Jessica J. Choate

Education
Professional Master of Business Administration   *August 2019*
University of Oklahoma   *Norman, OK*
- Graduate Certificate of Energy

Master of Science – Atmospheric Sciences   *August 2016*
University of Illinois at Urbana-Champaign   *Urbana, IL*
- Thesis Advisors: Dr. Robert Rauber, Dr. Brian Jewett, Dr. Greg McFarquhar
- "Source Air Feeding Convection Within a Nocturnal Mesoscale Convective System on 9 August 2014 that Evolved from Surface-Based to Elevated During its Evolution"
- Awarded 2015 Graduate College Master's Project Travel Grant
- UIUC List of Excellent Teachers
    - Fall 2015, Spring 2015, Fall 2014

Bachelor of Science – Atmospheric Sciences   *May 2014*
University of Illinois at Urbana-Champaign   *Urbana, IL*
- High Distinction
- Ogura Undergraduate Research Award
    - Awarded to undergraduate students who perform exemplary research in the UIUC Department of Atmospheric Sciences
- 2014 Commencement Speaker

Skills
Python, NCL, WRF, R, MATLAB, HTML, GARP, IDV, php, css, Photoshop, Adobe Illustrator, 3D Live, Fusion, Fusion Studio, Weather Central, Unix/Linux

Professional Experience
University of Illinois Atmospheric Sciences Department   Urbana, IL
Academic Advisor and Instructor   *June 2019-Current*
- Advise all Atmospheric Sciences Undergraduates
- Develop innovative verification techniques to be applied to NSSL Experimental Warn-on-Forecast System for ensembles (NEWS-e) forecasts.

National Severe Storm Laboratory (NSSL)/
Cooperative Institute for Mesoscale Meteorological Studies (CIMMS)   Norman, OK
Research Associate   *September 2016-August 2019*
- Verification and visualization specialist for Warn-on-Forecast (WoF) research team.
- Develop innovative verification techniques to be applied to NSSL Experimental Warn-on-Forecast System for ensembles (NEWS-e) forecasts.
- Develop and execute NEWS-e experiments as part of the Hazardous Weather Testbed Spring Forecasting Experiment.
- Collaborate on research within NSSL/CIMMS to further the goal of WoF to extend severe weather lead-time to one hour to protect life and property from severe weather damage.
- Execute post-processing functions for archived forecasts to evaluate sensitivity experiments and improve forecast verification.
- Lead re-design of website interface and user experience.

- Design assessment and evaluation of NEWS-e products used by National Weather Service forecasters to begin transition to operational settings and maintain relationships with operational points of contact.
- Expand and aid in R2O and R2A activities to improve NEWS-e usability through work with operational forecasters and members of the meteorological community.
- Design and present training to expanding NEWS-e users.

Teaching Experience

University of Illinois Atmospheric Sciences Department   Urbana, IL
Teaching Assistant

"ATMS410: Radar Remote Sensing"   *Spring 2016*
- Assisted in designing lectures, assignments, and exams for upper classmen and graduate students enrolled in Radar Remote Sensing.
- Guided students in final projects operating and analyzing data from DOW mobile radars.
- Managed grading procedures throughout the semester.

"ATMS100: Introduction to Atmospheric Sciences"   *Fall 2014- Fall 2015*
- Designed and present meteorology lectures to three weekly lab sections of over 35 students each.
- Guided students through lab work of a variety of meteorological topics.
- Graded and organized coursework for over 300 undergraduate students.

"ATMS 120: Severe and Hazardous Weather"   *Fall 2012- Summer 2013*
- Organized classwork for over 500 students for lecture and online-based courses.
- Managed grading procedures for a team of teaching assistants as well as independent grading.

University of Illinois Atmospheric Science Department   Urbana, IL
Course Development and Teaching Assistant

"ATMS491: Broadcast Meteorology"   *Fall 2015, Spring 2016*
- Designed class syllabus and lectures for original Broadcast Meteorology course new to the University of Illinois Urbana-Champaign Atmospheric Sciences department.
- Lectured on broadcast-focused forecasting topics.
- Mentored students on future job prospects and career goals.
- Provided feedback to students on progress and development of broadcasting skills throughout the semester.

Research Experience

NSSL Societal Impacts Group   Norman, OK
Affiliate   *2018-Present*

Warn-on-Forecast Team   Norman, OK
Verification and Visualization Specialist   *2016-Present*

PECAN Research Team   Urbana, IL
Graduate Research Assistant   *2014-2016*
Undergraduate Research Assistant   *2013-2014*

CSWR Research Team   Hays, KS
Doppler-On-Wheels Operator   *2015*

Modeling
CIMMS/NSSL Research Associate
- Manage post-processing of NEWS-e system retrospectively and in real-time situations.
- Identify verification techniques to aid in improvement of the NEWS-e system. NEWS-e is a 3km, 36-member multi-physics ensemble, implementing data assimilation every 15 minutes and producing new forecasts every half hour.

Master's research
- Designed Python programs to create WSR-88D composite images for direct comparison to WRF model output.
- Created Python programs to analyze a multitude of WRF parameters, and more specifically to extract and analyze the evolution of several variables through space and time.
- Combined HYSPLIT (Hybrid Single Particle Lagrangian Integrated Trajectory) model output into parcel trajectory analyses using Python.
- Calculated reflectivity and various thermodynamic variables using NCL and data from several WRF runs at multiple pressure levels for a variety of sensitivity tests.
- Manipulated WRF output to study the transition from surface-based to elevated nocturnal mesoscale convective systems.
- Created and examined simulations of pre-storm MCS environments and the evolution of CAPE at multiple heights above ground level.
- Ran over 2,000 HYSPLIT back-trajectories using archived NAM data.
- Analyzed HYSPLIT data to define the parcel source regions feeding a transitioning mesoscale convective system from surface-based to elevated and the impacts of differing regions on storm evolution.

Work in "Atmospheric Simulation with the Weather Research and Forecasting Model" taught by Dr. Stephen Nesbitt, Spring 2016
- Ran multiple idealized squall line WRF simulations for thermodynamic sensitivity experiments.
- Designed realistic WRF simulations to test sensitivity to domain size on multiple outputs of mesoscale convective system simulations.
- Tested a plethora of WRF planetary boundary layer schemes to analyze differing effects on simulations of the 24 Feb 2016 Illinois blizzard.

Data Collection and Analysis
CIMMS/NSSL Research Associate
- Aid in designing forecasting experiments for optimal data collection of NEWS-e performance during SFE2017-SFE2019
- Assisted the NEWS-e team formulate survey questions for the Spring Forecast Experiment 2017 (SFE2017) to further understand how different members of the meteorological community interpret probability.
- Thoroughly examined product usage by an expert forecaster during SFE2017-SFE2018 and created a large database which organizes and classifies multiple product types.
- Combined the multiple types of data collected during the SFE2017-SFE2018 to create a cohesive storyline to be used during a conference presentation and starting point for a publication.

PECAN Field Campaign
- Member of the Center for Severe Weather Research (CSWR) team during the entirety of the Plains Elevated Convection At Night (PECAN) nocturnal field campaign.
- Lead scientist of the Doppler-On-Wheels 8 (DOW 8) for 30+ IOPs.
- Oversaw radar operations and data collection during IOPs.
- Maintained the DOW's suite of data collection instruments measuring wind speed/direction, temperature, relative humidity, etc.
- Simultaneously drove and navigated DOW 8 in severe weather situations to obtain quality data safely.
- Trained with mobile mesonet teams in storm cross sections.
- Team member on NOAA's P3 aircraft observing data collection processes during PECAN IOP 21 in the Texas Panhandle.

Graduate/Undergraduate Research
- Analyzed thermodynamic structures and radar archives of nocturnal convective systems to identify cases of elevated convection, and developed a climatology of all mesoscale convective systems across the Great Plains over a 4-year period.
- Designed a ranking system for classifying elevated convective systems.
- Analyzed statistics in the form of Contoured Frequency by Distance Diagrams designed in MATLAB.
- Performed statistical analysis on sea-level rise data within R.

Communication Experience

CIMMS   Norman, OK
CIMMS Promotional Video Narrator   *November 2018*

NSSL   Norman, OK
"Bite-Sized Science" Host   *October 2018-Present*

WCIA   Champaign, IL
Broadcast Meteorologist   *January 2013-July 2016*
- Designed in-depth forecasts for Central Illinois.
- Prepared and delivered weather forecasts for WCIA (1 million+ viewers) both on-air and across web-based platforms such as Facebook, Twitter, and WCIA's weather page.
- Provided constant updates and forecasts during severe weather coverage.

WFFT   Fort Wayne, IN
Broadcast Meteorologist   *2015*
- Forecasted for the surrounding Fort Wayne area.
- Prepared and delivered weather forecasts for both on-air and online platforms.

WGN Studios   Chicago, IL
Weather Intern   *2013*
- Prepared the Chicago Tribune weather pages before submission deadlines.
- Compiled recent and climatological data for the Chicagoland Area.
- Assisted Tom Skilling (Chief Meteorologist) and NWS employees in preparing on-air and online forecast graphics.

Camp Invention   Chicago, IL
Media Coordinator   *2009-2012*
- Designed and organized all media and publicity outlets for the Resurrection High School branch of the national organization.
- Acted as liaison between parents, organizers, and national offices for all media activity and implement and enforce national standards for media regulations involving minors.

Leadership Experience

Department of Atmospheric Sciences Student Organization   Champaign, IL
President   *August 2015 – July 2016*
- Sustained ties between department graduate students and faculty/university heads.
- Acted as student liaison during faculty meetings.
- Organized events to develop strong department pride and camaraderie.

Alpha Xi Delta Women's Fraternity
Membership Vice President   *January 2013 – December 2014*
- Managed the recruiting efforts of a chapter comprised of over 180 collegiate women
- Designed and executed recruitment events attended by over 1200 collegiate women.

Recruitment Assistant   *January 2012- December 2012*
House Manager   *January 2011- December 2011*

Student Chapter of the American Meteorological Society
Secretary   *August 2013- May 2014*
Academic and Professional Committee Head   *August 2012- May 2013*

Publications

Clark, A. J., and Coauthors, 2019: A Real-Time Simulated Forecasting Experiment for Advancing the Prediction of Hazardous Convective Weather

Wilson, K.A., P.L. Heinselman, P.S. Skinner, J.J. Choate, and K.E. Klockow-McClain, 2019: Meteorologists' Interpretations of Storm-Scale Ensemble-Based Forecast Guidance. Wea. Climate Soc., 11, 337–354, https://doi.org/10.1175/WCAS-D-18-0084.1

Skinner, P.S., D.M. Wheatley, K.H. Knopfmeier, A.E. Reinhart, J.J. Choate, T.A. Jones, G.J. Creager, D.C. Dowell, C.R. Alexander, T.T. Ladwig, L.J. Wicker, P.L. Heinselman, P. Minnis, and R. Palikonda, 2018: Object-Based Verification of a Prototype Warn-on-Forecast System. Wea. Forecasting, 33, 1225–1250, https://doi.org/10.1175/WAF-D-18-0020.1

Presentations

Choate, J., Clark, A., Gallo, B., Grimes, E., Heinselman, P., Skinner, P., Wilson, K., 2019: Examining the use of the NSSL Experimental Warn-on-Forecast System for ensembles for the prediction of severe storms through short-term forecast outlooks during the 2018 Spring Forecasting Experiment. Amer. Meteor. Soc. 99th Annual Meeting, 6 January to 10 January, Phoenix, AZ.

Choate, J., Clark, A., Gallo, B., Grimes, E., Heinselman, P., Skinner, P., Wilson, K., 2018: Examining the use of the NSSL Experimental Warn-on-Forecast System for ensembles for the prediction of severe storms through short-term forecast outlooks during the 2018 Spring Forecasting Experiment. Amer. Meteor. Soc. 29th Conference on Severe Local Storms, 22 October to 26 October, Stowe, VT.

Choate, J., Clark, A., Heinselman, P., Imy, D., Skinner, P., 2018: First Demonstration of the NSSL Experimental Warn-on-Forecast System as part of the 2017 Spring Experiment. Amer. Meteor. Soc. 98th Annual Meeting, 7 January to 11 January, Austin, TX.

Choate, J., Rauber, R., McFarquhar, G., Jewett, B., 2016: A comparative analysis of multi-level convective available potential energy and reflectivity for the elevated nocturnal mesoscale convective system on 9 August 2014. School of Earth Society and Environment Research Review, 26 February, Urbana, IL.

Choate, J., Rauber, R., McFarquhar, G., Jewett, B., 2015: A comparative analysis of multi-level convective available potential energy and reflectivity for the elevated nocturnal mesoscale convective system on 9 August 2014. Amer. Meteor. Soc. 16th Conference on Mesoscale Processes, 03 August to 06 August, Boston, MA.

Choate, J., Rauber, R., McFarquhar, G., Jewett, B., 2015: A comparative analysis of multi-level convective available potential energy and reflectivity for elevated nocturnal mesoscale convective systems. School of Earth Society and Environment Research Review, 13 February, Urbana, IL.

Choate, J., Rauber, R., McFarquhar, G., Jewett, B., 2014: Climatological thermodynamic analysis of elevated nocturnal mesoscale convective systems on the Great Plains. Amer. Meteor. Soc. Student Conference, 01 February to 02 February, Atlanta, GA.

Choate, J., Rauber, R., McFarquhar, G., Jewett, B., 2014: Climatological thermodynamic analysis of elevated nocturnal mesoscale convective systems on the Great Plains. School of Earth Society and Environment Research Review, 21 February, Urbana, IL.