John R. Taylor
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Professor of Oceanography
Department of Applied Mathematics and Theoretical Physics
Fellow and Director of Studies in Mathematics, St. John's College
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EDUCATION

- Ph.D. Mechanical and Aerospace Engineering, University of California, San Diego, 2008
- M.S. Mechanical and Aerospace Engineering, University of California, San Diego, 2004
- B.S. Engineering Physics, Santa Clara University, 2001
  Computational Physics Emphasis, University Honors Program

PROFESSIONAL EXPERIENCE

Professor of Oceanography, 2022 -
Department of Applied Mathematics and Theoretical Physics, University of Cambridge
Reader in Oceanography, 2017 - 2022
Department of Applied Mathematics and Theoretical Physics, University of Cambridge
Teaching (Title B) Fellow, 2013-
College of St. John the Evangelist, University of Cambridge
Director of Studies in Mathematics, 2017-2019
College of St. John the Evangelist, University of Cambridge
University Lecturer in Oceanography, 2011-2017
Department of Applied Mathematics and Theoretical Physics, University of Cambridge
Postdoctoral Research Associate, 2010-2011
Department of Earth, Atmospheric and Planetary Sciences, Massachusetts Institute of Technology
NSF Mathematical Sciences Postdoctoral Research Fellow, 2008-2010
Department of Earth, Atmospheric and Planetary Sciences, Massachusetts Institute of Technology
National Defense Science and Engineering Graduate Fellow, 2003-2007
Department of Mechanical and Aerospace Engineering, University of California, San Diego
Visiting Scientist, 2000-2002
University Corporation for Atmospheric Research, Fleet Numerical Meteorology and Oceanography Center, U.S. Navy, Monterey, CA
Research Assistant, 1998-2000
Chemical Oceanography, Oregon State University
Research Assistant, 1995-1997
Atmospheric Science, Oregon State University

PEER-REVIEWED JOURNAL ARTICLES & BOOK CHAPTERS

1. Yao, L., Taylor, J.R., Jones, D.C. and Bachman, S.D., 2025. Identifying ocean submesoscale activity from vertical density profiles using machine learning. Earth and Space Science, 12(1), p.e2022EA002618.

2. Powell, C.W., Haynes, P.H., Ming, A.D. and Taylor, J.R., 2025, Moisture transport by convective overshoots in the tropical tropopause layer. Weather. https://doi.org/10.1002/wea.7689
3. Powell, C.W., Haynes, P.H. and Taylor, J.R., 2024. Diagnosing tracer transport in convective penetration of a stably stratified layer. Journal of Fluid Mechanics, 997, p.A48.
4. Guo, J., Taylor, J.R. and Zhou, Q., 2024, Zigzag instability of columnar Taylor–Green vortices in a strongly stratified fluid. Journal of Fluid Mechanics, 997, p.A34.
5. Strong-Wright, J. and Taylor, J.R., 2024, A model of tidal flow and tracer release in a giant kelp forest. JFM Flow, 4, p.E21.
6. Powell, C.W., Haynes, P.H. and Taylor, J.R., 2024, Diagnosing tracer transport in convective penetration of a stably stratified layer. Journal of Fluid Mechanics, 997, p.A48.
7. Anselin, J., Holland, P.R., Jenkins, A. and Taylor, J.R., 2024, Ice base slope effects on the turbulent ice shelf-ocean boundary current. Journal of Physical Oceanography.
8. Dingwall, J. and Taylor, J.R., 2024, Model for the cyclonic bias of convective vortices in a rotating system. Physical Review Fluids, 9(3), p.033503.
9. Chen, S., Strong-Wright, J. and Taylor, J.R., 2024, Modeling carbon dioxide removal via sinking of particulate organic carbon from macroalgae cultivation. Frontiers in Marine Science, 11, p.1359614.
10. Strong-Wright, J., Chen, S., Constantinou, N.C., Silvestri, S., Wagner, G.L., and Taylor, J.R., 2023, OceanBioME.jl: A flexible enviornment for modelling the coupled interactions between ocean biogeochemistry and physics, J. Open Source Software, DOI: 10.21105/joss.05669.
11. Atoufi, A., Zhu, L., Lefauve, A, Taylor, J.R., Kerswell, R, Dalziel, S.B., Lawrence, G., and Linden, P.F., 2023, Stratified inclined duct: two-layer hydraulics and instabilities, J. Fluid Mech. 977, doi:10.1017/jfm.2023.871
12. Jiang, X., Atoufi, A., Zhu, L, Levauve, A., Taylor, J.R., Dalziel, S.B., Linden, P.F., Geometry of stratified turbulent mixing: local alignment of the density gradient with rotation, shear and visous dissipation, 2023, J. Fluid Mech., 977, doi:1017/jfm.2023.833.
13. Dingwall, J., Chor, T., and Taylor, J.R. , Large eddy simulations of the accumulation of buoyant material in oceanic wind-driven and convective turbulence, 2023, J. Fluid Mech. 954, A27.
14. Zhu, L, Atoufi, A., Lefauve, A., Taylor, J.R., Kerswell, R., Dalziel, S.B., Lawrence, G.A., Linden, P.F., Stratified inclined duct: direct numerical simulations, 2023, J. Fluid Mech. 969, A20.
15. Qu, L., Thomas, L.N., Wienkers, A.F., Hetland, R.D., Kobashi, D., Taylor, J.R., Hsu, F.H.W., MacKinnon, J.A., Shearman, R.K., and Nash, J.D. , Rapid vertical exchange at fronts in the Northern Gulf of Mexico, 2022, Nature Comm. 13, 5624.
16. Fujita, R., et al., 2023. Seaweed blue carbon: Ready? Or Not?. Marine Policy, 2023, 155, p.105747.
17. Patmore, R.D., Holland, P.R., Vreugdenhil, C.A., Jenkins, A. and Taylor, J.R., 2023. Turbulence in the ice shelf–ocean boundary current and its sensitivity to model resolution. Journal of Physical Oceanography, 53(2), pp.613-633.
18. Taylor, J.R. and Thompson, A.F., 2023, Submesoscale dynamics in the upper ocean. Annual Review of Fluid Mechanics, 55(1), pp.103-127.
19. Chor, T., Wenegrat, J.O. and Taylor, J., 2022. Insights into the mixing efficiency of submesoscale centrifugal–symmetric instabilities. Journal of Physical Oceanography, 52(10), pp.2273-2287.
20. Vreugdenhil, C.A., Taylor, J.R., Davis, P.E., Nicholls, K.W., Holland, P.R. and Jenkins, A., 2022, The ocean boundary layer beneath Larsen C Ice Shelf: insights from large-eddy simulations with a near-wall model. Journal of Physical Oceanography, 52(8), pp.1903-1926.

21. Dorrell, R.M., Lloyd, C.J., Lincoln, B.J., Rippeth, T.P., Taylor, J.R., Caulfield, C.C.P., Sharples, J., Polton, J.A., Scannell, B.D., Greaves, D.M. and Hall, R.A., 2022, Anthropogenic mixing in seasonally stratified shelf seas by offshore wind farm infrastructure. Frontiers in Marine Science, 9, p.830927.
22. Strong-Wright, J., and J.R. Taylor, 2022, Modeling the growth potential of the kelp Saccharina Latissima in the North Atlantic. *Front. Mar. Sci.*, doi.org/10.3389/fmars.2021.793977.
23. Middleton, L., P. Davis, J.R. Taylor, and K.W. Nicholls, 2022, Double diffusion as a driver of turbulence in the stratified boundary layer beneath George VI Ice Shelf. *Geophys. Res. Lett.*, p.e2021GL096119.
24. Fine, E.C., J.A. MacKinnon, M. Alford, L. Middleton, J.R. Taylor, S. Cole, N. Couto, A. Le Boyer, and T. Peacock, 2021, Double diffusion, shear instabilities, and heat impacts of a Pacific Summer Water intrusion in the Beaufort Sea. *J. Phys. Ocean.*, *52(2) 189-203.*
25. Gula, J., J.R. Taylor, A. Shcherbina, and A. Mahadevan, 2021, Submesoscale processes and mixing. in: Ocean Mixing; Drivers, Mechanisms and Impacts, eds. M. Meredith and A. Naviera Garabato, *Elsevier.*
26. Wienkers, A.F., L.N. Thomas, and J.R. Taylor, 2021, The influence of front strength on the development and equilibration of symmetric instability. Part 2. Nonlinear evolution. *J. Fluid Mech.,* 926.
27. Wienkers, A.F., L.N. Thomas, and J.R. Taylor, 2021, The influence of front strength on the development and equilibration of symmetric instability. Part 1. Growth & saturation. *J. Fluid Mech.,* 926.
28. Middleton, L, E. Fine, J. Mackinnon, M. Alford, and J.R. Taylor, 2021, Estimating dissipation rates associated with double diffusion. *Geophys. Res. Lett.* 48(15).
29. Howland, C.J., J.R. Taylor and C.P. Caulfield, 2021, Shear-induced breaking of internal gravity waves. *J. Fluid Mech.*, *921.*
30. Howland, C.J., J.R. Taylor, and C.P. Caulfield, 2021, Quantifying mixing and available potential energy in vertically periodic simulations of stratified flows. *J. Fluid Mech.*, 914.
31. Ruan, X., A.F. Thompson, and J.R. Taylor, 2021, The evolution and arrest of a turbulent stratified oceanic bottom boundary layer over a slope: Upslope regime and PV dynamics, *J. Phys. Ocean.*, 51(4), 1077-1089.
32. Couston, L.-A., E. Hester, B. Favier, J.R. Taylor, P.R. Holland, and A. Jenkins, 2020, Topography generation by melting and freezing in a turbulent shear flow, *J. Fluid Mech.*, 911.
33. Middleton, L, C.A. Vreugdenhil, P. Holland, and J.R. Taylor, 2020, Numerical Simulations of Melt-Driven Double-Diffusive Fluxes in a Turbulent Boundary Layer beneath an Ice Shelf, *J. Phys. Ocean.*, 51(2), 403-418.
34. Smith, K.M, C.P. Caulfield, and J.R. Taylor, 2020, Turbulence in forced stratified shear flows, *J. Fluid Mech.*, 910.
35. Wenegrat, J.O., L.N. Thomas, M.A. Sundermeyer, J.R. Taylor, E.A D'Asaro, J.M. Klymak, R.K. Shearman, C.M. Lee, 2020, Enhanced mixing across the gyre boundary at the Gulf Stream front, *Proc. Nat. Acad. Sci.*, 117(30) 17607-17614.
36. Crowe, M., and J.R. Taylor, 2020, The effects of surface wind stress and buoyancy flux on the evolution of a front in turbulent thermal wind balance. *Fluids,* 5(2), 87.
37. Howland, C., C.P. Caulfield, and J.R. Taylor, 2020, Mixing in forced stratified turbulence and its dependence on large-scale forcing. *J. Fluid Mech., 898.*
38. Middleton, L. and J.R. Taylor, 2020, A general criterion for the release of background potential energy through double diffusion, *J. Fluid Mech.*, 893.
39. Taylor, J.R., K.M. Smith, and C.A. Vreugdenhil, 2020, The influence of submesoscales and vertical mixing on the export of sinking tracers in large-eddy simulations, *J. Phys. Ocean.*, 50(5), 1319-1339.

40. Whitt, D.B., M. Lévy, and J.R. Taylor, 2019, Submesoscales Enhance Storm-Driven Vertical Mixing of Nutrients: Insights From a Biogeochemical Large Eddy Simulation. *J. Geophys. Res.*, 124, https://doi.org/10.1029/2019JC015370.
41. Crowe, M., and J.R. Taylor, 2019, Baroclinic instability with a simple model for vertical mixing. *J. Phys. Ocean.*, 49(12), 3273-3300.
42. Taylor, J.R., S.M. de Bruyn Kops, C.P. Caulfield, and P.F. Linden, 2019, Testing the assumptions underlying ocean mixing methodologies using direct numerical simulations, *J. Phys. Ocean.*, 49, 2761-2779.
43. Crowe, M., and J.R. Taylor, 2019, The evolution of a front in turbulent thermal wind balance. Part 2. Numerical Simulations, *J. Fluid Mech.*, 850, 179-211.
44. Ruan, X., A.F. Thompson, and J.R. Taylor, 2019, The evolution and arrest of a turbulent stratified oceanic bottom boundary layer over a slope, *J. Phys. Ocean.*, 49, 469–487.
45. Vreugdenhil, C., and J.R. Taylor, 2019, Stratification effects in the turbulent boundary layer beneath a melting ice shelf: insights from resolved large-eddy simulations, *J. Phys. Ocean.*, 49, 1905–1925.
46. Stamper, M., J.R. Taylor, and B. Fox-Kemper, 2018, The growth and saturation of submesoscale instabilities in the presence of a barotropic jet, *J. Phys. Ocean.*, 48, 2779-2797.
47. Vreugdenhil, C., and J.R. Taylor, 2018, Large-eddy simulations of stratified plane Couette flow using the anisotropic minimum-dissipation model, *Phys. Fluids*, 30(8), 085104.
48. Crowe, M., and J.R. Taylor, 2018, The evolution of a front in turbulent thermal wind balance. Part 1. Theory, *J. Fluid Mech.*, 850, 179-211.
49. Taylor, J.R., 2018, Accumulation and subduction of buoyant tracers at submesoscale fronts, *J. Phys. Ocean.*, 48, 1233-1241.
50. Taylor, J.R., S. Bachman, S., M. Stamper, K. Adams, P. Hosegood, J.-B. Sallee, R. Torres, 2018, Submesoscale Rossby waves on the Antarctic Circumpolar Current, *Science Advances*, 4(3), DOI: 10.1126/sciadv.aao2824.
51. Howland, C., J.R. Taylor, C.P. Caulfield, 2018, Testing linear marginal stability in stratified shear layers. J. Fluid Mech. 839.
52. Whitt, D.B., and J.R. Taylor, 2017, Energetic submesoscales maintain strong mixed layer stratification during an autumn storm, J. Phys. Ocean., 47(10) 2419-2427.
53. Bachman, S.D., J.R. Taylor, K.A. Adams, and P. Hosegood, 2017, Mesoscale and submesoscale effects on mixed layer depth in the Southern Ocean, *J. Phys. Ocean.,* 47, 2173-2188.
54. Kaminski, A.K., C.P. Caulfield, and J.R. Taylor, 2017, Nonlinear evolution of linear optimal perturbations of strongly stratified shear layers, *J. Fluid Mech.,* 825, 213-244.
55. Taylor, J.R., and Q. Zhou, 2017, A multi-parameter criterion for layer formation in a stratified shear flow using sorted buoyancy coordinates, *J. Fluid Mech.,* 823, R5.
56. Whitt, D.B, J.R. Taylor, and M. Levy, M, 2017, Synoptic-to-planetary scale wind variability enhances phytoplankton biomass at ocean fronts, *J. Geophys. Res.,* 122, 4602-4633.
57. Adams, K.A., P. Hosegood, J.R. Taylor, J.-B. Sallee, S.D. Bachman, R. Torres, M. Stamper, 2017, Frontal circulation and submesoscale variability during the formation of a Southern Ocean mesoscale eddy, *J. Phys. Ocean.,* 47, 1737-1753.
58. Zhou, Q., J.R. Taylor., and C.P. Caulfield, 2017, Self-similar mixing in stratified plane Couette flow for varying Prandtl number, *J. Fluid Mech.* 820, 86-120.
59. Zhou, Q., J.R. Taylor., C.P. Caulfield, and P.F. Linden, 2017, Diapycnal mixing in layered stratified plane Couette flow quantified in a tracer-based coordinate, *J. Fluid Mech*. 823, 198-229.
60. Bachman, S.D., B. Fox-Kemper, J.R. Taylor, and L.N. Thomas, 2017, Parameterization

of Frontal Symmetric Instabilities. I: Theory for Resolved Fronts, *Ocean Modelling*, 109, 72-95.

61. Whitt, D.B, M. Levy, and J.R. Taylor, 2017, Low and high frequency oscillatory winds synergistically enhance nutrient entrainment and phytoplankton at fronts, *J. Geophys. Res.*,122, 2, 1016-1041.

62. Stamper, M., and J.R. Taylor, 2016, The transition from symmetric to baroclinic instability in the Eady model. *Ocean Dyn.,* 67(1), 65-80.

63. Portwood, G., S.M. de Bruyn Kops, J.R. Taylor, H. Salehipour, and C.P. Caulfield, 2016, Robust identification of dynamically distinct regions in stratified turbulence. *J. Fluid Mech.* Rapids, 807, R2.

64. Taylor, J.R., E. Deusebio., C.P Caulfield, and R. Kerswell, 2016, A new method for isolating turbulent states in transitional stratified plane Couette flow. *J. Fluid Mech. Rapids,* 808, R1.

65. Shakespeare, C.J., and J.R. Taylor, 2016, Spontaneous wave generation at strongly strained density fronts, *J. Phys. Ocean*. 46 (7), 2063-2081.

66. Taylor, J.R., 2016, The influence of submesoscale restratification and convection on light-limited phytoplankton growth. *Geophys. Res. Lett.* 2016GL069106.

67. Thomas, L.N., J.R. Taylor, E. D'Asaro, C. Lee, and J. Klymak, 2016, Symmetric instability, inertial oscillations, and turbulence at the Gulf Stream front. *J. Phys. Ocean.* 46, 197-217.

68. Bachman, S.D., and J.R. Taylor, 2015, Numerical simulations of the equilibration between eddy-induced restratification and vertical mixing. *J. Phys. Ocean.* 46, 919-935.

69. Watteaux, R., R. Stocker, and J.R. Taylor, 2015, Sensitivity of the nutrient uptake rate by chemotactic bacteria to physical and biological parameters in a turbulent environment. *J. Theor. Biol.* 387, 120-135.

70. Deusebio, E., C.P. Caulfield, and J.R. Taylor, 2015. The intermittency boundary in stratified plane Couette flow. *J. Fluid Mech.*, 781, 298-329.

71. Shakespeare, C.J., and J.R. Taylor, 2015, The spontaneous generation of inertia-gravity waves during frontogenesis forced by large strain: numerical simulations. *J. Fluid Mech.,* 772, 508-534.

72. Enriquez, R.M., and J.R. Taylor, 2015, The competition between wind-driven mixing and surface heating in triggering spring phytoplankton blooms. *J. Mar. Sci.,* doi:10.1093/icesjms/fsv071.

73. Shakespeare, C.J., and J.R. Taylor, 2014, The spontaneous generation of inertia-gravity waves generated during frontogenesis forced by large strain: theory. *J. Fluid Mech.*, 757, 817-853.

74. Kaminski, A.K., C.P. Caulfield, and J.R. Taylor, 2014. Transient growth in strongly stratified shear layers. *J. Fluid. Mech.,* 758, R4.

75. Shcherbina, A. et al, 2014. The LatMix summer campaign: Submesoscale stirring in the upper ocean. *Bulletin of the American Meteorological Society*.

76. Bachman, S.D., and J.R. Taylor, 2014. Modelling of partially resolved oceanic symmetric instability. *Ocean Modelling*. 82, 15-27.

77. Thomas, L.N., and J.R. Taylor, 2014. Damping of inertial motions by parametric subharmonic instability. *J. Fluid Mech.*. 743, 280-294.

78. Ferrari R., S.T. Merrifield and J.R. Taylor, 2014. Shutdown of convection triggers increase of surface chlorophyll. *J. Mar. Sys.*, http://dx.doi.org/10.1016/j.jmarsys.2014.02.009

79. Shakespeare C.J. and J.R. Taylor, 2013, Geostrophic adjustment and frontogenesis in zero and uniform PV flows: a generalised mathematical model. *J. Fluid Mech.*, 736, 366-413.

80. Thomas L.N., J.R. Taylor, R. Ferrari, and T.M. Joyce, 2013, Symmetric instability in the

Gulf Stream. *Deep Sea Res. II,* 91, 96-110.
81. Taylor J. R., and R. Stocker, 2012, Trade-offs of chemotactic foraging in turbulent water, *Science,* 338, (6107), 675-679.
82. Taylor J.R., and R. Ferrari, 2011, Ocean fronts trigger high latitude phytoplankton blooms, *Geophys. Rese. Lett.* doi:10.1029/2011GL049312.
83. Taylor J.R., and R. Ferrari, 2011, Turbulent convection and the onset of the spring phytoplankton bloom. *Limnology and Oceaography*. 56, 6, 2293–2307.
84. Thomas L.N., and J.R. Taylor, 2010, Reduction of the usable wind-work on the general circulation by forced symmetric instability. *Geophys. Res. Lett.*, 37, L18606, doi:10.1029/2010GL044680.
85. Taylor J.R., and R. Ferrari, 2010, Buoyancy and wind-driven convection at mixed layer density fronts. *J. Phys. Ocean.,* 40, 1222-1242.
86. Gayen B., J.R. Taylor, and S. Sarkar, 2010, Large eddy simulation of a stratified boundary layer under an oscillatory current. *J. Fluid Mech.,* 643*, 233-266.*
87. Taylor J.R., and R. Ferrari, 2009, On the equilibration of a symmetrically unstable front via a secondary shear instability. *J. Fluid. Mech.,* 622, 103-113.
88. Taylor J.R., and S. Sarkar, 2008, Stratification effects in a bottom Ekman layer *J. Phys. Ocean.,* 38, 2535-2555.
89. Taylor J.R., and S. Sarkar, 2007, Direct and large eddy simulations of a bottom Ekman layer under and external stratification *Int. J. Heat and Fluid Flow,* 29, 3, 721-732.
90. Taylor J.R., and S. Sarkar, 2007, Internal gravity waves generated by a turbulent bottom Ekman layer. *J. Fluid Mech.,* 590, 1, 331-354.
91. Taylor J.R., S. Sarkar, and V. Armenio**,** 2005, Large eddy simulation of stably stratified open channel flow. *Phys. Fluids* 17, 116602.
92. Bennett A.F., J.R. Taylor, and B.S. Chua, 2005, Lattice Boltzmann open boundaries for hydrodynamic models. *J. Comp. Phys.,* 203, 89-111.
93. Taylor J.R., K.K. Falkner, U. Schauer, and M. Meredith, 2003, Quantitative considerations of dissolved Barium as a tracer in the Arctic Ocean. *J. Geophys. Res.,* 108 (C12), 3374.

PROFESSIONAL ACTIVITIES

- Ocean Visions Expert Working Group, 2021
- Co-Director, Fluid Dynamics of Sustainability and the Environment Summer School, 2021
- Peer Review College, Natural Environment Research Council, 2012 – 2015.
- Member of organizing committee and head of computational projects, Fluid Dynamics of Sustainability and the Environment Summer School, 2012 – 2018.

RESEARCH GRANTS

2021 – present Principal Investigator, Assessing carbon sequestration by a kelp farm in the Benguela upwelling system, Moore Foundation ($291,250)

2021 – present Principal Investigator, Modeling carbon sequestration potential of macroalgae, CCRC (£145,400)

2019 – present Principal Investigator, *NSFGEO-NERC*: Collaborative Research: Energy transfer between submesoscale vortices and resonantly-forced inertial motions in the northern Gulf of Mexico, Natural Environment Research Council (£294,281)

2016 – 2019 Principal Investigator, Understanding the Ice-shelf Ocean Boundary Layer, Natural Environment Research Council (£371,126)

2015 – 2018 Co-Investigator, Gulf of Mexico Research Initiative, CARTHE consortium (£366,636)

2013 – 2018 Co-Investigator, Mathematical Underpinnings of Stratified Turbulence (MUST), Engineering and Physical Sciences Research Council (£2,324,418)

2013 – 2016 Co-Investigator, Surface Mixed Layer Interactions at Submesoscales (SMILES), Natural Environment Research Council, (£316,215)
2013 Research Grant, Isaac Newton Trust, (£20,773)
2011 – 2012 Starting grant, Engineering and Physical Sciences Research Council Fund, University of Cambridge, (£50,000)

TEACHING ACTIVITIES

2012 – 2023 Lecturer – Fluid Dynamics of Climate, University of Cambridge, UK
2023 Lecturer – Mathematics for Natural Sciences, University of Cambridge, UK
2017 – 2020 Lecturer – Differential Equations, University of Cambridge, UK
2012 – 2015 Lecturer – Mathematics for Natural Sciences, University of Cambridge, UK
2012 – 2021 Lecturer – Ocean Dynamics, Fluid Dynamics of Sustainability and the Environment Summer School, University of Cambridge, UK and École Polytechnique, France.
2018 Lecturer – CNRS Summer School on Active Transport in the Ocean, Wimmeraux, France.
2013 – 2014 Examiner, Senior Examiner, Part IB Mathematics for Natural Sciences Tripos, University of Cambridge, UK.
2013 – Supervisor – Differential Equations, Dynamics and Relativity, Fluid Dynamics, St. John's College, Cambridge, UK.

ADMINISTRATIVE ROLES

Co-Director, Fluid Dynamics of Sustainability and the Environment Summer School, 2021, 2023
Director for Computational Teaching for All Mathematics (CATAM), 2018 - present
Chair of Computational Projects Assessment Committee (CPAC), 2018 - present
Director of Studies in Mathematics, St. John's College, 2017 - 2019
Teaching Committee, Artificial Intelligence for Environmental Risk CDT, 2020 - present
Computing and Information Technology Committee, 2018 - present
Graduate Education Committee, 2014 - 2019
Applied mathematics coordinator for 3rd and 4th term reports and PhD registration, 2014 - 2018
Part III committee, 2011 - 2014
Examiner, Part 1B Mathematics, Natural Science Tripos, 2013
Senior Examiner, Part 1B Mathematics, Natural Science Tripos, 2014

INVITED LECTURES

Stanley Gray Annual Lecture, Institute for Marine Engineering, Science, and Technology, 13 December, 2023, Trinity House, London.
ORCHESTRA/RoSES Annual Meeting, 2-4 July, 2019, Plymouth
CNRS Summer School on Active Transport in the Ocean, 2-6 July, 2018, Wimmeraux
Gordon Conference on Ocean Mixing, 3-8 June 2018, Andover.
IUGG Conference on Mathematical Geophysics, 6-10 June, 2016, Paris
Turbulence and the Climate System, 24-26 August, 2016, NCAR, Boulder
Theory of Climate, 2-6 March, 2015, Les Houches
National Meeting of the Royal Meteorological Society, 16 April 2014, London
Fundamentals of Climate, Atmosphere, and Ocean Dynamics, 12-14 May, 2014, Hamburg
OSMOSIS project science meeting, 22-23 May, 2014, Norwich
Andreas Acrivos Dissertation Award Lecture, APS DFD meeting, 2008, San Antonio

AWARDS AND HONORS

- Pilkington Prize, University of Cambridge, 2020

- Faculty Lecturing Award, Faculty of Mathematics, University of Cambridge, 2019
- Andreas Acrivos Dissertation Award in Fluid Dynamics, American Physical Society, 2008
- Mathematical Sciences Postdoctoral Research Fellow, National Science Foundation, 2008-2011
- National Defense Science and Engineering Graduate Fellow
- Sigma Pi Sigma, National Physics Honor Society

ADVISORY ROLES

Supervisor: Emma Beniston (PhD student, 2024 –)
Co-supervisor: Zhenna Azimrat-Andrews (PhD student, 2024 –)
Supervisor: Bethan Wynne-Catanach (PDRA, 2024 –)
Supervisor: Wren Stuart (PhD student, 2023 –)
Co-supervisor: Andrew Zhang (PhD student, 2023 –)
Supervisor: Jago Strong-Wright (PhD student, 2022 –)
Supervisor: Si Chen (PDRA, 2022 – 2024)
Supervisor: Jooeun Yoon (PDRA, 2022 – 2024)
Supervisor: Kenneth Li (PDRA, 2022 – 2024)
Co-supervisor: Charles Powell (PhD student, 2021 –)
Supervisor: Leyu Yao (Master's, PhD student, 2020 –)
Co-supervisor: Josephine Anselin (PhD student, 2021 –)
Supervisor: Amir Atoufi (PDRA, 2021 –)
Supervisor: Jenny Dingwall (PhD student, 2020 –)
Supervisor: Jinliang Liu (PDRA, 2020 – 2023)
Supervisor: Aaron Wienkers (PhD student, 2018 – 2023)
Supervisor: Leo Middleton (PhD student, 2017 – 2022)
Supervisor: Cat Vreugdenhil (PDRA, 2017 – 2020)
Co-supervisor: Chris Howland (PhD student, 2016 – 2020)
Supervisor: Matthew Crowe (PhD student, 2015 – 2019)
Supervisor: Kat Smith (PDRA, 2017 – 2019)
Supervisor: Qi Zhou (PDRA, 2015 – 2017)
Supervisor: Megan Stamper (PhD student, 2013 – 2017)
Supervisor: Scott Bachmann (PDRA, 2013 – 2017)
Supervisor: Daniel Whitt (PDRA, 2015 – 2017)
Supervisor: Alexis Kaminski (PhD student, 2012 – 2016)
Supervisor: Callum Shakespeare (PhD student, 2012 – 2015)
Supervisor: Rica Enriquez (PDRA, 2013 – 2015)
Supervisor: Enrico Deusebio (PDRA, 2014 – 2015)
Supervisor: Romain Watteaux (PDRA, 2012 – 2013)