Marcelo Chamecki *Curriculum Vitae*

University of California, Los Angeles
Department of Atmospheric and Oceanic Sciences
520 Portola Plaza, Math Sciences Building 7961
Los Angeles, CA 90095-1565

Cell: (814) 932-7552
Phone: (310) 825-0088
E-mail: chamecki@ucla.edu

Education

- Ph.D. in Environmental Engineering, 2008
  Johns Hopkins University, Baltimore, USA
- M.S.E. in Mechanical Engineering, 2006
  Johns Hopkins University, Baltimore, USA
- M.Sc. in Numerical Methods for Engineering, 2003
  Universidade Federal do Paraná, Curitiba, Brazil
- B.S. in Civil Engineering, 2000
  Centro Federal de Educação Tecnológica do Paraná, Curitiba, Brazil

Professional Appointments

- Professor, Dept. of Atmospheric and Oceanic Sciences, University of California, Los Angeles, 2019 – current
- Associate Professor, Dept. of Atmospheric and Oceanic Sciences, University of California, Los Angeles, 2016 – 2019
- Adjunct Associate Professor, Dept. of Meteorology, Pennsylvania State University, 2016 – 2018
- Visiting Scientist, Dept. of Environmental Engineering, UFPR (Brazil) , 2015 – 2018
- Associate Professor, Dept. of Meteorology, Pennsylvania State University, 2014 – 2015
- Assistant Professor, Dept. of Meteorology, Pennsylvania State University, 2008 – 2014
- Research Assistant, Dept. Geography & Env. Eng., Johns Hopkins University, 2003 – 2008

Sponsored Research

- "Solving the Coarse Dust Conundrum: What Atmospheric Process Keeps Coarse Dust Aloft?", NSF, 2019/2022
- "Improving Skill in Predicting Sand and Dust Fluxes", U.S. Army ERDC, 2019/2021
- "MacroAlgae Cultivation MODeling System (MACMODS)", ARPA-E, 2018/2020
- "Ultra Fine Particle Deposition onto Vegetated Surfaces Situated on Complex Topography: From Leaf to Landscape", NSF, 2017/2020

- "Transport and Fate of Oil in the Upper Ocean: Studying and Modeling Multiscale Physical Dispersion Mechanisms and Remediation Strategies Using Large Eddy Simulations", Gulf of Mexico Research Initiative (GoMRI), 2016/2018
- "From Turbulence to Weather and Climate: Unraveling the Multiscale Nature of Dust and Sand Transport in the Atmospheric Boundary Layer", NSF, 2014/2017
- "Bridging Land-surface Fluxes and Aerosol Concentrations to Triggering Convective Rainfall", DOE, 2014/2016
- "Large Eddy Simulation of Turbulent Dispersion of Oil in the Ocean Surface Layers: Development, Testing and Applications of Subgrid-Scale Parameterizations", Gulf of Mexico Research Initiative (GoMRI), 2012/2015
- "Dispersion of Particles Within and Above Plant Canopies", NSF/AGS, 2011/2014
- "Planning visit to Universidade Federal do Parana (UFPR), Brazil", NSF/OISE, 2011
- "Measurements and Modeling of Subgrid-Scale Turbulence in the Atmospheric Surface Layer", NSF/ATM, 2010/2012
- "A new model parameterization for numerical simulation of particle clustering in turbulent flows and applications to atmospheric dispersion and cloud formation", Matthew J. Wilson Jr. Travel Grant, 2009

Journal Papers

(underlined names indicate a lead-author student or postdoc mentored by Chamecki)

75. B. Chen, **M. Chamecki**, and G.G. Katul (2020), "Effects of gentle topography on forest-atmosphere gas exchanges and implications for eddy-covariance measurements", Journal of Geophysical Research – Atmospheres, 125, e2020JD032581.
74. E.A. D'Asaro, D.F. Carlson, **M. Chamecki**, R.R. Harcourt, B.K. Haus, B. Fox-Kemper, M.J. Molemaker, A.C. Poje, and D. Yang (2020), "Advances in observing and understanding small-scale open ocean circulation during the Gulf of Mexico Initiative Era", Frontiers in Marine Science, 7, 349.
73. F. Comola, J.F. Kok, **M. Chamecki**, and R.L. Martin (2019), "The intermittency of wind-driven sand transport", Geophysical Research Letters, 46, 13430–13440.
72. **M. Chamecki**, T. Chor, D. Yang, and C. Meneveau (2019), "Material transport in the ocean mixed layer: recent developments enabled by large eddy simulations", Reviews of Geophysics, 57, 1338–1371.
71. A.M. Razmi, **M. Chamecki**, and H.M. Nepf (2019), "Efficient numerical representation of the impacts of flexible plant reconfiguration on canopy posture and hydrodynamic drag", Journal of Hydraulic Research (in press).
70. A.K. Aiyer, D. Yang, **M. Chamecki**, and C. Meneveau (2019), "A population balance model for large eddy simulation of polydisperse droplet evolution", Journal of Fluid Mechanics, 878, 700–739.

69. B. Chen, **M. Chamecki**, and G.G. Katul (2019), "Effects of topography on in-canopy transport of gases emitted within dense forests", Quarterly Journal of the Royal Meteorological Society, 145, 2101–2114.

68. L.S. Freire, N.L. Dias, and **M. Chamecki** (2019), "Effects of sonic anemometer's path-averaging on the estimation of turbulent kinetic energy dissipation rates", Boundary-Layer Meteorology, 173, 99–113.

67. D. Wei, J.D. Fuentes, T. Gerken, A.M. Trowbridge, P.C. Stoy, and **M. Chamecki** (2019), "Influences of nitrogen oxides and isoprene on ozone-temperature relationships in the Amazon rain forest", Atmospheric Environment, 206, 280–292.

66. L.S. Freire, **M. Chamecki**, E. Bou-Zeid, and N.L. Dias (2019), "Critical flux Richardson number for Kolmogorov turbulence enabled by TKE transport", Quarterly Journal of the Royal Meteorological Society, 145, 1551–1558.

65. T. Chor, D. Yang, C. Meneveau, and **M. Chamecki** (2018), "A turbulence velocity scale for predicting the fate of buoyant materials in the Oceanic Mixed Layer", Geophysical Research Letters, 45, 11817–11826.

64. I.D. Nissanka, H.J. Park, L.S. Freire, **M. Chamecki**, J.S. Reid, and D.H. Richter (2018), "Parameterized concentration profiles for aerosols in the marine atmospheric boundary layer", Journal of Geophysical Research – Atmospheres, 123, 9688–9702.

63. B. Chen, D. Yang, C. Meneveau, and **M. Chamecki** (2018), "A numerical study of the effects of chemical dispersant on oil transport from an idealized underwater blowout", Physical Review Fluids, 3, 083801, 1–17.

62. X. Lin, **M. Chamecki**, G. Katul, and X. Yu (2018), "Effects of leaf area index and density on ultrafine particle deposition onto forest canopies: a LES study", Atmospheric Environment, 189, 153–163.

61. Y.-S. Chen, J. Verlinde, E.E. Clothiaux, A.S. Ackerman, A.M. Fridlind, **M. Chamecki**, P. Kollias, M.P. Kirkpatrick, B. Chen, G. Yu, and A. Avramov (2018), "On the forward modeling of radar Doppler spectrum width from LES: Implications for model evaluation", Journal of Geophysical Research – Atmospheres, 123, 7444–7461.

60. T. Chor, D. Yang, C. Meneveau, and **M. Chamecki** (2018), "Preferential concentration of noninertial buoyant particles in the ocean mixed layer under free convection", Physical Review Fluids, 3, 064501, 1–18.

59. **M. Chamecki**, N.L. Dias, and L.S. Freire (2018), "A TKE-based framework for studying disturbed atmospheric surface layer flows and application to vertical velocity variance over canopies", Geophysical Research Letters, 45, 6734–6740.

58. D. Wei, J.D. Fuentes, T. Gerken, **M. Chamecki**, A.M. Trowbridge, P.C. Stoy, G.G. Katul, G. Fisch, O. Acevedo, A. Manzi, C. von Randow, and R.M.N. Santos (2018), "Environmental and biological controls on seasonal patterns of isoprene above a rain forest in central Amazonia", Agricultural and Forest Meteorology, 256/257, 391–406.

57. N.L. Dias, B.L. Crivellaro, and **M. Chamecki** (2018), "The Hurst phenomenon in error estimates related to atmospheric turbulence", Boundary-Layer Meteorology, 168, 387–416.

56. K. Ghannam, G. Katul, E. Bou-Zeid, T. Gerken, and **M. Chamecki** (2018), "Scaling and similarity of the anisotropic coherent eddies in near-surface atmospheric turbulence", Journal of the Atmospheric Sciences, 75, 943–964.

55. R.L. Martin, J. Kok, T. Barchyn, C. Hugenholtz, **M. Chamecki**, and J.T. Ellis (2018), "High-frequency measurements of aeolian saltation flux: Field-based methodology and applications", Aeolian Research, 30, 97–114.

54. L.S. Freire and **M. Chamecki** (2018), "A one-dimensional stochastic model of turbulence within and above plant canopies", Agricultural and Forest Meteorology, 250-251, 9–23.

53. D. Richter and **M. Chamecki** (2018), "Inertial effects on the vertical transport of suspended particles in a turbulent boundary layer", Boundary-Layer Meteorology, 167, 235–256.

52. T. Gerken, **M. Chamecki**, and J.D. Fuentes (2017), "Air parcel residence times within forest canopies", Boundary-Layer Meteorology, 165, 29–54.

51. **M. Chamecki**, N.L. Dias, S.T. Salesky, and Y. Pan (2017), "Scaling laws for the longitudinal structure function in the atmospheric surface layer", Journal of the Atmospheric Sciences, 74, 1127–1147.

50. L.S. Freire, T. Gerken, J. Ruiz-Plancarte, D. Wei, J.D. Fuentes, G.G. Katul, N.L. Dias, O. Acevedo, and **M. Chamecki** (2017), "Turbulent mixing and removal of ozone within the Amazon rainforest canopy", Journal of Geophysical Research – Atmospheres, 122, 2791–2811.

49. C.Q. Dias-Junior, N.L. Dias, J.D. Fuentes, and **M. Chamecki** (2017), "Convective storms and non-classical low-level jets during high ozone level episodes in the Amazon region: an ARM/GOAMAZON case study", Atmospheric Environment, 155, 199–209.

48. S.T. Salesky, **M. Chamecki**, and E. Bou-Zeid (2017), "On the nature of the transition between roll and cellular organization in the convective boundary layer", Boundary-Layer Meteorology, 163, 41–68.

47. K. Ghannam, T. Duman, S. Salesky, **M. Chamecki**, and G. Katul (2017), "The nonlocal character of turbulence asymmetry in the convective atmospheric boundary layer", The Quarterly Journal of the Royal Meteorological Society, 143, 494–507.

46. J.D. Fuentes, **M. Chamecki**, and 13 more authors (2016), "Linking meteorology, turbulence, and air chemistry in the Amazon rainforest", Bulletin of the American Meteorological Society, 97, 2329–2342.

45. D.M. Santos, O.C. Acevedo, **M. Chamecki**, J.D. Fuentes, T. Gerken, and P. Stoy (2016), "Temporal scales of the nocturnal flow within and above a forest canopy in Amazonia", Boundary-Layer Meteorology, 161, 73–98.

44. Y. Pan and **M. Chamecki** (2016), "A scaling law for the shear-production range of second-order structure functions", Journal of Fluid Mechanics, 801, 459–474.

43. J.D. Fuentes, **M. Chamecki**, T. Roulston, B. Cheng, and K.R. Pratt (2016), "Air pollutants degrade floral scents and increase insect foraging times", Atmospheric Environment, 141, 361–374.

42. L.S. Freire, **M. Chamecki**, and J.A. Gillies (2016), "Flux-profile relationship for dust concentration in the stratified atmospheric surface layer", Boundary-Layer Meteorology, 160, 249–267.

41. Y. Pan, **M. Chamecki**, and H.M. Nepf (2016), "Estimating the instantaneous drag–wind relationship for a horizontally homogeneous canopy", Boundary-Layer Meteorology, 160, 63–82.

40. B. Chen, D. Yang, C. Meneveau, and **M. Chamecki** (2016), "Effects of swell on transport and dispersion of oil plumes within the ocean mixed layer", Journal of Geophysical Research – Oceans, 121, 3564–3578.

39. T. Liang, **M. Chamecki**, and X. Yu (2016), "Sea salt aerosol deposition in the coastal zone: a large eddy simulation study", Atmospheric Research, 180, 119–127.

38. E. Follett, **M. Chamecki**, and H. Nepf (2016), "Evaluation of a random displacement model with a parameterized eddy diffusivity for predicting particle escape from canopies", Agricultural and Forest Meteorology, 224, 40–48.

37. B. Chen, D. Yang, C. Meneveau, and **M. Chamecki** (2016), "ENDLESS: An extended non-periodic domain large-eddy simulation approach for scalar plumes", Ocean Modelling, 101, 121–132.

36. D. Yang, B. Chen, S.A. Socolofsky, **M. Chamecki**, and C. Meneveau (2016), "Large-eddy simulation and parameterization of buoyant plume dynamics in stratified flow", Journal of Fluid Mechanics, 794, 798–833.

35. S.A. Isard and **M. Chamecki** (2016), "A physically-based theoretical model of spore deposition for predicting spread of plant diseases", Phytopathology, 106, 244–253.

34. T. Gerken and 17 other authors including **M. Chamecki** (2016), "Downward transport of ozone rich air and implications for atmospheric chemistry in the Amazon rainforest", Atmospheric Environment, 124, 64–76.

33. G.G. Katul, C. Manes, A. Porporato, E. Bou-Zeid, and **M. Chamecki** (2015), "Bottlenecks in turbulent kinetic energy spectra predicted from the Von Karman Howarth Equation", Physical Review E, 92, 1–4.

32. T. Banerjee, G.G. Katul, S.T. Salesky, and **M. Chamecki** (2015), "Revisiting the formulations for the longitudinal velocity variance in the unstable atmospheric surface layer", Quarterly Journal of the Royal Meteorological Society, 141, 1699–1711.

31. Y. Pan, **M. Chamecki**, S.A. Isard, and H. Nepf (2015), "Dispersion of particles released at the leading edge of a crop canopy", Agricultural and Forest Meteorology, 211, 37–47.

30. D. Yang, B. Chen, **M. Chamecki**, and C. Meneveau (2015), "Oil plumes and dispersion in Langmuir, upper-ocean turbulence: large-eddy simulations and K-profile parameterization", Journal of Geophysical Research – Oceans, 120, 4729–4759.

29. Y. Pan, E. Follett, **M. Chamecki**, and H. Nepf (2014), "Strong and weak, unsteady reconfiguration and its impact on turbulence structure within plant canopies", Physics of Fluids, 26, 1–15.

28. Y. Pan, **M. Chamecki**, and S.A. Isard (2014), "Large-eddy simulation of turbulence and particle dispersion inside the canopy roughness sublayer", Journal of Fluid Mechanics, 753, 499–534.

27. S.C. Gleicher, **M. Chamecki**, S.A. Isard, Y. Pan, and G.G. Katul (2014), "Interpreting three-dimensional spore concentration measurements and escape fraction in a crop canopy using a coupled Eulerian-Lagrangian stochastic model", Agricultural and Forest Meteorology, 194, 118–131.

26. D. Yang, **M. Chamecki**, and C. Meneveau (2014), "Inhibition of oil plume dilution in Langmuir ocean circulation", Geophysical Research Letters, 41, 1632–1638.

25. W. Anderson and **M. Chamecki** (2014), "Numerical study of turbulent flow over complex aeolian dune fields: the White Sands National Monument", Physical Review E, 89, 1–14.

24. D.M. Cancelli, **M. Chamecki**, and N.L. Dias (2014), "A large-eddy simulation study of scalar dissimilarity in the convective atmospheric boundary layer", Journal of the Atmospheric Sciences, 71, 3–15.

23. **M. Chamecki** (2013), "Persistence of velocity fluctuations in non-Gaussian turbulence within and above plant canopies", Physics of Fluids, 25, 1–14.

22. S.T. Salesky, G.G. Katul, and **M. Chamecki** (2013), "Buoyancy effects on the integral lengthscales and mean velocity profile in atmospheric surface layer flows", Physics of Fluids, 25, 1–21.

21. G.G. Katul, D. Li, **M. Chamecki**, and E. Bou-Zeid (2013), "Mean scalar concentration profile in a sheared and thermally stratified atmospheric surface layer", Physical Review E, 87, 1–8.

20. Y. Pan, **M. Chamecki**, and S.A. Isard (2013), "Dispersion of heavy particles emitted from area sources into the unstable atmospheric boundary layer", Boundary-Layer Meteorology, 146, 235–256.

19. S.T. Salesky and **M. Chamecki** (2012), "Random errors in turbulence measurements in the atmospheric surface layer: implications for Monin-Obukhov similarity", Journal of the Atmospheric Sciences, 69, 3700–3714.

18. D.M. Cancelli, N.L. Dias, and **M. Chamecki** (2012), "Dimensionless criteria for the production-dissipation equilibrium of scalar fluctuations and their implications for scalar similarity", Water Resources Research, 48, W10522.

17. S.T. Salesky and **M. Chamecki** (2012), "A similarity model of subfilter-scale energy for large-eddy simulations of the atmospheric boundary layer", Boundary-Layer Meteorology, 145, 69–91.

16. S.T. Salesky, **M. Chamecki**, and N.L. Dias (2012), "Estimating the random error in eddy-covariance based fluxes and other turbulence statistics: the filtering method", Boundary-Layer Meteorology, 144, 113–135.

15. **M. Chamecki**, N.S. Dufault, and S.A. Isard (2012), "Atmospheric dispersion of rust spores: a new theoretical framework to interpret field data and estimate downwind dispersion", Journal of Applied Meteorology and Climatology, 51, 672–685.

14. **M. Chamecki** (2012), "An analytical model for dispersion of biological particles emitted from area sources: inclusion of dispersion in the crosswind direction", Agricultural and Forest Meteorology, 157, 30–38.

13. **M. Chamecki** and C. Meneveau (2011), "Particle boundary layer above and downstream of an area source: scaling, simulations, and pollen transport", Journal of Fluid Mechanics, 683, 1–26.

12. **M. Chamecki**, S.C. Gleicher, N.S. Dufault, and S.A. Isard (2011), "Diurnal variation in settling velocity of pollen released from maize and consequences for atmospheric dispersion and cross-pollination", Agricultural and Forest Meteorology, 15, 1055–1065.

11. M. Martin, **M. Chamecki**, and G.S. Brush (2010), "Anthesis synchronization and floral morphology determine diurnal patterns of ragweed pollen dispersal", Agricultural and Forest Meteorology, 150, 1307–1317.

10. **M. Chamecki** (2010), "Modeling subgrid-scale heat fluxes in the neutral and stratified atmospheric boundary layer", Journal of Turbulence, 11, N13, 1–16.

9. M.D. Martin, **M. Chamecki**, G.S. Brush, C. Meneveau, and M.B. Parlange (2009), "Pollen clumping and wind dispersal in an invasive angiosperm", American Journal of Botany, 96(9), 1703–1711.

8. **M. Chamecki**, C. Meneveau, and M.B. Parlange (2009), "Large eddy simulation of pollen transport in the atmospheric boundary layer", Journal of Aerosol Science, 40(3), 241–255.

7. **M. Chamecki**, C. Meneveau, and M.B. Parlange (2008), "A hybrid spectral/finite-volume algorithm for large eddy simulation of scalars in the atmospheric boundary layer", Boundary-Layer Meteorology, 128(3), 473–484.

6. R. van Hout, **M. Chamecki**, G. Brush, J. Katz, and M.B. Parlange (2008), "The influence of local meteorological conditions on the circadian rhythm of corn (*Zea mays L.*) pollen emission", Agricultural and Forest Meteorology, 148, 1078–1092.

5. **M. Chamecki**, R. van Hout, C. Meneveau, and M.B. Parlange (2007), "Concentration profiles of particles settling in the neutral and stratified atmospheric boundary layer", Boundary-Layer Meteorology, 125(1), 25–38.

4. **M. Chamecki**, C. Meneveau, and M.B. Parlange (2007), "The local structure of atmospheric turbulence and its effect on the Smagorinsky model for large eddy simulation", Journal of the Atmospheric Sciences, 64(6), 1941–1958.

3. M.F. Gobbi, **M. Chamecki**, and N.L. Dias (2006), "Application of digital filtering for minimizing aliasing effects in atmospheric turbulent surface layer spectra", Water Resources Research, 42(3), W03405.

2. **M. Chamecki** and N.L. Dias (2004), "The local isotropy hypothesis and the turbulent kinetic energy dissipation rate in the atmospheric surface layer", Quarterly Journal of the Royal Meteorological Society, 130(603), 2733–2752.

1. N.L. Dias, **M. Chamecki**, A. Kan, and C.M.P. Okawa (2004), "A study of spectra, structure and correlation functions and their implications for the stationarity of surface-layer turbulence", Boundary-Layer Meteorology, 110(2), 165–189.

Other Publications

1. **M. Chamecki**, T. Chor, D. Yang, and C. Meneveau (2020), "Understanding material movement in the ocean's upper layer", Eos, 101, https://doi.org/10.1029/2020EO138351.

Proceedings Papers

7. D.M. Cancelli, **M. Chamecki** and N.L. Dias, "A study of the similarity between scalars over a heterogeneous surface using large-eddy simulation", American Journal of Environmental Engineering, 5, 9–14, 2015.

6. D.M. Cancelli, **M. Chamecki** and N.L. Dias, "A study of scalar similarity over heterogeneous surface using large-eddy simulation" (in Portuguese). Ciencia e Natura (Proceedings of the VIII Brazilian Micrometeorology Workshop), 11594, 178–180, 2013.

5. C. Meneveau, **M. Chamecki** and M.B. Parlange, "Large eddy simulation of pollen dispersion in the atmosphere". Direct and Large-Eddy Simulation VII: Proceedings of the 7$^{\text{th}}$ International ERCOFACT Workshop on Direct and Large-Eddy Simulation, September 8-10, Trieste, Italy, 2010.

4. E. Bou-Zeid, M.B. Parlange, H. Huwald, **M. Chamecki** and C. Meneveau, "SNOHATS: Stratified atmospheric turbulence over snow surfaces". Advances in Turbulence XI: Proceedings of the 11$^{\text{th}}$ European Turbulence Conference, June 25-28, Porto, Portugal, 2007.

3. **M. Chamecki**, C. Meneveau and M.B. Parlange, "Effects of Local Conditions on Smagorinsky and Dynamic Coefficients for LES of Atmospheric Turbulence". Advances in Turbulence XI: Proceedings of the 11$^{\text{th}}$ European Turbulence Conference, June 25-28, Porto, Portugal, 2007.

2. M.F. Gobbi, **M. Chamecki**, D. Vissotto, I.A. Pisnitchenko and N.L. Dias, "Implementation of a mesoscale model for the southern region of Brazil" (in Portuguese). Proceedings of the 9$^{\text{th}}$ Brazilian Meteorology Conference, Foz do Iguaçu, Brazil, 2002.

1. **M. Chamecki**, J.E.F. Abdalla and R.D. Machado, "A Timoshenko beam finite element for analyzing laminated composites". Proceedings of the 21$^{\text{st}}$ Iberian Latin American Congress on Computational Methods in Engineering, Rio de Janeiro, Brazil, 2000.

Invited Seminars

35. "Chimneys of the Amazon: effects of gentle topography on gas fluxes emitted within forests", MEE Seminar, Portland State University, 2019.

34. "Turbulence and gas transport within the Amazon forest: from flat terrain, to idealized ridges, to realistic (but simple) topography", MMM Seminar, NCAR, 2019.

33. "Turbulence and gas transport within the Amazon forest", Environmental Fluid Dynamics Seminar, Notre Dame, 2018.

32. "Numerical Study of the Effects of Chemical Dispersant on the Transport of Oil Plumes in the Ocean Mixed Layer", Environmental and Water Resources Engineering Seminar, UC Davis, 2017.

31. “What does the wind look like?”, Disney Animation Studios, 2017.

30. “Turbulent flows within and above plant canopies: observations, simulations, and theory”, Department of Mechanical and Aerospace Engineering, UCSD, 2017.

29. “Turbulent flows within and above plant canopies: observations, simulations, and theory”, Center for Interdisciplinary Research in Fluids, UCSB, 2017.

28. “Simulações numéricas do transporte oceânico de plumas de óleo: o acidente “Deepwater Horizon” no Golfo do México, Department of Environmental Engineering, UFPR (Brazil), 2017.

27. “Large-Eddy Simulation of Oil Dispersion in the Ocean Mixed Layer”, Department of Civil and Environmental Engineering, Duke, 2016.

26. “The Local Structure of Turbulence in the Lowest Layers of the ABL”, IX Brazilian Micrometeorology Workshop (Brazil), 2015.

25. “Large eddy simulation applications to meteorology”, Tutorial School on Fluid Dynamics: Topics in Turbulence, UMD, 2015.

24. “Turbulence Meets Air Chemistry in the Amazon Forest”, Department of Atmospheric and Oceanic Sciences, UCLA, 2015.

23. “Turbulence Meets Air Chemistry in the Amazon Forest”, The Ray Falconer Natural History Lecture Series ASRC, SUNY Albany, 2015.

22. “Plants, Particles, Droplets and Bubbles: Using Large Eddy Simulation to Study Complex Environmental Flows”, Department of Civil and Environmental Engineering, Georgia Tech, 2015.

21. “Plant reconfiguration and its consequences for non-Gaussian turbulence within and above a vegetation canopy”, Department of Atmospheric and Oceanic Sciences, UCLA, 2014.

20. “Large-Eddy Simulation of Oil Dispersion in the Ocean Mixed Layer”, Department of Meteorology, Pennsylvania State University, 2014.

19. “Plant Reconfiguration and Non-Gaussian Turbulence within and above a Vegetation Canopy”, Aeronautics Turbulence Seminars, Imperial College London (UK), 2014.

18. “The Wind That Shakes the Barley – Non-Gaussian Turbulence Within and Above Plant Canopies”, Graduate Program in Numerical Methods for Engineering, Universidade Federal do Parana (Brazil), November 2013.

17. “The Wind That Shakes the Barley – Non-Gaussian Turbulence Within and Above Plant Canopies”, VIII Brazilian Micrometeorology Workshop (Brazil), 2013.

16. “The Wind That Shakes the Barley – Non-Gaussian Turbulence Within and Above Plant Canopies”, Fluid Dynamics Research Consortium (FDRC), Pennsylvania State University, 2013.

15. “The Fluid Mechanics of Plant Disease Epidemics”, Department of Earth and Planetary Sciences, Johns Hopkins University, 2013.

14. "Blowin' in the Wind: The Fluid Mechanics of Plant Disease Epidemics", Department of Geography and Environmental Engineering, Johns Hopkins University, 2012.

13. "Turbulent Dispersion of Biological Particles in the Atmosphere", The Lindseth Lecture, Sibley School of Mechanical and Aerospace Engineering, Cornell University, 2012.

12. "Turbulent Dispersion of Biological Particles in the Atmosphere", Department of Civil and Environmental Engineering, MIT, 2011.

11. "Large Eddy Simulation of the Atmospheric Boundary Layer", Department of Environmental Engineering, Universidade Federal do Parana (Brazil), 2011.

10. "Turbulent Dispersion of Biological Particles in the Atmosphere", Department of Civil and Environmental Engineering, Princeton University, 2011.

9. "Large eddy simulation applications to meteorology", Tutorial School on Fluid Dynamics: Topics in Turbulence, UMD, 2010.

8. "Large eddy simulation of environmental flows and applications to pollen dispersion", Department of Civil and Environmental Engineering, MIT, 2008.

7. "Large eddy simulation of environmental flows and applications to pollen dispersion", Department of Mechanical and Aerospace Engineering, Arizona State University, 2008.

6. "Field experiments and large eddy simulation of pollen dispersion in the atmosphere", Department of Civil and Environmental Engineering, University of Massachusetts, 2008.

5. "Large eddy simulation of environmental flows and applications to pollen dispersion", Laboratory of Environmental Fluid Mechanics and Hydrology, EPFL (Switzerland), 2008.

4. "Large eddy simulation of particle transport in wall-bounded turbulent flows and applications to pollen dispersion", Department of Aeronautics and Astronautics, University of Washington, 2008.

3. "Pollen dispersion by the wind: field experiments and numerical simulations", Department of Civil and Environmental Engineering, University of Iowa, 2008.

2. "Large eddy simulation of the atmospheric boundary layer flows and applications to pollen dispersion", Department of Meteorology, Pennsylvania State University, 2008.

1. "Large eddy simulation of environmental flows and applications to pollen dispersion", Department of Civil and Environmental Engineering, Virginia Tech, 2008.

Presentations in Conferences

Presentations by students and collaborators not included

36. "Turbulence, mixing, and nutrient fluxes in kelp farms", AGU Ocean Sciences Meeting, San Diego, CA, 2020.

35. "Chimneys of the Amazon: effects of gentle topography on gas fluxes emitted within forests", 100^{th} AMS Annual Meeting, Boston, MA, 2020.

34. "Effects of small-scale 3D Turbulence on the Transport of Oil Plumes in the Ocean Mixed Layer (OML)", GoMRI Synthesis Core-1 Group Workshop, Tallahassee, FL, 2019.

33. "A Reduced TKE Phase Space for Studying Disturbed Atmospheric Surface Layer Flows: Application to Vertical Velocity Variance over a Forest Canopy", 23rd Symposium on Boundary Layers and Turbulence, Oklahoma City, OK, 2018.

32. "Simple Analytical Models of Escape Fractions of Particles and Reactive Gases Emitted within Crops and Forests", Fourth Conference on Biogeosciences, Boise, ID, 2018.

31. "Atmospheric boundary layers, turbulence, and dust", Workshop on Dust Emission, Chemistry, and Transport, Chicago, IL, 2017.

30. "Energy distribution across scales in the atmospheric surface layer: scaling laws and consequences for dispersion", Meteorology And Climate – Modeling for Air Quality, Davis, CA, 2017.

29. "A coupled nearfield and farfield large-eddy simulation for oil transport from deep-water blowouts – a study of the effects of dispersant in the Deepwater Horizon accident", Fall Meeting of the American Geophysical Union, San Francisco, CA, 2016.

28. "Exploring Turbulent Flows in Model Canopies using LES", McWilliams Symposium, Boulder, CO, 2016 [INVITED].

27. "A physically-based theoretical model of spore deposition for predicting spread of plant diseases", Annual Meeting of the American Phytopathological Society, Tampa, FL, 2016 [INVITED].

26. "Scaling Laws for Structure Functions in the Lowest Layers of the ABL", 22$^{\text{nd}}$ Symposium on Boundary Layer Turbulence, Salt Lake City, UT, 2016.

25. "Large-Eddy Simulation of Oil Dispersion in the Ocean Mixed Layer", 13$^{\text{th}}$ US National Congress on Computational Mechanics, San Diego, CA, 2015 [INVITED].

24. "Effects of Swell on Transportation and Dispersion of Oil Plumes within the Ocean Mixed Layer" (poster), Gulf of Mexico Oil Spill & Ecosystem Science Conference, Houston, TX, 2015.

23. "The impact of unsteady reconfiguration on turbulence structure within a flexible canopy: large-eddy simulation study of a cornfield", Fall Meeting of the American Geophysical Union, San Francisco, CA, 2014 [INVITED].

22. "An improved parameterization of dust dry deposition velocity for climate models" (poster), Fall Meeting of the American Geophysical Union, San Francisco, CA, 2014.

21. "A one-dimensional stochastic model of turbulence within plant canopies" (poster), Fall Meeting of the American Geophysical Union, San Francisco, CA, 2014.

20. "Bridging land-surface fluxes and aerosol concentrations to triggering convective rainfall", FAPESP–U.S. Collaborative Research on the Amazon Symposium, Washington, DC, 2014 [INVITED].

19. "Plant reconfiguration and consequences for turbulence and dispersion inside plant canopies", 21$^{\text{st}}$ Symposium on Boundary Layer Turbulence, Leeds, UK, 2014.

18. "Towards new phenomenological models of subgrid scale flux of oil droplet for next-generation large eddy simulation of oil plume-turbulence interaction", Gulf of Mexico Oil Spill & Ecosystem Science Conference, New Orleans, LA, 2013.

17. "Large eddy simulation of turbulent dispersion of oil in the ocean surface layers: development, testing and applications of subgrid-scale parameterizations" (poster), Gulf of Mexico Oil Spill & Ecosystem Science Conference, New Orleans, LA, 2013.

16. "Scalar dispersion inside plant canopies: the role of turbulence intermittency" (poster), Fall Meeting of the American Geophysical Union, San Francisco, CA, 2012.

15. "A new approach to estimate random errors in turbulence statistics", 20^{th} Symposium on Boundary Layer Turbulence, Boston, MA, 2012.

14. "Spatial locality of turbulent fluxes: toward local flux-gradient relationships in the atmospheric surface layer" (poster), Fall Meeting of the American Geophysical Union, San Francisco, CA, 2011.

13. "Subgrid scale flux of heavy particle concentration in coarse grained Eulerian fields as deduced from DNS of 2D homogeneous isotropic turbulence", 64^{th} Annual Meeting of the Division of Fluid Dynamics, American Physical Society, Baltimore, MD, 2011.

12. "Dispersion of bioaerosols: LES, theory and experiments", Workshop on the Use of UAVs for Probing the Atmospheric Boundary Layer, Curitiba, Parana, Brazil, 2011 [INVITED].

11. "Pollen dispersal from isolated field crops: boundary-layer scaling and effects of source field size", 29^{th} Conference on Agricultural and Forest Meteorology, Keystone, CO, 2010.

10. "Large-eddy simulation of pollen dispersion", Atmospheric Turbulence and Boundary Layer: A Symposium in Honor of John C. Wyngaard, State College, PA, 2010 [INVITED].

9. "A large-eddy simulation study of pollen dispersal from field crops: effects of source size and boundary-layer scaling", 16^{th} Conference on Air Pollution Meteorology, 90^{th} AMS Annual Meeting, Atlanta, GA, 2010.

8. "An LES study of pollen dispersal from isolated populations: effects of source field size and boundary-layer scaling. 61^{st} Annual Meeting of the Division of Fluid Dynamics, American Physical Society, San Antonio, Texas, 2008.

7. "Pollen dispersal from a ragweed field: experiments and numerical simulations", Annual Meeting of the Pan-American Aerobiology Association, Amherst, MA, 2008.

6. "Large eddy simulation of pollen transport in the atmospheric boundary layer", 60^{th} Annual Meeting of the Division of Fluid Dynamics, American Physical Society, Salt Lake City, UT, 2007.

5. "Effects of local conditions on Smagorinsky and dynamic coefficients for LES of atmospheric turbulence", 11^{th} European Turbulence Conference, Porto, Portugal, 2007.

4. "Concentration profiles of particles settling in the neutral and stratified atmospheric boundary layer", Research Symposium on Environmental and Applied Fluid Dynamics, Johns Hopkins University, Baltimore, MD, 2007.

3. "Pollen transport in the atmospheric boundary layer: Large eddy simulation and field experiments", Fall Meeting of the American Geophysical Union, San Francisco, CA, 2006.

2. "Relation between the local structure of turbulence and the Smagorinsky coefficient", 58^{th} Annual Meeting of the Division of Fluid Dynamics, American Physical Society, Chicago, IL, 2005.

1. "Estimating the turbulent kinetic energy (TKE) dissipation rate in the atmospheric surface layer with sonic anemometry data", 56^{th} Annual Meeting of the Division of Fluid Dynamics, American Physical Society, Meadowlands, NJ, 2003.

Courses Taught

2. At UCLA – UG: Introduction to the Atmospheric Environment, Numerical Methods in Atmospheric Sciences, Atmospheric Boundary Layer; GRAD: Introduction to Atmospheric and Oceanic Fluid, Numerical Methods in GFD, Atmospheric Boundary Layer.

1. At Penn State – UG: Atmospheric Dispersion, Atmospheric Dynamics; GRAD: Geophysical Fluid Dynamics, Atmospheric Turbulence, Advanced Topics in Turbulence, Numerical Methods for GFD, Advanced Applied Math for Scientists

Current Graduate Students

3. Rodrigo Branco Rodakoviski (Ph.D., Atmospheric and Oceanic Sciences), Fall 2019–present

2. Min Leung (Ph.D., Atmospheric and Oceanic Sciences – co-advised with Dr. Jasper Kok), Fall 2018–present

1. Tomas Chor (Ph.D., Atmospheric and Oceanic Sciences), Fall 2016–present

Former Graduate Students

8. Bicheng Chen (Ph.D., June 2017, Penn State, Meteorology), Disertation: "The characteristics and modeling of oil dispersion in the ocean mixed layer from underwater blowout spill accidents"

7. Livia Souza Freire (Ph.D., December 2016, Penn State, Meteorology), Disertation: "Characterization and modeling of atmospheric flow within and above plant canopies"

6. Paulo Paes (M.S., December 2015, Penn State, Mechanical Engineering – co-advised with Dr. James Brasseur), Thesis: "The role of law-of-the-wall and roughness scale in the lower stress boundary condition for large-eddy simulation over rough surfaces"

5. Ying Pan (Ph.D., July 2014, Penn State, Meteorology), Dissertation: "Aerial dispersal of particles emitted inside plant canopies: application to the spread of plant diseases"

4. Scott Salesky (Ph.D., June 2014, Penn State, Meteorology) Dissertation: "Monin-Obukhov similarity and convective organization in the unstable atmospheric boundary layer"

3. Simone Gleicher (M.S., April 2013, Penn State, Meteorology) Thesis: "Turbulent dispersion of pathogenic spores within and above a maize canopy: field experiments and Lagrangian modeling"

2. James Limbacher (M.S., June 2010, Penn State, Meteorology) Thesis: "A comparison of methods used to estimate the turbulent kinetic energy dissipation rate in the atmospheric surface layer"

1. Scott Salesky (M.S., May 2010, Penn State, Meteorology) Thesis: "Similarity models of subfilter-scale energy and temperature variance for large eddy simulations of the atmospheric boundary layer"

Current and Former Postdoctoral Scholars

6. Michael Heisel, June 2019–present.

5. Chao Yan, February 2018–present.

4. Bicheng Chen, September 2017–December 2019.

3. Anikesh Pal, October 2016–June 2017.

2. Tobias Gerken, January 2014–December 2015.

1. Ying Pan, August 2014–September 2015.

Current and Former Visiting Students

3. Xinlu Lin (Visiting Ph.D. student, from Tsinghua University – China), October 2016–October 2017.

2. Tinghao Liang (Visiting Ph.D. student, from Tsinghua University – China), February 2014–August 2014.

1. Diana M. Cancelli (Visiting Ph.D. student, from UFPR – Brazil), April 2012–May 2013.

Fellowships and Awards

- Special Visiting Researcher, UFPR (Brazil), 2015–2017
- Research Assistantship, Johns Hopkins University, 2004–2008
- DoGEE Fellowship, Johns Hopkins University, 2003–2004
- Brazilian National Council for Scientific and Technological Development (CNPq) Scholarship, CEFET-PR, 1999–2000

Professional Affiliations

- American Meteorological Society (since 2007)
- American Geophysical Union (since 2006)
- American Physical Society (since 2003)

Other Professional Activities

- Invited instructor for all the 3 editions of the "Summer School on Fluid Dynamics: Topics in Turbulence" held at the University of Maryland (2011, 2015, 2018).
- Member of Editorial Board, Agricultural and Forest Meteorology, 2010 – 2016
- Member of the American Meteorological Society committee on "Boundary Layers and Turbulence", 2013 – 2019
- Review of manuscripts submitted for publication to many journals including Nature, Scientific Reports, Journal of Atmospheric Sciences, Journal of Fluid Mechanics, Geophysical Research Letters, Journal of Geophysical Research, Quarterly Journal of the Royal Meteorological Society, Ocean Modelling, Physical Review Fluids, Physics of Fluids, Journal of Turbulence, Boundary-Layer Meteorology, Agricultural and Forest Meteorology, Advances in Water Resources, and Water Resources Research.
- Review of grant proposals for National Science Foundation, DOE-BER (panel), Swiss National Science Foundation, Natural Sciences and Engineering Research Council of Canada, Austrian Science Fund
- Co-organizer (together with Drs. Jose Fuentes, James Brasseur and Don Lenschow) of the meeting Atmospheric Turbulence and Boundary Layer: A Symposium in Honor of John C. Wyngaard, held at Penn State.