

CURRICULUM VITAE

Jeffrey B. Basara

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JEFFREY B. BASARA

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PROFESSIONAL PREPARATION

University of Oklahoma, Norman, OK	Meteorology	Ph.D.	2001
University of Oklahoma, Norman, OK	Meteorology	M.S.	1998
Purdue University, West Lafayette, IN	Atmospheric Science	B.S.	1994

PROFESSIONAL APPOINTMENTS

2018-present Executive Associate Director, Hydrology and Water Security Program, University of Oklahoma

2018-present Associate Professor, School of Civil Engineering and Environmental Science, University of Oklahoma

2017-2018 Associate Director for the Graduate Program, School of Meteorology, University of Oklahoma

2014-2020 Director, Kessler Atmospheric and Ecological Field Station

2012-present Associate Professor, School of Meteorology, University of Oklahoma

2002-2018 Director of Research, Oklahoma Climatological Survey, University of Oklahoma

2007-2012 Adjunct Associate Professor, School of Meteorology, University of Oklahoma

2001-2007 Adjunct Assistant Professor, School of Meteorology, University of Oklahoma

2001-2002 Research Scientist, Oklahoma Climatological Survey, University of Oklahoma

Dr. Basara leads the Climate, Hydrology, Ecosystems, Weather (CHEWe) research group at the University of Oklahoma. His current work includes interdisciplinary research focused on precipitation extremes, land-atmosphere interactions, and developing observational and modeling strategies that (1) increase the overall understanding of the complex interactions within the environmental column and (2) meet the needs of critical stakeholders. <http://hydrometeorology.oucreate.com>

SIGNIFICANT HONORS AND AWARDS

2021 Vice President for Research and Partnerships Annual Award for Excellence in Research Grants

2019 College of Atmospheric and Geographic Sciences Dean's Award for Excellence in Teaching

2019	USDA Research Education Economics (REE) Under Secretary's Award
2019	USDA-NIFA Multistate Partnership Award
2014	Named a Kavli Fellow of the United States National Academy of Sciences.
2010	Special Award from the American Meteorological Society for " <i>A new paradigm for the nation's weather forecasting enterprise based on a voluntary grass-roots effort, with impressive national impact through its use in curricula at scores of universities.</i> "
2004	Named a Fellow of the Cooperative Institute for Mesoscale Meteorological Studies.
2001	School of Meteorology Douglas Lilly Award for the best Ph. D. Manuscript
2001	School of Meteorology Outstanding Teaching Assistant Award
2000	The David James Schellberg Memorial Scholarship Award
1998-2001	NASA Earth System Science <i>Ph.D. Fellowship</i>
1996-1998	NASA Space Grant Consortium <i>Graduate Student Fellowship</i>
1992-1994	Citizens Scholarship Foundation of America Award

1. Teaching data

a. Statement of Teaching

The core foundation of any academic institution, organization, or department is the quality of instruction and preparation of the students. While this statement applies broadly, it is manifest in numerous capacities in today's academic system throughout undergraduate and graduate student education including traditional classroom-style instruction and mentored research at local campuses (graduate and undergraduate students) to new paradigms including online instruction that reach a global population. This places increasing challenges on faculty to pursue excellence in teaching across a changing landscape of instruction. Further, the complexity of instruction will likely increase into the foreseeable future (especially given the response to Covid-19 and its impacts) and the ultimate success of academic institutions will be dependent upon identifying strengths within current and future faculty to meet the needs of students in the changing educational environment.

I have a passion for teaching. This passion has been borne out in many ways, but all within one overarching goal – to provide excellent instruction that meets the needs of current students to be difference makers across the environmental sciences. To that end, I attempt to utilize every available asset that can increase learning capacity from traditional lecture based approaches, to experimental and experiential techniques (i.e., “hands-on” approach), to discussion-based formats that foster collaborative efforts (e.g., the flipped classroom approach), and the incorporation of enhanced digital learning via online instruction.

Summary of Teaching History and Accomplishments

To date, my teaching activities have included multiple components from in-person to online to direct mentorship and include those accomplishments below:

- I have always pursued experience in teaching, and while a graduate student at the University of Oklahoma, I served as a teaching assistant for multiple courses. However, while on a NASA

fellowship as a Ph.D. student, I volunteered to instruct the primary non-major undergraduate course which included 100 students from a variety of backgrounds and disciplines. While it was the first course I developed and instructed on my own, it was a tremendous experience and solidified my vision for one-day becoming a professor. Further, due to my efforts in the classroom, I was awarded the 2001 Outstanding Teaching Assistant Award from the School of Meteorology at the University of Oklahoma.

- After becoming an adjunct faculty member in 2002 and until I transitioned to regular faculty in 2012 (ranked renewable term; RRT), I continued teaching approximately one course per year and instructed students at both the undergraduate and graduate levels. This included the opportunity to specifically engage those who were enrolled in the Honors sections of introductory courses within the Meteorology major and provide targeted instruction.
- After participating in the Oklahoma Weather Center Research Experiences for Undergraduates program (OWC REU; now NWC REU) early in my career, I developed a summer internship program at the Oklahoma Climatological Survey (OCS) to specifically provide research opportunities specifically for School of Meteorology undergraduates; the program was funded from 2004-2007. Of note is that, of the eight undergraduates who participated in the OCS Summer Research Internship Program, three obtained Ph.D. degrees later in their academic careers (Eric Hunt, University of Nebraska; Amanda Schroeder, University of Georgia; Tommy Winning, University of Texas A&M Corpus Christi). Additionally, from 2004-2009 I also developed a partnership with the Université de Limoges and supervised undergraduate students from France during the summer.
- My primary in-person, classroom instruction since becoming regular (RRT) faculty has been focused on two courses: (1) METR 4424 Synoptic Meteorology Laboratory; a four-credit, five-contact hour core course for undergraduate majors and (2) METR 4633/5633 Hydrometeorology; a three-credit elective course offered to upper division undergraduate students and graduate students. I have also instructed the graduate advanced synoptic meteorology course – METR 5413 – a three-credit core course to “fill-in” for an instructor on sabbatical.
- As part of an interdisciplinary education activity, I teamed with Dr. Phil Gibson of Biology and we developed a 3-4 week intercession/summer course that brings students from a wide range of backgrounds to the Kessler Atmospheric and Ecological Field Station and provides them with on-site experience and instruction focused on environmental sampling strategies across vegetation, soil, water, and atmospheric techniques. First offered during the summer of 2016, the course is led by Dr. Gibson and now regularly offered as students can receive both undergraduate and graduate credit.
- To meet the growing online needs of students timed with the launch of the Hydrology and Water Security (HWS) Program, I converted/developed my Hydrometeorology course to an online version during the Fall of 2018. This adaptation of the Hydrometeorology course required enhanced design to facilitate an online course that could be rigorous in technical merit and apply broadly across the environmental sciences.
- During 2019, I developed a second, but in this case previously untaught, online course at the graduate level for the HWS program: Hydroclimatology. Because this was a new course, it was specifically and strategically designed to maximize learning in an online environment via targeted content, recorded lectures, and rigorous assignments designed to connect students to practical applications. This first offering included 45 students enrolled and received excellent reviews; the second offering in the Summer 2020 included 65 students (awaiting evaluations).

Based on the success of this course and as the HWS matures, at some point in the future I anticipate converting the online Hydroclimatology course to a full, on-ground course.

While course design, development and instruction are critical to academia at the university level, the concept of “teaching” applies more broadly. In particular, engaging students at all levels with mentored research provides new opportunities to expand their intellectual and applied capabilities within both discipline and interdisciplinary sciences. As such I fully support the development of students through research and have served as the academic chair for **19** graduate students who have obtained advanced degrees (16 M.S. and 3 Ph.D.) and am currently chair or co-chair for **7** others (3 M.S. and 4 Ph.D.). Additionally, I have served on the graduate committees of **38** past and current students. In all cases, I work with the students on end-to-end research which includes not only developing a scientific idea, plan, and analysis, but also the communication of the research to broader audiences (scientific and stakeholder oriented) in the form of poster and oral presentations as well as peer-reviewed publications. In recent years and as the CHEWe group has matured with a distribution of students spanning second-year undergraduates to Ph.D. candidates, the environment has developed into a collaboratory whereby the exchange of ideas is no longer solely top-down driven by my influence, but also amongst the students themselves. This has led to an explosion of productivity from the group which has been evident not only in the graduation rates, but also in the number of student-led, first-authored publications (and co-publications) as well as numerous departmental, university, and national awards (**18** undergraduate and graduate awards since 2015; listed in 1.c).

In addition, I routinely mentor undergraduate students with focused research projects embedded within research experiences for undergraduates (REU), senior capstone projects, and sponsored research. While it is not uncommon for graduate students to serve as (lead) authors on manuscripts, it is far less common for undergraduate students to serve in such a capacity. However, undergraduates I have mentored have served as the lead author on four publications since 2015 and in the 8 years that the McCasland Award for Outstanding Undergraduate Research has been presented by the School of Meteorology, student teams I have mentored have won the award three times.

In the end, whether it is in the classroom, remote field campaigns, or online, I firmly believe that the role of an academic is to constantly and intentionally educate the students we engage with. At the same time, the challenges to faculty and students are changing within the global education system. Each challenge also presents opportunities for innovation and advancement. As we broadly look to the future, strategic instruction maximizing in-person, online, and mentored research resources will be necessary to meet the educational needs of the students as well as the faculty. I see tremendous opportunities to bring my expertise and passion for teaching across platforms and pursue continued growth and leadership in overall scholarship, and specifically teaching, to the University of Oklahoma.

b. Courses Taught and Enrollments

<u>Course</u>	<u>Course Title</u>	<u>Semester Taught</u>	<u>Enrollment</u>
METR 5633	Hydrometeorology	Fall 2020	82
METR 4424	Synoptic Meteorology Laboratory	Fall 2020	48
METR 5803	Hydroclimatology	Summer 2020	65
CEES 5020			
METR 4633	Hydrometeorology	Spring 2020	15
METR 5633			1
METR 4424	Synoptic Meteorology Laboratory	Fall 2019	38
METR 5633	Hydrometeorology	Fall 2019	63
METR 5803	Hydroclimatology	Summer 2019	45
CEES 5020			
METR 4970/5970	Environmental Sampling	Spring 2019	1
MBIO/PBIO	Techniques**		
4970/5970			4
METR 4633	Hydrometeorology	Spring 2019	21
METR 5633			2
METR 4424	Synoptic Meteorology Laboratory	Fall 2018	40
METR 5633	Hydrometeorology	Fall 2018	21
METR 4970/5970	Environmental Sampling		8
	Techniques**		1
METR 4633	Hydrometeorology	Spring 2018	10
METR 5633			1
METR 4424	Synoptic Meteorology Laboratory	Fall 2017	39
METR 4970/5970	Environmental Sampling	Spring 2017	4
PBIO 4970/5970	Techniques**		5
METR 4633	Hydrometeorology	Spring 2017	20
METR 5633			-
METR 4424	Synoptic Meteorology Laboratory	Fall 2016	49
METR 5413	Advanced Synoptic Meteorology	Spring 2016	16
METR 4424	Synoptic Meteorology Laboratory	Fall 2015	43
METR 4633	Hydrometeorology	Spring 2015	14
METR 5633			-
METR 4424	Synoptic Meteorology Laboratory	Fall 2014	52
METR 4633	Hydrometeorology	Spring 2014	30
METR 5633			-
METR 4424	Synoptic Meteorology Laboratory	Fall 2013	48
METR 4633	Hydrometeorology	Spring 2013	15
METR 5633			-
METR 4491	Weather Briefing	Fall 2012	5
METR 5491			1
METR 2013	Introduction to Meteorology	Fall 2011	8
	(Honors Section)		
METR 2013	Introduction to Meteorology	Spring 2011	6
METR 2013	Introduction to Meteorology	Fall 2010	16

	(Honors Section)		
METR 4633	Hydrometeorology	Spring 2010	22
METR 5633			-
METR 2013	Introduction to Meteorology (Honors Section)	Fall 2009	5
METR 5803	Climate Issues	Spring 2007	16
METR 4424	Synoptic Meteorology Laboratory	Fall 2004	54
METR 4424	Synoptic Meteorology Laboratory	Fall 2003	41
METR 4424	Synoptic Meteorology Laboratory	Fall 2002	37
METR 4803	Forecasting***	Spring 2002	9
METR 2413	Introduction to Synoptic Meteorology	Spring 2002	71
METR 1014	Introduction to Meteorology	Fall 2000	100

* As of 8/31/2020

** Served as a Co-instructor - Lead Instructor was Dr. Phil Gibson

*** Served as a Co-instructor - Lead Instructor was Dr. Fred Carr

c. Individual Work with Students

Due to my position(s) within the University of Oklahoma, and because of the support provided by internal and external funding, I have had the privilege to advise, supervise, and mentor individual students from a variety of backgrounds and at multiple academic levels (i.e., both graduate and undergraduate). This is and has been one of the most fulfilling aspects of my role as an academic.

Graduate Advisees

Student	Thesis/Dissertation Title	Degree	Graduation Year
Kodi L. Nemunaitis	Validation of the North American Land Data Assimilation System (NLDAS) Using Data from Oklahoma Mesonet OASIS Sites	M.S.	2003
Donald J. Giuliano	Using the B-W Fuzzy Logic Technique to Estimate CBL Depth from 915 MHZ Wind Profiler Data	M.S.P.M.	2004
Christy Carlson	A Spatial and Temporal Climatology of 1% Temperatures and Coincident Dew Point Temperature for the Continental United States	M.S.P.M.	2004
Peter K. Hall	The Urban Environment of Oklahoma City: Spatial and Temporal Analysis of the Meteorological Conditions	M.S.	2004

Daniel R. Cheresnick	An Analysis of Severe Hail Swaths in the Southern Plains of the United States	M.S.	2005
James Hocker	A Geographic Information Based Analysis of Supercell and Squall Line Storms Swaths Across Oklahoma	M.S.	2006
Justin W. Monroe	Evaluating NARR surface Reanalysis Variables and NLDAS Using Oklahoma Mesonet Observations	M.S.	2007
Amanda Schroeder	A Quantitative Description of the Oklahoma City Urban Heat Island	M.S.	2010
Lindsay Tardif	Quantifying the Spatial and Temporal Variability of the Surface Energy Budget Across Oklahoma During a Period of Historic Precipitation	M.S.	2011
Aaron Gleason	Evolution of National Weather Service Forecast Products Using In Situ Observations in Oklahoma	M.S.	2011
Kodi L. Nemunaitis*	Observational and Model Analyses of the Oklahoma City Urban Heat Island	Ph.D.*	2014
Jing Liu	Quantitative Analysis of Evapotranspiration Climatology and Variation at Oklahoma Mesonet Sites during Drought Period	M.S.	2015
Paul Flanagan	The Dryline, Convective Initiation, and Rapid Evolution of Drought in Oklahoma During 2011	M.S.	2015
Hayden Mahan	In-Situ Measurements and Remotely Sensed Estimations of Surface Fluxes over the Southern Great Plains of the United States	M.S.	2016
Bradley G. Illston	Near Surface Atmospheric Impacts Resulting from a Developing Metropolitan Area	Ph.D.	2016
Ryann Wakefield	A 16-Year Observational Analysis of Land-Atmosphere Coupling in Oklahoma Using Mesonet and North American Regional Reanalysis Data	M.S.	2018
Paul Flanagan	The Changing Hydroclimate of the United States Great Plains: Meteorological and Climatological Impacts on Water Resources	Ph.D.	2018
Noah Brauer	Quantifying Precipitation Efficiency and Drivers of Excessive Precipitation in Post-Landfall Hurricane Harvey	M.S.	2019

Sarah Wugofski	Synoptic and Mesoscale Analysis of the 2015 Southern Great Plains Flash Pluvial	M.S.	2019
Stuart Edris	Evaluation of Flash Drought Criteria Components	M.S.	2020
Jordan Christian	Flash Droughts: A Local to Global Analysis of Rapid Drought Intensification and their Associated Impacts	Ph.D.	2020
Taylor Grace		M.S.	Current Student – Expected 2021
Bryony Puxley**		M.S.	Current Student – Expected 2021
Ryann Wakefield		Ph.D.	Current Student – Expected 2021
Noah Brauer***		Ph.D.	Current Student – Expected 2022
Devon Woods***		Ph.D.	Current Student – Expected 2022
Alyssa Woodward		M.S.	Current Student – Expected 2022
Stuart Edris		Ph.D.	Current Student – Expected 2023
Daniel Mesheske		Ph.D.	Current Student – Expected 2023

* Co-Advised with Dr. Petra Klein

** Co-Advised with Dr. Elinor Martin

*** Co-Advised with Dr. Pierre Kirstetter

Graduate Student Committees Served On

<u>Student</u>	<u>Degree</u>	<u>Graduation Year</u>	<u>Department</u>
Brad Illston	M.S.	2002	Meteorology
John Ensworth	Ph.D.	Withdrew in 2004	Meteorology
Michael James	M.S.	2006	Meteorology
Carlos Yanez-Uribe	M.S.	2008	Geography
Mang Lueck Cheuk	M.S.	2009	Geography
Shanon Connelly	M.S.	2010	Environmental Science, Policy, and Geography, University of South Florida
Diana Vanegas	M.S.	2011	Microbiology and Plant Biology
Jill Hardy	M.S.	2014	Meteorology
Reed Timmer	Ph.D.	2015	Meteorology
Amanda Schroeder	Ph.D.	2015	Department of Geography,

			University of Georgia
Zac Flamig	Ph.D.	2016	Meteorology
David Gagne	Ph.D.	2016	Meteorology
Cui Jin	Ph.D.	2016	Microbiology and Plant Biology
Race Clark	Ph.D.	2016	Meteorology
Rajen Bajgain	Ph.D.	2017	Microbiology and Plant Biology
Yuting Zhao	Ph.D.	2017	Microbiology and Plant Biology
Yao Zhang	Ph.D.	2017	Microbiology and Plant Biology
Jessica Erlingis	Ph.D.	2017	Meteorology
Bill Dower	Ph.D.	2017	Electrical Engineering
Manabendra Saharia	Ph.D.	2017	Microbiology and Plant Biology
Uvirkaa Akumagaa	Ph.D.	2018	Geography
Jay McDaniel	Ph.D.	2018	Electrical Engineering
Greg Blumberg	Ph.D.	2018	Meteorology
David Harrison	M.S.	2018	Meteorology
Russell Caldwell	Ph.D.	2019	Microbiology and Plant Biology
Greg Jennrich	M.S.	2019	Meteorology
Zhenhua Zou	Ph.D.	2019	Microbiology and Plant Biology
Jie Wang	Ph.D.	2019	Microbiology and Plant Biology
Ryan Lagerquist	Ph.D.	2020	Meteorology
Tri Pham	M.S.	2020	Environmental Science
Walter Chandler	M.S.	2020	Environmental Science
Xiaocui Wu	Ph.D.	2020	Microbiology and Plant Biology
Ryan Bunker	M.S.	2020	Meteorology
Brian Sun	Ph.D.	Current Student	Electrical Engineering
Qing Chang	Ph.D.	Current Student	Microbiology and Plant Biology
Qingyu Wang	Ph.D.	Current Student	Meteorology
Anna Wanless	M.S.	Current Student	Meteorology
Jorge Celis	Ph.D.	Current Student	Microbiology and Plant Biology

Undergraduate Senior Capstone Mentorship

- Collin Caldwell, Steve Bodnar, Michael James, Grant Stewart, and Shane Young, 2003
- Chad Ringley, Michael Grogan, Beth Minter, Justin Monroe, Kelly Sugden, and Dianne Laird, 2004
- Eric Hunt and Cindy Morgan, 2004-2005
- Josh Benefield, Michael Morris, Scott Stevens, Chad Ganeau, Melissa Moon, and Amanda Schroeder, 2005-2006
- Megan Ferris, 2006-2007
- Kenneth Jackson, Ben Walnick, Jonathan Whitehead, Eric Hollingshead, Kyle Davis, Tommy Winning, Trevor Grout, Lauren Bodenhamer, 2008-2009.
- Landon Harrison, Mason Rowell, and Chase Thomason, 2009-2010.
- Lamont Bain, Brittany Benson, 2010-2011.
- Kyle Pennington, James Glenn, Kyle Thiem, Jessica Voveris, Emma Kuster, Wava Denito,

Daniela Spade, 2012-2013

- Jordan Ferguson, Lauren Wigley, Jordan Christian, Katy Christian, 2013-2014
- Taylor McCorckle, Skylar Williams, Tim Pfeiffer, 2014-2015
- Brett Borchardt, Andrew Moore, Kevin Biehl, Rachel Gaal, David King, 2015-2016
- Mathew Bray, Kristine Chen, Stephen Foskey, 2019-2020
- Virgil Enos, Mark McCoy, Jack Miller, 2020-2021

Undergraduate Research Mentorship

Student	Support/Activity	Period
Andrew Philpott	OWC REU Program	Summer 2002
Justin Monroe	OCS Undergraduate Research Assistant	2003-2005
Dutin Rapp	OWC REU Program	Summer 2002
Collin Caldwell, Steve Bodnar	SMEX03 Field Sampling; Grant Funded via USDA	Summer 2003
Michael James, Grant Stewart, Michael Morris, Kristen Poole	Joint Urban 2003 Field Campagian; Grant Funded via DoD	Summer 2003
Jim Southard, Eric Hunt	OCS Undergraduate Summer Internship Program	Summer 2004
Scott Stevens, Amanda Schroeder	OCS Undergraduate Summer Internship Program	Summer 2005
Sophie Denis, Adrien Dalhun	Undergraduate Research Exchange Program with the Université de Limoges	Summer 2005
Heather Campbell, Tommy Winning	OCS Undergraduate Summer Internship Program	Summer 2006
Emilie Delanoue, François Bélingard	Undergraduate Research Exchange Program with the Université de Limoges	Summer 2006
Tommy Winning	OCS Undergraduate Research Assistant	2006-2009
John Barr, Aaron Gleason	OCS Undergraduate Summer Internship Program	Summer 2007
Nicolas Ducleroir, Jonathan Dautrement	Undergraduate Research Exchange Program with the Université de Limoges	Summer 2007
Maxime Renoux, Arnaud Rival	Undergraduate Research Exchange Program with the Université de Limoges	Summer 2008
Pierre-Antione Dutheil	Undergraduate Research Exchange Program with the Université de Limoges	Summer 2009
Megan Conway	KAEFS Undergraduate Research Assistant	2014-2015
Nicholas Balderas	KAEFS Undergraduate Research Assistant	2015-2018
Morgan Clark	NWC REU Program	Summer 2018
Raquel Dominguez	NWC REU Program	Summer 2019
Emily West	Undergraduate Research Assistant	2020 - Present
Mac Syrett	Undergraduate Research Assistant	2021 - Present

Undergraduate Student Awards

- **Eric Hunt and Cindy Morgan** (Jeffrey Basara, Student Mentor) - David Shellberg Memorial Scholarship, University of Oklahoma. Served as the mentor and co-author of the research project entitled *Significant Inversions and Rapid In-Situ Cooling at a Well-Sited Oklahoma Mesonet Station* and published in the Journal of Applied Meteorology. (April 2005).
- **Joanna N. Maybourn, Casey M. Peirano, Jennifer E. Tate, Parker J. Brown, Jake D. Hoey, Brandon R. Smith** (Jeffrey Basara, Student Mentor) - McCasland Award for Outstanding Undergraduate Research, School of Meteorology. Served as the mentor and co-author of the research project entitled *Drought and associated impacts in the Great Plains of the United States - A review* and published in the International Journal of Geosciences. (April 2014).
- **Taylor McCorckle, Skylar Williams, Tim Pfeiffer** (Jeffrey Basara, Student Mentor) McCasland Award for Outstanding Undergraduate Research, School of Meteorology. Served as the mentor and co-author of the research project entitled *Atmospheric Contributors to Heavy Rainfall Events in the Arkansas-Red River Basin* and published in Advances in Meteorology. (April 2016).
- **Ben Toms** (Jeffrey Basara, Student Mentor) - McCasland Award for Outstanding Undergraduate Research, School of Meteorology. Served as the mentor and co-author of the research project entitled *Usage of Existing Meteorological Data Networks for Parameterized Road Ice Formation Modeling* published in the Journal of Applied Meteorology and Climatology. (April 2017).

Graduate Student Awards

- **Paul Flanagan** (Jeffrey Basara Ph.D. Student Advisor) - David Shellberg Memorial Scholarship, University of Oklahoma. (April 2016).
- **Jordan Christian** (Jeffrey Basara Ph.D. Student Advisor) - 1st Place Oral Presentation, The American Meteorological Society 32nd Conference on Hydrology. The Evaporative Stress Index as an Indicator for Flash Drought Across the United States Using Reanalysis Datasets. (January 2018)
- **Ryann Wakefield** (Jeffrey Basara M.S. Student Advisor) - 2nd Place Poster Presentation, 2018 Student Research and Creativity Day - Engineering/Science A Category. (February 2018).
- **Ryann Wakefield** (Jeffrey Basara M.S. Student Advisor) – Outstanding Teaching Assistant Award, School of Meteorology. (2018).
- **Paul Flanagan** (Jeffrey Basara Ph.D. Student Advisor) - Outstanding Performance as a Graduate Student, School of Meteorology. (2018).
- **Ryann Wakefield** (Jeffrey Basara Ph.D. Student Advisor) - David Shellberg Memorial Scholarship, University of Oklahoma. (2019).
- **Ryann Wakefield** (Jeffrey Basara Ph.D. Student Advisor) - Provost's Certificate of Distinction in Teaching, University of Oklahoma. (2019).
- **Ryann Wakefield** (Jeffrey Basara Ph.D. Student Advisor) - Future Investigators in NASA Earth and Space Science and Technology (FINESST) Fellowship Recipient. (2019).
- **Noah Brauer** (Jeffrey Basara Ph.D. Student Advisor) - James Bruce Morehead Award, University of Oklahoma. (2019).

- **Jordan Christian** (Jeffrey Basara Ph.D. Student Advisor) - David Shellberg Memorial Scholarship, Graduate College, University of Oklahoma (2020).
- **Jordan Christian** (Jeffrey Basara Ph.D. Student Advisor) - Bullard Dissertation Completion Fellowship, University of Oklahoma (2020).
- **Jordan Christian** (Jeffrey Basara Ph.D. Student Advisor) - Provost's Graduate Teaching Assistant Award, University of Oklahoma (2020).
- **Ryann Wakefield** (Jeffrey Basara Ph.D. Student Advisor) – Yoshi Sasaki Award for best M.S. Publication, School of Meteorology, University of Oklahoma (2020).
- **Noah Brauer** (Jeffrey Basara Ph.D. Student Co-Advisor) - Outstanding Teaching Assistant Award, School of Meteorology, University of Oklahoma (2020).
- **Jordan Christian** (Jeffrey Basara Ph.D. Student Advisor) - Outstanding Performance as a Graduate Student, School of Meteorology, University of Oklahoma (2020).
- **Bryony Puxley** (Jeffrey Basara M.S. Student Co-Advisor) – Douglas K. Lilly Scholarship in Climate Science, School of Meteorology, University of Oklahoma (2020).
- **Noah Brauer** (Jeffrey Basara Ph.D. Student Co-Advisor) - Student Journal Paper Award, ARRC, University of Oklahoma (2021).
- **Noah Brauer** (Jeffrey Basara Ph.D. Student Co-Advisor) - Tommy C. Craighead Award for Best Paper in Radar Meteorology, School of Meteorology, University of Oklahoma (2021).
- **Jordan Christian** (Jeffrey Basara Ph.D. Student Advisor) – Edwin Adlerman Award for Graduate Student Research, School of Meteorology, University of Oklahoma (2021).

2. Research/Creative Activity Data

a. Statement of Research/Creative Activities

My research interests have focused on the integration of increased understanding across weather, climate, water, and ecosystems, with specific research activities that include the physical processes which impact the development of the planetary boundary layer, surface-atmosphere exchange, urban meteorology, severe weather, in situ instrumentation, precipitation extremes (droughts, flash droughts, flash floods, and pluvial periods) the development, validation, and improvement of land surface models used in numerical weather prediction, and the validation of remotely sensed soil moisture and skin temperature from satellite mounted instruments. Because of the nature of past research positions affiliated with the Oklahoma Climatological Survey, the primary focus of my research has been on the Great Plains of North America. However, in more recent years and in concert with leading the CHEWe Research Group, the work has taken on a broader perspective: local to global with specific focus on how surface-atmosphere coupling drives hydrometeorological and hydroclimatological extremes. Many of these research projects require collaboration with a range of colleagues and scientists and true interdisciplinary partnerships.

Summary of Research/Creative Activities Accomplishments

- I served as the Director of Research for the Oklahoma Climatological Survey (OCS) for 17 years. In this capacity, I was tasked with developing and maintaining the research activities within OCS utilizing State of Oklahoma budgeted resources augmented with external funding. During this period, I led numerous staff and students in expanding the fundamental knowledge of weather and climate processes across the Great Plains of the United States and worked to communicate critical results to stakeholders across a variety of sectors spanning agriculture, to water resources, to emergency management. Key components of the work also included (1) utilizing and expanding the capacities of the Oklahoma Mesonet, a statewide network of environmental observing sites that collects critical weather and climate observations and (2) associated applied research that addressed the needs of local stakeholders while improving our fundamental knowledge of high-impact environmental processes in the region (drought, floods, severe weather, etc.).
- As an early career scientist, I served as a PI of the Joint Urban 2003 field experiment in Oklahoma City, led the logistics and operations center during the 35-day campaign, and served as the primary liaison between the project and the City of Oklahoma City prior to, during, and following the field campaign.
- I served as the lead scientist for the Oklahoma City Micronet project (OKCNET). The OKCNET project was a 5-year effort to deploy a network of 40 atmospheric monitoring stations deployed across Oklahoma City as a collaborative effort between the Oklahoma Mesonet and the City of Oklahoma City. The network was designed to provide critical weather information for the daily operations of the City of Oklahoma City, to spur new scientific research focused on urban meteorology, and to serve as a resource for the citizens of Oklahoma.

- As regular faculty at the University of Oklahoma (since 2012), I have maintained a research-active presence on the campus and lead the Climate, Hydrology, Ecology, Weather (CHEWe) Research Group (<http://hydrometeorology.oucreate.com>). With funding provided by external agencies including, but not limited to, the NSF, USDA, NASA, and NOAA, this interdisciplinary group of colleagues and students examines critical aspects of hydrometeorological and hydroclimatological extremes, their impact on environmental processes, and associated surface-atmosphere coupling and feedbacks from local to global scales. The work also includes the design and deployment of in situ sensing systems (surface flux towers, unmanned aerial systems, etc.) across various landscapes including at the Kessler Atmospheric and Ecological Field Station (KAEFS), at the USDA Grazinglands Research Laboratory (USDA-GRL) in El Reno Oklahoma, and the Marena, Oklahoma In Situ Sensor Testbed (MOISST).
- I served as the Director of the Kessler Atmospheric and Ecological Field Station (2014-2020) and worked closely with scientists across multiple disciplines both within and beyond the University of Oklahoma to increase the overall understanding of the complex interactions within the environmental column and the promotion of interdisciplinary research across the environmental sciences.
- Overall, I have served as PI, Co-PI, or Senior Personnel on external funding awards exceeding \$40M (over \$30M since joining the regular faculty within a RRT appointment in 2012). In addition, I have served as the lead or co-author on over 80 peer-reviewed articles and currently have the following H-Index values: Google Scholar = 32, Publons = 27, and Research Gate = 31.
- I firmly believe that a critical aspect of research involves communication across all scales, and in particular, to relevant stakeholders and the general public. As such, due to funding supported by the USDA, a key aspect of my recent research has been focused on the impacts of hydrometeorological and hydroclimatological processes/extremes on agriculture in the Great Plains. While this has led to several key scientific publications, a critical component of the work has been interacting with a host of interdisciplinary researchers from multiple institutions (e.g., USDA-GRL, Oklahoma State University, Kansas State University, Tarleton State University, University of Nebraska, the Noble Foundation, etc.) and through direct engagement of with agriculture extension across the Southern Great Plains via invited presentations at regional workshops with agricultural producers. As an example and as part of the USDA Sponsored Grazing Cap project, my efforts on climate variability and agriculture in the Great Plains were featured as part of video series:
 - <https://www.youtube.com/watch?v=Q9tri6xa7rI>
- In recent years, I have expanded our CHEWe research from local to regional and global at varying temporal scales to address critical hydrometeorological and hydroclimatological processes/extremes (i.e., too much and too little precipitation). In particular, I have led specific efforts to advance our understanding of rapid onset of drought (otherwise referred to as flash drought) and excessive precipitation at the subseasonal to seasonal scales (S2S).

The fruit of these efforts has resulted in critical results published across the peer-reviewed literature and S2S was included as a key focus area (FA) of the recently awarded \$20M NSF Track-1 project (I serve as the PI of the S2S FA).

b. Publications

As of April 2021, my h-index ranges from **29** to **34** via peer-reviewed or edited publications throughout the environmental sciences. The overall metrics of scholarly impact are dependant on the information source, including those at the links below:

Publons (**29**): <https://publons.com/researcher/2894812/jeffrey-b-basara/>

Google Scholar (**34**): <https://scholar.google.com/citations?hl=en&user=dGIV5AwAAAAJ>

ResearchGate (**33**): https://www.researchgate.net/profile/Jeffrey_Basara

Publications Accepted or In Press:

1. Brauer, N. S., **J. B. Basara**, R. A. Wakefield, P. Kirstetter, C. R. Homeyer, J. M. Shepherd, J. Santanello, 2021: The Inland Maintenance and Re-intensification of Tropical Storm Bill (2015) Part 2: Precipitation Microphysics. *Journal of Hydrometeorology*. In press.
2. Chen, W, R. T. Pinker, Y. Ma, G. Hulley, E. Borbas, T. Islam, K.-A. Cawse-Nicholson, S. Hook, C. Hain, **J. Basara**, 2021: Land Surface Temperature from GOES-East and GOES-West, *J. of Atmos. and Oceanic Tech.*, In press.

Publications In Final Form (Reverse Chronological Order):

1. Shepherd, J.M., A. Thomas, J. Santanello, P. Lawston, **J. Basara**, 2021: Evidence of Warm Core Structure Maintenance Over Land: A Case Study Analysis of Cyclone Kelvin. *Environmental Research Communications*, **3** 045004, <https://doi.org/10.1088/2515-7620/abf39a>
2. Celis, J., H. Moreno, **J. Basara**, R. McPherson, M. Cosh, T. Ochsner, X. Xiao, 2021, From Standard Weather Stations to Virtual Micro-meteorological Towers: Real-time Modeling Tool for Surface Energy Fluxes, Evapotranspiration, Soil Temperature and Soil Moisture Estimations. *Remotes Sensing*, **13**, 1271, <https://doi.org/10.3390/rs13071271>.
3. Homeyer, C. R., A. O. Fierro, B. A. Schenkel, A. C. Didlake, G. M. McFarquar, J. Hu, A. Ryzhkov, **J. B. Basara**, A. Murphy, J. Zawislak, 2021: Polarimetric signatures in landfalling tropical cyclones. *Monthly Weather Review*. **149**, 131-154. <https://doi.org/10.1175/MWR-D-20-0111.1>
4. Bajgain, R. X. Xiao, P. Wagle, Y. Zhou, J. S. Kimball, C. Brust, **J. B Basara**, P. Gowda, P. Starks, J. P. S. Neel, 2021: Comparing Evapotranspiration Products of Different Temporal and Spatial Scales in Native and Managed Prairie Pastures. *Remote Sensing*, **13**, 82. <https://doi.org/10.1016/j.agrformet.2020.108137>
5. Christian, J., **Basara, J. B.**, Hunt, E., Otkin, J., and X. Xiao, 2020: Flash drought development and cascading impacts associated with the 2010 Russian Heatwave. *Environmental Research Letters*, **15**, 9. <https://doi.org/10.1088/1748-9326/ab9faf>

6. Bajgain, R. X. Xiao, **J. B. Basara**, R. Doughty, X. Wu, P. Wagle, Y. Zhou, P. Gowda, J. Steiner, 2020: Differential responses of native and managed prairie pastures to environmental variability and management practices. *Agricultural and Forest Meteorology*, **294**, 108137, <https://doi.org/10.1016/j.agrformet.2020.108137>
7. Hunt, E. D., J. I. Christian, **J. B. Basara**, L. Lowman, J. A. Otkin, J. Bell, K. Jarecke, R. A. Wakefield, R. M. Randall, 2020: The Flash Drought of 1936. *Journal of Applied and Service Climatology*, **4**. doi.org/10.46275/JOASC.2020.11.001.
8. Brauer, N., **Basara, J. B.**, Homeyer, C. R., McFarquhar, G., Kirstetter, P.-E. (2020). Quantifying Precipitation Efficiency and Drivers of Excessive Precipitation in Post-Landfall Hurricane Harvey. *Journal of Hydrometeorology*, **21**, 433–452.
9. Jennrich, G.C., J.C. Furtado, **J.B. Basara**, and E.R. Martin, (2020). Synoptic Characteristics of 14-Day Extreme Precipitation Events Across the United States. *J. Climate*, **33** (15): 6423–6440, <https://doi.org/10.1175/JCLI-D-19-0563.1>
10. Niraula, R., Saleh, A., Bhattarai, N., Bajgain, R., Kannan, N., Osei, E., Gowda, P., Neel, J., Xiao, X., **Basara, J. B.** (2020). Understanding the effects of pasture type and stocking rate on the hydrology of the Southern Great Plains. *Science of The Total Environment*, **708**, 134873. <https://doi.org/10.1016/j.scitotenv.2019.134873>.
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Publications In Preparation:

1. Wakefield, R. A., **J. B. Basara**, N. S. Brauer, J. Furtado, J. M. Shepherd, J. Santanello, 2021: The Inland Maintenance and Re-intensification of Tropical Storm Bill (2015) Part 1: Contributions of the Brown Ocean Effect. *Journal of Hydrometeorology*. In review.
2. Bajgain, R. X. Xiao, **J. B. Basara**, R. Doughty, X. Wu, 2021: Divergent responses of soil greenhouse gas effluxes to nitrogen addition and rainfall events measured using high frequency automated chambers. *Journal of Environmental Quality*. In review.
3. Krueger, E., T. E. Ochsner, M. R. Levi, **J. B. Basara**, 2021: Grassland Productivity Estimates Informed by soil moisture measurements: statistical and mechanistic approaches. *Agronomy Journal*. In review.
4. Paudel, S. N. Gomez-Casanovas, E. H. Boughton, S. D. Chamberlain, P. Wagle, B. L. Peterson, R. Bajgain, P. J. Starks, **J. B. Basara**, C. J. Bernacchi, E. H. DeLucia, L. E. Goodman, P. H. Gowda, R. Reuter, J. P. Sparks, H. M. Swain, X. Xiao, and J. L. Steiner, 2021: Does Intensive Management of Perennial Pasture Improve Multiple Ecosystem Services? *Global Change Biology*, In review.
5. Wang, J., X. Xiao, **J. Basara**, X. Wu, R. Bajgain, Y. Qin, R. B. Doughty, B. Moore, 2021: Impacts of juniper woody plant encroachment into grasslands on local climate. *Agricultural and Forest Meteorology*, In review.
6. Wakefield, R. A., D. Turner, **J. B. Basara**, 2021: Evaluation of a land-atmosphere coupling metric computed from a ground-based infrared interferometer. *Journal of Hydrometeorology*. In review.
7. Otkin, J., Y. Zhong, E. Hunt, J. Christian, **J. Basara**, H. Nguyen, M. Wheeler, T. Ford, A. Hoell, M. Svoboda, M. Anderson, 2021: Toward the Development of a Flash Drought Intensity Index. *Environmental Research Letters*, In review.
8. Hunt, E., F. Femia, C. Werrell, J. Christian, J. Otkin, **J. Basara**, M. Anderson, T. White, R. Randall, C. Hain, K. McGaughey, 2021: Agricultural and Food Security Impacts from the 2010 Russia flash drought. *Weather and Climate Extremes*, In review.

- Christian, J., **Basara, J. B.**, Hunt, E., Otkin, J., Furtado, J., Xiao, X. and R. Randall, 2021: Global Distribution, Trends, and Drivers of Flash Drought Occurrence. *Nature Comms.*, In Review.

c. External and Internal Funding

In Reverse Chronological Order

- RII Track-1: Socially Sustainable Solutions for Water, Carbon, and Infrastructure Resilience in Oklahoma*, NSF EPSCOR, Project Co-PI; Project Total = \$20M; PI, S2S Focus Area - Total = \$2.35M. 2020-2025, 3 months of support.
- OU-ARS Cooperative Agreement*. USDA ARS, PI, Total funds awarded: \$161,765, 2020-2023, 0.5 months of support.
- Enhancing National Security Decision-making Process for Regions Vulnerable to the Impacts of Flash Droughts Through Greater Use of NASA Resources*, Project Co-PI; OU PI, NASA, Project total = \$400,000, 2019-2021, 1 month of support.
- OU-ARS Cooperative Agreement*. USDA ARS, PI, Total funds awarded: \$156,000, 2019-2020, 0 months of support.
- RII Track-2 FEC: Marshalling Diverse Big Data Streams to Understand Complexity of Tick-borne Diseases in the Southern Great Plains*, NSF, KU is the Lead Institution (~\$4M Total), OU Total = \$883,8468, Co-PI, 2019-2023, PI- X. Xiao, 1.75 months of support.
- Evaluating the Contributions of Local and Non-Local Land-Atmosphere Coupling to Flash Drought Evolution and Prediction*, PI, NASA, \$135,000, 0 months of support.
- OU-ARS Cooperative Agreement*. USDA ARS, PI, \$75,000, 2018-2019, 0 months of support.
- Modernization of Mesonet Long Term Averages*. Earth Networks / NOAA, Co-PI, Total funds awarded: \$200,000, 2018-2019. PI – B. Moore, 0 months of support.
- Space-borne Antennas and Circuits for Condensed Radars and STEM*. NASA, Co-PI, Total funds awarded: \$889,761, 2018-2020, PI – H. Sigmarsson, 0.75 months of support.
- PREEVENTS Track 2: Collaborative Research: Developing a Framework for Seamless Prediction of Sub-Seasonal to Seasonal Extreme Precipitation Events in the United States*. NSF, Senior Personnel, Total funds awarded: \$1,842,562, 2017-2022, PI – E. Martin, 3 months of support.

11. *Multi-scale analysis of microbe-climate interactions in greenhouse gas emissions from grasslands and croplands with livestock and manure use.* USDA, Co-PI, Total funds awarded: \$3M, 2016-2021, PI – X. Xiao, 3 months of support.
12. *Central Oklahoma Rural Partnership for Science (CORPS).* State of Oklahoma, Department of Education, Co-PI, Total funds awarded: \$2,072,087, 2016-2020. PI – L. Atkinson, 1 month of support.
13. *Evaluating the Impacts of Sensor Return Interval on Remote Estimates of Evapotranspiration at Field Scales.* USDA, PI, Total funds awarded: \$36,890, 2013-2015, 0 months of support.
14. *Facilitating adaptive management under conditions of rapid drought onset using the GOES-based evaporative stress index.* NOAA, PI, Total funds awarded: \$149,350, 2013-2015, 3 months of support.
15. *Resilience and vulnerability of beef cattle production in the Southern Great Plains under changing climate, land use and markets.* USDA, Total funds awarded: ~\$10M, OSU/KSU were lead agencies, Co-PI, 2013-2018, 5 months of support.
16. *Black Ice Detection and Road Closure and Warning Control System for Oklahoma.* Oklahoma Department of Transportation, Co-PI, Total funds awarded: \$230,544, 2012-2014, PI - Y. Hong, 0 months of support.

NOTE: *Prior to 2012, position did not require summer salary due to 12-month appointment.*

17. *A Mobile Intelligent Transportation System (ITS) Platform.* Oklahoma State University, Co-PI, Total funds awarded: \$341,352, Y. Hong, 0 months of support.
18. *Drought Monitoring: A System for Tracking Plant Available Soil Moisture Based on the Oklahoma Mesonet.* Oklahoma Water Resource Research Institute, Co-PI, Total funds awarded: \$50,000, T. Ochnser (OSU), 0 months of support.
19. *Evaluation of Downscaled High-Resolution WRF Simulations For Use in Operational Forecasting.* Cooperative Program for Operational Meteorology, Education and Training (COMET) Outreach Program, PI, Total funds awarded: \$76,849, 2009-2010, 0 months of support.
20. *Quantifying Evaporation and Effective Precipitation Across Varying Seasonal and Within-Season Climatic Signals Across Oklahoma.* Oklahoma Water Resources Board, PI, Total funds awarded: \$118,902, 2009-2012, 0 months of support.
21. *Support of CLASIC field activities,* USDA, PI, \$40,000, 2007, 0 months of support.

22. As the lead scientist for the project, awarded \$333,715 from the Office of the Vice President for Research at the University of Oklahoma to implement the Oklahoma City Micronet, PI, 2006, 0 months of support.
23. Develop an implementation plan for meteorological monitoring and air quality stations within the SHENAIR project. James Madison University Awarded, PI, \$24,862, 2006, 0 months of support, PI – B. Nairn, 0 months of support.
24. *Remediation and Restoration Monitoring at the Tar Creek Superfund Site*. USGS, Co-PI, Co-PI Total funds award = \$76,273, 2005.
25. *Development of an urban micronet in Oklahoma City*. Oklahoma Regents for Higher Education, PI, \$250,000, 2005, 0 months of support.
26. *Quantifying the Structure of the Planetary Boundary Layer In and Around Oklahoma City*. NASA New Investigator Award, PI, Total funds awarded: \$274,433, 2004-2008, 0 months of support.
27. *Remediation and Restoration Monitoring at the Tar Creek Superfund Site*. USGS, Co-PI, The total award from the USGS of \$888,570 included \$154,718 for OCS research activities, 2004, PI – B. Nairn, 0 months of support.
28. *Evaluating NARR and LDAS Data Using the Oklahoma Mesonet*. NASA, PI, \$25,000, 2004, 0 months of support.
29. *Research Activities at the University of Oklahoma in Support of the Joint Urban 2003 Field Experiment (FY03-FY04)*. The Department of Defense (DoD) Defense Threat Reduction Agency (DTRA) through the H. E. Cramer Company, PI, Total funds awarded: \$252,999, 2003-2007, 0 months of support.
30. The Department of Transportation (VOLPE) awarded a contract in the amount of \$9,731. PI, 2003, 0 months of support.
31. ITT Industries awarded a contract in the amount of \$2,949. PI, 2003, 0 months of support.
32. *Support the SMEX03 Field Experiment*, USDA, PI, \$11,000, 2003, 0 months of support.
33. *Scientific Evaluation of Weather Modification in Oklahoma*. Oklahoma Water Resources Board, PI, Total funds awarded: \$61,748, 2003-2005, 0 months of support.
34. Awarded a NASA EPSCoR a Research Initiation Grant in the amount of \$19,047. PI, 2002, 0 months of support.
35. *Land-Atmosphere Memory Quantified Using Observations from the Oklahoma Mesonet and the NOAA Land Surface Model*. NOAA, PI, Total funds awarded: \$336,592, 2002-2006, 0 months of support.

36. *Research Activities at the University of Oklahoma in Support of the 2003 Oklahoma City Field Experiment (FY02)*. The Department of Defense (DoD) Defense Threat Reduction Agency (DTRA) through the H. E. Cramer Company, PI, Total funds awarded: \$53,980, 2002-2003, 0 months of support.

3. Service Data

a. Statement of Service

During the formative years of my development, I was fortunate to be exposed to coaches and mentors that helped me to develop a worldview whereby leadership and responsibility were not simply important concepts, but were expected. Through those encounters I have valued the position of the servant-leader who was repeatedly modeled to me by great men and women throughout my life. I watched and admired how individuals grounded in honesty, integrity, and a dedicated work ethic could lead many and accomplish more than the individuals, or parts, alone. To me, service and leadership are entirely synonymous and intricately connected. In that vein, I have intentionally chosen a path by which to continuously gain experience and wisdom in effective leadership to serve others, accomplish more, and to pass on what I have learned.

During my time at the University of Oklahoma I have never shied away from taking on leadership responsibilities within my professional career. In fact, from the onset of my first professional appointment in 2001 until present, and through multiple academic and administrative positions, I have continuously built my capacity for leadership and engagement to strengthen my service to all levels of the University of Oklahoma and enhance our academic, scholarship, and research missions.

Summary of Service Accomplishments at OU

- I served as the Director of Research for the Oklahoma Climatological Survey (OCS) for 17 years. In this capacity, I was tasked with developing and maintaining the research activities within OCS utilizing State of Oklahoma budgeted resources augmented with external funding. During this period, I led numerous staff and students in expanding the fundamental knowledge of weather and climate processes across the Great Plains of the United States and worked to communicate critical results to stakeholders across a variety of sectors spanning agriculture, to water resources, to emergency management. A key component of the work also included utilizing and expanding the capacities of the Oklahoma Mesonet, a statewide network of environmental observing sites that collects critical weather and climate observations.
- Since 2002 I have been involved in the academic enterprise of the University of Oklahoma, first as an adjunct faculty member, and since 2012, as a member of the regular faculty with appointments in the School of Meteorology and the School of Civil Engineering and Environmental Sciences.
- After serving on the executive committee for nearly a decade, in 2014, I was named the Director of the Kessler Atmospheric and Ecological Field Station (KAEFS) at the University of Oklahoma. During the period of that appointment through 2020, I was actively engaged with faculty, staff, and students across the university to sustain and grow the footprint of KAEFS within the university system. As a result, (interdisciplinary) research activities at the site have more than doubled, undergrad and graduate student educational activities (courses, mentored research, etc.) have more than tripled, and

facilities have been modernized utilizing multi-level partnerships including those between the university and the private sector (e.g., delivering high-bandwidth connectivity to KAEFS through a partnership with Pioneer Telephone Cooperative).

- In more recent years, my administrative responsibilities within the University of Oklahoma have increased. From 2017-2018 I served as the Associate Director of the Graduate Program for the School of Meteorology (SoM) while in a RRT appointment. In this position, I led the graduate student enterprise of the SoM which included assessment of our graduate program and nearly 100 graduate students, recruiting and admissions of new graduate students into the SoM, oversight concerning inclusiveness and increased diversity, curriculum revisions at the graduate-level, teaching assistant assignments, course scheduling for the SoM, oversight of the academic performance review for the SoM which occurred in 2017-2018, and mentorship of junior faculty. While I transitioned to another administrative role in the HWS Program 2018 (see next bullet), I continue to serve the SoM in a number of capacities including as the Graduate Liaison, the chair of the Graduate Admissions Committee, and as a member of the Graduate Studies Committee.
- Beginning in 2016, I was tasked, along with a committee of colleagues, to draft a vision for a Hydrology and Water Security (HWS) initiative at the University of Oklahoma. In 2017, the draft vision was presented to and accepted by the administration of the University of Oklahoma which led to the launch of the HWS Program. In 2018, I was named the Executive Associate Director of the HWS Program and assumed a joint faculty position within the School of Civil Engineering and Environmental Science. In this capacity, I have joint responsibility for launching, maintaining, and expanding the HWS program which incorporates faculty from four departments and three colleges and students from diverse backgrounds through:
 - The development of curriculum for online M.S. tracks in both Hydrology and Water Security.
 - Mentoring two junior faculty hired into the HWS program.
 - Development of a HWS academic minor for undergraduate students.
 - Engaging the talented faculty across the University of Oklahoma to enhance existing and pursue new research activities.
 - Serving on the Graduate Admissions Committee for the HWS Program.

b. List of Service

Academic Service

2018-present Executive Associate Director, Hydrology and Water Security Program, University of Oklahoma

2018-present Committee Member, Graduate Admission Committee, Hydrology and Water Security Program

2018 Evaluation Committee for the Dean of the College of Atmospheric and Geographic Sciences

2017-present Chair, Graduate Admission Committee, School of Meteorology, University of Oklahoma

2017-present Graduate Liaison, School of Meteorology, University of Oklahoma

2017-present Committee Member, Provost's Advisory Committee for General Education Oversight., University of Oklahoma

2017-2018 Faculty Search Committee, Hydrology and Water Security Program, University of Oklahoma

2017-2018 Associate Director of the Graduate Program, School of Meteorology, University of Oklahoma

2016-present Graduate Admissions Committee, School, School of Meteorology, University of Oklahoma

2014-2020 Director, Kessler Atmospheric and Ecological Field Station

2013-present Member, Graduate Studies Committee, School of Meteorology, University of Oklahoma

2012 College of Atmospheric and Geographic Sciences Faculty Marshall, University of Oklahoma

2010-2011 Search Committee Member, Climate Ecologist faculty position, University of Oklahoma

2010 Strategic Weather Enterprise Committee member, University of Oklahoma

2010 College of Atmospheric and Geographic Sciences Faculty Marshall, University of Oklahoma

2009-2012 Advisory Board member for the Atmospheric Radar Research Center at the University of Oklahoma

2008 Strategic Planning Committee member for the School of Meteorology, University of Oklahoma

2006-2011 Co-convenor of the Boundary-Layer, Urban, and Land Atmosphere Interactions Specialty Seminar Series

- 2005-2006 Transition Committee member for the College of Atmospheric and Geographic Sciences
- 2004-2014 Executive Committee member for the Kessler Farm Field Laboratory (Kessler Atmospheric and Ecological Field Station), University of Oklahoma

Professional Service and Instruction

- 2020 Reviewer-Panelist, NASA Science Utilization of the Soil Moisture Active-Passive Mission solicitation.
- 2020 Co-Chair, Improvements to the Analysis and Prediction of Flash Drought and Long-Term Drought, American Meteorological Society Annual Meeting, Boston, MA.
- 2019 Co-Chair, Integrating Water and Energy Cycle Pathways to Better Understand Weather and Climate Extremes, American Meteorological Society Annual Meeting, Phoenix, AZ.
- 2018 Co-Chair, Variability of Regional Hydroclimate, American Meteorological Society Annual Meeting, Austin, TX.
- 2016 Reviewer-Panelist, NASA Science Utilization of the Soil Moisture Active-Passive Mission solicitation.
- 2015 US Chair, Sixth Indo-American Symposium, United States National Academy of Sciences, Kavli Frontiers of Science. Irvine, CA, August.
- 2015 Reviewer-Panelist, National Science Foundation East Asia Pacific Summer Institute Graduate Fellowship Program.
- 2014-present WxChallenge National Manager
- 2014 Reviewer-Panelist, National Science Foundation East Asia Pacific Summer Institute Graduate Fellowship Program.
- 2011-present COMET Advisory Panel member
- 2010-2016 American Meteorological Society Committee member on Artificial Intelligence Applications to Environmental Science.
- 2010 Lead Instructor for the Seventh COMET Symposium on Processes in the PBL in Boulder, CO in September.

- 2009-2011 Named to the National Science Foundation Facilities Assessment Editorial Board and Represented the In-Situ Surface and Surface-Atmosphere Exchange Area.
- 2009 Reviewer-Panelist, National Science Foundation East Asia Pacific Summer Institute Graduate Fellowship Program.
- 2008 Lead Instructor for the Sixth COMET Symposium on Processes in the PBL in Boulder, CO in September.
- 2008 Served as a member of the science team which conducted the BEAREX field experiment in Bushland, TX.
- 2007 Lead Instructor for the Fifth COMET Symposium on Processes in the PBL in Boulder, CO in August.
- 2006-2014 WxChallenge Advisory Board Member
- 2006 Lead Instructor for the Fourth COMET Symposium on Processes in the PBL in Boulder, CO in September.
- 2006 Reviewer-Panelist, National Science Foundation East Asia Pacific Summer Institute Graduate Fellowship Program.
- 2004 Lead Instructor for the Second and Third COMET Symposia on Processes in the PBL in Boulder, CO in June and August.
- 2004 NASA Earth System Science Scholars Network Organizing Committee member.
- 2003 Invited lecturer at First COMET Symposium on Processes in the PBL in Boulder, CO in September. Provided two lectures entitled “The Impact of Soil Moisture on Processes within the PBL” and “The Impact of Vegetation on Atmospheric Processes within the PBL”
- 2002 Invited participant at a planning workshop for the national ecological observing network (NEON) infrastructure. Served as a working group leader for automated observing networks.

Professional Stakeholder Engagement

As academics, we serve not only the students, colleagues, and staff of the University of Oklahoma, but also the citizens of the State of Oklahoma, adjacent areas, and the United States. As such, the direct engagement with stakeholders in the region and the transmission of critical scientific findings is a critical act of service to our communities. A summary of recent, **invited** presentations at stakeholder workshops and conferences are provided below:

- Oklahoma Irrigation Conference (2020), Altus OK
- 21st Annual Crop Production Clinic (2020), Goodwell, OK
- Ag Education – Mesonet (2019), Norman, OK
- CPOF 2019 Western Region Conference, Oakley, KS
- KRC Farm and Food Conference (2019), Wichita, KS
- USDA-ARS Range Research Field Day (2019), Woodward, OK
- KS Extension Roundup (2019), Hays, KS
- K-State Research and Extension, Garden City (2018), KS
- Adapting Grazing Management for Future Needs Conference (2018), Shawnee OK
- K-State Research and Extension (2018), Hays, KS
- Cover Your Acres Winter Conference (2018), Oberlin, KS