CURRICULUM VITAE

CHARLES MENEVEAU

Louis M. Sardella Professor, Department of Mechanical Engineering
Professor, Department of Physics and Astronomy (joint)
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Birth Date: December 04, 1960 (Paris, France).

Education:

Ph.D. in Mechanical Engineering:	Yale University, May 1989
Master of Philosophy:	Yale University, 1988
Master of Science:	Yale University, 1987
B.S. in Mechanical Engineering:	Universidad Técnica Federico Santa María, Valparaíso (Chile), 1985

Positions:

2005 – present:	L.M. Sardella Professor of Mechanical Engineering, JHU
2009 – present:	Associate Director, Institute for Data Intensive and Engineering Science (IDIES).
2018 – present:	Secondary appointment as Professor in the Department of Physics & Astronomy, Krieger School or Arts & Sciences, Johns Hopkins University.
June-August, '13:	Visiting Professor, EPFL Lausanne, Switzerland
May 2013:	Visiting Professor, Università di Roma Tor Vergata, Italy
March-April '13:	Visiting Professor, École Normale Supérieure de Lyon, France
2012 – Febr.'13:	Visiting Professor, University of Melbourne, Australia
2001 –2012:	Director, Center for Environmental and Applied Fluid Mechanics (CEAFM).
2016 – present:	Secondary appointment as Professor in the Department of Environmental Health and Engineering (EHE), Whiting School of Engineering, JHU.
2001 – 2016:	Secondary appointment in Department of Geography and Environmental Engineering (DoGEE), JHU.
2002 – 2004:	Vice-Chair, Department of Mechanical Engineering
1996 – 2005:	Professor, JHU
1999 – 2000:	Visiting Professor, École Centrale de Paris, France
1994 – 1996:	Associate Professor, Johns Hopkins University
1990 – 1994:	Assistant Professor, Johns Hopkins University
1989 – 1990:	Postdoctoral Fellow, Center for Turbulence Research (Stanford University / NASA Ames Research Center)
05-09 – 1989:	Postdoctoral Fellow, Yale University
1986 – 1989:	Research Assistant, Yale University.

Society Memberships:

- American Academy of Mechanics, Fellow.
- American Society of Mechanical Engineers, Fellow.
- American Physical Society, Fellow.
- American Geophysical Union, Member.
- American Institute for Aeronautics and Astronautics, Senior Member.

Awards and Honors:

- Awarded the 2024 G.K. Batchelor Prize *"for high-impact fundamental contributions to the study of turbulence and wall-bounded flows, and for bringing insightful and rigorous fluid mechanics to the science of wind turbines and wind farms for the benefit of society*".
- Recipient, Miegunyah Distinguished Visiting Fellows Program, 2024, University of Melbourne, Australia.
- Recipient, 2021 Fluid Dynamics Award from the American Institute of Aeronautics and Astronautics (AIAA), "*for advancing both the theoretical and practical understanding of turbulence through groundbreaking modeling techniques and applications of large-eddy simulation*."
- Elected member, National Academy of Engineering (2018), *"for contributions to turbulence small-scale dynamics, large-eddy simulations, wind farm fluid dynamics, and leadership in the fluid dynamics community"*.
- Awarded honorary doctorate from the Danish Technical University, *Doctor Tecnices, Honoris Causa* (2016) "*for outstanding and highly innovative scientific achievements in fluid dynamics, particularly for his work on turbulence and atmospheric physics and its applications to wind energy*".
- Midwest Mechanics Lecturer (2014-2015).
- Fulbright Scholar, US-Australia Fulbright Scholarship (Sept. 2012-Febr. 2013).
- Stanley Corrsin Lecturer, Johns Hopkins University (2012).
- First recipient of the Stanley Corrsin Award from the American Physical Society (2011), citation: "*For his innovative use of experimental data and turbulence theory in the development of advanced models for large-eddy simulations, and for the application of these models to environmental, geophysical and engineering applications*."
- Foreign corresponding member of the Chilean Academy of Sciences (2005).
- Appointed to the Louis M. Sardella Professorship in Mechanical Engineering (2005).
- UCAR Outstanding Publication Award for co-authorship of the paper by Horst *et al*., that appeared in J. Atmospheric Science in 2004.
- Johns Hopkins University Alumni Association Excellence in Teaching Award (2003).
- François N. Frenkiel Award for Fluid Mechanics, American Physical Society (2001).
- Henry P. Becton Prize for Excellence in Research, Yale University (1989).
- Premio Federico Santa María, UTFSM Valparaíso, Chile (1985).

Editorships and other professional synergistic activities:

- Deputy Editor, Journal of Fluid Mechanics (April 2010 - present).
- Chair, American Physical Society, Division of Fluid Dynamics (2019).
- Key participant in the development and maintenance of the JHTDB (Johns Hopkins Turbulence Databases) open numerical laboratory (2008-present).
- Editor-in-Chief, Journal of Turbulence (2003 - 2015).
- Associate Editor, Journal of Fluid Mechanics (September 2005 - 2010).
- Member Editorial Committee, Annual Rev. of Fluid Mechanics (2005-2010).
- Member Advisory Board, Theor. & Comp. Fluid Dynamics (2001 - present).
- Associate Editor, Physics of Fluids (2001 - 2003).
- Guest Associate Editor, Annual Reviews of Fluid Mechanics (2003).

Expertise:

Professor Meneveau's research is focused on understanding and modeling hydrodynamic turbulence, and complexity in fluid mechanics in general. Special emphasis is placed on the multiscale aspects of turbulence, using tools such as subgrid-scale modeling, downscaling techniques, and fractal geometry. Applications of the results to Large Eddy Simulation (LES) have facilitated applications of LES to engineering, environmental and geophysical flow phenomena. Currently Meneveau is focused on applications of LES to wind energy and wind farm fluid dynamics, on developing advanced wall models for LES, as well as on building "big data" tools to share the very large data sets that arise in computational fluid dynamics with broad constituencies of scientists and engineers around the world.

Publications in refereed journals:

1. Y. Hao, T. Żaki and C. Meneveau, "Lagrangian Finite-Time Fluctuation Relation in isotropic turbulence" (2025), submitted to Phil. Trans. A (under review).
2. P.K. Yeung, P.K., K. Ravikumar, R. Uma-Vaideswaran, K.R. Sreenivasan, S.B. Pope, C. Meneveau, and S. Nichols, "Small-scale properties from exascale computations of turbulence on a 32768^3 periodic cube" (2025), submitted to J. Fluid Mech. (under review).
3. X. Zhu, S. Xiao, G. Narasimhan, L. A. Martinez-Tossas, M. Schnaubelt, G. Lemson, A. Szalay, D. F. Gayme, and C. Meneveau, "JHTDB-wind: a wind farm large eddy simulation database with web-services enabled, virtual sensor querying" (2025), submitted to Earth Systems Science Data.
4. S. Xiao, X. Zhu, G. Narasimhan, D.F. Gayme, and C. Meneveau, "Wind Farm Dynamics over a Diurnal Cycle: Analysis of a Comprehensive Large Eddy Simulation Web-Services Accessible Dataset" (2025), submitted to J. Sustainable and Renewable Energy.
5. T. Salomone, C. Meneveau, G. De Stefano and U. Piomelli, "Wall-Model Response to Departure from Equilibrium in Turbulent Flows over Rough Surfaces" (2025), submitted to J. Fluid Mech.
6. H. Yao, M. Schnaubelt, A. Lubonja, D. Medvedev, Y. Hao, M. Wang, G. Lemson, R. Burns, A.S. Szalay, P.K. Yeung, G. Eyink, T. A. Zaki, and C. Meneveau, "Analysis of inertial-range intermittency in forward and inverse cascade regions in isotropic turbulence" (2025), submitted to J. Turbulence.

7. M. R. Bin Shahadat, M.H. Doranehgard, W. Cai; C. Meneveau, B. Schafer, S. Li, “An Airfoil-Based Synthetic Actuator Disk Model for Wind Turbine Aerodynamic and Structural Analysis” (2025), Renewable Energy (accepted, in press).

8. G. Narasimhan, D.F. Gayme and C. Meneveau, “An extended analytical wake model and applications to yawed wind turbines in atmospheric boundary layers with different levels of stratification and veer" (2025), J. Renewable and Sustainable Energy (published online).

9. C. Meneveau, “The fluid mechanics of active flow control at very large scales” (2024), J. Fluid Mech. **1000**, F9.

10. C. Meneveau, N. Hutchins and D. Chung, “The wind-shade roughness model for turbulent wall-bounded flows” (2024), J. Fluid Mech. **1001**, A3.

11. M. Ayala, Sadek, Z., Ferčák, O., Cal, R.B., Gayme, D. and Meneveau, C., “A Moving Surface Drag Model for LES of Wind over Waves” (2024), Bound. Lay. Met. **190**, 39, pp. 1-34.

12. B. Viggiano, T. Basset, M. Bourgoin, R.B. Cal, L. Chevillard, C. Meneveau, and R. Volk, “Lagrangian modeling of a nonhomogeneous turbulent shear flow: Molding homogeneous and isotropic trajectories into a jet” (2024). Physical Review Fluids **9**, 044604.

13. P. Morra, C. Meneveau and T. Zaki, “ML for fast assimilation of wall-pressure measurements from hypersonic flow over a cone” (2024), Scientific Reports **14**, 12853.

14. C. Mouchref, B. Viggiano, O. Ferčák, J. Bossuyt, N. Ali, C. Meneveau, D. Gayme and R.B. Cal, “Wave-phase dependence of Reynolds shear stress in the wake of fixed-bottom offshore wind turbine via quadrant analysis" (2024). J. Renewable and Sustainable Energy **16**, 03301.

15. H. Yao, P.K. Yeung, T.A. Zaki and C. Meneveau, "Kolmogorov’s refined similarity hypothesis: consequences from an exact two-point equation for isotropic turbulence" (2024), Phys. Rev. Lett. **132**, 164001.

16. G. Narasimhan, D.F. Gayme and C. Meneveau, “Analytical model coupling Ekman and surface layer structure in atmospheric boundary layer flows” (2024), Bound. Layer Met. **190**, 16, pp. 1-27.

17. M. Aghaei-Jouybari, J.H. Seo, S. Pinto, L. Cattafesta, C. Meneveau, and R. Mittal, “Extended Darcy–Forchheimer law including inertial flow deflection effects” (2024). J Fluid Mech. **980**, A13.

18. H. Yao, M. Schnaubelt, A. Szalay, T. Zaki and C. Meneveau, “Comparing local energy cascade rates in isotropic turbulence using structure function and filtering formulations” (2024), J. Fluid Mech. **980**, A42.

19. G.M. Starke, C. Meneveau, J.R. King and D.F. Gayme, “A Dynamic Model of Wind Turbine Yaw for Active Farm Control” (2024), Wind Energy **27**, 1302-1318.

20. J. Bossuyt, O. Fercak, Z. Sadek, C. Meneveau, D.F. Gayme, and R.B. Cal, "Floating wind farm experiments through scaling for wake characterization, power extraction and turbine dynamics" (2023), Phys. Review Fluids **8**, 120501.

21. S. Kumar, C. Meneveau and G. Eyink, “Vorticity cascade and turbulent drag in wall-bounded flows: plane Poiseuille flow” (2023), J. Fluid Mech. **974**, A27.

22. M. Fowler, T.A. Zaki and C. Meneveau, “A multi-timescale wall model for LES and applications to non-equilibrium channel flows” (2023), J. Fluid Mech. **974**, A51.

23. H. Yao, T. Zaki and C. Meneveau, “Entropy and fluctuation relations in turbulence” (2023), J. Fluid Mech. **973**, R6.

24. L.A. Martinez-Tossas, P. Sakievich, M.J. Churchfield and C. Meneveau, “Generalized Filtered Lifting Line Theory for Arbitrary Chord Lengths and Application to Wind Turbine Blades” (2023), Wind Energy **27**, 101-106.

25. Y. Hao, P. Clark Di Leoni, O. Marxen, C. Meneveau, G.E. Karniadakis and T.A. Zaki: "Instability-wave prediction in hypersonic boundary layers with physics-informed neural operators" (2023), J. Computational Science **73**, 102120.

26. P.P. Sullivan, J.C. McWilliams, C. Meneveau, E.G. Patton, “Stable boundary layers and subfilter-scale motions” (2023), Atmospheres **14**, 1107.

27. P. Clark Di Leoni, K. Agarwal, T.A. Zaki, C. Meneveau and J. Katz, "Reconstructing velocity and pressure from sparse noisy particle tracks using Physics-Informed Neural Networks" (2023), Experiments in Fluids **64**, 95.

28. Y. Qi, C. Meneveau, G. Voth & R. Ni: "Folding dynamics and its intermittency in turbulence" (2023), Phys. Rev. Lett. **130**, 154001.

29. R. Hu, P.L. Johnson & C. Meneveau: “Modeling the resuspension of small inertial particles in turbulent flow over fractal-like multiscale rough surface” (2023), Phys. Rev. Fluids **8**, 024304.

30. C. Meneveau and Colm-cille Caulfield, “Editorial: Introducing JFM Notebooks” (2022), J. Fluid Mech. **952**, E1.

31. P. Clark Di Leoni, L. Lu, C. Meneveau, G.E. Karniadakis & T. Zaki, “Neural operator prediction of linear instability waves in high-speed boundary layers” (2023), J. Comp. Phys. **474**, 111793

32. G. Narasimhan, D.F. Gayme & C. Meneveau: “Effects of wind veer on a yawed wind turbine wake in atmospheric boundary layer flow” (2022), Phys. Rev. Fluids **7**, 114609.

33. M. Aghaei-Jouybari, J.H. Seo, Y. Yuan, R. Mittal, & C. Meneveau: “Contributions to pressure drag in rough-wall turbulent flows: insights from force partitioning” (2022), submitted to Phys. Rev. Fluids **7**, 084602.

34. W. Wu, C. Meneveau, R. Mittal, A. Padovan, C. Rowley & L. Cattafesta: “Response of a Turbulent Separation Bubble to Zero-Net-Mass-Flux Jet Perturbations” (2022), Phys. Rev. Fluids **7**, 084601.

35. S. Kumar, C. Meneveau and G. Eyink: “Perturbative model for the second order velocity structure function tensor in turbulent shear flows” (2022), Phys. Rev. Fluids **7**, 064601.

36. Y. Luo, Y. Shi and C. Meneveau, “Multifractality in a nested velocity gradient model for intermittent turbulence” (2022), Phys. Rev. Fluids **7**, 014609.

37. A. Aiyer and C. Meneveau, “Resolved and subgrid-scale crossing trajectory effects in Eulerian large eddy simulations of polydisperse droplet transport” (2022), J. Fluid Mech. **935**, A-15.

38. M. Fowler, T.A. Zaki and C. Meneveau, “A Lagrangian relaxation towards equilibrium wall model for large eddy simulation” (2022), J. Fluid Mech. **934**, A44.

39. M. Bastankhah, C.R. Shapiro, S. Shamsoddin, D.F. Gayme and C. Meneveau, "A vortex sheet based analytical model of the curled wake behind yawed wind turbines" (2022), J. Fluid Mech. **933**, A2.

40. K.M. Womack, R.J. Volino, C. Meneveau, and M.P. Schultz, "Turbulent boundary layer flow over regularly and irregularly arranged truncated cone surfaces", 2022, J. Fluid Mech. **933**, A38.

41. G.M. Starke, C. Meneveau, J.R. King and D.F. Gayme, "The Area Localized Coupled

Model for Analytical Mean Flow Prediction in Arbitrary Wind Farm Geometries" (2021), J. Renew. Sust. Energy **13**, 033305.

42. G. Narasimhan, C. Meneveau & T.A. Zaki, "Large Eddy Simulation of transitional wall-bounded flows using a machine learning classifier to distinguish laminar and turbulent regions" (2021), Phys. Rev. Fluids **6**, 074608.

43. P. Clark Di Leoni, T. Zaki, G.E. Karniadakis & C. Meneveau, "Two-point stress-strain rate correlation structure and non-local eddy viscosity in turbulent flows" (2021), J. Fluid Mech. **914**, A6.

44. M. Ge, D.F. Gayme and C. Meneveau, "Large-eddy simulation of wind turbines immersed in the wake of a cube-shaped building" (2021) Renewable Energy **163**, 1063-1077.

45. A. Aiyer and C. Meneveau, “Coupled population balance and large eddy simulation model for polydisperse droplet evolution in a turbulent round jet” (2020), Phys. Rev. Fluids **5**, 114305.

46. C. Meneveau, “A note on fitting a generalized Moody diagram for wall modeled Large Eddy Simulations” (2020), J. Turbulence **21**, 650-673.

47. R. Mittal, C. Meneveau & W. Wu, “A Mathematical Framework for Estimating Risk of Airborne Transmission of COVID-19 with Application to Facemask Use and Social Distancing” (2020), Phys. Fluids **32**, 101903.

48. C. Shapiro, D.F. Gayme & C. Meneveau, “Generation and decay of counter-rotating vortices downstream of yawed wind turbines in the atmospheric boundary layer” (2020), J. Fluid Mech. **903**, R2.

49. Z. Wu, T.A. Zaki & C. Meneveau, "Data compression for turbulence databases using spatio-temporal sub-sampling and local re-simulation" (2020), Phys. Rev. Fluids. **5**, 064607.

50. Z. Wu, T. Zaki & C. Meneveau, “High-Reynolds-number fractal signature of nascent turbulence during transition” (2020), Proc. Nat. Acad. Sci. **117**, 3461-3468.

51. W. Wu, R. Mittal & C. Meneveau, "Total mechanical energy transport lines and attractors in separating turbulent boundary layers" (2020), Phys. Rev. Fluids **5**, 012601(R).

52. W. Wu, C. Meneveau and R. Mittal "Spatio-temporal dynamics of turbulent separation bubbles" (2020), J. Fluid Mech. **883**, A45.

53. Chamecki, M., Chor, T., Yang, D., & Meneveau, C. (2019). Material transport in the ocean mixed layer: Recent developments enabled by large eddy simulations. Reviews of Geophysics, **57**, 1338-1371.

54. P. Veers, Dykes, K., Lantz, E., Barth, S., Bottasso, C.L., Carlson, O., Clifton, A., Green, J., Green, P., Holttinen, H., Laird, D., Meneveau, C. *et al.,* “Grand challenges in the science of wind energy” (2019). Science **366**, 443.

55. K.M. Womack, C. Meneveau and M.P. Schultz, "Comprehensive shear stress analysis of turbulent boundary layer profiles" (2019), J. Fluid Mech. **879**, 360-389.

56. A. K. Aiyer, D. Yang, M. Chamecki, and C. Meneveau: “Population Balance Modeling in a Large Eddy Simulation Framework” (2019), J. Fluid Mech. **878**, 700-739.

57. C.R. Shapiro, D.F. Gayme & C. Meneveau: "Filtered actuator disks: Theory and application to wind turbine models in large eddy simulation" (2019), Wind Energy **22**, 1414-1420.

58. C.R. Shapiro, G.M. Starke, C. Meneveau and D.F. Gayme: "A Wake Modeling Paradigm for Wind Farm Design and Control" (2019), Energies **12**, 2956.

59. C. Meneveau, “Big wind power: Seven questions for turbulence research” (2019), J.

Turbulence **20**, 2-20.

60. Z. Wu, J. Lee, C. Meneveau and T. Zaki, “Application of a self-organizing map to identify the turbulent-boundary-layer interface in a transitional flow” (2019), Phys. Rev. Fluids **4**, 023902.

61. X.I.A. Yang and C. Meneveau, “Hierarchical random additive model for wall-bounded flows at high Reynolds numbers” (2019), Fluid Dynamics Research **51**, 011405.

62. L.A. Martínez-Tossas and C. Meneveau, "Filtered lifting line theory and application to the actuator line model" (2019), J. Fluid Mech**. 863**, 269-292.

63. J. Bossuyt, C. Meneveau, & J. Meyers, “Effect of layout on asymptotic boundary layer regime in deep wind farms” (2018), Phys. Rev. Fluids **3**, 124603.

64. T. Chor, D. Yang, C. Meneveau & M. Chamecki, “A turbulence velocity scale for predicting the fate of buoyant materials in the Oceanic Mixed Layer” (2018), Geophys. Res. Lett. **45**, 11,817–11,826.

65. L.A. Martínez-Tossas, M.J. Churchfield, A.E. Yilmaz, H. Sarlak, P.L. Johnson, J.N. Sørensen, J. Meyers, C. Meneveau, “Comparison of four LES research codes and effects of model coefficient and inflow turbulence in actuator line based wind turbine modeling” (2018), J. Renew. Sust. Energy **10**, 033301.

66. B. Chen, D. Yang, C. Meneveau and M. Chamecki, “A Numerical Study of the Effects of Chemical Dispersant on Oil Transport from an Idealized Underwater Blowout” (2018), Phys. Rev. Fluids **3**, 083801.

67. J.U. Bretheim, C. Meneveau,1 & D.F. Gayme, "The restricted nonlinear large eddy simulation approach to reduced-order wind farm modeling" (2018), J. Renew. Sust. Energy **10**, 043307.

68. E. Ramudu, R. Gelderloos, D. Yang, C. Meneveau and A. Gnanadesikan, “Large eddy simulation of heat entrainment under Arctic sea ice” (2018), J. Geophys. Res.-Oceans **123**, 287-304.

69. T. Chor, D. Yang, C. Meneveau & M. Chamecki, “Preferential concentration of noninertial buoyant particles in the ocean mixed layer under free convection” (2018), Phys. Rev. Fluids **3**, 064501.

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L.J. Lukassen, R.J.A.M. Stevens, C. Meneveau and M. Wilczek, “ Modeling space-time correlations of velocity fluctuations in wind farms” (2018), Wind Energy **21**, 474-487.

71. M. Danish & C. Meneveau, “Multi-scale analysis of the invariants of velocity gradient tensor in isotropic turbulence” (2018), Phys. Rev. Fluids **3**, 044604.

72. I. Hameduddin, C. Meneveau, T.A. Zaki and D.F. Gayme, “Geometric decomposition of the conformation tensor in viscoelastic turbulence” (2018), J. Fluid Mech. **842**, 395-427.

73. J.H. Elsas, A. Szalay and C. Meneveau, “Geometry and scaling laws of excursion and iso-sets of enstrophy and dissipation in isotropic turbulence” (2018), J. Turbulence **19**, 297-321.

74. C. Shapiro, D.F. Gayme & C. Meneveau, “Modelling yawed wind turbine wakes: a lifting line approach” (2018), J. Fluid Mech. **841**, R1, 1-12.

75. C. Shapiro, J. Meyers, C. Meneveau & D.F. Gayme, “Wind farms providing secondary frequency regulation: Evaluating the performance of model-based receding horizon control” (2018), Wind Energy Science **3**, 11-24.

76. M. Buzzicotti, M. Linkmann, H. Aluie, L. Biferale, J. Brasseur and C. Meneveau, “Effect of

filter type on the statistics of energy transfer between resolved and subfilter scales from a-priori analysis of direct numerical simulations of isotropic turbulence" (2018), J. Turbulence **19**, 167-197.

77. J. Bretheim, C. Meneveau and D.F. Gayme, "A restricted nonlinear large eddy simulation model for high Reynolds number flows" (2018), J. Turbulence **19**, 141-166.

78. P. Johnson and C. Meneveau, "Predicting viscous-range velocity gradient dynamics in large-eddy simulations of turbulence" (2018), J. Fluid Mech. **837**, 80-114

79. R.J.A.M. Stevens, L.A. Martinez-Tossas, & C. Meneveau, "Comparison of wind farm large eddy simulations using actuator disk and actuator line models with wind tunnel experiments" (2018), Renewable Energy **116**, 470-478.

80. P. Johnson & C. Meneveau, "Turbulence intermittency in a multiple-time scale, Navier-Stokes based reduced model" (2017), Phys. Rev. Fluids **2**, 072601(R).

81. X.I.A. Yang, R. Badya, P. Johnson, I. Marusic & C. Meneveau, "Structure function tensor scaling in the logarithmic region from attached eddy model of wall-bounded turbulent flows" (2017), Phys. Rev. Fluids 2, 064602.

82. J. Bossuyt, C. Meneveau, & J. Meyers, "Wind farm power fluctuations and spatial sampling of turbulent boundary layers" (2017), J. Fluid Mech. **823**, 329-344.

83. C. Shapiro, P. Bauweraerts, J. Meyers, C. Meneveau & D.F. Gayme, "Model-based receding horizon control of wind farms for secondary frequency regulation" (2017), Wind Energy **20**, 1261-1275.

84. L.A. Martinez-Tossas, M. Churchfield & C. Meneveau: "Optimal smoothing length scale for actuator line models of wind turbine blades based on Gaussian body force distribution" (2017), Wind Energy **20**, 1083-1096.

85. J. Sadique, X.I.A. Xiang, C. Meneveau & R. Mittal: "Aerodynamic properties of rough surfaces with high aspect--ratio roughness elements - Effect of aspect--ratio and arrangements" (2017), Bound. Layer Met. **163**, 203-224.

86. P. Johnson & C. Meneveau, ""Restricted Euler dynamics along trajectories of small inertial particles in turbulence" (2017), J. Fluid Mech. **816**, R2.

87. J. Bossuyt, M.F. Howland, C. Meneveau & J. Meyers, "Measurement of unsteady loading and power output variability in a micro wind farm model in a wind tunnel" (2017), Exp. in Fluids **58**, 1.

88. X.I.A. Yang & C. Meneveau: "Modeling turbulent boundary layer flow over fractal-like multiscale terrain using Large Eddy Simulations and analytical tools" (2017), Phil. Trans. R. Soc. A, **375**, 20160098.

89. R.J.A.M. Stevens & C. Meneveau, "Flow structure and turbulence in wind farms", (2017), Annu. Rev. Fluid Mech. **49**, 311-339.

90. P. Johnson, S. Hamilton, R. Burns & C. Meneveau (2017), "Analysis of Lagrangian stretching in turbulent channel flow using a database task-parallel particle tracking algorithm", Phys. Rev. Fluids **2**, 014605.

91. S. Xie, C.L. Archer, N. Ghaisas and C. Meneveau, "Benefits of collocating vertical-axis and horizontal-axis wind turbines in large wind farms" (2017), Wind Energy **20**, 45-62.

92. X.I.A. Yang & C. Meneveau: "Large Eddy Simulations and parameterization of roughness element orientation and flow direction effects in rough wall boundary layers" (2016), J. Turbulence **17**, 1072-1085.

93. P. Johnson & C. Meneveau: "A closure for Lagrangian velocity gradient evolution in

turbulence using recent deformation mapping of initially Gaussian fields" (2016). J. Fluid Mech. **804**, 387-419.

94. X.I.A. Yang, C. Meneveau, I. Marusic & L. Biferale: "Extended Self-similarity in Moment-Generating-Functions in Wall-bounded Turbulence at High Reynolds Number" (2016), Phys. Rev. Fluids **1**, 044405.

95. R.J.A.M. Stevens, B.F. Hobbs, A. Ramos & C. Meneveau, "Combining economic and fluid dynamic models to determine the optimal spacing in very large wind farms", (2016), Wind Energy **20**, 465-477.

96. M.G. Giometto, A. Christen, C. Meneveau, J. Fang, M. Krafczyk, M.B. Parlange: "Spatial characteristics of roughness sublayer mean flow and turbulence over a realistic urban surface" (2016), Bound. Layer Met. **160**, 425-452.

97. M.F. Howland, J. Bossuyt, L.A. Martínez-Tossas,J. Meyers & C. Meneveau: "Wake Structure of Wind Turbines in Yaw under Uniform Inflow Conditions" (2016), J. Sust. Renew. Energy **8**, 043301.

98. X.I.A. Yang, I. Marusic & C. Meneveau: "A hierarchical random additive process and logarithmic scaling of generalized high order, two-point correlations in turbulent boundary layer flow" (2016), Phys. Rev. Fluids. **1**, 024402.

99. W. Munters. C. Meneveau & J Meyers, "Shifted periodic boundary conditions for simulations of wall-bounded turbulent flows"c (2016), Phys. Fluids **28**, 025112.

100. W. Munters, C. Meneveau & J. Meyers, "Turbulent inflow precursor method with time-varying direction for large-eddy simulations and applications to wind farms" (2016), Bound. Layer Met. **159**, 305-328

101. B. Chen, D. Yang, C. Meneveau & M. Chamecki: "ENDLESS: An Extended Non-periodic Domain Large-Eddy Simulation Approach for Scalar Plumes" (2015), Ocean Modeling **101**, 121-132.

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

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58. E. Bou-Zeid, C. Meneveau & M.B. Parlange, “Comparison of foud eddy-viscosity models in LES of flow over rough walls”, Proc. HT-FED04, 2004 ASME Heat Transfer/FED Summer Conference, paper HT-FED04-56126, 11p.

59. Y-C Chow, O. Uzol, J. Katz & C. Meneveau, “An investigation of axial turbomachinery flow using PIV in an optically-unobstructed facility” Proc. 9th of International Symposium on Transport Phenomena and Dynamics of Rotating Machinery' Honolulu, Hawaii (2002).

60. O. Uzol, Y.C. Chow, J. Katz & C. Meneveau. "Experimental investigation of unsteady flow field within a two-stage axial turbomachine using PIV". Int. Gas Turbine. I (2002).

61. B. Tao, J. Katz, C. Meneveau: "Alignment trends of a decomposed SGS stress tensor determined from holographic PIV measurements", paper FEDSM02-31261, Proceedings of the ASME 2002 Fluids Engineering Division Summer Meeting, Montreal, Canada (2002).

62. Tao, B., Katz, J. and Meneveau, C. “Alignment of the strain-rate, SGS stress, and SGS force relative to parameters based on the filtered velocity gradients”, Proc ASME 2001 Fluids Engineering Division Summer Meeting, FEDSM01-18272, New Orleans, LA (2001).

63. C. Meneveau, H. S. Kang, F. Charlette, J. Averill, O. Knio and D. Veynante: “Challenges in modeling scalars in turbulence and LES: Anisotropy, dynamic models, and scale separation” (2001), IUTAM Proc. of Symposium on Turbulent Mixing and Combustion (A. Pollard, ed), Kluwer Academic.

64. H.S. Kang and C. Meneveau, “Experimental measurements of subgrid passive scalar anisotropy and universality” (2001), in Proceedings of Direct and Large Eddy Simulation - IV (Geurts, Métais and Friedrich, Eds), Kluwer Academic.

65. Tao, B., Katz, J. and Meneveau, C. “Effects of strain-rate and subgrid dissipation rate on alignment trends between large and small scales in turbulent duct flow”, Proc. ASME Fluids Engineering Division Summer Meeting, FEDSM00-11164, Boston, MA, (2000).

66. B. Tao, J. Katz, & C. Meneveau, “Application of HPIV data in turbulent duct flow for turbulence modeling”, in Proc. Fluids Eng. Division Summer meeting of the ASME, San Fransisco, FEDSM99-7281 (1999).

67. F. Porté-Agel, C. Meneveau & M.B. Parlange, “Dynamic model for large-eddy simulations near the limits of the inertial range of turbulence”, in Proc. Fluids Eng. Division Summer meeting of the ASME, San Fransisco, FEDSM99-7835 (1999).

68. F. Porté-Agel, C. Meneveau & M.B. Parlange, ‘”Accounting for scale-dependence in the dynamic Smagorinsky model”, in “Recent advances in DNS and LES” (1999). Proc. of 2nd AFOSR Conference, held at Rutgers (Knight & Sakell, eds., Kluwer Academic), pp. 317-328.

69. C. Meneveau, S. Cerutti, J.O’Neil, F. Porté-Agel & M. Parlange: “Physics and modeling of small scale turbulence for Large Eddy Simulation”, (1999) Proceedings of Monte Verita II (eds. A. Tsinober & A. Gyr), Trends in Mathematics (Birkhauser Verlag), pp. 221-231.

70. M. Sinha, J. Katz & C. Meneveau: “Addressing passage-averaged and LES modeling issues in turbomachinery flows using two-dimensional PIV data” (ASME), FEDSM98-5091 (1998).

71. S. Liu, C. Meneveau & J. Katz: “Generation of locally isotropic turbulence in a tank, and its response to rapid straining” (1997), FED-ASME Forum on Turbulent Flows, CD-ROM (1997).

72. C. Meneveau & T. Lund, "Dynamic model with scale-dependent coefficients in the viscous range" (1996), in: Proc. of the Summer Program 1996, Center for Turbulence Research, Stanford University, p. 275-290.

73. A. Scotti, C. Meneveau & M. Fatica, "Dynamic Smagorinsky model on anisotropic grids" (1996), in: Proc. of the Summer Program 1996, Center for Turbulence Research, Stanford University, p. 259-274.

74. J.R. Mansfield, O.M. Knio & C. Meneveau, "Towards Lagrangian large vortex simulation" (1996), in 'Vortex flows and related numerical methods', (Edited by Y. Gagnon et al., ESAIM *Proc.*, **1**, http://www.emath.fr/proc/ Vol.1/, pp. 49-64.

75. C. Meneveau & T. Lund, "Lagrangian averaging for dynamic eddy-viscosity subgrid models of turbulenc", in: Proc. of 'Semi-analytic techniques for Navier Stokes equations' (Montreal, 1995, K. Coughlin, ed.) CRM Proc. Lecture Notes, vol. 20, Amer. Math. Soc., Providence, RI, 1999, pp. 101--107.

76. C. Meneveau, T. Lund & W. Cabot, "A Lagrangian dynamic model of turbulence" (1994), in: Proc. of the summer program 1994, Center for Turbulence Research, Stanford University.

77. S. Liu, C. Meneveau & J. Katz: "Experimental studies of similarity subgrid-scale models of turbulence using conditional averaging" (1994), FED-ASME Forum on Turbulent Flows, pp.1-7.

78. J. O'Neil & C. Meneveau: 'Measurements of subgrid-scale stresses in the turbulent plane wake' (1994), FED-ASME Forum on Turbulent Flows, pp. 8-14.

79. S. Liu, C. Meneveau & J. Katz: "Experimental study of similarity subgrid-scale models of turbulence in the far-field of a jet" (1994), in: 'Direct and Large-Eddy Simulation **1**'. eds. P. Voke, L. Kleiser & J-P Chollet (Kluwer Acad. Amsterdam), p. 37-48.

80. C. Meneveau, "Wavelet analysis of turbulence: The mixed energy cascade" (1992), in: Proc. 'Wavelets, Fractals and Fourier Transforms', eds.: M. Farge, J.R.C. Hunt & J.C. Vassilicos, Oxford U. Press (1993), p.251.

81. C. Meneveau, "On the physics of fractality and scaling in hydrodynamic turbulence" (1993) in "Chaotic Dynamics and Transport in Fluids and Plasmas", I. Prigonine, editor, Research Trends in Physics, AIP, p.250.

82. C. Meneveau, T. Lund & J. Chasnov, "On the local nature of the energy cascade" (1992), in: Proc. of the summer program 1992, Center for Turbulence Research, Stanford University, p. 47.

83. C. Meneveau, T. Lund & P. Moin, "Search for subgrid-scale parametrization by projection pursuit regression" (1992), in: Proc. of the summer program 1992, Center for Turbulence Research, Stanford University, p. 61.

84. C. Meneveau "The Fractal Geometry of Turbulence" in: Proceedings of the II Pan American Congress of Applied Mechanics, eds.: Kittl et al. (1991).

85. M. Farge, Y. Guezennec, C.M. Ho & C. Meneveau, "Wavelet analysis of coherent structures", in: Proc. of the Summer Program 1990, CTR, Stanford University.

Some Keynote/Plenary Lectures:

- "Using eddy resolving numerical simulations to address important questions for wind energy", plenary talk at the "Congreso Chileno de Mecánica Computacional", Pontifice Universidad Católica de Valparaíso, 5 Region, Chile. October 03-04, 2024.

- “Turbulence, macro-vortices, and reduced flow models for wind energy applications” plenary talk accepting the 2024 Batchelor Prize in Fluid Mechanics, August 28, 2024, ICTAM 2024 meeting, Deagu, South Korea
- “New physics-based wall modeling concepts for Large Eddy Simulations of turbulence”, invited plenary talk at the 35th Symposium on Naval Hydrodynamics, Nantes, France, July 8-12, 2024.
- “Fluid dynamics and turbulence science for sustainable wind energy harvesting”, Miegunya Fellow Lecture, April 17, 2024, University of Melbourne, Australia.
- "Intermittency and Lagrangian dynamics of velocity gradients in fluid turbulence", invited plenary speaker at the Summer School and workshop “Building bridges between classical and quantum turbulence”, Institute d’etudes scientifiques, Cargèse, Corsica France, July 4-9, 2023.
- “New physics based wall models for large eddy simulations”, Invited Lecture (Richard Pletcher lecture) Iowa State University, Ames Iowa, April 19, 2023.
- March 20-24, 2023: Invited Speaker for the “2023 Alps’ Tour of Fluid Mechanics”:
  - “Intermittency and Lagrangian dynamics of velocity gradients in fluid turbulence”, presentation in Ecole Normale Superieure de Lyon, France, March 20, 2023,
  - “Nascent fractal scaling during flat plate boundary layer transition to turbulence”, presentation at LEGI, Université Grenoble Alpes, Grenoble, France, March 21, 2023,
  - “Large wind farm power and turbine yaw: insights from turbulent boundary layer and vortex structure fundamentals”, presentation at EPFL, Lausanne, Switzerland, March 23, 2023,
  - “New physics-based wall modeling concepts for Large Eddy Simulation of turbulence”, presentation at ETH, Zürich, Switzerland, March 24, 2023.
- “Modeling turbulence over multiscale surfaces: fractal trees, landscapes, waves”, plenary talk at the Workshop “100 years of turbulence: Innsbruck 1922 – 2022”, November 3-5, 2022, Innsbruck, Austria.
- “Boundary layer turbulence and implications for wind farm models”, Plenary invited talk at NAWEA/Windtech 2022 Conference, Univ. Delaware, DE September 22-24, 2022.
- “A public turbulence database system and sample application for LES wall modeling”, Invited talk at the workshop (on zoom, Bejing China) celebrating the 120th anniversary of Chou Pei-Yuan’s birth (Chinese Kolmogorov), August 14-16, 2022.
- “Lagrangian modeling of turbulent fine-scale structure”, invited keynote talk BIRS-CMO 2022 event: “M5 - Mathematics of Multiphase, Multiscale, Mutiphysics Models“, August 3, 2022.
- “Democratizing really big data in turbulence and sample application”, keynote lecture at the EMI Engineering Mechanics Institute conference, Baltimore MD, June 03, 2022.
- ‘‘A multifractal version of Navier-Stokes based model of velocity gradients in turbulence”, invited talk at the EGU webinar series EGU NP Campfire on “Scaling and multifractals: from historical perspectives to recent developments”, February 1, 2022.
- “Predicting Large Scale Wind Farm Generation: Current and Future Challenges”, keynote lecture at the 3rd Energy Efficiency and Environmental Sustainability Conference, December 9, 2021, La Serena Chile (online)
- "Wind farm flow structure: applications of aerodynamics beyond turbine blades", AIAA Fluid Dynamics Technical Committee Award Lecture, AIAA Aviation Forum, August 4, 2021 (online).

- "Large Eddy Simulations of Turbulence and Insights generated regarding Wind Energy", plenary lecture at "New Challenges in Turbulence Research VI", Les Houches, France (on zoom). February 9, 2021.
- "Boundary layer turbulence and reduced models of wind farms", plenary lecture at the The 24th Online Frontier Scientists Workshop Turbulence Prediction and Control, Korean Academy of Science and Technology, Nov. 6, 2020.
- "Democratizing Access to Big Data from DNS and Applications to Machine Learning", plenary lecture at the 33rd ONR Symposium on Naval Hydrodynamics, Osaka Japan (virtual), October 19, 2020.
- *"The Johns Hopkins Turbulence Databases: Democratizing big data from Direct Numerical Simulations"* at the U.S. National Committee on Theoretical and Applied Mechanics 2019 (72nd) Annual Meeting, March 30, 2019; NAS Building, Washington DC.
- *"Some Turbulence Fundamentals with emphasis on modeling and LES"*, Plenary talk at the conference "Turbulence from Angstroms to Lightyears", International Centre for Theoretical Science, Bangalore, India, January 20, 2018.
- *"Windfarm turbulence at 10^{13} Angstroms or ~10^{-13} LightYears*", Plenary talk at the conference "Turbulence from Angstroms to Lightyears", International Centre for Theoretical Science, Bangalore, India, January 22, 2018.
- *"New analytical models for turbulence spectra and turbine wakes in wind farms"*, plenary invited talk at the Burgers Symposium, Lunteren, The Netherlands, June 5&6, 2018.
- *Lagrangian turbulence models of the velocity gradient tensor and applications in LES*, plenary invited talk at the ECCOMAS 2018 Conference, Glasgow UK, June 11-14, 2018.

Current student and postdoctoral advising:

Current doctoral students:

- Yue Hao (co-advised with Prof. T. Zaki)
- Manuel Ayala (co-advised with Prof. D. Gayme)
- Ho Jun Kim (co-advised with Prof. T. Zaki)
- Yishu Zhang (co-advised with Prof. D. Gayme)
- Isaac Medina

Current postdocs and research staff:

- Dr. Shuolin Xiao (co-advised with Prof. D. Gayme)

Current Masters students:

- Yuqi Zhang

Former student and postdoctoral advisees:

Former doctoral students:

1. Mitchell Fowler (PhD 2023, co-advised with Prof. T. Zaki, now Naval Surface Warfare Center Carderock Division, NSWCCD).
2. Ghanesh Narasimhan (PhD 2023, co-advised with Prof. D. Gayme, now postdoc at Univ. Minnesota).

3. Samvit Kumar (PhD 2023, co-advised with Prof. G. Eyink, now postdoc at Johns Hopkins Univ.)
4. Genevieve Starke (PhD 2022, co-advised with Prof. D. Gayme, now at the National Renewable Laboratory (NREL), Colorado).
5. Kristofer Womack (PhD 2021, now at Office of Naval Research)
6. Kara Shipley (Doct. Eng., 2021, co-advised with D. Gayme, now at Applied Physics Lab.)
7. Aditya Aiyer (PhD 2020), now postdoc at Princeton University.
8. Carl Shapiro (PhD 2018, co-advised with D. Gayme), now Department of Energy.
9. Joel Bretheim (PhD 2018, co-advised with D. Gayme), now at the Naval Research Laboratory.
10. Perry Johnson (PhD 2017), now Assistant Professor, Univ. California, Irvine, CA.
11. Luis A. “Tony” Martínez-Tossas (PhD 2017), now research scientist at the National Renewable Laboratory (NREL), Colorado.
12. Xiang Yang (PhD 2016, co-advised with R. Mittal). Now Assistant Professor, Penn State University.
13. Jasim Sadique (PhD 2015, co-advised with R. Mittal). Now with Convergent Science.
14. Adrien Thormann (Ph.D. 2015), now with Bridgestone, France.
15. Claire Verhulst (Ph.D., 2015) now with Center for Educational Outreach, Johns Hopkins University.
16. Jason Graham (PhD 2014), now at the Applied Physics Lab.
17. Kunlun Bai (PhD 2014, co-advised with J. Katz), now Research Scientist, KLA-Tencor, San Fransisco, CA.
18. William Anderson (PhD 2011), now Associate Professor, Department of Mechanical Engineering, Univ. Texas at Dallas, TX.
19. Marcelo Chamecki (PhD 2008, co-advised with M. Parlange), now full Professor, Department of Atmospheric & Ocean Sciences, University of California Los Angeles (UCLA).
20. Li Yi (PhD 2007), now Lecturer, University of Sheffield, UK.
21. Vijayant Kumar (PhD 2007, co-advised with M. Parlange), now VP Data Science and Engineering, at SentientScience.
22. Carlos Rosales (PhD 2007), now Professor and Chair, Mechanical Engineering, Univ. Técnica Federico Santa María, Valparaíso, Chile.
23. Chad Higgins (PhD 2007, co-advised with M. Parlange), now tenured Associate Professor, Water Resources Engineering, Oregon State Univ., OR.
24. Stuart Chester (PhD 2006), now with Northrop Gruman, MD.
25. Elie Bou-Zeid (PhD 2005, co-advised with M. Parlange), now full Professor, Civil and Environmental Engineering, Princeton University.
26. Jun Chen (PhD 2005, co-advised with J. Katz), now full Professor, Mechanical Engineering, Purdue University, Indiana.
27. Jan Kleissl (PhD 2004, co-advised with M. Parlange), now full Professor, Mechanical and Aerospace Engineering, University of California, San Diego.
28. Bo Tao (PhD 2001, co-advised with J. Katz), Associate Professor, Wentworth Institute of Technology, Boston, MA.
29. Houshuo Jiang (PhD 2000, co-advised with T. Osborn), now Associate Scientist with tenure at Woods Hole Oceanographic Institution, MA.
30. Stefano Cerutti (Ph.D., 1999), now with Lockheed Martin, Orlando, FL.
31. Fernando Porté-Agel (PhD 1999, co-advised with M. Parlange), tenured full Professor, EPFL, Lausanne, Switzerland).
32. Alberto Scotti (PhD 1997), now Professor, Marine Sciences Department at University of North Carolina.

33. Shewen Liu (PhD 1997, co-advised with J. Katz), now at US Bureau of Shipping, Texas.
34. John Mansfield (PhD 1997, co-advised with O. Knio), Naval Surface Warfare Center Carderock Division.
35. John O'Neil (PhD 1996), now Research Engineer, Applied Physics Laboratory, Johns Hopkins University, Laurel, MD.

Former postdocs and research staff:

1. Dr. Hanxun Yao (co-advised with Prof. T. Zaki, Fall 2015: Assistant Prof. USTC, China).
2. Dr. Mostafa Aghaeijouybari (co-advised with Prof. R. Mittal, now Assistant Prof. Kansas State University).
3. Dr. Xiaowei Zhu (co-advised with Prof. D. Gayme, now Assistant Prof. Portland State University, Oregon).
4. Dr. Patricio Clark Di Leoni (Co-advised with Prof. T. Zaki, now Assistant Prof. University de San Andrés, Argentina)
5. Dr. Wen Wu (co-advised with R. Mittal), now Assistant Professor, University of Mississippi.
6. Dr. Mohammad Danish, now Associate Professor, Bennet University, Uttar Pradesh, India.
7. Dr. Kun Yang, now in research administration (Southern Technical Univ. China).
8. Dr. Richard Stevens, now Associate Professor, Twente University, The Netherlands.
9. Dr. Di Yang, now Associate Professor, Mechanical Engineering, University of Houston, TX.
10. Dr. Michael Wilczek, now Professor for Theoretical Physics, University of Bayreuth, Germany.
11. Dr. Adrian Sescu, now tenured Associate Professor, Aerospace Engineering, Mississippi State University.
12. Dr. Huidan Yu, now tenured Associate Professor, Mechanical Engineering, University of Indiana -Purdue University at Indianapolis.
13. Dr. Hyung-Suk Kang, now Research Engineer, Applied Physics Laboratory, Johns Hopkins University, Laurel, MD.
14. Dr. Marco Martins-Afonso, now researcher, Centro de Matemática da Universidade do Porto (CMUP), Portugal.
15. Dr. Laurent Chevillard, now CNRS researcher, Ecole Normale Superieure, Lyon, France.
16. Dr. Wusi Yue (postdoc, co-advised with M. Parlange), now research engineer at GSE Systems.
17. Dr. Yu-Heng Tseng (co-advised with M. Parlange), now Project Scientist II, NCAR, CO.
18. Dr. Juan Hierro (Fulbright postdoc co-advised with J. Katz), now at LITEC, Zaragoza, Spain.
19. Dr. Oguz Uzol, (co-advised with J. Katz), now with Suzlon Blade Science Center, Vejle, Denmark.

Former Masters students:

1. Evan LaTourette-Ghez (M.S.E. 2024)
2. Chenghao Qian (M.S.E. 2024)
3. Yishu Zhang (M.S.E. 2024)
4. Hongjin Yu (M.S.E. 2023)
5. Emmet Turner (M.S.E. 2023)
6. Solomon Polansky (M.S.E. 2020)
7. Gautham Narasimham (M.S.E. 2020)

8. Ashvin Vinod (M.S.E. 2020)
9. Andrew Mellon (M.S.E. 2020)
10. Gilbert Josh (M.S.E. 2018)
11. Danny Dembner (M.S.E. 2018)
12. Yifan Zhang (M.S.E. 2018)
13. Matthew Thompson (M.S.E. 2016)
14. Nicole Cade-Ferreira (M.S.E. 2016
15. Michael Leibel (M.S.E. 2014).
16. Hector Morales (M.S. E. 2012).
17. Brandon Hahn (M.S. E. 2012).
18. Taylor Reese (M.S. E. 2010).
19. Yunke Yang (M.S.E. 2008).
20. Dan Brzozowski (M.S.E. 2004).
21. Pamela Rawe (M.S.E. 1999), U.S. Navy.
22. Matthew Hayden (M.S.E. 1999), U.S. Navy.
23. Richard Anderson (M.S.E. 1995, then PhD in DoGEE with Prof. B. Hobbs), now Assistant Professor, School of Environment and Earth Sciences, Duke University.

Undergraduate student advising:

- Continuous academic advising of undergraduate classes (about 10 students/year)
- Undergraduate research advising: German Saltar (UPR undergrad, summer 2019), Michael Howland (2014-2016), John Bacon (2014), Vincent Rolin (2011, 2012), Jason Li (RPI undergrad, 2011), José Polo (Univ. Turabo PR undergrad, summer 2008), Francisco Wharton (Univ. Turabo PR undergrad, summer 2008), Gustavo Rivera-Rosario (RPI undergrad, Summers of 2007 and 2008), John Kegelman (2007), Joe Lefkowitz (2007), Lauren Denk (2006), Ryan Mayes (2006) Michael Scheib (2005), Juan Sanchez (2005), Byong-Ho Hwang (2005), Giles Haysom (2005) Anthony Tvaroha (2002), David Breau (1998), Ben Kusmin (1993), Ken El-Sherif (1993).

High-School students:

- Research Practicum supervision of Mr. Nathan Greene, Baltimore Polytechnic HS (2011/2012).
- Research Practicum supervision of Mr. Duane Dennis, Baltimore Polytechnic HS (2008-2010).
- Research Practicum supervision of Mr. Jesse Broccato, Baltimore Polytechnic HS (2007/2008)
- Research Practicum supervision of Mr. Duane Dennis, Baltimore Polytechnic HS (2008/2009). Duane is now undergraduate student at MIT.

Visiting scholars:

- Luo Yuan (2018-2020), visiting PhD student from Beijing Univ., China.
- Dr. Huifeng Hu (2018).
- Dr. Jia Deng (2018).
- José-Hugo Elsas (2016-2017), visiting PhD student from Universidade Federal do Rio de Janeiro, Brazil.
- Juliaan Bossuyt (2013-2016), visiting PhD student from KU Leuven, Belgium.

- Wim Munters (2014), visiting PhD student from KU Leuven, Belgium.
- Hamid Sarlak (2012), visiting PhD. Student from Danish Technical University, Denmark.
- Jonas Bochung (2012), visiting M.S. student from Univ. Aachen, Germany.
- Stimit Shah (2012), visiting PhD student from Princeton University.
- Victor Maldonado (2011, 2012), visiting PhD student from RPI, NY.
- Edo Frederix (2011), visiting MS student from Eindhoven University of Technology, Netherlands.
- Marc Calaf (2008-2009), visiting PhD student from EPFL, Switzerland
- Guillermo Araya (Spring 2008), visiting PhD student from RPI, NY.
- Maja Wänström (Fall 2007-Spring 2008), visiting PhD student from Chalmers, Sweden.
- Brian Brzek (Spring 2007), visiting PhD student from RPI, NY.
- Sheila Torres (Spring 2007,2008,2009), visiting PhD student from RPI, NY.
- José Lebron (Spring 2007,2008,2009), visiting PhD student from RPI, NY.
- Fabrice Charlette (PhD 2002), visiting PhD student from Ecole Centrale Paris.
- Fedderik van der Bos, visiting M.S. student 2001.

Host to visiting faculty:

- Ruifeng Hu (2018)
- Ivan Marusic (October 2015)
- Luciano Castillo (2008 - 2011)
- Johan Meyers (August 2007, Spring 2009, Summer 2011, Spring 2014)
- Paolo Gualtieri (May 2007)
- Luca Biferale (Summer 2006, March/April 2016)
- Federico Toschi (Summer 2006)

Courses taught:

Undergraduate:

- Intermediate Fluid Mechanics
- Thermodynamics
- Fluid Mechanics I
- Fluid Mechanics II
- Heat Transfer
- Thermal Systems Laboratory (co-taught).
- Introduction to Mechanics I

Graduate:

- Fluid Dynamics I
- Turbulence
- Convection
- Uncertainty Analysis and Downscaling (co-taught)
- Topics in complex systems: fractals, chaos, and self-organization
- Advanced Experimental Techniques (co-taught).

External appointments:

- Chair, Scientific Advisory Board, Max Planck Institute for Nonlinear Dynamics and Self Organization, Göttingen, Germany, 2018-2022.
- Member, Scientific Advisory Board, Max Planck Institute for Nonlinear Dynamics and Self Organization, Göttingen, Germany, 2013-2022.
- Member, Scientific Advisory Board, Max Planck Center Twente for Complex Fluid Dynamics, Twente University, The Netherlands, 2017-present.
- RPI, Troy, NY. Start: 2009 - 2012. Adjunct Professor.
- NWRC (National Wind Resource Center, Texas Tech University, Lubbock Texas), 2013 – 2014. Adjunct Professor.

Consulting:

- 2018/2019: Expert witness in the area of wind energy fluid dynamics.
- 2010: For EPFL Middle East, evaluation of wind tunnel design proposals.
- 2001-2004: For Applied Scientific Research (Santa Ana, CA) on LES models in grid-free CFD.
- 1996: For Burnett & Co., Inc., wind-tunnel drag measurements for Lacrosse sticks.
- 1995: For Knoll Atomic Power Lab. (Troy, NY), on turbulence modeling for two-phase flows.
- 1992: For “Project C-D”, on fluid mechanics of various biomedical devices.

Personal: Married, 2 children. Fluent in English, Spanish, German, French.