Eric R. Pardyjak
Curriculum Vitae

Office Address
University of Utah
Department of Mechanical Engineering
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Home Address
2626 S. Beverly St.
Salt Lake City, UT

Biographical Data

Birth date: 9/19/72
Place of Birth: Rochester, NY
Citizenship: United States

Research Interests

Fundamental and applied fluid mechanic's research. Application of fundamental turbulence concepts to studies in environmental atmospheric flows in complex terrain (i.e., urban and mountainous). Interests include both experimental (field & laboratory based) and computational research. Optimization of sustainable urban designs for air quality, energy production, water use, and energy efficiency. Investigations of the influence of turbulence on microphysical processes such as snowflake and fog behavior.

Education

Doctor of Philosophy Mechanical Engineering - July, 2001
Arizona State University, Tempe, AZ
Specialization: Dynamics of the Atmospheric Boundary Layer
Master of Science - Mechanical Engineering - August, 1996
University of Wisconsin, Madison, WI
Specialization: Turbulence Modeling
Bachelor of Science - May, 1994
Michigan State University, East Lansing, MI
Major: Mechanical Engineering

Professional Experience

University of Utah – Associate Dean for Faculty
Price College of Engineering, 2/25-present

University of Utah – Full Professor
Department of Mechanical Engineering, 7/13-present
Department Chairs: Dr. Tim Ameel and Dr. Bruce Gale

University of Utah – Adjunct Full Professor
Department of Atmospheric Sciences, 7/13-6/24

Université Paul Sabatier, Laboratoire d'Aérologie , Obervatoire Midi-Pyrénées, France - Visiting scientist
Host: Marie Lothon and Pierre Durand, 8/16-7/17

University of Utah – Associate Professor
Department of Mechanical Engineering, 7/07-6/13
Department Chair: Dr. Tim Ameel

University of Utah, Department of Mechanical Engineering, Director of Graduate Studies/Associate Department Chair 8/10-7/11

University of Utah – Adjunct Associate Professor
Department of Atmospheric Sciences, 7/07- 6/13
Department Chair: Dr. Kevin Perry

Université Paul Sabatier, Laboratoire d'Aérologie , Obervatoire Midi-Pyrénées, France - Invited Professor
Host: Marie Lothon, 6/11-7/11

École Polytechnique Fédérale de Lausanne, Switzerland – Visiting Professor
School of Architecture, Civil and Environmental Engineering (ENAC)
EFLUM - Laboratory of Environmental Fluid Mechanics and Hydrology, 9/09-7/10
ENAC Dean and Host: Dr. Marc Parlange

University of Utah – Assistant Professor
Department of Mechanical Engineering, 8/01-6/07
Department Chair: Dr. J.C. Klewicki & Dr. K.S. Udell

University of Utah – Adjunct Assistant Professor
Department of Meteorology, 6/06-6/07
Department Chair: Dr. James Steenburgh

Los Alamos National Laboratory - Graduate Research Assistant/post-doc
Energy and Environmental Analysis Group, 4/00-8/01
Supervisor: Dr. Michael J. Brown
Research included initial development of the fast response transport and dispersion models QUIC-URB and QUIC-Plume for use in urban areas as part of the Department of Energy's Chemical Biological Nonproliferation Program; participation in the VTMX (Vertical Transport and Mixing eXperiment) and URBAN dispersion field campaigns in Salt Lake City, UT as well as "The Wall" experiment at the Dugway Proving Grounds at the Salt Flats in Utah.

Arizona State University - Graduate Research Assistant
Department of Mechanical and Aerospace Engineering, 8/96-8/01
Supervisor: Professor H.J.S. Fernando
Research included conducting and supervising two, large, multi-disciplinary pollution related field experiments in Phoenix, AZ coined PAFEX-I and PAFEX-II (Phoenix Air Flow Experiment). The projects (funded by NSF and the Arizona Department of Environmental Quality) have been used to gain knowledge of the flow of pollutants in the Phoenix air shed and add insight to the dynamics of the atmospheric boundary layer.

Los Alamos National Laboratory - Visiting Research Scientist
Energy and Environmental Analysis Division, 7/99-8/99
Supervisor: Dr. Michael J. Brown
Development and implementation of a counter gradient turbulent heat transport model for the 3D atmospheric circulation code HOTMAC.

University of Wisconsin-Madison - Graduate Research Assistant
Department of Mechanical Engineering, 8/94-7/96
Supervisor: Professor Christopher J. Rutland
Computation fluid dynamics research. Developed and implemented new turbulence, Very Large Eddy Simulation (VLES) models for the complex flow and internal combustion code KIVA.

Michigan State University - Undergraduate Research Assistant
Department of Mechanical Engineering, 8/93-8/94
Supervisor: Professor John F. Foss
Experimental research in turbulent shear flow laboratory. Co-designed, manufactured and tested a portable multi-wire, hot-wire calibration unit. Conducted preliminary studies and design for an automotive fan testing facility. Provided technical support for undergraduate fluid mechanics laboratory.

E.I. DuPont de Nemours & CO., Inc. - Mechanical Engineering Co-op
Chambers Works Plant, 12/91-3/92 and 6/92-8/92
Niagara Falls Sodium Plant, 1/93-5/93
Supervisor: Mr. Vincent Pun
Provided R&D support for chemical manufacturing process. Worked closely with production; consulted with process engineers and supervised mechanics.

Internally Funded Research Proposals

- Role: PI, Project Title: Scintillometry Measurement System for Quantification of Atmospheric Fluxes. Research Instrumentation Fund, Funding Agency: University of Utah, Vice President for Research, Amount Awarded: $85,000, Duration of Award: One-time award 2013.

Funded Research Proposals

- Role: Senior Personnel, Project Title: Pathogen Monitoring and Disease Management within a Vineyard FRAMEwork, USDA (Flowdown from Washington State). Total Utah Award: $696,043 (Pardyjak portion 0.5 months salary), M. Moyer (PI), W.F. Mahaffee (CoI), R. Stoll (CoI), T. Miles (CoI), Duration of Award: 9/2024-8/2028.
- Role: co-PI, Miniaturized weather station with rapid switching between precipitation and meteorological measurement modes, DOE SBIR Phase II Grant No. DE-SC0022516, A. Reaburn, $1,641,506, Duration of Award: 4/1/2023-4/1/2025.
- Role: co-PI, Project Title: Observational evaluation of the effects of atmospheric temperature and turbulence on hydrometeor fallspeed, National Science Foundation. T. Garrett (PI), Pardyjak portion: $241,736, Duration of Award: 2022-2025.
- Role: co-PI, Project Title: Fatima: Fog and turbulence interactions in the marine atmosphere, Office of Naval Research. H.J.S. Fernando (PI), C. Dorman (CoI), E.R. Pardyjak (CoI), Shen (CoI), Q. Wang (CoI), lead Institution University of Notre Dame, Total Award: $3,000,000 (with 5-year option $5,000,000) U of U contribution: 3-years $838,336 (with 5-year option $1,395,296), Duration: May 2021-April 2026.
- Role: co-PI, Project Title: Cold Fog Amongst Complex Terrain (CFACT), National Science Foundation. Z. Pu (PI - Atmos Sci), E. Pardyjak (CoI), 3-year project, Total Award: $1,171,902 plus NCAR instrumentation support. Mech Eng portion: ~$340k, June 2021- May 2026.
- Role: Senior Personnel, Project Title: A systems approach for managing bacterial blight of carrot, USDA/NIFA/SCRI, Utah portion of Award: $369,437, J. Dung (PD), J. Chang (CoPD), G. Greenway

(PI), J. Jacobs (PI), Rob Stoll (PI), L. du Toit (CoI), Walt Mahaffee (CoI), T. Mahmud (CoI), J. Sdihu (CoI), Sept 2020 – Aug 2024.

- Role: Senior Personnel, Project Title: FRAME: fungicide resistance assessment mitigation and Extension network, USDA/NIFA/SCRI, M. Moyer (PI), W.F. Mahaffee (CoI), R. Stoll (CoI), T. Miles (CoI), R. Naegale (CoI), Total Award: $5,000,000, Oct 2018 – Sept 2022.
- Role: PI, Project Title: DEID Snow-Storm Instabilities, Funding Agency: Colorado Department of Transportation, Amount Awarded: $55,549, Duration of Award: 2/4/2019-12/31/2022.
- Role: co-PI, Project Title: Observational and theoretical investigations related to hydrometeor settling in turbulent air, Funding Agency: NSF, Amount Awarded: $498,961 (plus $92,598 supplement), Duration of Award: May 2019 – March 2022.
- Role: co-PI (PI: H.J.S. Fernando, Notre Dame), Project Title: Toward Improving Coastal Fog Prediction (C-FOG), Funding Agency: Office of Naval Research, Amount Awarded to Pardyjak: $550,000. Duration of Award, May 2018 - Dec 2022.
- Role: PI, Project Title: A Research Project on the Establishment of the air quality prediction system applicable to each air quality forecasting region in Korea: Phase 2, Funding Agency: National Institute for Environmental Research, Republic of Korea, Amount Awarded: $80,000, Duration of Award, March 2018-May 2019.
- Role: Sr. Personnel (PI:Tim Garrett), Project Title: High temporal and spatial resolution measurement of hydrometeor mass for automated assessment of precipitation rate and type, Funding Agency: Department of Energy, STTR phase II award, Amount Awarded to Pardyjak: $40,000, Duration of Award, May 2018-May 2019.
- Role: PI, Project Title: A Research Project on the Establishment of the air quality prediction system applicable to each air quality forecasting region in Korea: Phase 1, Funding Agency: National Institute for Environmental Research, Republic of Korea, Amount Awarded: $86,000, Duration of Award, March 2017-April 2018.
- Role: co-PI (PI: Steve Kreuger), Project Title: PREEVENTS Track 2: A fast-response wildland fire modeling framework for prediction and risk assessment, Funding Agency: NSF, Amount Awarded: $2,024,452.00, Duration of Award: August 2017-August 2021.
- Role: PI, Project Title: Collaborative Research: Parameterization of the land-surface thermal and moisture heterogeneities, Funding Agency: NSF, Amount Awarded: $614,921, Duration of Award, March 2017 – March 2021.
- Role: co-PI (Kam Leang, PI), Project Title: U.S. ARMY Phase II STTR: Autonomous Broad Spectrum Environmental Sentinels, Funding Agency: U.S. Army, Amount Awarded to Utah: $330,000, Duration of Award: August 2016 – August 2018.
- Role: PI, Project Title: Localized Distributed Power Generation: Economically Robust, Demand-Optimized Placement of Urban Energy Production Systems, Funding Agency: NSF, Amount Awarded: $309,909, Duration of Award: July 2015-Dec 2018.
- Role: PI, Project Title: Wind energy resource assessment for Washakie Renewable Energy at the Paradise Shrimp Farm, Belize. Funding Agency: Washakie Renewable Energy, Amount Awarded: $28,207, Duration of Award: October, 2013-April, 2015.
- Role: PI, Project Title: The Impact of Green Infrastructure on Urban Microclimate and Air Quality, Funding Agency: NSF, Amount Awarded: $1,000,000, Duration of Award: October, 2011-September, 2015.
- Role: Co-PI, Project Title: Mountain terrain atmospheric modeling and observations (MATERHORN) program Funding Agency, ONR-MURI, Amount Awarded, $1,500,000 (University of Utah portion), Duration of Award: July, 2011-June 2014.
- Role: PI, Project Title: Development of a Windbreak Dust Predictive Model and Mitigation Planning Tool Funding, Agency: SERDP (Strategic Environmental Research and Development Program), Amount Awarded: $356,468, Duration of Award: March, 2010-December, 2012.

- Role: PI, Project Title: Optimization of Urban Designs for Air Quality and Energy, Efficiency Funding Agency: NSF, Amount Awarded: $341,467, Duration of Award: September, 2008-January, 2012.
- Role: PI, Project Title: Rotor blade vortex control using surface roughness, Funding Agency: Korean Institute of Geosciences and Mineral Resource, Amount Awarded: $41,900, Duration of Award: June, 2010-December, 2010
- Role: PI, Project Title: Technical Support for External Modeling Capabilities for Pentagon Shield and Urban Shield Programs, Funding Agency: STAR Institute (formerly NCAR), Amount Awarded: $53,593, Duration of Award: October, 2008-December, 2009.
- Role: PI, Project Title: An Investigation of the relationship between indoor and outdoor air quality during the winter in Nogales, Sonora, Mexico, Funding Agency: SCERP, Amount Awarded: $69,952, Duration of Award: June, 2008-December, 2009.
- Role: Co-PI with Hollerbach, Minor, Willemsen and Metzger, Project Title: Generation of Complex Environmental Flow Patterns for Virtual Environments, Funding Agency: NSF, Amount Awarded: $1,119,215, Duration of Award: October, 2004-September, 2008 (extended through 9/2009).
- Role: PI, Project Title: PIV AND PLIF MEASUREMENTS OF TURBULENT DISPERSION OF CONTAMINANT IN PIPING NETWORKS, Funding Agency: Department of Energy, Los Alamos National Laboratory, Amount Awarded: $85,000, Duration of Award: February, 2006-June, 2008.
- Role: PI, Project Title: Validation of QUIC Disperison System, Funding Agency: Department of Energy, Los Alamos National Laboratory, Amount Awarded: $50,000, Duration of Award: February, 2006-June, 2008.
- Role: Co-PI (PI – Craig Forster), Project Title: Urban Systems Research Center – Synergy Interdisciplinary Award, Funding Agency: University of Utah Office of Research, Amount Awarded: $100,000, Duration of Award: July, 2006-December, 2007.
- Role: PI, Project Title: High PM Episodes in US-Mexico Border Cities, Funding Agency: SCERP, Amount Awarded: $65,299, Duration of Award: June, 2006-December, 2007.
- Role: PI, Project Title: Spanish Fork wind measurements for wind turbine applications, Funding Agency: Wasatch Wind, LLC, Amount Awarded: $6,720, Duration of Award: December, 2005-July, 2006.
- Role: PI, Project Title: EXTENSION AND TESTING OF THE QUICK URBAN and INDUSTRIAL COMPLEX (QUIC) DISPERSION MODELING SYSTEM, Funding Agency: Department of Energy, Amount Awarded: $82,965, Duration of Award: September, 2005-December, 2006.
- Role: PI, Project Title: Development of a Windbreak Dust Control Strategy Tool for Communities in Arid Climates such as the US-Mexico Border Region, Funding Agency: SCERP, Amount Awarded: $67,000, Duration of Award: June, 2005-August, 2006.
- Role: PI, Project Title: Implementation of QUIC into Pentagon Shield, Funding Agency: Department of Energy, Amount Awarded: $53,947, Duration of Award: Feb 28, 2004-Dec 31, 2005.
- Role: PI, Project Title: Wind-tunnel building array experiments using PIV to obtain Reynolds shear stress fields, Funding Agency: Department of Energy, Amount Awarded: $52,051, Duration of Award: Dec 31, 2004-Sep 31, 2006.
- Role: PI, Project Title: The Wind Energy Research Project: Design and Construction of a Modular Test Bed Wind Turbine, Funding Agency: EPA – P3 Sustainability, Amount Awarded: $10,000, Duration of Award: August, 2004-July, 2005.
- Role: PI, Project Title: Fugitive Dust transport, Funding Agency: SCERP, Amount Awarded: $40,000, Duration of Award: June, 2004-August, 2005.
- Role: PI, Project Title: QWIC-URB Continuation + Addendum, Funding Agency: Department of Energy, Amount Awarded: $94,965, Duration of Award: March 20, 2004-April, 2005.
- Role: PI (Co-PI Klewicki), Project Title: Joint Urban 2003 Field Experiment, Funding Agency: H.E. Cramer Company, Inc (subcontract for DTRA, DOD), Amount Awarded: $118,333, Duration of Award: April 16, 2003-September, 2004.

- Role: PI, Project Title: QWIC-URB Continuation, Funding Agency: Department of Energy, Amount Awarded: $60,000+$10k extension, Duration of Award: December 20, 2002-December 20, 2003.
- Role: PI, Project Title: QWIC-URB Continuation, Funding Agency: Department of Energy, Amount Awarded: $60,000, Duration of Award: October 31, 2001-September 30, 2002.
- Role: Co-PI with J.C. Klewicki, Project Title: Weber Canyon Wind Study, Funding Agency: US Air Force - Hill Air Force Base, Amount Awarded: $67,330, Duration of Award: December 2001-June 30, 2002.
- Role: PI, Project Title: Aerosol Collection System Testing, Funding Agency: Phoenix Analysis Design & Technologies, Amount Awarded: $1,500, Duration of Award: September 31, 2002-December 1, 2002.
- Project Title: Phoenix, AZ summer ozone field study, Funding agency: Arizona Department of Environmental Quality and vice president for research at Arizona State University, Funded for the period: August 1 - September 15, 1998, Amount funded: $18k.
- Project Title: Phoenix, AZ pollution dispersion modeling study using CALINE4, Funding agency: Arizona Department of Transportation, Funded for the period: August, 1999 - May, 2000, Amount funded: $13k.

Honors and Awards

Teaching

- Dean recognition for being placed among top instructors in the College of Engineering based on student evaluations for undergraduate Fluid Mechanics, Spring 2022
- Dean recognition for being placed among top instructors in the College of Engineering based on student evaluations for undergraduate Heat Transfer, Fall 2013
- Dean recognition for being placed among top instructors in the College of Engineering based on student evaluations for Environmental Fluid Dynamics, Spring 2013
- Dean recognition for being placed among top instructors in the College of Engineering based on student evaluations for Thermal System Design, Spring 2008
- Dean recognition for being placed among top instructors in the College of Engineering based on student evaluations for Intermediate Fluid Dynamics, Fall 2007
- Dean recognition for being placed among top 15% of instructors in the College of Engineering based on student evaluations for Environmental Fluid Dynamics, Spring 2007
- Dean recognition for being placed among top 15% of instructors in the College of Engineering based on student evaluations for Intermediate Fluid Dynamics, Fall 2006

Professional

- Fellow, American Society of Mechanical Engineers, 2017
- Fulbright Scholar Award, Commission Franco-Américane, 2016-2017
- Researcher of the Award, Department of Mechanical Engineering, University of Utah, 2011 Utah, 2011
- Researcher of the year award, Department of Mechanical Engineering, University of Utah, 2021-2022
- Recipient of Technical Achievement Award and nominated for DuPont's Jackson Laboratory `Oscar Award,' 7/92

Academic

- Dow-Corning Research Internship/Grant, 8/93-8/94
- Tau Beta Pi (Engineering honor society), 4/94
- Pi Tau Sigma (Mechanical Engineering honor society), 10/92

- Phi Kappa Phi honor society, 2/94
- Golden Key National Honor Society, 1/93

Invited Talks

- Pardyjak, E.R., "High-Resolution, Fast-Response Modeling of Environmental Transport Processes," University of Utah, Mechanical Engineering Distinguished Seminar, January 2020.
- Pardyjak, E.R., "Investigating the Role of Surface Temperature Spatial Heterogeneity on Thermal Circulations and Turbulence," University of Utah, Atmospheric Sciences Seminar, September 2019.
- Pardyjak, E.R., "Investigating the Spatial Heterogeneity of Thermal Circulations and Turbulence in Complex Terrain," Washington State University, November 2018.
- Pardyjak, E.R, P. Durand, T. Hedde, N. Gunawardena, F. Dupuy, and P. Roubin, "KASCADE2017 – An experimental study of thermal circulations and turbulence in complex terrain," European Geophysical Union, Vienna, Austria, 25 April 2017.
- Pardyjak, E.R., "Investigating spatial heterogeneity of thermal circulations and turbulence in complex terrain," ACINN Seminar, University of Innsbruck, Austria, 17 May 2017.
- Pardyjak, E.R., "Transitional and stable boundary-layer processes in complex terrain during the MATERHORN field campaign," Laboratoire d'Aérologie, L'Observatoire Midi-Pyrénées (OMP), l'Université Toulouse III - Paul Sabatier (UPS), Toulouse, France, 1 December 2016.
- Pardyjak, E.R., "Which atmospheric feedbacks across which scales are critical to include across urban system models (e.g., building design, engineering, planning, air quality, hydrology, etc.)?," Workshop on the Integration of Urban Atmospheric Processes Across Scales, Reading, England, 16 November 2016.
- Pardyjak, E.R., "High-Resolution Modeling of Environmental Transport Processes for Sustainable Cities," CERFACS (Centre Européen de Recherche et de Formation Avancée en Calcul Scientifique), Toulouse, France, 6 Oct 2016.
- Pardyjak, E.R., "Microscale Measurement and Modeling Challenges and Opportunities in Cities," Meteorology and Climate – Modeling for Air Quality (MAC-MAQ), Air Quality Research Center, UC-Davis/California Air Resources Board, 16-18 September 2015, Sacramento, CA.
- Pardyjak, E.R., "Overview of the University of Utah Environmental Fluid Dynamics Lab," ARL Atmospheric Science Center Workshop 2015, 9-10 Jun 2015, White Sands Missile Range.
- Pardyjak, E.R., "Uncertainty in Evening Transition and Turbulent Flux Characterization in Mountainous Terrain," Workshop on, Microscale Modeling of Complex-Terrain Flows, 25-26 September 2014, University of Notre Dame.
- Pardyjak, E.R, "The MATERHORN Experiments - Toward Improved Numerical Weather Prediction Complex Terrain Environments," Dugway Proving Ground, 11 September 2014.
- Pardyjak, E.R., "Studying Multi-scale/Multi-physics Processes in Complex Terrain Environments for Improved Numerical Weather Prediction," Princeton University, 16 March 2014.
- Pardyjak, E.R. "Impact of Green Infrastructure (GI) on Urban Microclimate & Air Quality," Department of Aerospace & Mechanical Engineering and Environmental Fluid Dynamics Group Seminar, University of Notre Dame, Indiana, 28 October 2011.
- Pardyjak, E.R., D. Nadeau, C. Higgins, M. B. Parlange, H.J.S. Fernando, "Modeling the Decay of the Convective Boundary Layer Over Heterogeneous Terrain," BLLAST (Boundary Layer Late Afternoon and Sunset Turbulence) Workshop 17-18 June 2010: Turbulence decay of the afternoon transition, Lannemezan, France.

- Pardyjak, E.R., Flow and Dispersion in Complex Terrain, "Flow and Dispersion in Complex Terrain," WSL Institute for Snow and Avalanche Research SLF in Davos, Switzerland 2 February 2010.
- Pardyjak, E.R., S. Simoni, M. Calaf, R. Mage, and M. Parlange, "Understanding the interaction of diurnal circulation patterns and local turbulent fluxes in an Alpine environment," Nonlinear Processes in Geophysics session, European Geosciences Union, General Assembly 2010, Vienna, Austria, 02 – 07 May 2010. Solicited Presentation.
- Pardyjak, E.R. and H.J.S. Fernando, "The effect of surface type on the decay of turbulence in the surface layer during evening transition," 9th EMS (European Meteorological Society) Annual Meeting, Toulouse, France, 28 September - 2 October 2009. Solicited Presentation.
- Portland State University's Green Buildings and the Built Environment Seminar Series, "The role of Environmental Fluid Dynamics in sustainable urban design," Portland, OR, May 22, 2009.
- Arizona State University's Ecosystems Engineering Seminar, "The role of Environmental Fluid Dynamics in sustainable urban design," Tempe, AZ, 4 February 2009.
- Border Environment Cooperation Commission Binational Workshop on Paving and Health, "Development of a Windbreak Dust Control Strategy Tool for Communities in Arid Climates such as the U.S.-Mexico Border Region," Cibeles Convention Center, Ciudad Juarez, Chihuahua, 4 December 2007.
- Utah State University Department of Mechanical Engineering Graduate Seminar, "Environmental Fluid Dynamics," Logan, Utah, 6 November 2006.
- University of Utah Department of Meteorology Seminar, Environmental Fluid Dynamics, Salt Lake City, Utah, 29 September 2006.

Academic Supervisory Roles

PhD Students Graduated (14)	**Defense Date**	**Dissertation Project**
Mathew Nelson	3/2006	Urban turbulence characterization
Akshay Gowardhan	6/2008	Urban large-eddy simulation
Sandip D. Kulkarni (co-Chair w/Minor)	8/2009	Wind flow control in a virtual environment
Balwinder Singh	1/2010	Urban Lagrangian dispersion modeling
Heather Holmes	10/2010	Atmospheric transport & chemistry
Prathap Ramamurthy	04/2011	Urban turbulence and trace gas studies
Bhagirath Addepalli	12/2012	Urban optimization modeling
Scott Speckart	04/2012	Fugitive dust measurement and modeling
Derek Jensen	10/2016	Transitory turbulence atmospheric surface layer
Chaoxun Hang	06/2017	Turbulent heat & moisture transport
Nipun Gunawardena	01/2018	Distributed sensor station & statistical algos.
Travis Morrison (co-Chair w/Calaf)	01/2021	Heat transfer in heterogeneous surface layer
Alexei Perelet	06/2021	Scintillometry and atmospheric fluxes
Behnam Bozorgmehr	03/2022	Fast response environ simulation

MS Thesis Students Graduated (17)	**Defense Date**	**Thesis Project**
Spencer Donovan	08/22	Influence of turbulence on snowflake motion
Ryan Candlish	05/21	Simulating airflow in a mineshaft
Hanieh Eshagh	06/17	Vegetation in urban simulations
Kevin Briggs	12/14	Scalar transport in QUIC-EnvSim
Chad Nielson	08/12	Hydrofoil PIV measurements
Sean Moran	04/12	Particle deposition on vegetative surfaces
Tom Booth	10/11	Fast response data assimilation

Chad Allen	08/10	Building-resolving urban energy model
Holly Oldroyd	08/09	PIV/PLIF measurements in pipes
Tony Favalaro	05/08	QUIC-URB Validation/Sensitivity
Mark Deaver	08/07	Wind display for virtual environment
Jai Kiran	12/06	Urban cold pools – UTES
Amatulnoor Uzma	12/06	Modeling flow through vegetation
Prathap Ramamurthy	07/05	Urban Trace gas Emissions Study
Balwinder Singh	12/04	Lagrangian Dispersion modeling
Nilesh Bagal	11/04	QUIC-URB sensitivity Study
Akshay Gowardhan	11/04	QUIC-URB model evaluation

MS Non-Thesis Students Chair	**Exam Date**	
Tim Dwyer (ME)	01/08	Contaminant pipe flow dispersion
Cannon Neslen	03/06	Non-Thesis

Present Graduate students (5)	**Level**	**Project**
Matthieu Renault	PhD	Impact of terrain on wildfire spread
Ben Silberman	PhD	Snow stability assessment
Abdulrahman Yousuf (co-Chair w/Stoll)	PhD	Low-cost air-quality sensors
Zach Ruble	MS/PhD	Pressure fluctuations in complex terrain
Jack Eskeland	MS	Snow stability anticracks

Post-doctoral Researchers

Researcher (2 currently)	**Project**
Alexei Perelet (2021-Present)	Measuring hydrometeors using scintillometry
Karlie Rees (2024-Present)	Role of turbulence on fog life cycle
Dhiraj Kumar Singh (2018-2024)	SnowPixel sensor development/CFOG
Travis Morrison (2021-2022)	Turbulence in environmental flows
Vigneshwaran Kulandaivelu (2012-2014)	Fine-scale atmospheric turbulence measurements
Bhagirath Addepalli (2013)	Urban Form Optimization

Visiting International Scholars

Scholar	**Home Institution**	**Project**
Francesco Barbano (2019-20)	University of Bologna (Italy)	Urban modeling/Coastal Fog
Prof. J.J. Kim (2018-20)	Pukyong National Uni. (S. Korea)	CUDA-URB/QES development
Matthieu Renault (2018)	Unversité de Reims, France	Complex terrain modeling
Florian DuPuy (2017)	University of Toulouse	KASCADE2017 analysis
C. Roman-Cascon (2015)	Univ. Complutense de Madrid	Mountain fog formation
Prof. J.J. Kim (2012-14)	Pukyong National Uni. (S. Korea)	QUIC-URB development
Estel Blay (2012)	Univ. Politècnica de Catalunya	Evening trans. processes

Present Undergraduate Researchers (3)

Student	**Project**
Adrian Franz-Garrison	PIV Measurement of winds around snowflakes
Dominic Alei-Gonzalez	Anticrack mode behavior in fractures
James Karr	Velocity-vorticity relation in the surface layer

Former Undergraduate Student research projects (42)

Zach Ruble	Low-cost measurement stations
Alexis Deford*	Low-cost aspirated temperature measurements
Carsen Monaco	Integration of GPS units into low-cost measurement system

Ben Silberman	Low-cost measurement stations
Alex Bingham	Low-cost weather sensor development
Ryan Candlish	Development of a hotplate snow sensor
Scott Carlson	Development of a Python-based GUI for QES Wind
Anup Khadka*	Low-cost environmental measurements station development
Jeppesen Feliciano*	Geometry representation in MPM/ICE for urban simulations
Vignesh Sivaramakrishnan	Improving local energy-budget measurement stations (LEMS)
Elliott Barth	Repair of a remote sensing SODAR wind measurement device
Aaron Burton	Development of a Microcontroller-based Atmospheric Sounding System (M.A.S.S.)
Scott Schoen	Building heat transfer modeling
Nipun Gunawardena*	Development local energy balance measurement stations
Christian Holbert	Cold air pool study in the Salt Lake Valley using remote sensing
Bryon Edmunds*	Wind-tunnel deposition study
Price Lefler	TPAWT dispersion
Daniel Alexander	PIV measurements of flow around sports stadiums
Sydney Stoker	Flow visualization sports stadium (Grinnell College)
Timothy Barber	PIV/PLIF measurements
Hamid Sani	Virtual Wind Tunnel (TPAWT)
Sam Dickman*	PIV measurements of urban street canyons
Seamus Connor	QUIC-URB GUI development
Louis Monaco	Environmental Measurements
Jenny Gill	QUIC-URB GUI development
Holly Oldroyd	QUIC-URB GUI development
Dustin Wallis	Virtual Wind Tunnel (TPAWT)
Jason Hunter	Urban Wind Measurements
Tony Favalaro	QUIC-URB GUI development
Zachery Wilson	Flux Richardson Probe development
Nick Shingleton	QUIC-URB GUI development
Morgan Farley-Crust	TPAWT Virtual Wind Tunnel
Bret Verhoef	Urban Wind measurements
Aaron Barclay	PIV measurements of flow around buildings
Andy Parker	QWIC-URB GUI development
Tom Booth	QWIC-URB GUI development
Austin Van Otten	Drag measurements in urban environments
Jana Price	PIV measurements of flow around buildings
James Allison	Design of sonic anemometer mounting devices
Jeff Waterhouse	CFD of Hill Air Force Base Weber Canyon Study
Brad Hansen	PIV measurements of flow around buildings
Lester Sherrow	Stratified wind tunnel improvements

* indicates a UROP award

Highschool Student Researchers

Kyle Berkson – (2023) Olympus Highschool, Salt Lake City, UT
Gabe Mogollon - (2019-2020) Phoenix, AZ
Isaac Brumley – (2018-2019) AMES Hightschool, Salt Lake City, UT
Elizabeth Prucka – (2015-2016) Park City, UT

Habilitation Committees

Dr. Marie Lothon	University of Toulouse, France	2016
Dr. Manuela Lehner	University of Innsbruck, Austria	2022

Doctoral/Masters Committee member (Mechanical Engineering students unless specified)

L.D.M. Sanchez-Arias	PhD (2024)	A. Kalyanapu	PhD (CivEng 2011)
M. Huckings	PhD	B. Bailey	MS (2011)
H. Csala	PhD	C. Workman	MS (2011)
A. Draheim	MS (2024)	W. Flower	MS (CivEng 2011)
C.L. Neslon	PhD	J. Lisonbee (Atmos Sci)	MS (2010)
R. Serbinski	MS (Atmos Sci)	N. Shingleton	MS (2010)
J. Davis	MS	L. Richards	MS (Atmos Sci 2009)
G. Carrillo-Cardenas	MS (Atmos Sci)	I.C. Jaramillo	PhD (Chem Eng 2009)
H. Hedworth	PhD (Chem Eng 2023)	C. Davidson	PhD (ESS 2009)
L. Ulmer	PhD (2023)	D. Torgerson	MS (2009)
G. Torkelson	PhD (2023)	D. Judi	PhD (CivEng 2009)
B. Stanislawski	PhD (2021)	I. Jeyachandran	PhD (CivEng 2008)
O. Atlasin	PhD (2021)	R. Jamison	MS (2008)
M. Moody	PhD (2021)	I. Rodriguez	PhD (Physics 2008)
K. Rees	MS (2020 Atmos Sci)	A. Amritkar	MS (2008)
J. Bourne	PhD (2020)	N. Webb	PhD (Physics 2007)
C. Anjewierden	MS (2019)	J. Kingston	PhD (2006)
R. Cieri	PhD (2019 Biology)	Park	PhD (2006)
E. Maric	PhD (2019)	T. Omer	MS (2006)
C. Gomez-Navarro	PhD (2018 Biology)	J. Allen	MS (2006)
M. Kahn	PhD (2017)	R. Joshi	MS (2006)
G. West	PhD (2017)	D. Challa	MS (2006)
T. Price	PhD (2017)	P. R. Desam	PhD (2006)
N. Miller	PhD (2017)	T. Deem	MS (2005)
Y. Feng	PhD (2016 CivEng)	Sai Ram	MS (2005)
M. Jeglum	PhD (2016 Atmos Sci)	J. Clark	MS (Met U of Ok, 2005)
B. Bailey	PhD (2015)	H. Miner	MS (2005)
M. Overby	MS (2014 CS UMD)	S. Pol	MS (2005)
N. Lareau	PhD (2014 Atmos Sci)	D. Sandberg	MS (2005)
H. Zhang	PhD (2013 Atmos Sci)	Nate Arnim	MS (2005)
D. Sweeney	PhD (2012)	Q. Zhang	PhD (2005)
N. Andrews	MS (2012)	P. Priyadarshana	PhD (2004)
W. Horne	MS (2012)	E. Wheeler	MS (2004)
D. Frei	MS (2012)	B. Waite	MS (2004)
P. Jankovich	PhD (2012)	N. Burgess	Masters (2004)
A. Gould	MS (2012)	T. Wei	Doctoral (2004)
J. Mulandi	PhD (CivEng 2011)	L. Sherrow	Masters (2003)
L. Flemming	PhD (2011)		

International External Thesis Reviewer

D. Bellamy, PhD, University of Montreal, in-progress
J. Gueffier, PhD, Université Toulouse III - Paul Sabatier, 2023
L. Duconge, PhD, Université Toulouse III - Paul Sabatier, 2019
J. Arillaga, PhD, Universidad Complutense de Madrid, Spain, 2019
F. DuPuy, PhD, France, Université Toulouse III - Paul Sabatier, 2018
T. Sabatier, PhD, France, Université Toulouse III - Paul Sabatier, 2018
G.-J. Duine, PhD, France, Université Toulouse III - Paul Sabatier, 2016
H. Oldroyd, PhD, Switzerland, École polytechnique fédérale de Lausanne, 2015
E. Blay-Carreras, PhD, Spain, Universitat Politècnica de Catalunya (UCP-Barcelona), 2014
D. Nadeau, PhD, Switzerland, École polytechnique fédérale de Lausanne, 2011

Patents (Names in bold are supervised post-docs)

Garrett, T., **Singh, D. K**., Rees, K., and E. Pardyjak, Differential Emissivity Based Evaporable Particle Measurement, U.S. Provisional Patent Application No. 62/941,665 filed November 27, 2019, TNW Ref. No.: 00846-U6780.PROV

Peer Reviewed Journal Publications (Names in bold are supervised students or post docs)

1. Garrett, T., D.K. Singh, E.R. Pardyjak, Settling and rotation of frozen hydrometeors in turbulent air, *Geophysical Research Letters*, under revision, Jan 2025.
2. Wang, T., H.J. Oldroyd, E.R. Pardyjak, and M.B. Parlange, The turbulence flow structure of anabatic winds over a steep alpine slope, *Boundary-Layer Meteor*., submitted, Feb 2025.
3. Cheng, R., C. Hang, and E.R. Pardyjak, A study of evening-transition thermal processes and flow-dynamics over opposing slopes, *Q. J. R. Meteorol. Soc.*, under revision, February 2025.
4. **Bozorgmehr, B.**, P. Willemsen, J.A. Gibbs, R. Stoll, J.-J. Kim, Z. Patterson, E.R. Pardyjak, Improving the performance of a reduced-order mass-consistent model for urban environments and complex terrain with a higher-order geometrical representation, accepted, *Journal of Advances in Modeling Earth Systems*, March 2025.
5. Carrillo-Cardenas, G., S. W. Hoch, E. Pardyjak, M. Garcia, W. Brown, Z. Pu, and A. G. Hallar, 2024: Elucidating New Particle Formation in Complex Terrain During the Winter 2022 Cold Fog Amongst Complex Terrain (CFACT) Campaign, *Atmos. Chem. Phys*, accepted, March 2025.
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7. Ortiz-Suslow, D. G., Ruiz-Plancarte, J., Yamaguchi, R., Kalogiros, J., Fernando, H. J. S., Creegan, E., Pardyjak, E., Gabersek, S., Gultepe, Ismail, and Wang, Q., A case study of boundary-layer development downstream of a small, remote island, *Q. J. R. Meteorol. Soc.*, https://doi.org/10.1002/qj.4929, 2025.
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- Nadeau, D., E.R. Pardyjak (presenter), C. Higgins, and M. B. Parlange, 2010: Modeling the decay of the convective boundary layer over heterogeneous terrain, 9th Symposium on Boundary Layers and Turbulence, Keystone, CO, 1-6 August 2010, 10A.4
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- Jeyachandran, I., Burian, S.J., Pardyjak, E.R., Pomeroy, C.A., and Skousen, B., 2010: Impact of green infrastructure on urban energy fluxes and microclimate. EWRI 2010 International conference on Water Resources and Environment, Jan 5- Jan 7, Chennai, India
- **H. Holmes**, **S. Speckart** and E. Pardyjak 2010: Investigation of the Relationship Between Time Resolved Indoor and Outdoor Particulate Matter Concentrations Across the Urban Area of Nogales, Sonora, Mexico. AAAR 2010 Specialty Conference: Air Pollution and Health , 2D.5, San Diego, CA 22-26 March 2010.
- J. Veranth, **S. Speckart**, **B. Addepelli**, and E. Pardyjak, 2010: Development of windbreak dust control models for roadway fugitive dust mitigation and transport flux, AAAR 29th Annual Conference, Portland, OR, 25-29 October 2010. Paper Number: 8.B.16
- J. Clark, A. Larson, P. Willemsen, and E. Pardyjak, 2009: Particle Dispersion Modeling and Visualization in Urban Environments Using CUDA, NVIDIA GPU Technology Conference, Sept 30-Oct 2, 2009 – San Jose, CA.
- Pardyjak, E.R., P. Willemsen and D. E. Johnson, 2009: Optimization of urban designs for air quality and energy efficiency, Amer. Meteor. Soc., Eighth Symposium on the Urban Environment, Phoenix, AZ, 10-16 January 2009.
- Pardyjak, E.R., **U.N. Amatul**, M. A. Nelson, and M. J. Brown, 2009: Development of a vegetation deposition model for a fast response urban Lagrangian dispersion model, Amer. Meteor. Soc., Eighth Symposium on the Urban Environment, Phoenix, AZ, 10-16 January 2009.
- Christen A., C.S.B. Grimmond, M. Roth, E. Pardyjak, 2009: The IAUC Urban Flux Network - An international network of micrometeorological flux towers in urban ecosystems, Eos Trans. AGU, 90(52), San Francisco, CA, Fall Meet. Suppl., Abstract B31C-06.
- Jeyachandran, I., Burian, S.J., and Pardyjak, E.R., 2009: Cascading effects of landscape modification on microclimate, energy and water usage. AWRA 2009 Spring Specialty conference, May 4- May 6, Anchorage, AK.
- Jeyachandran, I., Burian, S.J., Augustus, N., Pardyjak, E.R., Ramamurthy, P., and Forster, C., 2008: Urban landscape and climate influences on urban water cycle. AWRA Annual Water Resources Conference, Nov 17 – Nov 20, New Orleans , LA.
- Jeyachandran, I., Burian, S.J., and Pardyjak, E.R., 2008: Effects of urbanization on interconnected water cycle, microclimate and energy usage in semi-arid regions. AGU fall conference, Dec 15- Dec 19, San Francisco, CA.

- **Dwyer, T., Farley-Chrust, M**. McMurtry, P., and Pardyjak, E., 2007: Siting Wind Farms in Complex Terrain: Spanish Fork Canyon a Case Study, Conferencia Inernacional de energía removable, ahorro de energía y educación energética, May 23, 2007 Havana, Cuba.
- **Holmes, H.A**., B.J. Tyler, R.E. Peterson, E.R. Pardyjak, 2007: Surface Chemistry Analysis of Urban and Rural Aerosols During a Night-time High PM Burning Event in Yuma, AZ. American Association for Aerosol Research 26th Annual Meeting, Reno, NV, 24-28 September 2007. Abstract 17E.1.
- Veranth, J., **S. Speckart**, E. Pardyjak, Experimental and modeling study of particle deposition near roads. American Association for Aerosol Research 26th Annual Meeting, Reno, NV, 24-28 September 2007. Abstract 11G.8.
- **Addepalli, B.,** M.J. Brown, E. R. Pardyjak, and I. Senocak, 2007: Investigation of the Flow Structure around Step-Up, Step-Down, Deep Canyon and Isolated Tall Building Configurations using Wind-Tunnel PIV Measurements, Seventh Symposium on the Urban Environment, San Diego, CA, 10-13 September 2007, Poster P1.19.
- **Gowardhan**, A., E. Pardyjak, I. Senocak, and M. Brown, 2007: An investigation of thermal effects on flow and dispersion in an idealized urban area using LES , Seventh Symposium on the Urban Environment, San Diego, CA, 10-13 September 2007, P1.11.
- Pataki, D. E.; Dudley-Murphy, E. A.; Emmi, P. C.; Forster, C. B.; Mills, J. I.; Pardyjak, E. R.; Peterson, T. R., 2007: Improving fossil fuel emissions scenarios with urban ecosystem studies: A case study in the Salt Lake-Ogden metropolitan region. 2006 AGU Fall Meeting, San Francisco, CA, 11-15 December 2006.
- Pardyjak, E.R., D.E. Pataki, **P. Ramamurthy**, **J. Kiran**, Measurements of trace-gas fluxes and the surface energy budget in the semi-arid urban Salt Lake Valley, Utah, U.S.A. First International Conference on Carbon Management at Urban and Regional Levels: Connecting Development Decisions to Global Issues, Mexico City, September 4-8, 2006.
- **Addepalli, B**. and Pardyjak, E.R., 2006: Experimental Investigation of the Effect of Reynolds Number and H / δ Value on Flow Fields in Street Canyons with Cubical Buildings, American Physical Society, 59th Annual Meeting of the APS Division of Fluid Dynamics, Chicago, IL, November 19-21, 2006, abstract #HG.003
- **Addepalli, B.** and E.R. Pardyjak, 2005: 2D PIV Measurements of flow between a pair of model buildings with varying geometries, American Physical Society, 58th Annual Meeting of the APS Division of Fluid Dynamics, Tampa Bay, FL, November 19-21, 2006, abstract #HG.003.
- **Speckart, S**., E.R. Pardyjak and J. Veranth. Assessment of Windbreaks as a Dust Control Strategy in Arid Climates. The 2006 SCERP Annual Technical Conference, San Diego, CA January 17, 2006.
- Veranth , J., **S. Speckart**, E. Pardyjak, V. Etyemezian, Experimental and numerical studies of near source fugitive dust transport, American Association for Aerosol Research, 2005 Annual Conference, Austin, Texas October 17 - 21, 2005.
- Veranth, J.M., E.R. Pardyjak, **S. Speckart**, K. Perry, J. Chow, J. Watson, V. Etyemezian, Computational modeling of near-source deposition of fugivitive dust on vegetative surfaces, Air and Waste Management Association meeting, June 2005.
- Pataki, D.E., J.R. Ehleringer, C.B. Forster, J.C. Klewicki, E.R. Pardyjak, R.E. Peterson, W. J. Steenburgh, B. J. Tyler, Understanding urban atmospheric CO2: Challenges and opportunities. 2004 AGU Fall Meeting, San Francisco, CA, 13-17 December 2004.
- Kastner-Klein, P., E.R. Pardyjak, **A. Gowardhan**, M.J. Brown. Evaluation of the fast response model QWIC-URB based on wind tunnel flow measurements idealized street canyons. 11th *International Conference on Wind Engineering*, Lubbock, TX June 2003.

- Tuohig, M.E., J.P. Mattson,E.R. Pardyjak, J.C. Martin 2003: A linear damper model does not fully predict passive muscle work during cyclic length change. Presented at the *50th annual meeting of the American College of Sports Medicine*, San Francisco CA.
- Pardyjak, E.R. Decay of Turbulence in the Atmospheric Surface Layer During Evening Transition. *Ninth Annual Workshop on Weather Prediction in the Intermountain West,* Salt Lake City, UT 2002.
- Pardyjak, E.R., P. Monti, and H.J.S. Fernando. Mixing Efficiency Parameterization During Stable Periods in Complex Terrain, Seventeenth Arizona Fluids Conference, Tucson, AZ. February, 2001.
- Fernando, H.J.S, J.C.R. Hunt, and E.R. Pardyjak. Thermal Circulation in Complex Terrain, International Symposium of Stratified Flows - British Columbia, CA. June, 2000.
- Pardyjak, E.R., H.J.S. Fernando, G. Wang, J. Anderson, N.S. Berman. Breakdown of Complex Terrain Atmospheric Boundary Layers, Fifty-Second Annual Meeting, American Physical Society, Division of Fluid Dynamics, November 21-23, 1999. New Orleans, LA.
- Pardyjak, M. Brown, D. Decroix and H.J.S. Fernando, Development of a Counter Gradient Transport Model for HOTMAC, 1999 SCERP Technical Conference, November 18, 1999. Las Cruces, NM.
- Yu, F., N.S. Berman, H.J.S. Fernando, E. Pardyjak, and A. Mahalov. Stable Nocturnal Vertical Structure of the Atmospheric Boundary Layer in Phoenix, Fifteenth Arizona Fluid Mechanics Conference, April 23,1999, Tucson, AZ.
- Pardyjak, E.R., A.A. Grachev, H.J.S. Fernando, J.C.R. Hunt, N.S. Berman, J.R. Anderson, M.L. Hildebrandt, and D.S. McGuiness. Structure of the Atmospheric Boundary Layer Over the Complex Terrain of Phoenix: In Site Measurements during PAFEX-I, Fourteenth Arizona Fluid Mechanics Conference, March 27-28, 1998, Tempe, AZ.
- Grachev, A.A., E.R. Pardyjak, H.J.S. Fernando, J.C.R. Hunt. Some Observations of the Atmospheric Nocturnal Boundary Layer Over Complex Terrain, Fourteenth Arizona Fluid Mechanics Conference March 27-28, 1998, Tempe, AZ.
- Mahalov, A., N.S. Berman, H.J.S. Fernando, F. Yu, E.R. Pardyjak, Stable Layers in the Atmospheric Boundary Layer. Bulletin of the American Physical Society. 51st Annual Meeting of the Division of Fluid Mechanics. November 22-24, 1998. Philadelphia, PA. November 1998. Volume 43, No.9.

Other Publications

- Streit, G.E., M.J. Brown, M.D. Williams, and E.R. Pardyjak, Urban Dispersion Studies for Determination of the Sensor Upwind Area of Influence, LA-CP-00-219. 2000.
- Fernando, H.J.S., Pardyjak, E. and Hunt J.C.R., PAFEX: A Joint Arizona State University/Arizona Department of Environmental Quality Study of Meteorology and Air Quality in the Phoenix Valley, *MAE Newsletter*, 1998.

Teaching Experience (All classes taught at the University of Utah)

- Environmental Instrumentation (co-taught with ATMOS SCI): Spring 2012
- Thermal Systems Design: Spring 2008, Fall 2008
- Intermediate Fluid Mechanics: Fall 2005, 2006, 2007, 2014, 2020, 2022
- Environmental Fluid Dynamics: Fall 2002, 2004, Spring 2007, 2009, 2011, 2013, 2015, 2019, 2021, 2023
- Design of Complex Cont. Systems/Complex Continuum Phenomena: Fall 2004
- Introduction to Numerical Methods: Spring 2002, 2003, 2004, 2006
- Numerical Methods for Engineering Systems (ME2450): 2014, 2016, 2018

- Introduction to Sustainable Energy Systems Design I (Numerical Methods): Fall 2010, 2011
- Undergraduate Fluid Mechanics: 2001, 2003, 2012, 2019, Spring 2020, Fall 2022, Spring 2024
- Undergraduate Heat Transfer: Fall 2013, Fall 2015, Fall 2021, Fall 2023
- Advanced Convective Heat Transfer: Fall 2017
- GEO 5650/6650 Hydrology and Water Resources (team taught, my section has been evaporation processes): Fall 2018, Fall 2019, Fall 2021, Fall 2022

Guest Lectures in classes around the University of Utah campus including Civil and Environmental Engineering, Atmospheric Sciences, and Architecture and Urban-Planning.

Senior Design Project Advisor

- Assistant Faculty advisor for UofU solar vehicle team (Spring 2003)
- Advisor for UofU Modular Test-Bed Wind Turbine (2004-2005)
- Advisor for UofU Modular Test-Bed Wind Turbine (2005-2006)
- Advisor for UofU Modular Test-Bed Wind Turbine (2006-2007)
- Advisor for Tornado Machine project (2006-2007)
- Advisor for Boulder Kinetics human powered vehicle (2007-2008)
- Advisor Tiny Turbine team I (2008-2009)
- Advisor Tiny Turbine team II (2008-2009)
- Advisor FSAE Supercharger team (2008-2009)
- Co-Advisor Chimp Grip Strength team (2008-2009)
- Advisor MASS – tethered balloon sensors (2012-2013)
- Advisor Snow Depth Sensor (2014-2015)
- Advisor Fountain Water Flow Dynamics Study (2016-2017)
- Co-Advisor Incendiary Wind Tunnel Phase I (2017-2018)
- Co-Advisor Incendiary Wind Tunnel Phase II (2018-2019)
- UAV Infrared Imaging System (2019-2020)
- Advisor Educational Avalanche Board (2020-2021)
- Advisor Fog Measurement Probe Mount and Calibration Unit (2021-2022)
- Advisor Lightweight Sensor Package for Tethered Balloon Meteorological Observations (2023-2024)

New Course/Curriculum Development

Environmental Fluid Dynamics (EFD) Graduate Track – This highly interdisciplinary track builds on existing collaborations across the department, college and university such as the Center for Sustainability and the Global Change and Ecosystems Center. The program is designed to provide an academic infrastructure to help develop a nationally recognized program in EFD through improved recruiting and the promotion of interdisciplinary research. The program will be composed of three course areas: (1) traditional thermal-fluid sciences taught in mechanical engineering, (2) applied mathematics and (3) environmental science. The tracks will allow students to take courses from traditionally non-ME courses without having special approval.

Undergraduate "Spiral" Curriculum – Worked with colleagues Roemer, Bamburg and Mascaro to develop the sophomore level "Introduction to Sustainable Energy Systems Design I" class that is part of a new two year Mechanical Engineering sequence at the University of Utah. This project was part of an NSF CCLI grant.

Fluid Mechanics Curriculum – Working with M. Metzger and P. McMurtry significant changes have been implemented into the undergraduate and graduate fluid mechanics curriculum. This includes removing out of date classes and replacing them with classes that more appropriately fit the needs of the undergraduate

and graduate students. As part of this work, for the first time during the Fall 2005 semester, I developed the lectures and taught the new graduate level Intermediate Fluid Dynamics. The class has now been taught successfully three times.

Environmental Fluid Dynamics – the purpose of this class was to fill a void in the fluid mechanics curriculum that focused on length and time scales ranging from traditional micrometeorological scales to scales associated with classical engineering fluid mechanics. This class was taught for the first time in the Fall 2002 and then in Fall 2005, Spring 2007. The class typically has had predominate graduate student enrollment from mechanical and chemical engineering as well as meteorology. The class is now a regularly taught upper-level graduate fluid mechanic's class.

Department, College and University Service Activities

Department

- RPT chair (8/2022 – present)
- Faculty Success Committee (8/2023-present)
- Mech. Engineering Thermal-Fluids Energy Systems (TFES) Division Chair (8/17-8/21, 8/11-8/16, 09/08-05/09)
- Executive Committee (8/11-8/21, 09/08-05/09)
- Department Search Committees (2001-2002, 2007-2008, 2010-2011, 2011-2012, 2017-2018, 2019-2020, 2021-2022, 2022-2023)
- Awards Committee (2018-2023)
- Graduate Committee (2011-2107, 8/05-05/09)
- Director of Graduate Studies and Associate Dept. Chair (8/10-7/11)
- External Relations Committee – Department of Mech. Engineering (10/01-05/09, Chair 9/07-9/08, Chair 2014-2016)
- Department Seminar Committee (09/06-05/08, Chair 09/07-05/08)
- Department Dynamics Faculty Search Committee (2001-2002)

College

- College of Engineering RPT Committee (2018-2021, chair 2019-2020)
- University of Utah College Council member (2004 – 2007)
- Excellence in Teaching Committee, College of Engineering (2011-2012)
- Environmental Engineering Graduate Program Executive Council (2002-2009)

University

- VP for research ad-hoc committee, Field Station Task Force (2018)
- Seed Grant Committee (2014-2018)
- Internal reviewer for the Graduate Council review of the Geology & Geophysics Department (2017)
- Global Change and Sustainability Center, Executive committee member (2013-2015)

- Global Change and Ecosystem Center, Seminar Committee Chair (2011)
- Global Change and Ecosystem Center, Department Representative (2010-2015)
- Global Change and Ecosystem Center, Graduate Fellowship Committee (2011)
- Sustainable Campus Initiative Fund (SCIF) Allocation Committee – Faculty representative (2011-2014)
- University Research Committee – (08/03-05/09)

Professional External Service

- Associate Editor - *Environmental Fluid Mechanics* (2017-present)
- Journal Editorial Board Member – *Measurement Science & Technology*, Section Leader - Measurements for the environment (2011-present).
- Special Issue Guest Editor, *Quarterly Journal of the Royal Meteorological Society*: FATIMA Marine fog and turbulence (2023-present).
- Member of the Organizing Committee for the 77th Annual Division of Fluid Mechanics American Physical Society in Salt Lake City, UT (2024).
- Session Chair, 77th Annual Division of Fluid Mechanics American Physical Society in Salt Lake City, UT (2024).
- Session Chair, 2023 Annual AMS Meeting in Denver, CO (2023).
- Co-organizing Chair for the Meteorology and Climate - Modeling for Air Quality Conference (MAC-MAQ 2021), 15-17 September 2021, Davis, Sacramento, California (2021).
- Session Co-convener and Chair, Session A33R, Observations, Modeling, and Forecasting of Coastal Fog Processes Posters, Annual AGU Fall Meeting (2019).
- Organizing Committee and session chair for the Meteorology and Climate - Modeling for Air Quality Conference (MAC-MAQ 2019), 11-13 September 2019, Davis, Sacramento, California (2019).
- Member of the NCAR (National Center for Atmospheric Research) Observing Facilities Assessment Panel (OFAP) (2015-2017) – this panel monitors NSF-sponsored observing facilities at NCAR and other institutions that manage and operate the NSF's Lower Atmosphere Observing Facilities (LAOF).
- Organizing Committee and session chair for the Modeling for Air Quality Conference (MAC-MAQ 2017) September 2017, Davis, California (2017).
- Co-chair, Organizing committee for 22nd Boundary Layer Turbulence Conference, June 2016, Salt Lake City, UT (2015-2016).
- Special Issue Guest Editor, *ACP/AMT Inter-Journal SI*: The Boundary-Layer Late Afternoon and Sunset Turbulence (BLLAST) project (2013-2016).
- Special Issue Guest Editor, *Environmental Fluid Mechanics*: Special issue on complex terrain flows, with special emphasis on the MATERHORN program (2016-2019).
- Journal Editorial Board Member – Datasets International: Dataset Papers in Atmospheric Sciences (2012-2017).
- Regular *ad hoc* journal Guest Editor, *ACP/AMT Inter-Journal SI* (2013-2014).
- Session Co-convener and Chair, Session A53O, Observations, Predictions, and Predictability of the Atmosphere Over Complex Terrain, Annual AGU Fall Meeting (2017)
- Session Co-convener and Chair, Session ID # 8181, Section: Atmospheric Sciences, Atmospheric Flows Over Complex Terrain, Annual AGU Fall Meeting (2015)
- Session Co-convener and Chair, Session A53O, Observations, Predictions, and Predictability of the Atmosphere Over Complex Terrain, Annual AGU Fall Meeting (2014)
- Session Co-conveners and Chair, Session A058. Research on Improving Weather Prediction for Mountain Terrain, Annual AGU Fall Meeting (2013)

- Session Co-conveners and Chair, Session H004. Advances in spatial scaling of hydrological and biogeochemical processes, Annual AGU Fall Meeting (2013)
- Session Chair, DACA 2013, Davos, Switzerland
- Session Chair, Evaluation Studies and Applications, 92 Annual Meeting of the American Meteorological Society, 17th Conference on Air Pollution Meteorology with the A&WMA, New Orleans (2012)
- Session Chair 2007 Division of Fluid Mechanics American Physical Society annual conference in Salt Lake City, UT
- Session Co-Chair, *Urban Turbulence and Boundary Layers*, American Meteorological Society, San Diego, Seventh Symposium on the Urban Environment (2007)
- Co-Chair of the Organizing Committee for the 2007 Division of Fluid Mechanics American Physical Society annual conference in Salt Lake City, UT
- Chair of the Program Committee for the 2007 Division of Fluid Mechanics American Physical Society annual conference in Salt Lake City, UT
- Co-Organized QUIC Dispersion Modeling Conferences at the University of Utah 2003-2006. Participants included researchers and students from the University of Utah, Arizona State University, University of Oklahoma, University of California-Riverside and Los Alamos National Lab (2003-2006)
- Session Co-Chair American Meteorological Society, Vancouver, Fifth Symposium on the Urban Environment (2004)

Outreach Activities

- Wildfire outreach presentations and lab demonstrations – Atmospherics Sciences outreach day (2019)
- UofU College of Engineering MESA (Mathematics, Engineering, Science Achievement) – demonstrations in lab for 9-12 graders (2017)
- University of Utah – HiGear summer program participation (2013)
- University of Minnesota – Duluth Bridges to Baccalaureate Degree Program (2008, 2009, 2012, 2013)
- Judge for Intermountain Junior Science and Humanities Symposium (2002-2008)

Journal Reviewer

- Advances in Science and Research
- Atmosphere
- Atmospheric Chemistry and Physics
- Atmospheric Environment
- Boundary-Layer Meteorology
- British Journal of Environment and Climate Change
- Building Research & Information
- Building Simulation
- Civil Engineering and Environmental Systems
- Environmental Fluid Mechanics
- Experiments in Fluids
- Global Change Biology
- International Journal of Climatology
- International Journal of Heat and Fluid Flow
- Journal of Applied Meteorology and Climatology
- Journal of the Air & Waste Management Association
- Journal of Geophysical Research
- Journal of Fluids Engineering
- Journal of Hydrology
- Journal of Solar Energy Engineering
- Land
- Measurement Science & Technology
- Quarterly Journal of the Royal Met. Soc.
- Science of the Total Environment

- Transportation Research Part D: Transport and Environment
- Urban Climate

Grant Reviewer

- National Science Foundation (NSF)
- European Research Commission (ERC)
- Swiss National Science Foundation (SNSF)
- Natural Sciences and Engineering Research Council of Canada (NSERC)
- German National Aerospace Agency (DLR)
- French national science foundation (INRS)
- Austrian national science foundation

Professional Registrations and Affiliations

- American Geophysical Union (Member)
- American Society of Mechanical Engineers (Fellow)
- American Meteorological Society (Member)
- American Physical Society (Member)
- American Society for Engineering Education (Member)