

CURRICULUM VITAE

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

Associate Professor and Edith Kinney Gaylord Presidential Professor
School of Meteorology, University of Oklahoma, 120 David L. Boren Blvd,
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Personal Information

Citizenship/Residency: German/US Permanent Resident

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 July 2008 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

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: good 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=0RRXPJMAAAAJ>
Research Gate: 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 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;
- 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.

Teaching

Courses:

Spring 2005, 2007, 2009, 2012	Micrometeorology, Senior/Graduate level, lecturer, School of Meteorology, University of Oklahoma.
Spring 2004, 2006, 2008, 2011, 2013, 2014, 2015	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 students supervised: 16

Joshua Gebauer, University of Oklahoma, MS, current, co-chair together with Alan Shapiro
Jinxin Wang, University of Oklahoma, PhD, current, co-chair together with Ming Xue
Elizabeth Smith, University of Oklahoma, MS, current, co-chair together with Evgeni Fedorovich
Tim Bonin, University of Oklahoma, PhD, completed in 2015, co-chair together with Philip Chilson
Jennifer Newman, University of Oklahoma, PhD, completed in 2015
Sean Arms, University of Oklahoma, MS completed in 2006, PhD completed in 2014
Kodi Monroe, University of Oklahoma, PhD, completed 2014, co-chair together with Jeffrey Basara
Greg Blumberg, University of Oklahoma, MS, completed 2013, co-chair together with David Turner
Nicole Ramsay, University of Oklahoma, MS, completed 2013
Jose Galvez, University of Oklahoma, PhD, completed 2011
Brian Bridges, University of Oklahoma, MSPM, completed 2011
James V. Clark, University of Oklahoma, MS completed in 2005
Jeff Kyle, University of Oklahoma, MS completed in 2002
David Williams, University of Oklahoma, MS completed in 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: 16

School of Meteorology, University of Oklahoma:

Amanda Schroeder (MS, completed 2010), Andrew Taylor (PhD, completed 2010), Aaron Gleason (MS, completed 2011), Brett Zielke (MS, completed 2011), Sean Waugh (MS, completed 2012), Brett Albright (MS, completed 2012), Charlotte Wainwright (PhD, completed 2014), Stephen Castleberry (MS, completed 2014), Nathan Anderson (MS, completed 2014), Paul Flannagan (MS, completed 2015), Larissa Reames (PhD, current), Brad Illston, (PhD, current), Alexander Boothe (MS, current)

Department of Geography, University of Oklahoma:

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

Department of Engineering, University of Oklahoma:

Lee Fithian (PhD, current)

Number of undergraduate students mentored and supervised: 34

Capstone and Honors' research projects:

2004: Shaun Bell, Brian Hamilton, Jay Hoffman, Michael Pittard (2 Capstone projects)
2006: Grant Hicks, Ameya Joshi, Jessica Sagona, Daniel Howie (2 Capstone projects)
2007: Troy Christensen, David Bodine, Matt Carney (2 Capstone projects)
2008: Brian Putnam (Honors project)
2009: Ellen Wardrop (Honors project)
2011: Nicole Ramsay and Keith Sherburn (Capstone project)
2012 Marissa Metcalf and Abraham Frei-Pearson (Capstone project)
2013 Victoria Ford (Honors project)
2014 Sean Benedict (Honors project)
2015 Sean Benedict and Brandon Taylor (Capstone project)
2015 Andrew Moore (Honors project)

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) 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 (current since 2010).
Coordinator of the SoM Hamburg Academic Exchange Programs (2004-2010).
Co-organizer of the SoM Boundary Layer, Urban Meteorology and Land-surface Processes Seminar (2007-2014).
- College:** Study Abroad Liaison for the College of Atmospheric and Geographic Sciences (current since 2012)
Member of Search Committee for the Director of the Cooperative Institute for Mesoscale Meteorological Studies (current since 2015)
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 (current since 2012)
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:** University Council on Faculty Awards and Honors (2010-2012)
KAEFS Steering Committee (substitute for Phil Chilson during his sabbatical in 2013/14)
- Professional:** UCAR Board of Trustees (since Feb. 2015)
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 (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)
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: ~75
Proposal Reviewer for NSF, NERC
Total number of proposals reviewed since 2002: 10

Participation in Funded Research Projects (Total credit in US funding since 2002: US\$ 1,366,756.65)

- 2014-2017** 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. 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 und 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** 7th 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** 6th 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

- 07-08 July 2015** Invited participant 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** 9th 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** 8th 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** 6th 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** 5th 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** 84th 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** 15th 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** 3rd 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** 3rd 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** 14th 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** 6th 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** 2nd 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** 5th 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** 22nd 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** 2nd 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** 4th 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** 2nd 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 7th Intl. Conf. on Urban Climatology, Yokohama, 06/29-07/03 2009.
- 2008-2009** Program chair, 8th AMS Symposium on the Urban Environment, Phoenix, Arizona, 11-15 January 2009.
- 2007** Program committee member and session chair, 7th AMS Symposium on the Urban Environment, 09/10-13, San Diego, California.
- 2006** Program committee member and session chair, 6th 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, 5th 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 3rd WTG Dreiländertagung D-A-CH '93 *Windprobleme in dichtbesiedelten Gebieten*, November 11th, 1993, University of Karlsruhe.
- June/July 1993** Participation in organising the NATO Advanced Study Institute *Wind Climate in Cities*, Waldbronn, July 5th - 16th, 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] 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. *Journal of Applied Meteorology and Climatology* 2015; e-View doi: <http://dx.doi.org/10.1175/JAMC-D-15-0206.1>.
- [2] **Klein P. M.**, X. M. Hu, A. Shapiro, and M. Xue, 2015. Linkages between Boundary-Layer Structure and the Development of Nocturnal Low-Level Jets in Central Oklahoma. *Boundary Layer Meteorology*, DOI 10.1007/s10546-015-0097-6.
- [3] 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. *Bulletin of the American Meteorological Society*, e-View doi:10.1175/BAMS-D-14-00238.1
- [4] 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*, DOI 10.1007/s10546-015-0072-2.
- [5] **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>.
- [6] **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>.
- [7] **Klein, P.M.** and J.M Galvez, 2015: Heat and Momentum Transfer in the Urban Roughness Sublayer. *Environmental Fluid Mechanics*, **15**, 419–438, 10.1007/s10652-014-9352-5.
- [8] Newman, J.F. and **P. Klein**, 2014: Extrapolation of Wind Speed Data for Wind Energy Applications. *Resources*, **3**, 81-105; doi:10.3390/resources3010081.
- [9] 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.
- [10] **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.
- [11] 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.
- [12] Bonin, T.A., P. B. Chilson, B. S. Zielke, **P. M. Klein**, and J. R. Leeman, 2013. Development and comparisons of wind retrieval algorithms for small unmanned aerial systems. *Geosci. Instrum. Method. Data Syst.*, **2**, 177–187, doi:10.5194/gi-2-177-2013.
- [13] Hu X-M., **P. Klein**, M. Xue, J.K. Lundquist, F. Zhang, Y Qi, 2013. Impact of Low-Level Jets on the Nocturnal Urban Heat Island Intensity in Oklahoma City. *J. Appl. Meteor. Climatol.*, **52**, 1779–1802.
- [14] Hu X-M., **P. Klein**, M. Xue, A. Shapiro, A. Nallapareddy, 2013. A Nocturnal Warming Event Associated with a Cold-Front Passage in Oklahoma. *Journal of Geophysical Research – Atmospheres*, **118**, 2714–2728, doi:10.1002/jgrd.50309.
- [15] Hu X-M., **P. Klein**, M. Xue, F. Zhang, D. Doughty, J. Fuentes, 2013. Impacts of low-level-jets induced vertical mixing on boundary layer ozone. *Atmospheric Environment*, **70**, 123-130, ISSN 1352-2310, 10.1016/j.atmosenv.2012.12.046.

- [16] Nelson M. A., Pardyjak E.R., **Klein P.**, 2011. Momentum and turbulent kinetic energy budgets within Park Avenue street canyon during Joint Urban 2003. *Boundary-Layer Meteorology*, **140**, 143-162.
- [17] **Klein P.** and D. Young, 2011. Concentration Fluctuations in a Downtown Urban Area – Part I: Analysis of Joint Urban 2003 Full-Scale Fast-Response Measurements. *Environmental Fluid Mechanics*, **11**, 23-42. DOI: 10.1007/s10652-010-9194-8.
- [18] **Klein P.**, B. Leitl, and M. Schatzmann, 2011. Concentration fluctuations in a downtown urban area – Part II: Analysis of Joint Urban 2003 wind-tunnel measurements. *Environmental Fluid Mechanics*, **11**, 43-60. DOI: 10.1007/s10652-010-9195-7.
- [19] Grimmond, C.S.B., M. Roth, T.R. Oke, Y.C. Au, M. Best, R. Betts, G. Carmichael, H. Cleugh, W. Dabberdt, R. Emmanuel, E. Freitas, K. Fortuniak, S. Hanna, **P. Klein**, L.S. Kalkstein, C.H. Liu, A. Nickson, D. Pearlmutter, D. Sailor, J. Voogt, Climate and More Sustainable Cities: Climate Information for Improved Planning and Management of Cities (Producers/Capabilities Perspective), Procedia Environmental Sciences, Volume 1, Edited for the World Meteorological Organization by M.V.K. Sivakumar, B.S. Nyenzi and A. Tyagi, 2010, Pages 247-274, ISSN 1878-0296, DOI: 10.1016/j.proenv.2010.09.016.
- [20] Bodine D., **P.M. Klein**, S.C. Arms, and A. Shapiro, 2009. Variability of Surface Air Temperature over Gently-Sloped Terrain. *Journal of Applied Meteorology and Climatology*, **48**, 1117-1141.
- [21] Shapiro A., **P.M. Klein**, S.C. Arms, D. Bodine, and M. Carney, 2009. The Lake Thunderbird Micronet Project. *Bulletin of the American Meteorological Society*, **90**, 811-822.
- [22] **Klein P.**, B. Leitl, M. Schatzmann, 2007. Driving Physical Mechanisms of Flow and Dispersion in Urban Canopies. *International Journal of Climatology*, **27**, 1887–1907.
- [23] **Klein P.**, J.V. Clark, 2007. Flow Variability in a North-American Downtown Street Canyon. *Journal of Applied Meteorology and Climatology*, **46**, 851–877.
- [24] Schultz D.M., K.M. Kanak, J.M. Straka, R.J. Trapp, B.A. Gordon, D.S. Zrnicek, G.H. Bryan, A.J. Durant, T.J. Garrett, **P.M. Klein**, and D.K. Lilly, 2006. The Mysteries of Mammatus Clouds: Observations and Formation Mechanisms. *Journal of Atmospheric Sciences*, **63**, 2409-2435.
- [25] Kljun N., **P. Kastner-Klein**, E. Fedorovich, M.W. Rotach, 2004. Evaluation of Lagrangian footprint model using data from wind tunnel convective boundary layer. *Agricultural and Forest Meteorology*, **127**, 189-201.
- [26] **Kastner-Klein P.**, R. Berkowicz, R. Britter, 2004. The influence of street architecture on flow and dispersion in street canyons. *Meteorology and Atmospheric Physics*, **87**, 121-131.
- [27] **Kastner-Klein P.**, M.W. Rotach, 2004. Mean flow and turbulence characteristics in an urban roughness sublayer. *Boundary Layer Meteorology*, **111**, 55-84.
- [28] Di Sabatino S., **P. Kastner-Klein**, R. Berkowicz, R. Britter, E. Fedorovich, 2003. The modeling of turbulence from traffic in urban dispersion models – Part I: Theoretical considerations. *Environmental Fluid Mechanics*, **3**, 129-143.
- [29] **Kastner-Klein P.**, E. Fedorovich, M. Ketzler, R. Berkowicz, R. Britter, 2003. The modelling of turbulence from traffic in urban dispersion models – Part II: Evaluation against laboratory and full-scale concentration measurements in street canyons. *Environmental Fluid Mechanics*, **3**, 145-172.
- [30] **Kastner-Klein P.**, E. Fedorovich, 2002. Diffusion from a line source deployed in a homogeneous roughness layer: interpretation of wind tunnel measurements by means of simple mathematical models. *Atmospheric Environment*, **36**, 3709-3718.
- [31] **Kastner-Klein P.**, E. Fedorovich, M. W. Rotach, 2001. A wind tunnel study of organised and turbulent air motions in urban street canyons. *Journal of Wind Engineering and Industrial Aerodynamics*, **89**, 849-861.

- [32] **Kastner-Klein P.**, R. Berkowicz, E. J. Plate, 2000. Modelling of vehicle induced turbulence in air pollution studies for streets. *International Journal of Environment and Pollution*, 14, 496-507.
- [33] **Kastner-Klein P.**, E. Fedorovich, J.-F. Sini, P.G. Mestayer, 2000. Experimental and numerical verification of similarity concept for diffusion of car exhaust gases in urban street canyons. *Environmental Monitoring and Assessment*, 65, 353-361.
- [34] **Kastner-Klein P.**, E. J. Plate, 1999. Wind-tunnel study of concentration fields in street canyons, *Atmospheric Environment*, 33, 3973-3979.
- [35] Leitl B., **P. Kastner-Klein**, M. Rau, R.N. Meroney, 1997. Concentration and flow distributions in the vicinity of U-shaped buildings: Wind tunnel and computational data, *Journal of Wind Engineering and Industrial Aerodynamics*, 67-68, 745-755.
- [36] **Kastner-Klein P.**, E. Fedorovich, E. J. Plate, 1997. Gaseous pollutant dispersion around urban-canopy elements: wind tunnel case studies. *International Journal of Environment and Pollution*, 8, 727-737.
- [37] Bächlin W., **P. Klein**, 1994. Diffusion problems near tunnel portals in built-up areas. *The Science of the Total Environment*, 146/147, 377-385.

Peer-reviewed Reports and Book Chapters:

- [38] **Klein, P.**, 2012. Metropolitan effects on atmospheric patterns: important scales. *Metropolitan sustainability: Understanding and improving the urban environment*. F. Zeeman (Ed.), Woodhead Publishing Series in Energy: Number 34, 776p, ISBN 0 85709 046 1. Link to book: <http://www.woodheadpublishing.com/en/book.aspx?bookID=2329>.
- [39] Committee on Urban Meteorology: Scoping the Problem, Defining the Needs (Snow J.T., Zeng X., **Klein, P.**, Ebelst Sarnat S., Shepherd M., Stanley E. M.); Board on Atmospheric Sciences and Climate; Division on Earth and Life Sciences; National Research Council, 2012: Urban Meteorology: Forecasting, Monitoring, and Meeting Users' Needs, *National Academies Press*, ISBN 978-0-309-25217-1, 190 pp.

Articles Accepted/Submitted to Peer-reviewed Journals:

- [40] Newman J.F., T.A. Bonin, **P. M. Klein**, and S. Wharton, 2015. Testing and validation of multi-lidar scanning strategies for wind energy applications. Conditionally accepted, pending revisions, *Wind Energy*.
- [41] Newman J.F., **P. M. Klein**, T.A. Bonin, S. Wharton, A. Sathe, P.B. Chilson, and A. Muschinski 2015. Evaluation of three lidar scanning strategies for turbulence measurements. *Atmos. Meas. Tech. Discuss.*, 8, 12329–12381, www.atmos-meas-tech-discuss.net/8/12329/2015/doi:10.5194/amtd-8-12329-2015

Other Reports and Theses:

- [42] **Klein P.**, P.B. Chilson, E. Fedorovich, A. Shapiro, and D. Turner, 2015. Collaborative Research: Low-level Jets in the Nocturnal Stable Boundary Layer: Structure, Evolution, and Interactions with Mesoscale Atmospheric Disturbances, Annual project report of NSF award 1359698.
- [43] **Klein P.**, 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 and R.K. Newsom, 2014. Lower Atmospheric Boundary Layer Experiment. Final Campaign Summary, submitted to DOE ARM program, October 2014.
- [44] **Klein P.**, 2013. CAREER: Development of an Innovative Laboratory for Research and Education in Urban Meteorology. Final project report of NSF award 0547882.
- [45] **Klein P.**, 2012. CAREER: Development of an Innovative Laboratory for Research and Education in Urban Meteorology. Annual project report of NSF award 0547882.
- [46] **Klein P.**, 2011. CAREER: Development of an Innovative Laboratory for Research and Education in Urban Meteorology. Annual project report of NSF award 0547882.

- [47] **Klein P.**, 2010. CAREER: Development of an Innovative Laboratory for Research and Education in Urban Meteorology. Annual project report of NSF award 0547882.
- [48] **Klein P.**, 2009. CAREER: Development of an Innovative Laboratory for Research and Education in Urban Meteorology. Annual project report of NSF award 0547882.
- [49] **Klein P.**, 2008. CAREER: Development of an Innovative Laboratory for Research and Education in Urban Meteorology. Annual project report of NSF award 0547882.
- [50] **Klein P.**, 2007. CAREER: Development of an Innovative Laboratory for Research and Education in Urban Meteorology. Annual project report of NSF award 0547882.
- [51] **Kastner-Klein P.**, S. Di Sabatino, M. Ketzler, A. Kovar-Panskus, P. Louka, S. Trini Castelli, R. Berkowicz, R. Britter, E. Fedorovich, J.-F. Sini, 2001. The Modelling of Traffic Produced Turbulence. *Included in the final report of the TMR research network TRAPOS "Optimisation of Modelling Methods for Traffic Pollution in Streets"*, submitted to the European Commission, July 2001.
- [52] Savory E., M. W. Rotach, C. Chauvet, E. Guilloteau, **P. Kastner-Klein**, A. Kovar-Panskus, P. Louka, P. Salm, S. Trini Castelli, 2001. Street architecture and air quality. *Included in the final report of the TMR research network TRAPOS "Optimisation of Modelling Methods for Traffic Pollution in Streets"*, submitted to the European Commission, July 2001.
- [53] Chauvet C., **P. Kastner-Klein**, A. Kovar-Panskus, E. Savory, M. Schatzmann, 2001. The Use of Wind Tunnels in Modelling Air Quality in Street Canyons. *Included in the final report of the TMR research network TRAPOS "Optimisation of Modelling Methods for Traffic Pollution in Streets"*, submitted to the European Commission, July 2001.
- [54] **Kastner-Klein P.**, B. Ruck, E.J. Plate, 2000. Strömungsmechanische Aspekte in der Stadtplanung im Hinblick auf eine Reduktion von Kfz-Immissionen. *Final report of the research project PEF 2 96 005*, FZKA-BWPLUS 49 (<http://bwplus.fzk.de>), PEF; Forschungszentrum Karlsruhe (in German).
- [55] **Kastner-Klein P.**, 1999. Experimentelle Untersuchung der strömungsmechanischen Transportvorgänge in Straßenschluchten. *Doctoral Thesis*, University of Karlsruhe, Germany, publication series of the 'Institut für Hydromechanik der Universität Karlsruhe', ISSN 1439 - 4111, issue 2/1999 (in German).
- [56] **Kastner-Klein P.**, E.J. Plate, 1999. Windkanalversuche zur Verbesserung der Ermittlung von Kfz-bedingten Konzentrationsverteilungen in Stadtgebieten. *Final report of the research project PEF 2 95 001*, FZKA-BWPLUS 9 (<http://bwplus.fzk.de>), PEF; Forschungszentrum Karlsruhe (in German).
- [57] **Klein P.**, M. Rau, Z. Wang, E.J. Plate, 1994. Ermittlung des Strömungs- und Konzentrationsfeldes im Nahfeld typischer Gebäudekonfigurationen (Experimente). *Final report of the research project PEF 2 92 003*, *KfK-PEF 124*, Kernforschungszentrum Karlsruhe (in German).

Articles in Proceedings:

- [58] Newman J. F., T. A. Bonin, **P. Klein**, S. Wharton, and P. B. Chilson, 2014. Optimizing Lidar Scanning Strategies for Wind Energy Turbulence Measurements. *21st AMS Symposium on Boundary Layers and Turbulence*, 9-13 June 2014, Leeds, United Kingdom, <https://ams.confex.com/ams/21BLT/webprogram/Paper248198.html> .
- [59] J. Newman J. and **P. M. Klein**, 2013. Extrapolation of Wind Speed Data for Wind Energy Applications. *Proceedings of the Fourth Conference on Weather, Climate, and the New Energy Economy*, AMS Annual Meeting, 5-10 January 2013, Austin, Texas, USA.
- [60] **P. M. Klein** and J.M. Galvez, 2012. Small-Aperture Scintillometer Measurements of Turbulent Fluxes at a Suburban Site. *Proceedings of the 16th International Symposium for the Advancement of Boundary-Layer Remote Sensing – ISARS 2012*, 5-8 June 2012, Boulder, Colorado, USA.

- [61] Galvez, J.M, **P. M. Klein**, S. C. Arms, and B. L. Bridges, 2010. Observational studies of turbulent transfer processes across the urban canopy. *Proceedings of the 9th Symposium on the Urban Environment*, 1-6 August 2010, Keystone, CO, USA.
- [62] **Klein, P.M.**, J. K. Lundquist and J. B. Basara, 2010 Mixing Processes in the Nocturnal Atmospheric Boundary Layer and Their Impacts on Urban Ozone Concentrations and Heat Island Intensity. *Proceedings of the 19th Symposium on Boundary Layers and Turbulence*, 1-6 August 2010, Keystone, CO, USA
- [63] Chilson P.B., A. Gleason, B. Zielke, F. Nai, M. Yeary, **P. Klein**, W. Shalamunenc, T. Bonin, and W. Bocangel, 2009. SMARTSONDE: A small UAS platform to support radar research, *Proceedings of the 34th Conference on Radar Meteorology*, 4-9 October 2009, Williamsburg, Virginia, USA.
- [64] Grimmond C.S.B., M. Roth, T.R. Oke, Y.C. Au, M. Best, R. Betts, G. Carmichael, H. Cleugh, W. Dabberdt, R. Emmanuel, E. Freitas, K. Fortuniak, S. Hanna, **P. Klein**, L.S. Kalkstein, C.H. Liu, A. Nickson, D. Pearlmutter, D. Sailor, and J. Voogt, 2009. Climate and More Sustainable Cities: Climate Information for Improved Planning and Management of Cities (Producers/Capabilities Perspective). *Proceedings of the World Climate Conference-3 (WCC-3)*, 31 August – 4 September, 2009, Geneva, Switzerland.
- [65] **Klein P.**, J. Galvez, and S. Arms, 2009. Comparison of mean flow and turbulence characteristics at different sub-urban measurement sites. *Proceedings of the 7th International Conference on Urban Climate (ICUC-7)*, 29 June-3 July 2009, Yokohama, Japan.
- [66] **Klein P.**, and J.V. Clark, 2006. Implementation of a traffic-produced turbulence scheme into the fast-response model QUIC. *Proceedings of the 14th Joint Conference on the Applications of Air Pollution Meteorology with the A&WMA*, January 29- February 2, Atlanta, Georgia, USA.
- [67] Brown M.J., A. Gowardhan, S. U. Pol, **P. Klein**, M. A. Nelson, A. Huber, S. Kim, W. Coirier, and M. Freeman, 2006. Experimental and Model-Computed Area-Averaged Vertical Profiles of Wind Speed for Evaluation of Mesoscale Urban Canopy Schemes. *Proceedings of the 6th AMS Symposium on the Urban Environment*, January 29- February 2, Atlanta, Georgia, USA.
- [68] **Klein P.**, B. Leidl, M. Schatzmann, 2005. Flow Patterns in Urban Street Canyons - Comparison of Wind-Tunnel and Field Data from Joint Urban 2003. *Proceedings of the International Workshop on Physical Modelling of Flow and Dispersion Phenomena. (PHYSMOD)*, August 23-25, London, Ontario, Canada.
- [69] **Kastner-Klein P.**, and J.V. Clark, 2004. Vertical profiles of mean flow and turbulence characteristics in a downtown street canyon measured during Joint Urban 2003. *Proceedings of the 5th AMS Symposium on the Urban Environment*, August 23-26, Vancouver, BC, Canada.
- [70] **Kastner-Klein P.**, and J.V. Clark, 2004. Modeling of flow and dispersion characteristics in typical urban building configurations with the fast-response model QUIC. *Proceedings of the 5th AMS Symposium on the Urban Environment*, August 23-26, Vancouver, BC, Canada.
- [71] **Kastner-Klein P.**, B. Leidl, F. Pascheke, M. Schatzmann, 2004. Wind-tunnel simulation of the JOINT Urban 2003 tracer experiment. *Proceedings of the AMS Symposium on Planning, Nowcasting, and Forecasting in the Urban Zone*, January 11-15, Seattle, Washington, USA.
- [72] Brown M., D. Boswell, G. Streit, M. Nelson, T. McPherson, T. Hilton, E.R. Paradyjak, S. Pol, P. Ramamurthy, B. Hansen, **P. Kastner-Klein**, J. Clark, A. Moore, D. Walker, N. Felton, D. Strickland, D. Brook, M. Princevac, D. Zaijic, R. Wayson, J. Mac Donald, F. Fleming, D. Storwald, 2004. JOINT Urban 2003 street canyon experiment. *Proceedings of the AMS Symposium on Planning, Nowcasting, and Forecasting in the Urban Zone*, January 11-15, Seattle, Washington, USA.
- [73] Leidl B., F. Pascheke, M. Schatzmann, **P. Kastner-Klein**, 2003. Wind-tunnel experiments within the scope of the Oklahoma City tracer experiment. *Proceedings of PHYSMOD2003: International Workshop on Physical Modeling of Flow and Dispersion Phenomena*, September 3-5, Prato, Italy.

- [74] Kljun N., **P. Kastner-Klein**, M. W. Rotach, E. Fedorovich, 2002. Evaluation of the Lagrangian footprint model LBDM-B using wind tunnel data sets, *Proceedings of the 15th AMS Symposium on Boundary Layer and Turbulence*, July 15-19, Wageningen, The Netherlands.
- [75] **Kastner-Klein P.**, M. Ketzl, S. Di Sabatino, R. Berkowicz, R. Britter, E. Fedorovich, 2002. Significance of traffic produced turbulence for urban dispersion modeling. *Proceedings of the 4th AMS Symposium on the Urban Environment*, May 20-24, Norfolk, Virginia, USA.
- [76] **Kastner-Klein P.**, D. Williams, F. Hall, 2002. Impact of long-range transport on ozone pollution in the Oklahoma City metro area. *Proceedings of the 12th Joint Conference on the Applications of Air Pollution Meteorology with the Air and Waste Management Association*, May 20-24, Norfolk, Virginia, USA.
- [77] **Kastner-Klein P.**, E. Fedorovich, N. Kljun, M. W. Rotach, 2001. Dispersion of a Gaseous Plume in the Sheared Convective Boundary Layer: Evaluation of a Lagrangian Particle Model Versus Wind Tunnel Simulation Data. *Proceedings of the 3rd International Symposium on Environmental Hydraulics*, Tempe, Arizona, USA, 5-8 December 2001.
- [78] Rotach M.W., **P. Kastner-Klein**, 2001. Turbulent Exchange of Momentum in the Urban Roughness Sublayer. *Proceedings of the 3rd International Symposium on Environmental Hydraulics*, Tempe, Arizona, USA, 5-8 December 2001.
- [79] Ketzl M., R. Berkowicz, T. Flassak, A. Lohmeyer, **P. Kastner-Klein**, 2001. Adaptation of results from CFD-models and wind-tunnels for practical traffic pollution modelling. *Proceedings of the 7th Workshop on Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes*, Belgirate, Italy, 28-31 May 2001 (<http://rtmod.jrc.it/~thunis/harmo7/>).
- [80] **Kastner-Klein P.**, 2001. Near-surface turbulence parameterizations (overview). *Proceedings of the COST Workshop on Urban Boundary Layer Parameterisations*, Zurich, Switzerland, 24th May 2001.
- [81] Kljun N., **P. Kastner-Klein**, M.W. Rotach, E. Fedorovich, 2001. Evaluation of 3D Lagrangian footprint models with wind tunnel data sets for the convective boundary layer, *EGS General Assembly*, Nice, France, March 26-30 2001.
- [82] **Kastner-Klein P.**, M.W. Rotach, E. 2001. Parameterization of wind and turbulent shear stress profiles in the urban roughness sublayer. *Proceedings of the Third International Conference on Urban Air Quality*, Loutraki, Greece, 19-23 March 2001.
- [83] **Kastner-Klein P.**, R. Berkowicz, E. Fedorovich, E. 2001. Evaluation of scaling concepts for traffic-produced turbulence based on laboratory and full-scale concentration measurements in street canyons. *Proceedings of the Third International Conference on Urban Air Quality*, Loutraki, Greece, 19-23 March 2001.
- [84] **Kastner-Klein P.**, M.W. Rotach, M.J. Brown, E. Fedorovich, R.E. Lawson, 2000. Spatial variability of mean flow and turbulence fields in street canyons, *Proceedings of the 3rd AMS Symposium on the Urban Environment*, August 14-18, Davis, California, USA.
- [85] **Kastner-Klein P.**, M.W. Rotach, E. Fedorovich, 2000. Experimental study on mean flow and turbulence characteristics in an urban roughness sublayer, *Proceedings of the 14th AMS Symposium on Boundary Layer and Turbulence*, August 7-11, Aspen, Colorado, USA.
- [86] Rotach M.W., E. Batchvarova, R. Berkowicz, J. Brechler, Z. Janour, **P. Kastner-Klein**, D. Middleton, V. Prior, C. Sacré, C. Soriano, 2000. Wind input data for urban dispersion modeling, *Proceedings of the COST 715 WG4 Workshop*, June 15-16, Prague, Czech Republic.
- [87] **Kastner-Klein P.**, E. Fedorovich, M. W. Rotach, 1999. Organised and turbulent air motions in a wind tunnel model of a street canyon with and without moving vehicles, *Proceedings of 6th International Conference on Harmonisation within Atmospheric Dispersion Modelling*, October 11-14, Rouen, France.
- [88] **Kastner-Klein P.**, R. Berkowicz, A. Rastetter, E. J. Plate, 1998. Modelling of vehicle induced turbulence in air pollution studies for streets. *Proceedings of the 5th Workshop on Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes*. Rhodes, Greece, 18-21 May 1998.

- [89] **Kastner-Klein P.**, E.J. Plate, 1998. Strömungsmechanische Aspekte in der Stadtplanung im Hinblick auf eine Reduktion von Kfz-Immissionen. FZKA-BWPLUS 3 (Mai 1998): F. Horsch et al. (Hrsg.): Diskussionskreise "Maßnahmen zur Luftreinhaltung" (PEF) beim Statusseminar 1998.
- [90] Plate E.J., **P. Kastner-Klein**, 1998. Wind tunnel modelling of traffic induced pollution in cities. Proceedings of the 2nd German-Japanese meeting "Klimaanalyse für die Stadtplanung" 25.-27. September 1997, Research Center for Urban safety and Security Kobe University, Japan. Special Report No. 1, T. Okimura, M. Moriyama, H. Zimmermann (Eds.), pp. 206-221.
- [91] **Kastner-Klein P.**, E.J. Plate, 1997. Windkanalversuche zur Verbesserung der Ermittlung von Kfz - bedingten Konzentrationsverteilungen in Stadtgebieten. 13. *Statuskolloquium des PEF*, 11.-12. März 1997, Forschungszentrum Karlsruhe, Hrsg. F. Horsch et al., FZKA - PEF 153, pp. 235-246, April 1997.
- [92] **Kastner-Klein P.**, E.J. Plate, 1996. Windkanalversuche zur Verbesserung der Ermittlung von Kfz - bedingten Konzentrationsverteilungen in Stadtgebieten. 12. *Statuskolloquium des PEF*, 12.-13. März 1996, Forschungszentrum Karlsruhe, Hrsg. F. Horsch et al., FZKA - PEF 142, pp. 279-290, April 1996.
- [93] **Kastner-Klein P.**, E. Fedorovich, E. J. Plate, 1996. Wind-tunnel case studies of atmospheric dispersion in the urban environment, *Proceedings of the 4th Workshop on Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes*, Oostende, Belgium, 6-9 May 1996.
- [94] Plate E.J., **P. Kastner-Klein**, 1995. Simulation der Ausbreitung von KFZ-Abgasen - Fachliche Impulse durch Windkanalmessungen, *Experten-Workshop „Verkehr und Immissionen“*, Forschungszentrum Karlsruhe, 12.7.1995.
- [95] **Kastner-Klein P.**, E.J. Plate, 1995. Belastungen durch Luftverunreinigungen an Straßen -- Untersuchungen im Windkanal, 8. *ALS-Kolloquium „Ausbreitung von Luftverunreinigungen“*, Universität Stuttgart, 5. Oktober 1995.
- [96] Klein P., M. Rau, R. Röckle, E.J. Plate, 1994. Concentration estimation around point sources located in the vicinity of U-shape buildings. *Air Pollution II, Vol. 2: Pollution Control and Monitoring*, Editors: J.M. Baldasano, C.A. Brebbia, H. Power, P. Zanetti, Computational Mechanics Publications 1994.
- [97] Klein P., M. Rau, Z. Wang, E.J. Plate, 1994. Ermittlung des Strömungs- und Konzentrationsfeldes im Nahfeld typischer Gebäudekonfigurationen (Experimente). 10. *Statuskolloquium des PEF*, 15.-17. März 1994, Kernforschungszentrum Karlsruhe, Hrsg. F. Horsch et al., FZKA - PEF 118, April 1994.

Participation in Conference Presentations and Posters:

- [98] Bonin T. A., **P. M. Klein**, P. B. Chilson, J. F. Newman, W. G. Blumberg, and D. D. Turner, 2014. Analysis of Turbulence and Thermodynamics Associated with Low-Level Jets. *21st AMS Symposium on Boundary Layers and Turbulence*, 9-13 June 2014, Leeds, United Kingdom.
- [99] Chilson P. B., B. Argrow, K. S. Barr, T. A. Bonin, W. O. J. Brown, S. A. Cohn, S. M. Ellis, **P. M. Klein**, A. Muschinski, J. F. Newman, S. P. Oncley, L. Root, S. Tichkule, T. M. Weckwerth, S. Wharton, and D. E. Wolfe, 2014. Lower Atmospheric Thermodynamics and Turbulence Experiment (LATTE): Overview and Initial Results. *21st AMS Symposium on Boundary Layers and Turbulence*, 9-13 June 2014, Leeds, United Kingdom.
- [100] Hu, X.-M., **P. M. Klein** and M. Xue, 2014. Summertime Urban Heat Island in the Oklahoma City and Implications for Air Quality Assessment, 2014. *11th AMS Symposium on the Urban Environment*, 03-06 February 2010, Atlanta, USA.
- [101] **Klein P. M.** and J.M.. Galvez, 2014. Scaling of Mean Flow and Turbulence in the Urban Canopy Layer, 2014. *11th AMS Symposium on the Urban Environment*, 03-06 February 2010, Atlanta, USA.
- [102] Nemunaitis-Monroe K.L., J. B. Basara and **P. Klein**, 2014. Variations of energy fluxes across Oklahoma City, 2014. *11th AMS Symposium on the Urban Environment*, 03-06 February 2010, Atlanta, USA.

- [103] Ramsey N. R., **P. M. Klein** and B. Moore III, 2014. 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*, 03-06 February 2010, Atlanta, USA.
- [104] Newman, J. F., T. A. Bonin, **P. Klein**, S. Wharton, and P. B. Chilson: Optimizing lidar scanning strategies for wind energy measurements. (Invited) *AGU Fall Meeting*, San Francisco, CA. Oral presentation, Dec. 9, 2013.
- [105] Newman, J., S. Wharton, and **P. Klein**: Effects of turbulence on wind power production, *North American Wind Energy Academy Graduate Student Symposium*, Boulder, CO. Oral presentation, Aug. 8, 2013.
- [106] Bonin T.A., **P. M. Klein**, P. B. Chilson, and C. E. Wainwright, 2013. Comparisons of Doppler Lidar Wind Measurements using VAD Analysis. Sixth Symposium on Lidar Atmospheric Applications. *AMS Annual Meeting*, 5-10 January 2013, Austin, Texas, USA.
- [107] Blumberg, W.G., **P. M. Klein** and D. D. Turner, 2013, Developing a Statistical Thermodynamic Profiling Retrieval for the AERI. 17th Conference on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans, and Land Surface, *AMS Annual Meeting*, 5-10 January 2013, Austin, Texas, USA.
- [108] Ramsey N.R. and **P. M. Klein**, 2013. The Impact of Meteorological Parameters on Urban Air Quality in the Oklahoma City Metro Area. Fourth Conference on Environment and Health, *AMS Annual Meeting*, 5-10 January 2013, Austin, Texas, USA.
- [109] **Klein P. M.** and J.M. Galvez, 2012. Turbulent Heat and Momentum Transfer Within the Urban Roughness Sublayer. *8th International Conference on Urban Climate – ICUC 8 and 10th AMS Symposium on the Urban Environment*, 6-10 Aug. 2012, in Dublin, Ireland.
- [110] **Klein P.M.**, R. Coffman, L. Fithian, and J. Vogel, 2012. Performance Evaluation of an Experimental Green Roof in a Semi Arid Region. *8th International Conference on Urban Climate – ICUC 8 and 10th AMS Symposium on the Urban Environment*, 6-10 Aug. 2012, in Dublin, Ireland.
- [111] Vogel, J.R., R.R. Coffman, **P. Klein**, and L. Fithian, 2011. Atmospheric and Energy Studies on a Semi-Arid Experimental Green Roof. National Low Impact Development Symposium, Philadelphia, PA, Sep. 25-28, 2011.
- [112] Coffman, R.R., **P. Klein**, L. Fithian, and J.R. Vogel, 2011. Atmospheric and Energy Studies in a Semi-Arid Experimental Station. Growest: Western Green Roofs Annual Conference, Denver, CO, Jun. 17, 2011.
- [113] Vogel, J.R., R.R. Coffman, **P. Klein**, and L. Fithian, 2011. Atmospheric and Energy Studies on a Semi-Arid Experimental Green Roof. *11th Annual Meeting of the American Ecological Engineering Society*, Asheville, NC, May 23-25, 2011.
- [114] Schroeder, A. J., J. B. Basara, B. G. Illston, and **P. M. Klein**, 2010. A quantitative description of the Oklahoma City urban heat island. *9th AMS Symposium on the Urban Environment*, 02-06 August 2010, Keystone, USA.
- [115] Arms, S., **P. M. Klein** and O. Coceal, 2010. Interactions between coherent structures and the urban canopy shear layer. *9th AMS Symposium on the Urban Environment*, 02-06 August 2010, Keystone, USA.
- [116] Basara, H.G., J. B. Basara, **P. Klein**, and B. G. Illston, 2010. Application of Joint Urban 2003 observations for assessment of morbidity outcomes during a heat wave. *9th AMS Symposium on the Urban Environment*, 02-06 August 2010, Keystone, USA.
- [117] Arms, S., and **P. M. Klein**, 2009. Coherent structures within a North American street canyon. *8th AMS Symposium on the Urban Environment*, 12-15 January 2009, Phoenix, USA.
- [118] **Klein, P.M.**, S. C. Arms and J. M. Galvez, 2009. Development of an Innovative Laboratory for Research and Education in Urban Meteorology: An Overview of the NSF Career Project: ILREUM. *8th AMS Symposium on the Urban Environment*, 12-15 January 2009, Phoenix, USA.

- [119] Galvez, J.M, **P. M. Klein** and S. Arms, 2009. Scintillometry applied to urban studies: evaluation of scintillometer measurements made at a sub-urban site. *8th AMS Symposium on the Urban Environment*, 12-15 January 2009, Phoenix, USA.
- [120] Arms, S., **P. M. Klein** and E. Fedorovich, 2008. Analysis and classification of flows over gently sloping terrain within patchy vegetation. *18th AMS Symposium on Boundary Layers and Turbulence*, 9-13 June 2008, Stockholm, Sweden.
- [121] Galvez, J.M., **P. Klein** and S. Arms, 2008. Turbulent heat fluxes in the atmospheric surface layer: comparison of scintillometer measurements with eddy-covariance and gradient methods. *18th AMS Symposium on Boundary Layers and Turbulence*, 9-13 June 2008, Stockholm, Sweden.