

Reading list for **supercells**

29 Nov. 2010

Atkins, N. T., M. L. Weisman, and L. J. Wicker, 1999: The influence of preexisting boundaries on supercell evolution. *Mon. Wea. Rev.*, **127**, 2910 – 2927.

Barnes, S. L., 1970: Some aspects of a severe, right-moving thunderstorm deduced from mesonetwork rawinsonde observations. *J. Atmos. Sci.*, **27**, 634 – 648.

Beck, J. R., J. L. Schroeder, and J. M. Wurman, 2006: High-resolution dual-Doppler analyses of the 29 May 2001 Kress, Texas, cyclic supercell. *Mon. Wea. Rev.*, **134**, 3125 – 3148.

Bluestein, H., 1984: Further examples of low-precipitation severe thunderstorms. *Mon. Wea. Rev.*, **112**, 1885-1888.

Bluestein, H. B., 1986: Visual aspects of the flanking line in severe thunderstorms. *Mon. Wea. Rev.*, **114**, 788 – 795.

Bluestein, H. B., 2007: Advances in applications of the physics of fluids to severe weather systems. *Reports on Progress in Physics*, **70**, 1259 – 1323.

Bluestein, H. B., 2009: The formation and early evolution of the Greensburg, Kansas, tornadic supercell on 4 May 2007. *Wea. Forecasting*, **24**, 899 – 920.

Bluestein, H.B. and G.R. Woodall, 1990: Doppler-radar analysis of a low-precipitation (LP) severe storm. *Mon. Wea. Rev.*, **118**, 1640-1664.

Bluestein, H. and C. Sohl, 1979: Some observations of a splitting severe thunderstorm. *Mon. Wea. Rev.*, **107**, 861-873.

Bluestein, H. and C. Parks. 1983: A synoptic and photographic climatology of low-precipitation severe thunderstorms in the Southern Plains. *Mon. Wea. Rev.*, **111**, 2034-2046.

Bluestein, H. B., and A. L. Pazmany, 2000: Observations of tornadoes and other convective phenomena with a mobile, 3-mm wavelength, Doppler radar: The spring 1999 field experiment. *Bull. Amer. Meteor. Soc.*, **81**, 2939 – 2951.

Bluestein, H. B., and M. L. Weisman, 2000: The interaction of numerically simulated supercells initiated along lines. *Mon. Wea. Rev.*, **128**, 3128 – 3149.

Bluestein, H. B., and S. G. Gaddy, 2001: Airborne pseudo-dual-Doppler analysis of a rear-inflow jet and deep convergence zone within a supercell. *Mon. Wea. Rev.*, **129**, 2270 – 2289.

- Bluestein, H. B., W. P. Unruh, D. C. Dowell, T. A. Hutchinson, T. M. Crawford, and H. Stein, 1997: Doppler radar analysis of the Northfield, Texas, tornado of 25 May 1994. *Mon. Wea. Rev.*, **125**, 212 – 230.
- Bluestein, H. B., S. G. Gaddy, D. C. Dowell, A. L. Pazmany, J. C. Galloway, R. E. McIntosh, and H. Stein, 1997: Doppler radar observations of substorm-scale vortices in a supercell. *Mon. Wea. Rev.*, **125**, 1046 – 1059.
- Brandes, E. A., 1977a: Flow in severe thunderstorms observed by dual-Doppler radar. *Mon. Wea. Rev.*, **105**, 113 – 120.
- Brandes, E. A., 1977b: Gust front evolution and tornado genesis as viewed by Doppler radar. *J. Appl. Meteor.*, **16**, 333 – 338.
- Brandes, E. A., 1978: Mesocyclone evolution and tornadogenesis: Some obervations. *Mon. Wea. Rev.*, **106**, 995 – 1011.
- Brandes, E. A., 1981: Finestructure of the Del City – Edmond tornadic mesovortices. *Mon. Wea. Rev.*, **109**, 635 – 647.
- Brandes, E. A., 1984a: Relationships between radar-derived thermodynamic variables and tornadogenesis. *Mon. Wea. Rev.*, **112**, 1033 – 1052.
- Brandes, E. A., 1984b: Vertical vorticity generation and mesocyclone sustenance in a tornadic thunderstorms: The observational evidence. *Mon. Wea. Rev.*, **112**, 2253 – 2269.
- Brandes, E. A., 1993: Tornadic thunderstorm characteristics determined with Doppler radar. *The Tornado: Its Structure, Dynamics, Prediction, and Hazards* (C. Church, D. Burgess, C. Doswell, and R. Davies-Jones, eds.), Geoph. Monog. **79**, Amer. Geophy. Union, 143 – 159.
- Brandes, E. A., R. P. Davies-Jones, B. C. and Johnson, 1988: Streamwise vorticity effects on supercell morphology and persistence. *J. Atmos. Sci.*, **45**, 947 – 963.
- Brooks, H. E., and R. B. Wilhelmson, 1993: Hodograph curvature and updraft intensity in numerically modeled supercells. *J. Atmos. Sci.*, **50**, 1824 – 1833.
- Brooks, H. E., C. A. Doswell III, and R. Davies-Jones, 1993: Environmental helicity and the maintenance and evolution of low-level mesocyclones. *The Tornado: Its Structure, Dynamics, Prediction, and Hazards* (C. Church, D. Burgess, C. Doswell, and R. Davies-Jones, eds.), Geoph. Monog. **79**, Amer. Geophy. Union, 97 – 104.
- Brooks, H. E., C. A. Doswell III, and R. B. Wilhelmson, 1994: The role of midtropospheric winds in the evolution and maintenance of low-level mesocyclones. *Mon. Wea. Rev.*, **122**, 126 – 136.

- Brown, R. A., D. W. Burgess, J. K. Carter, L. R. Lemon, and D. Sirmans, 1975: NSSL dual-Doppler radar measurements in tornadic storms: a preview. *Bull. Amer. Meteor. Soc.*, **56**, 524 – 526.
- Browning, K. A., 1964: Airflow and precipitation trajectories within severe local storms which travel to the right of the winds. *J. Atmos. Sci.*, **21**, 634 – 639.
- Browning, K. A., 1965a: The evolution of tornadic storms. *J. Atmos. Sci.*, **22**, 664 – 668.
- Browning, K. A., 1965b: Some inferences about the updraft within a severe local storm. *J. Atmos. Sci.*, **22**, 669 – 677.
- Browning, K. A., 1986: Morphology and classification of middle-latitude thunderstorms. Chapter 7, *Thunderstorm Morphology and Dynamics* (E. Kessler, ed.), Univ. of Oklahoma Press, 133 – 152.
- Browning, K. A., and F. H. Ludlam, 1962: Airflow in convective storms. *Q. J. Roy. Meteor. Soc.*, **88**, 117 – 135.
- Browning, K. A. and R. J. Donaldson, Jr., 1963: Airflow and structure of a tornadic storm. *J. Atmos. Sci.*, **20**, 533 – 545.
- Bunkers, M. J., B. A. Klimowski, J. W. Zeitler, R. L. Thompson, and M. L. Weisman, 2000: Predicting supercell motion using a new hodograph technique. *Wea. Forecasting*, **15**, 61 – 79.
- Burgess, D. W., and L. R. Lemon, 1990: Severe thunderstorm detection by radar. *Radar in Meteorology: Battan Memorial and 40th Anniversary Radar Conf.*, Chapter 30a (D. Atlas, ed.), Amer. Meteor. Soc., 619 – 656.
- Burgess, D. W., M. A. Magsig, J. Wurman, and D. C. Dowell, 2002: Radar observations of the 3 May 1999 Oklahoma City tornado. *Wea. Forecasting*, **17**, 456 – 471.
- Byko, Z., P. Markowski, and Y. Richardson, 2009: Descending reflectivity cores in supercell thunderstorms observed by mobile radars and in a high-resolution numerical simulation. *Wea. Forecasting*, **24**, 155 – 186.
- Charba, J., and Y. Sasaki, 1971: Structure and movement of the severe thunderstorm of 3 April 1964 as revealed from radar and surface mesonet data analysis. *J. Meteor. Society of Japan*, **49**, 191 – 214 [NTIS PB-174 68].
- Davies-Jones, R. P., 1984: Streamwise vorticity: The origin of updraft rotation in supercell storms. *J. Atmos. Sci.*, **41**, 2991 – 3006.
- Davies-Jones, R., 2000: A Lagrangian model for baroclinic genesis of mesoscale vortices. Part I: Theory. *J. Atmos. Sci.*, **57**, 715 – 736.

Davies-Jones, R., 2002: Linear and nonlinear propagation of supercell storms. *J. Atmos. Sci.*, **59**, 3178 – 3205.

Davies-Jones, R. P., 2004: Growth of circulation around supercell updrafts. *J. Atmos. Sci.*, **61**, 2863 – 2876.

Davies-Jones, R., and H. Brooks, 1993: Mesocyclogenesis from a theoretical perspective. *The Tornado: Its Structure, Dynamics, Prediction, and Hazards* (C. Church, D. Burgess, C. Doswell, and R. Davies-Jones, eds.), Geoph. Monog. **79**, Amer. Geophy. Union, 105 – 114.

Davies-Jones, R., R. J. Trap, and H. B. Bluestein, 2001: Tornadoes and tornadic storms. *Severe Convective Storms*, Meteor. Monogr., 28, no. 50 (C. Doswell III, ed.), Amer. Meteor. Soc., 167-221.

Donaldson, R. J., Jr., 1970: Vortex signature recognition by a Doppler radar. *J. Appl. Meteor.*, **9**, 661 – 670.

Donaldson, R. J., 1990: Foundations of severe storm detection by radar. *Radar in Meteorology: Battan Memorial and 40th Anniversary Radar Conf.*, Chapter 15 (D. Atlas, ed.), Amer. Meteor. Soc. 115 – 121.

Dowell, D. C., and H. B. Bluestein, 1997: The Arcadia, Oklahoma, storm of 17 May 1981: Analysis of a supercell during tornadogenesis. *Mon. Wea. Rev.*, **125**, 2562 – 2582.

Dowell, D. C., H. B. Bluestein, and D. P. Jorgensen, 1997: Airborne Doppler radar analysis of supercells during COPS-91. *Mon. Wea. Rev.*, **125**, 365 – 383.

Dowell, D. C., and H. B. Bluestein, 2002a: The 8 June 1995 McLean, Texas, storm. Part I: Observations of cyclic tornadogenesis. *Mon. Wea. Rev.*, **130**, 2626 – 2648.

Dowell, D. C., and H. B. Bluestein, 2002b: The 8 June 1995 McLean, Texas, storm. Part II: Cyclic tornado formation, maintenance, and dissipation. *Mon. Wea. Rev.*, **130**, 2649 – 2670.

Fankhauser, J. C., 1971: Thunderstorm-environment interactions determined from aircraft and radar observations. *Mon. Wea. Rev.*, **99**, 171 – 192.

Forbes, G. S., and H. B. Bluestein, 2001: Tornadoes, tornadic thunderstorms, and photogrammetry: A review of the contributions by T. T. Fujita. *Bull. Amer. Soc.*, **82**, 73-96.

French, M. M., H. B. Bluestein, D. C. Dowell, L. J. Wicker, M. R. Kramar, and A. L. Pazmany, 2008: High-resolution, mobile Doppler radar observations of cyclic mesocyclogenesis in a supercell. *Mon. Wea. Rev.*, **136**, 4997 – 5016.

- Fujita, T., 1960: A detailed analysis of the Fargo tornadoes of June 20, 1957. Research paper to the U. S. Weather Bureau, No. 42, University of Chicago, Chicago, 67 pp.
- Fujita, T., and H. Grandoso, 1968: Split of a thunderstorm into anticyclonic and cyclonic storms and their motion as determined from numerical model experiments. *J. Atmos. Sci.*, **25**, 416 – 439.
- Hammond, G. R., 1967: *Study of a Left-moving Thunderstorm of 23 April 1964*, ESSA Tech. Memo. IERTM-NSSL 31, 75 pp.
- Heymsfield, G. M., 1978: Kinematic and dynamic aspects of the Harrah Tornadic storm analyzed from dual-Doppler radar data. *Mon. Wea. Rev.*, **106**, 233 – 254.
- Hitschfeld, W., 1960: The motion and erosion of convective storms in severe vertical wind shear. *J. Meteor.*, **17**, 270 – 282.
- Klemp, J. B., 1987: Dynamics of tornadic thunderstorms. *Ann. Rev. Fluid Mech.*, **19**, 369 – 402.
- Kramar, M. R., H. B. Bluestein, A. L. Pazmany, and J. D. Tuttle, 2005: The “Owl Horn” radar signature in developing Southern Plains supercells. *Mon. Wea. Rev.*, **133**, 2608 – 2634.
- Lehmiller, G. S., H. B. Bluestein, P. J. Neiman, F. M. Ralph, and W. F. Feltz, 2001: Wind structure in a supercell thunderstorm as measured by a UHF wind profiler. *Mon. Wea. Rev.*, **129**, 1968-1986.
- Lemon, L. R., 1976: The flanking line, a severe thunderstorm intensification source. *J. Atmos. Sci.*, **33**, 686 – 694.
- Lemon, L. R., and C. A. Doswell III, 1979: Thunderstorm evolution and mesocyclone structure as related to tornadogenesis. *Mon. Wea. Rev.*, **107**, 1184 – 1197.
- Lilly, D. K., 1986: The structure, energetics and propagation of rotating convective storms. Part II: Helicity and storm stabilization. *J. Atmos. Sci.*, **43**, 126 – 140.
- Markowski, P. M., E. N. Rasmussen, and J. M. Straka, 1998a: The occurrence of tornadoes in supercells interacting with boundaries during VORTEX-95. *Wea. Forecasting*, **13**, 852 – 859.
- Markowski, P. M., E. N. Rasmussen, J. M. Straka, and D. C. Dowell, 1998b: Observations of low-level baroclinity generated by anvil shadows. *Mon. Wea. Rev.*, **126**, 2942 – 2958.

- Markowski, P. M., J. M. Straka, E. N. Rasmussen, and D. O. Blanchard, 1998c: Variability of storm-relative helicity during VORTEX. *Mon. Wea. Rev.*, **126**, 2959 – 2971.
- Markowski, P. M., E. Rasmussen, J. Straka, R. Davies-Jones, Y. Richardson, and R. J. Trapp, 2008: Vortex lines within low-level mesocyclones obtained from pseudo-dual Doppler radar observations. *Mon. Wea. Rev.*, **136**, 3513 – 3535.
- Moller, A. R., 1978: The improved NWS storm spotters' training program at Ft. Worth, Tex., *Bull. Amer. Meteor. Soc.*, **39**, 1574 – 1582.
- Newton, C. W., and J. C. Fankhauser, 1964: On the movements of convective storms, with emphasis on size discrimination in relation to water-budget requirements. *J. Appl. Meteor.*, **3**, 651 – 668.
- Rasmussen, E. N., 2003: Refined supercell and tornado forecast parameters. *Wea. Forecasting*, **18**, 530 – 535.
- Rasmussen, E. N., and D. O. Blanchard, 1998: A baseline climatology of sounding-derived supercell and tornado forecast parameters. *Wea. Forecasting*, **13**, 1148 – 1164.
- Rasmussen, E. N. and J. M. Straka, 1998: Variations in supercell morphology. Part I: Observations of the role of upper-level storm-relative flow. *Mon. Wea. Rev.*, **126**, 2406 – 2421.
- Rasmussen, E. N., S. Richardson, J. M. Straka, P. M. Markowski, and D. O. Blanchard, 2000: The association of significant tornadoes with a baroclinic boundary on 2 June 1995. *Mon. Wea. Rev.*, **128**, 174 – 191.
- Ray, P. S., R. J. Doviak, G. B. Walker, D. Sirmans, J. Carter, and B. Bumgarner, 1975: Dual-Doppler observation of a tornadic storm. *J. Appl. Meteor.*, **14**, 1521 – 1530.
- Ray, P. S., B. C. Johnson, K. W. Johnson, J. S. Bradberry, J. J. Stephens, K. K. Wagner, R. B. Wilhemson, and J. B. Klemp, 1981: The morphology of several tornadic storms on 20 May 1977. *J. Atmos. Sci.*, **38**, 1643 – 1663.
- Rogers, R. R., 1990: The early years of Doppler radar in meteorology. *Radar in Meteorology: Battan Memorial and 40th Anniversary Radar Conf.*, Chapter 16 (D. Atlas, ed.), Amer. Meteor. Soc., 122 – 129.
- Rotunno, R., 1981: On the evolution of thunderstorm rotation. *Mon. Wea. Rev.*, **109**, 577 – 586.
- Rotunno, R., 1993: Supercell thunderstorm modeling and theory. *The Tornado: Its Structure, Dynamics, Prediction, and Hazards* (C. Church, D. Burgess, C. Doswell, and R. Davies-Jones, eds.), Geoph. Monog. **79**, Amer. Geophy. Union, 57 – 73.

- Rotunno, R., and J. B. Klemp, 1982: The influence of the shear-induced pressure gradient on thunderstorm motion. *Mon. Wea. Rev.*, **110**, 136 – 151.
- Rotunno, R., and J. B. Klemp, 1985: On the rotation and propagation of simulated supercell thunderstorms. *J. Atmos. Sci.*, **42**, 271 – 292.
- Schlesinger, R. E., 1975: A three-dimensional numerical model of an isolated convective cloud: Preliminary results. *J. Atmos. Sci.*, **32**, 934 – 957.
- Schlesinger, R. E., 1978: A three-dimensional numerical model of an isolated thunderstorm: Part I. Comparative experiments for variable ambient wind shear. *J. Atmos. Sci.*, **35**, 690 – 713.
- Schesinger, R. E., 1980: A three-dimensional numerical model of an isolated thunderstorm. Part II: Dynamics of updraft splitting and mesovortex couplet evolution. *J. Atmos. Sci.*, **37**, 395 – 420.
- Schlesinger, R. E., 1984: Effects of the pressure perturbation field in numerical models of unidirectionally sheared thunderstorm convection: Two versus three dimensions. *J. Atmos. Sci.*, **41**, 1571 – 1587.
- Straka, J. M., E. N. Rasmussen, R. P. Davies-Jones, and P. M. Markowski, 2007: An observational and idealized numerical examination of low-level counter-rotating vortices in the rear flank of supercells. *Electronic J. Severe Storms Meteor.*, **2**, 22 pp.
- Vasiloff, S. V., E. A. Brandes, and R. P. Davies-Jones, 1986: An investigation of the transition from multicell to supercell storms. *J. Clim. Appl. Meteor.*, **25**, 1022 – 1036.
- Wakimoto, R. M., W. – C. Lee, H. B. Bluestein, C.-H. Liu, and P. H. Hildebrand, 1996: ELDORA observations during VORTEX 95. *Bull. Amer. Meteor. Soc.*, **77**, 1465 – 1481.
- Wakimoto, R. M. and C. Liu, and H. Cai, 1998: The Garden City, Kansas storm during VORTEX-95. Part I: Overview of the storm's life cycle and mesocyclogenesis. *Mon. Wea. Rev.*, **126**, 372 – 392.
- Wakimoto, R. M., and H. Cai, 2000: Analysis of a nontornadic storm during VORTEX 95. *Mon. Wea. Rev.*, **128**, 565 – 592.
- Wakimoto, R. M., H. Cai, and H. V. Murphrey, 2004: The Superior, Nebraska supercell during BAMEX. *Bull. Amer. Meteor. Soc.*, **85**, 1095 – 1106.
- Weaver, J. F., 1979: Storm motion as related to boundary-layer convergence. *Mon. Wea. Rev.*, **107**, 612 – 619.

Weisman, M. L., and J. B. Klemp, 1982: The dependence of numerically simulated convective storms on vertical wind shear and buoyancy. *Mon. Wea. Rev.*, **110**, 504 – 520.

Weisman, M. L., and J. B. Klemp, 1984: The structure and classification of numerically simulated convective storms in directionally varying wind shears. *Mon. Wea. Rev.*, **112**, 2479 – 2498.

Weisman, M. L., and J. B. Klemp, 1986: Characteristics of isolated convective storms. Chapter 15, *Mesoscale Meteorology and Forecasting*, Amer. Meteor. Soc., 331 – 358.

Weisman, M. L., and R. Rotunno, 2000: The use of vertical wind shear versus helicity in interpreting supercell dynamics. *J. Atmos. Sci.*, **57**, 1452 – 1472.