

## CURRICULUM VITAE

### **DR.-ING. DIPL.-PHYS. PETRA M. KLEIN**

Executive Associate Dean, College of Atmospheric and Geographic Sciences  
Professor and Edith Kinney Gaylord Presidential Professor, School of Meteorology,  
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#### PERSONAL INFORMATION

**Citizenship:** U.S. of America and Germany  
**Other:** During 1995-2004 my last name was Kastner-Klein

#### UNIVERSITY EDUCATION

**July 1999** Defense of Ph.D. dissertation at the faculty of Civil Engineering, University of Karlsruhe, Germany. Title of thesis: *Experimental investigation of fluid mechanical transport processes in street canyons* (mark: very good).  
**April 1993** Diploma in Physics (mark: very good), University of Karlsruhe, Germany.  
**1986 – 1993** Physics, University of Karlsruhe, Germany. Diploma thesis: *Wind-tunnel study of vehicle-emission dispersion near road-tunnel portals* (mark: very good), Institute of Hydrology and Water Resources Planning.

#### EMPLOYMENT HISTORY

**Since August 2017** Executive Associate Dean, College of Atmospheric and Geographic Sciences, University of Oklahoma, Norman, Oklahoma, USA.  
**January – August 2017** Associate Director for Graduate Programs, School of Meteorology, University of Oklahoma, Norman, Oklahoma, USA.  
**Since July 2016** Professor, School of Meteorology, University of Oklahoma, Norman, Oklahoma, USA.  
**July 2008 – June 2016** Associate Professor (tenured), School of Meteorology, University of Oklahoma, Norman, Oklahoma, USA.  
**Aug. 2002 – June 2008** Assistant Professor, School of Meteorology, University of Oklahoma, Norman, Oklahoma, USA.  
**Jan. 2001 – July 2002** Visiting Assistant Professor, School of Civil Engineering and Environmental Science, University of Oklahoma, Norman, Oklahoma, USA.  
**May 1999 - Dec. 2000** Post-Doctoral Research Associate, Institute for Atmospheric and Climate Science, Swiss Federal Institute of Technology (ETH), Zurich, Switzerland.  
**Oct. 1997 – April 1999** Research Associate, Institute of Hydromechanics, University of Karlsruhe, Germany.  
**May 1993 - Sept. 1997** Research Associate, Institute of Hydrology and Water Resources Planning, University of Karlsruhe, Germany.

## **AWARDS**

**Regents Professorship**, University of Oklahoma, May 2022

**Helmut Landsberg Award**, “*For decades of sustained leadership in the field of urban meteorology and exemplary contribution to experimental investigation of flow and turbulence characteristics in urban areas.*” American Meteorological Society, 2021

**Fellow of the American Meteorological Society**, 2018

**Edith Kinney Gaylord Presidential Professorship**, University of Oklahoma, April 2009

**Teaching Scholars Initiative (TSI) award**, College of Atmospheric and Geographic Sciences, University of Oklahoma, April 2009

**NSF Career Award**, 2006 (see also section about funded research)

**OU Presidential International Travel Award**, 2004

## **LANGUAGES**

English: professional speaking, reading, and writing

German: native

## **ONLINE RESEARCH PROFILES:**

ResearcherID: <http://www.researcherid.com/rid/G-1894-2012>

Google Scholar: <http://scholar.google.de/citations?user=ORRXPJMAAA>

Research Gate: [https://www.researchgate.net/profile/Petra\\_Klein?ev=hdr\\_xprf](https://www.researchgate.net/profile/Petra_Klein?ev=hdr_xprf)

## **PROFESSIONAL ASSOCIATIONS:**

Member of the American Meteorological Society

Member of the American Geophysical Union

Member of the American Association for the Advancement of Science

Member of the International Association for Urban Climatology

## **AREAS OF RESEARCH INTERESTS**

### ***General area:***

Atmospheric boundary layer research and tropospheric pollution problems

### ***Areas of particular interest:***

- Experimental investigation of flow and turbulence characteristics in urban areas
- Structure and dynamics of the nocturnal boundary layer
- Measurements and parameterizations of turbulence and mixing processes in the atmospheric boundary layer
- Interactions between boundary layer dynamics and atmospheric chemistry
- Modeling of atmospheric dispersion processes
- Renewable energy resources
- Wind-tunnel modeling of geophysical flow phenomena
- Atmospheric measurement techniques
- Environmental impacts of urbanization

## **DIVERSITY AND INCLUSION:**

### ***Roles and Accomplishments:***

- Chair of the Diversity and Inclusivity Council of the College of Atmospheric and Geographic Sciences (A&GS, 2017-2021)
  - Coordinates the updating and maintenance of the A&GS Diversity and Inclusivity Council website (<http://www.ou.edu/ags/diversity>)
  - Established a policy for hiring of faculty in the College of Atmospheric and Geographic Sciences, including clear and well-documented screening and interview criteria and templates for the position advertisement, with the objective to reduce implicit bias and promote diversity when hiring of faculty
  - Created a policy for students registered with OU's Accessibility and Disability Resource Center to receive testing accommodation within the National Weather Center
  - Developed the [NWC protocol](#), a code of conduct document for A&GS and National Weather Center (NWC) sponsored activities
  - Established and administers an UG student travel award program that annually supports ten undergraduate students who want to attend professional meetings.
  - Coordinated offering OU's Active Bystander training in the National Weather Center (May 2019)
  - Coordinated offering OU's Unlearning Training series in the National Weather Center (Spring 2020)
  
- Diversity Liaison for the College of Atmospheric and Geographic Sciences (since 2017)
  - Serves as A&GS faculty liaison for OU's diversity, equity, and inclusion office
  - Participates in OU's campus wide diversity and inclusion strategy and initiatives
  - Organized the A&GS participation in OU's common read of "Flowers of the Killer Moon" (Fall, 2019) and initiated a A&GS common read program which was launched in spring 2020.

### ***Participation in workshops and trainings:***

- Completed the Unlearning Training series at the University of Oklahoma (more details about the training provided at <http://www.ou.edu/diversityandinclusion/experience/training>)
- 2019 ESWN Women in Sciences Leadership Workshop, Boulder, CO, November 2019
- Workshop: "Seeking Cultural Competence in Hiring: Practical Strategies for Hiring Faculty, Staff and Administrators", by Dr. Chris Cullinan, University of Oklahoma, October 31, 2019
- AMS Short course "Diversity, Equity, and Inclusion for Geoscientists", at the annual AMS meeting in Phoenix, AZ, January 2019
- NSF sponsored 2-day Hearts of G.O.L.D (Geosciences Opportunities for Leadership in Diversity) bias and bystander intervention training in July 2018 in Colorado Springs.

## **TEACHING**

### ***Formal Classroom Instruction:***

Fall 2021	Advanced Observations for Lower Atmospheric Research, co-taught with Dr. Elizabeth Smith, School of Meteorology, University of Oklahoma
Spring 2019, 2020, 2021, 2022	Climate and Renewable Energy. Senior level, open to both major and non-majors, lecturer, School of Meteorology, University of Oklahoma
Spring 2005, 2007, 2009, 2012, 2017	Micrometeorology, Senior/Graduate level, lecturer, School of Meteorology, University of Oklahoma.
Spring 2004, 2006, 2008, 2011, 2013-2016	Air Pollution Meteorology and Modeling, Senior/Graduate level, lecturer, School of Meteorology, University of Oklahoma.
Every fall semester since 2003 (except 2009)	Meteorological Measurement Systems, Junior level, lecturer, School of Meteorology, University of Oklahoma.
Spring 2003	Introduction to Meteorology, Freshman/Sophomore level, lecturer, School of Meteorology, University of Oklahoma.
Spring 2001, 2002, 2013, 2014, 2015	Air Quality Management, Senior/Graduate level, lecturer, School of Civil Engineering and Environmental Science, University of Oklahoma.
Fall 2001	Air Pollution Control Engineering, Graduate level, lecturer, School of Civil Engineering and Environmental Science, University of Oklahoma.
Spring 2000	Applied Air Pollution Modeling, Senior level, TA, ETH Zurich.
Fall 1996, spring 1997	Applied Statistics for Civil Engineers, Senior level, TA, University of Karlsruhe.

### ***Mentoring and Advising:***

**Number of graduate student committees chaired or co-chaired:** 20

- Michelle Spencer, University of Oklahoma, currently serving as PhD committee co-chair together with Dr. Elizabeth Smith.
- Arianna Jordan, University of Oklahoma, currently serving as PhD committee co-chair together with Dr. Elizabeth Smith.
- Qingyu Wang, University of Oklahoma, MS, chair, 2018, currently serving as chair of PhD committee.
- Francesca Lappin, University of Oklahoma, MS, chair, 2021, currently serving as PhD committee co-chair together with Dr. Liz Pillar Little.
- Nolan Meister, University of Oklahoma, MS, co-chair together with Dr. Elizabeth Smith, 2022.
- Tyler Bell, University of Oklahoma, MS, chair, 2018, PhD, chair, 2021.
- Elizabeth Smith, University of Oklahoma, PhD, co-chair together with Evgeni Fedorovich, 2018.
- Tim Bonin, University of Oklahoma, PhD, co-chair together with Philip Chilson, 2015.
- Jennifer Newman, University of Oklahoma, PhD, chair, 2015.
- Sean Arms, University of Oklahoma, MS, chair, 2006, PhD, chair, 2014.
- Kodi Monroe, University of Oklahoma, PhD, co-chair together with Jeffrey Basara, 2014.
- Greg Blumberg, University of Oklahoma, MS, co-chair together with David Turner, 2013.
- Nicole Ramsay, University of Oklahoma, MS, chair, 2013.
- Jose Galvez, University of Oklahoma, PhD, chair, 2011.

- Brian Bridges, University of Oklahoma, MSPM, chair, 2011.
- James V. Clark, University of Oklahoma, MS, chair, 2005.
- Jeff Kyle, University of Oklahoma, MS, chair, 2002.
- David Williams, University of Oklahoma, MS, chair, 2002.
- Christophe Gentil, University of Karlsruhe, supervisor of diploma thesis, 1998.
- Andreas Rastetter, University of Karlsruhe, supervisor of diploma thesis, 1997.

Number of graduate students mentored as MS/PhD Committee Member: 25

*School of Meteorology, University of Oklahoma:*

Amanda Schroeder (MS, 2010), Andrew Taylor (PhD, 2010), Aaron Gleason (MS, completed 2011), Brett Zielke (MS, 2011), Sean Waugh (MS, 2012), Brett Albright (MS, 2012), Charlotte Wainwright (PhD, 2014), Stephen Castleberry (MS, 2014), Nathan Anderson (MS, 2014), Paul Flannagan (MS, 2015), Brad Illston, (PhD, 2016), Alexander Boothe (MS, 2016), Hayden Mahan (MS, 2016), Larissa Reames (PhD, 2017), Joshua Gebauer (MS, 2017), Ryann Wakefield (MS, 2018), Brian Greene (MS, 2018), Briana Lynch, (MS, 2019), Daniel Phoenix (PhD, 2019), Robert van Kleeck (MS, 2020), Brian Greene (PhD, current), Connor Bruce (MS, current)

*Department of Geography, University of Oklahoma:*

Mang Lung Cheuk (PhD, completed 2009), Emily Windahl (MS, completed 2016)

*Department of Engineering, University of Oklahoma:*

Lee Fithian (PhD, completed 2019)

Number of International Dissertations Reviewed: 1

*Geophysical Institute, University of Bergen:* Line Båserud, PhD, 2018

Number of undergraduate students mentored and supervised: 40

*Capstone and Honors' research projects:*

2004: Shaun Bell, Brian Hamilton, Jay Hoffman, Michael Pittard (2 Captstone projects)  
 2006: Grant Hicks, Ameya Joshi, Jessica Sagona, Daniel Howie (2 Captstone projects)  
 2007: Troy Christensen, David Bodine, Matt Carney (2 Captstone projects)  
 2008: Brian Putnam (Honors project)  
 2009: Ellen Wardrop (Honors project)  
 2011: Nicole Ramsay and Keith Sherburn (Captstone project)  
 2012 Marissa Metcalf and Abraham Frei-Pearson (Captstone project)  
 2013 Victoria Ford (Honors project)  
 2014 Sean Benedict (Honors project)  
 2015 Sean Benedict and Brandon Taylor (Captstone project)  
 2015 Andrew Moore (Honors project)  
 2016 Mary LaPorte and Santiago Mazuera (First Year Research Experience (FYRE) project)  
 2016 Stuart Edris and Jason Newby (Captstone project)  
 2017 Sarah Rodriguez (Honors project)

*REU students:*

2018 Morgan Clark (NWC REU program), co-mentor together with Dr. Sean Crowell  
 2019 Michelle Spencer (NWC REU program), co-mentor together with Dr. Elizabeth Smith

*Research projects of exchange students:*

Bjoern Fock, Kerstin Schmidt, Duick Young, Kristin Mielke, David Bodine, Max Perrone, Paul Kamis, Denise Hertwig, Margaret Frey, Chase Rhoades, Lucas Reimann, Meike Hellweg

## **SERVICE**

### ***Department:***

Chair (2011-14) and member (2010-2014, 2016-2018) of the School of Meteorology Graduate Studies Committee.

Member of the School of Meteorology Undergraduate Studies Committee (2002-2009).

Undergraduate Advisor (current since 2003)

Coordinator of the SoM European Academic Exchange Programs (2010-2018).

Coordinator of the SoM Hamburg Academic Exchange Programs (since 2004).

Organizer of the SoM Boundary Layer, Urban Meteorology and Land-surface Processes Seminar (2007-2014, 2018- 2019).

### ***College:***

Study Abroad Liaison for the College of Atmospheric and Geographic Sciences (since 2012)

Co-Chair of Search Committee for Williams Chair in the School of Meteorology (2018-2020)

Co-Chair of Search Committee for Mark and Kandi McCasland Chair and Director of the School of Meteorology (2017-2018)

Chair of the WNI Scholarship Selection Committee (since 2017)

Member of Search Committee for the Director of the Cooperative Institute for Mesoscale Meteorological Studies (2015-2017)

Member of Search Committee for Faculty member in the Department of Geography and Environmental Sustainability (2015-2016)

Member of Search Committee for the Williams Chair position in Meteorology (2012-2015)

Member of Search Committee for Faculty position in the School of Meteorology (2011-2012)

Member of Search Committee for 3 Faculty positions in the School of Meteorology (2012-2014)

Member of Search Committee for Remote Sensing Faculty member in the Department of Geography (2007-2008)

Member of Search Committee for Mark and Kandi McCasland Chair and Director of the School of Meteorology (2007-2008)

Member of the Atmospheric and Geographic Sciences College Transition Committee (2005)

### ***University:***

Member of the sub-committee on Criterion 1 (Mission) for the Higher Learning Commission (HLC) accreditation report (since 2022)

Member of OU's Faculty Retention Advisory Committee (2019-2021)

Participant in the OU Vice President for Research and Partnerships (VPRP) Strategic Planning Exercise and lead of the Energy, Environment, and Sustainability focus group (2020)

Reviewer of the OU VPRP Big Idea Challenge Proposals (2020)

Reviewer of the OU VPRP COVID-19 Seed Grant Proposals (2020)

Member of the search committee for the Senior Associate Vice President for Research and Partnerships position (2020)

Member of Search Committee for Dean of College of International Studies and Associate Provost (2019-2020)

Member of Search Committee for Faculty member in the Department of Physics and Astronomy (2016-2017)

University Council on Faculty Awards and Honors (2010-2012)

KAEFS Steering Committee (substitute for Phil Chilson during his sabbatical in 2013/14)

**Professional:**

Member of the UCAR review panel for the 2020 and 2021 President's Strategic Initiative Fund proposal submissions in the scientific research category (Spring 2020 and 2021)

Board Member of the AMS Volunteering Program (2019-2021)

Member of the search committee for the director of the NCAR Mesoscale and Microscale Meteorology Laboratory (2019-2020)

Participant in the UCAR Board of Trustees and NCAR leadership retreat in Vail, Colorado (July 2019)

UCAR Board of Trustees (Feb. 2015-2021). In my role as trustee, I served on the NCAR Budget and Programs Committee, on the Executive Committee of the Board of Trustees (Feb. 2016-2021), and as Co-chair of the Board of Trustees (Feb. 2017-2021).

Member of the Scientific Program Committee of the 23<sup>rd</sup> AMS Boundary Layers and Turbulence Conference, June 2018, Oklahoma City, OK, USA.

Member of the AMS Committee on Boundary Layers and Turbulence (2018-2021).

Member of the Planning Committee of the National Academies Workshop on the Future of Atmospheric Boundary Layer Observations, October 24-26, 2017, Airlie House, Warrenton, VA

Member of the Program Organizing Committee (2017) for the NSF-sponsored community workshop on developing requirements for in situ and remote-sensing capabilities in convective and turbulent environments (C-RITE), 22-24 May 2017 at the NCAR, Boulder, CO.

Member of the 2016 AMS Annual Meeting Program Committee

Member of the External Advisory Committee of the Earth Observatory Laboratory, NCAR, Boulder (since 2006)

Member of the National Academies Board of Atmospheric Sciences and Climate 2011 summer study: Committee on Urban Meteorology: Scoping the Problem, Defining the Needs, 27-29 Jul. 2011.

Invited expert and panel member, Workshop on U.S. Weather Research and Research-to-Operations Activities, Board of Atmospheric Sciences and Climate, National Academies of Science, Woods Hole, MA, 21-22 July 2009.

Member of the AMS Committee on Boundary Layers and Turbulence (since 2018)

Member (2002-2007) and chair (2007) of the AMS Board on the Urban Environment, ex-officio member (2008-2010)

Member of the AMS Committee Meteorological Aspects of Air Pollution (2005-2007)

Board member of the International Association for Urban Climatology (2007-2011)

CIMMS Fellow (since 2002)

Editor of English translation of the 2. Edition of the book *Micrometeorology* by Thomas Foken (2016)

Member of Editorial Board of the Journal *Environmental Fluid Mechanics* (since 2010)

Reviewer for the Journals:

*Atmospheric Chemistry and Physics,*  
*Atmospheric Environment,*  
*Atmospheric Research,*  
*Boundary Layer Meteorology,*

*Bulletin of the American Meteorology Society,*  
*Environmental Fluid Mechanics,*  
*Environmental Management,*  
*Environmental Modeling and Assessment,*  
*Environmental Modelling and Software,*  
Geophysical Research Letters,  
*International Journal of Climatology,*  
*Journal of Applied Meteorology and Climatology,*  
*Journal of Wind Engineering and Industrial Aerodynamics,*  
*Landscape and Urban Planning,*  
*Quarterly Journal of the Royal Meteorological Society,*  
*Meteorology and Atmospheric Physics,*  
*Meteorologische Zeitschrift,*  
*Theoretical and Applied Climatology,* and  
*Urban Climate.*

Total number of manuscripts reviewed since 2002: ~90

Proposal Reviewer for NSF, NERC, Austrian Science Foundation, total number of proposals reviewed since 2002: 14



## **PARTICIPATION IN FUNDED RESEARCH PROJECTS**

(US funding since 2001, personal credit: US \$2,262,550, total budget: \$4,423,027)

- 2020-2021** Lawrence Livermore Laboratory grant *Boundary-layer Structure during AWAKEN*, Function: PI, budget US \$81,695, credit: 100%.
- 2020-2023** DOE award *Coastal Urban Boundary-layer Interactions with Convection (CUBIC)*, Function: PI, budget US \$895,887, credit: 40%.
- 2019-2020** NOAA award *Planetary Boundary Layer Observations During CHEESEHEAD with CLAMPS*. Function: PI, budget US \$97,190, credit: 100%.
- 2019-2020** NOAA award *Boundary Layer Observations During Vortex SE*. Function: PI, budget US\$ \$125,843, credit: 100%.
- 2016-2019** NSF award *Collaborative Research: Perdigao: Multiscale Flow Interactions in Complex Terrain*. Function: PI (Co-PIs: Turner), budget US \$397,851, credit: 60%.
- 2014-2018** NSF award *Collaborative Research: Low-Level Jets in the Nocturnal Stable Boundary Layer: Structure, Evolution and Interactions with Mesoscale Atmospheric Disturbances*. Function: PI (Co-PIs: Chilson, Fedorovich, Shapiro, Turner), budget US \$984,474, credit: 20%.
- 2012-2015** NSF MRI award: *Development of a Mobile Thermodynamic and Dynamic Profiling Facility for the Atmospheric Boundary Layer*. Function: Co-PI (PI: Parsons, Co-PIs: Cheong, Chilson, Turner), budget \$663,268, credit: 20%.
- 2012-2014** Lawrence Livermore Laboratory grant: *Research in support of Forecasting and Uncertainty Quantification of Power from Intermittent Renewable Energy Sources*. Function: PI (Co-PIs: Fedorovich, Morrissey, Parsons), budget \$113,411, credit 25%
- 2013 (June – July)** Support as guest researcher at the cluster of excellence "Integrated Climate System Analysis and Prediction" (CliSAP) within Research Topic B-5 (Urban Systems) at the Meteorological Institute, University of Hamburg.
- 2010 (Jan. –July)** Support as CliSAP fellow at the Research Centre KlimaCampus at the University of Hamburg. Project *Verification of Urban Climate Zone Classification and Improvement of Turbulence Parameterizations through Full-Scale and Wind-Tunnel Data*.
- 2009-2010** State of Oklahoma, Conservation Commission Award *Experimental Green Roof*, Function: Co-PI, budget: US\$ 86,070, credit: 25%.
- 2006-2013** NSF Career Award *Development of an Innovative Laboratory for Research and Education in Urban Meteorology (ILREUM)*. Function: PI, budget: US\$ 674,801, credit 100%.
- 2003-2006** US DOE Project in collaboration with Los Alamos National Laboratories *Integration of Traffic-Produced-Turbulence Parameterizations in the Fast Response Urban Dispersion Model QUIC-PLUME*. Function: PI, budget US\$ 119,880, credit: 100%.
- 2003-2005** US DOE/DTRA Project *Study of Traffic-Produced Mean and Turbulent Air Motions in an Urban Street during JOINT URBAN 2003*. Function: PI, budget: US\$ 133,862, credit: 100%.
- 2002-2004** US DTRA project *Wind-Tunnel Modeling of the DOE/DTRA Urban 2003 Tracer Experiment*. Function: PI, budget US\$ 58,795, credit: 100%.
- 2001** OC-ALC/TIET Technology and Engineering Project *Impact of Long-Range Transport of Ozone Precursors from Dallas on Air Quality at TAFB*. Function: PI.
- 1999-2000** Project TRAPOS of European Commission Training and Mobility of Researchers Programme *Optimisation of Modelling Methods for Traffic Pollution in Streets*. Function: Young Visiting Researcher (Post-Doc), Chairperson of the Working Group on "Traffic Produced Turbulence".
- 1997-1999** Project *Strömungsmechanische Aspekte in der Stadtplanung im Hinblick auf eine Reduktion von Kfz – Immissionen*, PEF 2 96 005, Forschungszentrum Karlsruhe. Function: Research Scientist.

- 1995-1996** Project *Windkanalversuche zur Verbesserung der Ermittlung von Kfz - bedingten Konzentrationsverteilungen in Stadtgebieten*, PEF 2 95 001, Forschungszentrum Karlsruhe. Function: Research Scientist.
- 1993-1994** Project *Ermittlung des Strömungs- und Konzentrationsfeldes im Nahfeld typischer Gebäudekonfigurationen (Experimente)*, PEF 2 93 003, Kernforschungszentrum Karlsruhe. Function: Research Scientist.

### **INVITED TALKS**

- 18 Dec. 2018** Invited seminar at the Geophysical Institute, University of Bergen, Norway. Title: *Nocturnal Boundary Layer Observations in Different Types of Terrain*.
- 25 June 2018** Invited seminar at the German Aerospace Center (DLR), Institute of Atmospheric Physics (IPA) in Oberpfaffenhofen, Wessling, Germany. Title: *Nocturnal Boundary Layer Observations in Different Types of Terrain*.
- 24 Jan. 2017** Invited presentation at the 13<sup>th</sup> Symposium of the Urban Environment, 97<sup>th</sup> AMS Annual Meeting, Seattle, WA, USA. Title: *Observations of Urban Boundary Layers – Progress and Challenges*.
- 29 Nov. 2016** National Weather Center Colloquium, Norman, OK, USA. Title: *Linkages between boundary layer structure and evolution of the nocturnal low-level jet in the U.S. Southern Great Plains*.
- 23 May 2016** Graduate Seminar, Institute for Atmospheric and Cryospheric Sciences, University of Innsbruck, Austria. Title: *Linkages between boundary layer structure and evolution of the nocturnal low-level jet in the U.S. Southern Great Plains*.
- 18 Dec. 2014** Invited talk at the Annual Meeting of the American Geophysical Union, San Francisco, USA. Title: *Formation of nocturnal low-level jets and structure of the nocturnal boundary layer in the Southern Great Plains*.
- 25. Sept. 2014** Invited talk at the Workshop on Microscale Modeling of Complex-Terrain Flows, Notre Dame University. Title: *Formation of nocturnal low-level jets and structure of the nocturnal boundary layer*
- 03 Dec. 2013** Invited talk at the Urban Precipitation Workshop organized by the Princeton Environmental Institute and the Department of Civil and Environmental Engineering at Princeton University. Title: *Urban Boundary Layer Structure*.
- 27 Aug. 2013** Invited talk at Argonne National Laboratories for Urban Landscapes and Climate Change: from Measurements to Modeling; A Workshop to Improve Urban Representation in Climate Models. Title: *Spatial and Temporal Characteristics of the Oklahoma City Urban Heat Island*.
- 12 April 2013** Panelist at the session 4151 Urban Meteorology: Forecasting, Monitoring, and Meeting Users' Needs (co-sponsored by American Meteorological Society) at the AAG Annual meeting in Los Angeles.
- 16 Aug. 2011** Invited talk at the Workshop on Urban Air Quality and Climate Change (UAQCC) in Hamburg. Title: *Mixing Processes in the Nocturnal Atmospheric Boundary Layer and Their Impacts on Urban Ozone Concentrations and Heat Island Intensity*.
- 17 June 2010** Invited talk at the Meteorological Institute, University of Hannover, Germany. Title of talk: *Temporal and spatial variability of flow and dispersion processes in cities*.
- 24 March 2010** Invited talk at the MetStroem workshop hosted by the Meteorological Institute, University of Hamburg, Germany. Title of talk: *Variability of urban flow and concentration data in space and time*.

- 04 February 2010** Invited talk at the Meteorological Institute, University of Hamburg, Germany. Title of talk: *Wetter und Klima in Städten – Schauplatz lokaler and globaler Veränderungen? (Weather and Climate in Cities – Stage for Local and Global Changes?)*
- 21-22 July 2009** Invited expert and panel member, Workshop on U.S. Weather Research and Research-to-Operations Activities, Board of Atmospheric Sciences and Climate, National Academies of Science, Woods Hole, MA.
- 5 June 2009** Invited speaker, Meteorologisches Kolloquium, Institut für Meteorologie, Freie Universität Berlin. Title of seminar: *Einfluss von Städten auf Wetter und Klima.*
- 28 Nov. 2007** Invited speaker at the AOS 270 Seminar Series, Department of Atmospheric and Oceanic Sciences, University of California, Los Angeles. Title of seminar: *Flow and Dispersion Process in the Urban Canopy Layer.*
- 13 Sept. 2007** 7<sup>th</sup> AMS Symposium on Urban Environment, 09/10-13, San Diego, California. Invited plenary speaker: *Physical modeling and its role towards improving understandings of transport and dispersion as relevant to urban -coastal area.*
- 3 Jan. 2007** Fluids Research Department, Applied Research Laboratory, Penn State University. Seminar talk: *Driving Physical Mechanisms of Flow and Dispersion in Urban Canopies.*
- 13 June 2006** 6<sup>th</sup> International Conference on Urban Climate, 06/12-16, Gothenburg, Sweden. Invited plenary speaker: *Multi-scale interactions and driving physical mechanisms in urban canopy layer flow.*
- 15 June 2005** Helsinki Urban Modeling Workshop: Use of Helsinki Mesoscale Testbed Data in Urban Atmospheric Modeling, Helsinki, Finland. Presentation: *State of the art in wind tunnel modeling of urban areas and possible uses of Helsinki data*
- 08 June 2005** Department of Meteorology, University of Reading, Great Britain. Seminar talk: *Mean flow and turbulence characteristics in a downtown street canyon measured during Joint Urban 2003*
- 01 April 2004** Environmental Protection Agency, Research Triangle Park, North Carolina, USA. Seminar talk: *Mean Flow, Turbulence and Dispersion Characteristics in Urban Areas*
- 14 Oct. 2002** Department of Civil Engineering, Texas Tech University, Lubbock, Texas, USA. Seminar talk: *Urban Air Quality – Overview on Physical and Numerical Modeling Techniques*
- 07 June 2002** Department of Mechanical and Aerospace Engineering, University of California, San Diego, California, USA. Seminar talk: *Mean Flow and Turbulence Characteristics in the Urban Surface Layer*
- 30 May 2002** Department of Land, Air and Water Resources, University of California, Davis, California, USA. Seminar talk: *Mean Flow and Turbulence Characteristics in the Urban Surface Layer*
- 09 May 2002** School of Meteorology, University of Oklahoma, Norman, Oklahoma, USA. Seminar talk: *Meteorological Challenges in Urban Air Quality Management.*
- 24 May 2001** COST Workshop on Urban Boundary Layer Parameterisations, Zurich, Switzerland. Talk: *Overview of near-surface turbulence parameterisations.*
- 15 Sept. 2000** School of Civil Engineering and Environmental Science, University of Oklahoma, Norman, Oklahoma, USA. Seminar talk: *Urban Air Quality Modeling and Assessment.*
- 5 Oct. 1995** 8. ALS-Kolloquium „Ausbreitung von Luftverunreinigungen“, University of Stuttgart, Germany. Talk: *Belastungen durch Luftverunreinigungen an Straßen - Untersuchungen im Windkanal.*

## PARTICIPATION IN INTERNATIONAL SCIENTIFIC MEETINGS

- 10-15 Jan. 2021** 101<sup>st</sup> AMS Annual Meeting, Virtual. Co-author of the presentations: *Exploring Great Local Greenhouse Gases (GHGs) Mixing Evaluation with Single-Column WRF-VPRM* (given by my PhD student Qingyu Wang) and *Identifying Inequities and Cultural Biases within the Geosciences: An OU Case Study* (given by my Co-PI Cassandra Shivers-Williams).
- 12-16 Jan. 2020** 100<sup>th</sup> AMS Annual Meeting, Boston, MA, USA. Co-author of the presentation: *Exploring Great Plains Nocturnal Low-Level Jet Heterogeneity and Connections to Convection Initiation* (given by my REU student Michelle Spencer).
- 22-24 May 2019** Workshop on Urban Scale Processes and their Representation in High Spatial Resolution Earth System Models, Argonne National Laboratory. Invited as leader of a group discussion focusing on Observations in Urban Environments.
- 6-10 Jan. 2019** 99<sup>th</sup> AMS Annual Meeting, Phoenix, AZ, USA. Co-author of the presentations: *Confronting the Boundary Layer Data Gap: Evaluating New and Existing Methodologies of Probing the Lower Atmosphere* (given by the PhD student Tyler Bell), *Estimating Vertical Heat Flux Profiles Using UAS and LIDAR Observations* (given by the PhD student Brian Greene), *Stormin' the Atmosphere with Unmanned Aircraft Systems: Early Results From LAPSE-RATE and Lessons Learned* (given by the Philip Chilson).
- 11-15 June 2018** 23<sup>rd</sup> AMS Symposium on Boundary Layers and Turbulence. Presentation: *Nocturnal Boundary-Layer Structure Inside a Valley Observed During the Perdigão Field Experiment*. Co-author of 3 presentations: *Evaluating the Spatial and Temporal Evolution of Great Plains Low-level Jets During PECAN Using High-resolution Observations and Simulations* (given by my PhD student Elizabeth Smith), *Analysis of Flow in Complex Terrain Using Innovative Multi-Doppler Lidar Retrievals* (given by my MS student Tyler Bell), and *Plume or Bubble? Transitions in City-Scale Atmospheric Circulation with the Richardson Number* (given by Hamidreza Omidvar, Phd student at Princeton University).
- 7-11 Jan. 2018** 98<sup>th</sup> AMS Annual Meeting, Austin, TX, USA. Co-author of 2 presentations: *The Great Plains Low-Level Jet during PECAN: Observed and Simulated Characteristics* (given by my PhD student Elizabeth Smith), and *Examining Common Features of the Low-Level Jet during PECAN* (given by MS student Joshua Gebauer).
- 11-15 Dec. 2017** Fall Meeting of the American Geophysical Union, New Orleans, LA, USA. Co-author on 3 presentations, one given by my student MS Tyler Bell: *Nocturnal Boundary-Layer Phenomena Observed at a Complex Site During the Perdigão Experiment*.
- 19-21 Sept. 2016** PECAN Science Workshop. Presentation: *Nocturnal boundary-layer structure and evolution of the low-level jet during PECAN*, Norman, OK, USA.
- 13-15 August 2016** Second University of Oklahoma-Nanjing University Symposium on Weather and Climate Research. Presentation: *Variability of Urban Heat Island Intensity and Ozone Air Quality in Oklahoma City and Dallas-Fort Worth*, Nanjing University, Nanjing, China.
- 20-25 June 2016** 22<sup>nd</sup> AMS Symposium on Boundary Layers and Turbulence. Presentation: *Linkages between boundary layer structure and evolution of the nocturnal low-level jet in the U.S. Central Plains* and co-author on 3 other presentations, Salt Lake City, Utah, USA.
- 10-13 May 2016** Perdigão Planning Meeting. Presentation: *Boundary Layer Observations with the Collaborative Lower Atmospheric Mobile Profiling System (CLAMPS)*, Vila Velha de Rodão, Portugal.
- 07-08 July 2015** Invited participant in the NSF sponsored "2015 Urban Climate Institute: Urban Warming and the Built Environment", College of Environment and Design, University of Georgia, Athens, GA.

- 02-06 Feb. 2014** 2014 Annual AMS meeting. Session chair and three presentations: *Summertime Urban Heat Island in the Oklahoma City and Implications for Air Quality Assessment* (11th Symposium on the Urban Environment), *Scaling of Mean Flow and Turbulence in the Urban Canopy Layer* (11th Symposium on the Urban Environment), and *A change in urban air quality brought about by varying meteorological parameters* (18th Joint Conference on the Applications of Air Pollution Meteorology with the A&WMA).
- 06-08 Aug. 2013** 2013 Symposium of the North American Wind Energy Academy. Presentation: *Lidar measurements of wind and turbulence for wind-energy applications*.
- 12 April 2013** 2013 Annual AAG meeting in Los Angeles. Panelist of session 4151 “Urban Meteorology: Forecasting, Monitoring, and Meeting Users’ Needs”, and Presentation: *Impacts of the structure and dynamics of the nocturnal boundary layer on urban climate*.
- 6-10 Aug. 2012** 8th International Conference on Urban Climate – ICUC 8 and 10th AMS Symposium on the Urban Environment in Dublin, Ireland. Presentation: *Turbulent Heat and Momentum Transfer Within the Urban Roughness Sublayer*. Poster: *Performance Evaluation of an Experimental Green Roof in a Semi Arid Region*.
- 5-8 June 2012** 16th International Symposium for the Advancement of Boundary-Layer Remote Sensing – ISARS 2012, in Boulder, Colorado, USA. Presentation: *Small-Aperture Scintillometer Measurements of Turbulent Fluxes at a Suburban Site*.
- 16-18 Aug. 2011** Workshop on Urban Air Quality and Climate Change (UAQCC) in Hamburg. Member of the Scientific Advisory Board and Presentation: *Mixing Processes in the Nocturnal Atmospheric Boundary Layer and Their Impacts on Urban Ozone Concentrations and Heat Island Intensity*.
- 27-29 Jul. 2011** Member of the National Academies Board of Atmospheric Sciences and Climate 2011 summer study: Committee on Urban Meteorology: Scoping the Problem, Defining the Needs.
- 18 - 19 April 2011** 3rd Scintillometer Workshop 2011, Wageningen, The Netherlands. Presentation: *Evaluation of Monin-Obukhov Similarity Functions Used in a Small Aperture Scintillometer*.
- 02-06 Aug. 2010** 9<sup>th</sup> AMS Symposium on the Urban Environment, Keystone, Colorado. Presentation: *Mixing Processes in the Nocturnal Atmospheric Boundary Layer and Their Impacts on Urban Ozone Concentrations and Heat Island Intensity*. Also co-author of the abstracts *A quantitative description of the Oklahoma City urban heat island* (pres. given by Amanda Schroeder), *Interactions between coherent structures and the urban canopy shear layer* (pres. given by Sean Arms), *Observational studies of turbulent transfer processes across the urban canopy* (pres. given by Jose Galvez), and *Application of Joint Urban 2003 observations for assessment of morbidity outcomes during a heat wave* (pres. given by Heather Basara).
- 29 June -3 July 2009** 7th International Conference on Urban Climate (ICUC-7), Yokohama, Japan. Presentation: *Comparison of mean flow and turbulence characteristics at different sub-urban measurement sites*.
- 12-15 Jan. 2009** 8<sup>th</sup> AMS Symposium on the Urban Environment, Phoenix, Arizona. Presentation: *Development of an Innovative Laboratory for Research and Education in Urban Meteorology: An Overview of the NSF Career Project: ILREUM*. Also co-author of the abstracts *Coherent structures within a North American street canyon* (pres. given by Sean Arms) and *Scintillometry applied to urban studies: evaluation of scintillometer measurements made at a sub-urban site* (pres. given by Jose Galvez)

- 9-13 June 2008** 18th Symposium on Boundary Layers and Turbulence, Stockholm, Sweden. Presentation: *Variability of Surface-Air Temperature over Gently Sloped Terrain*. Also co-author of the abstracts *Analysis and classification of flows over gently sloping terrain within patchy vegetation* (pres. given by Sean Arms) and *Turbulent heat fluxes in the atmospheric surface layer: comparison of scintillometer measurements with eddy-covariance and gradient methods* (pres. given by Jose Galvez)
- 28 - 30 May 2008** Participant at the Theme-of-the-Year 2008 Geophysical Turbulent Phenomena Workshop 3 entitled "Observing the Turbulent Atmosphere: Sampling Strategies, Technology and Applications", Boulder Colorado.
- 21-24 Jan. 2008** 15th Joint Conference on the Applications of Air Pollution Meteorology with the A&WMA, New Orleans, Louisiana, USA. Presentation: *Concentration Fluctuations in a Downtown Urban Area Analysis of Concentration Data from the Joint Urban 2003 Full-Scale and Wind-Tunnel Measurements*.
- 21-24 Jan. 2008** Mentor of 2 poster presentations at the student conference of the Annual AMS meeting, New Orleans, Louisiana, USA. Presentations: *Analysis of wind data from the 2004 DAPPLE experiment in Westminster, UK* (Perron et al.) and *Variability of surface air temperature over gently-sloped terrain* (Bodine et al.).
- 10-13 Sept. 2007** 7th AMS Symposium on Urban Environment, 09/10-13, San Diego, California. Session chair and invited plenary speaker: *Physical modeling and its role towards improving understandings of transport and dispersion as relevant to urban -coastal area*.
- 26-28 Sept. 2006** NCAR/GTP workshop "Turbulence and Scalar Transport in Roughness Sublayers" at the National Center for Atmospheric Research, Boulder, Colorado.
- 12-16 June 2006** 6<sup>th</sup> International Conference on Urban Climate, Gothenburg, Sweden. Session chair and invited plenary speaker: *Multi-scale interactions and driving physical mechanisms in urban canopy layer flow*.
- 29 Jan. - 02 Febr. 2006** 6th AMS Symposium on the Urban Environment and 14th Joint Conference on the Applications of Air Pollution Meteorology with the A&WMA, Atlanta, Georgia, USA. Presentations: *Comparison of wind-tunnel and full-scale street-canyon data from Joint Urban 2003*, and *Implementation of a traffic-produced turbulence scheme into the fast-response model QUIC*.
- 15-16 June 2005** Helsinki Urban Modeling Workshop: Use of Helsinki Mesoscale Testbed Data in Urban Atmospheric Modeling, Helsinki, Finland. Co-chair of the Working Group *Microscale- and physical-modeling* and presentation: *State of the art in wind tunnel modeling of urban areas and possible uses of Helsinki data*
- 23-26 Aug. 2004** 5<sup>th</sup> AMS Symposium on the Urban Environment, Vancouver, BC, Canada. Presentations: *Vertical profiles of mean flow and turbulence characteristics in a downtown street canyon measured during Joint Urban 2003*, *Modeling of flow and dispersion characteristics in typical urban building configurations with the fast-response model QUIC*, and *Dispersion modeling of traffic emissions in cities*.
- 11-15 Jan. 2004** 84<sup>th</sup> AMS Annual Meeting, Seattle, Washington, USA. Presentation: *Wind-tunnel simulation of the JOINT Urban 2003 tracer experiment*.
- 2-5 June 2003** Eleventh International Conference on Wind Engineering, Lubbock, Texas, USA. Presentation: *Evaluation of the fast response model QWIC-URB based on wind-tunnel flow measurements in idealized street canyons*.
- 15-19 July 2002** 15<sup>th</sup> AMS Symposium on Boundary Layer and Turbulence, Wageningen, Netherlands. Poster presentation: *Evaluation of the Lagrangian footprint model LBDM-B using wind tunnel data sets*.

- 20-24 May 2002** 4th AMS Symposium on the Urban Environment and 12th Joint Conference on the Applications of Air Pollution Meteorology with the Air and Waste Management Association, Norfolk, Virginia, USA. Presentations: *Significance of traffic produced turbulence for urban dispersion modeling* and *Impact of long-range transport on ozone pollution in the Oklahoma City metro area.*
- 5-8 Dec. 2001** 3<sup>rd</sup> International Symposium on Environmental Hydraulics, Tempe, Arizona, USA. Presentation *Dispersion of a gaseous plume in the sheared convective boundary layer: Evaluation of a Lagrangian particle model versus wind tunnel simulation data.*
- 14-18 Aug. 2000** 3<sup>rd</sup> AMS Symposium on the Urban Environment, Davis, California, USA. Presentation: *Spatial variability of mean flow and turbulence fields in street canyons* and *Wind input data for urban dispersion modeling - activities of working group 1 within COST 715.*
- 7-11 Aug. 2000** 14<sup>th</sup> AMS Symposium on Boundary Layer and Turbulence, Aspen, Colorado, USA. Presentation: *Experimental study on mean flow and turbulence characteristics in an urban roughness sublayer.*
- 11-14 Oct. 1999** 6<sup>th</sup> Conference on Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes. Rouen, France. Presentation: *Organised and turbulent air motions in a wind tunnel model of a street canyon with and without moving vehicles.*
- 13-15 Sept. 1999** EC391 EUROMECH Colloquium Wind tunnel modelling of dispersion in environmental flows, Institute of Thermomechanics, Prague, Czech Republic. Presentations: *Wind tunnel study of concentration and flow fields near street canyon intersections*, and *Diffusion from a line source deployed in a homogeneous roughness layer: Interpretation of wind tunnel measurements by means of simple mathematical models.*
- 23-25 Aug. 1999** Workshop of the Program SATURN (Studying Atmospheric Pollution in Urban Areas), University of Aveiro, Portugal. Poster presentation: *Wind tunnel study of flow fields in street canyons with moving vehicles.*
- 3-5 Mar.1999** 2<sup>nd</sup> International Conference on Urban Air Quality: Measurement, Modelling and Management, Technical University of Madrid, Madrid, Spain. Presentation: *Similarity concept for dispersion of car exhaust gases in street canyons tested against wind-tunnel and numerical model data.*
- 30 June-3 July 1998** International Workshop on Flow Diagnosis Techniques, State Marine Technology University, St. Petersburg, Russia. Presentation: *Application of LDA technique to flow and turbulent diffusion diagnosis in a wind-tunnel model of urban street canyon with moving vehicles.*
- 18-21 May 1998** 5<sup>th</sup> Conference on Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes, Rhodes, Greece. Presentation: *Modelling of vehicle induced turbulence in air pollution studies for streets.*
- 2-6 June 1997** 22<sup>nd</sup> NATO CCMS International Technical Meeting on Air Pollution Modelling and its Application, Clermont Ferrand, France.
- 17-27 Mar. 1997** NATO Advanced Study Institute Buoyant Convection in Geophysical Flows, Pforzheim, Germany.
- 4-8 Aug. 1996** 2<sup>nd</sup> International Symposium on Computational Wind Engineering, (CWE 96), Fort Collins, Colorado, USA. Presentation: *Concentration and flow distributions in the vicinity of U-shaped buildings: Wind tunnel and computational data.*
- 10-14 June 1996** International Conference on Urban Climatology, ICUC'96, Essen, Germany. Presentation: *Wind-tunnel studies of concentration fields in street canyons and crossings.*

- 5-9 May 1996** 4<sup>th</sup> Workshop on Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes. Oostende, Belgium. Presentation: *Wind-tunnel case studies of atmospheric dispersion in the urban environment*.
- 27-29 Sept. 1994** 2<sup>nd</sup> International Conference "Air Pollution 94", Barcelona, Spain. Presentation: *Concentration estimation around point sources located in the vicinity of U-shape buildings*.
- 5-16 July 1993** NATO Advanced Study Institute "Wind Climate in Cities", Waldbronn, Germany.

### **OTHER PROFESSIONAL ACTIVITIES**

- 2009** Member of the International Scientific Committee of the 7<sup>th</sup> Intl. Conf. on Urban Climatology, Yokohama, 06/29-07/03 2009.
- 2008-2009** Program chair, 8<sup>th</sup> AMS Symposium on the Urban Environment, Phoenix, Arizona, 11-15 January 2009.
- 2007** Program committee member and session chair, 7<sup>th</sup> AMS Symposium on the Urban Environment, 09/10-13, San Diego, California.
- 2006** Program committee member and session chair, 6<sup>th</sup> AMS Symposium on the Urban Environment, 01/29-02/03/2006, Atlanta, Georgia.
- 2004** Program committee member and chair of session in honor of Prof. Dr. Erich Plate, 5<sup>th</sup> AMS Symposium on the Urban Environment, 08/13-26/2004, Vancouver, Canada.
- 2003-2004** Special Issue of Meteorology and Atmospheric Physics on Air Quality. Function: Co-editor.
- 1994 - 1995** Proceedings *Windprobleme in dichtbesiedelten Gebieten*, WTG - Reports, No. 3, Editor E. Plate, 1995. Function: technical editor.
- Nov. 1993** Organisation of 3<sup>rd</sup> WTG Dreiländertagung D-A-CH '93 *Windprobleme in dichtbesiedelten Gebieten*, November 11<sup>th</sup>, 1993, University of Karlsruhe.
- June/July 1993** Participation in organising the NATO Advanced Study Institute *Wind Climate in Cities*, Waldbronn, July 5<sup>th</sup> - 16<sup>th</sup>, 1993.
- 1993** Expert study: *Windkanaluntersuchungen für den Standort und die Umgebung des Kraftwerks Franken II der Großkraftwerk Franken AG*, TÜV Bayern Sachsen, function: co-worker.



## LIST OF PUBLICATIONS

### **Refereed Articles in Journals:**

- [1] Sanchez Gomez M., J. K. Lundquist, **P. M Klein**, T. M. Bell, 2021. Turbulence Dissipation Rate Estimated from Lidar Observations During the LAPSE-RATE Field Campaign. *Earth Syst. Sci. Data*, 13, 3539–3549, <https://doi.org/10.5194/essd-13-3539-2021>.
- [2] Bell, T. M., **P. M. Klein**, J. K. Lundquist, and S. Waugh, 2021. Remote-sensing and radiosonde datasets collected in the San Luis Valley during the LAPSE-RATE campaign, *Earth Syst. Sci. Data*, 13, 1041–1051, <https://doi.org/10.5194/essd-13-1041-2021>.
- [3] Mullendore, G. L., M. C. Barth, **P. M. Klein**, and J. H. Crawford, 2020: Broadening Impact of Field Campaigns: Integrating Meteorological and Chemical Observations. *Bull. Amer. Meteor. Soc.*, 102, E463-E475, doi: <https://doi.org/10.1175/BAMS-D-19-0216.1>.
- [4] Bell, T. M., Greene, B. R., **Klein, P. M.**, Carney, M., and Chilson, P. B.: Confronting the boundary layer data gap: evaluating new and existing methodologies of probing the lower atmosphere, *Atmos. Meas. Tech.*, 13, 3855–3872, <https://doi.org/10.5194/amt-13-3855-2020>, 2020.
- [5] de Boer, G., Houston, A., Jacob, J., Chilson, P. B., Smith, S. W., Argrow, B., Lawrence, D., Elston, J., Brus, D., Kemppinen, O., **Klein, P.**, Lundquist, J. K., Waugh, S., Bailey, S. C. C., Frazier, A., Sama, M. P., Crick, C., Schmale III, D., Pinto, J., Pillar-Little, E. A., Natalie, V., and Jensen, A.: Data Generated During the 2018 LAPSE-RATE Campaign: An Introduction and Overview, *Earth Syst. Sci. Data*, 12, 3357–3366, 2020, <https://doi.org/10.5194/essd-12-3357-2020>.
- [6] de Boer, G., Diehl, C., Jacob, J., Houston, A., Smith, S. W., Chilson, P., Schmale, D. G., III, Intrieri, J., Pinto, J., Elston, J., Brus, D., Kemppinen, O., Clark, A., Lawrence, D., Bailey, S. C. C., Sama, M. P., Frazier, A., Crick, C., Natalie, V., Pillar-Little, E., **Klein, P.**, Waugh, S., Lundquist, J. K., Barbieri, L., Kral, S. T., Jensen, A. A., Dixon, C., Borenstein, S., Hesselius, D., Human, K., Hall, P., Argrow, B., Thornberry, T., Wright, R., and Kelly, J. T., 2020: Development of Community, Capabilities, and Understanding through Unmanned Aircraft-Based Atmospheric Research: The LAPSE-RATE Campaign. *Bull. Amer. Meteor. Soc.*, 101, E684–E699, <https://doi.org/10.1175/BAMS-D-19-0050.1>.
- [7] Omidvar H., E. Bou-Zeid, Q. Li, J.-P. Mellado, and **P. Klein**, 2020: Plume of Bubble? Mixed convection flow regimes and city-scale circulations. *Journal of Fluid Mechanics*, 897, A5. doi:10.1017/jfm.2020.360
- [8] Bell T., **P.M. Klein**, N. Wildmann, and R. Menke, 2020: Analysis of Flow in Complex Terrain Using Multi-Doppler Lidar Retrievals, *Atmos. Meas. Tech.*, **13**, 1357–1371, <https://doi.org/10.5194/amt-13-1357-2020>.
- [9] Bonin, T.A., **P.M. Klein**, and P.B. Chilson, 2020: Contrasting Characteristics and Evolution of Southerly Low-Level Jets During Different Boundary-Layer Regimes. *Boundary Layer Meteorology*, 174, 179–202. <https://link.springer.com/article/10.1007/s10546-019-00481-0>.
- [10] Wakefield, R.A., J.B. Basara, J.C. Furtado, B.G. Illston, C.R. Ferguson, and **P.M. Klein**, 2019: A Modified Framework for Quantifying Land-Atmosphere Covariability during Hydrometeorological and Soil Wetness Extremes in Oklahoma. *J. Appl. Meteor. Climatol.*, **58**, <https://doi.org/10.1175/JAMC-D-18-0230.1>.

- [11] Fernando, H.J., J. Mann, J.M. Palma, J.K. Lundquist, R.J. Barthelmie, M. Belo-Pereira, W.O. Brown, F.K. Chow, T. Gerz, C.M. Hocut, **P.M. Klein**, L.S. Leo, J.C. Matos, S.P. Oncley, S.C. Pryor, L. Bariteau, T.M. Bell, N. Bodini, M.B. Carney, M.S. Courtney, E.D. Creegan, R. Dimitrova, S. Gomes, M. Hagen, J.O. Hyde, S. Kigle, R. Krishnamurthy, J.C. Lopes, L. Mazzaro, J.M. Neher, R. Menke, P. Murphy, L. Oswald, S. Otarola-Bustos, A.K. Pattantyus, C.V. Rodrigues, A. Schady, N. Sirin, S. Spuler, E. Svensson, J. Tomaszewski, D.D. Turner, L. van Veen, N. Vasiljević, D. Vassallo, S. Voss, N. Wildmann, and Y. Wang, 2019: [The Perdigão: Peering into Microscale Details of Mountain Winds](https://doi.org/10.1175/BAMS-D-17-0227.1). *Bull. Amer. Meteor. Soc.*, **100**, 799–819, <https://doi.org/10.1175/BAMS-D-17-0227.1>.
- [12] Smith, E.N., J.G. Gebauer, **P.M. Klein**, E. Fedorovich, and J.A. Gibbs, 2019: The Great Plains Low-Level Jet during PECAN: Observed and Simulated Characteristics. *Mon. Wea. Rev.*, **147**, 1845–1869, <https://doi.org/10.1175/MWR-D-18-0293.1>
- [13] Wagner T.J., **P. M. Klein**, and D. D. Turner, 2019. A new generation of ground-based mobile platforms for active and passive profiling of the boundary layer. *Bull. Amer. Meteor. Soc.*, **100**, 137–153, <https://doi.org/10.1175/BAMS-D-17-0165.1>.
- [14] Geerts, B., D. J. Raymond, V. Grubišić, C. A. Davis, M. C. Barth, A. Detwiler, **P. M. Klein**, W.-C. Lee, P. M. Markowski, G. L. Mullendore, and J. A. Moore, 2018. Recommendations for in situ and remote sensing capabilities in convective and turbulent environments. *Bull. Amer. Meteor. Soc.*, **99**, 2463–2470, <https://doi.org/10.1175/BAMS-D-17-0310.1>.
- [15] Smith E. N., J. A. Gibbs, E. Fedorovich, and **P. M. Klein**, 2018. WRF model study of the Great Plains low-level jet: effects of grid spacing and boundary layer parameterization. *Appl. Meteor. Climatol.*, **57**, 2375–2397, <https://doi.org/10.1175/JAMC-D-17-0361.1>.
- [16] Gebauer J.G., A. Shapiro, E. Fedorovich, and **P. M. Klein**, 2018. Convection initiation caused by heterogeneous low-level jets over the Great Plains. *Monthly Weather Review*, **146**, 2615–2637, <https://doi.org/10.1175/MWR-D-18-0002.1>.
- [17] Nemunaitis-Monroe K.L., **P. M. Klein**, J. B. Basara, and E. Fedorovich, 2017. Sensitivity of Predictions of the Urban Surface Energy Balance and Heat Island to Variations of Urban Canopy Parameters in Simulations with the WRF Model. *J. Appl. Meteor. Climatol.*, **56**, 573–595, doi: 10.1175/JAMC-D-16-0157.1.
- [18] Geerts, B., D. Parsons, C.L. Ziegler, T.M. Weckwerth, M.I. Biggerstaff, R.D. Clark, M.C. Coniglio, B.B. Demoz, R.A. Ferrare, W.A. Gallus, K. Haghi, J.M. Hanesiak, **P.M. Klein**, K.R. Knupp, K. Kosiba, G.M. McFarquhar, J.A. Moore, A.R. Nehrir, M.D. Parker, J.O. Pinto, R.M. Rauber, R.S. Schumacher, D.D. Turner, Q. Wang, X. Wang, Z. Wang, and J. Wurman, 2017: The 2015 Plains Elevated Convection at Night Field Project. *Bull. Amer. Meteor. Soc.*, **98**, 767–786, <https://doi.org/10.1175/BAMS-D-15-00257.1>
- [19] Bonin T.A., J. Newman, **P. Klein**, P. Chilson, and S. Wharton, 2016. Improvement of Vertical Velocity Statistics Measured by a Doppler Lidar through Comparison with Sonic Anemometer Observations, *Atmos. Meas. Tech.*, **9**, 5833–5852, 2016, doi:10.5194/amt-9-5833-2016.
- [20] Newman J.F., **P. M. Klein**, T.A. Bonin, S. Wharton, A. Sathe, P.B. Chilson, and A. Muschinski, 2016. Evaluation of three lidar scanning strategies for turbulence measurements, *Atmos. Meas. Tech.*, **9**, 1993–2013, doi:10.5194/amt-9-1993-2016, 2016.
- [21] Newman J.F., T.A. Bonin, **P. M. Klein**, and S. Wharton, 2016. Testing and validation of multi-lidar scanning strategies for wind energy applications. *Wind Energy*, doi: 10.1002/we.1978.
- [22] Hu X. M., M. Xue, **P. M. Klein**, B. G. Illston, and S. Chen, 2016. Analysis of Urban Effects in Oklahoma City using a Dense Surface Observing Network. *J. Appl. Meteor. Climatol.* **55**, 723–741, doi: 10.1175/JAMC-D-15-0206.1.

- [23] **Klein P. M.**, X. M. Hu, A. Shapiro, and M. Xue, 2016. Linkages between Boundary-Layer Structure and the Development of Nocturnal Low-Level Jets in Central Oklahoma. *Boundary Layer Meteorology*, **158**, 383–408, DOI 10.1007/s10546-015-0097-6.
- [24] Lehner M., C.D. Whiteman, S.W. Hoch, E.T. Crosman, M.E. Jeglum, N.W. Cherukuru, R. Calhoun, B. Adler, N. Kalthoff, R. Rotunno, T.W. Horst, S. Semmer, W.O.J Brown, S.P. Oncley, R. Vogt, A.M. Grudzielanek, J. Cermak, N.J. Fonteyne, C. Bernhofer, A. Pitacco, **P. Klein**, 2015. The METCRAX II field experiment—A study of downslope windstorm-type flows in Arizona’s Meteor Crater. *Bull. Amer. Meteor. Soc.*, **97**, 217–235, <https://doi.org/10.1175/BAMS-D-14-00238.1>
- [25] Bonin T. A., W. G. Blumberg, **P. M. Klein**, and P. B. Chilson, 2015. Thermodynamic and Turbulence Characteristics of the Southern Great Plains Nocturnal Boundary Layer under Differing Turbulent Regimes. *Boundary Layer Meteorology*, **157**, 401–420, DOI 10.1007/s10546-015-0072-2.
- [26] **Klein, P.M.** and T. A. Bonin, J.F. Newman, D.D. Turner, P.B. Chilson, C.E. Wainwright, W.G. Blumberg, S. Mishra, M. Carney, E.P. Jacobsen, S. Wharton, R. K. Newsom, 2015: LABLE: A multi-institutional, student-led, atmospheric boundary-layer experiment. *Bull. Amer. Meteor. Soc.*, **96**, 1743–1764. doi: <http://dx.doi.org/10.1175/BAMS-D-13-00267.1>.
- [27] **Klein, P.M.** and R. Coffman, 2015: Establishment and Performance of an Experimental Green Roof under Extreme Climatic Conditions. *Science of The Total Environment*, **512–513**, 82–93, ISSN 0048-9697, <http://dx.doi.org/10.1016/j.scitotenv.2015.01.020>.
- [28] **Klein, P.M.** and J.M Galvez, 2015: Flow and turbulence characteristics in a suburban street canyon. *Environmental Fluid Mechanics*, **15**, 419–438, 10.1007/s10652-014-9352-5.
- [29] Newman, J.F. and **P. Klein**, 2014: Extrapolation of Wind Speed Data for Wind Energy Applications. *Resources*, **3**, 81–105; doi:10.3390/resources3010081.
- [30] Ramsay, N.R, **P. Klein**, and B. Moore, 2014: The Impact of Meteorological Parameters on Urban Air Quality in the Oklahoma City Metropolitan Area. *Atmospheric Environment*, **86**, 58–67.
- [31] **Klein, P.M.**, Hu X-M., and M. Xue, 2014. Impacts of mixing processes in the nocturnal atmospheric boundary layer on urban ozone concentrations. *Boundary Layer Meteorology*, **150**, 107–130.
- [32] Hu X-M., **P. Klein**, M. Xue, 2013. Evaluation of the updated YSU Planetary Boundary Layer Scheme within WRF for Wind Resource and Air Quality Assessments. *J. Geophys. Res. Atmos.*, **118**, 10,490–10,505, doi:10.1002/jgrd.50823.
- [33] Bonin, T.A., P. B. Chilson, B. S. Zielke, **P. M. Klein**, and J. R. Leeman, 2013. Comparison and application of wind retrieval algorithms for small unmanned aerial systems. *Geosci. Instrum. Method. Data Syst.*, **2**, 177–187, doi:10.5194/gi-2-177-2013.
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