

Robert G. Fovell

Professor

Department of Atmospheric and Environmental Sciences

University at Albany, SUNY

404 ETEC Bldg - Harriman Campus

1220 Washington Ave, Room 496

Albany, NY 12226

Office: (518) 442-4479; Fax: (518) 442-5825

E-mail: rfovell@albany.edu

Web: <http://www.atmos.albany.edu/facstaff/rfovell>

Ph.D., Atmospheric Sciences, University of Illinois at Urbana-Champaign, 1988.

Employment:

Professor, Atmospheric and Environmental Sciences, University at Albany, SUNY (2015-present)

Undergraduate Program Director, University at Albany, SUNY (2018-2022)

Professor Emeritus, UCLA Atmospheric and Oceanic Sciences (2015-present).

Professor, UCLA Atmospheric and Oceanic Sciences (1991-2015).

Department chair, UCLA Atmospheric and Oceanic Sciences (2013-14).

Undergraduate faculty advisor, UCLA Atmospheric and Oceanic Sciences (1991-2015).

Chair, Faculty Executive Committee, UCLA College of Letters and Science (2007-09).

Postdoc, Atmospheric Sciences, University of Washington (1988-1990).

Professional (recent):

Member, American Meteorological Society (AMS), American Geophysical Union, and National Weather Association.

Editor, *Bulletin of the American Meteorological Society* (2019-2023)

Editor, *Journal of the Atmospheric Sciences* (2015-2019).

Member, WRF-MPAS Research Applications Board (2020-2024) and Physics Review Panel (2019-present).

Member, AMS Committee on Mountain Meteorology (2022-present).

Co-chair, 13th and 14th AMS Conferences on Mesoscale Processes (2009, 2011), AMS Michio Yanai Symposium (2011), 21st AMS Mountain Meteorology Conference (2024).

Past member, Developmental Testbed Center Science Advisory Board; AMS Committee on Mesoscale Processes (1994-97, 2007-2013; chair 2009-2012); AMS Committee on Severe Local Storms; Unidata Strategic Advisory Committee; AMS Teaching Excellence Award Committee; World Meteorological Organization Monsoon Panel (Severe Monsoon Weather), etc..

Awards:

College of Arts and Sciences Dean's Award for Outstanding Achievement in Teaching, University at Albany (2019).

Fellow of the American Meteorological Society (2013).

AMS Edward Lorenz Teaching Excellence Award (2012).

UCLA Distinguished Teaching Award (Harvey L. Eby Award for the Art of Teaching, 2005).

Editor's Citation, Journal of Geophysical Research – Atmospheres (2009).

Videos and Books:

Fovell, R. G., 2010: *Meteorology: An Introduction to the Wonders of the Weather*. The Great Courses, number 1796. Published by The Teaching Company, LLC, Chantilly, VA. <http://www.thegreatcourses.com/courses/meteorology-an-introduction-to-the-wonders-of-the-weather.html?cid=1796>

Fovell, R. G., and W.-w. Tung (Editors), 2016: "Multiscale Convection-Coupled Systems in the Tropics: A Tribute to Dr. Michio Yanai". *Meteorological Monographs*, **56**, American Meteorological Society. <http://journals.ametsoc.org/toc/amsm/56>

Publications:

Fovell, R. G., and Y. Ogura, 1988: Numerical simulation of a midlatitude squall line in two dimensions. *Journal of the Atmospheric Sciences*, **45**, 3846-3879.

Fovell, R. G., and Y. Ogura, 1989: Effect of vertical wind shear on numerically simulated multicell storm structure. *Journal of the Atmospheric Sciences*, **46**, 3144-3176.

Fovell, R. G., 1991: Influence of the Coriolis force on two-dimensional model storms. *Monthly Weather Review*, **119**, 606-630.

Fovell, R. G., D. R. Durran, and J. R. Holton, 1992: Numerical simulations of convectively generated gravity waves in the stratosphere. *Journal of the Atmospheric Sciences*, **49**, 1427-1442.

Fovell, R. G., and M.-Y. C. Fovell, 1993: Climate zones of the conterminous United States defined using cluster analysis. *Journal of Climate*, **6**, 2103-2135.

Houze, R. A., Jr., W. Schmid, R. G. Fovell, and H.-H. Scheisser, 1993: Hailstorms in Central Switzerland: Left movers, right movers, and false hooks. *Monthly Weather Review*, **121**, 3345-3370.

Sun, J., S. Braun, M. I. Biggerstaff, R. G. Fovell, R. A. Houze, Jr., 1993: Warm upper level downdrafts associated with a squall line. *Monthly Weather Review*, **121**, 2919-2927.

- Newman, W. I., J. K. Lew, G. L. Siscoe, and R. G. Fovell, 1995: Systematic effects of randomness in radiative transfer. *Journal of the Atmospheric Sciences*, **52**, 427-435.
- Fovell, R. G., and P. S. Dailey, 1995: The temporal behavior of numerically simulated multicell-type storms. Part I: Modes of Behavior. *Journal of the Atmospheric Sciences*, **52**, 2073-2095.
- Fovell, R. G., 1997: Consensus clustering of U.S. temperature and precipitation data. *Journal of Climate*, **10**, 1405-1427.
- Piechota, T. C., J. A. Dracup, and R. G. Fovell, 1997: Western U.S. streamflow and atmospheric circulation patterns during El Nino-Southern Oscillation (ENSO). *Journal of Hydrology*, **201 (1-4)**, 249-271.
- Fovell, R. G., and P.-H. Tan, 1998: The temporal behavior of numerically simulated multicell-type storms. Part II: The convective cell life cycle and cell regeneration. *Monthly Weather Review*, **26**, 551-577.
- Dailey, P. S., and R. G. Fovell, 1999: Numerical simulation of the interaction between the sea-breeze front and horizontal convective rolls. Part I: Offshore ambient flow. *Monthly Weather Review*, **127**, 858-878.
- Berk, R. A., and R. G. Fovell, 1999: Public perceptions of climate change: A Òwillingness to payÓ assessment. *Climatic Change*, **41**, 413-446.
- Fovell, R. G., and P.-H. Tan, 2000: A simplified squall-line model revisited. *Quarterly Journal of the Royal Meteorological Society*, **126**, 173-188.
- Schoenberg, F., R. Berk, R. Fovell, C. Li, R. Lu, and R. Weiss, 2001: Approximation and inversion of a complex meteorological system via linear filters. *Journal of Applied Meteorology*, **40**, 446-458.
- Berk, R. A., R. G. Fovell, F. Schoenberg, and R. E. Weiss, 2001: Some statistical tools for evaluating computer simulations: A data analysis approach useful for environmental models. *Climatic Change*, **51**, 119-130.
- Fovell, R. G., and P. S. Dailey, 2001: Numerical simulation of the interaction between the sea- breeze front and horizontal convective rolls. Part II: Along-shore ambient flow. *Monthly Weather Review*, **129**, 2057-2072.
- Fovell, R. G., 2002: Upstream influence of numerically simulated squall-line storms. *Quarterly Journal of the Royal Meteorological Society*, **128**, 893-912.
- Berk, R. A., P. Bickel, K. Campbell, R. Fovell, S. Keller-McNulty, E. Kelly, R. Linn, B. Park, A. Perelson, N. Roupail, J. Sacks, and F. Schoenberg, 2002: Workshop on Statistical Approaches for the Evaluation of Complex Computer Models. *Statistical Science*, **17**, 173-192.
- Wakimoto, R. M., H. V. Murphey, R. G. Fovell, and W.-C. Lee, 2004: Mantle echoes associated with deep convection: Observations and numerical simulations. *Monthly Weather Review*, **132**, 1701-1720.
- Fovell, R. G., 2004: Adjoint of a parameterized moisture convection model. *Meteorology and Atmospheric Physics*, **86**, 173-194.

- Fovell, R. G., 2005: Convective initiation ahead of the sea-breeze front. *Monthly Weather Review*, **133**, 264-278.
- Fovell, R. G., G. L. Mullendore, and S.-H. Kim, 2006: Discrete propagation in numerically simulated nocturnal squall lines. *Monthly Weather Review*, **134**, 3735-3752.
- Hughes, M., A. Hall, and R. G. Fovell, 2006: Dynamical controls on the diurnal cycle of temperature in complex topography. *Climate Dynamics*, **29**, 277-292.
- Fovell, R. G., and H. Su, 2007: Impact of cloud microphysics on hurricane track forecasts. *Geophysical Research Letters*, **34**, L24810, doi:10.1029/2007GL031723.
- Brenig, L., E. Zaady, J. Vigo-Aguiar, A. Karnieli, R. Fovell, Sh. Arbel, I. Al Baz, Z. Y. Offer, 2008: Cloud formation and rainfalls induced by an artificial solar setting: A weather engineering project for fighting aridity. *Geographica Phorum*, **7**, no. 7, 67-82.
- Hughes, M., A. Hall, and R. G. Fovell, 2009: Blocking in areas of complex topography, and its influence on rainfall distribution. *Journal of the Atmospheric Sciences*, **66**, 508-518.
- Fovell, R. G., K. L. Corbosiero, and H.-C. Kuo, 2009: Cloud microphysics impact on hurricane track as revealed in idealized experiments. *Journal of the Atmospheric Sciences*, **66**, 1764-1778.
- Fovell, R. G., B. Jackson, and A. Kaduwela, 2009: High-resolution meteorological modeling of California air quality episodes: Model intercomparison and validation. In D.G. Steyn and S.T. Rao (eds.), *Air Pollution Modeling and its Application XX*, NATO Science for Peace and Security Series - C: Environmental Security), Springer, The Netherlands, doi: 10.1007/978-90-481-3812-8, p. 591-597.
- Kim, J., R. Fovell, A. Hall, Q. Li, K. N. Liou, J. McWilliams, Y. Xue, X. Qu, S. Kapnick, W. Waliser, A. Eldering, Y. Chao, and R. Friedl, 2009: A projection of the cold season hydroclimate in California in mid-twenty-first century under the SRES-A1B emission scenario. California Environmental Protection Agency and California Energy Commission Report CEC-500-2009-029-F.
- Waliser, D., J. Kim, Y. Xue, Y. Chao, A. Eldering, R. Fovell, A. Hall, Q. Li, K. N. Liou, J. McWilliams, S. Kapnick, R. Vasic, F. De Sale, Y. Yu, 2009: Simulating the Sierra Nevada Snowpack: The impact of snow albedo and multi-layer snow physics. California Environmental Protection Agency and California Energy Commission Report CEC-500-2009-030-F.
- Fovell, R. G., K. L. Corbosiero, A. Seifert, and K.-N. Liou, 2010: Impact of cloud-radiative feedback on hurricane track. *Geophysical Research Letters*, **37**, L07808, doi:10.1029/2010GL042691.
- Trier, S. B., R. D. Sharman, R. G. Fovell, and R. G. Frehlich, 2010: Numerical simulation of radial cloud bands within the upper-level outflow of an observed mesoscale convective system. *Journal of the Atmospheric Sciences*, **67**, 2990-2999.

- Gu, Y., K. N. Liou, S. C. Ou, and R. Fovell, 2011: Cirrus cloud simulations using WRF with improved radiation parameterization and increased vertical resolution. *Journal of Geophysical Research*, D06119, doi:10.1029/2010JD014574.
- Kim, S.-H., and R. G. Fovell, 2011: Some aspects of heavy precipitation relating to topography. Book chapter in *The Global Monsoon System: Research and Forecast*, edited by C.-P. Chang et al., published by World Scientific, p. 277-288.
- Fovell, R. G., 2011: Some heavy convective precipitation and initiation forecasting issues. WWRP/ETRP Workshop on Operational Monsoon Research and Forecast Issues, Lecture notes, p. 17-35. Published by the World Meteorological Organization, publication 2011-3.
- Cao, Y., R. G. Fovell, and K. L. Corbosiero, 2011: Tropical cyclone track and structure sensitivity to initialization in idealized simulations: A preliminary study. *Terrestrial, Atmospheric and Oceanic Sciences*, **22**, 559-578.
- Waliser, D.E., J. Kim, Y. Xue, Chao, Y., A. Eldering, R. Fovell, A. Hall, Q. Li, K. Liou, J. McWilliams, S. Kapnick, R. Vasic, F. De Sale, and Y. Yu, 2012, Simulating the cold season snowpack: The impact of snow albedo and multi-layer snow physics. *Climatic Change*, **109 (Suppl. 1)**, S95-S117. doi: 10.1007/s10584-011-0312-5.
- Lane, T.P., R. D. Sharman, S. B. Trier, R. G. Fovell, and J. K. Williams, 2012: Recent advances in the understanding of near-cloud turbulence. *Bulletin of the American Meteorological Society*, **93**, 499-515.
- Wu, L., H. Su, R. G. Fovell, B. Wang, J. T. Shen, B. H. Kahn, S. M. Hristova-Veleva, B. H. Lambriksen, E. J. Fetzer, J. H. Jiang, 2012: Relationship of environmental relative humidity with North Atlantic tropical cyclone intensity and intensification rate. *Geophysical Research Letters*, **39**, L20809, doi:10.1029/2012GL053546.
- Hsu, L.-H., H.-C. Kuo, and R. G. Fovell, 2013: On the geographic asymmetry of typhoon translation speed across the mountainous island of Taiwan. *Journal of the Atmospheric Sciences*, **70**, 1006-1022.
- Liou, K. N., Y. Gu, L. R. Leung, W. L. Lee, and R. G. Fovell, 2013: A WRF Simulation of the Impact of 3D Radiative Transfer on Surface Hydrology over the Rocky-Sierra Mountains. *Atmospheric Chemistry and Physics*, **13**, 11709-11721.
- Bu, Y. P., R. G. Fovell, and K. L. Corbosiero, 2014: Influence of cloud-radiative forcing on tropical cyclone structure. *Journal of the Atmospheric Sciences*, **71**, 1644-1662.
- Wu, L., H. Su, R. G. Fovell, T. Dunkerton, Z. Wang, and B. Kahn, 2015: Impact of environmental moisture on tropical cyclone intensification. *Atmospheric Chemistry and Physics*, **15**, 14041-14053.
- Cheng, V., R. J. Berg, D. Skiada, O. T. Okoye, R. G. Fovell, P. G. Teixeira, D. Demetriades, and K. Inaba, 2015: The impact of temporal, environmental, and sociocultural factors on blunt and penetrating trauma admission volumes: review of 41,613 patient admissions. *Journal of the American College of Surgeons*, **221(4,2)**, e145-e146. doi:10.1016/j.jamcollsurg.2015.08.290

- Cao, Y., and R. G. Fovell, 2016: Downslope windstorms of San Diego County. Part I: A case study. *Monthly Weather Review*, **144**, 529-552.
- Fovell, R. G., and coauthors, 2016: Influence of cloud microphysics and radiation on tropical cyclone structure and motion. In “Multiscale Convection-Coupled Systems in the Tropics”, *Meteorological Monographs*, **56**, 11.1-11.27, doi: 10.1175/AMSMONOGRAPHS-D-15-0006.1.
- Wilson, T. H., and R. G. Fovell, 2016: Modeling the evolution and life cycle of stable cold pools. *Weather and Forecasting*, **31**, 1753-1769.
- Rolinski, T., S. Capps, R. G. Fovell, Y. Cao, B. J. D’Agostino, S. Vanderburg, 2016: The Santa Ana Wildfire Threat Index: Methodology and operational implementation. *Weather and Forecasting*, **44**, 1881-1897.
- Bu, Y. P., R. G. Fovell, and K. L. Corbosiero, 2017: The influences of boundary layer mixing and cloud-radiative forcing on tropical cyclone size. *Journal of the Atmospheric Sciences*, **74**, 1273-1292. doi:10.1175/JAS-D-16-0231.1
- Fovell, R. G., and Y. Cao, 2017: The Santa Ana winds of Southern California: Winds, gusts, and the 2007 Witch fire. *Wind and Structures*, **24**(6), 529-564.
- Wilson, T. H., and R. G. Fovell, 2018: Modeling the evolution and life cycle of radiative cold pools and fog. *Weather and Forecasting*, **33**, 203-220.
- Cao, Y., and R. G. Fovell, 2018: Downslope windstorms of San Diego County. Part II: Physics ensemble analyses and gust forecasting. *Weather and Forecasting*, **33**, 539-559.
- Hsu, L.-H., S.-H. Su, R. G. Fovell, and H.-C. Kuo, 2018: On typhoon track deflections near the east coast of Taiwan. *Monthly Weather Review*, **146**, 1495-1510.
- Gutierrez, A., and R. G. Fovell, 2018: A new gust parameterization for weather prediction models. *Journal of Wind Engineering and Industrial Aerodynamics*, **177**, 45-59.
- Fovell, R. G., and A. Gallagher, 2018: Winds and gusts during the Thomas fire. *Fire*, **1**, 47 (22 pages). doi:10.3390/fire1030047
- Ditchek, S. D., J. Molinari, K. L. Corbosiero, and R. G. Fovell, 2019: An objective climatology of tropical cyclone diurnal pulses in the Atlantic Basin. *Monthly Weather Review*, **147**, 591-605. <https://doi.org/10.1175/MWR-D-18-0368.1>
- Xia, G., L. Zhou, J. R. Minder, R. G. Fovell, and P. A. Jimenez, 2019: Simulating impacts of real-world wind farms on land surface temperature using the WRF Model: Physical mechanisms. *Climate Dynamics*, **53**, 1723-1739. <https://doi.org/10.1007/s00382-019-04725-0>
- Duine, G.-J., C. Jones, L. M. V. Carvalho, and R. G. Fovell, 2019: Simulating Sundowner winds in coastal Santa Barbara: Model validation and sensitivity. *Atmosphere*, **10**(3), 155. <https://doi.org/10.3390/atmos10030155>
- Ditchek, S. D., K. L. Corbosiero, R. G. Fovell, and J. Molinari, 2019: Electrically-active tropical cyclone diurnal pulses in the Atlantic Basin. *Monthly Weather Review*, **147**, 3595-3607. <https://doi.org/10.1175/MWR-D-19-0129.1>

- Liang, Z., R. G. Fovell, and Y. Liu, 2019: Observational Analysis of the Characteristics of Synoptic Situation and Evolution of the Organized Warm-Sector Rainfall in the Coastal Region of South China in the Pre-Summer Rainy Season. *Atmosphere*, **10(11)**, 722. <https://doi.org/10.3390/atmos10110722>
- Gutierrez, A., C. Porrini, and R. G. Fovell, 2020: Combination of wind gust models in convective events. *Journal of Wind Engineering and Industrial Aerodynamics*, **199**, 104118. <https://doi.org/10.1016/j.jweia.2020.104118>
- Ditchek, S. D., K. L. Corbosiero, R. G. Fovell, and J. Molinari, 2020: Electrically active diurnal pulses in Hurricane Harvey (2017). *Monthly Weather Review*, **148**, 2283-2305. <https://doi.org/10.1175/MWR-D-20-0022.1>
- Fovell, R. G., and A. Gallagher, 2020: Boundary layer and surface verification of the High-Resolution Rapid Refresh, Version 3. *Weather and Forecasting*, **35**, 2255-2278. <https://doi.org/10.1175/WAF-D-20-0101.1>
- Vaughan, M. T. and R. G. Fovell, 2021: The influence of boundary layer mixing strength on the evolution of a baroclinic cyclone. *Monthly Weather Review*, **149**, 661-678. <https://doi.org/10.1175/MWR-D-20-0264.1>
- Fovell, R. G., M. J. Brewer, and R. J. Garmon, 2022: The December 2021 Marshall fire: Predictability and gust forecasts from operational models. *Atmosphere*, **13**, 765. <https://doi.org/10.3390/atmos13050765>
- Fovell, R. G., and A. Gallagher, 2022: An evaluation of surface wind and gust forecasts from the High-Resolution Rapid Refresh model. *Weather and Forecasting*, **37**, 1049-1068. <https://doi.org/10.1175/WAF-D-21-0176.1>
- Yu, C., B. Tang, and R. G. Fovell, 2023: Tropical cyclone tilt and precession in moderate shear: Precession hiatus in a critical shear regime. *Journal of the Atmospheric Sciences*, **80**, 909-932. <https://doi.org/10.1175/JAS-D-22-0200.1>
- Piersante, J. O., K. L. Corbosiero, and R. G. Fovell, 2023: Simulated diurnal pulses in Hurricane Dorian (2019). *Monthly Weather Review*, **151**, 2869-2882. <https://doi.org/10.1175/MWR-D-23-0049.1>
- Yu, C., B. Tang, and R. G. Fovell, 2023: Diverging behaviors of simulated tropical cyclones in moderate vertical wind shear. *Journal of the Atmospheric Sciences*, **80**, 2837-2860. <https://doi.org/10.1175/JAS-D-23-0048.1>
- Carvalho, L. M. V., and co-authors, 2024: The Sundowner Winds Experiment (SWEX) in Santa Barbara, CA: Advancing understanding and predictability of downslope windstorms in coastal environments. *Bulletin of the American Meteorological Society*, **105**, E532-E538. <https://doi.org/10.1175/BAMS-D-22-0171.1>
- Fovell, R. G., and M. J. Brewer, 2024: Sundowner winds at Montecito during the Sundowner Winds Experiment. *Atmosphere*, **15**, 810. <https://doi.org/10.3390/atmos15070810>
- Yu, C., B. Tang, and R. G. Fovell, 2024: Tropical cyclone boundary layer asymmetries in a tilt-following perspective. *Journal of the Atmospheric Sciences*, **81**, 1543-1563. <https://doi.org/10.1175/JAS-D-23-0178.1>

Fovell, R. G., and S. B. Capps, 2025: Sustained wind forecasts from the High-Resolution Rapid Refresh model: Skill assessment and bias mitigation. *Atmosphere*, **16**, 16. <https://doi.org/10.3390/atmos16010016>

Brewer, M. J., and R. G. Fovell, 2025: Hybrid numerical weather prediction: Downscaling GraphCast AI forecasts for downslope windstorms. *Weather and Forecasting*, **40**, 187-206. <https://doi.org/10.1175/WAF-D-24-0097.1>