

November 2009

## CURRICULUM VITAE

### Dr. Evgeni Fedorovich

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#### PERSONAL DETAILS

**Date of birth:** June 2, 1956

**Place of birth:** St. Petersburg, Russia (in 1956 – 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". Supervisor: Dr. Alexey Dubov.

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

#### ACTIVITY AREAS

- 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 of different physical properties.

#### EMPLOYMENT HISTORY

**2004 - pres.** Professor, School of Meteorology, University of Oklahoma (OU), 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

- Summers 2007** Visiting Professor, Meteorological Institute, University of Hamburg (UH),  
and **2008** Germany. Participation in the academic exchange program between OU and UH.
- Spring/  
Summer 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, Leningrad (St. Petersburg) Hydrometeorological  
Institute, Russia.

#### PROFESSIONAL DISTINCTIONS

##### **Humboldt Research Award**

2009, Alexander von Humboldt Foundation, Germany.

See <http://www.humboldt-foundation.de/web/6446.html> for the award description.

##### **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.

### **Bourse du Conseil Régional des Pays de la Loire**

1992, Region of Loire Lands, France.

### **Best Presentation Award**

Young Scientist Conferences of 1983 and 1986, A. I. Voeikov Main Geophysical Observatory, Leningrad (St. Petersburg), Russia.

## TEACHING

### **2000 - pres., University of Oklahoma, USA**

Courses taught:

*Advanced Atmospheric Dynamics I* (graduate). Fall 2008 semester.

*Atmospheric Dynamics I* (undergraduate). Spring 2002 semester.

*Atmospheric Dynamics II. Theory of Atmospheric Flows* (undergraduate). Spring 2006 semester.

*Atmospheric Turbulence* (graduate). Spring 2004 and 2008 semesters.

*Boundary Layer Meteorology* (graduate). Spring 2000, 2001, 2003, 2005, 2007, and 2009 semesters.

*Meteorological Measurements* (undergraduate). Fall 2003 semester.

*Physical Meteorology I. Thermodynamics* (undergraduate). Fall 2004-2006 semesters.

*Physical Meteorology III. Radiation and Climate* (undergraduate). Fall 2000-2002 and 2007 semesters.

*School of Meteorology Seminar*. Fall 2003 semester.

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 FORTRAN, PL/1 and BASIC: lecturing, practical exercises with undergraduate students.

TEACHING AT ADVANCED COURSES AND SUMMER SCHOOLS

- 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 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

- 2007 - pres.** Member of the 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 Endowed Professorships Search Committee.

University of Oklahoma, Norman, Oklahoma, USA.

**2006 - pres.** Convener of the 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 - pres.** 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 - pres.** Affiliated Faculty, School of International and Area Studies.

University of Oklahoma, Norman, Oklahoma, USA.

**2000 - pres.** 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.

## EDITORIAL WORK

### ***Books***

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

#### *Reviews:*

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:*

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.

**Journals**

**2008 – 2009** Co-editor of the special issue of *Acta Geophysica* on boundary layer flows along sloping surfaces.

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

**2009 – pres.** Editorial board member of the *Boundary-Layer Meteorology*.

MEETINGS

*Invited lectures and talks*

**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 AMS 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 AMS 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***

- October 2009** 34th AMS 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. Scipi3n, R. Palmer, P. Chilson, and A. M. Botnick).
- August 2009** 19th Congr3s Franais de M3canique, 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 AMS Symposium on Boundary Layers and Turbulence. 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 AMS 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. Scipi3n, P. Chilson, and R. Palmer).
- May 2006** 17th AMS 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 AMS 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. Vil3-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 AMS 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 AMS 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 AMS 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 EU 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 EU 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 EU 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 EU 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. Hespel).
- 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 AMS 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

### **2009**

St. Petersburg Technical University, Russia. Talk at the 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 Constraints 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, University of Hamburg, 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. The NWC Seminar Series on Boundary Layer, Urban Meteorology, and Land Surface Processes. Seminar 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, University of Hamburg, 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 (SoM), 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), University of Utrecht, Utrecht, 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. Lecture: "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".

## **EXPEDITIONS AND FIELD EXPERIMENTS**

**2003** Oklahoma City atmospheric dispersion experiment "Joint Urban 2003". Scientific advising and technical support.

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

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

**1980** Expedition aboard the research ship "Professor Zubov" in 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

- 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: EUR 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, AND ADVANCED COURSES

- 2009 - 2010** Fifth International Symposium on Computational Wind Engineering (CWE 2010). Member of the scientific committee. May 23-27, 2010, Chapel Hill, North Carolina, USA.
- 2007 - 2008** Eighteenth 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** Fourth 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** Third 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

- Chris Wilson**, M.S. student, School of Meteorology, University of Oklahoma, USA, 2009-pres. Topic: "Large eddy simulation of stably stratified boundary layers with realistic environmental forcings". Recipient of the 2009 Northrop Grumman Fellowship from the American Meteorological Society.
- Jeremy Gibbs**, Ph.D. student, School of Meteorology (SoM), University of Oklahoma, USA, 2009-pres. Topic: "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". Recipient of the 2009 SoM Outstanding Teaching Assistant Award.
- Simon Axelsen**, Ph.D. student, Institute of Marine and Atmospheric Research, University of Utrecht, Utrecht, the Netherlands (visited School of Meteorology, University of Oklahoma in 2008). Topic: "Analytical and numerical studies of katabatic winds".
- Bryan Burkholder**, Ph.D. student, School of Meteorology, University of Oklahoma, USA, 2007-pres. Topic: "Numerical studies of katabatic and anabatic flows in stratified atmospheric environments".
- Jeremy Gibbs**, M.S. student, 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. student, School of Meteorology, 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. student, School of Meteorology, University of Oklahoma, USA, 2003-2004. Topic: “Numerical and experimental study of urban convective boundary layer”.

**Lisa Wright**, M.S. student, 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. student, 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. student, School of Meteorology, 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. student, 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. student, University of Karlsruhe, Germany, 1997-2001. Topic: “Wind tunnel simulation of gaseous tracer dispersion in the atmospheric convective boundary layer”.

**Emmanuel Guilloteau**, Post-Doc, University of Karlsruhe, Germany, 1999-2000. Topic: “Numerical investigation of turbulent flow structure in urban street canyons”.

**Jose Carlos Ribeiro**, Ph.D. student, 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. student, 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. student, 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. student, Ecole Centrale de Nantes, France, 1993. Thesis: “Modeling atmospheric dispersion from an area source in a coastal region”.

**Igor Shkolnik**, M.S. student, 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. student, 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. student, 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 Ph.D. AND M.S. COMMITTEES

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

**Corey Potvin**, Ph.D., School of Meteorology, University of Oklahoma, USA, 2007-pres. Topic: “Detection and characterization of tornadic vortices based on multiple-radar observations of convective storms”.

**Jose Galvez**, Ph.D., School of Meteorology, University of Oklahoma, USA, 2007-pres. Topic: “Effects of urban canyons on surface fluxes and their repercussions on the urban boundary layer”.

**Michael Buban**, Ph.D., School of Meteorology, University of Oklahoma, USA, 2007-pres. Topic: “Application of ensemble Kalman filtering in data assimilation in convective boundary layer modeling”.

**Sean Arms**, Ph.D., School of Meteorology, University of Oklahoma, USA, 2007-pres. Topic: “Turbulence heterogeneity in a sparse vegetation canopy”. Recipient of the *Best Student Presentation Prize* at the Eighteenth 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 (NLDA) using Oklahoma Mesonet observations”.

**Danny Scipi3n**, Ph.D., School of Electrical and Computer Engineering, University of Oklahoma, USA, 2005-pres. Topic: “Advanced radar simulator using numerically generated atmospheric boundary layer meteorological fields”.

**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**, Ph.D., Wageningen University, the Netherlands, 2005. Dissertation: “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**, Ph.D., Ecole Centrale de Nantes, Nantes, France, 2003. Dissertation: “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**, Ph.D., Institute of Fluid Mechanics, Toulouse, France, 1999. Dissertation: “Etude expérimentale de la dispersion de polluants en présence d'obstacles” (Experimental study of the pollutant dispersion in presence of obstacles).
- Claude Guilbaud**, Ph.D., Joseph Fourier University, Grenoble, France, 1996. Dissertation: “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 - pres.** 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 (until 2008: Alexander von Humboldt Association of America), USA

## REVIEWING

### *Journal manuscript reviews*

*Acta Geophysica* (2007, 2009 – two reviews),  
*Agricultural and Forest Meteorology* (2005),  
*Atmosphere-Ocean* (2004),  
*Atmospheric Environment* (1998-2007 – five reviews),  
*Atmospheric Research* (2001-2007 – four reviews),  
*Boundary Layer Meteorology* (2003-2008 – eight reviews, 2009 – two reviews),  
*Chemical Engineering and Processing* (2006),  
*Environmental Science and Technology* (2005),  
*Geophysical Research Letters* (2006, 2008),  
*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* (2006-2008 – four reviews, 2009),  
*Journal of Applied Mechanics* (2006),  
*Journal of Applied Meteorology (and Climatology)* (2001-2008 – six reviews, 2009),  
*Journal of Atmospheric and Oceanic Technology* (2009),  
*Journal of Environmental Monitoring* (2004),  
*Journal of Fluid Mechanics* (1995-2008 – six reviews, 2009 – three reviews),  
*Journal of Fluids Engineering* (2008),  
*Journal of Geophysical Research* (1999-2007 – five reviews),  
*Journal of the Atmospheric Sciences* (2000-2007 – eleven reviews, 2009 – four reviews),  
*Journal of Turbulence* (2004, 2009),  
*Journal of Wind Engineering and Industrial Aerodynamics* (2001-2007 – eight reviews),  
*Meteorology and Atmospheric Physics* (2003, 2008),  
*Monthly Weather Review* (2007 – two reviews),  
*Physics of Fluids* (2009),  
*Quarterly Journal of the Royal Meteorological Society* (2002, 2003),  
*Water Resources Research* (2003-2005 – four reviews),  
*Weather and Forecasting* (2002-2004 – four 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),

*Minnesota Supercomputing Institute* (USA, 2009),

*National Aeronautics and Space Administration* (USA, 2001),

*National Science Foundation* (USA, 2002-2008 – eight reviews, 2009),

*Wageningen Institute for Environment and Climate Research* (the Netherlands, 2006).

### ***Conference paper reviews***

*Fifth International Symposium on Engineering Turbulence Modelling and Measurements*

Corsica, France, 1998

*Fourth International Symposium on Computational Wind Engineering*

Yokohama, Japan, 2006

*NATO Advanced Study Institute "Buoyant Convection in Geophysical Flows*

Pforzheim, Germany, 1997

*Third International Symposium on Environmental Hydraulics*

Tempe, Arizona, USA, 2001

### ***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 review***

*Elsevier* (2007)

### ***Reviews/evaluations of hire/tenure/promotion dossiers***

Five reviews/evaluations since 2003.

## **LANGUAGE SKILLS**

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

## **SCIENTIFIC PUBLICATIONS**

Author/co-author of >140 scientific articles in meteorology, fluid dynamics, geophysics, and biology. Representative peer-reviewed journal articles and book chapters are listed below.

1. Borisov I. A., O. I. Soboleva, E. D. Suglobova, and **E. E. Fedorovich**, 1994: Na<sup>+</sup> and K<sup>+</sup> 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.
2. 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.
3. Burkholder, B., A. Shapiro, and **E. Fedorovich**, 2009: Katabatic flow induced by a cross-slope band of surface cooling. *Acta Geophysica*, **57**, 923-949.
4. 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.
5. 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.
6. 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.
7. 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.
8. 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.
9. **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.
10. **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.
11. **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.
12. **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.
13. **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.
14. **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.
15. **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.
16. **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.
  17. **Fedorovich, E.**, and R. Conzemius, 2008: Effects of wind shear on the atmospheric convective boundary layer structure and evolution. *Acta Geophysica*, **56**, 114-141.
  18. **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.
  19. **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.
  20. **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.
  21. **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.
  22. **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.
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