

# Maxwell Grover

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## Education

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**Master of Science: Atmospheric Science** Anticipated 2021

University of Illinois Urbana-Champaign – Champaign, Illinois

- Funded through the RELAMPAGO Field Campaign
- Improving global observations of thunderstorm updraft width through satellite remote sensing

**Bachelor of Science: Meteorology Major, Mathematics Minor** August 2015 – May 2019

Valparaiso University – Valparaiso, Indiana

- Magna Cum Laude
- Presidential Scholarship based on merit

## Technical Skills

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- Programming languages and mathematical packages: Python, R, FORTRAN, Maple
- GIS and image processing programs: ArcGIS Pro, ArcMAP, ENVI
- Tools and environments: GEMPAK, Github, Linux, Mac OS, Windows

## Research and Internship Experience

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**Graduate Research Assistant** August 2019 – Present

*Department of Atmospheric Sciences, University of Illinois at Urbana-Champaign, Urbana, IL*

- Research the dynamical coupling of thunderstorm updrafts, downdrafts, and cold pools from observational data
- Develop a data workflow for studying pseudo global warming impacts on severe weather hazards
- Produce results that include abundant documentation such that workflows can be easily reproduced

**Software Development Intern** May 2019 – August 2019

*Unidata, University Corporation for Atmospheric Research, Boulder, Colorado*

- Actively developed MetPy, a Python library for meteorological applications
- Created a METAR parser and apply it to various text files to read in surface observation data
- Developed a simplified visualization method, easing the Python visualization learning curve

**Independent Student Researcher** May 2018 – July 2019

*Department of Geography and Meteorology, Valparaiso University, Valparaiso, Indiana*

- Collaborate with both the computer science and meteorology department in addition to NCAR
- Assemble parallel computing devices and compile necessary libraries to run the WRF
- Benchmarked multiple systems and platforms to evaluate computational effectiveness

**Student Contractor** August 2018 – December 2018

*USGS Lake Michigan Ecological Research Station, Chesterton, Indiana*

- Developed tools to ingest, process, and analyze microclimate data using Python and ArcGIS
- Determined location and characteristics of microclimates at the Indiana Dunes National Lakeshore
- Documented project progress and submit for publication

## **Research Experience for Undergraduates (REU) Participant**

May 2018 – July 2019

*Department of Geography, University of Northern Iowa, Cedar Falls, Iowa*

- Interdisciplinary Research Experience in Hyperspectral Imaging (IDREHSI) Program
- Collaborated with faculty mentor and program director to complete original research
- Applied remote sensing techniques on hyperspectral images to detect tornado damage swaths

## **Teaching and Mentoring Experience**

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### **Instructor, AMS Student Conference Python Workshop**

January 2020

*Student Conference, American Meteorological Society Annual Meeting, Boston, Massachusetts*

- Review and edit educational materials for the workshop
- Instruct students about how to use Python for meteorology within their various workflows

### **Instructor, Unidata Python Regional Workshop at SUNY Albany**

May 2019

*Unidata, University Corporation for Atmospheric Research (UCAR), Boulder, Colorado*

- Review and edit educational materials for the workshop
- Instruct professors, students, and members of the private sector about how to use Python for meteorology

### **Tutor, Valparaiso University Weather Center**

January 2018 – May 2019

*Department of Geography and Meteorology, Valparaiso University, Valparaiso, Indiana*

- Serve as a resource for meteorology students by answering questions relating to various coursework
- Lead supplemental instruction sessions for students struggling with assignments or projects

### **Teaching Assistant, Climatology Lab**

January 2018 – May 2019

*Department of Geography and Meteorology, Valparaiso University, Valparaiso, Indiana*

- Supported students with challenging assignments
- Answer questions students have regarding their labs

### **Teaching Assistant, Meteorological Computer Applications**

August 2018 – December 2018

*Department of Geography and Meteorology, Valparaiso University, Valparaiso, Indiana*

- Aided students in developing coding skills and writing scripts in Fortran and Python
- Supported faculty through grading and students with review sessions

### **Project Advisor, Introduction to Data Science**

January 2018 – May 2018

*Department of Geography and Meteorology, Valparaiso University, Valparaiso, Indiana*

- Met with microclimate research group and answer any potential questions
- Provided guidance for developing research methods

### **Teaching Assistant, Introduction to Meteorology**

August 2018 – December 2018

*Department of Geography and Meteorology, Valparaiso University, Valparaiso, Indiana*

- Graded lab assignments and answer students' questions
- Coordinated review sessions and create content to help students review for exams

## **Recognition**

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### **Outstanding Poster Presentation – AMS Weather Analysis and Forecasting (WAF) Conference**

January 2020

*100<sup>th</sup> Annual American Meteorological Society Meeting, Boston, Massachusetts*

- Presented during the joint session with WAF/NWP, Python, and EIPT
- Based on academic merit, presented at the AMS Annual Meeting in Phoenix, Arizona

### **Outstanding Leadership and Service Award**

May 2019

*Valparaiso University Office of Student Affairs, Valparaiso, Indiana*

- American Meteorology Society senior named scholarship
- Based on academic merit, presented at the AMS Annual Meeting in Phoenix, Arizona

### **Bhanwar Lal Bahethi Scholarship**

January 2019

*Science Systems and Applications Incorporated, Lanham, Maryland*

- American Meteorology Society senior named scholarship
- Based on academic merit, presented at the AMS Annual Meeting

### **Better Business Bureau of Wisconsin Student of Integrity**

March 2015

- 7 scholarships awarded statewide
- Based on student involvement and community engagement

## **Grants**

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### **Creative Work and Research Committee, “Undergraduate Research Grant”, \$704**

August 2018 – May 2019

- Student driven research focused on using Raspberry Pi clusters to run the WRF model
- Coordinated efforts between the computer science and meteorology departments in addition to NCAR

## **Civic Service and Community Engagement**

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### **AMS Board on Environmental Information Processing Technologies**

January 2020 – Present

*American Meteorological Society, Boston, Massachusetts*

- Student member focused on increasing community engagement
- Aid in planning annual EIPT symposium at the annual meeting

### **Midwest Student Conference for Atmospheric Research Co-Chair**

January 2020– Present

*University of Illinois at Urbana-Champaign, Urbana, IL*

- Student member focused on increasing community engagement
- Aid in planning annual EIPT symposium at the annual meeting

### **School of Earth Society and the Environment Research Review Co-Chair**

December 2020 – Present

*University of Illinois at Urbana-Champaign, Urbana, IL*

- Student member focused on increasing community engagement
- Aid in planning annual EIPT symposium at the annual meeting

### **Deputy Director**

May 2018 – May 2019

*Valparaiso University Storm Intercept Team*

- Lead forecast discussions and determine whether to chase
- Coordinate training exercises for new members and current members

### **Morale Team Captain**

May 2017 – May 2019

*Valparaiso University Dance Marathon*

- Serve on executive committee that leads the fundraising efforts benefiting Lurie Children’s Hospital
- Choreograph a unique dance and teach it to over 500 participants

### **Vice President of Recruitment**

January 2018 – January 2019

*Interfraternity Council, Valparaiso University*

- Led roundtables with fraternity recruitment chairs
- Develop strategic plans for growth and provide materials to aid chapters' growth

### **Vice President of Programming**

January 2017 – December 2017

*Interfraternity Council, Valparaiso University*

- Coordinated service events involving several hundred members of the fraternity and sorority community
- Aided new member educators in enhancing their education programs through roundtables and additional resources

## **Work Experience**

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### **Ambassador in Admissions, Student Visit Team Member, Welcome Desk Attendant**

April 2016 – May 2019

*Valparaiso University Department of Undergraduate Admissions*

- Guide students around campus providing relevant information for their college search decision
- Prepare materials for student visit days and facilitate visit days consisting of several hundred students/parents

### **Programming Director**

May 2016 - May 2017

*Valparaiso University Television (VUTV)*

- Coordinate all content for the channel, ensuring programs run 24/7
- Collaborate with show directors and outside sources to ensure content is updated and relevant

### **Watersports Attendant**

May 2013 – August 2019

*Lake Lawn Resort, Delavan, Wisconsin*

- Actively engaged with resort guests and members of the community at the boat rental pier
- Drove customers around the lake while providing a historical tour of the region

## **Publications**

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Trapp, R. J., Kosiba, K. A., Marquis, J. N., Kumjian, M. R., Nesbitt, S. W., Wurman J., Salio P., **Grover, M.**, Robinson P., and Hence D. A., Multiple-platform and multiple-Doppler radar observations of a supercell thunderstorm in South America during RELAMPAGO. *Mon. Wea. Rev.*, *accepted*

Arms, S., J. Chastang, **M. Grover**, J. Thielen, M. Wilson, and D. Dirks, Introducing Students to Scientific Python for Atmospheric Science. *Bull. Amer. Meteor. Soc.*, *accepted*

## **Conference Presentations**

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### **Oral Presentations**

Mallinson H., **Grover M.**, Trapp R., (November 2019). "The Influence of Terrain and Environment on Cold Pools during RELAMPAGO", American Meteorological Society Annual Meeting, Boston, Massachusetts

Trapp R., **Grover M.**, Mallinson H., (November 2019). "The Dynamical Coupling of Convective Updrafts, Downdrafts and Cold Pools during RELAMPAGO", RELAMPAGO Data Analysis Workshop, Buenos Aires, Argentina

**Grover M.**, May R., Bruick Z., (August 2019). "METAR to Surface Maps: Transforming Text from Ugly Text into Beautiful Maps", Unidata End of Summer Seminar Series, Boulder, Colorado

**Grover M.**, Czarnetzki A., Bingqing L., (July 2018). “Tornado Path Detection Using Hyperspectral Imaging: Analysis of the 2011 Super Outbreak in West-Central Alabama”, UNI NSF REU IDREHSI Student Conference

Clark C., **Grover M.**, Sessa M., Mehner A., Evans C., (April 2018). “Seasonal Prediction of Lake Effect Snow” Great Lakes Meteorology Conference, Valparaiso, Indiana

## Poster Presentations

**Grover M.**, May R., (July 2020). “MetPy's Meteorological Data Parsing Abilities: From Surface to Upper Air” , Scientific Python Conference, Austin, Texas

**Grover M.**, Goebbert K., May R., Bruick Z., (January, 2020). “Declarative Surface Station Plots: The Next Stop on the GEMPAK Replacement Roadmap for MetPy”, American Meteorological Society Annual Meeting, Boston, Massachusetts

**Grover M.**, May R., Bruick Z., (October, 2019). “METAR to Surface Station Plots: Transforming Ugly Text into a Beautiful Map”, Midwest Student Conference on Atmospheric Research, Urbana, IL

**Grover M.**, Arseneau I., Foust E., Rosasco N., Wade T., Goebbert K., (January 2019). “The Effectiveness of a Raspberry Pi Cluster to Perform WRF Simulations for Enhancing Computational Resources within the Valparaiso University Meteorology Program”, 2019 AMS Student Conference

**Grover M.**, Czarnetzki A., Bingqing L., (January 2019). “Tornado Path Detection Using Hyperspectral Imaging: Analysis of the 2011 Super Outbreak in West-Central Alabama”, 2019 AMS Student Conference

**Grover M.**, Czarnetzki A., Bingqing L., (July 2018 ) “Tornado Path Detection Using Hyperspectral Imaging: Analysis of the 2011 Super Outbreak in West-Central Alabama”, UNI NSF REU IDREHSI Student Conference, Cedar Falls, Iowa

**Grover M.**, Patterson T., Schmitt K. (April 2018). “Microclimates at the Indiana Dunes National Lakeshore”, Great Lakes Meteorology Conference, Valparaiso, Indiana

**Grover M.**, Jewell C., Levandowski B., (May 2017). “USGS Indiana Dunes Microclimate Existence Exploration”, Symposium on Undergraduate Research and Creative Expression (SOURCE), Valparaiso, Indiana

## Memberships

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**American Meteorological Society/National Weather Society** August 2015 – Present

- Attend conferences and attend speaking events
- Develop communication skills through workshops and networking events

**Chi Epsilon Pi Meteorology Honor Society** February 2016 – May 2019

- Mentor freshmen students within the department and provide insight on how to succeed within the program
- Visit area schools to educate children about science through experiments and Q/A sessions

**Order of Omega** November 2018 – May 2019

- Fraternity and sorority life honor society consisting of the top 3% of the community
- Dedicated to leadership, service, and high academic achievement

## References

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**Kevin Goebbert, Associate Professor**

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