

TROY ZAREMBA

(815)245-0031 | tzaremba@albany.edu

RESEARCH INTERESTS

Radar meteorology, lidar remote sensing, extratropical cyclones, mesoscale snow bands, cloud microphysics, orographic precipitation, weather modification, boundary layer clouds, atmospheric rivers, quasi-linear convective systems, tornadic supercells, eclipses

EDUCATION

Ph.D., Atmospheric Sciences

Fall 2020 – Spring 2023

University of Illinois Urbana-Champaign – Urbana, IL

- **Dissertation:** “Vertical Motions in Orographic Clouds over the Payette River Basin and their impact on Cloud Liquid Water Content: results from SNOWIE”
- Graduate Minor in College Teaching, Mentoring Certificate, Weather and Climate Risk and Data Analytics Certificate
- Committee: Dr. Robert M. Rauber (Primary Advisor), Dr. Greg M. McFarquhar, Dr. Stephen Nesbitt, and Dr. Robert Trapp

M.S., Atmospheric Sciences

Fall 2018 - Spring 2020

University of Illinois Urbana-Champaign – Urbana, IL

- Thesis: “Cloud Top Phase Characterization of Cold Sector Southern Ocean Clouds and Ice Production at Warm Cloud Top Temperatures: results from the SOCRATES Field Campaign”
- Advisor: Dr. Robert M. Rauber

B.S., Atmospheric Sciences

Fall 2014 - Spring 2018

University of Illinois Urbana-Champaign – Urbana, IL

- Minor in Geography and GIS
- Graduated with High Distinction

TEACHING EXPERIENCE

Guest Lecturer

University at Albany – Albany, NY

Department of Atmospheric and Environmental Sciences

- **ATM 461: Mesoscale Processes** *Fall 2023*
 - Designed and delivered a lecture on radar meteorology emphasizing motion retrievals for mesoscale processes catered to graduate students
 - Designed a comprehensive homework assignment focused on radar applications in mountain meteorology

Teaching Assistant

University of Illinois Urbana-Champaign – Urbana, IL

Department of Atmospheric Sciences

- **ATMS 324: Field Studies of Convection** *Summer 2022*
 - Drove over 5000 miles in order to help students learn how to forecast and recognize structural features characteristic of supercellular convection, organized mesoscale convective systems, and other thunderstorms
 - Helped lead daily forecast briefings/discussions
- **ATMS 410: Radar Remote Sensing** *Fall 2021*
 - Designed in-class assignments for upper classmen and graduate students intended to be used in a flipped classroom
 - Created interactive lectures that taught students how to use Python to analyze airborne and ground-based radar data
 - Collected data in the field using a Doppler on Wheels radar and taught students how to use Python to plot and analyze collected data
 - Managed grading procedures and developed rubrics/expectations for class assignments/projects

- **ATMS 313: Synoptic Weather Forecasting** *Spring 2019*
 - Helped students during weekly office hours and graded assignments
 - Assisted students in interpreting weather maps and writing weather forecast discussions during weekly lab sessions
- **ATMS 100: Introduction to Meteorology** *Fall 2018*
 - Designed and presented lectures to four weekly lab sections of over 20 students. These were intended for students without a Meteorology background
 - Provided help to students during weekly office hours and graded assignments
- **ATMS 120: Severe and Hazardous Weather** *Fall 2016 – Spring 2018*
 - Organized coursework for large lecture (>500 students) and online-based courses
 - Managed grading procedures for a team of undergraduate teaching assistants and graded assignments

RESEARCH EXPERIENCE

Postdoctoral Scholar

July 2023 - Present

- University at Albany - Albany, NY
 - Currently using Python and running WRF to examine P-Type transitions using model, radar, and microphysics data from the Winter Precipitation Type Research Multi-scale Experiment (WINTRE-MIX)
 - Developed methodology to identify turbulence that was shear and convection induced within the melting layer of winter storms during cases where a P-Type transition was observed
 - In the process of running high resolution WRF simulations of turbulence within the melting layer
 - Examining DOW radar Doppler Spectra and its variational relationship to changes in cloud microphysical properties
 - Developed methodology to explore fine scale variations in reflectivity and vertical motion in extratropical cyclones observed with cloud radars using data from IMPACTS

Graduate Research Assistant

August 2018 – July 2023

- University of Illinois Urbana Champaign – Urbana, IL
 - Master's work focused on using Python to analyze cold sector Southern Ocean clouds using radar, lidar, microphysics, and satellite data from the Southern Ocean Clouds, Radiation, Aerosol Transport Experimental Study (SOCRATES)
 - Developed a classification scheme to characterize Southern Ocean cloud top phase
 - Found that the ice phase was important within clouds with cloud top temperatures exceeding -5°C
 - Contributed to analyses of an atmospheric river observed during the campaign
 - Ph.D. research focused on using Python to analyze orographic clouds over the Payette River Basin of Idaho using radar, microphysics, and WRF model data from the Seeded and Natural Orographic Wintertime Clouds: the Idaho Experiment (SNOWIE)
 - Developed a four-part study focused on vertical motion retrievals, magnitudes, and their effect on microphysical processes over complex terrain
 - Developed a theoretical study showing that glaciogenic cloud seeding effects cannot be detected using radar remote sensing in the presence of heavy background orographic precipitation
 - Contributed to a study analyzing the impact of atmospheric river moisture flux on cloud structure over complex terrain, a study comparing observed and simulated seeding effects, and a study analyzing the microphysical response of terrain forced flow
 - Used Python to analyze radar, lidar, and microphysics data from the Investigation of Microphysics and Precipitation for Atlantic Coast Threatening Snowstorms (IMPACTS) field campaign.
 - Contributed analysis to a study that showed differences in microphysical processes occurring within the stratiform and convective regions of a commahead region of an extratropical cyclone
 - Used Master's work to build a classification scheme to quantify extratropical cyclone cloud top phase characteristics over the Midwest and Northeast U.S.

Undergraduate Research Assistant

January 2017 - July 2018

- University of Illinois Urbana-Champaign – Urbana, IL
 - Used Python to analyze airborne radar data from SNOWIE in order to investigate cloud top generating cells and potential glaciogenic seeding signatures
 - Analyzed optical array probe data from the Plains Elevated Convection at Night (PECAN) field campaign to illustrate how ice particle habits changed with depth within the trailing stratiform regions of mesoscale convective systems during aircraft spiraling descents

FIELD EXPERIENCE

NASA Eclipse Ballooning Project (NEPB)

Fall 2023, Spring 2024

- Team Lead
- Goal was to sample boundary layer evolution and potential stratospheric gravity waves generated by environmental variations as result of the annular eclipse
- Led a team of six undergraduate students in launching rawinsondes before, during and after the 2023 annular eclipse in Moriarty, NM
- Launched 30 rawinsondes and operated a weather station
- Preparing for a total eclipse deployment in Watertown, NY in April 2024

Boundary-layer Evolution and Structure of Tornadoes (BEST)

Summer 2023

- Graduate Researcher
- Goal of the project was to sample supercellular tornadoes
- Drove and operated a Doppler on Wheels radar during four intensive operation periods
- Sampled three tornadoes

Propagation, Evolution, and Rotation in Linear Storms (PERILS)

Spring 2022, 2023

- Graduate Researcher
- Goal of the project was to sample tornadic quasi-linear convective systems in the Mississippi River Valley
- Drove and operated a Doppler on Wheels radar during intensive operation periods
- Launched rawinsondes and helped with deployment of wind profiler
- Helped sample six quasi-linear convective systems

Investigation of Microphysics and Precipitation for Atlantic Coast-Threatening Storms (NASA EPSO - IMPACTS)

Winter 2020, 2022, 2023

- Graduate Researcher
- Goal of the project was to sample mesoscale snow bands
- Developed rawinsonde launch modules used by mobile rawinsonde units
- Coordinated rawinsonde launches throughout the Northeast United States that were used by mission scientists in real time for decision support
- Launched over 100 rawinsondes

Doppler on Wheels Radar Deployments

Fall 2022

- Collected data in the field with undergraduate and graduate students as part of the course ATMS 410: Radar Remote Sensing using a Doppler on Wheels Radar
- Successfully completed 10 intensive operation periods
- Mentored students on how to develop Python code to analyze radar data collected

Seeded and Natural Orographic Wintertime Clouds the Idaho Experiment (SNOWIE) Winter 2017

- Undergraduate Researcher
- Goal of the project was to sample orographic cloud cover and to prove the efficacy of wintertime orographic cloud seeding
- Member of the mobile sounding unit
- Coordinated rawinsonde launches during intensive operation periods

PEER-REVIEWED PUBLICATIONS

Peer Reviewed Publications:

1. Zaremba, T. J., R. M. Rauber, L. Di Girolamo, J. R. Loveridge, and G. M. McFarquhar, 2023: On the detection of cloud seeding effects in wintertime orographic cloud systems, *J. Appl. Meteor. Climatol.*, in press, <https://doi.org/10.1175/JAMC-D-22-0154.1>
2. Janiszski, A., R. M. Rauber, B. F. Jewett, G. M. McFarquhar, T. J. Zaremba, J. E. Yorks, 2023: A Kinematic Modeling Study of the Re-Organization of Snowfall between Cloud-top Generating Cells and low-level Snow Bands in Midlatitude Winter Storms, *J. Appl. Meteor. Climatol.*, in press., <https://doi.org/10.1175/JAS-D-23-0024.1>

3. [Zaremba, T. J.](#), R. M. Rauber, B. Geerts, J. French, S. A. Tessendorf, L. Xue, K. Friedrich, C. Weeks, R. M. Rasmussen, M. L. Kunkel, and D. R. Blestrud, 2023: Vertical Motions in Orographic Cloud Systems over the Payette River Basin. Part 4: Controls on Supercooled Liquid Water Content and Cloud Droplet Number Concentration, *J. Appl. Meteor. Climatol.*, in press. <https://doi.org/10.1175/JAMC-D-23-0080.1>
4. Rea, D., R. M. Rauber, H. Hu, S. A. Tessendorf, S. W. Nesbitt, B. Jewett, and [T. J. Zaremba](#), 2023: The Contribution of Subtropical Moisture Within an Atmospheric River on Moisture Flux, Cloud Structure, and Precipitation over the Salmon River Mountains of Idaho using Moisture Tracers, *JGR: Atmospheres*, 128 (6), <https://doi.org/10.1029/2022JD037727>
5. Geerts, B., C. Grasmick, R. M. Rauber, [T. J. Zaremba](#), L. Xue, and K. Friedrich, 2023: Vertical motions forced by mesoscale terrain and cloud microphysical response in extratropical precipitation systems, *J. Atmos. Sci.*, 80 (3), 649-669, <https://doi.org/10.1175/JAS-D-22-0161.1>
6. Varcie, M. M., [T. J. Zaremba](#), R. M. Rauber, G. M. McFarquhar, J. A. Finlon, L. A. McMurdie, A. Ryzhkov, F. Waitz, M. Schnaiter, E. Järvinen, D. J. Delene, M. R. Poellet, M. McLinden, and A. Janiszewski, 2023: Precipitation Growth Processes in the Comma Head Region of the 7 February 2020 Northeast Snowstorm: results from IMPACTS, *J. Atmos. Sci.*, 80 (1), 3-29, <https://doi.org/10.1175/JAS-D-22-0118.1>
7. [Zaremba, T. J.](#), R. M. Rauber, S. Haimov, B. Geerts, J. R. French, C. Grasmick, K. Heimes, S. A. Tessendorf, K. Friedrich, L. Xue, R. M. Rasmussen, M. L. Kunkel, and D. R. Blestrud, 2022: Vertical Motions in Orographic Cloud Systems over the Payette River Basin. Part 1: Recovery of Vertical Motions and their Uncertainty from Airborne Doppler Radial Velocity Measurements, *J. Appl. Meteor. Climatol.*, 61 (4), 1713-1731, <https://doi.org/10.1175/JAMC-D-21-0228.1>
8. [Zaremba, T. J.](#), K. Heimes, R. M. Rauber, B. Geerts, J. R. French, C. Grasmick, S. A. Tessendorf, L. Xue, K. Friedrich, R. M. Rasmussen, M. L. Kunkel, and D. R. Blestrud, 2022: Vertical Motions in Orographic Cloud Systems over the Payette River Basin. Part 2: Fixed and Transient Updrafts and their Relationship to Forcing, *J. Appl. Meteor. Climatol.*, 61 (4), 1733-1751, <https://doi.org/10.1175/JAMC-D-21-0229.1>
9. Heimes, K., [T. J. Zaremba](#), R. M. Rauber, S. A. Tessendorf, L. Xue., K. Ikeda, B. Geerts, J. R. French, K. Friedrich, R. M. Rasmussen, M. L. Kunkel, and D. R. Blestrud, 2022: Vertical Motions in Orographic Cloud Systems over the Payette River Basin, Part 3: Evaluation of the Impact of Transient Vertical Motions on Targeting During Orographic Cloud Seeding Operations, *J. Appl. Meteor. Climatol.*, 61 (4), 1753-1777, <https://doi.org/10.1175/JAMC-D-21-0230.1>
10. Xue, L., C. Weeks, S. Chen, S. A. Tessendorf, R. M. Rasmussen, K. Ikeda, B. Kosovic, D. Behringer, J. R. French, K. Friedrich, [T. J. Zaremba](#), R. M. Rauber, C. P. Lackner, B. Geerts, D. Blestrud, M. Kunkel, N. Dawson, and S. Parkinson, 2022: Comparison between observed and Simulated AgI seeding impacts in a well observed case from the SNOWIE field program, *J. Appl. Meteor. Climatol.*, 61 (4), 345-367, <https://doi.org/10.1175/JAMC-D-21-0103.1>
11. [Zaremba, T. J.](#), R. M. Rauber, G. M. McFarquhar, P. J. Demott, J. J. D'Alessandro, and W. Wu, 2021: Ice in Southern Ocean Clouds with Cloud Top Temperatures Exceeding -5°C , *JGR: Atmospheres*, 126 (14), <https://doi.org/10.1029/2021JD034574>
12. [Zaremba, T. J.](#), R. M. Rauber, G. M. McFarquhar, M. Hayman, J. A. Finlon, and D. M. Stechman, 2020: Phase Characterization of Cold Sector Southern Ocean Cloud Tops: Results from SOCRATES. *JGR: Atmospheres*, 125 (24), <https://doi.org/10.1029/2020JD033673>
13. Finlon, J. A., R. M. Rauber, W. Wu, [T. J. Zaremba](#), G. M. McFarquhar, S. W. Nesbitt, M. Schnaiter, E. Järvinen, F. Waitz, T. C. J. Hill, and P. J. DeMott, 2020: Structure of an Atmospheric River Over Australia and the Southern Ocean: Part II. Microphysical Evolution, *JGR: Atmospheres*, 125 (18). <https://doi.org/10.1029/2020JD032514>
14. Rauber, R. M., H. Hu, F. Dominguez, S. W. Nesbitt, G. M. McFarquhar, [T. J. Zaremba](#), and J. A. Finlon, 2020: Structure of an Atmospheric River Over Australia and the Southern Ocean. Part I: Tropical and Midlatitude Water Vapor Fluxes, *JGR: Atmospheres*, 125 (18), <https://doi.org/10.1029/2020JD032513>

Submitted Manuscripts:

1. Janiszkeski, A., R. M. Rauber, B. F. Jewett, T. J. Zaremba, 2023: Re-organization of snowfall beneath cloud-top within the comma head of two extreme U.S. East Coast winter cyclones, *submitted to JGR: Atmospheres*.
2. Zaremba, T. J., R. M. Rauber, K. Heimes, J. E. Yorks, J. A. Finlon, S. D. Nicholls, P. Selmer, L. A. McMurdie, and G. M. McFarquhar, 2023: Cloud top phase characterization of extratropical cyclones over the Northeast and Midwest United States: results from IMPACTS, *submitted to the J. Atmos. Sci.*

Manuscripts in Preparation:

1. Zaremba, T. J., and R. M. Rauber, 2024: Vertical gradients in radial velocity as a proxy for turbulence, waves, and layers of ascent in extratropical cyclones: results from IMPACTS, *in prep for submission to the J. Atmos. Oceanic. Technol.*
2. Zaremba, T. J., J. R. Minder, and K. Friedrich, 2024: Turbulence within melting layers of winter storms and its impact on melting layer evolution: results from WINTRE-MIX, *in prep for submission to the J. Atmos. Sci.*
3. Zaremba, T. J., J. R. Minder, and K. Friedrich, 2024: Microphysical Variability evidenced in Variations in Radar Doppler Spectra: results from WINTRE-MIX, *in prep for submission to the J. Atmos. Sci.*
4. Zaremba, T. J., R. M. Rauber, K. Heimes, G. M. McFarquhar, L. A. McMurdie, J. Yorks, 2024: 3-D Structure of a shallow generating cell driven snowstorm over the Midwest and its microphysical characteristics determined using particle aspect ratio: results from IMPACTS, *in prep for submission to JGR: Atmospheres*

PRESENTATIONS

Conference Presentations

1. Zaremba, T. J., R. M. Rauber, B. Geerts, J. R. French, S. A. Tessendorf, L. Xue, K. Friedrich, C. Weeks, R. M. Rasmussen, M. L. Kunkel, and D. Blestrud, 2023: Vertical Motions in Orographic Cloud Systems Retrieved from W-Band radar over the Idaho Mountains during SNOWIE: Controls on Supercooled Liquid Water Content and Cloud Droplet Number Concentrations, American Meteorological Society Radar Meteorology Conference, Minneapolis, Minnesota, 28 Aug - 1 Sep 2023.
2. Zaremba, T. J., R. M. Rauber, B. Geerts, J. R. French, S. A. Tessendorf, L. Xue, K. Friedrich, C. Weeks, R. M. Rasmussen, M. L. Kunkel, and D. Blestrud, Vertical Motions in Orographic Cloud Systems over the Payette River Basin: Controls on Liquid Water Content, Drop Number Concentrations and Drop Size Distributions, American Meteorological Society Mesoscale Conference, Madison, Wisconsin, 17-21 Jul 2023.
3. Zaremba, T. J., R. M. Rauber, K. Heimes, B. Geerts, J. R. French, S. A. Tessendorf, L. Xue, K. Friedrich, R. M. Rasmussen, M. L. Kunkel and D. Blestrud, 2023: Controls on Supercooled Liquid Water Content and Cloud Droplet Number Concentration, SNOWIE Science Team Meeting, Boulder, Colorado, 15-16 May 2023.
4. Zaremba, T. J., R. M. Rauber, J. E. Yorks, G. M. McFarquhar, S. D. Nicholas, and L. A. McMurdie, 2023: Cloud Top Phase Characterization of Extratropical Cyclones over the Midwest and Northeast United States: Results from IMPACTS, American Geophysical Union Annual Meeting, Chicago, Illinois, 12-16 Dec 2023.
5. Zaremba, T. J., R. M. Rauber, L. Di Girolamo, J. R. Loveridge, and G. M. McFarquhar, 2022: On the radar detection of cloud seeding effects in wintertime orographic cloud systems, SNOWIE Science Team Meeting, Boulder, Colorado, 25 Jul 2022.
6. Zaremba, T. J., R. M. Rauber, K. Heimes, B. Geerts, J. R. French, S. A. Tessendorf, L. Xue, K. Friedrich, R. M. Rasmussen, M. L. Kunkel and D. Blestrud, 2022: Fixed and Transient Updrafts in Orographic Cloud Systems over the Payette River Basin and Their Relationship to Forcing: Results from SNOWIE, 2022 American Meteorological Society Mountain Meteorology Conference, Park City, Utah, 27 Jun - 1 Jul 2022.

7. Zaremba, T. J., R. M. Rauber, K. Heimes, B. Geerts, J. R. French, S. A. Tessendorf, L. Xue, K. Friedrich, R. M. Rasmussen, M. L. Kunkel and D. Blestrud, 2022: Fixed and Transient Updrafts in Orographic Cloud Systems over the Payette River Basin and Their Relationship to Forcing: Results from SNOWIE, 2022 American Meteorological Society Annual Meeting (23rd Conference on Planned and Inadvertent Weather Modification), 23 – 27 Jan 2022. Virtual.
8. Zaremba, T. J., R. M. Rauber, G. M. McFarquhar, P. J. DeMott, J. D'Alessandro, and W. Wu, 2021 Ice in Southern Ocean Clouds with Cloud Top Temperatures $>-5^{\circ}\text{C}$, 2021 American Geophysical Union Annual Meeting, New Orleans, Louisiana, 12-17 Dec 2021.
9. Zaremba, T. J., R. M. Rauber, K. Heimes, B. Geerts, J. French, S. Tessendorf, L. Xue, K. Friedrich, R. Rasmussen, M. L. Kunkel, and D. R. Blestrud, 2021: Fixed and Transient Updrafts over the Payette River Basin: results from SNOWIE, International Conference on Clouds and Precipitation, 2-5 Aug 2021. Virtual.
6. Zaremba, T., R. M. Rauber, G. M. McFarquhar, J. A. Finlon, S. Lasher-Trapp, and D. M. Stechman, 2019: Characteristics of Southern Ocean Cloud Tops observed by the HCR and HSRL. Southern Ocean Atmospheric Research Workshop, Hobart, Tasmania, 19 – 22 Nov 2019.
7. Zaremba, T., R. M. Rauber, J. A. Finlon, G. M. McFarquhar, S. Lasher-Trapp, and D. M. Stechman, 2019: Phase Characterization of Southern Ocean Clouds using HIAPER Cloud Radar (HCR) and High Spectral Resolution Lidar (HSRL) Observations: results from the SOCRATES Field Campaign, 39th International Conference on Radar Meteorology, Nara, Japan, 16 – 20 Sep 2019.
8. Zaremba, T., R. M. Rauber, G. M. McFarquhar, S. Lasher-Trapp, D. M. Stechman, and J. A. Finlon, 2018: Preliminary Observations of Supercooled Liquid Water at Cloud Top. Southern Ocean Science Conference, Boulder, Colorado, 27 – 29 Nov 2018.

Poster

1. Zaremba, T. J., R. M. Rauber, G. M. McFarquhar, and L. McMurdie, 2023: Relationship between vertical reflectivity and vertical motion gradients in winter storms observed during IMPACTS, American Meteorological Society Radar Conference, Minneapolis, Minnesota, 28 August - 1 Sep 2023.
2. Zaremba, T. J., M. Varcie, R. M. Rauber, G. M. McFarquhar, J. Finlon, L. McMurdie, A. V. Ryzhkov, M. Schnaiter, E. Järvinen, F. Waitz, D. J. Delene, M. Poellet, and A. Janiszkeski, 2023: Precipitation growth processes in the Comma Head Region of the 7 February 2020 Northeast Snowstorm: results from IMPACTS, American Meteorological Society Mesoscale Conference, Madison, Wisconsin, 17-21 Jul 2023.
3. Zaremba, T. J., R. M. Rauber, J. Loveridge, L. Di Girolamo, and G. M. McFarquhar, 2023: On the detection of cloud seeding effects with radar in winter orographic cloud systems, American Geophysical Union Annual Meeting, Chicago, Illinois, 12-16 Dec 2023.
4. Zaremba, T. J., R. M. Rauber, L. Di Girolamo, J. R. Loveridge, and G. M. McFarquhar, 2022: On the radar detection of cloud seeding effects in wintertime orographic cloud systems, American Meteorological Society Collective Meeting, Madison, Wisconsin, 8-12 Aug 2022.
5. Zaremba, T. J., R. M. Rauber, J. E. Yorks, S. D. Nicholls, G. M. McFarquhar, and L. A. McMurdie, 2022: Cloud Top Phase Characterization of Extratropical Cyclones over the Midwest and Northeast United States: results from IMPACTS. American Meteorological Society Collective Meeting, Madison, Wisconsin, 8-12 Aug 2022.
6. Zaremba, T. J., M. M. Varcie, R. M. Rauber, G. M. McFarquhar, J. A. Finlon, and L. A. McMurdie, 2022: Precipitation Growth Processes in the Comma Head Region of the 7 February 2020 Snowstorm Observed During IMPACTS. American Meteorological Society Collective Meeting, Madison, Wisconsin, 8-12 Aug 2022.
7. Zaremba, T. J., R. M. Rauber, J. E. Yorks, S. D. Nicholls, G. M. McFarquhar, and L. A. McMurdie, 2022: Cloud Top Phase Characterization of Extratropical Cyclones over the Midwest and Northeast United States: results from IMPACTS, IMPACTS Science Team Meeting, Boulder, Colorado, 26-28 Jul 2022.
8. Zaremba, T. J., M. Varcie, R. M. Rauber, G. M. McFarquhar, J. Finlon, L. McMurdie, A. Janiszkeski, and A. Ryzhkov, 2022: Precipitation Growth Processes and the Relationship to the Dynamics in the Comma Head Region of the 7 February 2020 Snowstorm Observed during IMPACTS, 2022 American Meteorological Society Annual Meeting (19th Conference on Mesoscale Processes), 23 – 27 Jan 2022 Virtual.

9. Zaremba, T. J., M. M. Varcie, R. M. Rauber, G. M. McFarquhar, J. A. Finlon, and L. A. McMurdie, 2021: Precipitation Growth Processes in the Comma Head Region of the 7 February 2020 Snowstorm Observed During IMPACTS. IMPACTS Science Team meeting, Seattle, Washington, 28-30 Sep 2021.
10. Zaremba, T. J., R. M. Rauber, G. M. McFarquhar, P. J. DeMott, J. J. D'Alessandro, W. Wu, 2021: Ice in Southern Ocean Clouds with Cloud Top Temperatures exceeding -5°C . International Conference on Clouds and Precipitation, 2021. 2-5 Aug 2021. Virtual.
11. Zaremba, T. J., R. M. Rauber, G. M. McFarquhar, M. Hayman, J. A. Finlon, D. M. Stechman, 2020: Phase Characterization of Cold Sector Southern Ocean Cloud Tops: Results from SOCRATES, American Geophysical Union Annual Meeting (Aerosol, Cloud, Precipitation, and Radiation Studies over the Southern Ocean), San Francisco, California, 1 – 17 Dec 2020. Virtual.
12. Zaremba, T. J., R. M. Rauber, J. A. Finlon, G. M. McFarquhar, S. Lasher-Trapp, and D. M. Stechman, 2019: Phase Characterization of Southern Ocean Clouds using HIAPER Cloud Radar (HCR) and High Spectral Resolution Lidar (HSRL) Observations: results from the SOCRATES Field Campaign, American Geophysical Union Meeting (Aerosol, Cloud, Precipitation, and Radiation Studies over the Southern Ocean), San Francisco, California, 9 – 13 Dec 2019.
13. Zaremba, T. J., and R. M. Rauber, 2018: Preliminary Observations of Supercooled Liquid Water at Cloud Top. Midwest Student Conference on Atmospheric Research, Champaign, Illinois, 27 – 28, Oct 2018.

HONORS AND AWARDS

Schlesinger Travel Grant	<i>Summer 2022</i>
Ogura Outstanding Research Paper by a Graduate Student Honorable Mention	<i>Spring 2021</i>
<ul style="list-style-type: none"> • Phase Characterization of Cold Sector Southern Ocean Cloud Tops: Results from SOCRATES 	
LAS IMPACT Award	<i>Spring 2021</i>
Graduate College Conference Travel Award	<i>Fall 2019</i>
UIUC List of Teachers Ranked Excellent	<i>Fall 2021</i>
<ul style="list-style-type: none"> • ATMS 410 • ATMS 313 • ATMS 100 	<i>Spring 2019</i>
Ogura Undergraduate Research Award	<i>Fall 2018</i>
North American Weather Modification Council (NAWMC) Scholarship	<i>Spring 2018</i>
	<i>Fall 2017</i>

SERVICE

AMS Radar STAC Committee	<i>2023 – Present</i>
Undergraduate Research Apprenticeship Program (URAP)	<i>2022</i>
<ul style="list-style-type: none"> • Independently mentored two undergraduate students who analyzed IMPACTS field campaign data using Python. Projects looked at quasi-vertical profiles of winter storms and Dual-Polarization radar characteristics of co-located airborne microphysics and ground-based radar data when mixed-phase cloud was sampled. Students presented their research projects at the Undergraduate Research Symposium. 	
Doppler on Wheels Outreach Events	<i>2021- 2022</i>
<ul style="list-style-type: none"> • Volunteered to drive Doppler on Wheels Radar to student led outreach events and represented the Department of Atmospheric Sciences at various public gatherings (Engineering Open House, Farmer's Markets, etc.) and an emergency manager meeting. 	
School of Earth Society and Environment Research Review Planning Committee	<i>2021</i>
<ul style="list-style-type: none"> • Led a team of undergraduate and graduate students in organizing our annual school wide conference designed to showcase the work of undergraduate and graduate students in the Departments of Atmospheric Sciences, Geology, and Geography. Had over 50 poster presenters, 10 lightning talks, and 100 attendees. 	

Department of Atmospheric Sciences Student Organization Secretary (DASSO) 2019-2023

- Served on the board of DASSO in various roles as a graduate student (President – Current Position, Treasurer, and Secretary)
- Increased the number of board positions from three to six adding a Diversity, Equity, and Inclusion Chair, New Student Liaison (in order to increase new student participation and make sure their voices are heard), and Vice President (in charge of facilitating the new graduate student mentorship program)
- Helped create the Department's Graduate Ambassador Program which is in charge of helping faculty with graduate student recruitment efforts. This led the creation of an online recruitment event.
- Serve as a conduit between graduate students and faculty by attending monthly faculty meetings
- Help organize social events throughout the semester
- Increased visibility of organization by creating a Twitter page, organization logo, and creating a bulletin board with recent photos and list of upcoming events
- Was part of the leadership board that won the LAS IMPACT award

Midwest Student Conference on Atmospheric Research (MSCAR) 2019-2022

- Led a team of undergraduate and graduate students in organizing the Department's annual student led conference with two keynote speakers (Drs. Marshall Shepherd and Mika Tosca), a Python Workshop, Careers Panel, and Graduate School Fair in 2021.
 - Held the conference in virtual format as a result of the pandemic
- Had over 20 student talks and 40 student poster presenters from around the country
- Have served as a committee member and have helped with conference planning throughout graduate school

Student Chapter of the American Meteorological Society (SCAMS) Vice President 2017-2018

- Social Committee Chair who organized social events throughout the year

Member

- American Meteorological Society 2017-Present
- American Geophysical Union 2017-Present

Journal Article Reviewer 2022 -Present

- Journal of the Atmospheric Sciences, Journal of Geophysical Research: Atmospheres, Atmospheric Chemistry and Physics

TECHNICAL SKILLS

Expertise in Python, MATLAB, R, Windows, OSX, Adobe Illustrator, ArcMap, Microsoft Office (Word, Excel, PowerPoint, Publisher)

IN THE NEWS

- UAlbany students launch weather balloon in preparation for upcoming solar eclipse
<https://wnyt.com/top-stories/ualbany-students-launch-weather-balloon-in-preparation-for-upcoming-solar-eclipse/>
- UAlbany Students Prepare to Launch Weather Balloons for NASA Eclipse Project
<https://www.albany.edu/news-center/news/2023-ualbany-students-prepare-launch-weather-balloons-nasa-eclipse-project>
- Tornado in a bottle experiment offered insights into U of I doppler radar research
<https://www.hfchronicle.com/2022/08/15/tornado-in-a-bottle-experiment-offered-insights-into-u-of-i-doppler-radar-research/>
- The investigation of Microphysics and Precipitation for Atlantic Coast-Threatening Snowstorms (IMPACTS)
<https://atmos.illinois.edu/news/2020-01-28/investigation-microphysics-and-precipitation-atlantic-coast-threatening-snowstorms>

- Undergraduate Research Can be the Highlight of your Time at Illinois
<https://las.illinois.edu/news/blog/las-insider/2020-03-31/undergraduate-research-can-be-highlight-your-time-illinois>
- Up, Up and Away: Launching Balloons in a Blizzard
<https://blogs.nasa.gov/earthexpeditions/2022/02/07/up-up-and-away-launching-balloons-in-a-blizzard/>
- The Launching of Blizzard Balloons
<https://las.illinois.edu/news/2022-02-17/launching-blizzard-balloons>

REFERENCES

Dr. Robert Rauber

Director of the School of Earth, Society, and Environment

University of Illinois at Urbana-Champaign
1301 W Green St, Urbana, IL 61801
r-rauber@illinois.edu
(217) 333-2835

Dr. Justin Minder

Associate Professor

University at Albany
1220 Washington Ave., Albany, IL 12203
jminder@albany.edu
(206) 271-3891

Dr. Robert Trapp

Department Head

University of Illinois at Urbana-Champaign
1301 W Green St, Urbana, IL 61801
jtrapp@illinois.edu
(765) 427-0550

Dr. Steve Nesbitt

Professor

University of Illinois at Urbana-Champaign
1301 W Green St, Urbana, IL 61801
snesbitt@illinois.edu
(217) 390-9086

Dr. Jeff Frame

Clinical Associate Professor

University of Illinois at Urbana-Champaign
1301 W Green St, Urbana, IL 61801
frame@illinois.edu
(814) 504-8631

Dr. Greg McFarquhar

Director of CIWRO

Professor University of Oklahoma
mcfarq@ou.edu