JOSHUA J. ALLAND

University at Albany, State University of New York 1400 Washington Avenue \diamond DAES 325 \diamond Albany, NY 12222 (612) \cdot 644 \cdot 4157 \diamond jalland@albany.edu \diamond http://www.atmos.albany.edu/student/jalland

EDUCATION

University at Albany	August 2013–May 2019
Ph.D. in Atmospheric Science	
Advisors: Drs. Kristen Corbosiero and Brian Tang	
Iowa State University	May 2013

B.S. *summa cum laude* with honors in Meteorology GPA: 3.97/4.00

FELLOWSHIPS AND HONORS

Phi Beta Kappa Society 2	012–present
American Meteorological Society Beacon 2	017–present
National Science Foundation Graduate Research Fellowship	2013 - 2018
UCAR Capitol Hill Visits Essay Contest Award Winner	2018
National Oceanic and Atmospheric Administration	
Ernest F. Hollings Undergraduate Scholarship	2011 - 2013
Iowa State University Liberal Arts and Sciences Commencement Student Speaker	2013
Iowa State University Commencement Student Marshall	2013
Iowa State University Best Senior Thesis Award	2012
American Meteorological Society Named Scholarship	2012
National Weather Association Phillips Family Undergraduate Scholarship in Meteorology	2011
Iowa State University Dean's List	2009 - 2013
American Meteorological Society Freshman Undergraduate Scholarship	2009
Eastview High School Valedictorian	2009

RESEARCH EXPERIENCE

Dry Air, Vertical Wind Shear, and Tropical Cyclone Development September 2016–present Graduate student under co-advisors Drs. Kristen Corbosiero and Brian Tang Albany, NY

- \cdot Utilizing a 3D hurricane model to investigate the synergistic effect of dry air and vertical wind shear on tropical cyclone development.
- $\cdot\,$ Implementing an Eulerian analysis, an isentropic analysis, a moist static energy budget, and a trajectory analysis.

Role of Northern and Southern Waves on Tropical Cyclogenesis	January 2015–present
Investigator with Yuan-Ming Cheng	Albany, NY

- \cdot Investigating the track of Northern Waves from reanalysis datasets to determine if these waves coherently travel and ultimately merge with Southern Waves.
- $\cdot\,$ Utilizing the Advanced Research Weather Research and Forecasting Model to analyze the dynamics and thermodynamics of a merging Northern and Southern Wave before developing into a tropical cyclone.

Downdrafts, Dry Air, and Tropical Cyclone Spinup	August	2013–September 2016
Graduate student under co-advisors Drs. Kristen Corbosiero and Brian	Tang	Albany, NY
Utilized an avigummetric hymnicane model to investigate the rele of dry	oir or i	the grinup timescale of

• Utilized an axisymmetric hurricane model to investigate the role of dry air on the spinup timescale of tropical cyclones.

- \cdot Examined the influence of dry air on the secondary circulation using a moist entropy framework.
- \cdot Implemented forward and backward trajectory analysis to determine the impact of dry air tropical cyclone size.

Kessler Microphysics in a Simple Cloud ModelAugust 2015–December 2015InvestigatorAlbany, NY

- \cdot Built a simple axisymmetric cloud model and inputted Kessler (1969) microphysics.
- \cdot Analyzed the importance of autoconversion, accretion, evaporation, and environmental moisture on the development of rain water in the cloud model.

Midlatitude Eddies and Tropical Cyclone DevelopmentSeptember-December 2014Investigator with Rosimar Rios-BerriosAlbany, NY

• Implemented reanalysis datasets to investigate the relationship between midlatitude transient and stationary eddies, the interannual variability of the western North Pacific monsoon trough, and tropical cyclone development.

Water Vapor's Role on Tropical Cyclone Development	January–May 2014
Investigator with Rosimar Rios-Berrios and Jeremy Berman	Albany, NY

· Utilized George Bryan's Cloud Model 1 (CM1) to investigate the quantitative role of tropospheric relative humidity on tropical cyclone development using water vapor and relative angular momentum budgets.

African Easterly Waves and Tropical Cyclogenesis	January–August 2013
Investigator with Dr. Tsing-Chang (Mike) Chen	Ames, IA

 \cdot Determined the mechanism behind Northern Waves crossing the African Easterly Jet using satellite and reanalysis datasets.

Rapid Intensification of Hurricane Earl (2010)August-December 2012Investigator with Drs. Sundararaman Gopalakrishnan and Tsing-Chang (Mike) ChenAmes, IA

• Analyzed the observed and modeled rapid intensification of Hurricane Earl (2010) using dropwindsonde data and the Hurricane Weather Research and Forecasting (HWRF) model.

Parameterization Schemes and Tropical Cyclone Development	August–December 2012
Investigator with Amanda Black	Ames, IA

 $\cdot\,$ Analyzed the effect of differing parameterizations on the primary and secondary circulations of a tropical cyclone slab model.

Warm Core Structure and Tropical Cyclone Intensity	May–August 2012
Intern at the Hurricane Research Division	Miami, FL

• Conducted scientific research on the height and depth of the warm core in tropical cyclones and compared these results to the vertical distribution of Hurricane Earl's (2010) warm core before, during, and after Earl's rapid intensification.

Rossby Wave PropagationAugust-December 2011Investigator with Brittany Peterson and Jade DeMersAmes, IA

 $\cdot\,$ Analyzed the distribution and movement of Rossby Waves and compared the observed trend to theory.

Forecasting Winter Weather Conditions

Intern at the National Weather Service

Fall 2017
Albany, NY
Fall 2017
Albany, NY
Spring 2017
Albany, NY

· Facilitated in-class discussions and interactive activities to stimulate student interest.

- Instructor of Record
- **Atmospheric Thermodynamics**

sors to determine if the more expensive sensor was more accurate.

Guest Lecturer		Albany, NY
Guest-lectured (1 class) for Dr. Ry	an Torn to discuss thermodynamics of moist air.	

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Physical Meteo	rology			Spring 2018

- · Designed, prepared, and taught lecture material on cloud microphysics and giving effective presenta-
- tions.

- · Prepared homeworks, pop-quizzes, and an exam to assess student growth.
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· Used traffic cameras to calculate the distance to nearby objects to help forecast visibility during winter weather conditions.

> January-May 2010 Ames, IA

· Analyzed synoptic conditions during heavy precipitation events in the Midwest from 1980–2000, assuming that these conditions will be more frequent in the future.

FIELD EXPERIENCE

Forecaster

Mission Flight into Tropical Storm Gordon Flight Scientist

Climate Change and Heavy Precipitation Events

Investigator with advisor Dr. William Gutowski

Hurricane and Severe Storm Sentinel (HS3)

Instrumentation Tower Construction

Co-investigator with Justin Hayward

TEACHING EXPERIENCE

Lakeland, FL Collaborated with scientists and Hurricane Hunters onboard NOAA's WP-3D Orion aircraft to collect radar, dropsonde, and buoy data.

· Co-led tropical weather discussions to scientists and pilots associated with HS3. Scientists and pilots

· Assembled an instrumentation tower and analyzed the temperatures of two different temperature sen-

gathered information from these briefings to plan flights into tropical disturbances.¹

September 2018

September 2014

Wallops Island, VA

January–May 2012

Ames, IA

Fall 2018

Albany, NY

- \cdot Actively assisted the instructor in a team-based learning course designed to solve statistical problems using Python.
- \cdot Guest-lectured (3 classes), led review sessions, graded homework and exams, and assisted students whenever needed.

	The Oceans	Fall 2016
	Teaching Assistant	Albany, NY
•	Moderated an online, graded discussion board and tutored students wheneve	er needed.
	Weather & Climate Issues Guest Lecturer	Fall 2016 Albany, NY
•	Guest-lectured (1 class) for Dr. Andrea Lang to discuss tropical cyclones as forecasting activity.	nd conduct an interactive
	Tropical Meteorology <i>Guest Lecturer</i>	Spring 2015 Albany, NY
•	Guest-lectured (1 class) for Dr. Kristen Corbosiero to discuss the role of modevelopment.	bisture on tropical cyclone
	Introduction to Meteorology Teaching Assistant	2011–2013 Ames, IA
•	Led forecast discussions and review sessions, graded assignments, proctored ex whenever needed.	ams, and tutored students
	Meteorology and Physics Courses Academic Leader	2010–2013 Ames, IA
•	Led weekly review sessions for Atmospheric Dynamics I and Physics courses. I sessions for Atmospheric Physics and Synoptic Meteorology.	Facilitated frequent review
	Atmospheric Dynamics Guest Lecturer	Spring 2013 Ames, IA
	Guest-lectured (2 classes) for Dr. Tsing-Chang (Mike) Chen.	
	Earth, Wind & Fire Learning Community Peer Mentor	2011–2012 Ames, IA
	Guided and helped undergraduate freshman and transfer students through t	heir first year of college.
	Freshman Honors Program Instructor	August–December 2010 Ames, IA
•	Developed class-by-class lesson plans and facilitated group activities and eve seminar.	nts for a freshman honors

REFEREED PUBLICATIONS

Alland, J. J., B. H. Tang, and K. L. Corbosiero, 2017: Effects of midlevel dry air on development of the axisymmetric tropical cyclone secondary circulation. J. Atmos. Sci., 74, 1455–1470, doi: 10.1175/JAS-D-16-0271.1.

Tang, B. H., R. Rios-Berrios, J. J. Alland, J. D. Berman, and K. L. Corbosiero, 2016: Sensitivity of axisymmetric tropical cyclone spin-up time to dry air aloft. J. Atmos. Sci., 73, 4269–4287, doi: 10.1175/jas-d-16-0068.1.

NON-REFEREED PUBLICATIONS

Alland, J. J., K. C. Carter, A. J. Drager, S. M. Hitchcock, and E. R. Nielsen, 2018: Mistakes will happen in graduate school. Bulletin of the American Meteorological Society.

Drager, A. J., E. R. Nielsen, S. M. Hitchcock, J. J. Alland, and K. C. Carter, 2017: Building your professional webpage. Bulletin of the American Meteorological Society.

Nielsen, E. R., S. M. Hitchcock, A. J. Drager, J. J. Alland, and K. C. Carter, 2017: Finding the right match: Tips on the job search and application process. Bulletin of the American Meteorological Society.

Carter, K. C., J. J. Alland, A. J. Drager, S. M. Hitchcock, and E. R. Nielsen, 2017: Preparing a good CV. Bulletin of the American Meteorological Society.

Carter, K. C., J. J. Alland, and A. J. Drager, 2017: Observing leaders of today to become the leaders of tomorrow. Bulletin of the American Meteorological Society.

Alland, J. J., K. C. Carter, and A. J. Drager, 2016: A conference for students, by students. The SPS Observor.²

Rios-Berrios, R., **J. J. Alland**, and J. D. Berman, 2014: The role of water vapor in tropical cyclone development. Down to Earth, Physics Today.³

THESES

Alland, J. J., and T.-C. Chen, 2013: North Atlantic hurricanes contributed by African Easterly Waves north and south of the African Easterly Jet, Part II. Department of Geological and Atmospheric Sciences, Iowa State University, 5 pp.

Alland, J. J., T.-C. Chen, S. G. Gopalakrishnan, T. Quirino, and X. Zhang, 2012: On the observed and modeled development of Hurricane Earl (2010) during rapid intensification. *Department of Geological and Atmospheric Sciences, Iowa State University*, 20 pp.

SELECTED CONFERENCE AND SYMPOSIA PRESENTATIONS

Alland, J. J., B. H. Tang, and K. L. Corbosiero, 2018: Synergistic effect of mid-level dry air and vertical wind shear on tropical cyclone ventilation pathways. *33rd Conference on Hurricanes and Tropical Meteorology*, Ponte Vedra, FL.

Alland, J. J., and Y.-M. Cheng, 2018: The role of African easterly waves north of the African easterly jet on tropical cyclogenesis. *33rd Conference on Hurricanes and Tropical Meteorology*, Ponte Vedra, FL.

Alland, J. J., B. H. Tang, and K. L. Corbosiero, 2017: Synergistic effect of mid-level dry air and vertical wind shear on the development of the tropical cyclone secondary circulation. 18th Cyclone Workshop, Sainte Adele, Quebec, Canada.

Alland, J. J., B. H. Tang, and K. L. Corbosiero, 2017: Synergistic effect of mid-level dry air and vertical wind shear on the development of the tropical cyclone secondary circulation. *8th Northeast Tropical Meteorology Workshop*, Rensselaerville, NY.

Alland, J. J., and Y.-M. Cheng, 2017: The role of African easterly waves north of the African easterly jet on tropical cyclogenesis. *97th AMS Annual Meeting*, Seattle, WA.

²Available online at https://www.spsnational.org/the-sps-observer/spring-summer/2016/conference-students-students

 $^{{}^{3}\}mbox{Available online at http://scitation.aip.org/content/aip/magazine/physicstoday/news/10.1063/PT.5.4008; jsessionid=k8ke 637 rijr0.xaip-live-03$

Alland, J. J., B. H. Tang, and K. L. Corbosiero, 2016: Sensitivity of tropical cyclone spinup time and convection to the initial entropy deficit. *32nd Conference on Hurricanes and Tropical Meteorology*, San Juan, PR.

Alland, J. J., B. H. Tang, and K. L. Corbosiero, 2015: Sensitivity of tropical cyclone convection to the initial entropy deficit. *17th Cyclone Workshop*, Pacific Grove, CA.

Alland, J. J., B. H. Tang, and K. L. Corbosiero, 2015: Sensitivity of tropical cyclone convection to the initial entropy deficit. *7th Northeast Tropical Meteorology Workshop*, Dedham, MA.

Alland, J. J., R. Rios-Berrios, and J. D. Berman, 2015: Investigating the role of tropospheric water vapor on tropical cyclone development: Water vapor and angular momentum budgets. 14th Annual AMS Student Conference, Phoenix, AZ.

Alland, J. J., and T.-C. Chen, 2014: North Atlantic hurricanes contributed by African Easterly Waves north and south of the African Easterly Jet, Part II. *31st Conference on Hurricanes and Tropical Meteorology*, San Diego, CA.

Alland, J. J., and T.-C. Chen, 2014: North Atlantic hurricanes contributed by African Easterly Waves north and south of the African Easterly Jet, Part II. 13th Annual AMS Student Conference, Atlanta, GA.

Alland, J. J., and T.-C. Chen, 2013: North Atlantic hurricanes contributed by African Easterly Waves north and south of the African Easterly Jet, Part II. 2013 Honors Poster Presentation, Ames, IA.

Alland, J. J., T.-C. Chen, S. G. Gopalakrishnan, T. Quirino, and X. Zhang, 2012: On the observed and modeled development of Hurricane Earl (2010) during rapid intensification. 2013 Honors Alumni Board Meeting, Ames, IA.

Alland, J. J., T.-C. Chen, S. G. Gopalakrishnan, T. Quirino, and X. Zhang, 2012: On the observed and modeled development of Hurricane Earl (2010) during rapid intensification. *12th Annual AMS Student Conference*, Austin, TX.

Alland, J. J., T.-C. Chen, S. G. Gopalakrishnan, T. Quirino, and X. Zhang, 2012: On the observed and modeled development of Hurricane Earl (2010) during rapid intensification. 20th Annual Iowa State University Atmospheric Science Undergraduate Research Symposium, Ames, IA.

Alland, J. J., T.-C. Chen, S. G. Gopalakrishnan, T. Quirino, and X. Zhang, 2012: Importance of warm core processes on the rapid intensification of Hurricane Earl (2010). 2012 Student Science & Education Symposium, Silver Spring, MD.

Alland, J. J., T.-C. Chen, S. G. Gopalakrishnan, T. Quirino, and X. Zhang, 2012: Importance of warm core processes on the rapid intensification of Hurricane Earl (2010). 2012 Hurricane Research Division Student Symposium, Miami, FL.

WORKSHOPS AND TRAINING

Student Rapporteur for the AMS Summer Community Meeting	August 2018
National Hazards Workshop	Summer 2018
National Center for Atmospheric Research Advanced Study Program Student Visitor	Summer 2018
Disaster, Crisis, and Emergency Management and Policy (graduate-level course)	Fall 2017
University at Albany Seminar in College Teaching	Fall 2016
National Science Foundation Expert Witness Training Academy	August 2015
American Meteorological Society Summer Policy Colloquium	June 2015
Intensive Summer School for Computing in Environmental Sciences (ISSCENS)	June 2014
Advanced Spotter Training	April 2013
Intern at the Hurricane Research Division	Summer 2012
National Center for Atmospheric Research Undergraduate Leadership Workshop	June 2012

FORMAL MENTORSHIP

Hannah Messier:	Undergraduate Senior	Thesis at Iowa State	e University	2018
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LEADERSHIP POSITIONS

Department of Atmospheric and Environmental Sciences Gradu Intradepartmental Educational Resource Co-Chair	uate Student Committee 2017–Present
American Meteorological Society Student Conference Planning	Committee
Co-Chair	2015–2017
Session Chair	2013-2017
Poster Subcommittee	2013-2014
Co-Chair in Training	2014
New Ideas Forum Planning Committee	2014
University at Albany Future Faculty Leadership Council	
Member	2015 - 2017
Co-Organizer of the Summer Teaching Bootcamp	2017
Co-Organizer of the College Teaching Symposium	2016
Presenter: Lesson Plan Design	2017
Presenter: Framing a Growth Mindset: Change What Happens in your C	Classroom 2016
Presenter: Managing Collaborative Projects	2015
Presenter: What to do the First Day of Class	2015
Presenter: Syllabus Design	2015
University at Albany Earth Day Planning Committee	
Member	2015
American Meteorological Society Board for Early Career Profe	ssionals
Co-Organizer of the Early Career Networking Event	2016
Session Chair and Committee Member	2014
Iowa State University American Meteorological Society	
$\mathrm{President}^4$	2012-2013
Academic Chair ⁵	2011 - 2012
Iowa State University Howard Hughes Medical Institute Educa	tion Reform Project
Student Representative	2013
Iowa State University Liberal Arts and Sciences Council	
Iowa State University American Meteorological Society Representative	2012
OUTREACH	
SOARS Poster Judge	2018
Judged student posters of research conducted during the SOARS program	m at NCAR.
Rise High Program	2018
Planned interactive activities and demonstrations to educate students and	excite interest in meteorology.
Voorheesville High School	2014-2016, 2018
Co-participated in forecast discussions and fun demonstrations.	

⁴Award: Student Chapter of the Year by the American Meteorological Society

⁵Award: Student Chapter of the Year by the American Meteorological Society

and helped students develop presentable projects using data collected from a field trip. Severe Weather Safety Bags Co-led an effort to put severe weather safety information on over 1 million grocery bags throughout the Keep Austin Beautiful Co-led over 20 members of the Iowa State University American Meteorological Society to clean up **Science Bowl Competition** Served as a judge for the annual middle and high school Science Bowl. **Science Olympiad Competition** Co-trained middle school students for Science Olympiad. These students received first place in their Severe Weather Poster Contest Organized a state-wide elementary school poster contest to promote severe weather safety. **Elementary School Science Nights** 2012 - 2013

Taught high school students about Earth's atmosphere using a rotating tank, presented on hurricanes,

Co-educated over 1000 students during numerous science nights. Activities included: weather Jeopardy, building anemometers, arts-and-crafts, and creating a tornado in a simulator.

Educated students using meteorological demonstrations and built anemometers.

Mobile Home Project

Midwest.

division.

Austins' parks.

Co-initiated an effort to provide and develop severe weather safety information to all mobile home parks in Iowa.

Boy Scout Weather Merit Badge

University at Albany Earth Day

University at Albany Weather & Climate Camp

Helped Boy Scouts earn their Weather Merit Badge by inviting speakers to talk about meteorology and by creating wooden anemometers.

Other Outreach

REU/Scholarship Night: Educated students on internships and scholarship opportunities. 2014–2015

Fellowship Applications: Offered advice to fellow graduate students and edited applications. 2014–2015

AMS Annual Meeting: Organized a road trip so over 30 students could attend the Annual Meeting. 2013

Professional Development Activities: Co-organized many professional development activities including: forecasting for the local newspaper, launching a weather balloon, Bufkit/GR tutorial, news station tour, National Severe Storms Laboratory tour, National Weather Service tour, storm chasing seminar, and a CHILL Radar virtual tour. 2012 - 2013

TECHNICAL STRENGTHS

Operating Languages	Linux, Windows
Languages	FORTRAN 90/95, Python, NCL, GrADS, HTML, CSS, Java

PROFESSIONAL SERVICES

Provided editorial comments to book chapter titled "The Hurricane Boundary Layer", written by Sundararaman G. Gopalakrishnan, C. Venkata Srinivas, and Kieran T. Bhatia. 2013

2015 - 2017

2013

2013

2013

2013

2013

2012 - 2013

2012

PROFESSIONAL AFFILIATIONS

American Meteorological Society National Weather Association American Geophysical Union American Association for the Advancement of Science American Physical Society Geological Society of America