Curriculum vitae for David B. Parsons, Ph.D.

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EDUCATION

1982	Ph.D. in Atmospheric Science, University of Washington Advisor: *The late Peter V. Hobbs*
1977	B.S. in Meteorology, Rutgers University, Highest Honors after 3 years of study

RESEARCH INTERESTS

Arctic cyclones, tropopause polar vortices, and sea ice loss; ENSO and climate extremes; deep learning approaches including convolution neural networks; impact of Rossby waves on middle latitude and Arctic circulations; global numerical weather prediction, inherent predictability, and error growth; physical parameterizations; dynamics of mesoscale circulations in the tropics, middle latitudes, and polar regions; disaster risk reduction and the modernization of hydrometeorological services in the developing world

PROFESSIONAL RECORD

2018 - current	Presidential Associate's Presidential Professor and Director Emeritus, University of Oklahoma
2010 - 2018	Director, School of Meteorology, University of Oklahoma
2010 - 2018	The Mark and Kandi McCasland Chair of Meteorology, Professor School of Meteorology, University of Oklahoma
2008 - 2010	United Nations Diplomat, Chief of the World Weather Research Division including THORPEX, World Meteorological Organization
2002 - 2010	Senior Scientist, the Institute for Integrative and Multidisciplinary Earth Studies (TIIMES) and Earth Observing Laboratory (formerly Atmospheric Technology Division (ATD)), National Center for Atmospheric Research (NCAR)
2003 - 2008	Director, US THORPEX Interagency Project Office, NCAR
2004	Deputy Director (acting), Earth Observing Laboratory, NCAR
2001 - 2003	Manager, Research Technology Facility, NCAR/ATD
2001 – 2003	Director, IHOP_2002 (International H_2O) Project
1995 - 2001	Deputy Manager, Surface and Sounding Systems Facility (SSSF), NCAR/ATD

Summer 1998	Visiting Scientist, Joint Cooperative Institute for Mesoscale Meteorology, U. of Reading, Reading, England
1997	Visiting Scientist, Centre Nationale Researche Meteor., Meteo-France, Toulouse, France
1993 - 2001	Head Science Group, NCAR/ATD/SSSF
1984 - 2002	Scientist I/II/III, NCAR, appointments in this time-frame were within the Atmospheric Analysis and Prediction and Mesoscale and Microscale Meteorology Divisions, and ATD
1984	Visiting Scientist, NCAR/ATD
1983	National Research Council Post-Doctoral Fellow, Wave Propagation Laboratory, NOAA
1979—1982	Research Associate and also served as a Graduate Teaching Assistant, Cloud Physics Group, Atmospheric Sciences Department, University of Washington

SELECTED EXTERNAL SERVICE ACTIVITIES

2019	**Academic representative**, Round Table on the launch of the Open Consultative Platform for the World Meteorological Organization (WMO) at the 18th Congress of the WMO, Geneva, Switzerland
2017 - current	**Member, Organizing Committee for National Science Foundation (NSF)'s Workshops on Graduate Education in the Geoscience**. This Geoscience Initiative is designed to help NSF's meet their goal to improve graduate student education. Two workshops took place under the leadership of Dean Sharon Mosher, U Texas
2019	**Panelist and discussion leader**, Mind the Gap Workshop, NSF-supported workshop to foster deep and open workforce development conversations within the atmospheric sciences between industry and academia, including students.
2018 - current	**Fellow's Selection Committee** for the Atmospheric Science Section of the American Geophysical Union
2018 - current	**Co-chair and founding member of the Global Weather Enterprise Forum:** The Forum consists of thirteen members, 4 each from the private, public and academic sectors and a representative from the International Science Council. The Forum was organized by the World Bank's Global Facility For Disaster Reduction and Recovery (WB/GFDRR), the Association of Hydro-Meteorological Equipment Industry (HMEI) and the United Nation's World Meteorological Organization (WMO). The Forum's goals include advancing cooperation between these sectors and, in particular, saving lives, protecting property and increasing economic efficiency, including in the developing world.
2018 - current	**Founding academic member of the Coordination Group for the Global Weather Enterprise Forum**: A liaison group between the Forum and its sponsors

	(World Bank/GFDRR, HMEI, WMO). The invitation denotes the honor of being named the lead academic member of the Forum.
2016 - 2018	**Member, Subcommittee on Transforming the American Meteorological Society:** Part of the Society's Centennial Committee for the 100th Anniversary
2018	**Program Committee**, American Meteorological Society's Summer Community Meeting
2012 - 2018	**Ex-officio member of the CIMMS Executive Board**, University of Oklahoma
2011 - 2018	**Institutional Representative,** University Cooperation for Atmospheric Research, annual members meeting
2010 - 2018	**Member, Directors Council**, National Weather Center, University of Oklahoma
2017	**Invited participant**, Workshop on The Global Weather Enterprise, hosted by the World Bank, Washington DC
2017	**Invited participant**, Workshop on The Global Weather Enterprise, hosted by the World Bank, Washington DC
2016	**Lead Organizer**, 1st PECAN Scientific Workshop, Norman, OK
2012 - 2013	**Member, Executive Committee** for the proposed Lake Victoria Project in East Africa
2011- 2015	**Founding Associate Editor**, Geoscientific Instrumentation, Methods and Data Systems (GI)
2011 - 2015	**Co-Chair**, Scientific Steering Committee for the Plains Elevated Convection at Night (PECAN)
2010 - 2014	**Member**, Joint Scientific Committee, World Weather Research Program
2010 - 2014	**Member**, Scientific Steering Committee for the 1st World Open Science Conference on Weather; co-convener of the session on continental convection [>1000 person meeting], meeting sponsored by the International Science Council (ICSU) and the World Meteorological Organization (WMO)
2006 - 2008	**Member**, Scientific Steering Committee of the World Weather Research Program
2005 - 2006	**Member**, US delegation to the World Meteorological Organization's Commission on Atmospheric Science
2003 - 2008	**Co-chair**, North American THORPEX Regional Committee

2003 - 2005	**Member,** THORPEX International Science Steering Committee,
2003 – 2005	**Co-chair** of THORPEX's Observing System Research Subprogram,
1997 – 2000	**Chair,** Panel for the Mesoscale Chapter for American Meteorological Society Monograph on Severe Local Storms
1994 – 2000	**Editor**, Journal of the Atmospheric Sciences
1991	**Co-author**, American Meteorological Society's policy statements on "Tornado Forecasting and Tracking", "Mobile Homes and Severe Winds"
1990 – 1992	**Member,** American Meteorological Society's Committee on Severe Local Storms and co-chair of the national conference

SELECTED UNIVERSITY OF OKLAHOMA SERVICE ACTIVITIES

2018 – 2019	**Member, President's Advisory Committee on Academics and Budget,** University of Oklahoma – Ten-member faculty committee established under a shared governance model. The committee reviewed budgetary reductions and reprogramming proposed by the Deans and Directors and made recommendations on these proposals to the University President based on their impacts on students and academic program
2018 – 2020	**Member**, Norman Campus Presidential Professorship Selection Committee
2015 - 2017	**Member, Graduate Admissions Committee**, School of Meteorology
2015 - 2016	**Co-chair, Search Committee for Early Career Faculty**, School of Meteorology
2014 - 2017	**Member, Search Committee for the Director of the Cooperative Institute for Mesoscale Meteorological Studies (CIMMS),** University of Oklahoma
2013 - 2017	**Member, Committee on Undergraduate Curriculum Revision**, School of Meteorology
2012 - present	**Fellow of the Cooperative Institute for Mesoscale Meteorological Studies (CIMMS),** University of Oklahoma
2012 - present	**Ex-officio member of the CIMMS Executive Board**, University of Oklahoma
2012 - present	**Member of the Executive Committee**, Center for the Analysis and Prediction of Storms, University of Oklahoma
2010 - 2018	**Member, Directors Council**, National Weather Center, University of Oklahoma
2011 – 2017	**Member, College Committee on Tenure and Promotion**, University of Oklahoma

2016	**Co-Chair of the University of Oklahoma – Reading University, Research Summit**
2014 - 2015	**Member, Vice-President for Research's Task Force on the Future of University Strategic Organizations**, University of Oklahoma.
2013 - 2014	**Chair,** early career faculty search, School of Meteorology
2012	**Chair**, early career faculty search, School of Meteorology
2012 - 2014	**Member**, search committee for the Williams Chair, School of Meteorology
2012	**Chair**, early career faculty search committee, School of Meteorology
2012	**Member,** round-table on future of the University of Oklahoma's library system
2011	**Member,** External review team for the University of Oklahoma, Kessler Farm Field Laboratory

RECENT REVIEW TEAMS AND PANELS

2019	**Member, External Review Team**, University of Wyoming's Atmospheric Sciences Program
2018	**Member**, NASA review panel on the Precipitation Measurement Mission, Washington DC
2017	**Member,** External Review Team for Texas A & M's Atmospheric Science Program
2014 - 2017	**Member, Special panel established by NSF and NCAR to examine proposals submitted by the National Center for Atmospheric Research for funding requests for non-NSF support.** The panel also made recommendations on procedures to ensure fair competition with the academic community and to help NCAR meet the NSF vision for their center
2014	**Chair,** Special Panel on the Future of the Weather Enterprise, World Weather Open Science Conference, Montreal, Canada
2013 - 2015	**Chair,** External Review Committee of the Ertel Centers (Germany)
2013	**Member,** Review Team, Department of Energy, GOAMAZON Program
2011	**Invited expert**, Southeast Europe Research Framework in Regional Climate Modeling for 2012-2017
2010	**Member**, Review Panel, National Science Foundation, DYNAMO Project

2009 - 2010 **Ex-officio Member** of the Science Advisory Board of the European Center for Medium Range Weather Forecasting (ECMWF) representing the World Meteorological Organization

2009 - 2013 **Member,** European Commission Advisory Board for the INCA Program (Nowcasting, decision support, and risk management for the countries of central and eastern Europe)

ADMINISTRATIVE EXPERIENCE

Director: School of Meteorology, University of Oklahoma, Norman, OK

Responsibilities included: Conduct research and teach, while leading the School with its 21 regular faculty, 35 adjunct and affiliate faculty, 225 undergraduates, 85 graduate students, 9 staff, $7 M in endowments and a base budget of nearly $3 M. As Director, oversee faculty meetings, departmental policies and practices, tenure and promotion cases for the School and participate in the College leadership teams. Responsible for the academic mission of the School, which is the largest undergraduate program in atmospheric sciences in the nation. Work closely with the research centers that have been initiated or organized by our faculty (Center for the Analysis and Prediction of Storms, Advanced Radar Research Center, Co-operative Center for Mesoscale Meteorological Studies and South Central Climate Center). The regular faculty of the School are involved in ~$4.3 M in research expenditures and ~$24 M in research grants. The combined research expenditures of the weather enterprise (School and associated centers) exceeds all Colleges at the University, except for the large College Arts and Sciences with their 28 academic units and 21 centers. Interact with the Dean and his organizational structure and the Provost's Office through their monthly meetings with Chairs and Directors.

United Nations Diplomat and Chief of the World Weather Research Division: World Meteorological Organization (WMO), Geneva, Switzerland

Responsibilities included: Overseeing the THORPEX International Program Office, which was a donor supported program requiring nearly $1M in external funding each year. Major contributors to the THORPEX Trust Fund included the governments of the Canada, China, France, Germany, Japan, Korea, Norway, the United States, and the United Kingdom. This position also included overseeing the other subprograms and numerous projects of the World Weather Research Program (WWRP), which spanned prediction research on time-scales of minutes to intra-annual covering topics ranging from weather and climate variability to social science and the impacts of weather on disease transmission. Diverse projects and programs spanned from the tropics to the polar regions and brought together researchers from the academic community with those involved in the operational prediction. The THORPEX and WWRP efforts varied in scope and size with the larger external projects having budgets of ~$10 M. The Division also organized numerous meetings around the world each year and prepared documents for major international meetings of the WMO.

Associate Director (acting): Earth Observing Laboratory, National Center for Atmospheric Research (NCAR), Boulder, CO

Responsibilities included: Serving as the Associate Director for the Laboratory during its founding period prior to the arrival of the first Director. At that time, the Laboratory had approximately 140 employees across such diverse occupations as scientist, engineers, programmers, administrators, technicians and pilots with a base budget of well over $40 M. The laboratory develops and deploys major research facilities for the NSF-supported atmospheric sciences community including two research aircraft, ground and airborne

radars systems, ship and ground-based profiling systems, in-situ surface systems and sounding systems including dropsondes. The laboratory also supports the deployment of these systems in field campaigns. These activities are deadline driven involving complex logistics and require close cooperation with NSF program managers and academic researchers. Duties included filling in as the acting Director during his extended sabbatical absence.

***Director, US THORPEX Project Office**, NCAR, Boulder, CO*

Responsibilities included: Working with the US research community, operational scientists and program managers within the NSF, NOAA, NASA and the Office of Naval Research (ONR) to develop and implement the US contribution to the international THORPEX program. Duties included monthly meetings in Washington DC with program managers and representing the US program within the International THORPEX program. Served as the Co-Chair North American Regional Committee working closely with leads in Mexico and Canada. The Project Office and my participation was funded through multi-agency support.

Manager, Research Technology Facility: NCAR, Boulder, CO

Responsibilities included: Overseeing the development, maintenance, upgrading and deployment of major research facilities for the NSF-supported atmospheric sciences community. Instrumentation facilities and associated software systems included the S-POL Doppler radar, the ELRODA airborne radar, high resolution backscatter lidar, dropsondes, radiosondes, surface flux measurement stations, and mobile, ship-borne and ground-based Integrated Sounding Systems each consisting of wind profilers, radiosondes, surface meteorological stations. The position involved working closely with the academic community on the planning, execution and analysis of complex field projects worldwide. These activities are deadline driven, logistically complex and require close cooperation with NSF program managers and proposals for special funding to NSF and other agencies. The staff of the facility consisted of ~ 70 software engineers and programmers, scientists, engineers, technicians and administrative staff including visitors. The budget including special funds from NSF was ~$7-8 M annually.

ACTIVE GRANTS*: ~ $2.038 M (+Senior Personnel on ~$8M for renewal of the UK SCENARIO Project)*

Principal Investigator: Understanding and improving predictions of the impacts of Rossby wave breaking on tropopause polar vortices and Arctic cyclones, Office of Naval Research, $688,118, 3/1/2018 – 2/28/2023

Principal Investigator: Explaining the nocturnal maximum in deep convection over the Great Plains through understanding the interactions between the nocturnal low-level jet and mesoscale convective systems, National Science Foundation/AGS, $728,007, 8/15/2019-8/14/2022

Co-principal Investigator: Improving the understanding and prediction of nocturnal convection through advance data assimilation and ensemble simulation in PECAN, National Science Foundation/AGS, $602,014, 4/1/2014 – 3/31/2020

Co-principal Investigator: Scientific Program Overview for planning the THINICE Arctic field project, National Science Foundation/Arctic, $19,767 for project planning, 8/15/2019-8/14/2021

Senior Personnel: "SCENARIO (UK) National Environmental Research Council Doctoral Training Partnership: A postgraduate centre in the Science of the Environment: Natural and Anthropogenic pRocesses, Impacts and Opportunities. PI: Methven (U of Reading), representing OU as one of two

international partners. ~$8M for 5 years beginning 11/2018; funding to UK universities in the consortium. No direct funding to OU.

PREVIOUS GRANTS (In effect after my arrival at OU): *~$11.1 M including estimate of facility deployment awards (+Senior Personnel on ~$7.9M UK SCENARIO Project)*

"South-Central Climate Science Center", Moore, B. (PI), Shafer, Vaughn, Bamzai, Jenkins-Smith, **Parsons**, Tarhule, Xiao, Mc Pherson, Co-PIs, U.S. Department of the Interior, U.S. Geological Survey, $3,992,893. 3/1/2012 – 2/28/2017. [supplement awards not included]

"Investigation into the mechanisms for the maintenance of nocturnal convective systems", NSF/GEO **PI: Parsons,** Co-PI: Bluestein, $ 465,585.00, 1/1/2013-12/31/2016.

"SCENARIO (UK) National Environmental Research Council Doctoral Training Partnership: A postgraduate centre in the Science of the Environment: Natural and Anthropogenic pRocesses, Impacts and Opportunities. PI: Methven (U of Reading), multiple Co-PIs, **Parsons (senior personnel)** -- representing OU one of three international partners. $7.9 M for 5 years beginning 11/2013 – 10/2018, Fuunding to UK universities in the consortium. No direct funding to OU.

"The Mechanisms for the Maintenance of Nocturnal Convective Systems" NSF/GEO supplement for PECAN field phase. **PI: Parsons**, $134,000. 4/30/2014 to 12/31/2015.

"PECAN Experiment, Facility Allocation Request to the National Science Foundation's Observing Facility Assessment Panel", B. Geerts (PI), **Parsons**, Weckwerth, Wurman, Zeigler (co-PIs), ~$2.5 M.

"Scientific Program Overview for the PECAN (Plains Elevated Convection at Night) project" **PI: Parsons**, Geerts, Weckwerth (co-PIs): NSF/GEO: Scientific umbrella proposal for planning the PECAN program under the NSF Large Field Project Category. $15,000, 5/1/2013-5/31/2014.

"ARM Support for the Plains Elevated Convection at Night (AS-PECAN) Experiment", DOE/ARM approved facility request for participation of DOE's climate research facility in PECAN, Turner (PI) Geerts, **Parsons** (co-PIs) for facilities, radiosonde expendables within DOE for the experiment.

"Improved Characterization and Prediction of Antarctic Weather and Climate Through Utilitzation of the CONCORDIASI Data Set," **PI: Parsons,** Co-PI: Cavallo, NSF/Office of Polar Programs, $273,473.00, 9/15/2012-8/31/2014.

"MRI: Development of a Mobile Thermodynamic and Dynamic Profiling Facility for the Atmospheric Boundary Layer," NSF/MRI, **PI: Parsons,** Co-PIs: Turner, Choeng, Chilson, Klein, $663,267.00, 10/1/2012-9/30/2014.

"Research in Support of Forecasting and Uncertainty Quantification of Power from Intermittent Renewable Energy Sources", Lawrence Livermore National Laboratory, PI: Klein, **Co-PI**: Fedorovich, **Parsons,** Morrissey, $ 58,406.00, 9/30/2013-9/30/2014.

"Research in Support of Forecasting and Uncertainty Quantification of Power from Intermittent Renewable Energy Sources", Lawrence Livermore National Laboratory, PI: Morrissey, **Co-PI: Parsons,** $ 26,218.00, 5/8/2012 - 9/30/2012.

"International Polar Year: NCAR Support of Driftsonde for the CONCORDIASI Project", D. **Parsons (Original PI)**, Cohn (PI when Parsons assumed his position in the WMO], T. Hock, J. Powers. [Note,

Parsons was the PI when the grant was awarded, but grant remained at NCAR and S. Cohn became the PI when Parsons went on leave to join the WMO. $2,045,179, 10/1/07 –9/30/2011, NSF, Office of Polar Program, Antarctic

NOAA Contribution to the THORPEX Trust Fund to Maintain the International Project Office, **Parsons (PI)**, $1 M, 2009-2013. My role as PI ended when I left the WMO to go to the University of Oklahoma.

EARLIER PROPOSALS

Principal Investigator, THORPEX, Weather-climate interface. Internal funds, NCAR Strategic Initiative, 2006.

Principal Investigator, US THORPEX Project Office, NOAA and NSF Special Funds, 2004-2008, Approximately $150K per year.

Principal Investigator, Facility Allocation Request for the T-PARC Tropical Cyclone Project, $3 M, 2006-2009

Co-Principal Investigator for IHOP_2002 Facility Requests to the NSF deployment pool, $3M.

Co-Principal Investigator, Special NSF funds for IHOP_2002 Project Office.

Scientific Steering Committee, Water Cycle on All Scales, NCAR Strategic Initiative, Internal funds, FY 2001.

Co-Principal Investigator. NCAR/ATD proposal to the USWRP for improved characterization of water vapor and impact on convective forecasts, FY 2001.

Principal Investigator. NCAR component of the Vertical Transport and Mixing Program, Dept. of Energy, FY 2000-2004, estimated $250K

Principal Investigator. NCAR/ATD proposal to the USWRP for improved characterization of water vapor and impact on convective forecasts, FY 1997, 1999.

Principal Investigator. Atmospheric Science Component of Japan-U.S. Tropical Ocean Climate Study, FY 1997.

Co-principal Investigator. TOGA COARE: Kinematic and thermodynamic controls on deep convection over the Oceanic warm pool (Brian Mapes, P.I.), FY 1996-1999.

Principal Investigator. ARM: Development of an Integrated Data Assimilation and Sounding System (IDASS), FY 1993-2001, Approximately $600,000 per year.

Co-Principal Investigator. TOGA COARE: Airborne Doppler analysis and momentum flux calculations (Peggy LeMone, P.I.), FY 1992-1995.

Co-Principal Investigator. TAMEX: Taiwan Mesoscale Experiment. For support of the U.S. Project Office for FY 1990 (with Bill Kuo to National Science Foundation).

Principal Investigator. Joint Facility Request for Doppler radar systems during TAMEX

to study structure of Mei-Yu front and accompanying mesoscale convective systems. Only time to date an NCAR Doppler radar has been used overseas.

Co-Principal Investigator. Study structure of fronts including dynamics of mesoscale frontal waves (with John Clark to National Science Foundation).

SELECTED INTERNATIONAL INVITED PRESENTATIONS[1]

2019	Invited keynote presentation for Asia Climate Week, "The Revolutionary Impact of Two Evolutionary Changes on Your Life" – Opening talk, InterMet/Inter-Flood/Inter-Air Asia, Singapore (the two changes are urbanization and climate change)
2019	Invited presentation, "Air pollution: Public Health and the Need for Observations", Inter-Air Asia, Singapore
2019	Studio interview on Asia Tonight discussing the release of the WMO Report on State of the Climate, Channel News Asia, Singapore
2018	Invited keynote presentation, "What is Valuable Hydrometeorological Data in the Modern World?", Joint meeting of the Global Weather Enterprise Forum and the Association of Hydro-Meteorological Equipment Industry, Singapore
2016	Invited presentation "Why Do The Rains Fall over the Great Plains…. Mainly at Night", European Center for Medium Range Weather Forecasting (ECMWF) Seminar Series, Reading, UK
2014	Invited talk in the special session on "The science of weather forecasting: past successes and future challenges", World Weather Open Science Conference, Montreal, Canada[1]
2014	Invited Lecture "THORPEX Accomplishments, Challenges and Lessons Learnt", World Meteorological Organization
2013	Invited keynote lecture, 50th Anniversary of meeting of the Korean Meteorological Society, Seoul, Korea
2010	Invited Public Lecture: "Societal Needs and Prospects for Improved Prediction of High Impact Weather", ZMAG (Austria Met and Geophysics Service), Vienna, Austria
2010	Invited presentation to the WMO Commission on Atmospheric Science's Technical Meeting, Icheon, Korea
2009	Invited Public Lecture: "Prospects for Improving Typhoon Prediction", Japanese Meteorological Society, Tokyo, Japan

[1] Have lectured and presented invited talks in Argentina, Australia, Austria, Canada, China, Croatia, Czech Republic, Finland, France, Germany, Hong Kong, Italy, Japan, Korea, Mexico, Morocco, Netherlands, Norway, Serbia, S. Africa, Spain, Switzerland, Taiwan, and the UK. The talks listed here are only a subset of these presentations.

2009	Invited Opening Lecturer, "Como reducer y mitigar los efectos de los desastres naturales con pronosticos mas exactos y oportunos" South American and Iberian Peninsula Congress on Weather and Climate, Buenos Aires, Argentina
2006	Invited presentation to the WMO Commission on Atmospheric Science's (CAS's) Technical Meeting, Cape Town, South Africa
2005	Invited Lecture on the International Polar Year to the Joint Session of the European Geophysical Society

AWARDS AND RECOGNITION

2018	President's Associates Presidential Professor, University of Oklahoma
2015	Certification of Appreciation from NOAA for leadership contributions to the US THORPEX effort
2014	Certificate of Appreciation from the World Meteorological Organization for Outstanding Contribution to the development and implementation of the International THORPEX Program
2012 - current	Fellow of the Cooperative Institute for Mesoscale Meteorological Studies (CIMMS), University of Oklahoma
2009 -- present	Fellow, American Meteorological Society
2009	Certificate of Appreciation from the International Council for Science and the World Meteorological Organization for valuable contributions to the International Polar Year
2006	Key Contributor, COSMIC – GPS Satellite Radio Occultation Constellation Team
2003	NASA Group Achievement Award, CRYSTAL FACE Science Team
2003	Outstanding Service Award for TOGA COARE, Atmospheric Technology Division, NCAR
1987 & 2004	Divisional Nominee for NCAR Outstanding Publication Award
1995	Official U.S. nominee for the WMO's Vaisala Award
1982—1983	National Research Council Post-Doctoral Fellowship
1976—1979	National Severe Storms Laboratory Research Fellowship

1976 B.S. received with Highest Honors

COURSES TAUGHT

METR 2013: Introduction to Meteorology I: Introduces students to important phenomena and physical processes that occur in the Earth's atmosphere. Students will learn the basic concepts and instruments used to study atmospheric problems. First course in sequence focuses on atmospheric radiation, thermodynamics, moisture, stability, clouds, and precipitation.

METR 2023: Introduction to Meteorology II: The second course in our introduction sequence that focuses on atmospheric dynamics, weather systems across the scales including extratropical cyclones, tropical cyclones, sea breezes, flow over orography, and thunderstorms. It also addresses boundary layer meteorology, air pollution.

METR 4133: Atmospheric Dynamics III: Mid-latitude Synoptic-Scale Dynamics: This course combines concepts from kinematics, dynamics and thermodynamics to characterize the synoptic-scale atmosphere, with emphasis on quasi-geostrophic and baroclinic instability theory, Q-vectors, and potential vorticity-thinking as the basis for understanding the structure, movement and evolution of extra-tropical weather systems including fronts and jets.

METR 4911: Senior Seminar: Capstone students integrate and apply knowledge gained in their previous courses to an original research project of their choosing. The instructor guides senior meteorology majors through a research project with interdisciplinary topics encouraged. Students are paired with regular and adjunct faculty mentors. The first semester (METR 4911) concentrates on basic skills, the selection of a research topic, a letter of intent, and a proposal for their research.

METR 4922: Senior Seminar: Capstone provides opportunities to strengthen basic research, report writing, presentation, and professional skills. During the second semester (METR 4912), students complete their research project, and present their results in oral presentations, a poster presentation, and a final paper modeled after a journal article.

METR 5004: Fundamentals of Atmospheric Science: This course is intended to provide a broad foundational knowledge base for our graduate students. The covers basics in climate, convection, middle latitude weather systems, radar and remote sensing, tropical meteorology, cloud physics and atmospheric chemistry. In various years, I have taught the radar and tropical meteorology sections of this course.

METR 5443: Introduction to Tropical Meteorology: This course covers the basic of dynamical and physical processes governing circulations in the tropics and includes tropical wave theory, tropical cyclones, ENSO, and tropical convection. Taught portion of this class filling for a faculty focusing on the tropical wave section of the course.

Graduate Student Mentoring:

Completed:

Benjamin Blake, MS advisor, currently working at NOAA/EMC as a contractor, recipient of the School of Meteorology Outstanding Masters Student Award

Katie (Bowden) Wilson, PhD administrative chair, currently working as a researcher at CIMMS, recipient of AMS poster presentation award and the National Weather Association's Dr. Roderick A. Scofield Scholarship for Meteorology

Kristen Cassady, MS co-advisor, currently with the National Weather Service office in Cincinnati

Manda Chasteen, MS advisor, currently working on her PhD at University of Oklahoma

Kevin Haghi, PhD advisor, currently a researcher at the University of Washington'

Samuel Lillo, MS advisor, currently in the PhD program at University of Oklahoma

Larissa Reames, PhD co-advisor, currently a National Research Council Post-doctoral Fellow, awarded a Blue Water Computational Fellowship while a PhD student

Ashton Robinson, PhD co-advisor, currently at NOAA/SPC and founder and manager of Weather Deep, a private sector company, was the recipient of the American Association of State Climatologist's Ourstanding Disseration Award

James Russell, MS advisor, current a post-doctoral Research Associate at University of Utah

Current:

Hristo Chipilski, PhD co-advisor**,** recipient of several AMS conference presentation awards

Samuel Lillo, PhD advisor

Christopher Rattray, MS advisor

In addition, I have served on PhD dissertation committees for graduate students at Colorado State University, the University of Toronto, and Meteo France/CNRM and numerous MS and PhD Committees at the University of Oklahoma.

PUBLICATIONS --- Refereed

(* indicates graduate advisee or co-advisee, # indicates undergraduate mentored)

1. Houze, Jr., R. A., P. V. Hobbs, P. H. Herzegh and D. B. Parsons, 1979: Size distribution of precipitation particles in frontal clouds. *J. Atmos. Sci*., **36**, 156-162.

2. Houze, Jr., R. A., P. V. Hobbs, D. B. Parsons and P. H. Herzegh, 1980: Reply to comments on size distribution in frontal clouds. *J. Atmos. Sci.*, **37**, 699-700.

3. Wang, P. Y., D. B. Parsons and P. V. Hobbs, 1983: The mesoscale and misoscale structure and organization of clouds and precipitation in mid-latitude cyclones. VI: Wave-like rainbands associated with a cold-frontal zone. *J. Atmos. Sci.*, **40**, 543-558.

4. Parsons, D. B., and P. V. Hobbs, 1983: The mesoscale and microscale structure and organization of clouds and precipitation in mid-latitude cyclones. VII: Formation, development, interaction, and dissipation of rainbands. *J. Atmos. Sci.*, **40**, 559-579.

5. Parsons, D. B., and P. V. Hobbs, 1983: The mesoscale and microscale structure and organization of clouds and precipitation in mid-latitude cyclones. IX: Some effects of orography on rainbands. *J. Atmos. Sci*, **40**, 1930-1949.

6. Parsons, D. B., and P. V. Hobbs, 1983: The mesoscale and microscale structure and organization of clouds and precipitation in mid-latitude cyclones. XI: comparisons between observational and theoretical aspects of rainbands. *J. Atmos. Sci.*, **40**, 2377-2398.

7. Parsons, D. B., C. G. Mohr, and T. Gal-Chen, 1987: A severe frontal rainband. Part III: Derived thermodynamic structure. *J. Atmos. Sci.*, **44**, 1615-1631.

8. Kessinger, C. J., D. B. Parsons, and J. W. Wilson, 1988: Observations of a storm containing mesocyclones, down bursts, and horizontal vortex circulations. *Mon. Wea. Rev.,* **116**, 1959-1982.

9. Zhang, D.-L., K. Gao, and D. B. Parsons, 1989: Numerical simulation of an intense squall line during 10-11 June 1985. PRE-STORM. Part 1: Model Verification. *Mon. Wea. Rev.,* **117**, 960-994.

10. Parsons, D. B., and R. A. Kropfli, 1989: Dynamics and fine structure of a microburst observed with dual-Doppler radar. *J. Atmos. Sci.*, **47**, 1674-1692.

11. Trier, S. B., D. B. Parsons, and T. J. Matejka, 1990: Observations of a subtropical cold front in a region of complex terrain. *Mon. Wea. Rev.*, **118**, 2449-2470.

12. Parsons, D. B., M. A. Shapiro, R. M. Hardesty, R. J. Zamora, and J. M. Intrieri, 1991: The fine-scale structure of a west-Texas dryline. *Mon. Wea. Rev.*, **119**, 1242-1258.

13. Trier, S.B., D.B. Parsons, and J.H.E. Clark, 1991: Environment and evolution of a cold-frontal mesoscale convective system. *Mon. Wea. Rev.*, **119**, 2429-2455.

14. Parsons, D. B., 1992: A mechanism for intense frontal updrafts and narrow cold-frontal rainbands. *J. Atmos. Sci.*, **49**, 1810-1825.

15. Parsons, D.B., and M.L. Weisman, 1993: A Numerical study of a rotating downburst. *J. Atmos. Sci.*, **50**, 2369-2385.

16. Trier, S.B, and D.B. Parsons, 1993: Evolution of environmental conditions preceding the development of a nocturnal mesoscale convective complex. *Mon. Wea. Rev.*, **121**, 1078-1098.

17. Parsons, D., W. Dabberdt, H. Cole, T. Hock, C. Martin, A.-L. Barrett, E. Miller, M. Spowart, M. Howard, W. Ecklund, D. Carter, K. Gage, and J. Wilson, 1994: The Integrated Sounding System: Description and preliminary observations from TOGA COARE. *Bull. Amer. Meteor. Soc.*, **75**, 553-567.

18. Trier, S.B., D.B. Parsons, 1995: Updraft dynamics within a numerically simulated subtropical rainband. *Mon. Wea. Rev.*, **123**, 39-58.

19. Akaeda,. K., J.M. Reisner, and D.B. Parsons, 1995: The role of mesoscale and topographically induced circulations in initiating a flash flood observed during the TAMEX project. *Mon. Wea. Rev.*, **123**, 1720-1739.

20. Barth, M.C. and D.B. Parsons, 1996: Microphysical processes associated with intense frontal rainbands and the effect of evaporation and melting on frontal dynamics. *J. Atmos. Sci.*, **53**, 1569-1586.

21. Riddle, A.C., W.M. Angevine, W.L. Ecklund, E. Miller, D. Parsons, D.A. Carter, K.S. Gage, 1996: Wind-profiler and rawinsonde observations compared at ISS sites during TOGA COARE. *Contributions to Atmospheric Physics*.

22. Trier, S.B., W.C. Skamarock, M.A. LeMone, D.B. Parsons, and D.P. Jorgensen, 1996: Structure and evolution of the 22 February 1993 TOGA COARE squall line: Numerical simulations. *J. Atmos. Sci.*, **53**, 2861-2886.

23. Parsons, D.B., and J. Dudhia, 1997: Observing system simulation experiments and objective analysis tests in support of the goals of the Atmospheric Radiation Measurement program. *Mon. Wea. Rev.*, **125**, 2353-2381.

24. Kuo, Y.-H., J.F. Bresch, M.-D. Cheng, J. Kain, D. Parsons, W.-K. Tao, and D.-L. Zhang, 1997: Summary of a mini-workshop on cumulus parameterization for mesoscale models. *Bull. Amer. Met. Soc.*, **78**, 475-491.

25. Yoneyama, K., and D. B. Parsons, 1999: A proposed mechanism for the intrusion of dry air into the tropical western Pacific region. *J. Atmos. Sci.*, **56**, 1524-1546.

26. Parsons, D.B., J.-L. Redelsperger, and K. Yoneyama, 2000: The evolution of the tropical western Pacific atmosphere-ocean system following the arrival of a dry intrusion. *Quart. J. Roy. Meteor. Soc*., **126,** 517-548.

27. Guo, Y.-R., Y.-H. Kuo, J. Dudhia, D. Parsons, C. Rocken, 2000: Four-dimensional variational data assimilation of heterogeneous mesoscale observations for a strong convective case. *Mon. Wea. Rev.*, **128**, 619-643.

28. Parsons, David B., Melvyn A. Shapiro, Erik Miller, 2000: The mesoscale structure of a nocturnal dryline and of a frontal-dryline merger. *Mon. Wea.*, **128**, 3824-3838.

29. Browning, K. A., A. J. Thorpe, A. Montani, D. Parsons, M. Griffiths, P. Panagi, E. M. Dicks, 2000: Interactions of tropopause depressions with an ex-tropical cyclone and sensitivity of forecasts to analysis errors. *Mon. Wea. Rev.*, **128**, 2734-2755.

30. Guichard, F., D. Parsons, E. Miller, 2000: Thermodynamic and radiative impact of the correction of sounding humidity bias in the topics. *J. Climate*, **13**, 3611-3624.

31. Bluestein, H.B., B. Albrecht, R. M. Hardesty, W. D. Rust, D. Parsons, R. Wakimoto, and R. M. Rauber, 2001: Ground-based Mobile Instrument Workshop Summary. *Bull. Amer. Meteor. Soc*., **82**, 681-694.

32. Cohn, S.A., W. Brown, C. Martin, M.S. Susedik, G. Maclean and D.B. Parsons, 2001: Clear air boundary layer spaced antenna wind measurement with Multiple Antenna Profiler (MAPR). *Annales Geophsicae, **19,*** 845-854.

33. J.-L. Redelsperger, D.B. Parsons, and F. Guichard, 2001: Simulations of the recovery processes and factors limiting cloud-top height following a dry intrusion observed during TOGA-COARE.. *J. Atmos. Sci.,* **59***,* 2438-2457.

34. Trenberth, K. E., A. Dai, R. M. Rasmussen, D.B. Parsons, 2003: The Changing Character of Precipitation. *Bull. Amer. Meteor. Soc.,* **84**, 1205-1217.

35. Guichard, F., D. Parsons, J. Dudhia, and J. Bresch, 2003: Evaluation of cloud and radiation parameterizations in MM5 on a seasonal time scale. *Mon. Wea. Rev.,* **131**, 926-944.

36. Wang, J., D. J. Carlson, D. B. Parsons, T. F. Hock, D. Lauritsen, H. L. Cole, K. Beierle, and E. Chamberlain, 2003: Performance of operational radiosonde humidity sensors in direct comparison with a chilled mirror dew-point hygrometer and its climate implication. *Geophy. Res. Lett.*, 30.

37. Flamant, C., F. Guichard, J. van Baelen, O. Bock, F. Couvreux, D. Parsons, T. Weckwerth, J. Pelon, P. Drobinski, K. Lhomme, M. Guenno and E. Doerflinger, 2003: Campagne IHOP 2002 (la) : une campagne de mesure de la vapeur d'eau dans la couche limite, **43,** La Météorologie.

38. Tammy M. Weckwerth, David B. Parsons, Steven E. Koch, James A. Moore, Margaret A. LeMone, Belay B. Demoz, Cyrille Flamant, Bart Geerts, Junhong Wang and Wayne F. Feltz. 2004: An Overview of the International H_2O Project (IHOP 2002) and Some Preliminary Highlights. *Bull. Amer. Meteor. Soc.,* **85**, 253–277.

39. Weckwerth, T.M. and D. B. Parsons, 2006: A Review of Convective Initiation and the Motivation for IHOP_2002. *Mon. Wea. Rev*., **131**, 926-944.

40. Pinto, J.O., D. B. Parsons, W.O.J. Brown, S. Cohn, N. Chamberlain and B. Morley, 2006: Coevolution of Down-Valley Flow and the Nocturnal Boundary Layer in Complex Terrain. J. Appl. Meteor. And Clim., 1429-1449.

41. Gall, R,, and D. B. Parsons, 2006: It's Hurricane Season: Do you know where your storm is? IEEE Spectrum. August Issue.

42. P. Drobinski, Parsons, D.B., P. Cocquerez, A. Cardonne, H. Cole, J. Fox, T. Hock, J.-P. Lefevre, J.-L. Redelsperger, K. Romberg, J. VanAndel, S. Venel, 2007: Des ballons stratosphericques traquent la mousson africaine. 47, La Météorologie.

43. Pankine, A., K. Nock, Z. Li, D. Parsons, M. Purucker, W. Wiscombe and E. Weinstock, , and K. Nock, 2009: Stratospheric satellites for earth observations. *Bull. Amer. Meteor.* Soc., 90, 1109-1119.

44. Rabier, F., et al., 2010: Campagnes expérimentales-Le projet Concordiasi en Antarctique, Meteorologie, 42

45. Bougeault, P. et al., 2010: The THORPEX Interactive Grand Global Ensemble, Bull. *Amer. Meteor. Soc.,* 92, 1059-1072.

46. Shapiro, M.A., et al., 2010: An Earth-system Prediction Initiative for the 21st Century, *Bull. Amer. Meteor. Soc.,* 92, 1377-1388.

47. Rabier, Florence, and Coauthors, 2010: The Concordiasi Project in Antarctica. *Bull. Amer. Meteor. Soc.*, **91**, 69–86.

48. Drobinski P., Karbou F., Bauer P., Cocquerez P., Lavaysse C., Hock T., Parsons D., Rabier F., Redelsperger J.-L., Vénel, 2013: Driftsonde observations to evaluate numerical weather prediction of the late 2006 African monsoon. *J. Appl. Meteor. Clim.,* 974-999.

49. Rabier F., Cohn S., Cocquerez P., Hertzog A., Avallone L., Deshler T., Haase J., Hock T., Doerenbecher A., Wang J., Guidard V., Thépaut J.-N., Langland R., Tangborn A., Balsamo G., Brun E., Parsons D., Bordereau J., Cardinali C., Danis F., Escarnot J.-P., Fourrié N., Gelaro R., Genthon C., Ide K., Kalnajs L., Martin C., Meunier L.-F., Nicot J.-M, Perttula T., Potts N., Ragazzo P., Richardson D., Sosa-Sesma S., Vargas A., 2013: The Concordiasi field experiment over Antarctica: First results from innovative atmospheric measurements, *Bull. Amer. Meteor. Soc,* ES17-ES-20.

50. Cohn S. A, and co-authors (alphabetical), 2013: Driftsonde: Providing In-Situ Long-Duration Dropsonde Observations Over Remote Regions, *Bull. Amer. Meteor. Soc.,* **94**, *1661- 1674.*

51. Tian-You, Yu, D. Parsons, E. Nakakita, T. Tsuda, and H. Ishikawa, 2014: Mitigating the Impact of Severe Weather and Climate Variability, *Bull. Amer. Meteor. Soc,* e-view, on-line.

52. Kirstetter, P., T.-Y. Yu, R. Palmer, D. Parsons, H. Ishikawa and J. M. Erlingis, 2016, *Bull. Amer. Meteor. Soc*, 97, No. 6, e-view, on-line.

53. Parsons, D. B., Beland, M., Burridge, D., Bougeault, P., Brunet, G., Caughey, J., Cavallo, S., Charron, M., Davies, H. C., Niang, A. D., Ducrocq, V., Gauthier, P., Hamill, T. M., Harr, P. A., Jones, S. C., Langland, R. H., Majumdar, S. J., Mills, B. N., Moncrieff, M., Nakazawa, T., Paccagnella, T., Rabier, F., Redelsperger, J. -L., Saunders, R. W., Shapiro, M. A., Swinbank, R., Szunyogh, I., Thorncroft, C., Thorpe, A. J., Waliser, D., Wernli, H., Toth, Z., 2017: THORPEX Research and the Science of Prediction. *Bulletin of the American Meteorological Society*. **98**, 807-830

54. Lillo*, S. and Parsons, D.B., 2017: Investigating the dynamics of error growth in ECMWF medium range forecast busts, *Quart. J. Roy. Met. Soc* . **143**, 1211-1226.

55. B. Geerts, D. Parsons, C. L Ziegler, T. M Weckwerth, D. D Turner, J. Wurman, K. Kosiba, R. M Rauber, G. M McFarquhar, M. D Parker, R. S Schumacher, M. C Coniglio, K. Haghi*, M. I Biggerstaff, P. M Klein, W. A Gallus Jr, B. Demoz, K. R Knupp, R. A Ferrare, A. R Nehrir, R. D Clark, Xuguang Wang, J. M Hanesiak, J. O Pinto, James A Moore, 2017: The 2015 Plains Elevated Convection At Night (PECAN) field project. *Bulletin of the American Meteorological Society*, 98 (4), 767-786

56. Parsons, D., 2016: The Observing Research Prediction Experiment (THORPEX) Legacies and the Future of the World Weather Research Program (WWRP), invited Editorial, *World Research Program Quarterly Newsletter, Oct. 2016.*

57. Blake*, B., D. Parsons, K. Haghi*, and S. Castleberry*, 2017: The Structure, Evolution and Dynamics of a Nocturnal Convective System Simulated Using the WRF-ARW Model, *Mon. Wea. Rev.* 145, 3179-3201.

58. Cook*, A.R., L. M. Leslie, D. B. Parsons and J. T. Schaefer, 2017: The impact of the El Nino Southern Oscillation (ENSO) on the winter and early spring U.S. tornado outbreaks, *J. Appl. Meteor. and Clim.,* 56, 2455-2478.

59. Haghi*, K., D. Parsons, and A. Shapiro, 2017: Bores Observed During IHOP_2002: The Relationship of Bores to the Nocturnal Environment. *Mon. Wea. Rev.,* 145, 3929-3946,

60. Rodwell, M., D. S. Richardson, D. B. Parsons and H. Wernli, 2018: Flow dependent reliability: A path toward more skillful ensemble forecasts. *Bull. Amer. Meteor, Soc.,* 99, 1015-1026.

61. Johnson, A., X. Wang, K. R. Haghi*, D. B. Parsons, 2018: Evaluation of forecasts of a convectively generated bore using an intensively observed case study from PECAN, *Mon. Wea. Rev*., **146**, 3097-3122.

62.Staudinger, M., P. Benichou, D. B. Parsons, A. Thorpe, D. Rogers, V. Tsirkunov, M. Suwa, A.-M. Bogdanova, B. Day, B. Ford, D. Ivanov, and J. Hirst, 2018: A United Front: The global weather enterprise: supporting sustainable development. *Meteor. Tech. Intern.,* Sept. 2018 ed.*,* 14-19.

63. Chipilski*, H.G., X. Wang, and D. B. Parsons. 2018: Object-Based Algorithm for the Identification and Tracking of Convective Outflow Boundaries, *Mon. Wea. Rev.,* **146***,* 4179-4200.

64. Parsons, D.B., K. Haghi*, K. Halbert#, B. Elmer#, and J. Wang, 2019: The Potential Role of Atmospheric Bores and Atmospheric Gravity Waves in the Initiation and Maintenance of Nocturnal Convection Over the Southern Great Plains. *J. Atmos. Sci., 76, 43-68.*

65. Chasteen*, M. B., S, E. Koch, and D.B. Parsons, 2019: Multi-scale processes enabling the longevity and daytime persistence of a nocturnal convective system. *Mon. Wea. Rev.,* 147 (2), 733-761.

66. Haghi, K.R., B. Geerts, H. Chipilski*, A. Johnson, S. Degelia, D. Imy, D.B. Parsons, R. Adams-Selin, D.D. Turner, and X. Wang, 2019: Bore-ing into nocturnal convection. *Bull. Amer. Meteor*. Soc, 100, 1103-1121.

68. Lillo*, S.P., D.B. Parsons, and M. Pena, 2019: Dynamics behind a record-breaking trough over Mexico and implications for El Nino and downstream predictability, *Bull. Amer. Met. Soc.*, 100, 1961-1978.

69. Zhang*, S., D.B. Parsons, and Y. Wang, 2019: Wave disturbances and their role in the maintenance, structure and evolution of a mesoscale convective system. *J. Atmos. Sci*. early on-line release.

70. Parsons, D.B., S. P. Lillo*, C. P. Rattray*, P. Bechtold, M.J. Rodwell, and C. M. Bruce#, 2019: The role of continental convective systems in forecast busts within global weather prediction systems, Atmosphere: Special Issue on Convection and its Impact on Weather, on-line early release.

PUBLICATIONS--Contributions to Books and Technical Notes

71. Parsons, D. B., B. F. Smull and D. K. Lilly, 1988: Chapter 26b: Report of the Panel on Mesoscale Organization and Processes. *Radar in Meteorology*, D. Atlas: Editor. Amer. Meteor. Soc., Boston, MA, 461-472.

72. Parsons, D. B., and S. B. Trier, 1989: *Taiwan Area Mesoscale Experiment: Doppler Radar Operations Summary*. NCAR Technical Note (NCAR/TN-315STR), 65 pp.

73. Parsons, D.B. and J.F.W. Purdom, (lead authors), 1995: 6.3 Topographically Induced Convective Cloud Patterns. *Images in Weather Forecasting: A Practical Guide for Interpreting Satellite and Radar Imagery*. M.J. Bader, G.S. Forbes, J.R. Grant, R.B.E. Lilley, and A.J. Waters: Editors. Cambridge University Press, 376-392.

74. Parsons, D.B., (contributing author), 1995: 6.5. Organized Mesoscale Convective Systems (contributed to sections on types of mesoscale convective systems and on severe weather associated with MCSs). *Images in Weather Forecasting: A Practical Guide for Interpreting Satellite and Radar Imagery*. M.J. Bader, G.S. Forbes, J.R. Grant, R.B.E. Lilley, and A.J. Waters: Editors., Cambridge University Press, 400-444.

75. T. Gal-Chen and D.B. Parsons, 1999: Chapter 13: Dynamic Retrievals. *The Analysis of Observations*. William A. Cooper: Editor. ASP web publication, supplementing chapter originally written by the late Tvzi Gal-Chen (web document)

76. Drobinski, P., P. Cocquerez, A. Doerenbecher, C. Lavaysse, D. Parsons, J.-L. Redelsperger, and S. Venel, 2013: Hurricane and monsoon tracking with driftsondes. Encyclopedia of Sustainability Science and Technology, Springer, Robert Meyers (ed). 1-14. 48.

77. Nakazawa, T., Parsons, D.B, and Komori, T. 2010: THORPEX and its application for Nargis by ensemble prediction. Indian Ocean Tropical Cyclones and Climate Change, Springer Press, Y. Carabi (ed), 143-148.

78. Parsons, D.B., 2015: Chapter 13: Continental Convection, 233-264, "Seamless Prediction of the Earth System: From Minutes to Months", WMO-1156, G. Brunet and S. Jones, editors.

79. **Dissertation:** Parsons, D. B., 1982: The origin, maintenance, and dissipation of rainbands in cold-frontal systems including the effects of orography and comparisons with theory. Ph.D. dissertation, University of Washington, Seattle, WA. Advisor, the late and great, Dr. Peter V. Hobbs

Publications in various stages of review:

80. Chipilski*, H.G., X. Wang, and D. B. Parsons. 2018: Impact of Assimilating Thermodynamic and Kinematic Profilers on the Prediction of Bores and Bore-Driven Nocturnal Convection: A Multi-Scale Forecast Evaluation for the 6 July 2015 Case Study, accepted in *Mon. Wea. Rev*. with minor revisions

FIELD EXPERIENCE

2015 **PECAN**, Principal Investigator on the NSF Program Overview, Co-Principal Investigator of the Experimental Design Overview and the facility request

2008 – 2010 **CONCORDIASI,** US lead, Principal Investigator on NSF Scientific Program Overview, and Principal Investigator on the Driftsonde component, which was taken over by Dr. Steven Cohn when I went to the WMO.

2008	**T-PARC,** Principal Investigator on NSF Scientific Program Overview. Dr. Patrick Harr assumed the leadership after I took my position at the WMO. Co-Principal Investigator on the Experimental Design Overview
2006	**AMMA-THORPEX**. Principal Investigator, Driftsonde demonstration project for 2006 Atlantic Hurricane Season.
2002	**IHOP_2002**, Principal Investigator; Chair, Project Office.
2000	**VTMX Program**, Principal Investigator for the NCAR component of a boundary layer experiment in Salt Lake City.
1996	**ARM GPS Water Vapor Experiment**, Principal Investigator.
1994	**NCAR Project Scientist**, Participant in the field phase through ATD project support of the ISS in the LANTEX, and ACE projects.
1992	**ARM Program**, Co-principal investigator for a November 1992 experiment at the CART site for measuring boundary layer fluxes with a newly developed interfermetric profiler and comparing this technique against measurements from a research aircraft.
1992	**ARM Program**, Principal Investigator for a June 1993 experiment at the CART site for testing a data assimilation into a non-hydrostatic model under warm season convective conditions.
1991-1993	**TOGA COARE**, Participant in planning and field work for the ISS systems.
1989	**National STORM Program**, Invited participant in small working group that help to draft 1989 planning document for summer STORM.
1986-1988	**TAMEX** (Taiwan Mesoscale Experiment), Member Experimental Design Committee Co-chair Doppler Radar Working Group Radar coordinator and NCAR/ATD Project Manager Supervising the radar data management.
1985	**OK Pre-STORM** (Oklahoma-Kansas Pre-STORM Project), Joint NOAA, NCAR, and University Project; observer on aircraft.
1985	**TEXEX** (Texas Frontal Experiment), NOAA and NCAR; Experimental planning and observer at Doppler lidar site.
1984	**MAYPOLE** (May Radar Polarization Experiment), NCAR, Field Observing Facility; Experimental planning and forecaster.
1976-1979	**CYCLES** (Cyclonic Extratropical Storms), University of Washington; experimental planning, graduate student researcher at Doppler radar site.

Selected Administrative Research Accomplishments

1. **Helped moved the School of Meteorology toward a broad, modern atmospheric science program:** Prior to my arrival, the School of Meteorology was known as a successful program, but one that was narrowly focused on weather-related research. A consensus decision was made to build outward from our strengths in radar, convective weather, and mesoscale meteorology to include a greater emphasis in climate, subseasonal to seasonal circulations, atmospheric chemistry, polar research, and satellite remote sensing. The specific areas of focus included successfully predicting new agency trends, such as polar meteorology, which is now a strength of our program through funding support from the Office of Naval Research (ONR) and our alignment with the Navigating the New Arctic initiative, which is one of NSF ten, new "big ideas. This change in focus was possible through the hiring six new tenure-track faculty at the level of Assistant Professor, one ranked renewable-term faculty, and three new senior faculty (an Associate Professor, two at the Professor level).

2. **Overall Research Growth:** The annual research expenditures of the weather and climate enterprise for the School and the associated centers totaled nearly $25 M in CY2018 with the bulk of the $25 M research expenditures ($18.5 M) occur in CIMMS led by Dr. McFarquhar, a faculty member of the School. An even larger total of ~$39.7M is reached if the research expenditures of the School's faculty whose administrative home is in the Dean's office is also included in large part due to Dean Moore's $15 M associated with his NASA GEOCARB project. While when I arrived, the School was much more of an educational enterprise with the research focused in the centers. However, the School has undergone dramatic improvement and growth in our research enterprise during my eight years as Director. For example, over the time period of our last Academic Performance Review, the external grant funding within the School, where one of our faculty served as a Principal Investigator, rose from less than $9 M in 2010 to nearly $16 M in 2016. More recently, later in 2nd term as Director, our research expenditures rose by over 26% from 2015 to 2017, while over the same period publications in peer reviewed journals increased by 48% from 60 to 89. The total research expenditures of College of Atmospheric and Geographic Sciences (with only two academic units, the School of Meteorology and the Department of Geography and Environmental Sustainability and the research centers founded by our faculty) now exceeds all other Colleges within the Norman campus with approximately twice the research expenditures per faculty member. This record is primarily due to the vibrancy of the School's faculty and the researchers within the centers, but also aided by a number of administrative actions describe below.

   Encouraged movement toward a research active faculty: When I arrived to become the Director, nearly 40% of the tenured and tenure-track faculty were not a Principal Investigator on any external research grant. Nearly all the faculty are now research active and are principal investigators on research grants (the exception is often the newest hires). This change was accomplished through persistent education of the university administration, rewards, mentoring, assisting faculty in proposal development, and striking a balance between kind encouragement and setting expectations on annual reviews. We added additional IT staff and increased faculty support in the classroom (e.g., GTAs, graders, hiring talented instructors to teach large general education courses) allowing more time for research and graduate mentoring.

   Help initiate a shift in the research culture at the School: The graduate program evolved from MS intensive to reaching an approximate balance between the awarding of MS and PhD degrees. Another change was the growth in the number of post-doctoral researchers as, at the time of my arrival, these researchers were primarily associated with the research centers with only 1 or 2 affiliated with the School. When I stepped down as Director, the faculty within the School were mentoring ~10-12 post-doctoral scientists. These increases in doctoral students and post-doctoral researchers allowed faculty to

concentration on "grander and deeper" research topics. I also sought to encourage the establishment of multi-faculty research groups.

Change in the School's relationship to the research centers: Upon my arrival as Director in 2010, many adjunct and affiliate faculty who were researchers in the major centers (ARRC, CAPS, CIMMS) were excellent in mentoring graduate students, but forbidden by Graduate College policy from chairing PhD committees. Through working with our faculty and the Graduate College, these affiliate and adjunct faculty can now, through established criteria and a faculty vote, chair PhD committees. We also increased the administrative support provided to our adjunct and affiliate faculty so that they are aware of and can more easily navigate through the rules, deadlines, and regulations of the School and Graduate College.

Encouraged more varied sources of research funding: At the time of my arrival, the funding for research within the School was primarily from NSF and NOAA with NSF-supported research expenditures by the School of Meteorology and affiliated research centers typically falling within the top five of atmospheric science programs. In recent years, the School has received funding from NSF, NOAA, ONR, NASA, and other government agencies that are less focused on the atmospheric sciences such as the Depts. of Transportation, Agriculture, Interior, and Education. The School's faculty now also receive some funding from foreign governments (e.g., Korean Meteorological Administration) and the private sector in the US, Japan, and China with the later from companies associated with the Chinese Academy of Science.

3. Role in establishing national and international research centers:

Establishment of the South Central Climate Science Center: In response to Department of Interior plans to establish and fund a regional climate center for the south central portion of the country, the University established a tiger team to scope out a winning proposal prior to the announcement of opportunity. I was a member of that team and a co-principal investigator on the successful multidisciplinary proposal that result in the establishment of the South Central Regional Climate Center (https://southcentralclimate.org). The grant awarded to consortium led by OU and composed of universities, tribal nations, and a research institute. Our competition included consortium led by the two leading public universities in Texas.

Chaired the multi-year review team for the Hans-Ertel Centre for Weather Research [Hans-Ertel-Zentrum für Wetterforschung]: In 2011, the German Federal Ministry of Transport, Building and Urban Development initiated the Hans-Ertel Centre for Weather Research [Hans-Ertel-Zentrum für Wetterforschung (HErZ)]. The goal of HErZ was to better connect research and teaching at German universities, activities at the atmospheric research centers, and the needs of the German national weather service. The priority research areas included "atmospheric dynamics and predictability, data assimilation, model development, climate monitoring and diagnostics, and the optimal use of information from weather forecasting and climate monitoring for the benefit of society." The review team was instrumental in moving the center toward more "permanent" funding at a level of €2,000,000 yr^{-1} over a 12-yr period.

Involved in two successful multi-year proposals for the UK Science of the Environment: Natural and Anthropogenic pRocesses, Impacts and Opportunities (SCENARIO) Doctoral Training Program: SCENARIO funds 60 PhD students over each of the 5-year periods. The scientific scope of SCENARIO spans physical, chemical, and biological processes within the overarching theme of "environmental risk and sustainability" over a wide range of temporal and spatial scales. The expertise spans the science of the atmosphere, oceans, ice, hydrology, soil, ecosystems and space weather. These doctoral training programs must include several UK universities, private and public sector entities, and international academic partners. Current international partners are OU and Cal Tech. SCENARIO allows for PhD students to spend significant time at OU at no cost to our institution.

4. **Organizing and leading large national and international field projects:** A hallmark of my career has been to bring the scientific community and funding agencies together to organize and obtain funding support for large national and international field campaigns. The overall total for the combination of US interagency funding for research and field deployment together with international field deployments exceeds $45M.

Co-Principal Investigator of the successful Scientific Project Overview (SPO) Proposal to NSF for the THINICE Arctic Proposal (2019) under the category of large and complex field projects: THINICE has made it through the competitive NSF SPO review processes and individual proposals will be submitted this fall. THINICE is an interdisciplinary project involving sea ice, ocean processes, and atmospheric dynamics to understand why some Arctic cyclones cause rapid sea ice losses of up to 500,000 km^2 in a 3-day period. The NSF portion of THINICE is ~$5.6 M, but this estimate does not include potential international partnerships, such Norway providing research funding and an ice breaker vessel and the UK funding a research team and a British Antarctic Survey aircraft.

Principal Investigator of the successful SPO proposal to NSF for the PECAN (Plains Elevated Convection at Night) Experiment (2015): PECAN was a $13.5 M effort funded through NSF, NOAA, NASA, and DOE. PECAN involved 350 participants from twenty-eight universities and eleven research laboratories and included more than 130 students. The science was focused on advancing understanding and prediction of night-time thunderstorms over the Great Plains. While the night-time maximum in storm frequency has been known for over 100 years, these storms are poorly predicted and scientists are still debating the explanation for this maximum.

Principal Investigator of the successful SPO proposal to NSF for CONCORDIASI Antarctic project (2008-2010): CONCORDIASI was a contribution to the International Polar Year that included deployment of a constellation of long-duration instrumented stratospheric balloons as well as in-situ observations over the Antarctic plateau. CONCORDIASI was designed to better understand and predict the atmospheric chemistry, weather and climate over Antarctic. The French Space Agency (CNES) provided substantial funding to support the development and deployment of US facilities with the overall funding for instrumentation development, the field phase, and research from the two nations is estimated to >$8 M.

Principal Investigator of the successful SPO proposal to NSF for the T-PARC (THORPEX Pacific Asian Regional Campaign) Project in 2008: The field campaign brought together participants from Canada, China, Germany, France, the United States, the United Kingdom, Japan, Korea, and Taiwan through organizing and combining their national project into a broad international collaboration. T-PARC was designed to advance understanding and prediction of typhoons and the downstream impacts of these events on high impact weather across North America and Europe. T-PARC also included coordination with a large Office of Naval Research Project called Tropical Cyclone Structure (TCS-08). The total funding for research and the field phase is roughly estimated to exceed $10M.

Principal Investigator of the successful Scientific Overview Proposal to NSF for IHOP_2002 (the International H_2O Project): The project involved over 250 researchers, students and technical staff primarily from the United States, Germany, France, and Canada. The principal objective of IHOP_2002 was to obtain an improved characterization of the time-varying three-dimensional water vapor field and evaluate its utility in improving the understanding and prediction of convection. Funding within the US was $8 M from NSF, NOAA, NASA, and DOE.

5. **Leadership role in the US contribution to the ten-year THORPEX program beginning in 2003:** During the planning and initial result phase of the IHOP_2002 campaign, I regularly interacted with the

interagency management group that oversaw the US Weather Research Program (USWRP). After IHOP_2002 was completed, this management team asked me to take on a national leadership role in the international THORPEX Program. This effort was the 1st major international program focusing on the advancement of global numerical weather prediction since the GARP (Global Atmospheric Research Program) program motivated by President Kennedy's effort to end the cold war. THORPEX brought together users of weather information, administrators at operational centers, social scientists, and atmospheric researchers. While at the National Center of Atmospheric (NCAR) research, my role in the project began by co-leading of one of the four original components and contributing to the International Science Plan. At the request of the program managers at the agencies funding atmospheric research, I subsequently assumed a national leadership role including establishing and directing the US THORPEX Project Office at NCAR at the request of the program managers overseeing the USWRP.

6. **International leadership in World Weather Research Program including THORPEX**: This national role led me to become involved in the international leadership beginning with co-chairing the North American Regional Committee. I was then encouraged to apply for the United Nations diplomatic post of Chief of the World Weather Research Program (WWRP) within the World Meteorological Organization (WMO). I was awarded this post and took a leave of absence from my position at NCAR. The WWRP position included overseeing the international THORPEX project and obtaining annual funding for the International Project Office from Canada, China, France, Germany, Japan, Norway, US, and UK. THORPEX itself was a large endeavor with, for example, a cluster of ten polar field projects that contributed to the International Polar Year. Together THORPEX and the other efforts of the WWRP included research and operational transition projects in Africa, Asia, the Arctic, Antarctic, Europe, North America, South America and the Pacific Islands. The research projects ranged from nowcasting weather hazards on minutes to hours to understanding extremes in the climate system. These research efforts included collaborations between the physical and social sciences, and joint projects with the World Climate Research Program on modeling and observational analyses.

7. **Development of observational facilities:** A various times in my career I have led or overseen the development of instrumentation facilities. The most recent activity was a successful Major Research Instrumentation award from NSF to develop a mobile thermodynamic and dynamic profiling facility for atmospheric boundary layer research. The system is called CLAMPS-1 (the 1st Collaborative Lower Atmospheric Mobile Profiling System). In addition, a number of other facilities were developed or significantly upgraded when I was a Manager of the Research Technology at NCAR. These systems included a collaboration funded by the French space agency (CNES) and NSF on driftsonde, which was a stratospheric ballooning system that carried a gondola that could provide in-situ observations and/or deploy dropondes upon remote command. The miniaturization of the dropsondes for the driftsonde program along with the remote communication and deployment system led to collaborations with NSF, NOAA and NASA on automated dropsonde systems for remote deployment on remotely controlled aircraft and the NSF/NCAR GV aircraft. Other developments at NCAR that I was involved with included DOE support to develop the Integrated Sounding Systems and a spaced antenna with profiler (Multi-Antenna Profiling Radar) and NSF funding of upgrades to the S-Pol Radar and modifications of the NRL P-3 to carry the ELDORA airborne Doppler radar and a French water vapor lidar.

8. **Maintenance, deployment, and upgrading of research facilities that are part of NSF's Lower Atmosphere Observing Facilities (LAOF):** While I was Manager of the Research Technology Facility in the Earth Observing Laboratory, we worked closely with program managers at the NSF and scientists with the university community on the following NSF Lower Atmosphere Observing Facilities: The S-Pol Doppler radar, the Integrated Sounding Systems (ISS) including the Multiple Antenna Profiling Radar (MAPR), the Flux PAM (Portable Automated Mesonet) Systems, the ELDORA airborne Doppler radar, and several dropsonde systems. I oversaw the development of several major national research facilities for use by the NSF-supported atmospheric sciences community.

9. Additional Administrative Accomplishments

1. **Significant roles in three community efforts to update curriculum in the geosciences including:** i) Serving on the organizing committee for the workshops associated with the NSF-sponsored effort on the future of graduate education in the geosciences led by Dean Sharon Mosher of the University of Texas Jackson School of Geosciences; ii) Leading the Global Weather Enterprise Forum efforts to provide guidance on the future educational needs of the global weather enterprise in both developed and developing nations; iii) Being a panel member, discussion leader, and presenter at the 2019 Minding the Gap Workshop that focused in the question *"How can academic departments and programs work with the private sector to better prepare students for the wide ranging career opportunities in atmospheric science?"*

2. **Global Weather Enterprise Forum (2017-2019):** An explosive growth is underway in the private sector component of the global weather enterprise largely motivated by the ~$1.5 trillion sensitivity of the global economy to day-to-day weather disruptions. Weather and climate change are also having a growing detrimental impact on society as the Global Economic Forum consistently ranks extreme weather events, natural disasters, failure to mitigate and adapt to climate change, and water crisis as the most detrimental and likely events to impact society. Unfortunately, many developing nations do not have access to state-of-the-art global weather forecast and climate model ensembles. This lack of access along with limited human and capital infrastructure contribute to weather disasters causing a $520 billion annual loss in consumption and driving 26 million people into poverty each year. Solving these problems requires collaboration between the private, public, and academic sectors including research and operational prediction. These issues led the World Bank, the Hydro-Meteorological Equipment Industry (HMEI), and the WMO to form the Global Weather Enterprise Forum. The Forum initially consisted of 12 members from each of the academic, private and public sectors. The Forum is designed to receive community input and provide recommendations to the World Bank, HMEI, and WMO on issues related to data sharing, access to forecast products, creating a vibrant academic sector, developing and sustaining public-private partnerships and greatly strengthening weather and climate services in low-income nations. I have served as the academic lead on the Forum and have been a member of its coordination group, which is a liaison committee between the Forum and the World Bank, WMO, and the HMEI. The Forum has proven to be quite popular, particularly among private sector entities and various consortium (e.g., reinsurance, communication) so that the 2nd phase of the Forum will have open membership. I will likely remain on the coordination group that oversees the Forum and remain involved in reviewing World Bank planning documents that help guide their $700M expenditures aimed at reducing and mitigating the impact of hydrometeorological disasters.

3. **University of Oklahoma**

Member of the President's Academic Programs and Budget Advisory Committee (PAPBAC) (2018-2019): Major reductions in State funding led the University to identify and implement significant budgetary reductions across numerous colleges, academic units, and other entities (e.g., libraries, museums, academic press, and international centers). As part of a shared governance model, the University formed a ten-member faculty committee (5 selected by the faculty senate and 5 by the President) that was co-chaired by the Provost and ex-President of the Faculty Senate. For each major (>$100k) reduction proposed by the administration, the committee studied the unit's budget within the context of enrollment, academics, research productivity, staffing levels, scholarship programs, student support services, vision for the future, and best practices at peer and aspirational peer universities. We then interviewed the relevant Dean, Director, and in some cases stakeholders to listen to their opinion about the impact of the proposed budgetary reductions and answer our questions. Reports were prepared

for each unit to inform the President of any detrimental impacts of proposed budgetary reductions and whether the budgetary reductions were desirable, tolerable, or against our culture. The President nearly always followed our recommendations.

Initiated a study that helped change the balance between fees and tuition at the graduate level: The University practice has generally been that Graduate Research and Teaching Assistants (GRAs and GTAs) receive a tuition waiver, but must pay for fees and health insurance. Since our graduate students felt strongly that student fees were too high, I asked the Student Affairs Committee (SAC) to do a detailed survey across the nation's atmospheric science programs. The students undertook a truly exhaustive search (e.g., stipend levels, tuition and fees paid by students, health insurance costs, student housing prices, access to mass transit/parking, etc.) and found that our stipend levels were higher than most programs and generous given Norman's cost of living. However, after considering fees, the net compensation fell well below our peer programs. In response to this survey, the School dramatically increased our stipend levels. We also shared this analysis with the university administration, which eventually led to a significant increase in stipends and a decrease in the graduate fees charged across research active programs at the Norman campus.

Role in development of an online Master of Environmental Science: Hydrology & Water Security degree was established through cooperation between the School of Meteorology, the Gallogly College of Engineering, and the department of Geography and Environmental Sustainability. This degree program began in this fall semester (2019) with 43 graduate students. We are projected to add another ~20-25 students for the spring semester and another ~40 students next fall. The course is a source of additional income for the academic units, the faculty who develop the courses, and the faculty and graduate students involved in teaching. The degree program is aimed at professional hydrologists who already have a Bachelor's degree and are working in hydrology or closely related field. Although I am no longer the Director, I remain a member of the oversight committee.

Leadership role in the initiation of two new 4+1 programs: These programs were formed in response to changes in the job market for the atmospheric sciences as discovered from discussions with the College's Board of Advisors, alumni, and other representatives from the private sector. These 4+1 programs offer a Bachelor's of Science degree in Meteorology along with either a Master's degree in Business Administration or a Master's degree in Data Science and Analytics. These degree programs were initiated and paper work was filed while I was Director, but the approval process has been recently completed and applications for these graduate programs will begin in the spring of 2020.

4. **Student Recruitment for the School of Meteorology:** The School attracts the nation's top academic students interested in the atmospheric sciences. Our 1st year students, for example, dominate the American Meteorological Society (AMS) Freshman Scholars collecting 20 scholarships (27% of the total) from 2012 to 2017 followed by Penn State (only 5), Stanford, and N. Carolina State! We also led the nation in AMS Minority Scholarships with 19% of the total just ahead of Cornell, followed by Harvard and Penn State! Our students have received numerous awards including NSF Graduate Fellowships, a Goldwater Scholarship, numerous NOAA Hollings Fellowships (5 alone in 2016), AMS Named Scholarships, AMS Graduate Fellowships, a Bluewater Computational Scholar, a Google internship, and the 1st ever Marshall Post-Graduate Fellowship ever awarded in the atmospheric sciences and in the Big 12 in any discipline. These accomplishments came about, in part, from the changes in student recruitment listed below:

Initiated numerous changes in undergraduate recruitment: The changes included: i) Instituting Summer Met Days where prospective students and family members participate in a day-long visit; ii) Creating an Undergraduate Academic Coordinator position to oversee undergraduate recruiting; iii) Having a student-led social media effort to better connect with prospective students; iv) Establishing of

a student ambassador program; v) Better accommodating transfer students (we hired the University Admissions' lead for transfer students); vi) Changes in how student visits during the academic year were handled.

Initiated changes in graduate recruitment: Upon my arrival, I found that the School relied primarily on internal applicants of variable quality due to a low acceptance rate (<25%) for offers made to external applicants and the lack of any formal process to identify top candidates. A faculty committee was formed to review and rank the applicants allowing the School to be more focused on recruiting top applicants and eliminating offers to applicants who unqualified. We also instituted an early (no cost) internal application process to allow students to gain some idea of their chances for acceptances prior to a formal application to the University and to help us identify and recruit the top applicants early in the process. The total number of applicants and our acceptance rate (~75%) both jumped substantially.

5. **Revised core curriculum in the School of Meteorology:**

The School recently undertook a major revision of its undergraduate degree in meteorology that will be implemented in the fall of 2019. The curriculum uniquely weaves non-core skills (e.g., programming, big data skills, oral and written communication, team-work, critical thinking) into our atmospheric science courses. For example, the School worked with the University's Writing Center to develop a matrix of communication skills of increasing difficulty to be introduced and assessed each semester. The curriculum also includes more atmospheric science classes earlier in the curriculum to help with retention and a pre-senior Capstone research class that increases the likelihood that students will submit an abstract for a conference presentation (all undergraduates are funded to attend one conference during their undergraduate career) or even a manuscript for a peer reviewed journal. The new curriculum also provide more extensive exposure to possible career paths, and regular exposure to coding (primarily Python).

Implemented a revision of our graduate curriculum (2012): In response to the decision of the School to broaden outward from our main focus on weather and radar, the School undertook a major revision of its graduate curriculum. Highlights of these changes include a "Direct-track" option allowing top student to enter into the PhD program after their first year of studies and a revised set of requirements that provide a balance between graduate students having broad core knowledge of the field and flexibility to dive deeper into their research area. The new curriculum was also more accessible to graduate students with degrees outside of the atmospheric sciences (e.g., geology, physics, mathematics, engineering, geosciences, chemistry) to help us recruit top students.

6. **Diversity:** Regretfully, as our nation grows more diverse, the geosciences remain among the least diverse of all STEM disciplines. The situation is even more dire for the atmospheric sciences, which is often ranked as the least diverse field within in the geosciences. Hence, creating a diverse and inclusive community has been a significant challenge for the School of Meteorology. However, the student body, staff, and faculty have all became more diverse during my time as Director. For example, in 2010 the percentage of female undergraduates was only 32%. By 2017, the sophomore to senior cohort was 42% female and the incoming freshman class was gender balanced. Another example is that in 2010 less than 6% of our students self-identified as non-white, but that number grew to ~18% by 2017. Unfortunately, this number is lower than the demographics of our state so that there is significant room for improvement, yet we note that 18% ranks high among major atmospheric science programs. The faculty also became more diverse. In 2010, all the faculty at the rank of full professor were males. The School now has two female faculty at the full professor rank with a major shift taking place at the early career level with the hiring of a female instructor and three Assistant Professors who are members of underrepresented groups. Recruiting one of these faculty included working with the administration to implement the University's

1st partner accommodation hire. The following actions helped create a more diverse and inclusive environment.

Setting an example as Director: As a 1st generation college graduate, I feel strongly that it is important for the Director to set the tone and send a message on diversity and inclusivity. This message begins with simple acts like meeting students from underrepresented groups shortly after their arrival and remembering their faces and names. The graduate students that I advised or co-advised at any given time have also been comprised of students from different races, ethnic groups, sexual orientation, gender identities, abilities/disabilities, national origin, and economic backgrounds. My undergraduate advisees are similarly diverse. These students are awesome and have accomplishments that include numerous national honors (e.g., a UCAR SOARS protégé, several NOAA Hollings Scholars, a Bluewater Computational Fellow, a Weather Channel intern, and recipient of presentation awards at conferences).
Hired Undergraduate and Graduate Academic Coordinators: The staff position of Undergraduate Academic Coordinator was created through reorganizing staff duties. Both Academic Coordinator hires have firsthand knowledge of the challenges and barriers faced by students from underrepresented groups and have allowed us to better develop linkages to diverse communities. For example, one of these hires is a Native American who has been invited to and participated in numerous targeted recruiting events. The other hire is a person with a physical disability who grew up in a mixed race family. Both are extremely approachable, enthusiastic, and a first stop in helping *all* our students solve a wide variety of problems.

Established I'M Meteorology: This program highlights the accomplishment of our diverse student body (see for example, http://meteorology.ou.edu/tag/im-meteorology/). These stories, along with images selected by our students are regularly posted on our web site, social media, and the monitors within the National Weather Center and College buildings. This visibility helps make our students more aware that we are a diverse and accepting community, while also sending a recruiting message that we have an inclusive program with successful students.

Strived to develop a dialog between the faculty and student body on diversity and inclusivity issues: Discussions at faculty meetings, town-halls with the students, and one-on-one exchanges with faculty, staff, and students have been utilizing to inform our community about the barriers faced by under-represented groups on- and off-campus and to gain insight on steps that could be taken to reduce these barriers. I have found that making the faculty more aware of published statistical evidence on likely biases in hiring and barriers to advancement to be the most effective tool.

Creating a community: I have found it important to gain the prospective of not just faculty voices, but input from students and staff on critical decisions facing the School. Several of the previously mentioned administrative accomplishments (e.g., University-wide changes in the tuition/fee ratio, graduate student recruitment, I'M Meteorology, reorganization of staff duties) began from listening to students and staff. Strategies include having an open-door policy, staff members and Associate Directors who are approachable, an active Student Affairs Committee (SAC), and holding several student town halls each year. The School also adopted the practice of having a SAC representative/liaison on all search committees and at all faculty meetings, except for matters relating tenure and promotion. Staff input occurs through a variety of mechanisms. Students and staff are also appointed to many decision making committees.

7. **Increased university financial support:** My time at Director included a very difficult financial period when many academic programs experienced budgetary cuts and the loss of numerous staff positions. Through persistence, sharing accomplishments, and demonstrating needs through external reviews and comparisons of staffing and budget levels with external atmospheric science peers and other OU science/engineering programs, the University has provided enhanced base support for a new IT staff

member, the creation of an administrative assistant position assigned to the Director, and the movement of another staff position from "soft" to base funded. The School also received additional funding for graduate teaching assistantships, faculty hires, a lecturer, and Undergraduate and Graduate Associate Directors.

8. **Linkages with the private sector:** The linkages between the private sector and the atmospheric sciences are often far weaker than disciplines, such as business, engineering, and geophysics.

Close connections between NCAR's dropsonde program and Vaisala Inc: While in my facility management position at NCAR, I built upon the previous foundation of close cooperation between Vaisala and NCAR in upgrades and design changes in the NCAR dropsonde system, which has typically included Vaisala in-situ sensors. As part of the licensing agreement, Vaisala covered most of the salary for one of our engineers working on the dropsondes.

The School of Meteorology and the Advanced Radar Research Center (ARRC) have developed a close connection to WeatherNews Inc, a risk communication company based in Japan with offices in Tokyo, Amsterdam and Norman: A critical aspect of this relationship includes the establishment of a formal internship program for our undergraduates, an annual award to an outstanding graduate student in the ARRC research center, and an annual workshop. At last count, WeatherNews employs over 60 of our graduates world-wide.

The School has developed a close relationship with Weather Decision Technology (WDT) and its new parent company DTN: WDT/DTN has employed numerous undergraduate interns each year and last year hired ~9 of our undergraduates as employees of the company. The leaders of WDT have worked closely with the School on a number of issues.

Broadcasting: The School has been successful in obtaining donations of equipment from the private sector. One example is the Baron company providing computers, graphical processors, and display systems used in the broadcasting industry. These systems are utilized primarily by students who are seeking a B.S. in Meteorology and a minor in Broadcasting from the Gaylord College of Journalism. This partnership with Baron, relationship with numerous broadcasting stations, and improved linkages with Journalism have led to a strong, new presence in broadcasting. For example, CNN and the Weather Channel each hired one of our undergraduates into their extremely competitive internship programs this summer.

Curriculum revisions: Alumni and employer surveys and one-on-one discussions with employers were conducted to gain input into the development of curriculum and our 4+1 programs. The CEO of WDT was significantly involved in our efforts to develop the 4+1 that results in an B.S. in Meteorology and an MBA.

General connections with leaders in the private sector: In part through the activities of the Global Weather Enterprise Forum, I have developed relationships with many CEO and high-level executives in the private sector. This fall our speaker line-up for our 1st year course includes a variety of talks that range from Amazon to the World Bank.