Martin A. Baxter

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Employment History

Associate Professor of Meteorology, Central Michigan University (June 2012-Present)

Assistant Professor of Meteorology, Central Michigan University (August 2006-June 2012)

Full-time Instructor of Meteorology, Saint Louis University (August 2005 – May 2006)

Graduate Research Assistant, Cooperative Institute for Precipitation Systems (CIPS) Research Group, Saint Louis University (June 2004 – May 2005)

Research Intern (GS-4), Hydrometeorological Prediction Center, Camp Springs, MD (July 2005)

Adjunct Instructor, Southwestern Illinois College, Belleville, Illinois (May 2003 – May 2005)

Graduate Teaching Assistant, Saint Louis University (August 2001 – May 2004)

Weather Forecaster, Weather or Not, Inc., Shawnee, KS (June 2001 – August 2001)

Undergraduate Teaching Assistant, University of Missouri-Columbia (August 2000 – May 2001)

Community Advisor, University of Missouri-Columbia (January 1999 – May 2001)

Education

Saint Louis University
Doctor of Philosophy in Meteorology: August 2006
Dissertation title: The Role of Convection in Mesoscale Banded Snowfall
Dissertation advisors: Dr. Charles E. Graves & Dr. James T. Moore

Saint Louis University
Master of Science in Meteorology (Research): August 2003
Thesis title: A Climatology and Case Studies of Snow to Liquid Ratios for the United States
Thesis advisors: Dr. Charles E. Graves & Dr. James T. Moore

University of Missouri-Columbia
Bachelor of Science in Atmospheric Science: May 2001

Teaching

Courses Taught at Central Michigan University

Meteorology (MET 240)

- Fall 2006**,** Fall 2007, Fall 2008, Spring 2009, Fall 2009, Spring 2010, Fall 2011

The goal of this course is to introduce students to the basic physical properties that control the weather. In Fall 2010, I completed a complete rewrite of the MET 240 MCS. Upon completion of the course, students should be able to:

1. *describe* the structure of the atmosphere and the physical processes that take place
2. *evaluate* basic equations and relationships to quantitatively solve meteorological problems
3. *read and interpret* basic weather maps
4. *apply* standard analysis techniques to surface and upper air data to create weather maps
5. *form* educated opinions on science-related issues using knowledge of the scientific process

Meteorology (MET 240) ONLINE

The addendum to the MET 240 Master Syllabus documenting the differences in the online version has been approved by the Geology department. A working course syllabus has also been developed, along with one week of course material of the 8 week course.

Synoptic Meteorology I (MET 340)

- Fall 2006**,** Fall 2007, Fall 2008, Fall 2009, Fall 2010, Fall 2011, Fall 2012

In this course, students apply concepts in remote sensing, dynamic, and physical meteorology to the analysis of synoptic scale weather systems. The goal of the course is for students to understand synoptic scale weather processes in a physical/conceptual framework held together with the dynamical underpinnings necessary to fully appreciate their complexity. In the course, students:

1. *describe* the structure and evolution of synoptic scale weather systems
2. *employ* standard techniques for plotting and analysis of meteorological data
3. *use* real data from historical cases to apply concepts learned in lecture
4. *maintain* an active interest in the day-to-day weather through weather forecasting and observing periodic weather discussions

Synoptic Meteorology II (MET 345)

- Spring 2007**,** Spring 2008, Spring 2009, Spring 2010, Spring 2011, Spring 2012, Spring 2013

This course continues to pursue the same goals as in Synoptic Meteorology I.

Computer Applications in Meteorology (MET 315)

- Spring 2008, Spring 2009, Spring 2010, Spring 2011, Spring 2012

This is a new course I have designed that has been taught three times as a special topics course, and has been approved as MET 315. The goal of this course is to facilitate the development of skills that allow students to effectively apply their meteorological knowledge. In the course, students:

1. *Use* multiple aspects of the Linux operating system to facilitate an efficient and effective work environment
2. *Apply* two popular meteorological analysis packages to disparate meteorological data types: GEMPAK and IDV
3. *Develop* good practices for displaying imagery and animations to audiences via posters, oral presentations, and web pages

Mesoscale Meteorology (MET 450)

- Fall 2012

Numerical Weather Prediction (MET 480)

- Spring 2011

This course is the final course in the meteorology sequence and thus requires synthesis of a variety of knowledge and skills. In the course, students:

1. *Quantitatively describe* the mathematical basis for numerical weather models
2. *Explain* the assumptions made in each of the major parameterization schemes
3. *Verify* an NWP forecast, *discuss*ing how the guidance could have been improved upon during the forecast process, and why the model was not able to accurately forecast the event
4. *Qualitatively describe* the process of data assimilation
5. *Evaluate* the advantages and disadvantages of deterministic and probabilistic approaches to numerical weather prediction
6. *Define the differences* among the various numerical weather prediction models used operationally throughout the world

Honors Senior Project (HON 499)

- Fall 2007, Fall 2011

These projects are discussed elsewhere in the CV.

Meteorology Internship (MET 491)

Beginning with Summer 2008, I have adopted the following measures to evaluate the quality of a student's internship experience. Students must submit:

- A description, written by the student, of the work performed, the education and skills acquired from the experience, and how they will build on the internship in the future to achieve career goals.
- Written documentation of the number of hours worked, from a supervisor.
- A written evaluation from a supervisor evaluating the quality of the student's performance and potential for future success.

- Summer 2012

Kimberly Andre – WOOD TV 8 NBC, Grand Rapids, MI
Ahmad Bajjey – WDIV 4 NBC, Detroit, MI
Matt Brooks – WPBN 7&4 NBC, Traverse City, MI
Lauren Duggan, Emily Wahls, and Travis Dunsmore – WLNS 6 CBS, Lansing, MI
Ian McCaffrey – WOOD TV 8 NBC, Grand Rapids, MI & WWMT 3 CBS, Kalamazoo, MI
Dylan Frazier - WJBK 2 Fox, Detroit, MI

- Summer 2011

Kaitlin Penfold – WJBK 2 Fox, Detroit, MI
Samantha Quist - WZZM 13 ABC, Grand Rapids, MI
Bethany Wubben – WOOD TV 8 NBC, Grand Rapids, MI

- Summer 2010

Cameron Amrine – National Weather Service, Gaylord, MI
Brad Sugden – WNEM 5 CBS, Flint, MI

- Summer 2009

Alex DeSmet – National Weather Service, White Lake, MI
Katie Dupree – WDIV 4 NBC, Detroit, MI
Shawn Verbruggen – WWTV/WWUP 9 & 10, Cadillac, MI

- Summer 2008

Brett Collar – WJBK 2 Fox, Detroit, MI
Annie Hoezee – WZZM 13 ABC, Grand Rapids, MI

- Summer 2007

Stephen Szulborski – National Weather Service, White Lake, MI
Jeraca Benson – WZZM 13 ABC, Grand Rapids, MI

Independent Study (MET 497)

- Spring 2009, 1 credit

Prepared a list of weekly readings consisting of powerpoint lectures, book chapters, journal articles, and webcasts focused on advanced topics in Atmospheric Prediction that the student wanted to learn more about in preparation for graduate school

- Fall 2010, 1 credit

Research project with undergraduate Mike Piatek-Jimenez, as documented below

- Spring 2012, 1 credit; 1 credit

-Prepared a reading course on Climate Dynamics & Climate Modeling
-Research project with L.B. LaForce, as documented below

- Fall 2012, 1 credit

Prepared a reading course on climate-related research at Canadian & U.S. meteorology graduate schools

- Spring 2013, 2 credits; 2 credits

-Prepared a reading course on Research Methods in Physical Geography
-Research project with L.B. LaForce, as documented below

Courses Taught at Other Institutions

Saint Louis University, St. Louis, Missouri
- Introductory Meteorology (twice), Earth System Science, Synoptic Meteorology II, Atmospheric Motions

Southwestern Illinois College, Belleville, Illinois
- Introduction to Earth Science (3 times)

Scholarly / Creative Activities

Peer-reviewed Journal Articles

Gravelle, C.M., M.A. Baxter, M. Stalley, J.N. Travers, and C.E. Graves, 2013: A Method to Assess the Similarity of Atmospheric States and Examine the Spread of Sensible Weather Outcomes, *Weather and Forecasting*, **in review**.

Lazarus, S.M., J. M. Collins, M. A. Baxter, A. Case-Hanks, T. M. Whittaker, K. R. Tyle, S. F. Cecelski, B. Geerts, and M. K. Ramamurthy, 2013: 2012 Unidata Users Workshop: Navigating Earth System Science Data, *Bulletin of the American Meteorological Society*, **in press.**

Bunkers, M.J. and M. A. Baxter, 2011: Radar Tornadic Debris Signatures on 27 April 2011, *Electronic Journal of Operational Meteorology*, **published online as 2011-ION1 at http://member.nwas.org.**

Baxter, M.A., 2011: Impacts of Very Small Initial Condition Errors on Mesoscale Aspects of Two Cyclones, *Electronic Journal of Operational Meteorology,* **(published online as 2011-EJ1 at: http://member.nwas.org.**

Baxter, M.A., 2011: Reforecasts of a 2004 Elevated Convection Event Misforecast by the Eta Model, *National Weather Digest*, **35**, 3-26.

Baxter, M.A., P. N. Schumacher, and J. M. Boustead, 2011: The Use of Potential Vorticity Inversion to Evaluate the Effect of Precipitation on Downstream Mesoscale Processes, *Quarterly Journal of the Royal Meteorological Society*, **137,** 179–198.

Baxter, M.A., C.E. Graves, and J.T. Moore, December 2006: A Physically-Based Method for Diagnosing Snow to Liquid Ratio Using Climatology, *National Weather Digest*, **30**, 29-44.

Baxter, M.A., C.E. Graves, and J.T. Moore, 2005: A Climatology of Snow to Liquid Ratio for the Contiguous United States, *Weather and Forecasting*, **20**, 729-744.

Ratley, C.W., A.R. Lupo and M.A. Baxter, 2002: Determining the Spring to Summer Transition in the Missouri Ozarks Using Synoptic Scale Atmospheric Data. *Transactions of the Missouri Academy of Sciences*, **36**, 55-62.

Conference Proceedings (must be approved by those organizing the conference as appropriate to the scientific level of the meeting, but are not peer-reviewed in the sense that journal articles are)

Schumacher, P.N., J.M. Boustead, and M.A. Baxter, June 2009: Influence of Diabatic Potential Vorticity Anomalies Upon Warm Conveyor Belt Flow. Part I: 14-15 February 2003. Preprints, 23rd Conference on Weather Analysis and Forecasting / 19th Conference on Numerical Weather Prediction, Omaha, Nebraska, Amer. Meteor. Soc.

Boustead, J.M., Schumacher, P.N., and M.A. Baxter, June 2009: Influence of Diabatic Potential Vorticity Anomalies Upon Warm Conveyor Belt Flow. Part II: 3-5 January 2005. Preprints, 23rd Conference on Weather Analysis and Forecasting / 19th Conference on Numerical Weather Prediction, Omaha, Nebraska, Amer. Meteor. Soc.

Baxter, M.A. and C.E. Graves, October 2006: A Case Example of the Role of Warm-Sector Convection on Mesoscale Banded Snowfall: 22-24 November 2003. Preprints, 23rd Conference on Severe Local Storms, St. Louis, Missouri, Amer. Meteor. Soc.

Baxter, M.A., S. Ng, C.E. Graves, and J.T. Moore, 2004: Winter Storm Forecasting as a Two-Step Process: The 26-27 November 2001 Snowstorm. Preprints, 20th Conference on Weather Analysis and Forecasting / 16th Conference on Numerical Weather Prediction, Seattle, Washington, Amer. Meteor. Soc.

Ratley, C.W., A.R. Lupo and M.A. Baxter, 2001: Spring to Summer Transitions in the Missouri Ozarks Region. Preprints, 12th Symposium on Global Change and Climate Variations, Albuquerque, New Mexico, Amer. Meteor. Soc., 205-6.

Internal Reports

Baxter, M., L. Orf, September 2008: Featured Site: Central Michigan University. Equipment Award Report to the Unidata Community, distributed to all members. Available at: http://www.unidata.ucar.edu/newsletter/2008sep/index.html

Baxter, M., G. Byrd, J. Korotky, B. Rozumalski, and D. Wesley, April 2007: The Redesigned COMET Mesoscale Analysis and Prediction Course. Internal Document – Cooperative Program for Operational Meteorology, Education, and Training at the University Corporation for Atmospheric Research

Professional Presentations – Talks (underline indicates undergraduate coauthor)

American Meteorological Society National Meeting, Austin, Texas, January 2013

- *Climatology and Conceptual Models of Snowfall Distribution in Cold-Season Central United States Cyclones* (with Phil Schumacher, NWS Sioux Falls, SD)

National Weather Association National Meeting, Madison, Wisconsin, October 2012

- *Climatology and Conceptual Models of Snowfall Distribution in Cold-Season Central United States Cyclones* (with Phil Schumacher, NWS Sioux Falls, SD)

Department Seminar, Central Michigan University, September 2011

- *Examples of the Upscale Impacts of Atmospheric Convection*

Northeastern Storm Conference, Taunton, Massachusetts, March 2011

- *Examining the Reliability of the Northeast Heavy Snow Conceptual Model* (co-author, presentation given by C. M. Gravelle, Saint Louis University, St. Louis, Missouri)

National Weather Association National Meeting, Tucson, Arizona, October 2010

- *Conceptual Model Verification: Heavy Snow Producing Northeast U.S. Cyclones* (co-author, presentation given by C. M. Gravelle, Saint Louis University, St. Louis, Missouri)

American Meteorological Society 23rd Conference on Weather Analysis and Forecasting / 19th Conference on Numerical Weather Prediction, Omaha, Nebraska, June 2009

- *Influence of Diabatic Potential Vorticity Anomalies Upon Warm Conveyor Belt Flow. Part I: 14-15 February 2003* (co-author, presentation given by P.N. Schumacher, National Weather Service, Sioux Falls, South Dakota)

- *Influence of Diabatic Potential Vorticity Anomalies Upon Warm Conveyor Belt Flow. Part II: 3-5 January 2005* (co-author, presentation given by J.M. Boustead, National Weather Service, Omaha, Nebraska)

Northwest Indiana Chapter of the National Weather Association / American Meteorological Society 7th Annual Great Lakes Meteorology Conference, Valparaiso, Indiana, April 2009

Impacts of Very Small Initial Condition Errors on Mesoscale Aspects of Two Cyclones

17th Annual U.S./Canada Great Lakes Operational Meteorology Workshop, Ann Arbor, Michigan, October 2008

Accuracy of a WRF Mesoscale Model Simulation of the 12 June 2001 Mesoscale Convective System (co-author, presentation given by B.M. Hoving, National Weather Service, Grand Rapids, Michigan)

High Plains Chapter of the National Weather Association / American Meteorological Society 12th Annual High Plains Conference, Hays, Kansas, September 2008

Variability of the Influence of Convection on Conveyor Belts: Development of Conceptual Models and Forecast Methodologies (co-author, presentation given by J. Boustead, National Weather Service, Topeka, Kansas)

Northwest Indiana Chapter of the National Weather Association / American Meteorological Society 6th Annual Great Lakes Meteorology Conference, Valparaiso, Indiana, April 2008

The Use of Potential Vorticity Diagnostics to Evaluate Differences Between Two Datasets: February 14-15 2003

National Weather Association National Meeting, Reno, NV, October 2007

Variability of the Influence of Convection on Conveyor Belts: Development of Conceptual Models and Forecast Methodologies

- Served as Session Chair for Numerical Weather Prediction

American Meteorological Society 23rd Conference on Severe Local Storms, St. Louis, Missouri, November 2006

A Case Example of the Role of Warm-Sector Convection on Mesoscale Banded Snowfall: 22-24 November 2003

Central Michigan University Departmental Seminar, Mt. Pleasant, MI, March 2006
Challenges in Snowfall Forecasting: Microphysics, Banding, and Convection

Kansas City Chapter of the American Meteorological Soc., Kansas City, MO, 2005
Snow to Liquid Ratio: Climatology and Forecast Methodologies

National Weather Association National Meeting, St. Louis, Missouri, 2005
A Case Study of a Surprise Elevated Convection Event Over Eastern Missouri: 24-25 July 2004
- Served as Session Chair for Cold Season Weather

Missouri Academy of Science, Jefferson City, Missouri, 2005
A Case Study of a Surprise Elevated Convection Event Over Eastern Missouri: 24-25 July 2004 (co-author, presentation given by **M.L. Keast**, Saint Louis University)

Omaha-Offutt Chapter of the American Meteorological Soc., Omaha, Nebraska, 2005
A Climatology and Case Studies of Snow to Liquid Ratio for the United States

Creighton University Departmental Seminar, Omaha, Nebraska, 2005
An Overview of Research Activities at the Cooperative Institute for Precipitation Systems

National Weather Association National Meeting, Portland, Oregon, 2004
Analysis of Two Mesoscale Snow Bands in Atypical Synoptic-Scale Flow Regimes

University of Missouri-Columbia Chapter of the NWA/AMS, Columbia, Missouri, 2003
Winter Precipitation Forecasting: Converting Liquid Water to an Appropriate Precipitation Type

National Weather Association National Meeting, Jacksonville, Florida, 2003
Determining the Spring to Summer Transition in the Missouri Ozarks Using Synoptic Scale Atmospheric Data (co-author, presentation given by A.R. Lupo, University of Missouri-Columbia)

Missouri Academy of Science, Warrensburg, Missouri, 2003
A Climatology of Snow to Liquid Ratios for the United States

Northeastern Storm Conference, Saratoga Springs, New York, 2003
A Climatology of Snow to Liquid Ratios for the United States

National Weather Association National Meeting, Ft. Worth, Texas, 2002
A Climatology of Snow to Liquid Ratios for the Midwestern United States

Missouri Academy of Science, Joplin, Missouri, 2001
Spring to Summer Transitions in the Missouri Ozarks

Professional Presentations – Posters (underline indicates undergraduate coauthor)

American Meteorological Society Student Conference, Austin, Texas, January 2013

- *Comparison of Two Forecasts for Tornadoes Associated with Cold Core 500-mb Lows: Surprise and Bust (*co-author, poster presented by **W. LaForce***)*

- *Numerical Simulation of a Snowfall Event with Mesoscale Snowbands to the Northeast and Northwest of the Surface Low: March 30th 2009 (*co-author, poster presented by **M. Casey***)*

National Weather Association National Meeting, Madison, Wisconsin, October 2012

- *Comparison of Two Forecasts for Tornadoes Associated with Cold Core 500-mb Lows: Surprise and Bust (*co-author, poster presented by **W. LaForce***)*

American Meteorological Society Student Conference, New Orleans, Louisiana, January 2012

- *Evaluation of the Mesoscale Convective Vortex and Heavy Flooding of August 11-12, 2010* (co-author, poster presented by **A. Picard**)

National Weather Association National Meeting, Tucson, Arizona, October 2010

- *Reforecasts of a 2004 Elevated Convection Event Misforecast by the Eta Model* (poster presented by myself)

- *Analysis of Microphysics Scheme Performance with the October 2006 Buffalo Snowstorm (*co-author, poster presented by **M. Piatek-Jimenez***)*

National Weather Association National Meeting, Norfolk, Virginia, October 2009

- *The Spatial and Temporal Variability in Snow-to-Liquid Ratio Across Michigan* (co-author, poster presented by **R.M. Kulik**)

National Weather Association National Meeting, Louisville, Kentucky, October 2008

- *Impacts of Very Small Initial Condition Errors on Mesoscale Aspects of Two Cyclones* (poster presented by myself)

- *Accuracy of a Local WRF-ARW Model Run for the 22-24 December 2007 Cyclone Using the New Model Evaluation Tools Verification Package* (co-author, poster presented by **K.A. Hoogewind**)

Central Iowa Chapter of the National Weather Association Severe Storms and Doppler Radar Conference, Des Moines, Iowa, March 2008

Accuracy of a WRF Simulation of the 12 June 2001 Mesoscale Convective System (co-author, poster presented by **B. M. Hoving**)

National Weather Association National Meeting, Reno, Nevada, October 2007

- *Accuracy of a WRF Simulation of the 12 June 2001 Mesoscale Convective System* (co-author, poster presented by **B. M. Hoving**)

- *The Role of Lower Mississippi Valley Elevated Convection in Snowfall Further North: 4-5 February 2005* (co-author, poster presented by **D. T. Anderson**)

- *The Influence of Elevated Convection on the Warm Moist Conveyer Belt during the 3-5 January 2005 Central Plains Winter Storm* (co-author, poster presented by J. M. Boustead, NOAA/NWS Omaha, NE)

- *A Case Study Examination of the Effect of Convection on Winter Precipitation* (co-author, poster presented by P. N. Schumacher, NOAA/NWS Sioux Falls, SD)

American Meteorological Society 20th Conference on Weather Analysis and Forecasting / 16th Conference on Numerical Weather Prediction, Seattle, Washington, 2004

Winter Storm Forecasting as a Two-Step Process: The 26-27 November 2001 Snowstorm (poster presented by myself and Dr. Sam Ng, Metropolitan State College of Denver)

Grants – External

Baxter, M.A., P.N. Schumacher: Climatology and conceptual models of snowfall distribution in cold-season Central U.S. cyclones. University Corporation for Atmospheric Research COMET Program. **$16,686** (including National Weather Service match of **$6290**), **project must first be approved by one of the 5 National Weather Service Regional Directors as beneficial to NWS operations, followed by approval from a review-panel of meteorologists employed by the program.**

Orf, L.G., and Baxter, M.A.: *Acquisition of a Multi-Core Server for the Enhancement of the Meteorology Program at Central Michigan University.* University Corporation for Atmospheric Research UNIDATA Program. (Awarded May 10 2010). **$10,311, acceptance rate unknown.**

Baxter, M.A.: *Enhancing the Use of IDV and GEMPAK in Undergraduate Research and Education at Central Michigan University*. University Corporation for Atmospheric Research UNIDATA Program. (Awarded June 1 2007). **$6,975, acceptance rate unknown.**

Baxter, M.A., P.N. Schumacher, and J. Boustead: *Variability of the Influence of Convection on Conveyor Belts: Development of Conceptual Models and Forecast Methodologies.* University Corporation for Atmospheric Research COMET Program. (March 1 2007 – February 28 2008 – extended through August 28 2008). **$14,275** (including National Weather Service match of **$4675**)**, project must first be approved by one of the 5 National Weather Service Regional Directors as beneficial to NWS operations, followed by approval from a review-panel of meteorologists employed by the program.**

Baxter, M.A.: *A Proposal for a UCAR Visiting Scientist Position at COMET*. University Corporation for Atmospheric Research COMET Program. (March 1 2007 – September 1 2007). **$13,466, by invitation of the program managers.**

Grants – Internal

Baxter, M.A., "Reforecasts of a 2004 Elevated Convection Event Misforecast by the Eta Model", FRCE Page Charge Grant for Publication in *National Weather Digest*, November 2011. **$1000.**

Baxter, M.A., "The Use of Potential Vorticity Inversion to Evaluate the Effect of Precipitation on Downstream Mesoscale Processes", FRCE Page Charge Grant for Publication in *Quarterly Journal of the Royal Meteorological Society,* April 2011. **$715**

Baxter, M.A.: *Impacts of Very Small Initial Condition Errors on Mesoscale Aspects of Two Cyclones,* FRCE Premiere Display Travel Grant for the National Weather Association Annual Meeting, October 2008. **$500**

Baxter, M.A.: *The Relative Contributions of Intrinsic and Practical Predictability to Model Forecasts of Cyclone Development*. President's Research Investment Fund, Central Michigan University. (September 1 2007 – November 30 2008, extended to December 1 2009). **$14,912**

Baxter, M.A.: *A Case Example of the Role of Warm-Sector Convection on Mesoscale Banded Snowfall, Premiere Display Travel Grant for the Severe Local Storms Conference of the American Meteorological Society*, November 2006. **$1000**

Undergraduate Student Research

2013-2014 Stephanie Bonney, Informal Project

Project: Predictability of Impacts Associated with the February 2011 "Groundhog's Day" Storm
-current student

2012-2013 Maura Casey, Student Assistant for COMET Partners Project

Project: Numerical Simulation of a Snowfall Event with Mesoscale Snowbands to the Northeast and Northwest of the Surface Low: March 30th 2009
-presented at American Meteorological Society Annual Meeting
-presented at SRCEE and Posters at the Capitol
-MS student in Geography, Michigan State University

2011-2012 L.B. LaForce, Informal Project

Project: Comparison of Two Forecasts for Tornadoes Associated with Cold Core 500-mb Lows: Surprise and Bust
-presented at National Weather Association Annual Meeting, winning 1st place in the Undergraduate Student Poster Contest
-presented at SRCEE and Posters at the Capitol
-seeking employment

2010-2011 Adam Picard, Centralis Scholarship Project

Project: *"Evaluation of the Mesoscale Convective Vortex of August 11-12, 2010"*

-presented at American Meteorological Society Student Conference, winning 1st place in the Undergraduate Student Poster Contest
-presented at SRCEE and Posters at the Capitol
-MS student in Earth Sciences, University of North Carolina-Charlotte

2009-2010 Mike Piatek-Jimenez, Informal Project

Project: *"Analysis of Microphysics Scheme Performance with the October 2006 Buffalo Snowstorm"*

-presented at National Weather Association Annual Meeting, winning 1st place in the Undergraduate Student Poster Contest
-presented at SRCEE
-Current student and owner, Gaucho Software LLC (weather analysis software package)

2008-2009 Kim Hoogewind, Student Assistant for PRIF Project

Project: "*Accuracy of a Local WRF-ARW Model Run for the 22-24 December 2007 Cyclone Using the New Model Evaluation Tools Verification Package"*

-presented at National Weather Association Annual Meeting, winning 3rd place in the Undergraduate Student Poster Contest
-presented at SRCEE
-**Teaching Assistant in MS Atmospheric Science Program, Purdue University**

Rachel Kulik, Informal Project

Project: "*The Spatial and Temporal Variability in Snow-to-Liquid Ratio Across Michigan*"

-presented at National Weather Association Annual Meeting
-presented at SRCEE
-**Currently employed at National Weather Service, Detroit, MI**

Kailey Wass, Project to fulfill Environmental Studies Internship

Project: "*Effects of Precipitation Events on the Frequency and Duration of Combined Sewer Overflows in Selected Michigan Communities*"

-presented at SRCEE & Posters at the Capitol
-Research Assistant in MS program in Forest Resources, University of Washington

2007-2008 Brandon Hoving, Senior Honors Project

Project: "*Accuracy of a WRF Simulation of the 12 June 2001 Mesoscale Convective System"*

-presented at National Weather Association Annual Meeting, winning 1st place in the Undergraduate Student Poster Contest
-presented at SRCEE & Posters at the Capitol
-presented at Central Iowa Severe Storms & Doppler Radar Conference
-Currently employed at National Weather Service, Grand Rapids, MI

David Anderson, Student Assistant for COMET Partners Project

Project: " *The Role of Lower Mississippi Valley Elevated Convection in Snowfall Further North: 4-5 February 2005"*

-presented at National Weather Association Annual Meeting
-Currently Manager, Fazoli's Restaurants

2004-2005 Michelle Keast, Saint Louis University

Project: " *A Case Study of a Surprise Elevated Convection Event Over Eastern Missouri: 24-25 July 2004"*

-presented at Missouri Academy of Science
-Currently Captain, United States Air Force

Graduate Committee Membership

Sarah Trojniak, MS in Meteorology, Saint Louis University
-degree conferred August 2013
-Warm Season Heavy Precipitation Up- and Downwind of Lake Michigan

Justin Hartnett, MS in Environmental Science and Policy, University of South Florida
-degree conferred May 2013
-Spatial and Temporal Trends of Snowfall in Central New York – A Lake Effect Dominated Region

Kimberly Hoogewind, MS in Meteorology, Purdue University
-degree conferred May 2012
-A Proposed Method for Objectively Identifying and Characterizing Frontal Zones

Chad Gravelle, PhD in Meteorology, Saint Louis University
-degree conferred July 2011
-Examining the Reliability of the Northeast U.S. Heavy Snow Conceptual Model

Jayson Gosselin, MS in Meteorology, Saint Louis University
-degree conferred July 2010
-A Composite Analysis of Heavy Snow Events Within the Central and Eastern United States

Honors

2013-2014 College of Science and Technology Sabbatical Fellowship Award

2012 Editor's Award from the American Meteorological Society's Bulletin of the American Meteorological Society

2009-2010 CMU Excellence in Teaching Award Winner

Selected by CST Dean to present at 2010 CMU Faculty Excellence Exhibition

First Place, Physical Science Division, Saint Louis University Graduate Student Research Day 2003 Poster Contest

Visibility

Provided one News Tip for the CMU Public Relations Department over 2012
-Followed by radio interviews on Central Michigan Public Radio and WSGW NewsRadio Saginaw, and a TV interview for WCMU

Served as paid content consultant for children's book: "Can You Survive: Storm Chasing? An Interactive Survival Adventure", by Elizabeth Raum, published Summer 2011 by Capstone Press

Quotes from interview on April 2011 Tornado Outbreak featured in 5-2-2011 story in the Pittsburgh Tribune-Review (Pittsburgh, PA)

Provided one News Tip for the CMU Public Relations Department over 2008
-Followed by newspaper coverage by The Saginaw News and the New Citizens Press (Lansing, MI)

Provided three News Tips for the CMU Public Relations Department over 2007
-Followed by two interviews on Central Michigan Public Radio and newspaper coverage in the Morning Sun

Interview on Snow to Liquid Ratio research featured in FOX 4 Kansas City, MO, Winter Weather Special, October 2005

Research on Snow to Liquid Ratio was featured in a December 24, 2003 article in the Science section of the Philadelphia Inquirer

Research on Snow to Liquid Ratio was used by HPC and NWS offices across the country in the 2003-2004 Winter Weather Experiment

Research featured in two NWS Visitview distance learning seminars
-"Utilizing GOES Imagery within AWIPS to Forecast Winter Storms" by Dan Bikos (CIRA-Colorado State) and John Weaver (NOAA-NESDIS)
-"Critical Processes Attending Heavy Banded Snowfall with Illustrations from Case Study Events" by James Moore and Chuck Graves (SLU)

Professional Growth

Workshop and Short Course Attendance

Intermediate Python: Using NumPy, SciPy, and Matplotlib, sponsored by the American Meteorological Society, Austin, Texas, January 5-6, 2013

Navigating Earth System Science Data, UCAR/Unidata, Boulder, CO, July 9-13, 2012

External Proposal Writing Workshop, Central Michigan University, Six Friday afternoons in Fall 2010

Strengthening Your Geoscience Program: A Practical Workshop with Ideas and Examples, sponsored by NAGT, GSI, GSA, AGU, College of William and Mary, Williamsburg, Virginia, June 2-4, 2009

Meteorology/Math Curriculum Foundations II Workshop sponsored by the Mathematical Association of America, Valparaiso University, Valparaiso, Indiana, February 22, 2007

COMET Mesoscale Analysis and Prediction Course at UCAR/COMET, Boulder, CO, June 2007

National Weather Service Enhanced Fujita Scale / Wind Damage Seminar at Central Michigan University, February 2007

Preparing for an Academic Career in the Geosciences: Workshop for Graduate Students and Post-Doctoral Fellows, Minneapolis, MN, sponsored by NAGT, DLESE, NSF, July 2004

NCAR WRF Tutorial, Boulder, CO, July 2004

RFC/HPC Hydrometeorological Course at UCAR/COMET, Boulder, CO, August 2003

Conference Attendance

American Meteorological Society National Meeting, Austin, Texas, January 2013

National Weather Association National Meeting, Madison, Wisconsin, October 2012

National Weather Association National Meeting, Birmingham, Alabama, October 2011

National Weather Association National Meeting, Tucson, Arizona, October 2010

Northwest Indiana Chapter of the National Weather Association / American Meteorological Society Great Lakes Meteorology Conference, Valparaiso, Indiana, April 2009

National Weather Association National Meeting, Louisville, Kentucky, October 2008

Northwest Indiana Chapter of the National Weather Association / American Meteorological Society Great Lakes Meteorology Conference, Valparaiso, Indiana, April 2008

National Weather Association National Meeting, Reno, Nevada, October 2007

American Meteorological Society 23rd Conference on Severe Local Storms, St. Louis, Missouri, November 2006

National Weather Association National Meeting, St. Louis, Missouri, 2005

Missouri Academy of Science, Jefferson City, Missouri, 2005

National Weather Association National Meeting, Portland, Oregon, 2004

Missouri Academy of Science, Warrensburg, Missouri, 2003

Northeastern Storm Conference, Saratoga Springs, New York, 2003

National Weather Association National Meeting, Ft. Worth, Texas, 2002

Missouri Academy of Science, Joplin, Missouri, 2001

Certificates Received

UCAR/COMET Numerical Weather Prediction Distance Learning Certificate, 2004

Saint Louis University Center for Teaching Excellence Certificate in University Teaching Skills, May 2005

Active Memberships

American Meteorological Society
National Weather Association

University and Professional Service

CMU Service Activities

University Service Activities

2012 & 2013	Faculty Organizer, Posters at the Capitol
2008-2010	CST representative to the First Year Advisory Council

College Service Activities

2012-2013	Marketing Team, CST Strategic Planning
Fall 11-Sp 13	EAS representative, CST Curriculum Committee
Spring 2010	GEL representative, CST Curriculum Committee
2006-2010	Member, Residential College Advisory Board

Department Service Activities

2013	Assisted in drafting Meteorology Program Review Documents
2012-	Invited and hosted three Meteorology Guest Speakers
2012-	Organized Annual Meteorology Career Day Event
2012	Compiled Chairman evaluation
2010-2011	Served as Mentor to Caitlin Ross, Full-time temporary instructor
2007-	Meteorology Program Assessment Co-coordinator -Placed Assessment Plan in WEAVE program
2007-2011	Faculty Advisor, Student Chapter of the American Meteorological Society - I have successfully facilitated annual student travel to: o Severe Storms and Doppler Radar Conference in Des Moines, Iowa o Great Lakes Meteorology Conference in Valparaiso, Indiana o National Weather Association Annual National Meeting, various locations

	- I have implemented and served as Local Manager for student participation in the National Collegiate Weather Forecasting Contest "WeatherChallenge"
2007-2008	Member, Assessment, Curriculum, and Planning Committee (Geography Dept)
2007-2008	Chair, Scholarship Committee (Geography Dept)
2006-2007	Member, Scholarship Committee (Geography Dept)

Student Advising

I typically serve as the students' first source for letters of recommendation, resume reviews, questions on job and scholarship opportunities, and academic advising.

Beginning Fall 2009, I have organized a "Meteorology Advising Night" held in the evening to assist them in scheduling their courses.

2012-2013	Majors Signed: 7
2011-2012	Majors Signed: 17
2010-2011	Majors Signed: 15
2009-2010	Majors Signed: 14
2008-2009	Majors Signed: 14
2007-2008	Majors Signed: 14
2006-2007	Majors Signed: 22

Additional Service Activities

2013	Represented EAS at SET Day
2013	Represented EAS at Spring Graduation
2012	Represented EAS at CMU and You Day
2012	Represented EAS at SET Day
2012	Represented EAS at Spring Graduation
2011	Represented Geology & Meteorology at SET Day
2010	Represented Geology at Spring Graduation
2010	Worked with National Weather Service to host an on-campus "Severe Weather Threats in Large Venues" workshop for 150 attendees
2009	Represented Meteorology at CMU and You Day
2009	Represented Meteorology at SET Day
2009	Represented Geology at Spring Graduation
2009	Served as part of a three person team that initiated the development of a proposed Hydrology major in the Geology department
2008	Guided CMU meteorology students in presentations and demonstrations at Vowles Elementary School, Mt. Pleasant, MI
2008	Worked with CST Web Designer to develop an entirely new website for the Meteorology Program
2008	Represented Meteorology at CMU and You Day
2008	Worked with CST administrators and Geology faculty over a 9 month period to negotiate the successful transfer of the

	Meteorology faculty and program from the Geography to the Geology department
2008	Attended CST Residential College trip to Beaver Island to present 1.5 hr workshop "Where do Weather Forecasts Come From?"
2008	Represented Meteorology at CST Day
2008	Served as faculty sponsor for junior Kim Hoogewind, who was one of 20 students nationwide accepted into the National Center for Atmospheric Research Undergraduate Leadership Workshop
2007	Represented Meteorology at Majors Night
2007	Represented Meteorology at CST Day
2007	Represented Geography at Spring Graduation
2007	Submitted Department Application for University Corporation for Atmospheric Research Academic Affiliate Program, which was approved
2006	Represented Meteorology at CMU and You Day
2006	Guided CMU meteorology students in presentations and demonstrations at Fancher Elementary School, Mt. Pleasant, MI
2002-2005	National Collegiate Weather Forecasting Contest, Saint Louis University Local Manager
2001-2005	Presented lectures and demonstrations for elementary school students visiting the Saint Louis University Atmospheric Science Dept.

Professional Service Activities for the Discipline of Meteorology

Editing and Reviewing

Member of 4-person team that merged the National Weather Association's print and online journals into one online journal, the "Journal of Operational Meteorology" over 2012-2013. I created the initial draft of the "Call for Papers", found here: http://nwas.org/jom.

-Associate Editor, 2013-

Editorial Team member for the Electronic Journal of Operational Meteorology (EJOM), published by the National Weather Association (NWA). Inaugurated in 2000, the NWA EJOM is a professional publication for association members and guests to share their experiences, procedures, research, and technical studies on topics related to operational forecasting. The journal publishes between 5 and 20 articles per year in an online format that highlights the use of time animations.

-Editor in Training, 2009
-Assistant Editor, 2010
-Chief Editor, 2011
-I have been responsible for 13 submissions to date
-I created the guidelines for a new submission category – "Images of Note"

Outreach Proposal Review Panel Member for the Cooperative Program for Meteorology, Education, and Training (COMET), April 17th, 2009, Boulder, CO

-to disperse funds provided by NOAA for projects involving university researchers and the National Weather Service

Paper review for *Atmospheric Research*, May 2013

Paper review for the *Journal of Atmospheric Sciences*, September 2012

Paper review for *Pure and Applied Geophysics*, February 2012

Paper review for the journal *Weather and Forecasting*, November 2011

Paper review for the journal *Weather and Forecasting*, September 2011

Paper review for the *Bulletin of the American Meteorological Society*, March 2011

Paper review for the *Bulletin of the American Meteorological Society*, February 2011

Paper review for *Pure and Applied Geophysics*, February 2011

Paper review for the journal *Weather and Forecasting*, March 2010

Paper review for the *Journal of Applied Meteorology and Climatology*, January 2010

Paper review for the journal *National Weather Digest*, December 2009

Textbook review for *Case Studies in Meteorology*, 2009, 2nd ed., Kendall-Hunt, 60 pp., by P.S. Market, S.M. Rochette, and R.L. Ebert-Cripe

Paper review for *Pure and Applied Geophysics*, November 2008

Paper review for the *Electronic Journal of Operational Meteorology*, October 2008

Paper review for the *Electronic Journal of Operational Meteorology*, May 2008

Paper review for the journal *Monthly Weather Review*, October 2006

Paper review for the *International Journal of Climatology*, June 2006

Paper review for the *Journal of Atmospheric and Oceanic Technology*, May 2006

Paper review for the journal *Weather and Forecasting*, May 2006

Workshop Instruction

Meeting of the UNIDATA Users Committee, Boulder, Colorado, April 2013
-Experiences with Creating Synoptic Case Studies Using IDV & RAMADDA

UCAR-COMET Meteorological Services of Canada Winter Weather Course, Boulder, Colorado, October 2010 – **Served as an Instructor**

-Types of Stability and Elevated Convection
-Snow to Liquid Ratio Climatology and Forecast Methodologies
-Numerical Weather Prediction Misconceptions
-Fundamentals of Data Assimilation
-Jet Streak Circulations

UCAR-COMET Mesoscale Analysis and Prediction Course, Boulder, Colorado, June 2010 – **Served as an Instructor**

-Mesoscale Predictability

UCAR-COMET Meteorological Services of Canada Winter Weather Course, Boulder, Colorado, October 2009 – **Served as an Instructor**

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-Fundamentals of Data Assimilation
-Jet Streak Circulations

Meeting of the UNIDATA Users Committee, Boulder, Colorado, April 2008

-Creation of a Case Study Archive Using THREDDS **(co-author, presentation given by Dr. Leigh Orf, CMU)**

UCAR-COMET Mesoscale Analysis and Prediction Course, Boulder, Colorado, April 2008 – **Served as an Instructor**

-Mesoscale Predictability

UCAR-COMET Meteorological Services of Canada Winter Weather Course, Boulder, Colorado, October 2007 – **Served as an Instructor**

-Quasi-Geostrophic Theory: A Review of Basic Concepts
-Introduction to the Potential Vorticity Framework
-Isentropic Thinking
-Types of Stability and Elevated Convection
-Snow to Liquid Ratio Climatology and Forecast Methodologies
-Numerical Weather Prediction Misconceptions
-Fundamentals of Data Assimilation
-Jet Streak Circulations

UCAR-COMET Mesoscale Analysis and Prediction Course, Boulder, Colorado, June 2007 – **Served as Academic Lead Instructor**

-The Effect of Stability on Frontogenetical Circulations
-Jet Streak Circulations

-Isentropic Thinking
-Introduction to the Potential Vorticity Framework
-Applications of the Potential Vorticity Framework
-Mesoscale Predictability
-Critical Processes Attending Heavy Banded Snowfall with Illustrations from Case Study Events
-4 AWIPS Labs:
-Large Scale Dynamics: QG Perspective
-Large Scale Dynamics: Isentropic/Potential Vorticity Perspective
-Dynamic Feature Identification Using Water Vapor Imagery
-Mesoscale Banded Snowfall

UCAR-COMET Meteorological Services of Canada Winter Weather Course, Boulder, Colorado, October 2006 – **Served as an Instructor**
-Quasi-Geostrophic Theory: A Review of Basic Concepts
-Isentropic Thinking
-IPV and the Dynamic Tropopause
-Snow to Liquid Ratio Lecture and Lab

UCAR-COMET Meteorological Services of Canada Winter Weather Course, Boulder, Colorado, 2005 – **Served as Academic Lead Instructor**
-Quasi-Geostrophic Theory: A Review of Basic Concepts
-Isentropic Thinking
-IPV and the Dynamic Tropopause
-Critical Processes Attending Heavy Banded Snowfall with Illustrations from Case Study Events
-Jet Streak Circulations
-Snow to Liquid Ratio Lecture and Lab

UCAR-COMET Hydrometeorology Course, Boulder, Colorado, 2003 – **Served as an Instructor**
-A Climatology and Case Studies of Snow to Liquid Ratios for the United States
-Precipitation Type Forecasting (with John Cortinas, NSSL-CIMMS)

Presentations at Forecasting Centers

National Weather Service Forecast Office, Gaylord, Michigan, July 2010
-NWP Misconceptions

National Weather Service Central Region Webinar (39 offices participating), October 2009 and November 2009
-The Use of Diabatic Potential Vorticity in Operational Forecasting (presentation given over the web using GoToMeeting, lead by NWS collaborators Phil Schumacher and Josh Boustead)

National Weather Service Forecast Office, Grand Rapids, Michigan, November 2009
-The Operational Use of Potential Vorticity: A Rationale

State College, PA and Pittsburgh, PA National Weather Service Joint Ensemble Workshop, May 2008

-*Mesoscale Predictability* (presentation given over the web using GoToMeeting)

National Weather Service Forecast Office, Grand Rapids, Michigan, November 2007

-*Introductions to and Applications of the Potential Vorticity Framework*
-*Snow to Liquid Ratio Climatology and Forecast Methodologies*

National Weather Service Forecast Office, Omaha, Nebraska, August 2007

-*Introduction to and Applications of the Potential Vorticity Framework*
-*Critical Processes Attending Heavy Banded Snowfall with Illustrations from Case Study Events*

National Weather Service Forecast Office, Sioux Falls, South Dakota, August 2007

-*Applications of the Potential Vorticity Framework*

Hydrometeorological Prediction Center, Camp Springs, Maryland, 2005

-*Operational Methods for Forecasting Snow to Liquid Ratio*

St. Louis Winter Weather Workshop (CIPS/NWS), St. Louis, Missouri, 2003

-*A Climatology and Case Studies of Snow to Liquid Ratio for the United States*

National Weather Service Forecast Office, Wilmington, Ohio, 2003

-*Forecasting Precipitation Type and Snow to Liquid Equivalent Ratios* (co-author, presentation given by J.T. Moore, Saint Louis University)

Other Activities

Member of 2014 American Meteorological Society 26th Weather Analysis and Forecasting/22nd Numerical Weather Prediction Conference Planning Committee

Member of American Meteorological Society Weather Analysis and Forecast Statement Revision Team (taking place over 2013-2014)

Integrated Data Viewer (IDV) Steering Committee Member, as part of the UCAR Unidata Program, October 2012 - Present
Unidata User's Committee, October 2011 – Present (3 year term)

Member of the National Weather Association Membership and Marketing Committee, October 2011 – Present (3 year term)

Member of the National Weather Association Publications Committee, October 2011 – Present (3 year term)

Member of the National Weather Association Weather Analysis and Forecasting Committee, September 2009 – Present (3 year term)

Integrated Data Viewer (IDV) Steering Committee Member, as part of the UCAR Unidata Program, August 2007 – March 2010

President - Greater St. Louis Chapter of the American Meteorological Society, June 2003 – June 2004

Participant in the Bow Echo Meteorological Experiment (BAMEX), May 2003 – July 2003