George H. Bryan

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Curriculum Vitae
July 2019

Education

Ph.D., Meteorology, The Pennsylvania State University, December 2002
- Thesis: *An Investigation of the Convective Region of Numerically Simulated Squall Lines*
- Thesis Adviser: J. Michael Fritsch

M.S., Meteorology, The Pennsylvania State University, May 1998
- Thesis: *Discrete Frontal Propagation Induced by Convection*
- Thesis Adviser: J. Michael Fritsch

B.S., Meteorology, The Pennsylvania State University, May 1996
- With High Distinction and With Honors in Meteorology
- Minor in Geography
- Honors Thesis: *Meteorological Analysis of the 17 April 1995 Oklahoma Severe Storms*
- Honors Thesis Adviser: Gregory S. Forbes

Professional Experience

National Center for Atmospheric Research
- Senior Scientist, 2017–present
- Scientist III, 2011–2017
- Scientist II, 2008–2011
- Scientist I, 2005–2008
- Postdoctoral Fellow, Advanced Study Program, 2003–2005

The Pennsylvania State University
- Graduate Research Assistant, 1996–2002
- Meteorological Observer, Department of Meteorology Weather Station, 1995–1996

University of Oklahoma and NOAA/National Severe Storms Laboratory
- Research Experience for Undergraduates Program, Summer 1995

Service

National Center for Atmospheric Research
- Deputy Head, Dynamical & Physical Meteorology section, 2017–present
- MMM Seminar Coordinator, 2016–2018

Editorships

- Editor, *Monthly Weather Review* (American Meteorological Society), 2010–2015
- Associate Editor, *Atmospheric Science Letters* (Royal Meteorological Society), 2010–2014
- Associate Editor, *Monthly Weather Review* (American Meteorological Society), 2004–2010

American Meteorological Society

- 33rd Conference on Hurricanes and Tropical Meteorology (2018): member, Conference Committee
- STAC Committee on Mesoscale Processes: Member, 2005–2008
- 13th Conference on Mesoscale Processes (2009): member, Conference Committee
- 12th Conference on Mesoscale Processes (2007): member, Conference Committee

Field Projects

- VORTEX2, 2009–2010: Co-coordinator, mobile rawinsondes
- BAMEX, 2003: Co-coordinator, dropsonde aircraft
- VORTEX, 1995: REU participant (mobile mesonets, mobile rawinsondes, and ELDORA)

Colorado State University

- Affiliate Faculty member, 2006–2009

Numerical model development and support

- CM1:
  - Primary developer and supporter of a nonhydrostatic numerical cloud model (CM1)
  - CM1 has been used in more than 200 peer-reviewed journal articles
  - website: http://www2.mmm.ucar.edu/people/bryan/cm1/
- WRF:
  - Developed the tropical cyclone test case
  - Contributor to several schemes (subgrid turbulence parameterization, sixth-order diffusion scheme, Rayleigh damper)
  - Contributed to the WRF Technical Note
- MM5:
  - Developed a software package to view MM5 output with GrADS (`MM5toGrADS`)

Honors and Awards

American Meteorological Society

- Clarence Leroy Meisinger Award, 2011
- Banner I. Miller Award, 2010
- Editor's Award, *Monthly Weather Review*, 2007
- Student Presentation Award, Conference on Severe Local Storms, 2000
- Graduate Fellowship, 1996–1998

Royal Meteorological Society

- Editor's Award, *Atmospheric Science Letters*, 2014

Mesoscale and Microscale Meteorology Laboratory, NCAR

- Outstanding Paper of the Year, 2015 (for Bryan and Morrison, 2012)
- Outstanding Paper of the Year, 2012 (for Bryan and Rotunno, 2009c)

The Pennsylvania State University

- Alumni Achievement Award, 2006
- Muan/Wilson Graduate Fellow Award, 2001
- Special Award for Teaching Support, 1999
- Robert O. Cole Award, 1996
- Outstanding Research Exhibit, Undergraduate Research Fair, 1996
- University Scholars Honors Degree, 1996

NOAA/National Weather Service

- Special Service Award, Eastern Region, 1999

Peer-Reviewed Publications

57. Peng, K., R. Rotunno, **G. H. Bryan**, and J. Fang, 2018: Evolution of an axisymmetric tropical cyclone before reaching slantwise moist neutrality. *J. Atmos. Sci*, **76,** 1865–1884, doi:10.1175/JAS-D-18-0264.1.

56. Shi, X., F. K. Chow, R. L. Street, and **G. H. Bryan**, 2019: Key elements of turbulence closures for simulating deep convection at kilometer-scale resolution. *J. Adv. Model. Earth Syst.*, **11,** doi:10.1029/2018MS001446.

55. Morrison, H., M. Witte, **G. H. Bryan,** J. Y. Harrington, and Z. J. Lebo, 2018: Broadening of modeled cloud droplet spectra using bin microphysics in an Eulerian spatial domain. *J. Atmos. Sci.,* **75,** 4005–4030, doi:10.1175/JAS-D-18-0055.1.

54. Stern, D. P., and **G. H. Bryan**, 2018: Using simulated dropsondes to understand extreme updrafts and wind speeds in tropical cyclones. *Mon. Wea. Rev.,* **146,** 3901–3925, doi:10.1175/MWR-D-18-0041.1.

53. Peng, K., R. Rotunno, and **G. H. Bryan**, 2018: Evaluation of a time-dependent model for the intensification of tropical cyclones. *J. Atmos. Sci.,* **75,** 2125–2138, doi:10.1175/JAS-D-17-0382.1.

52. Shi, X., F. K. Chow, R. L. Street, and **G. H. Bryan**, 2018: An evaluation of LES turbulence models for scalar mixing in the stratocumulus-capped boundary layer. *J. Atmos. Sci.,* **75,** 1499–1507,10.1175/JAS-D-17-0392.1.

51. Rotunno, R., and **G. H. Bryan**, 2018: Numerical simulations of two-layer flow past topography. Part I. The lee-side hydraulic jump. *J. Atmos. Sci.,* **75,** 1231–1241, doi:10.1175/JAS-D-17-0306.1.

50. Shi, X., H. L. Hagen, F. K. Chow, **G. H. Bryan,** and R. L. Street, 2017: Large-eddy simulation of the stratocumulus-capped boundary layer with explicit filtering and reconstruction turbulence modeling. *J. Atmos. Sci.,* **75**, 611–637, doi:10.1175/JAS-D-17-0162.1.

49. Diao, M., **G. H. Bryan,** H. Morrison, and J. Jensen, 2017: Ice nucleation parameterization and relative humidity distribution in idealized squall line simulations. *J. Atmos. Sci.,* **74,** 2761–2787, doi:10.1175/JAS-D-16-0356.1.

48. Worsnop, R. P., J. K. Lundquist, **G. H. Bryan,** R. Damiani, and W. Musial, 2017: Gusts and shear within hurricane eyewalls can exceed offshore wind-turbine design standards. *Geophys. Res. Lett.,* **44,** 6413–6420, doi:10.1002/2017GL073537.

47. Worsnop, R. P., **G. H. Bryan,** J. K. Lundquist, and J. A. Zhang, 2017: Using large-eddy simulations to define spectral and coherence characteristics of the hurricane boundary layer for wind-energy applications. *Bound.-Layer Meteor.,* **165,** 55-86, doi:10.1007/s10546-017-0266-x.

46. Miyamoto, Y., **G. H. Bryan,** and R. Rotunno, 2017: An analytical model of maximum potential intensity for tropical cyclones incorporating the effect of ocean mixing. *Geophys. Res. Lett.,* **44**, 5826–5835, doi:10.1002/2017GL073670.

45. Rotunno, R., P. M. Markowski, and **G. H. Bryan,** 2017: "Near ground" vertical vorticity in supercell thunderstorm models. *J. Atmos. Sci.,* **74,** 1757-1766, doi:10.1175/JAS-D-16-0288.1.

44. **Bryan, G. H.,** N. A. Dahl, D. S. Nolan, and R. Rotunno, 2017: An eddy injection method for large-eddy simulations of tornado-like vortices. *Mon. Wea. Rev.,* **145,** 1937–1961, doi:10.1175/MWR-D-16-0339.1.

43. Nolan, D. S., N. A. Dahl, **G. H. Bryan,** and R. Rotunno, 2017: Tornado vortex structure, intensity, and surface wind gusts in large-eddy simulations with fully developed turbulence. *J. Atmos. Sci.,* **74,** 1573–1597, doi:10.1175/JAS-D-16-0258.1.

42. Dahl, N. A., D. S. Nolan, **G. H. Bryan,** and R. Rotunno, 2017: Using high-resolution simulations to quantify underestimates of tornado intensity from in situ observations. *Mon. Wea. Rev.,* **145,** 1963–1982, doi:10.1175/MWR-D-16-0346.1.

41. **Bryan, G. H.,** R. P. Worsnop, J. K. Lundquist, and J. A. Zhang, 2017: A simple method for simulating wind profiles in the boundary layer of tropical cyclones. *Bound.-Layer Meteor.,* **162,** 475–502, doi:10.1007/s10546-016-0207-0.

40. Rotunno, R., **G. H. Bryan**, D. S. Nolan, and N. A. Dahl, 2016: Axisymmetric tornado simulations at high Reynolds number. *J. Atmos. Sci.,* **73,** 3843–3854, doi:10.1175/JAS-D-16-0038.1.

39. Stern, D. P., **G. H. Bryan**, and S. D. Aberson, 2016: Extreme low-level updrafts and wind speeds measured by dropsondes in tropical cyclones. *Mon. Wea. Rev.,* **144,** 2177–2204, doi:10.1175/MWR-D-15-0313.1.

38. Markowski, P. M., and **G. H. Bryan**, 2016: LES of laminar flow in the PBL: A potential problem for convective storm simulations. *Mon. Wea. Rev.,* **144,** 1841–1850, doi:10.1175/MWR-D-15-0439.1.

37. Nowotarski, C. J., P. M. Markowski, Y. P. Richardson, and **G. H. Bryan**, 2015: Supercell low-level mesocyclones in simulations with a sheared convective boundary layer. *Mon. Wea. Rev.,* **143,** 272–297. doi:10.1175/MWR-D-14-00151.1.

36. Morrison, H., J. A. Milbrandt, **G. H. Bryan**, K. Ikeda, S. A. Tessendorf, and G. Thompson, 2015: Parameterization of cloud microphysics based on the prediction of bulk ice particle properties. Part 2: Case study comparisons with observations and other schemes. *J. Atmos. Sci.,* **72,** 312–339. doi:10.1175/JAS-D-14-0066.1.

35. Kalina, E. A., K. Friedrich, H. Morrison, and **G. H. Bryan**, 2014: Aerosol effects on idealized supercell thunderstorms in different environments. *J. Atmos. Sci.,* **71,** 4558–4580. doi:10.1175/JAS-D-14-0037.1.

34. Markowski, P., Y. Richardson, and **G. H. Bryan**, 2014: The origins of vortex sheets in a simulated supercell thunderstorm. *Mon. Wea. Rev.,* **142,** 3944–3954, doi:10.1175/MWR-D-14-00162.1.

33. Nowotarski, C. J., P. M. Markowski, Y. P. Richardson, and **G. H. Bryan**, 2014: Properties of a simulated convective boundary layer in an idealized supercell thunderstorm environment. *Mon. Wea. Rev.,* **142**, 3955–3976, doi:10.1175/MWR-D-13-00349.1.

32. **Bryan, G. H.,** and R. Rotunno, 2014: Gravity currents in confined channels with environmental shear. *J. Atmos. Sci.,* **71,** 1121–1142, doi:10.1175/JAS-D-13-0157.1.

31. **Bryan, G. H.,** and R. Rotunno, 2014: The optimal state for gravity currents in shear. *J. Atmos. Sci.,* **71,** 448–468, doi:10.1175/JAS-D-13-0156.1.

30. Muhlbauer, A., W. W. Grabowski, S. P. Malinowski, T. P. Ackerman, **G. H. Bryan**, Z. J. Lebo, J. A. Milbrandt, H. Morrison, M. Ovchinnikov, S. Tessendorf, J. M.. Theriault, and G. Thompson, 2013: Reexamination of the state of the art of cloud modeling shows real improvements *Bull. Amer. Meteor. Soc.,* **94,** ES45–ES48, doi:10.1175/BAMS-D-12-00188.1.

29. **Bryan, G. H.,** 2013: Comments on "Sensitivity of tropical-cyclone models to the surface drag coefficient." *Quart. J. Roy. Meteor. Soc.,* **139**, 1957–1960, doi:10.1002/qj.2066.

28. Rotunno, R., and **G. H. Bryan**, 2012: Effects of parameterized diffusion on simulated hurricanes. *J. Atmos. Sci.,* **69,** 2284–2299, doi:10.1175/JAS-D-11-0204.1.

27. **Bryan, G. H.,** 2012: Effects of surface exchange coefficients and turbulence length scales on the intensity and structure of numerically simulated hurricanes. *Mon. Wea. Rev.,* **140,** 1125–1143, doi:10.1175/MWR-D-11-00231.1.

26. **Bryan, G. H.**, and H. Morrison, 2012: Sensitivity of a simulated squall line to horizontal resolution and parameterization of microphysics. *Mon. Wea. Rev.,* **140,** 202–225, doi:10.1175/MWR-D-11-00046.1.

25. Kang, S.-L., and **G. H. Bryan**, 2011: A large eddy simulation study of moist convection initiation over heterogeneous surface fluxes. *Mon. Wea. Rev,* **139,** 2901–2917, doi:10.1175/MWR-D-10-05037.1.

24. Rotunno, R., J. B. Klemp, **G. H. Bryan**, and D. J. Muraki, 2011: Models of non-Boussinesq lock-exchange flow. *J. Fluid Mech.,* **675,** 1–26, doi:10.1017/jfm.2010.648.

23. **Bryan, G. H.**, and M. D. Parker, 2010: Observations of a squall line and its near environment using high-frequency rawinsonde launches during VORTEX2. *Mon. Wea. Rev.,* **138,** 4076–4097, doi:10.1175/2010MWR3359.1.

22. **Bryan, G. H.**, and R. Rotunno, 2009c: Evaluation of an analytical model for the maximum intensity of tropical cyclones. *J. Atmos. Sci.,* **66,** 3042–3060, doi:10.1175/2009JAS3038.1.

21. **Bryan, G. H.**, and R. Rotunno, 2009b: The maximum intensity of tropical cyclones in axisymmetric numerical model simulations. *Mon. Wea. Rev.,* **137,** 1770–1789, doi:10.1175/2008MWR2709.1.

20. **Bryan, G. H.**, and R. Rotunno, 2009a: The influence of near-surface, high-entropy air in hurricane eyes on maximum hurricane intensity. *J. Atmos. Sci.,* **66,** 148–158, doi:10.1175/2008JAS2707.1.

19. **Bryan, G. H.**, 2008: On the computation of pseudoadiabatic entropy and equivalent potential temperature. *Mon. Wea. Rev.,* **136,** 5239–5245, doi:10.1175/2008MWR2593.1.

18. **Bryan, G. H.**, and R. Rotunno, 2008: Gravity currents in a deep anelastic atmosphere. *J. Atmos. Sci.,* **65,** 536–556, doi:10.1175/2007JAS2443.1.

17. Kirshbaum, D. J., R. Rotunno, and **G. H. Bryan**, 2007: The spacing of orographic rainbands triggered by small-scale topography. *J. Atmos. Sci.,* **64,** 4222–4245, doi:10.1175/2007JAS2335.1.

16. Knievel, J. C., **G. H. Bryan**, and J. P. Hacker, 2007: Explicit numerical diffusion in the WRF Model. *Mon. Wea. Rev.,* **135,** 3808–3824, doi:10.1175/2007MWR2100.1.

15. Kirshbaum, D. J., **G. H. Bryan**, R. Rotunno, and D. R. Durran, 2007: The triggering of orographic rainbands by small-scale topography. *J. Atmos. Sci.,* **64,** 1530–1549, doi:10.1175/JAS3924.1.

14. **Bryan, G. H.**, R. Rotunno, and J. M. Fritsch, 2007: Roll circulations in the convective region of a simulated squall line. *J. Atmos. Sci.,* **64,** 1249–1266, doi:10.1175/JAS3899.1.

13. Trier, S. B., C. A. Davis, D. A. Ahijevych, M. L. Weisman, and **G. H. Bryan**, 2006: Mechanisms supporting long-lived episodes of propagating nocturnal convection within a 7-day WRF Model simulation. *J. Atmos. Sci.,* **63,** 2409–2435, doi:10.1175/JAS3768.1.

12. Schultz, D. M., K. M. Kanak, J. M. Straka, R. J. Trapp, B. A. Gordon, D. S. Zrnic, **G. H. Bryan**, A. J. Durant, T. J. Garratt, P. M. Klein, and D. K. Lilly, 2006: The mysteries of mammatus clouds: Observations and formation mechanisms. *J. Atmos. Sci.,* **63,** 2409–2435, doi:10.1175/JAS3758.1.

11. **Bryan, G. H.**, J. C. Knievel, and M. D. Parker, 2006: A multimodel assessment of RKW Theory's relevance to squall-line characteristics. *Mon. Wea. Rev.,* **134,** 2772–2792, doi:10.1175/MWR3226.1.

10. **Bryan, G. H.**, 2005: Spurious convective organization in simulated squall lines owing to moist absolutely unstable layers. *Mon. Wea. Rev.,* **133,** 1978–1997, doi:10.1175/MWR2952.1.

9. **Bryan, G. H.**, and J. M. Fritsch, 2004: A reevaluation of ice-liquid water potential temperature. *Mon. Wea. Rev.,* **132,** 2421–2431, doi:10.1175/1520-0493(2004)132<2421:AROIWP>2.0.CO;2.

8. Davis, C., N. Atkins, D. Bartels, L. Bosart, M. Coniglio, **G. Bryan**, W. Cotton, D. Dowell, B. Jewett, R. Johns, D. Jorgensen, J. Knievel, K. Knupp, W.-C. Lee, G. McFarquhar, J. Moore, R. Przybylinski, R. Rauber, B. Smull, R. Trapp, S. Trier, R. Wakimoto, M. Weisman, and C. Ziegler, 2004: The Bow Echo and MCV Experiment: Observations and opportunities. *Bull. Amer. Meteor. Soc.,* **85,** 1075–1093, doi:10.1175/BAMS-85-8-1075.

7. **Bryan, G. H.**, J. C. Wyngaard, and J. M. Fritsch, 2003: Resolution requirements for the simulation of deep moist convection. *Mon. Wea. Rev.,* **131,** 2394–2416, doi:10.1175/1520-0493(2003)131<2394:RRFTSO>2.0.CO;2.

6. **Bryan, G. H.**, and J. M. Fritsch, 2002: A benchmark simulation for moist nonhydrostatic numerical models. *Mon. Wea. Rev.,* **130,** 2917–2928, doi:10.1175/1520-0493(2002)130<2917:ABSFMN>2.0.CO;2.

5. **Bryan, G. H.**, and J. M. Fritsch, 2000: Moist Absolute Instability: The sixth static stability state. *Bull. Amer. Meteor. Soc.,* **81,** 1207–1230, doi:10.1175/1520-0477(2000)081<1287:MAITSS>2.3.CO;2.

4. **Bryan, G. H.**, and J. M. Fritsch, 2000: Diabatically driven discrete propagation of surface fronts: A numerical analysis. *J. Atmos. Sci.,* **57,** 2061–2079, doi:10.1175/1520-0469(2000)057<2061:DDDPOS>2.0.CO;2.

3. **Bryan, G. H.**, and J. M. Fritsch, 2000: Discrete propagation of surface fronts in a convective environment: Observations and theory. *J. Atmos. Sci.,* **57,** 2041–2060, doi:10.1175/1520-0469(2000)057<2041:DPOSFI>2.0.CO;2.

2. Pontrelli, M. D., **G. H. Bryan**, and J. M. Fritsch, 1999: The Madison County, Virginia, Flash Flood of 27 June 1995. *Wea. Forecasting,* **14,** 384–404, doi:10.1175/1520-0434(1999)014<0384:TMCVFF>2.0.CO;2.

1. Nicosia, D. J., E. J. Ostuno, N. Winstead, G. Klavun, C. Patterson, C. Gilbert, **G. Bryan**, J. H. E. Clark, and J. M. Fritsch, 1999: A flash flood from a lake-enhanced rainband. *Wea. Forecasting,* **14,** 271–288, doi:10.1175/1520-0434(1999)014<0271:AFFFAL>2.0.CO;2.

Articles Under Review

6. Shi, X., R. M. Enriquez, R. L. Street, **G. H. Bryan**, and F. K. Chow, 2018: An implicit algebraic turbulence closure scheme for atmospheric boundary layer simulation. Submitted to *J. Atmos. Sci.*

5. Hutson, A., C. Weiss, and **G. Bryan,** 2018: Using mobile Doppler radar observations of gust fronts to infer buoyancy deficits within thunderstorm outflow. Submitted to *Mon. Wea. Rev.*

4. Kapoor, A., S. Ouakka, S. Arwade, J. Lundquist, M. Lackner, A. Myers, R. Worsnop, and **G. Bryan**. Hurricane eyewall winds and structural response of wind turbines. Submitted to *Wind Energy Science.*

3. Rotunno, R., and **G. H. Bryan,** 2019: Numerical simulations of two-layer flow past topography. Part II: Lee vortices. Submitted to *J. Atmos. Sci.*

2. Stern, D. P., J. D. Kepert, **G. H. Bryan,** and J. D. Doyle, 2019: Understanding atypical mid-level wind speed maxima in hurricane eyewalls. Submitted to *J. Atmos. Sci.*

1. Cione, J. J., **G. H. Bryan,** R. Dobosy, J. A. Zhang, G. de Boer, A. Aksoy, J. B. Wadler, E. A. Kalina, B. A. Dahl, K. Ryan, J. Neuhaus, E. Dumas, F. D. Marks, A. M. Farber, T. Hock, and X. Chen, 2019: Eye of the storm: Observing hurricanes with a small unmanned aircraft system. Submitted to *Bull. Amer. Meteor. Soc.*

BAMS: Papers of Note / Conference Notebook

5. Stern, D. P., and **G. H. Bryan,** 2018: Using simulated dropsondes to understand extreme tropical cyclone wind speeds. *Bull. Amer. Meteor. Soc.,* **99,** 2221–2222.

4. **Bryan, G. H.,** 2013: What is RKW Theory? *Bull. Amer. Meteor. Soc.,* **94,** 317–318.

3. D. M. Schultz, K. M. Kanak, J. M. Straka, R. J. Trapp, B. Gordon, D. Zrnic, **G. H. Bryan**, A. Durant, T. J. Garrett, P. Klein, D. K. Lilly, 2007: What causes mammatus? *Bull. Amer. Meteor. Soc.,* **88,** 146–147.

2. **Bryan, G. H.**, and J. M. Fritsch, 2002: Moist absolute instability in squall lines *Bull. Amer. Meteor. Soc.,* **83,** 1121.

1. **Bryan, G. H.**, and J. M. Fritsch, 2002: What is appropriate resolution for thunderstorm simulation? *Bull. Amer. Meteor. Soc.,* **83,** 1127–1128.

Books

1. Cotton, W. R., **G. H. Bryan**, and S. C. van den Heever, 2011: *Storm and Cloud Dynamics*, 2nd Edition, Academic Press.

Non-Refereed Publications

45. Peng, K., R. Rotunno, and **G. H. Bryan**, 2018: Evaluation of a time-dependent model for the intensification of tropical cyclones. Preprints, *33rd Conf. on Hurricanes and Tropical Meteorology*, Ponte Vedra Beach, FL, Amer. Meteor. Soc., 12C.8.

44. Shi, X., F. K. Chow, R. L. Street, and **G. H. Bryan**, 2017: Simulation of stratocumulus and deep convective clouds with the dynamic reconstruction turbulence closure. Preprints, *17th Conf. on Mesoscale Processes*, San Diego, CA, Amer. Meteor. Soc., 10.2.

43. Jeans, G., C. Cooper, C. Yetsko, and **G. H. Bryan**, 2014: Squall characterization in the Gulf of Mexico. *2014 Offshore Technology Conf.*, Houston, TX, OTC:25357.

42. Kalina, E. A., K. Friedrich, H. Morrison, and **G. H. Bryan**, 2014: Aerosol effects on simulated supercell thunderstorms in environments with different relative humidity and vertical wind shear. Preprints, *14th Conf. on Cloud Physics*, Boston, MA, Amer. Meteor. Soc., 292.

41. **Bryan, G. H.**, R. Rotunno, and M. L. Weisman, 2012: What is RKW Theory? Preprints, *26th Conf. on Severe Local Storms*, Nashville, TN, Amer. Meteor. Soc., 4B.6.

40. Nowotarski, C. J., P. M. Markowski, Y. P. Richardson, and **G. H. Bryan**, 2012: The influence of horizontal convective rolls on the morphology of low-level rotation in idealized simulations of supercell thunderstorms. Preprints, *26th Conf. on Severe Local Storms*, Nashville, TN, Amer. Meteor. Soc., 11B.4.

39. Nowotarski, C. J., P. M. Markowski, Y. P. Richardson, and **G. H. Bryan**, 2011: Interactions between simulated supercell thunderstorms and dry boundary layer convection. Preprints, *14th Conf. Mesoscale Processes*, Los Angeles, CA, Amer. Meteor. Soc., 7.3.

38. Nowotarski, C. J., P. M. Markowski, Y. P. Richardson, and **G. H. Bryan**, 2010: Simulating supercell thunderstorms in a horizontally-heterogeneous convective boundary layer. Preprints, *25th Conf. on Severe Local Storms*, Denver, CO, Amer. Meteor. Soc., 13A.3.

37. **Bryan, G. H.**, R. Rotunno, and Y. Chen, 2010: The effects of turbulence on hurricane intensity. Preprints, *29th Conference on Hurricanes and Tropical Meteorology*, Tucson, AZ, Amer. Meteor. Soc., 8C.7.

36. Parker, M. D., A. J. French, C. E. Letkewicz, M. J. Morin, K. Rojowsky, D. Stark, and **G. H. Bryan**, 2009: Mobile sounding measurements of the near-storm environment during VORTEX2. Preprints, *5th European Conference on Severe Storms*, Landshut, Germany, P09-07.

35. **Bryan, G. H.**, and R. Rotunno, 2009: The effects of small-scale turbulence on maximum hurricane intensity. Preprints, *13th Conference on Mesoscale Processes*, Salt Lake City, UT, Amer. Meteor. Soc., 14.2.

34. **Bryan, G. H.**, 2008: Evaluation of the theoretical speed and depth of gravity currents using three-dimensional numerical simulations. Preprints, *24th Conf. on Severe Local Storms*, Savannah, GA, Amer. Meteor. Soc., 10.1.

33. Morrison, H., **G. Bryan**, and G. Thompson, 2008: Impact of cloud microphysics on the development of trailing stratiform precipitation in squall lines. Preprints, *15th International Conference on Clouds and Precipitation*, Cancun, Mexico, IAMAS, P3.21.

32. Knievel, J. C., **G. H. Bryan**, J. H. Copeland, and J. P. Hacker, 2008: The WRF Model's new explicit numerical diffusion scheme and its effects on transport and dispersion in the planetary boundary layer. Preprints, *15th Conference on the Applications of Air Pollution Meteorology*, New Orleans, LA, Amer. Meteor. Soc., P2.1.

31. Ahijevych, D., **G. Bryan**, M. Weisman, S. Trier, C. Davis, and D. Dowell, 2006: Composite bow echo observed during BAMEX. Preprints, *23rd Conf. on Severe Local Storms*, St. Louis, MO, Amer. Meteor. Soc., CD-ROM, 7.3.

30. **Bryan, G. H.**, and M. L. Weisman, 2006: Mechanisms for the production of severe surface winds in a simulation of an elevated convective system. Preprints, *23rd Conf. on Severe Local Storms*, St. Louis, MO, Amer. Meteor. Soc., CD-ROM, 7.5.

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28. **Bryan, G.**, D. Ahijevych, C. Davis, S. Trier, and M. Weisman, 2005: Observations of cold pool properties in mesoscale convective systems during BAMEX. Preprints, *11th Conf. on Mesoscale Processes*, Albuquerque, NM, Amer. Meteor. Soc., CD-ROM, JP5J.12.

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Recent Presentations

Oral presentation, 2019 NCAR/UCP Science & Discovery Day

- Boulder, CO: May 2019
- Title: Observing hurricanes with a small unmanned aircraft system

Oral presentation, 2018 AGU Fall Meeting

- Washington, D.C.: December 2018
- Title: Sensitivity of convective self-aggregation to subtle details in a surface-layer parameterization in simulations of radiative-convective equilibrium

Poster presentation, 2018 AGU Fall Meeting

- Washington, D.C.: December 2018
- Title: Toward better simulations of hurricane winds in urban canopies

Keynote Lecture, 5th Conference on Turbulence and Interactions

- Les Trois-Îlets, Martinique: June 2018
- Title: Maximum wind gusts in hurricanes according to observations and large-eddy simulations

Oral Presentation, 33rd Conference on Hurricanes and Tropical Meteorology

- Ponte Vedra Beach, FL: April 2018
- Title: Using Coyote UAS observations to evaluate large-eddy simulations (and vice versa)

Oral presentation, 2017 AGU Fall Meeting

- Late-breaking Session on the 2017 Hurricane Season in the Americas
- New Orleans, LA: December 2017
- Title: Unique observations in Hurricane Maria using the Coyote UAS (Un-crewed Aircraft System)

Seminar, Department of Atmospheric Sciences, University of Illinois at Urbana-Champaign

- Urbana, IL: October 2017
- Title: Peak wind gusts in hurricanes from observations and numerical simulations

Oral presentation, 8th IUFRO International Conference on Wind and Trees

- Boulder, CO: July 2017
- Title: Tree damage from severe convective storms

Seminar, Mesoscale and Microscale Meteorology Laboratory, NCAR

- Boulder, CO: February 2017
- Title: Observations and large-eddy simulations of wind gusts in hurricanes