geophysical Union