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CURRICULUM VITAE

Dr. Evgeni Fedorovich

Professor Emeritus

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PERSONAL DETAILS

Date of birth: June 2, 1956

Place of birth: Leningrad, USSR.

EDUCATION

1986 Ph.D. (C.Sc.) in Physical and Mathematical Sciences (specialty: Geophysics), A. I. Voeikov Main Geophysical Observatory, Leningrad, USSR.

Dissertation: "Numerical modeling of atmospheric boundary layer flows over topography elements". *Advisor:* Dr. Alexey Dubov.

1979 M.S. in Physics (specialty: Atmospheric Physics), Leningrad State University, USSR.

ACTIVITY AREAS

- Editorial work for the *Boundary-Layer Meteorology*.
- Teaching boundary layer meteorology, atmospheric dynamics, and atmospheric physics at undergraduate and graduate levels.
- Theoretical, numerical, and observational studies of boundary layer flows: basic research and meteorological applications.
- Theory and numerical modeling of katabatic and anabatic flows (slope winds).
- Physical and numerical modeling of dispersion of passive scalars in buoyancy-driven flows and in flows of complex geometry.
- Geophysical data processing and analysis.
- Mesoscale atmospheric modeling.
- Parameterization of interaction between the atmosphere and underlying surfaces with different physical properties.

PROFESSIONAL DISTINCTIONS

Journal of the Atmospheric Sciences Editor's Award
"*For insightful, timely, and thorough reviews and re-reviews of several manuscripts during the past two years*"
2015, American Meteorological Society, USA.

Edith Kinney Gaylord Presidential Professorship
2012, University of Oklahoma, USA.

Humboldt Research Award (Humboldt Forschungspreis)
2009, Alexander von Humboldt Foundation, Germany.

Dean's Award for Excellence in Research and Scholarship
2008, College of Atmospheric and Geographic Sciences, University of Oklahoma, USA.

Journal of the Atmospheric Sciences Editor's Award
"*For thorough, sustained, critical, yet constructive reviews on a wide range of topics related to atmospheric boundary layers and turbulence*"
2008, American Meteorological Society, USA.

Academic tenure
2002, University of Oklahoma, USA.

Gastprofessor
2001, University of Karlsruhe, Germany.

Professeur Invité
1998, Ecole Centrale de Nantes, France.

Alexander von Humboldt Fellowship
1993, Alexander von Humboldt Foundation, Germany.

Post-Doctoral Fellowship of the Regional Council of the Loire Lands (Bourse du Conseil Régional des Pays de la Loire)
1992, Nantes, France.

First Place Prize
Young Scientist Conferences of 1983 and 1987, A. I. Voeikov Main Geophysical Observatory, Leningrad, USSR.

EMPLOYMENT HISTORY

2021 – pres. Professor Emeritus, School of Meteorology, University of Oklahoma, Norman, Oklahoma, USA.

2012 – 2021 Edith Kinney Gaylord Presidential Professor, School of Meteorology, University of Oklahoma, Norman, Oklahoma, USA.

2004 – 2012 Professor, School of Meteorology, University of Oklahoma, Norman, Oklahoma, USA.

1999 – 2004 Associate Professor, School of Meteorology, University of Oklahoma, Norman, Oklahoma, USA.

1997 – 1999 Research Associate, Institute for Hydromechanics, University of Karlsruhe, Germany.

1995 – 1997 Research Associate, Institute for Hydrology and Water Resources, University of Karlsruhe, Germany.

1993 – 1995 Alexander von Humboldt Research Fellow, Institute for Hydrology and Water Resources, University of Karlsruhe, Germany.

1990 – 1992 Director, Laboratory of Atmospheric Boundary Layer Studies, Department of Dynamic Meteorology, A. I. Voeikov Main Geophysical Observatory, St. Petersburg, Russia.

1988 – 1990 Assistant Professor, Department of Computational Mathematics, Leningrad Civil Engineering Institute, USSR.

1980 – 1988 Junior Research Associate, A. I. Voeikov Main Geophysical Observatory, Leningrad, USSR.

1979 – 1980 Trainee Researcher, A. I. Voeikov Main Geophysical Observatory, Leningrad, USSR.

VISITING AND PART-TIME APPOINTMENTS

2013 *Visiting Scientist*, Max Planck Institute for Meteorology, Germany.

2010 *Visiting Professor*, Meteorological Institute, Hamburg University, and Max Planck Institute for Meteorology, Germany.

2007 – 2008 *Academic Visitor*, Hamburg University. Germany.

2007 *Scientific Visitor*, National Center for Atmospheric Research, Boulder, Colorado, USA.

1999 – 2007 *Visiting Scientist*, Institute for Hydromechanics, University of Karlsruhe, Germany.

1998 *Visiting Professor*, Laboratory of Fluid Mechanics, Ecole Centrale de Nantes, France.

1996 *Associate Professor*, Department of Physics, University of Genoa, Italy.

1992 – 1993 *Visiting Scientist*, Laboratory of Fluid Mechanics, Ecole Centrale de Nantes, France.

1990 – 1992 *Associate Professor*, St. Petersburg Hydrometeorological Institute, Russia.

EDITORSHIP

Journals

2023 – pres. Editorial board member, *Boundary-Layer Meteorology*.

2022 Co-Editor-in-Chief, *Boundary-Layer Meteorology*.

2020 – 2021 Editor-in-Chief, *Boundary-Layer Meteorology*.

2014 – 2019 Co-Editor-in-Chief, *Boundary-Layer Meteorology*.

2010 – 2013 Associate Editor, *Mécanique & Industries* (*Mechanics & Industry*).

2009 – 2013 Editorial board member, *Boundary-Layer Meteorology*.

2008 – 2009 Co-Editor, special issue of *Acta Geophysica*.

Proceedings

2017 – 2022 Editorial board member, *Proceedings of Voeikov Main Geophysical Observatory*, St. Petersburg, Russia.

Books

1. **Fedorovich**, **E.**, R. Rotunno, and B. Stevens, Eds., 2004: *Atmospheric Turbulence and Mesoscale Meteorology*. Cambridge University Press, 280 pp.

   Reviews of this book:
   Mapes, B. E., 2005: *Bull. Amer. Meteorol. Soc*., **86**, 1145-1146;
   Emeis, S., 2005: *Meteorologische Zeitschrift*, **14**, 849-850;
   April, A., 2005: *Physics in Canada / La Physique au Canada*, **64**, 183-184.

2. Plate, E. J., **E. E. Fedorovich**, D. X. Viegas, and J. C. Wyngaard, Eds., 1998: *Buoyant Convection in Geophysical Flows*. Kluwer, 504 pp.

Reviews of this book:
Lilly, D. K., 1999: *Bull. Amer. Meteorol. Soc*., **80**, 937-938;
Icha, A., 2000: *Pure and Appl. Geophys.*, **157**, 864-866;
Grant, A, 2002: *Quart. J. Roy. Met. Soc*., **128**, 741.

Internet

2010 Translating into Russian and editing the user interface of the European Severe Weather Database on the Internet.

TEACHING

2010, Hamburg University, Germany

Numerical modeling and simulation of atmospheric boundary layer flows with complex forcings. Graduate level lecture course.
Atmospheric Dynamics II. Theory of Atmospheric Flows. Undergraduate independent study.
Turbulence modeling and simulation. Advising graduate students.

2000 – 2021, University of Oklahoma, USA

Courses taught:

Advanced Atmospheric Dynamics I (graduate). Fall semester 2008.
Atmospheric Dynamics I. Introduction to Atmospheric Kinematics and Dynamics (undergraduate). Fall semesters 2012 to 2015, 2017, 2018, and 2020.
Atmospheric Dynamics II. Theory of Atmospheric Flows (undergraduate). Spring semesters 2002, 2006, and 2019 – 2021.
Atmospheric Turbulence (graduate). Spring semesters 2004 and 2008.
Boundary Layer Meteorology (graduate). Spring semesters 2000, 2001 to 2009 (biannually), 2011 to 2016 (annually), 2018.
Meteorological Measurements (undergraduate). Fall semester 2003.
Micrometeorological Measurements and Modeling (double listed undergraduate/graduate). Spring semester 2017.
National Weather Center Colloquium. 2013 – 2018.
Physical Meteorology I. Thermodynamics (undergraduate). Fall semesters 2004 – 2006.
Physical Meteorology III. Radiation and Climate (undergraduate). Fall semesters 2000 – 2002, 2007, 2010, and 2011.
School of Meteorology Seminar. Fall semester 2003.

Supervising/advising graduate students.

1996 – 2001, University of Karlsruhe, Germany

Laboratory and numerical modeling of atmospheric boundary layer flows. Advising graduate students.

1996, University of Genoa, Italy

Dynamic meteorology. Graduate level lecture course.
Meteorological applications of turbulence theory. Practical exercises with graduate students.
Mesoscale atmospheric modeling. Advising graduate students.

1992 – 1993, Ecole Centrale de Nantes, France
Atmospheric boundary layer modeling. Advising/supervising graduate students.

1990 – 1992, Leningrad (St. Petersburg) Hydrometeorological Institute, Russia
Numerical methods of weather forecasting. Practical exercises with undergraduate students. Supervising/advising graduate students.

1988 – 1990, Leningrad Civil Engineering Institute, USSR
Numerical methods in problems of mechanics. Lecturing, practical exercises with undergraduate students.
Programming languages. lecturing, practical exercises with undergraduate students.

TEACHING AT ADVANCED COURSES AND SUMMER SCHOOLS

September 2012 4th CNR-ISAC International Summer School "Severe Convective Weather: Theory and Applications". Castro Marina (Lecce), Italy. Lectures:
I. Conceptual introduction to atmospheric planetary boundary layers;
II. Basic approaches toward atmospheric boundary layer modeling and simulation;
III. Atmospheric convective boundary layer with wind shears;
IV. Atmospheric boundary layers in pre-storm environments.

June 2012 Croatian-USA Workshop on Mesometeorology organized by Croatian Hydrometeorological Service, School of Meteorology, OU, and Institute of Geophysics, University of Zagreb. Ekopark Kraš Resort, Zagreb, Croatia. Lecture: *Numerical simulation of turbulent slope flows*.

June 2008 International Summer School on Atmospheric Boundary Layers. Ecole de Physique, Les Houches, France. Lectures on *Physical modeling of the atmospheric boundary layer flows* and tutorial on *Flux-profile calculations in the atmospheric surface layer based on multi-level measurement data*.

June 1999 IAHR-EGH Short Course "Environmental Fluid Mechanics: Theory, Experiments, Applications". Karlsruhe, Germany. Lectures on *Atmospheric diffusion and dispersion*, and laboratory demonstrations.

March 1997 NATO Advanced Study Institute "Buoyant Convection in Geophysical Flows". Pforzheim, Germany. Lectures: *Bulk models of the atmospheric convective boundary layer* and *Wind tunnel model study of the atmospheric convective boundary layer: mean flow fields, turbulence statistics and spectra* (with R. Kaiser).

August 1993 ERCOFTAC Summer School on Diffusion and Transport of Pollutants in the Atmospheric Mesoscale Flow Fields. Swiss Center for Scientific Computations, Manno, Switzerland. Lecture on *Inversion layers* and computer exercises with a parameterized model of a stably stratified atmospheric

boundary layer.

September 1990 Fifth International Youth School on Meteorology and Hydrology. Bulgarian Academy of Sciences, Varna, Bulgaria. Lecture: *Comparative analysis of the algorithms for the surface fluxes evaluation on the basis of standard meteorological data*.

SERVICE

2019 Member of Chesapeake Energy Endowed Professorship Selection Committee. University of Oklahoma, Norman, Oklahoma, USA.

2018 – 2019 Member of National Weather Center Colloquium and Seminar Series Committee, Norman, Oklahoma, USA.

2016 – 2017 Member of Faculty Search Committee. School of Meteorology, University of Oklahoma, Norman, Oklahoma, USA.

2015 – 2017 Member of Committee A. School of Meteorology, University of Oklahoma, Norman, Oklahoma, USA.

2014 – 2015 Member of Graduate Admission Committee, School of Meteorology. University of Oklahoma, Norman, Oklahoma, USA.

2013 – 2018 Coordinator of National Weather Center Colloquium and Seminar Series, Norman, Oklahoma, USA.

2013 Member of Proposal Review Panel in Fluid Dynamics, National Science Foundation, USA.

2011 – 2012 Member of Faculty Search Committee. Department of Physics and Astronomy, University of Oklahoma, Norman, Oklahoma, USA.

2010 – 2021 Member of Academic Programs Committee, College of Atmospheric and Geographic Sciences. University of Oklahoma, Norman, Oklahoma, USA.

2007 – 2010 Member of Boundary Layers and Turbulence Committee of the American Meteorological Society (AMS).

2007 – 2009 Graduate Liaison, School of Meteorology. University of Oklahoma, Norman, Oklahoma, USA.

2006 Member of American Airlines and Tommy Craighead Endowed Professorships Search Committee. University of Oklahoma, Norman, Oklahoma, USA.

2006 – 2012 Convener of National Weather Center (NWC) Seminar Series on Boundary Layer, Urban Meteorology, and Land Surface Processes. NWC, Norman, Oklahoma, USA.

2005 – 2007 Member of Committee A. School of Meteorology, University of Oklahoma, Norman, Oklahoma, USA.

2004 – 2007 Member of Undergraduate Studies Committee. School of Meteorology, University of Oklahoma, Norman, Oklahoma, USA.

2004 – 2021 Undergraduate Advisor. School of Meteorology, University of Oklahoma, Norman, Oklahoma, USA.

2004 – 2005 Member of Academic Misconduct Board. College of Geosciences, University of Oklahoma, Norman, Oklahoma, USA.

2003 – 2004 Member of Faculty Search Committee. School of Meteorology, University of Oklahoma, Norman, Oklahoma, USA.

2001 – 2003 Chairman of Graduate Studies Committee. School of Meteorology, University of Oklahoma, Norman, Oklahoma, USA.

2002 Member of Ph.D. Dissertation Award Committee. Graduate College, University of Oklahoma, Norman, Oklahoma, USA.

2001 – 2002 Member of Williams Chair Search Committee. College of Geosciences, University of Oklahoma, Norman, Oklahoma, USA.

2001 – 2002 Member of Faculty Search Committee. School of Meteorology, University of Oklahoma, Norman, Oklahoma, USA.

2000 – 2021 Affiliated Faculty, School of International and Area Studies, and Program of Eastern European Studies. University of Oklahoma, Norman, Oklahoma, USA.

2000 – 2021 Faculty, Graduate College. University of Oklahoma, Norman, Oklahoma, USA.

2000 – 2001 Member of Graduate Studies Committee. School of Meteorology, University of Oklahoma, Norman, Oklahoma, USA.

MEETINGS

Invited talks, lectures, and panel discussions

March 2017 Third Decennial Workshop on Turbulence in Stably Stratified Planetary Boundary Layers. Delft, the Netherlands. Keynote presentation: *Dynamics of nocturnal low-level jets: effects of turbulence and shallow slope* (with A. Shapiro).

June 2014 Sixth International Conference on Computational Wind Engineering (CWE 2014). Hamburg, Germany. Keynote presentation: *Turbulent winds in*

numerically simulated atmospheric convective boundary-layer flows (with J. Gibbs).

May 2014 European Geosciences Union Assembly. Vienna, Austria. Solicited talk: *Turbulence scale interactions in convective boundary-layer flows reproduced with compressible and incompressible large eddy simulation codes* (with J. Gibbs).

December 2013 American Geophysical Union Fall Meeting. San Francisco, USA. Invited talk: *Oscillatory boundary-layer flows along thermally perturbed sloping surfaces* (with A. Shapiro).

November 2013 8th Brazilian Micrometeorology Workshop. Santa Maria, Brazil. Invited lecture: *Structure of atmospheric boundary layers associated with convection initiation*.

November 2011 7th Brazilian Micrometeorology Workshop, Santa Maria, Brazil. Invited lecture: *Numerical simulation of sheared convective boundary layers*.

May 2010 Fifth International Symposium on Computational Wind Engineering (CWE 2010). Chapel Hill, North Carolina, USA. Leader of the panel discussion on the development, validation, and application of atmospheric boundary layer models and turbulence models for CWE.

March 2010 Workshop of the MetStröm Program of the Deutsche Forschungsgemeinschaft (DFG) "Comparing eddy-resolving numerical simulations with corresponding laboratory and field data", Hamburg, Germany. Invited talk: *Unresolved issues with comparability of numerical and wind-tunnel simulations of horizontally evolving atmospheric convective boundary layers*.

November 2009 6th Brazilian Micrometeorology Workshop. Santa Maria, Brazil. Invited lecture: *Dynamics of katabatic flows in stratified atmosphere*.

August 2009 19th Congrès Français de Mécanique. Marseilles, France. Opening talk at the Geophysical and Astrophysical Flow Dynamics Session: *Analytical study of a nocturnal low-level jet over a shallow slope* (with A. Shapiro).

June 2008 18th American Meteorological Society Symposium on Boundary layers and Turbulence. Stockholm, Sweden. Introduction to the Ekman Lecture: *Life and scientific legacy of Vagn Walfrid Ekman*.

May 2008 Theme-of-the-Year 2008 Geophysical Turbulent Phenomena Workshop 3 "Observing the Turbulent Atmosphere: Sampling Strategies, Technology and Applications". National Center for Atmospheric Research, Boulder, USA. Invited talk: *Combining wind tunnel modeling and numerical simulation to study turbulence and dispersion in planetary boundary layer flows*.

May 2008 Symposium on Atmospheric Boundary Layers and Turbulence within the Inaugural International Conference of the Engineering Mechanics Institute (EM08). Minneapolis, USA. Keynote lecture: *Numerical simulation and parameterization of entrainment into sheared convective boundary layers* (with R. Conzemius).

August 2004 5th American Meteorological Society Symposium on the Urban Environment. Vancouver, Canada. Talk at the special session in honor of Erich Plate: *Dispersion in atmospheric convective boundary layer with wind shears: from laboratory models to complex simulation studies*.

December 2001 CNRS (France) – NSF (USA) Workshop "Three-Dimensional Stratified and Sheared Turbulent Flows: Comparison between DNS, LES and Observations". Institut Pierre-Simon Laplace, Université Pierre et Marie Curie, Paris, France. Talk: *Zero-order model of penetrative convection in linearly stratified fluid reevaluated through large eddy simulation*.

January 1999 EnFlo Centre Fifth Year Anniversary Conference on Environmental Flow and Dispersion, University of Surrey, Guildford, United Kingdom. Lecture: *Laboratory modelling of atmospheric boundary-layer flows*.

Participation in scientific meetings

June 2018 23rd American Meteorological Society Symposium on Boundary Layers and Turbulence. Oklahoma City, Oklahoma, USA. Presentations: *An analytical model of an urban heat island circulation in calm conditions* (with A. Shapiro); *The Great Plains low-level jet during PECAN: evaluating spatial and temporal evolution using high resolution observed and simulated datasets* (with E. Smith, J. Gebauer, J. Gibbs, and P. Klein).

December 2016 American Geophysical Union Fall Meeting, San Francisco, USA. Presentation: *A baroclinic nocturnal low-level jet over the Great Plains* (with A. Shapiro and J. Gebauer).

September 2016 PECAN Science Workshop, Norman, Oklahoma, USA. Presentations: *Effects of shallow slope on the evolution of numerically simulated nocturnal low-level jets* (with J. Gibbs and A. Shapiro); *A baroclinic nocturnal low-level jet over the Great Plains* (with A. Shapiro and J. Gebauer); *Nocturnal boundary-layer structure and evolution of the low-level jet during PECAN* (with P. Klein, E. Smith, and D. Turner). *The role of the nocturnal low-level jet in convection initiation over eastern Kansas on 2 June 2015* (with J. Gebauer and A. Shapiro). *The Great Plains low-level jet during PECAN: initial comparisons of profiling observations with WRF model predictions* (with E. Smith, P. Klein, and J. Gibbs).

August 2016 The 2016 Nanjing University – University of Oklahoma Symposium on

Weather and Climate Research, Nanjing, China. Presentations: *Numerical simulations of nocturnal low-level jets over gently sloping terrain* (with J. Gibbs and A. Shapiro); *A unified theory of the Great Plains nocturnal low-level jet* (with A. Shapiro and S. Rahimi).

June 2016 22nd American Meteorological Society Symposium on Boundary Layers and Turbulence. Salt Lake City, Utah, USA. Presentations: *A theory for time-varying vertical motion induced by nocturnal low-level jets over the Great Plains* (with A. Shapiro and J. Gebauer); *The role of the nocturnal low-level jet in convection initiation over eastern Kansas on 2 June 2015* (with J. Gebauer and A. Shapiro); *Idealized numerical simulations of nocturnal low-level jets developing over gently sloping terrain* (with J. Gibbs and A. Shapiro); *WRF model study of the Great Palins low-level jet: effects of grid spacing and boundary layer parametrization* (with E. Smith, J. Gibbs, and T. Bonin).

June/July 2015 26th General Assembly of the International Union of Geodesy and Geophysics (IUGG), Prague, Czech Republic. Talk: *Accounting for topographic and frictional forcings in a unified theory of the nocturnal low-level jet* (with A. Shapiro and S. Rahimi).

January 2015 Annual Meeting of the American Meteorological Society. Phoenix, Arizona, USA.

June 2014 International Symposium "Perspectives in Micrometeorology", Thurnau, Germany.

April 2014 European Geosciences Union Assembly, Vienna, Austria. Talk: *Boundary-layer similarity in a numerically simulated oscillatory turbulent katabatic flow* (with A. Shapiro).

July 2013 Davos Atmosphere and Cryosphere Assembly 2013, Switzerland. Presentations: *Assessing a new scaling hypothesis for turbulent katabatic flow along a planar slope* and *Velocity and buoyancy oscillations in turbulent slope flows: do they live or do they die?* (both with A. Shapiro).

July 2012 Workshop "Wave-Turbulence Interactions in Stable Boundary Layers". Boulder, Colorado, USA. Presentation: *Growing oscillations in a sheared rotating stratified flow* (with A. Shapiro).

July 2012 20th American Meteorological Society Symposium on Boundary Layers and Turbulence. Boston, Massachusetts, USA. Presentations: *Comparison of convective boundary layer velocity spectra calculated from large eddy simulation and WRF model data* (with J. Gibbs) and *Direct evaluation of scalar and velocity structure functions in the atmospheric convective boundary layer from large eddy simulation output* (with C. Wilson).

August 2011 6th Baltic Heat Transfer Conference. Tampere, Finland. Presentation: *Horizontal buoyancy-driven flow along a differentially cooled underlying surface* (with A. Shapiro).

August 2010 19th American Meteorological Society Symposium on Boundary Layers and Turbulence. Keystone, Colorado, USA. Presentation: *Katabatic flow induced by a top-hat profile of down-slope surface cooling* (with A. Shapiro and B. Burkholder).

June 2010 Symposium on Boundary Layer and Turbulence in honor of John Wyngaard. Pennsylvania State University, USA. Presentation: *Turbulence structure of numerically simulated slope flows*.

May 2010 Fifth International Symposium on Computational Wind Engineering (CWE 2010), Chapel Hill, North Carolina, USA. Presentation: *Large eddy simulation of realistic wind fields in daytime atmospheric boundary layer* (with R. Conzemius).

March 2010 38th Symposium of Humboldt Research Awardees. Alexander von Humboldt Foundation, Bamberg, Germany.

October 2009 34th American Meteorological Society Conference on Radar meteorology. Williamsburg, Virginia, USA. Presentation: *Turbulence kinetic energy and dissipation rate estimated from a virtual wind profiler and verified through large eddy simulations* (with D. Scipión, R. Palmer, P. Chilson, and A. M. Botnick).

August 2009 19th Congrès Français de Mécanique, Alexandre Favre Colloquium. Marseilles, France. Presentation: *Turbulence and waves in numerically simulated slope flows* (with A. Shapiro).

June 2009 Global Energy and Water Cycle Experiment (GEWEX) Atmospheric Boundary Layer Study (GABLS) Workshop. National Center for Atmospheric Research, Boulder, Colorado, USA. Presentation: *Testing subgrid closures for large eddy simulation of stably stratified flows* (with B. Burkholder).

June 2009 10th Annual Weather Research and Forecasting Model (WRF) Users' Workshop. National Center for Atmospheric Research, Boulder, Colorado, USA. Presentation: *Sensitivity of near-surface meteorological fields in WRF to boundary/surface-layer parameterizations in conjunction with horizontal grid spacing* (with J. Gibbs).

May 2009 Workshop on Advanced Concepts for Boundary Layer Parameterizations. German Weather Service, Offenbach, Germany. Presentation: *Preliminary results from evaluation of subgrid closures for large eddy simulation of katabatic flows* (with B. Burkholder).

June 2008 18th American Meteorological Society Symposium on Boundary Layers and Turbulence. Stockholm, Sweden. Presentations: *Two-dimensional katabatic flows along a planar slope* (with B. Burkholder and A. Shapiro), *Coriolis effects in heterogeneous katabatic flows* (with A. Shapiro), *Scaling considerations for slope flows* (with A. Shapiro), *Simulations versus observations of a sheared convective boundary layer* (with R. Conzemius), *Analysis and classification of flows over gently sloping terrain within patchy vegetation* (with S. Arms and P. Klein), *Effect of the Earth's rotation on the equilibrium depth of a stably stratified barotropic planetary boundary layer* (with D. Mironov).

May 2008 Symposium on Atmospheric Boundary Layers and Turbulence within the Inaugural International Conference of the Engineering Mechanics Institute (EM08). Minneapolis, USA. Presentation: *Simulations versus observations of a sheared convective boundary layer* (with R. Conzemius).

January 2008 United States Department of Energy Workshop on Research Needs for Wind Resource Characterization. Broomfield, Colorado, USA.

September 2007 5th Baltic Heat Transfer Conference. Saint Petersburg, Russia. Presentation: *Analytical and numerical studies of natural convection along doubly infinite vertical plates in stratified fluids* (with A. Shapiro).

June 2007 16th American Meteorological Society Conference on Atmospheric and Oceanic Fluid Dynamics. Santa Fe, New Mexico, USA. Presentation: *Coriolis effects in inhomogeneous katabatic flows* (with A. Shapiro).

November 2006 International Workshop on Stable Boundary Layers. Sedona, Arizona, USA. Presentation: *Effects of rotation and turbulence-wave interactions in numerically simulated katabatic flows* (with A. Shapiro).

June 2006 7th International Symposium on Tropospheric Profiling. Boulder, Colorado, USA. Presentation: *Characterization of the daytime convective boundary layer using an advanced radar simulator* (with D. Scipión, P. Chilson, and R. Palmer).

May 2006 17th American Meteorological Society Symposium on Boundary Layers and Turbulence. San Diego, California, USA. Presentations: *Oscillatory flow regimes in turbulent katabatic flows retrieved from direct numerical simulations* (with A. Shapiro), and *Coriolis effects in katabatic flow along a differentially cooled sloping surface in a stratified fluid* (with A. Shapiro and C. Wall).

May 2005 4th International Conference on Computational Heat and Mass Transfer, Paris/Cachan, France. Presentation: *Analytical and numerical study of natural convection in a stably stratified fluid along vertical plates and cylinders with*

temporally-periodic surface temperature variations (with A. Shapiro).

August 2004 16th American Meteorological Society Symposium on Boundary Layers and Turbulence. Portland, Maine, USA. Presentations: *Numerical models of entrainment into sheared convective boundary layers evaluated through large eddy simulations* (with R. Conzemius), *Entrainment into sheared convective boundary layers as predicted by different large eddy simulation codes* (with R. Conzemius, I. Esau, F. Katopodes Chow, D. Lewellen, C.-H. Moeng, D. Pino, P. Sullivan, and J. Vilà-Guerau de Arellano), and *Nonstationarity of convective boundary layer growth in a heterogeneously stratified, shear-free atmosphere* (with R. Conzemius and A. Shapiro).

June 2004 Symposium "Atmospheric Turbulence and Mesoscale Meteorology", Geophysical Turbulence Program, NCAR. Boulder, Colorado, USA.

April 2004 First General Assembly of the European Geosciences Union (EGU). Nice, France. Presentations: *Numerical evaluation of wind-shear effects on turbulence regime and entrainment dynamics in the atmospheric convective boundary layer* (with R. Conzemius) and *Predictions of entrainment into a sheared atmospheric convective boundary layer by large eddy simulation versus two-parameter turbulence closure model* (with R. Conzemius).

June 2003 11th International Conference on Wind Engineering. Lubbock, Texas, USA. Presentation: *Evolution of mean wind and turbulence fields in a quasi-baroclinic convective boundary layer with strong wind shears* (with R. Conzemius).

May 2003 3rd International Conference on Computational Heat and Mass Transfer. Banff, Canada. Presentation: *Pressure work effects in unsteady convectively driven flow along a vertical plate* (with A. Shapiro).

July 2002 15th American Meteorological Society Symposium on Boundary Layers and Turbulence. Wageningen, the Netherlands. Presentations: *Effects of initial temperature and velocity perturbations on the development of convection in the atmospheric boundary layer* (with R. Conzemius), *Dynamics of convective entrainment in a heterogeneously stratified atmosphere with wind shear* (with R. Conzemius), and *Evaluation of the Lagrangian footprint model LPDM-B using wind-tunnel data sets* (with N. Kljun, P. Kastner-Klein, and M. W. Rotach).

July 2002 9th European Turbulence Conference (ETC9). University of Southampton, United Kingdom. Presentation: *Evolution of turbulent convective entrainment in heterogeneously versus linearly stratified fluids* (with R. Conzemius).

December 2001 3rd International Symposium on Environmental Hydraulics (ISEH2001), Tempe, Arizona, USA. Presentations: *Entrainment dynamics of shear-free*

convective boundary layers growing in linearly and discretely stratified fluids (with R. Conzemius), *Dispersion of gaseous plume in the sheared convective boundary layer: evaluation of a Lagrangian particle model versus wind tunnel simulation data* (with P. Kastner-Klein, N. Kljun, and M. W. Rotach), and *A combined numerical and laboratory study of dispersion from a point source in the atmospheric convective boundary layer with wind shear* (with J. Thäter and G. Jirka).

July 2001 4th International Workshop on Direct and Large-Eddy Simulation, University of Twente, Enschede, the Netherlands. Presentation: *Large eddy simulation of convective entrainment in linearly and discretely stratified fluids* (with R. Conzemius).

May 2001 Meeting of participants of the European Union Cooperative Program on Meteorology Applied to Urban Air Pollution Problems (COST 715). Swiss Federal Institute of Technology (ETHZ), Zürich, Switzerland.

August 2000 3rd American Meteorological Society Symposium on the Urban Environment. Davis, California, USA. Presentation: *Spatial variability of mean flow and turbulence fields in street canyons* (with P. Kastner-Klein, M. W. Rotach, M. J. Brown, and R. E. Lawson).

August 2000 14th American Meteorological Society Symposium on Boundary Layers and Turbulence. Aspen, Colorado, USA. Presentation: *Experimental study of mean flow and turbulence characteristics in an urban roughness sublayer* (with P. Kastner-Klein and M. W. Rotach).

June 2000 8th European Turbulence Conference (ETC-8). Polytechnic University of Catalonia, Barcelona, Spain. Presentation: *Turbulent transport across a sheared inversion at the convective boundary layer top* (with J. Thäter).

May 2000 Meeting of participants of the European Union Project "Optimization of Modelling Methods for Air Pollution in Streets" (TRAPOS). Ecole Centrale de Nantes, France.

October 1999 6th International Conference on Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes. INSA de Rouen, France. Presentation: *Organised and turbulent air motions in a wind tunnel model of a street canyon with and without moving vehicles* (with P. Kastner-Klein and M. W. Rotach).

September 1999 EC391 EUROMECH Colloquium "Wind tunnel modelling of dispersion in environmental flows". Institute of Thermomechanics, Academy of Sciences of the Czech Republic, Prague, Czech Republic. Presentations: *A wind tunnel study of gaseous tracer dispersion in the convective boundary layer capped by a temperature inversion* (with J. Thäter), *Wind tunnel study of concentration*

and flow fields near street canyon intersections (with P. Kastner-Klein), and *Diffusion from a line source deployed in a homogeneous roughness layer: interpretation of wind tunnel measurements by means of simple mathematical models* (with P. Kastner-Klein).

August 1999 Workshop of the European Union Programme SATURN (Studying Atmospheric Pollution in Urban Areas). University of Aveiro, Portugal. Presentation: *Wind tunnel study of flow fields in street canyons with moving vehicles* (with J. C. Ribeiro and P. Kastner-Klein).

May 1999 Symposium on Direct and Large Eddy Simulation. Isaac Newton Institute for Mathematical Sciences, Cambridge, United Kingdom. Presentation: *Large-eddy simulation study of transition regimes in a channel flow over a rough and heated plate*.

March 1999 Workshop "Turbulence Structure and Vortex Dynamics". Isaac Newton Institute for Mathematical Sciences, Cambridge, United Kingdom. Presentation: *Turbulence structure variation in a horizontally evolving convective boundary layer capped by a temperature inversion*.

March 1999 Second International Conference "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* (with P. Kastner-Klein, J.-F. Sini, and P. G. Mestayer).

June/July 1998 International Workshop on Flow Diagnosis Techniques. State Marine Technology University, St. Petersburg, Russia. Presentations: *Investigation of turbulence structure in the convective boundary layer by means of LDA measurements and large-eddy numerical simulation* (with R. Kaiser), and *Application of LDA technique to flow and turbulent diffusion diagnosis in a wind-tunnel model of urban street canyon with moving vehicles* (with P. Kastner-Klein and R. Berkowicz).

June 1998 IUTAM/IUGG Symposium on Developments in Geophysical Turbulence (DGT98). National Center for Atmospheric Research, Boulder, Colorado, USA. Presentation: *Turbulent mixing and entrainment in a horizontally evolving convective boundary layer capped by a temperature inversion* (with R. Kaiser).

January 1998 Meeting of participants of the European Union Project “Optimization of Modelling Methods for Air Pollution in Streets” (TRAPOS). Brussels, Belgium. Presentation: *Model studies of urban air pollution at the Institute for Hydromechanics, University of Karlsruhe*.

October 1997 EURASAP Workshop "The Determination of the Mixing Height – Current

Progress and Problems". Risø National Laboratory, Roskilde, Denmark. Presentation: *A model study of mixing and entrainment in the horizontally evolving atmospheric convective boundary layer* (with R. Kaiser).

August 1997 International Colloquium "Clear and Cloudy Boundary Layers". Royal Academy of Arts and Sciences, Amsterdam, the Netherlands. Presentation: *Turbulence structure in a wind tunnel model of the atmospheric convective boundary layer* (with R. Kaiser).

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* (with P. Kastner-Klein and E. Plate).

October 1995 International Workshop "Geophysical and Astrophysical Convection". National Center for Atmospheric Research, Boulder, Colorado, USA. Presentation: *Modeling atmospheric penetrative convection in a thermally stratified wind tunnel* (with R. Kaiser and M. Rau).

March 1995 International Workshop "Interaction of scales in turbulence: application to convection, diffusion and chemistry". Utrecht University, the Netherlands. Presentation: *Convective boundary layer turbulence spectra and dissipation rates derived from wind-tunnel simulations* (with R. Kaiser and M. Rau).

December 1994 Meeting of COBOLD Project "Convection, boundary-layer dynamics and turbulence parameterization in a new generation of climate and mesoscale models". Alfred Wegener Institute of Polar and Marine Research, Bremerhaven, Germany. Presentation: *Wind tunnel simulation of the atmospheric convective boundary layer* (with R. Kaiser, M. Rau, and E. Plate).

February 1994 Meeting of the European Union FIELDVOC Programme. European Commission, Brussels, Belgium. Presentation: *Modeling atmospheric dispersion from an area source in a coastal region of Brittany* (with P. Mestayer and D. Hespeel).

October 1991 EUROMECH 276 Colloquium "Dynamics of the Urban Atmosphere". Ecole Centrale de Nantes, France. Presentation: *Numerical modelling of the atmospheric boundary-layer flow over ridge- and valley-type artificial obstacles*.

July 1991 International Workshop on Atmospheric Planetary Boundary Layer Modelling. Hydrological Office, Helsinki, Finland. Presentation: *Parameterized models of the atmospheric boundary layer* (with S. Zilitinkevich and R. Tamsalu).

April/May 1990 9th American Meteorological Society Symposium on Turbulence and Diffusion. Roskilde, Denmark. Presentations: *Modeling atmospheric boundary layer over irregular underlying surface* (with E. Nadyozhina and L. Orlenko), *Numerical model of boundary-layer flow in the vicinity of a sea dam* (with B. Vager), *Parameterized model of the diurnal cycle of the atmospheric boundary layer* (with S. Zilitinkevich and M. Shabalova).

September 1988 International Symposium on Atmospheric Boundary Layer under Urban Conditions. Erevan, USSR. Presentation: *Two-parameter description of turbulence in the models of the stratified boundary layer over the inclined surface* (with A. Kirimov).

July 1986 4th International Conference on Boundary and Interior Layers. Novosibirsk, USSR. Presentation: *Numerical method for calculation of the atmospheric boundary layer over two-dimensional obstructions of moderate slope* (with A. Dubov).

INVITED LECTURES AND TALKS

2019

German Weather Service (DWD), Offenbach, Germany. Seminar talk: "Low-Level Jets over Gently Sloping Terrain of the U.S. Great Plains".

2018

Department of Meteorology and Air Quality, Wageningen University, the Netherlands. Seminar talk: "Nocturnal Low-Level Jets over the Great Plains of the United States".

2015

German Weather Service (DWD), Offenbach, Germany. Seminar talk: "Structural Features of Numerically Simulated Slope Flows: Implications for Atmospheric Modeling".

Department of Mechanics, Royal Institute of Technology, Stockholm, Sweden. Seminar talk: "Direct and Large-Eddy Simulations of Slope Flows".

2013

Center for Marine and Atmospheric Sciences (ZMAW), University of Hamburg and Max Planck Society, Germany. Seminar talk: "Oscillations and Boundary-Layer Similarity in Numerically Simulated Slope Flows" (with *A. Shapiro*).

Max Planck Research Group “Turbulent Mixing Processes in the Earth System”, Max Planck Institute for Meteorology, Hamburg, Germany. Seminar talks: I. "Issues with Large Eddy Simulations of Turbulent Slope Winds"; II. "Evening Transition of the Atmospheric Boundary

Layer and Decay of Convective Turbulence"; III. "Effects of Wind Shear on the Entrainment in Atmospheric Convective Boundary Layers".

2012

Department of Civil and Environmental Engineering, Princeton University, New Jersey, USA. Seminar talk: "Challenges in Conceptual Understanding and Numerical Simulation of Stably Stratified Atmospheric Boundary Layers".

Atmospheric Sciences Research Center, University at Albany, New York, USA. Falconer Lecture: "Understanding Thermally Driven Fluid Flows through Laboratory and Computer Experiments".

National Weather Center (NWC), Norman, Oklahoma, USA. Seminar Series on Boundary Layer, Urban Meteorology, and Land Surface Processes. Talk: "Stably Stratified Atmospheric Boundary Layer (SBL): Unresolved Issues in Conceptual Understanding and Modeling".

2011

Department of Atmospheric, Oceanic, and Space Sciences, University of Michigan, Ann Arbor, USA. Seminar talk: "Challenges in Numerical Simulations of Slope Flows".

2010

Humboldt Lecture: "Dynamics of Slope Flows in Stratified Atmosphere". Geophysical Colloquium, Hamburg University, Germany.

Institute of Marine and Atmospheric Research (IMAU), Utrecht University, the Netherlands. Colloquium talk: "Boundary Layer Features of Slope Flows in Stratified Atmosphere".

2009

St. Petersburg Technical University, Russia. Talk at a joint seminar of Thermophysics and Hydro- and Aerodynamics Departments: "Numerical Investigation of Turbulent Convection along Heated Vertical Plate Immersed in Stably Stratified Fluid at Moderate Reynolds Numbers".

A. I. Voeikov Main Geophysical Observatory, St. Petersburg, Russia. Seminar talk: "Numerical Investigation of Turbulent Slope Flows in Stratified Fluid: Structural Features and Integral Similarity Relationships".

Department of Multi-Scale Physics, Delft University of Technology, the Netherlands. Seminar talk: "Integral Constraints for Turbulent Slope Flows and their Numerical Verification".

Department of Meteorology and Air Quality, Wageningen University, the Netherlands. Seminar talk: "Scaling Relationships and Integral Constrains for Turbulent Slope Flows Validated

through Direct Numerical Simulations".

Ecole Centrale de Nantes, Nantes, France. Seminar talk: "Retrieval of Near-Surface Turbulence Parameters from Output of the Weather Research and Forecasting (WRF) Model Using Different Boundary Layer Parameterization Schemes" (with *J. Gibbs*).

2008

Institute of Meteorology and Geophysics, University of Innsbruck, Austria. Lecture: "Recent Advances in Analytical and Numerical Studies of Katabatic Flows".

2007

Meteorological Institute, Hamburg University, Germany. Seminar talk: "Entrainment into Sheared Convective Boundary Layers: Large Eddy Simulations and Numerical Model Parameterizations".

Department of Multi-Scale Physics, Delft University of Technology, the Netherlands. Seminar talk: "Natural Convection Along a Vertical Plate Immersed in a Stably Stratified Fluid".

Mesoscale and Microscale Meteorology (MMM) Division of the National Center for Atmospheric Research (NCAR), Boulder, Colorado, USA. Seminar talk: "Numerical Studies of Katabatic Flows with Coriolis Effects".

2006

National Weather Center (NWC), Norman, Oklahoma, USA. Seminar Series on Boundary Layer, Urban Meteorology, and Land Surface Processes. Talk: "Dynamics of Entrainment into Sheared Convective Boundary Layers" (with *R. Conzemius*).

2005

Department of Meteorology and Air Quality, Wageningen University, the Netherlands. Seminar talk: "Direct Numerical Simulation of Buoyantly Driven Flows Along Horizontal and Vertical Heated Surfaces".

2003

Department of Physics, Oklahoma State University, Stillwater, USA. Colloquium talk: "Analytical and Numerical Modeling of Convection Along Vertical and Horizontal Heated Surfaces" (with *A. Shapiro* and *R. Conzemius*).

2001

Meteorological Institute, Hamburg University, Germany. Seminar talk: "Transition Regimes of Entrainment in Atmospheric Convective Boundary Layers: Large Eddy Simulations versus

Laboratory and Atmospheric Data".

Department of Atmospheric Sciences, University of Illinois, Urbana-Champaign, USA. Seminar talk: "Interaction of Entrainment and Organized Vertical Motions at the Top of Spatially Evolving Convective Boundary Layer with Sheared Capping Inversion".

2000

Center for Environmental and Applied Fluid Mechanics, Johns Hopkins University, Baltimore, USA. Seminar talk: "Structure of Organized and Turbulent Motions in a Spatially Evolving Convective Boundary Layer with Elevated Velocity Shear".

School of Meteorology, University of Oklahoma, Norman, USA. Seminar talk: "Subsidence and Ascension at the Top of Convective Boundary Layer with Elevated Wind Shear ".

1999

School of Meteorology, University of Oklahoma, Norman, USA. Lecture: "To What Extent are We Able to Simulate in Laboratory Atmospheric Boundary-Layer Flows?". Seminar talk: "Evolution of Mixing and Entrainment in the Horizontally Developing Convective Boundary Layer".

Department of Thermo- and Fluid Dynamics, Ilmenau University of Technology, Ilmenau, Germany. Seminar talk: "Numerical Simulation of Transition Flow Regimes in the Inversion-Capped Boundary Layer over a Heated Plate".

Département Systèmes Energétiques et Environnement, Ecole des Mines de Nantes, Nantes, France. Lecture: "Laboratory Simulation of Buoyancy Driven Atmospheric Flows".

1998

Department of Applied Mechanics and Engineering Sciences, University of California, San Diego, USA. Seminar talk: "Combining Numerical and Wind-Tunnel Simulation Approaches for Investigation of the Turbulence Structure in a Convective Entrainment Zone with Imposed Shear".

Institute of Meteorology and Geophysics, University of Innsbruck, Austria. Lecture: "Multiscale Nature of Atmospheric Convection − A Challenge for Theoretical Meteorologists".

1997

Royal Netherlands Meteorological Institute (KNMI), De Bilt, the Netherlands. Seminar talk: "A Parallel Wind Tunnel and Large Eddy Simulation Study of Turbulence Regime in the Horizontally Evolving Atmospheric Convective Boundary Layer".

1996

Ecole Centrale de Nantes, Nantes, France. Seminar talk: "Turbulence Structure in a Wind Tunnel Model of the Atmospheric Convective Boundary Layer".

1995

Fraunhofer Institute for Atmospheric Environment, Garmisch-Partenkirchen, Germany. Seminar talk: "Bulk Models of Atmospheric Convection and their Extension for Mesoscale Convective Flow over Irregular Terrain".

Institute of Marine and Atmospheric Research (IMAU), Utrecht University, the Netherlands. Lecture: "Turbulence Structure in a Wind Tunnel Model of the Atmospheric Convective Boundary Layer".

Institute of Atmospheric Physics, Oberpfaffenhofen, Germany. Seminar talk: "Wind Tunnel Simulation of the Atmospheric Convective Boundary Layer".

Institut de Mécanique des Fluides de Toulouse, Toulouse, France. Seminar talk: "Theoretical and Laboratory Model Studies of Convective Boundary Layer".

Ecole Centrale de Lyon, Lyon, France. Seminar talk: "Theoretical and Laboratory Model Studies of Convective Boundary Layer".

Department of Mechanical Engineering, University of Surrey, Guildford, United Kingdom. Seminar talk: "Physical Modelling of the Atmospheric Convective Boundary Layer".

Laboratory of Geophysical and Industrial Flows (LEGI), Grenoble, France. Seminar talk: "Theoretical and Laboratory Model Studies of Convective Boundary Layer".

1994

Ecole Centrale de Nantes, Nantes, France. Seminar talk: "Preliminary Results from a Wind Tunnel Model of the Atmospheric Convective Boundary Layer".

1993

J. M. Burgers Center for Fluid Mechanics, Delft University of Technology, Delft, the Netherlands. Panta Rhei Lecture: "A Model for a Shear-Free Convective Boundary Layer with Parameterized Capping Inversion Structure".

Royal Netherlands Meteorological Institute (KNMI), De Bilt, the Netherlands. Seminar talk: "A Model for a Shear-Free Convective Boundary Layer with Parameterized Capping Inversion Structure".

Department of Meteorology and Wind Energy, Risø National Laboratory, Roskilde, Denmark.

Seminar talk: "A Model for a Shear-Free Convective Boundary Layer with Parameterized Capping Inversion Structure".

1991

Department of Meteorology and Wind Energy, Risø National Laboratory, Roskilde, Denmark. Seminar talk: "A Model of the Atmospheric Planetary Boundary Layer Based on the Similarity Approach".

1990

Institute of Meteorology and Climatology, University of Karlsruhe / Nuclear Research Center, Karlsruhe, Germany. Colloquium talk: "Numerical Model of the Atmospheric Boundary-Layer Flow over Topography Elements".

Heinrich Hertz Institute, Berlin, Germany. Seminar talk: "Modeling the Diurnal Cycle of the Atmospheric Planetary Boundary Layer".

ACADEMIC/SCIENTIFIC MISSIONS, EXPEDITIONS, AND FIELD EXPERIMENTS

2017 Mission of the University of Oklahoma to Brazil for exploring avenues of academic and research collaboration in meteorology with a focus on weather and radar applications. Member of the University of Oklahoma delegation.

2003 Oklahoma City atmospheric dispersion experiment “Joint Urban 2003”. Scientific advising and technical support.

1992 International scientific cruise aboard the research ship "Muikku" to the eastern part of the Gulf of Finland. Meteorological observations, water-quality measurements, and data processing.

1987 Expedition aboard the research ship "Ocean" to the tropical part of Pacific Ocean. Head of meteorological data management group.

1980 Expedition aboard the research ship "Professor Zubov" to the northern part of Atlantic Ocean. Meteorological observations and data processing.

SPECIALIZATION

June **2002:** Workshop for Early Career Faculty in Geosciences organized by National Association of Geoscience Teachers and National Science Foundation, USA. College of William and Mary, Williamsburg, Virginia, USA. Facilitators: Richelle Allen-King, R. Heather Macdonald, David W. Mogk, Randall M. Richardson, Steven C. Semken, and Barbara J. Tewksbury.

Aug.-Nov. **2000:** New Faculty Instructional Seminar, University of Oklahoma, Norman, USA.

Instructor: L. Dee Fink.

August **1996:** NATO Advanced Study Institute "Physics and Parameterization of Moist Atmospheric Convection", Seeon, Germany. Director: R. Smith.

May-June **1994:** College on Atmospheric Boundary Layer and Air Pollution Modelling. International Centre for Theoretical Physics, Trieste, Italy. Directors: K. Fedra, C. Ratto, T. Tirabassi, A. P. van Ulden.

July **1993:** NATO Advanced Study Institute "Wind Climate in Cities", Karlsruhe, Germany. Directors: J. E. Cermak, A. G. Davenport, E. J. Plate, and D. X. Viegas.

May-June **1989:** School on Computational Fluid Mechanics, Computer Centre of the Siberian Branch of the USSR Academy of Sciences. Abakan, USSR. Director: S. K. Godunov.

April **1986:** School on Geophysical Fluid Dynamics, Institute of the Atmospheric Physics of the USSR Academy of Sciences. Moscow, USSR. Director: A. M. Obukhov.

May **1985:** School on Geophysical Fluid Dynamics, Institute of the Atmospheric Physics of the USSR Academy of Sciences. Moscow, USSR. Director: A. M. Obukhov.

SCIENTIFIC PROJECTS AND PROGRAMS

2014 - 2019 "Low-level jets in the nocturnal stable boundary layer: structure, evolution and interactions with mesoscale atmospheric disturbances". Funding agency: National Science Foundation, USA. Grant AGS-1359698. Location: University of Oklahoma, USA. Function: co-principal investigator. Budget: US $$ 1214K.

2013 "Numerical simulation of atmospheric boundary-layer flows". Visiting grant from Max Planck Society (Germany) to conduct collaborative research at the Max Plank Institute for Meteorology. Location: Hamburg, Germany. Budget: €€ 3K.

2012 - 2014 "Research in support of forecasting and uncertainty quantification of power from intermittent renewable energy sources". Funding agency: Lawrence Livermore National Laboratory. Location: University of Oklahoma, USA. Function: investigator. Budget: US $$ 140K.

2010 - 2013 "Studies of the atmospheric boundary layer using numerical simulations coupled with radar/sodar-based field observations". Funding agency: National Science Foundation, USA. Grant ATM-1016153. Location: University of Oklahoma, USA. Function: co-principal investigator. Budget: US $$ 757K.

2009 - 2012 "Development of adaptation techniques for retrieval of near surface meteorological fields and turbulence parameters from Weather Research and Forecasting (WRF) model data for heterogeneous atmospheric environments". Funding agency: The Netherlands' Organization for Applied Research (TNO). Location: University of Oklahoma, USA. Function: principal investigator. Budget: US $$ 265K.

2007 - 2010 "Analytical and numerical studies of katabatic and anabatic flows in stratified atmospheric environments". Funding agency: National Science Foundation, USA. Grant ATM-0622745. Location: University of Oklahoma, USA. Function: co-principal investigator. Budget: US $$ 343K.

2007 - 2008 "Assessment of Weather and Research Forecasting (WRF) model capabilities in coastal areas". Funding agency: The Netherlands' Organization for Applied Research (TNO). Location: University of Oklahoma, USA. Function: principal investigator. Budget: US $$ 121K.

2006 - 2010 "Characterization of the daytime convective boundary layer using numerical simulations and radar field experiments". Funding agency: National Science Foundation, USA. Grant ATM-0553345. Location: University of Oklahoma, USA. Function: co-principal investigator. Budget: US $$ 402K.

2003 - 2004 "Study of traffic and turbulent air motions in an urban street during Joint Urban 2003". Funding agency: H. E. Cramer Company, Inc., USA. Location: University of Oklahoma, USA. Function: co-principal investigator. Budget: US $$ 134K.

2002 - 2005 "Dynamics of convective entrainment in heterogeneously stratified atmosphere with wind shears". Funding agency: National Science Foundation, USA. Grant ATM-0124068. Location: University of Oklahoma, USA. Function: principal investigator. Budget: US $$ 289K.

1997 - 2002 "Investigation and parameterization of scale interactions in the convective boundary-layer flow turbulence using unified atmospheric, wind-tunnel, and numerical model database". Funding agency: Deutsche Forschungsgemeinschaft (DFG). Location: University of Karlsruhe, Germany. Function: principal investigator. Project directors: G. Jirka and E. Plate.

1997 - 2001 "Optimisation of Modelling Methods for Air Pollution in Streets" (TRAPOS), TMR Programme of EU Commission. Location: University of Karlsruhe, Germany. Function: senior project leader. Budget: €€ 186K.

1995 - 1999 "Wind-tunnel study of turbulence dynamics, transport processes, and dispersion in convective boundary layer capped by a temperature inversion". Funding agency: Deutsche Forschungsgemeinschaft (DFG). Location: University of Karlsruhe, Germany. Function: co-principal investigator. Project directors: E. Plate and G. Jirka (from 1997).

1993 - 1995 "Investigation of turbulent transfer processes in the convective boundary layer developing under capping inversion". Project associated with the Alexander von Humboldt Fellowship. Location: University of Karlsruhe, Germany. Function: investigator. Project supervisor: E. Plate.

1990 - 1992 "Development of a regional climate numerical model coupled with a global climate model". Location: A. I. Voeikov Main Geophysical Observatory, St. Petersburg, Russia. Function: principal investigator. Project director: V. Meleshko.

1989 - 1991 "Model study of air-water interaction processes and evaporation from the surface in the northern part of Caspian Sea". Location: Civil Engineering Institute, St. Petersburg, Russia. Function: investigator. Project director: B. Vager.

1989 - 1990 "Database of atmospheric boundary-layer parameters for civil aviation airports". Location: Civil Engineering Institute and A. I. Voeikov Main Geophysical Observatory, St. Petersburg, Russia. Function: project director.

1986 - 1989 "Numerical model investigation of mesoscale atmospheric processes over the Gulf of Finland". Location: Civil Engineering Institute, St. Petersburg, Russia. Function: principal investigator. Project director: B. Vager.

1986 - 1988 "Optimization of interpolation methods for near-surface meteorological fields". Location: A. I. Voeikov Main Geophysical Observatory, St. Petersburg, Russia. Function: investigator. Project director: B. Ilyin.

ORGANIZATION OF CONFERENCES, SYMPOSIA, SCHOOLS, AND COURSES

2018 23rd American Meteorological Society Symposium on Boundary Layers and Turbulence. Chair of two sessions and leader of the closing discussion. June 11-15, 2018, Oklahoma City, USA.

2016 22nd American Meteorological Society Symposium on Boundary Layers and Turbulence. Session co-chair. June 24-28, 2016, Salt Lake City, USA.

2013 – 2014 6th International Symposium on Computational Wind Engineering (CWE 2014). Member of the Scientific Board and session chair. June 8-12, 2014, Hamburg, Germany.

2011 – 2012 Croatian – USA Workshop on Mesometeorology. Co-chair of the Organizing Committee and lecturer. June 18-20, 2012, Zagreb, Croatia.

2010 - 2011 13th International Conference on Wind Engineering (ICWE13). Member of the Scientific Committee. July 10-15, 2011, Amsterdam, the Netherlands.

2009 - 2010 5th International Symposium on Computational Wind Engineering (CWE 2010).

Member of the Scientific Committee, panelist, co-chair of the plenary session on "Development, Validation, and Application of Atmospheric Boundary Layer Models and Turbulence Models for CWE", and co-chair of the associated technical session. May 23-27, 2010, Chapel Hill, North Carolina, USA.

2007 - 2008 18th American Meteorological Society Symposium on Boundary Layers and Turbulence. Member of the Program Committee and session chair. June 9-13, 2008, Stockholm, Sweden.

2005 - 2006 4th International Symposium on Computational Wind Engineering (CWE 2006). Member of the Scientific Committee. July 16-19, 2006, Yokohama, Japan.

2003 - 2004 Symposium "Atmospheric Turbulence and Mesoscale Meteorology", Geophysical Turbulence Program, NCAR. Member of the Planning Committee and convener of the Atmospheric Turbulence section. June 2004, Boulder, Colorado, USA.

2000 - 2001 3rd International Symposium on Environmental Hydraulics. Member of the International Scientific Committee and convener of the "Thermally Driven Environmental Flows" section. December 2001, Tempe, Arizona, USA.

1995 - 1997 NATO Advanced Study Institute "Buoyant Convection in Geophysical Flows", Head of the local arrangement committee, member of the Organizing Committee, co-director, and lecturer. March 1997, Pforzheim, Germany.

SUPERVISING/ADVISING GRADUATE STUDENTS AND POST-DOCS

Cheng Liu, Ph.D., Nanjing University of Information Science and Technology, China (visited School of Meteorology, University of Oklahoma, in 2017). Topic: "Numerical simulation of atmospheric convective boundary layer with radiative heating".

Joshua Gebauer, M.S., School of Meteorology, University of Oklahoma, USA, 2015-2017. Thesis: "Convection initiation caused by heterogeneous Great Plains low-level jets". Recipient of the Sasaki Award for the best peer-reviewed paper by SoM M.S. student (2019).

Elizabeth Smith, M.S./Ph.D., School of Meteorology (SoM), University of Oklahoma, USA, 2014-2018. Dissertation: "The Great Plains nocturnal low-level jet: spatial and temporal evolution". Recipient of the 2014 Graduate Fellowship of the American Meteorological Society (AMS), SoM Faculty Recognition for Outstanding Performance as a Graduate Student (2016), Best Student Presentation Award of the 24th AMS Conference on Numerical Weather Prediction (2017), SoM Director's Recognition for Outstanding Service to the Department as a Graduate Student (2017), and Lilly Award for the best peer-reviewed paper by SoM Ph.D. student (2019).

Jeremy Gibbs, Post-doctoral scientist, School of Meteorology, Advanced Radar Research Center, and Cooperative Institute of Mesoscale Meteorological Studies, University of Oklahoma, USA, 2013-2016. Supervising research on numerical modeling and simulation of

atmospheric boundary layer flows.

Jeremy Gibbs, Ph.D., School of Meteorology (SoM), University of Oklahoma, USA, 2009-2012. Dissertation: "Downscaling techniques for retrieval of near-surface meteorological fields and turbulence parameters from atmospheric numerical model outputs". Recipient of the 2009 SoM Outstanding Teaching Assistant Award and 2011 Lilly Award for the best peer-reviewed paper by SoM Ph.D. student.

Chris Wilson, M.S., School of Meteorology, University of Oklahoma, USA, 2009-2012. Thesis: "Temperature, humidity, and velocity structure functions in stratified atmospheric boundary layers". Recipient of the 2009 Northrop Grumman Graduate Fellowship of the American Meteorological Society and 2013 Sasaki Award for the best peer-reviewed paper by SoM M.S. student.

Simon Axelsen, Ph.D., Institute of Marine and Atmospheric Research, Utrecht University, the Netherlands (visited School of Meteorology, University of Oklahoma, in 2008). Doctoral thesis (2010): "Large eddy simulation and analytical modelling of katabatic winds".

Bryan Burkholder, Ph.D., School of Meteorology, University of Oklahoma, USA, 2007-2012. Topic: "Numerical studies of katabatic and anabatic flows in stratified atmospheric environments".

Jeremy Gibbs, M.S., School of Meteorology, University of Oklahoma, USA, 2007-2008. Thesis: "Turbulent transport and surface interactions within inhomogeneous atmospheric environments: an evaluation of parameterization schemes in the Weather Research and Forecasting (WRF) model".

Aaron Botnick, M.S., School of Meteorology (SoM), University of Oklahoma, USA, 2006-2009. Topic: "Retrieval of mean wind and turbulence parameters from radar profiler measurements". Recipient of the 2008 Sasaki Award for the best peer-reviewed paper by SoM M.S. student.

Andrew Moore, M.S., School of Meteorology, University of Oklahoma, USA, 2003-2004. Topic: "Numerical and experimental study of urban convective boundary layer".

Lisa Wright, M.S., School of Meteorology, University of Oklahoma, USA, 2002. Topic: "Topological features of the entrainment interface at the convective boundary layer top".

Alexandre Fierro, M.S., School of Meteorology, University of Oklahoma, USA, 2001-2003. Thesis: "The influence of local environmental conditions upon supercell thunderstorm kinematics, microphysics, electrification and lightning: comparisons between simulated and observed storms of 2 June 1995".

Robert Conzemius, Ph.D., School of Meteorology (SoM), University of Oklahoma, USA, 2000-2004. Dissertation: "The effects of wind shear on convective boundary layer entrainment". Recipient of the 2005 Lilly Award for the best peer-reviewed paper by SoM Ph.D. student.

Frank Schimmel, Ph.D., Meteorological Institute, University of Hamburg, Germany (visited School of Meteorology, University of Oklahoma in 2000-2001). Dissertation (2003): "Adaptive numerical methods in atmospheric flow modeling".

Johannes Thäter, Ph.D., University of Karlsruhe, Germany, 1997-2001. Topic: "Wind tunnel simulation of gaseous tracer dispersion in the atmospheric convective boundary layer".

Emmanuel Guilloteau, Post-doctoral scientist, University of Karlsruhe, Germany, 1999-2000. Topic: "Numerical investigation of turbulent flow structure in urban street canyons".

Jose Carlos Ribeiro, Ph.D., University of Karlsruhe, Germany, and Technical University of Lisbon, Portugal, 1999. Topic: "Wind tunnel study of three-dimensional flow structure in street canyons of different geometry".

Alexis Madrange, M.S., University of Karlsruhe, Germany, and Ecole Centrale de Nantes, France, 1999. Thesis: "Etude expérimentale d'un écoulement en rue-canyon en soufflerie atmosphérique" (Experimental study of street-canyon flow in an atmospheric wind tunnel).

Rolf Kaiser, Ph.D., University of Karlsruhe, Germany, 1993-1996. Dissertation: "Windkanalstudie konvektiver Grenzschichtströmungen mit angehobener Temperaturinversion" (Wind tunnel study of convective flows with imposed temperature inversion).

Denis Hespeel, M.S., Ecole Centrale de Nantes, France, 1993. Thesis: "Modeling atmospheric dispersion from an area source in a coastal region".

Igor Shkolnik, M.S., Leningrad State Hydrometeorological Institute and A. I. Voeikov Main Geophysical Observatory, Leningrad (St. Petersburg), Russia, 1989-1990. Thesis: "Multi-grid numerical algorithm for a three-dimensional mass-consistent adjustment of wind field".

Elena Churina, Ph.D., A. I. Voeikov Main Geophysical Observatory, Leningrad (St. Petersburg), Russia, 1987-1991. Topic: "Spatial interpolation of surface meteorological and geophysical data based on physical inter-relationships".

Elena Lapshina, M.S., Leningrad State Hydrometeorological Institute and A. I. Voeikov Main Geophysical Observatory, Leningrad (St. Petersburg), Russia, 1986-1987. Thesis: "Reconstruction of atmospheric surface layer parameters based on data of standard meteorological observations".

SERVICE ON DOCTORAL AND M.S. COMMITTEES

Siddhant Gupta, Ph.D., School of Meteorology, University of Oklahoma, USA, 2019-2021. Dissertation: "In situ and satellite based estimates of aerosol-cloud interactions between biomass burning aerosols and marine stratocumulus clouds over the southeast Atlantic ocean".

Joel S. Schröter, Wageningen University, the Netherlands, 2018. Member of committee

(opponent) of the doctoral thesis: “Sheared convective boundary layers: turbulence kinetic energy and entrainment dynamics”.

Jeffrey Milne, Ph.D., School of Meteorology, University of Oklahoma, USA, 2018-pres. Topic: “Investigating helicity as predictor of severe mesoscale convective systems”.

Hristo Chipilski, Ph.D., School of Meteorology, University of Oklahoma, USA, 2017-2021. Dissertation: “The utility of ground-based remote sensing for convective-scale numerical weather prediction”.

Jasper M. Tomas, Delft University of Technology, the Netherlands, 2016. Member of committee (opponent) of the doctoral thesis: “Obstacle-resolving large-eddy simulation of dispersion in urban environments: effects of stability and roughness geometry”.

Jeffrey Milne, M.S., School of Meteorology, University of Oklahoma, USA, 2015-2016. Thesis: “Verification of 10-meter wind forecasts from NSSL-WRF in predicting severe wind-producing MCSS”.

Werner Lazeroms, Department of Mechanics, Royal Institute of Technology, Stockholm, Sweden, 2015. External examiner (opponent) of the doctoral thesis: “Turbulence modeling applied to the atmospheric boundary layer”.

Eric Jacobsen, M.S., School of Meteorology, University of Oklahoma, USA, 2013-2014. Thesis: “Prospects of clear air monitoring with the multi-mission phase array radar”.

Kodi Monroe, Ph.D., School of Meteorology, University of Oklahoma, USA, 2013-2014. Dissertation: “Observational and model analyses of the Oklahoma City urban heat island”.

Jennifer Newman, Ph.D., School of Meteorology, University of Oklahoma, USA, 2012-2015. Dissertation: “Optimizing lidar scanning strategies for wind energy turbulence measurements”.

Charlotte Wainwright, Ph.D., School of Meteorology, University of Oklahoma, USA, 2011-2014. Dissertation: “Development and validation of a sodar simulator for atmospheric boundary layer characterization”. Recipient of the 2014 Lilly Award for the best peer-reviewed paper by SoM Ph.D. student.

Olivier Herlédant, Ecole Centrale de Nantes, Nantes, France, 2011. Member of committee of the doctoral thesis: “Etude numérique et expérimentale de la micro-météorologie des sites de régates côtières appliquée à la baie Quiberon” (Numerical and experimental study of micro-meteorology of coastal regatta sites in the bay of Quiberon).

Todd Kluber, M.S., School of Meteorology, University of Oklahoma, USA, 2009-2010. Topic: “Modeling atmospheric boundary layer structure in frontal zones”.

Corey Potvin, Ph.D., School of Meteorology, University of Oklahoma, USA, 2007-2010. Dissertation: “Using a low-order model to detect and characterize intense vortices in multiple-

Doppler radar data".

Jose Galvez, Ph.D., School of Meteorology, University of Oklahoma, USA, 2007-2011. Dissertation: "Integrated role of the urban canopy on turbulent transfer within the roughness sublayer: an observational point of view".

Michael Buban, Ph.D., School of Meteorology, University of Oklahoma, USA, 2007-2014. Dissertation: "The formation of small-scale atmospheric vortices via horizontal shearing instability".

Sean Arms, Ph.D., School of Meteorology, University of Oklahoma, USA, 2007-2014. Dissertation: "Interaction between coherent structures and the urban canopy layer". Recipient of the *Best Student Presentation* prize at the 18th American Meteorological Society Symposium on Boundary Layers and Turbulence (June 9-13, 2008, Stockholm, Sweden).

Danielle Corrao, M.S., School of Meteorology, University of Oklahoma, USA, 2006-2008. Thesis: "The role of dataset selection in model verification and cloud parameterization development".

Justin Monroe, M.S., School of Meteorology, University of Oklahoma, USA, 2006-2007. Thesis: "Evaluating North American Regional Reanalysis (NARR) surface variables and North American Land Data Assimilation System (NLDAS) using Oklahoma Mesonet observations".

Danny Scipión, Ph.D., School of Electrical and Computer Engineering, University of Oklahoma, USA, 2005-2011. Dissertation: "Characterization of the convective boundary layer through a combination of large-eddy simulations and a radar simulator".

Bradford Barrett, Ph.D., School of Meteorology, University of Oklahoma, USA, 2005-2007. Dissertation: "Characteristics of tropical cyclones in the north Atlantic and east Pacific".

Sean Arms, M.S., School of Meteorology, University of Oklahoma, USA, 2005-2006. Thesis: "Experimental study of turbulence characteristics in the atmospheric surface layer over non-uniform terrain with patchy vegetation".

Alessandro Dosio, Wageningen University, the Netherlands, 2005. Member of committee (opponent) of the doctoral thesis: "Turbulent dispersion in the atmospheric convective boundary layer".

Khoi Le, Ph.D., School of Electrical and Computer Engineering, University of Oklahoma, USA, 2004-2009. Dissertation: "Spatial filtering of clutter using phased array radars for observation of the weather".

Ming Fang, Ph.D., School of Meteorology, University of Oklahoma, USA, 2004-2008. Dissertation: "The spectrum width equations for Doppler weather radar and the coupling of spectral broadening terms".

Jose Galvez, M.S., School of Meteorology, University of Oklahoma, USA, 2004-2005. Thesis: "Modulation of summer rainfall by the South American Altiplano lakes".

Alexandre Fierro, Ph.D., School of Meteorology, University of Oklahoma, USA, 2003-2007. Dissertation: "High resolution simulations of the microphysics and electrification in hurricane-like vortices over warm ocean and at landfall".

Matt Haugland, Ph.D., School of Meteorology, University of Oklahoma, USA, 2003-2006. Dissertation: "The uncoupled surface layer at the Crosstimber Micronet".

Adrian Loftus, M.S., School of Meteorology, University of Oklahoma, USA, 2003-2005. Thesis: "Parameterized mesoscale forcing mechanisms for initiating numerically-simulated isolated multicellular convection".

Donald Guiliano, M.S., School of Meteorology, University of Oklahoma, USA, 2003-2004. Thesis: "Using a fuzzy logic technique to estimate convective boundary layer depth from wind profiler data".

Hamish Ramsay, M.S., School of Meteorology, University of Oklahoma, USA, 2002-2004. Thesis: "Exploring hodograph-based techniques to estimate the velocity of right-moving supercells".

Laurent Navarro, Ecole Centrale de Nantes, Nantes, France, 2003. Member of committee (opponent) of the doctoral thesis: "Modélisation de la couche limite de surface marine et des processus dynamiques et thermodynamiques des aérosols" (Modeling of boundary layer above a sea surface and processes of aerosols dynamics and thermodynamics).

Matt Haugland, M.S., School of Meteorology, University of Oklahoma, USA, 2001-2002. Thesis: "The diurnal cycle of land-atmosphere interactions across Oklahoma's winter wheat belt".

Christopher Weiss, Ph.D., School of Meteorology, University of Oklahoma, USA, 2001-2004. Dissertation: "Variational pseudo multiple-Doppler analyses of a dryline utilizing very-high resolution mobile Doppler radar data".

Christopher McAloon, M.S., School of Meteorology, University of Oklahoma, USA, 2000-2001. Thesis: "An examination of sensible heat flux using the gradient-profile technique at ten Oklahoma Mesonet sites".

Fabienne Grazzini, Institute of Fluid Mechanics, Toulouse, France, 1999. Member of committee (opponent) of the doctoral thesis: "Etude expérimentale de la dispersion de pollutants en présence d'obstacles" (Experimental study of the pollutant dispersion in presence of obstacles).

Claude Guilbaud, Joseph Fourier University, Grenoble, France, 1996. Member of committee (opponent) of the doctoral thesis: "Etude des inversions thermiques: application aux

écoulements atmosphériques dans des vallées encaissées" (Study of thermal inversions: application to atmospheric flows in narrow valleys).

MEMBERSHIP IN PROFESSIONAL ASSOCIATIONS

2007 - 2014. Fellow, Cooperative Institute for Mesoscale Meteorological Studies, University of Oklahoma, USA
2000 - pres. Member, American Meteorological Society, USA
2000 - pres. Member, International Association for Urban Climate
1999 - pres. Member, American Friends of the Alexander von Humboldt Foundation (prior to 2008: Alexander von Humboldt Association of America), USA

REVIEWING

Journal manuscript reviews

Acta Geophysica (2007-2009 – 3 reviews),
Advances in Atmospheric Sciences (2013-2014 – 3 reviews),
Agricultural and Forest Meteorology (2005-2012 – 3 reviews),
Atmosphere-Ocean (2004),
Atmospheric Environment (1998-2007 – 5 reviews),
Atmospheric Chemistry and Physics (2010),
Atmospheric Research (2001-2007 – 4 reviews),
Atmospheric Science Letters (2018, 2019),
Boundary-Layer Meteorology (2003-2014 – 38 reviews),
Chemical Engineering and Processing (2006),
Continuum Mechanics and Thermodynamics (2011),
Environmental Fluid Mechanics (2012-2014 – 4 reviews),
Environmental Science and Technology (2005),
Frontiers in Earth Science (2016),
Geophysical Research Letters (2006, 2008),
Geoscientific Model Development (2010-2020 – 4 reviews),
International Journal of Applied Mechanics (2009),
International Journal of Heat and Fluid Flow (2006),
International Journal of Heat and Mass Transfer (2006, 2007),
International Journal of Thermal Sciences (2006-2009 – 5 reviews),
Journal of Applied Mechanics (2006),
Journal of Applied Meteorology (*and Climatology*) (2001-2017 – 19 reviews),
Journal of Atmospheric and Oceanic Technology (2009),
Journal of Environmental Monitoring (2004),
Journal of Fluid Mechanics (1995-2022 – 43 reviews),
Journal of Fluids Engineering (2008),
Journal of Geophysical Research (1999-2013 – 7 reviews),
Journal of the Atmospheric Sciences (2000-2021 – 47 reviews),
Journal of the Meteorological Society of Japan (2013),
Journal of Turbulence (2004-2009 – 3 reviews),
Journal of Wind Engineering and Industrial Aerodynamics (2001-2014 – 17 reviews),

Mécanique et Industries / *Mechanics and Industry* (2011-2014 – 3 reviews),
Meteorologische Zeitschrift (2010-2017 – 9 reviews),
Meteorology and Atmospheric Physics (2003, 2008),
Missouri Journal of Mathematical Sciences (2011),
Monthly Weather Review (2007-2017 – 8 reviews),
Nature Communications (2019),
Physics of Fluids (2009-2013 – 6 reviews),
Planetary and Space Science (2010 – 2 reviews),
Quarterly Journal of the Royal Meteorological Society (2002-2022 – 19 reviews; 2023),
Space Science Reviews (2015-2016 – 3 reviews),
Tellus (2017),
Water, Air, and Soil Pollution (2012),
Water Resources Research (2003-2013 – 6 reviews),
Weather and Forecasting (2002-2004 – 4 reviews).

Book chapter reviews

Buoyant Convection in Geophysical Flows
Kluwer, 1998, four chapter reviews
Mesoscale Meteorology and Atmospheric Turbulence
Cambridge University Press, 2003, four chapter reviews

Research proposal reviews

Academy of Sciences of the Czech Republic (2004),
Army Research Office (USA, 2001, 2004),
Canada Foundation for Innovation (2006),
Civilian Research and Development Foundation (USA, 2002, 2005),
Department of Energy (USA, 2013-2015 – 3 reviews),
German Research Foundation (*Deutsche Forschungsgemeinschaft*, DFG; 2014, 2018),
National Aeronautics and Space Administration (USA, 2001),
National Science Foundation (USA, 2002-2019 – 24 reviews),
Netherlands Organisation for Scientific Research, NWO (2013, 2018),
State Directorate of the Scientific and Technical Programs (Russia, 2013)
Swiss National Science Foundation (2010),
Wageningen Institute for Environment and Climate Research (Netherlands, 2006).

Conference abstract and paper reviews

Sixth International Symposium on Computational Wind Engineering
Hamburg, Germany, 2014; twenty three abstract reviews.
13th International Conference on Wind Engineering
Amsterdam, the Netherlands, 2011; nine abstract reviews.
Fifth International Symposium on Computational Wind Engineering
Chapel Hill, North Carolina, USA, 2010; eight paper reviews.
Fifth International Symposium on Engineering Turbulence Modelling and Measurements
Corsica, France, 1998; two abstract reviews.
Fourth International Symposium on Computational Wind Engineering
Yokohama, Japan, 2006; four paper reviews.

NATO Advanced Study Institute "Buoyant Convection in Geophysical Flows
Pforzheim, Germany, 1997; ten abstract reviews.
Third International Symposium on Environmental Hydraulics
Tempe, Arizona, USA, 2001; four paper reviews.

Ph.D. dissertation reviews
A. I. Voeikov Main Geophysical Observatory, Russia (2004),
Ecole Centrale de Nantes, France (2003),
University of Oklahoma, USA (2002).

Book proposal reviews
Elsevier (2007, 2015), *Springer* (2011).

Assessment of hire/tenure/promotion dossiers
Eighteen assessments since 2003.

LANGUAGE SKILLS

English - fluent, **German** - basic, **Russian** - native.

SCIENTIFIC PUBLICATIONS

Author/co-author of > **200** publications in meteorology, atmospheric physics, fluid dynamics, and biology. Peer-reviewed publications are listed below.

1. Axelsen, S., A. Shapiro, **E. Fedorovich**, and H. van Dop, 2010: Analytical solution for katabatic flow induced by an isolated cold strip. *Environmental Fluid Mechanics*, **10**, 387-414.
2. Bonin, T., P. Chilson, B. Zielke, and **E. Fedorovich**, 2013: Observations of early evening boundary layer transitions using a small unmanned aerial system. *Bound. Layer Meteorol.*, **146**, 119-132.
3. Borisov I. A., O. I. Soboleva, E. D. Suglobova, and **E. E. Fedorovich**, 1994: Na+ and K+ ion transport across the human erythrocyte membrane during the formation of nystatin channels under in-vitro conditions: the characteristics and analysis of the processes. *Tsitologia*, **36**, 427-436, in Russ.
4. Botnick, A. M., and **E. Fedorovich**, 2008: Large eddy simulation of atmospheric convective boundary layer with realistic environmental forcings. *Quality and Reliability of Large-Eddy Simulations*, J. Meyers et al., Eds., Springer, 193-204.
5. Burkholder, B., **E. Fedorovich**, and A. Shapiro, 2010: Evaluating subgrid-scale models for large-eddy simulation of turbulent katabatic flow. *Quality and Reliability of Large-Eddy Simulations II*, M. V. Salvetti et al., Eds., Springer, 149-160.
6. Burkholder, B., A. Shapiro, and **E. Fedorovich**, 2009: Katabatic flow induced by a cross-slope band of surface cooling. *Acta Geophysica*, **57**, 923-949.
7. Conzemius, R. J., and **E. Fedorovich**, 2006: Dynamics of sheared convective boundary layer

entrainment. Part I: Methodological background and large-eddy simulations. *J. Atmos. Sci*., **63**, 1151-1178.

8. Conzemius, R. J., and **E. Fedorovich**, 2006: Dynamics of sheared convective boundary layer entrainment. Part II: Evaluation of bulk model predictions of entrainment flux. *J. Atmos. Sci*., **63**, 1179-1199.
9. Conzemius, R., and **E. Fedorovich**, 2007: Bulk models of the sheared convective boundary layer: evaluation through large eddy simulations. *J. Atmos. Sci.*, **64**, 786-807.
10. Conzemius, R. J., and **E. Fedorovich**, 2008: A case study of convective boundary layer development during IHOP_2002: numerical simulations compared to observations. *Month. Weather Rev.*, **136**, 2305-2320.
11. Di Sabatino, S., P. Kastner-Klein, R. Berkowicz, R. Britter, and **E. Fedorovich**, 2003: The modelling of turbulence from traffic in urban dispersion models – Part I: Theoretical considerations. *Environmental Fluid Mechanics*, **3**, 129-143.
12. **Fedorovich, E. E.,** 1985: A numerical model of flow over by air stream of extended relief forms. *Meteorologiya i Gidrologiya*, No. **7**, 34-40. Engl. translation in *Meteorology and Hydrology*, Wash., D.C. Available from NTIS, Springfield, VA 22161, *MGA* (1986), **37**:6-170.
13. **Fedorovich, E. E.,** 1991: Numerical modelling of the slope effects in the atmospheric boundary layer. *Meteorologiya i Gidrologiya*, No. **8**, 56-65. Engl. translation in *Meteorology and Hydrology*, Wash., D.C. Available from NTIS, Springfield, VA 22161, *MGA* (1992), **43**:8-383.
14. **Fedorovich, E.**, 1995: Modeling the atmospheric convective boundary layer within a zero-order jump approach: an extended theoretical framework. *J. Appl. Meteor*., **34**, 1916-1928.
15. **Fedorovich, E. E.**, 1995: Inversion layers. *Diffusion and Transport of Pollutants in the Atmospheric Mesoscale Flow Fields*, A. Gyr and F.-S. Rys, Eds., Kluwer, 191-211.
16. **Fedorovich, E.**, 1998: Bulk models of the atmospheric convective boundary layer. *Buoyant Convection in Geophysical Flows*, E. J. Plate et al., Eds., Kluwer, 265-290.
17. **Fedorovich, E.**, 2004: Dispersion of passive tracer in the atmospheric convective boundary layer with wind shears: a review of laboratory and numerical model studies. *Meteorol. Atmos. Phys.*, **87**, 3-21.
18. **Fedorovich, E.**, 2011: Review of *Turbulence in the Atmosphere* by John C. Wyngaard. *Bound. Layer Meteorol.*, **139**, 543-549.
19. **Fedorovich, E.,** and R. Conzemius, 2001: Large-eddy simulation of convective entrainment in linearly and discretely stratified fluids. *Direct and Large-Eddy Simulation IV*, B. J. Geurts et al., Eds., Kluwer, 435-442.
20. **Fedorovich, E.,** and R. Conzemius, 2002: Evolution of turbulent convective entrainment in heterogeneously versus linearly stratified fluids. *Advances in Turbulence IX*, I. Castro et al., Eds., CIMNE Publication, Barcelona, Spain, 457-460.
21. **Fedorovich, E.**, and R. Conzemius, 2008: Effects of wind shear on the atmospheric convective boundary layer structure and evolution. *Acta Geophysica*, **56**, 114-141.

22. **Fedorovich, E.**, R. Conzemius, and D. Mironov, 2004: Convective entrainment into a shear-free linearly stratified atmosphere: bulk models reevaluated through large eddy simulations. *J. Atmos. Sci*., **61**, 281-295.

23. **Fedorovich, E.**, J. Gibbs, and A. Shapiro, 2017: Numerical study of idealized nocturnal low-level jets over gently sloping terrain. *J. Atmos. Sci*., **74**, 2813-2834.

24. **Fedorovich, E.**, and R. Kaiser, 1998: Wind tunnel model study of turbulence regime in the atmospheric convective boundary layer. *Buoyant Convection in Geophysical Flows*, E. J. Plate et al., Eds., Kluwer, 327-370.

25. **Fedorovich, E.**, R. Kaiser, M. Rau, and E. Plate, 1996: Wind tunnel study of turbulent flow structure in the convective boundary layer capped by a temperature inversion. *J. Atmos. Sci.*, **53**, 1273-1289.

26. **Fedorovich, E. E.**, and D. V. Mironov, 1995: A model for shear-free convective boundary layer with parameterized capping inversion structure. *J. Atmos. Sci.*, **52**, 83-95.

27. **Fedorovich, E.**, F. T. M. Nieuwstadt, and R. Kaiser, 2001: Numerical and laboratory study of horizontally evolving convective boundary layer. Part I: Transition regimes and development of the mixed layer. *J. Atmos. Sci.*, **58**, 70-86.

28. **Fedorovich, E.**, F. T. M. Nieuwstadt, and R. Kaiser, 2001: Numerical and laboratory study of horizontally evolving convective boundary layer. Part II: Effects of elevated wind shear and surface roughness. *J. Atmos. Sci.*, **58**, 546-560.

29. **Fedorovich, E.**, and A. Shapiro, 2009: Structure of numerically simulated katabatic and anabatic flows along steep slopes. *Acta Geophysica*, **57**, 981-1010.

30. **Fedorovich, E.**, and A. Shapiro, 2009: Turbulent natural convection along a vertical plate immersed in a stably stratified fluid. *J. Fluid Mech*., **636**, 41-57.

31. **Fedorovich, E.**, and A. Shapiro, 2009: Turbulence and waves in numerically simulated slope flows. *Mécanique & Industries*, **10**, 175-179.

32. **Fedorovich, E.**, and A. Shapiro, 2017: Oscillations in Prandtl slope flow started from rest. *Q. J. R. Meteorol. Soc.*, **143**, 670-677.

33. **Fedorovich, E.**, and J. Thäter, 2000: Turbulent transport across a sheared inversion at the convective boundary layer top. *Advances in Turbulence VIII*, C. Dopazo et al., Eds., CIMNE Publication, Barcelona, Spain, 367-370.

34. **Fedorovich, E.**, and J. Thäter, 2001: Vertical transport of heat and momentum across a sheared density interface at the top of a horizontally evolving convective boundary layer. *Journal of Turbulence*, **2**, 007.

35. **Fedorovich, E.**, and J. Thäter, 2002: A wind tunnel study of gaseous tracer dispersion in the convective boundary layer capped by a temperature inversion. *Atmospheric Environment*, **36**, 2245-2255.

36. Garratt, J. R., and **E. Fedorovich**, 2015: Introducing *Research Letters* to *Boundary-Layer Meteorology*. *Bound. Layer Meteorol.*, **154**, 349-350.

37. Gebauer, J. G., **E. Fedorovich**, and A. Shapiro, 2017: A 1D theoretical analysis of northerly low-level jets over the Great Plains. *J. Atmos. Sci*., **74**, 3419-3431.

38. Gebauer, J., A. Shapiro, **E. Fedorovich**, and P. Klein, 2018: Convection initiation caused by heterogeneous low-level jets over the Great Plains. *Month. Weather Rev.*, **146**, 2615-2637.

39. Gibbs, J. A., and **E. Fedorovich**, 2014: Comparison of convective boundary layer velocity spectra retrieved from large eddy simulation and Weather Research and Forecasting model data. *J. Appl. Meteorol. Clim*., **53**, 377-394.

40. Gibbs, J. A., and **E. Fedorovich**, 2014: Effects of temporal discretization on turbulence statistics and spectra in numerically simulated convective boundary layers. *Bound. Layer Meteorol.*, **153**, 19-41.

41. Gibbs, J. A., and **E. Fedorovich**, 2016: Sensitivity of turbulence statistics in the lower portion of a numerically simulated stable boundary layer to parameters of the Deardorff subgrid turbulence model. *Q. J. R. Meteorol. Soc.*, **142**, 2205-2213.

42. Gibbs, J. A., and **E. Fedorovich**, 2020a: On the evaluation of the proportionality coefficient between the turbulence temperature spectrum and structure parameter. *J. Atmos. Sci*., **77**, 2761-2763.

43. Gibbs, J. A., and **E. Fedorovich**, 2020b: Structure functions and structure parameters of velocity fluctuations in numerically simulated atmospheric convective boundary layer flows. *J. Atmos. Sci*., **77**, 3619-3629.

44. Gibbs, J. A., **E. Fedorovich**, and A. M. J. van Eijk, 2011: Evaluating Weather Research and Forecasting (WRF) model predictions of turbulent flow parameters in a dry convective boundary layer. *J. Appl. Meteor. Clim.*, **50**, 2429-2444.

45. Gibbs, J. A., **E. Fedorovich**, B. Maronga, C. Wainwright, and M. Dröse, 2016: Comparison of direct and spectral methods for evaluation of the temperature structure parameter in numerically simulated convective boundary layer flows. *Month. Weather Rev.*, **144**, 2205-2214.

46. Gibbs, J. A., **E. Fedorovich**, and A. Shapiro, 2015: Revisiting surface heat-flux and temperature boundary conditions in models of stably stratified boundary-layer flows. *Bound. Layer Meteorol.* **154**, 171-187.

47. Ilyin, B. M., **E. E. Fedorovich,** and E. N. Churina**,** 1988: Algorithm for the calculation of the climatic characteristics of the global radiation using routine observational data. *Meteorologiya i Gidrologiya,* No. **1**, 118-123. Engl. translation in *Meteorology and Hydrology*, Wash., D. C. Available from NTIS, Springfield, VA 22161, *MGA* (1990), **41**:6-282.

48. Kaiser, R., and **E. Fedorovich,** 1998: Turbulence spectra and dissipation rates in a wind tunnel model of the atmospheric convective boundary layer. *J. Atmos. Sci.*, **55**, 580-594.

49. Kastner-Klein, P., and **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.

50. Kastner-Klein, P., **E. Fedorovich**, M. S. Ketzel, R. Berkowicz, and 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.

51. Kastner-Klein, P., **E. Fedorovich,** and E. Plate, 1997: Gaseous pollutant dispersion around urban-canopy elements: wind tunnel case studies. *Int. J. Environment and Pollution*, **8**, 727-737.

52. Kastner-Klein, P., **E. Fedorovich,** and M. W. Rotach, 2001: A wind tunnel study of organised and turbulent air motions in urban street canyons. *J. Wind Eng. Ind. Aerodyn.*, **89,** 849-861.

53. Kastner-Klein, P., **E. Fedorovich,** J.-F. Sini, and P. G. Mestayer, 2000: Experimental and numerical verification of similarity concept for dispersion of car exhaust gases in urban street canyons. *Environmental Monitoring and Assessment*, **65,** 353-361.

54. Kljun N., P. Kastner-Klein, **E. Fedorovich**, and M. W. Rotach, 2004: Evaluation of Lagrangian footprint model using data from wind tunnel convective boundary layer. *Agric. Forest Meteorol.*, **127**, 198-201.

55. LeMone, M. A., W. Angevine, C. Bretherton, F. Chen, J. Dudhia, **E. Fedorovich**, K. Katsaros, D. Lenschow, L. Mahrt, E. Patton, J. Sun, M. Tjernström, and J. Weil, 2019: 100 years of progress in boundary layer meteorology. *AMS Meteorological Monographs*, **59**, Chapter 9.

56. Liu, C., **E. Fedorovich**, and J. Huang, 2018: Revisiting entrainment relationships for shear-free and sheared convective boundary layers through large-eddy simulations. *Q. J. R. Meteorol. Soc.*, **144**, 2182-2195.

57. Liu, C., **E. Fedorovich**, J. Huang, X.-M. Hu, Y. Wang, and X. Lee, 2019: Impact of aerosol shortwave radiative heating on the entrainment in atmospheric convective boundary layer: a large-eddy simulation study. *J. Atmos. Sci*., **76**, 785-799.

58. Liu, C., J. Huang, **E. Fedorovich**, X.-M. Hu, Y. Wang, and X. Lee, 2018: Turbulence statistics and spectra in an aerosol radiatively heated convective boundary layer: a large-eddy simulation study. *Atmosphere*, **9**, 347.

59. Mironov, D., and **E. Fedorovich**, 2010: On the limiting effect of the Earth's rotation on the depth of a stably stratified boundary layer. *Quart. J. Roy. Meteorol. Soc.*, **136**, 1473-1480.

60. Nemunaitis-Berry, K., 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. Meteorol. Clim*., **56**, 573-595.

61. Scipión, D., P. B. Chilson, **E. Fedorovich**, and R. D. Palmer, 2008: Evaluation of an LES-based wind profiler simulator for observations of a daytime atmospheric convective boundary layer. *J. Atmos. Oceanic Technol.*, **25**, 1423-1436.

62. Scipión, D., R. D. Palmer, P. B. Chilson, **E. Fedorovich**, and A. M. Botnick, 2009: Retrieval of convective boundary layer wind field statistics from radar profiler measurements in conjunction with large eddy simulation. *Meteorologische Zeitschrift*, **18**, 175-187.

63. Shapiro, A., B. Burkholder, and **E. Fedorovich**, 2012: Analytical and numerical investigation of two-dimensional katabatic flow resulting from local surface cooling. *Bound. Layer Meteorol.*, **145**, 249-272.

64. Shapiro, A., and **E. Fedorovich**, 2004: Unsteady convectively driven flow along a vertical plate immersed in a stably stratified fluid. *J. Fluid Mech*., **498**, 333-352.

65. Shapiro, A., and **E. Fedorovich**, 2004: Prandtl-number dependence of unsteady natural convection along a vertical plate in a stably stratified fluid. *Int. J. Heat and Mass Transfer*, **47**, 4911-4927.

66. Shapiro, A., and **E. Fedorovich**, 2005: Analytical and numerical study of natural convection in a stably stratified fluid along vertical plates and cylinders with temporally-periodic surface temperature variations. *Progress in Computational Heat and Mass Transfers*, **1**, R. Bennacer, A. A. Mohamad, M. El Ganaoui, J. Sicard, Eds., Lavoisier, 77-82.

67. Shapiro, A., and **E. Fedorovich**, 2006: Natural convection in a stably stratified fluid along vertical plates and cylinders with temporally-periodic surface temperature variations. *J. Fluid Mech*., **546**, 295-311.

68. Shapiro, A., and **E. Fedorovich**, 2007: Katabatic flow along a differentially cooled sloping surface. *J. Fluid Mech*., **571**, 149-175.

69. Shapiro, A. and **E. Fedorovich**, 2008: Coriolis effects in homogeneous and inhomogeneous katabatic flows. *Quart. J. Roy. Meteorol. Soc.*, **134**, 353-370.

70. Shapiro, A., and **E. Fedorovich**, 2009: Nocturnal low-level jet over a shallow slope. *Acta Geophysica*, **57**, 950-980.

71. Shapiro, A., and **E. Fedorovich**, 2009: Boundary layer flows along sloping surfaces. Preface to the special issue of *Acta Geophysica*, **57**, 801-802.

72. Shapiro, A., and **E. Fedorovich**, 2010: Analytical description of a nocturnal low-level jet. *Quart. J. Roy. Meteorol. Soc.*, **136**, 1255-1262.

73. Shapiro, A., and **E. Fedorovich**, 2012: Secularly growing oscillations in a stratified rotating fluid. *Phys*. *Fluids*, **24**, 054107 (2012).

74. Shapiro, A., and **E. Fedorovich**, 2013: Similarity models for unsteady free convection flows along a differentially cooled horizontal surface. *J. Fluid Mech*., **736**, 444-463.

75. Shapiro, A., and **E. Fedorovich**, 2014: A boundary-layer scaling for turbulent katabatic flow. *Bound. Layer Meteorol.*, **153**, 1-18.

76. Shapiro, A., and **E. Fedorovich**, 2019: An analytical model of an urban heat island circulation in calm conditions. *Environmental Fluid Mechanics*, **19**, 111-135.

77. Shapiro, A., **E. Fedorovich**, and J. Gebauer, 2018: Mesoscale ascent in nocturnal low-level jets. *J. Atmos. Sci*., **75**, 1403-1427.

78. Shapiro, A., **E. Fedorovich**, and J. Gibbs, 2015: An analytical verification test for numerically simulated convective flow above a thermally heterogeneous surface. *Geosci. Model Dev.*, **8**, 1809-1819.

79. Shapiro, A., **E. Fedorovich**, and S. Rahimi, 2016: A unified theory for the Great Plains nocturnal low-level jet. *J. Atmos. Sci*., **73**, 3037-3057.

80. Smith, E., **E. Fedorovich**, and A. Shapiro, 2017: Comparative evaluation of analytical descriptions of nocturnal low-level jets within the Ekman model framework. *Environmental Fluid Mechanics*, **17**, 485-495.

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