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Education:

Ph.D.	Mechanical Engineering	Cornell University	1999
	Thesis: Drag Reduction in Near-Wall Turbulent Flow		
	Advisor: Professor John L. Lumley		
C.P.G.S.	Engineering	Cambridge University, U.K.	1993
B.S.	Mechanical Engineering	Carnegie Mellon University	1992

Professional & Research Experience:

Research Associate Professor
2022– University of Washington, Dept. of Atmospheric Sciences

Research Scientist
2003–2022 University of Washington, Dept. of Atmospheric Sciences

Postdoctoral Researcher
2000–2003 University of Washington, Dept. of Applied Mathematics
VIGRE (Vertical Integration of Research & Education) Postdoctoral Researcher
1999–2000 University of California San Diego, Dept. of Mechanical & Aerospace Engineering
1999 (Jan.–Jul.) Cornell University, Sibley School of Mechanical & Aerospace Engineering

Industrial Experience
2000 Consultant, United Technologies Research Center, East Hartford, CT

Awards and Honors:

2018	AGU Editors' Citation for Excellence in Refereeing from *Journal of Advances in Modeling Earth Systems (JAMES)*
2016	AGU Editors' Citation for Excellence in Refereeing from *Reviews of Geophysics*
1992–1993	Churchill Scholarship, Churchill College, Cambridge University, UK
1992	Outstanding Senior in Mechanical Engineering, Carnegie Mellon University

Journal Publications (h-index: 28 (Web of Science), 30 (Google Scholar)):

70. McCoy, I. L., Wyant, M. C., Blossey, P. N., Bretherton, C. S., & Wood, R. (2024). Aitken mode aerosols buffer decoupled mid-latitude boundary layer clouds against precipitation depletion. *J. Geophys. Res.-Atmos.*, 129, e2023JD039572. https://doi.org/10.1029/2023JD039572

69. Feingold, Graham et al. (including Blossey). 2024. Physical science research needed to evaluate the viability and risks of marine cloud brightening. *Sci. Adv.* 10,eadi8594. https://doi.org/10.1126/sciadv.adi8594

68. Peng, L., Blossey, P. N., Hannah, W. M., Bretherton, C. S., Terai, C. R., Jenney, A. M., & Pritchard, M. (2024). Improving stratocumulus cloud amounts in a 200-m resolution multi-scale modeling framework

through tuning of its interior physics. *J. Adv. Model. Earth Sys.*, 16, e2023MS003632. https://doi.org/10.1029/2023MS003632

67. Atlas, R. L., Bretherton, C. S., Sokol, A. B., Blossey, P. N., & Khairoutdinov, M. F., 2024. Tropical cirrus are highly sensitive to ice microphysics within a nudged global storm-resolving model. *Geophys. Res. Lett.*, 51, e2023GL105868. https://doi.org/10.1029/2023GL105868

66. Bolot, M., Harris, L. M., Cheng, K.-Y., Merlis, T. M., Blossey, P. N., Bretherton, C. S., Clark, S. K., Kaltenbaugh, A., Zhou, L.,& Fueglistaler, S., 2023. Kilometer-scale global warming simulations and active sensors reveal changes in tropical deep convection. *npj Clim Atmos Sci* 6, 209. https://doi.org/10.1038/s41612-023-00525-w

65. Sarkar, M., A. Bailey, P. Blossey, S. P. de Szoeke, D. Noone, E. Quiñones Meléndez, M. D. Leandro and P. Y. Chuang, 2023. Sub-cloud rain evaporation in the North Atlantic winter trade winds derived by pairing isotopic data with a bin-resolved microphysical model. *Atmos. Chem. Phys.*, 23, 12671-12690, https://doi.org/10.5194/acp-23-12671-2023

64. Duetsch, M., E. J. Steig, P. N. Blossey, and A. G. Pauling, 2023. Response of Water Isotopes in Precipitation to a Collapse of the West Antarctic Ice Sheet in High-Resolution Simulations with the Weather Research and Forecasting Model. *J. Climate*, 36, 5417-5430, https://doi.org/10.1175/JCLI-D-22-0647.1

63. Risi, C., Muller, C., Vimeux, F., Blossey, P., Védeau, G., Dufaux, C., & Abramian, S. (2023). What controls the mesoscale variations in water isotopic composition within tropical cyclones and squall lines? Cloud resolving model simulations in radiative-convective equilibrium. *J. Adv. Model. Earth Sys.*, 15, e2022MS003331. https://doi.org/10.1029/2022MS003331

62. Erfani, E., Blossey, P., Wood, R., Mohrmann, J., Doherty, S. J., Wyant, M., & O, K.-T. (2022). Simulating aerosol lifecycle impacts on the subtropical stratocumulus-to-cumulus transition using large eddy simulations. *J. Geophys. Res.*, 127, e2022JD037258. http://doi.org/10.1029/2022JD037258

61. Chun, J.-Y., Wood, R., Blossey, P., and Doherty, S. J., 2023. Microphysical, macrophysical, and radiative responses of subtropical marine clouds to aerosol injections. *Atmos. Chem. Phys.*, 23, 1345-1368, https://doi.org/10.5194/acp-23-1345-2023

60. Dennis L Hartmann, Qiang Fu, Peter N Blossey, Brittany D Dygert, Adam B Sokol, 2022. The Vertical Profile of Radiative Cooling and Lapse Rate in a Warming Climate *J. Climate*, 35(19), 2653-2665. https://doi.org/10.1175/JCLI-D-21-0861.1

59. Marat Khairoutdinov, Christopher Bretherton and Peter Blossey, 2022. Global System for Atmospheric Modeling: Model Description and Preliminary Results *J. Adv. Model. Earth Sys.*, 14, e2021MS002968. https://doi.org/10.1029/2021MS002968

58. Wyant, M. C., Bretherton, C. S., Wood, R., Blossey, P. N., & McCoy, I. L. (2022). High free-tropospheric Aitken-mode aerosol concentrations buffer cloud droplet concentrations in large-eddy simulations of precipitating stratocumulus. *J. Adv. Model. Earth Sys.*, 14, e2021MS002930. https://doi.org/10.1029/2021MS002930

57. Peng, L., Pritchard, M., Hannah, W., Blossey, P., Worley, P. and Bretherton, C. S. (2022). Load-balancing intense physics calculations to embed regionalized high-resolution cloud resolving models in the E3SM and CESM climate models *J. Adv. Model. Earth Sys.*, 14, e2021MS002841. https://doi.org/10.1029/2021MS002841

56. Atlas, R., Bretherton, C. S., Khairoutdinov, M., Blossey, P. N., 2022. Hallett-Mossop rime splintering dims the Southern Ocean: New insight from global cloud-resolving simulations. *AGU Advances*, 3, e2021AV000454. https://doi.org/10.1029/2021AV000454

55. Turbeville, S. M., Nugent, J. M., Ackerman, T. P., Bretherton, C. S., and Blossey, P. N., 2022. Tropical Cirrus in Global Storm-Resolving Models. Part II: Cirrus Life Cycle and Top-of-Atmosphere Radiative Fluxes. *Earth and Space Science*, 9, e2021EA001978.
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54. Nugent, J. M., Turbeville, S. M., Bretherton, C. S., Blossey, P. N., and Ackerman, T. P., 2022. Tropical cirrus in global storm-resolving models. Part I: Role of deep convection. *Earth and Space Science*, 9, e2021EA001965.
https://doi.org/10.1029/2021EA001965

53. Gasparini, B., Sokol, A. B., Wall, C. J., Hartmann, D. L., and Blossey, P. N., 2021. Diurnal differences in tropical maritime anvil cloud evolution. *Journal of Climate* (published online ahead of print 2021),
https://doi.org/10.1175/JCLI-D-21-0211.1

52. Risi, C., Muller, C., and Blossey, P., 2021. Rain evaporation, snow melt and entrainment at the heart of water vapor isotopic variations in the tropical troposphere, according to large-eddy simulations and a two-column model *J. Adv. Model. Earth Sys.*, 13, e2020MS002381.
https://doi.org/10.1029/2020MS002381

51. Peter N. Blossey, Christopher S. Bretherton, Johannes Mohrmann, 2021. Simulating observed cloud transitions in the northeast Pacific during CSET *Monthly Weather Review*, 149(8), 2633-2658,
https://doi.org/10.1175/MWR-D-20-0328.1

50. Bjorn Stevens, Sadrine Bony, David Farrell et al (including Blossey as one of >200 co-authors), 2021. EUREC4A. *Earth Syst. Sci. Data*, 13, 4067-4119,
https://doi.org/10.5194/essd-13-4067-2021

49. Rachel Atlas, Christopher S. Bretherton, Peter N. Blossey, Andrew Gettelman, Charles Bardeen, Pu Lin, Yi Ming, 2020. How well do large-eddy simulations and global climate models represent observed boundary layer structures and low clouds over the summertime Southern Ocean? *J. Adv. Model. Earth Sys.*, 12, e2020MS002205.
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48. Chris Terai, Michael Pritchard, Chris Bretherton, Peter Blossey, 2020. The impact of resolving sub-kilometer processes on aerosol-cloud interactions in global model simulations. *J. Adv. Model. Earth Sys.*, 12, e2020MS002274.
https://doi.org/10.1029/2020MS002274

47. Risi, C., Muller, C., and Blossey, P., 2020. What controls the water vapor isotopic composition near the surface of tropical oceans? Results from an analytical model constrained by large-eddy simulations. *J. Adv. Model. Earth Sys.*, 12, e2020MS002106.
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46. Metz, J.J., D.R. Durran, and P.N. Blossey, 2019. Unusual trapped mountain lee waves with deep vertical penetration and significant stratospheric amplitude. *J. Atmos. Sci.*, 77, 633-646,
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45. Duetsch, M., Blossey, P. N., Steig, E. J., and Nusbaumer, J. M., 2019. Nonequilibrium fractionation during ice cloud formation in iCAM5: Evaluating the common parameterization of supersaturation as a linear function of temperature. *J. Adv. Model. Earth Syst.* 11.
https://doi.org/10.1029/2019MS001764

44. B. Gasparini, P. N. Blossey, D. L. Hartmann, G. Lin and J. Fan, 2019. What drives the lifecycle of tropical anvil clouds? *J. Adv. Model. Earth Syst.*, 11.
https://doi.org/10.1029/2019MS001736

43. D. L. Hartmann, P. N. Blossey and B. D. Dygert, 2019. Convection and Climate: What Have We Learned from Simple Models and Simplified Settings? *Curr. Clim. Change. Rep.*, https://doi.org/10.1007/s40641-019-00136-9

42. John V. Hurley, Kathryn L. Verlinden, Peter N. Blossey, Zhiming Kuang and David Noone, 2019. Moist entropy and water isotopologues in a zonal overturning circulation framework of the Madden-Julian Oscillation. *J. Geophys. Res.*, 124. https://doi.org/10.1029/2018JD029510

41. D. L. Hartmann, B. Gasparini, S. E. Berry and P. N. Blossey, 2018. The Life Cycle and Net Radiative Effect of Tropical Anvil Clouds *J. Adv. Model. Earth Syst.*, 10, 3012-3029. https://doi.org/10.1029/2018MS001484

40. P. N. Blossey, C. S. Bretherton, J. A. Thornton and K. S. Virts, 2018. Locally enhanced aerosols over a shipping lane produce convective invigoration but weak overall indirect effects in cloud-resolving simulations. *Geophysical Research Letters*, 45, 9305-9313, https://doi.org/10.1029/2018GL078682

39. M. C. Wyant, C. S. Bretherton and P. N. Blossey, 2018. The numerical effects of cross-grid flow in simulations of the marine boundary layer. *Journal of Advances in Modeling Earth Systems*, 10, 466-480, https://doi.org/10.1002/2017MS001241

38. C. S. Bretherton and P. N. Blossey, 2017. Understanding mesoscale aggregation of shallow cumulus convection using large-eddy simulation. *Journal of Advances in Modeling Earth Systems*, 9, 2798-2821, https://doi.org/10.1002/2017MS000981

37. R. Neggers and coauthors (including P. N. Blossey), 2017. Single-column model simulations of subtropical marine boundary-layer cloud transitions under weakening inversions. *Journal of Advances in Modeling Earth Systems*, 9, 2385-2412, https://doi.org/10.1002/2017MS001064

36. K.-M. Xu, Z. Li, A. Cheng, P. N. Blossey and C. Stan, 2017. Differences in the hydrological cycle and sensitivity between multiscale modeling frameworks with and without a higher-order turbulence closure. *Journal of Advances in Modeling Earth Systems*, 9, 2120-2137, https://doi.org/10.1002/2017MS000970

35. A. Bailey, P. N. Blossey, D. Noone, J. Nusbaumer and R. Wood, 2017. Detecting shifts in tropical moisture imbalances with satellite-derived isotope ratios in water vapor. *Journal of Geophysical Research*, 122, 5763-5779, https://doi.org/10.1002/2016JD026222

34. D. Lowenthal, G. Hallar, I. McCubbin, R. David, R. Borys, P. Blossey, A. Muhlbauer, Z. Kuang, and M. Moore, 2016. Isotopic fractionation in wintertime orographic clouds. *Journal of Atmospheric and Oceanic Technology* 33, 2663–2678, https://doi.org/10.1175/JTECH-D-15-0233.1

33. P. N. Blossey, C. S. Bretherton, A. Cheng, S. Endo, T. Heus, A. Lock and J. J. van der Dussen, 2016. CGILS Phase 2 LES intercomparison of response of subtropical marine low cloud regimes to CO2 quadrupling and a CMIP3-composite forcing change. *Journal of Advances in Modeling Earth Systems*, 08, https://doi.org/10.1002/2016MS000765

32. M. Moore, P. N. Blossey, A. Muhlbauer and Z. Kuang, 2016. Microphysical controls on the isotopic composition of wintertime orographic precipitation. *Journal of Geophysical Research*, 121, 7235–7253, https://doi.org/10.1002/2015JD023763

31. S. R. de Roode, I. Sandu, J. J. van der Dussen, A. S. Ackerman, P. Blossey, D. Jarecka, A. Lock, A. P. Siebesma, and B. Stevens, 2016. Large eddy simulations of EUCLIPSE/GASS Lagrangian stratocumulus to cumulus transitions: Mean state, turbulence, and decoupling. *Journal of the Atmospheric Sciences*, 73, 2485–2508,
https://doi.org/10.1175/JAS-D-15-0215.1

30. M. O. G. Hills, D. R. Durran and P. N. Blossey, 2016. The dissipation of trapped lee waves. Part II: The relative importance of the boundary layer and the stratosphere. *Journal of the Atmospheric Sciences*, 73, 943–955,
https://doi.org/10.1175/JAS-D-15-0175.1

29. D. R. Durran, M. O. G. Hills and P. N. Blossey, 2015. The dissipation of trapped lee waves. Part I: Leakage of inviscid waves into the stratosphere. *Journal of the Atmospheric Sciences*, 72, 1569–1584,
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https://doi.org/10.1002/2014MS000355

27. C. R. Jones, C. S. Bretherton and P. N. Blossey, 2014. Fast stratocumulus timescale in mixed layer model and large eddy simulation. *Journal of Advances in Modeling Earth Systems*, 6, 206–222,
https://doi.org/10.1002/2013MS000289

26. C. S. Bretherton and P. N. Blossey, 2014. Low cloud reduction in a greenhouse-warmed climate: Results from Lagrangian LES of a subtropical marine cloudiness transition. *Journal of Advances in Modeling Earth Systems*, 6, 91–114,
https://doi.org/10.1002/2013MS000250

25. M. Moore, Z. Kuang and P. N. Blossey, 2014. A moisture budget perspective of the amount effect. *Geophysical Research Letters*, 41, 1329–1335,
https://doi.org/10.1002/2013GL058302

24. M. Zhang and 39 co-authors (including P. N. Blossey), 2013. CGILS: Results from the first phase of an international project to understand the physical mechanisms of low cloud feedbacks in general circulation models. *Journal of Advances in Modeling Earth Systems*, 5, 826–842,
https://doi.org/10.1002/2013MS000246

23. J. J. van der Dussen and nine co-authors (including P. N. Blossey), 2013. The GASS/EUCLIPSE model intercomparison of the stratocumulus transition as observed during ASTEX: LES results. *Journal of Advances in Modeling Earth Systems*, 5, 483–499,
https://doi.org/10.1002/jame.20033

22. P. N. Blossey, C. S. Bretherton, M. Zhang, A. Cheng, S. Endo, T. Heus, Y. Liu, A. Lock, S. R. de Roode and K.-M. Xu, 2013. Marine low cloud sensitivity to an idealized climate change: The CGILS LES intercomparison. *Journal of Advances in Modeling Earth Systems*, 5, 234–258,
https://doi.org/10.1002/jame.20025

21. C. S. Bretherton, P. N. Blossey and C. R. Jones, 2013. Mechanisms of marine low cloud sensitivity to idealized climate perturbations: A single-LES exploration extending the CGILS cases. *Journal of Advances in Modeling Earth Systems*, 5, 316–337,
https://doi.org/10.1002/jame.20019

20. M. Zhang, C. S. Bretherton, P. N. Blossey, S. Bony, F. Brient and J.-C. Golaz, 2012. The CGILS experimental design to investigate low cloud feedbacks in general circulation models by using single-column and large-eddy simulation models. *Journal of Advances in Modeling Earth Systems*, Vol. 4,

M12001,
https://doi.org/10.1029/2012MS000182

19. M. C. Wyant, C. S. Bretherton, P. N. Blossey and M. Khairoutdinov, 2012. Fast cloud adjustment to increasing CO2 in a superparameterized climate model. *Journal of Advances in Modeling Earth Systems*, Vol. 4, M05001, 14 PP.
https://doi.org/10.1029/2011MS000092

18. D. R. Durran and P. N. Blossey, 2012. Implicit-explicit multistep methods for fast wave-slow wave problems. *Monthly Weather Review*, 140, 1307–1325.
https://doi.org/10.1175/MWR-D-11-00088.1

17. C. S. Bretherton, J. Uchida and P. N. Blossey 2010. Slow manifolds and multiple equilibria in stratocumulus-capped boundary layers. *Journal of Advances in Modeling Earth Systems*, Vol. 2, Art.#14, 20 pp.,
https://doi.org/10.3894/JAMES.2010.2.14

16. P. N. Blossey, Z. Kuang and D. M. Romps 2010. Isotopic composition of water in the tropical tropopause layer in cloud-resolving simulations of an idealized tropical circulation. *Journal of Geophysical Research*, 115, D24309,
https://doi.org/10.1029/2010JD014554

15. J. Uchida, C. S. Bretherton and P. N. Blossey 2010. The sensitivity of stratocumulus-capped mixed layers to cloud droplet concentration: Do LES and mixed-layer models agree? *Atmospheric Chemistry and Physics*, vol. 10, pp. 4097-4109.

14. S. J. Woolnough, P. N. Blossey, K.-M. Xu, P. Bechtold, J.-P. Chaboureau, T. Hosomi, S. F. Iacobellis, Y. Luo, J. C. Petch, R. Y. Wong and S. Xie 2010. Modeling convective processes during the suppressed phase of a Madden-Julian Oscillation: Comparing single-column models with cloud-resolving models. *Quarterly Journal of the Royal Meteorological Society*, Vol. 136, pp. 333-353.

13. M. C. Wyant, C. S. Bretherton and P. N. Blossey 2009. Understanding subtropical low cloud response to a warmer climate in a superparameterized climate model. Part I. Regime sorting and physical mechanisms. *Journal of Advances in Modeling Earth Systems*, Vol. 1, Art. #7, 11 pp.

12. P. N. Blossey, C. S. Bretherton and M. C. Wyant 2009. Understanding subtropical low cloud response to a warmer climate in a superparameterized climate model. Part II. Column modeling with a cloud resolving model. *Journal of Advances in Modeling Earth Systems*, Vol. 1, Art. #8, 14 pp.

11. M. A. Lopez, D. L. Hartmann, P. N. Blossey, R. Wood, C. S. Bretherton and T. Kubar 2009. A test of the simulation of tropical convective cloudiness by a cloud-resolving model. *Journal of Climate*, vol. 22, pp. 2834-2849.

10. J. C. Petch, P. N. Blossey and C. S. Bretherton 2008. Differences in the lower troposphere in two- and three-dimensional cloud-resolving model simulations of deep convection. *Quarterly Journal of the Royal Meteorological Society*, vol. 134, issue 636, pp. 1941-1946.

9. P. N. Blossey and D. R. Durran 2008. Selective monotonicity preservation in scalar advection. *Journal of Computational Physics*, vol. 227, pp. 5160-5183.

8. C. S. Bretherton, P. N. Blossey and J. Uchida 2007. Cloud droplet sedimentation, entrainment efficiency, and subtropical stratocumulus albedo. *Geophysical Research Letters*, 34, L03813,
https://doi.org/10.1029/2006GL027648.

7. P. N. Blossey, C. S. Bretherton, J. Cetrone and M. Khairoutdinov 2007. Cloud-resolving model simulations of KWAJEX: Model sensitivities and comparisons with satellite and radar observations. *Journal of the Atmospheric Sciences*, vol. 64, pp. 1488-1508.

6. C. S. Bretherton, P. N. Blossey and M. E. Peters 2006. Comparison of simple and cloud-resolving models of moist convection-radiation interaction with a mock-Walker circulation. *Theoretical and Computational Fluid Dynamics*, vol. 20, pp. 421–442.
5. C. S. Bretherton, P. N. Blossey & M. Khairoutdinov 2005. An energy-balance analysis of deep convective self-aggregation above uniform SST. *Journal of the Atmospheric Sciences*, vol. 62, pp. 4273–4292.
4. R. Wood & P. N. Blossey 2005. Comments on: "On the parameterization of the autoconversion process. Part I: Analytical formulation of the Kessler-type parameterizations". *Journal of the Atmospheric Sciences*, vol. 62, pp. 3003–3006.
3. Z. Kuang, P. N. Blossey & C. S. Bretherton 2005. A DARE approach for 3D cloud resolving simulations of large scale atmospheric circulation. *Geophysical Research Letters*, vol. 32, L02809.
2. J. L. Lumley & P. N. Blossey 1998. Control of turbulence, *Annual Review of Fluid Mechanics*, vol. 30, pp. 311–327.
1. J. B. Milford, D. Gao, S. Sillman, P. N. Blossey & A. G. Russell 1994. Total reactive nitrogen (NO_y) as an indicator of the sensitivity of ozone to reductions in hydrocarbons and NO_x, *Journal of Geophysical Research*, vol. 99, pp. 3533–3542.

Other Publications:

8. Feingold G., V. P. Ghate, L. M. Russell, et al. (including Blossey), 2022. DOE-NOAA Marine Cloud Brightening Workshop. U.S. Department of Energy and U.S. Department of Commerce NOAA; DOE/SC-0207; NOAA Technical Report OAR ESRL/CSL-1.
7. V. Krasnopolsky, M. Fox-Rabinowitz, A. Belochitski, P. J. Rasch, P. Blossey and Y. Kogan 2011. Development of neural network convection parameterizations for climate and NWP models using Cloud Resolving Model simulations. *NCEP Office Note*, No. 469.
6. P. N. Blossey, S. Narayanan & T. R. Bewley, 2002. Dynamics and control of jets in crossflow. In *IUTAM Symposium on Turbulent Mixing and Combustion*, Proceedings of the IUTAM Symposium held in Kingston, Ontario, Canada, June 3-6, 2001, ed. A. Pollard & S. Candel, Dordrecht, the Netherlands: Kluwer Academic Publishers, pp. 45–56.
5. J. L. Lumley, D. Rempfer, P. Blossey & L. Parsons 2001. Low-dimensional dynamical model of a turbulent boundary layer over a compliant surface: preliminary results. In *Fluid Mechanics and the Environment: Dynamical Approaches*, ed. J. L. Lumley, New York: Springer–Verlag, Lecture Notes in Physics, no. 566, pp. 267–284.
4. P. N. Blossey & J. L. Lumley 2000. A low-dimensional approach to turbulence control in the minimal flow unit. In *Intermittency in Turbulent Flows*, ed. J. C. Vasillicos, Cambridge, UK: Cambridge University Press, pp. 1–23.
3. P. N. Blossey & J. L. Lumley 1999. Reduced-order modeling and control of near-wall turbulence. In *Proceedings 38th IEEE Conference on Decision and Control*, pp. 2851–2856, Phoenix, AZ, December 7–10, 1999.
2. J. L. Lumley, P. N. Blossey & B. Podvin-Delarue 1999. Low dimensional models, the minimal flow unit and control. In *Fundamental Problematic Issues in Turbulence Research*, ed. A. Gyr, W. Kinzelbach & A. Tsinober, Basel: Birkhauser, pp. 57–66.
1. J. L. Lumley & P. N. Blossey 1999. The low dimensional approach to turbulence. In *Modeling Complex Turbulent Flows*, ed. M. D. Salas, J. Hefner & L. Sakell, Dordrecht, the Netherlands: Kluwer Academic Publishers, pp. 89–106.

Funding:

NSF: "Collaborative Research: AGS-FIRP Track3: Snow Sensitivity to Clouds in a Mountain Environment (S2noCLiME)", LynnMcMurdie (PI), Peter Blossey (co-PI), 2024–2027, $1,121,779, Grant number AGS-2348450

Simons: "Modeling Atmospheric Turbulence and its Impacts on Plume Dispersion for Stratospheric Aerosol Injection", Rob Wood (PI), Lekha Patel, Peter Blossey (co-PIs), $1,254,674, 2024–2027, Award number SFI-MPS-SRM-00005157 (Simons Foundation)

NOAA: "Investigating the MJO-TC connection and its role in subseasonal US precipitation prediction", Daehyun Kim (PI, 2022-2023), Peter Blossey (PI, 2024- after transfer from Kim), $451,383, Grant number NA22OAR4310608.

NASA: "Process and performance-based assessment of tropical cyclone and associated precipitation predictions in the NASA GEOS-S2S system for improved forecast skill", Daehyun Kim (PI, 2021–2024), Peter Blossey (PI, 2024– after transfer from Kim), $126,338, 2021–2025, Grant number 80NSSC21K1495

DOE: "Exploring global aerosol cloud interactions in unprecedented numerical fidelity by combining breakthroughs in multi-scale modeling, GPU supercomputing & neural network process emulation", Mike Pritchard (PI), Blossey, Po-Lun Ma, Walter Hannah (co-PIs), 2022–2025, $87,295 (UW subcontract). Grant number DE-SC0023368.

NSF: "Collaborative Research: Towards Better Understanding of the Climate System Using a Global Storm-Resolving Model", Peter Blossey (PI), 2022–2025, $352,990, Grant number AGS-2218829.

NSF: "Collaborative Research: Advancing Understanding of Aerosol-Cloud Feedback Using the World's First Global Climate Model with Explicit Boundary Layer Turbulence", Chris Bretherton (PI, 2019-2022), Peter Blossey (PI, 2022- after transfer from Bretherton), 2019–2024, $418,847. Grant number AGS-1912130.

DOE: "Are Marine Low Cloud Droplet Concentrations Buffered by Entrained Aitken-Mode Aerosol", Chris Bretherton (PI, 2019-2022), Peter Blossey (PI, 2022- after transfer from Bretherton), 2019–2024, $589,952. Grant number

NSF: "Collaborative Research: EUREC4A-iso–Constraining the Interplay between Clouds, Convection, and Circulation with Stable Isotopologues of Water Vapor", P. N. Blossey (PI), 2019–2024, $388,583. Grant number AGS-1938108.

NSF: "PIRE: International Partnership for Cirrus Studies", Elizabeth Moyer (PI), Stephan Fueglistaler, Zhiming Kuang, Tom Ackerman, P. N. Blossey (co-PIs), 2017–2024, $4,877,820.00. UW funding: $1,284,391. Ackerman (UW PI: 2017-2020), Blossey (UW PI: 2020– after transfer from Ackerman), grant number OISE-1743753.

NSF: "Collaborative Research: Isotopic Fractionation in Snow (IFRACS)", P. N. Blossey (UW PI), 2013–2017, $216,438, grant number AGS 1260368.

NASA: "Study of the Madden-Julian Oscillation with isotope-enabled regional and global models", Zhiming Kuang (PI), David Noone (co-I) and P. N. Blossey (co-I), 7/2013-7/2017. UW Subcontract from Harvard (Blossey, PI): $221,680, grant number NNX13AN47G.

Field Campaign Participation:

- EUREC4A, Jan-Feb 2020, Barbados.

Mentoring:

- Postdoc Mentoring: Litai Kang (with Rob Wood, 2024–), John D'Alessandro (with Rob Wood, 2023–), Lucas McMichael (with Rob Wood, 2022–), Hongwei Sun (with Rob Wood, 2023–), Liran Peng (at UC

Irvine with Mike Pritchard, 2020–2023), Ehsan Erfani (with Rob Wood, 2020–2022), Marina Dütsch (with Eric Steig, 2018–2020), Blaž Gasparini (with Dennis Hartmann, Phil Rasch, 2018–2020)

- PhD Committee Member: Jessica Badgeley (PhD 2022), Rachel Atlas (PhD 2022), Jacqueline Nugent (PhD 2023), Wang Di (LMD Paris, 2023), Samantha Turbeville, Lindsey Davidge, Mu-Ting Chien, Pedro Angulo-Umana (co-chair)
- MS Committee Member: Chris Wright (MS 2024), Spencer Ressel (MS 2024), Geraldine Neljon Emlaw (MS 2024), Katherine Mifsud, Stella Heflin

Selected Presentations:

- December 2022, Cold Pools and Water Isotopes during EUREC4A (invited), Cold Pool Workshop, Ringberg, Germany.
- May 2021, Convective Organization and Water Isotopes in Shallow Cumulus Clouds (invited), ETH Zurich Institute for Atmospheric and Climate Science Colloquium, via Zoom.
- January 2017, Exploring the relationship between tropical convection and water isotopologues, Laboratoire de Météorologie Dynamique, Paris, France.
- January 2017, Exploring the relationship between tropical convection and water isotopologues, Max Planck Institute for Meteorology, Hamburg, Germany.
- December 2014, The Response of Marine Boundary Layer Clouds to Idealized Climate Perturbations (invited), AGU Fall Meeting, San Francisco, CA.
- September 2013, Clarifying the amount effect (invited), First International Workshop on Advances in Observations, Models and Measurement Techniques of Atmospheric Water Vapor Isotopes, Gif-sur-Yvette, France.
- December 2012, Marine Low Cloud Sensitivity to Idealized Climate Perturbations: The CGILS LES Intercomparison (invited), AGU Fall Meeting, San Francisco, CA.
- November 2011, Low cloud feedbacks on climate simulated in high resolution large-eddy simulation models, University of Wisconsin Atmospheric and Oceanic Sciences Colloquium, Madison, Wisconsin.

Conference Participation Since 2018:

- Joint ARM User Facility and ASR PI Meeting: Oral and Poster Presentations (2023).
- Joint CFMIP-GASS Meeting on Cloud, Precipitation, Circulation & Climate Sensitivity, Paris France: Poster Presentation (2023).
- Cold Pools Workshop, Ringberg, Germany: Oral Presentation (2022)
- ARM/ASR Science Team Meeting: Poster Presentation (2022).
- AGU Fall Meeting: Oral Presentations (2019, 2020), Poster Presentations (2018, 2021, 2022), Session convener (2020, 2021, 2022).
- Pan-GASS Meeting: Oral Presentation (2022).
- CFMIP Meeting: Oral Presentation (2022), Poster Presentation (2023).
- Workshop on Spatial Organisation of Convection, Clouds and Precipitation, May 2021, online, poster presentation.
- Water isotopes and climate workshop, Boulder, CO, October 2019, attendee.
- PIRE Cirrus Team Meeting: 2019 (Friday Harbor), 2020 (online), 2021 (online). Oral presentation: 2019, 2023. Co-organizer (2019), Primary organizer (2020, 2021, 2023).

Service:

- Outreach: Helped host 13 visits by elementary and middle school students to the Atmospheric Sciences department at the University of Washington, 2015–2019. My role in hosting included leading discussions of weather, climate and careers in atmospheric science, giving tours of the weather instruments on the roof, and performing or assisting with demonstrations of atmospheric phenomena.
- Convener of AGU Fall Meeting Sessions on Cirrus in the Tropical Upper Troposphere and Lower Stratosphere, 2020, 2021, 2022.
- Organization within PIRE Cirrus project: coordination of an international online journal club 2019–2023 (>50 meetings), primary or co-organizer of annual team meetings 2019 (Friday Harbor, WA), 2020 (online), 2021 (online), 2023 (Friday Harbor, WA).
- Co-organizer of CGILS, the CFMIP/GASS Intercomparison of Large Eddy and Single Column Models, 2011–2016. This was a cooperative effort of the Cloud Feedbacks Model Intercomparison Project (CFMIP) and Global Atmospheric System Studies (GASS) to better constrain low cloud feedbacks using high-resolution large eddy simulation models and resulted in refereed journal publications numbered 20, 21, 22, 24 and 33 above.
- Organizer of discussion group on cloud-climate interactions in Atmospheric Sciences department at University of Washington, 2011–2019.
- Co-leader of the Cloud-Climate Interactions Working Group within the Center for Multiscale Modeling of Atmospheric Processes, a multi-institution NSF Science and Technology Center based at Colorado State University, 2012–2016.
- Organizing Committee Member, 57th Annual Meeting of the American Physical Society's Division of Fluid Dynamics, Seattle, WA, November 2004.

Software:

- System for Atmospheric Modeling (SAM) Versions 6.0 onwards, 2004–present. Contributed bug fixes and enhancements to SAM, a cloud resolving model developed by Marat Khairoutdinov at Colorado State University and SUNY-Stony Brook. These contributions include:
  - Interface to CAM and RRTMG radiation schemes (RRTMG jointly with Robert Pincus).
  - Interface to Morrison, Thompson and P3 microphysics schemes (P3 jointly with Guangxing Lin, Jiwen Fan and Blaz Gasparini)
  - Coupling of cloud and snow radiative properties between Morrison and Thompson microphysics and CAM/RRTMG radiation schemes and instrument simulators (jointly with Robert Pincus).
  - Implementation of water-isotope-enabled microphysics (Lin and Thompson) along with consistent treatment of heavy and standard water isotopes throughout the model.
- Isotope-enabled mesoscale model: Integrated water-isotope-enabled Thompson microphysics into the Weather Research and Forecasting (WRF) model, version 3.5.1, and enabled real case simulations by incorporating boundary conditions for water isotopes from isotope-enabled GCM using the WRF preprocessing system (WPS). Used in article 32 above.
- Isotope-enabled superparameterized global climate model (iSPCAM): Extended cloud resolving model (superparameterization) within SP-CAM to include water-isotope-enabled Thompson microphysics. Coupled this implementation with the isotope-enabled CESM developed by David Noone's group (Univ. of Colorado & Oregon State Univ.) to provide a full superparameterized, isotope-enabled earth system model.

- COAMPS, 2009. Contributed implementation of Blossey & Durran (2008)'s advection scheme to COAMPS, a forecast model maintained by the Naval Research Laboratory.
- CLAWPACK Version 4.2, Released December 2003. Contributed enhancements to the output and parallelization routines of CLAWPACK, a software package for solving systems of hyperbolic conservation laws developed by Randy Leveque at the University of Washington. Also implemented an extension of CLAWPACK that solves systems of hyperbolic equations on domains decomposed into multiple blocks.

Teaching:

University of Washington, Department of Applied Mathematics

- AMATH 352, Applied Linear Algebra & Numerical Analysis, Winter 2001, Spring 2001, Autumn 2001, Spring 2002, Spring 2003.
- AMATH 569, Methods of Applied Mathematics III (Partial Differential Equations), Spring 2003.

Book Reviews:

- P. J. Schmid & D. S. Henningson, *Stability and Transition in Shear Flows*, Springer–Verlag, New York, 2001. In *SIAM Review*, vol. 44, No. 1, 2002.

Reviewer (since 2018):

AGU Books, Atmospheric Chemistry and Physics, Climate Dynamics, Current Climate Change Reviews, Department of Energy, Earth System Science Data, Geophysical Research Letters, Geoscientific Model Development, Journal of Advances in Modeling Earth Systems, Journal of Climate, Journal of the Atmospheric Sciences, Journal of Geophysical Research, Monthly Weather Review, National Oceanic and Atmospheric Administration, National Science Foundation, Nature Climate Change, Quarterly Journal of the Royal Meteorological Society, Science.