## **Bibliographic references**

## **Books**

Ben-Naim, Arieh, *A Farewell to Entropy: Statistical Thermodynamics Based on Information*, World Scientific (2008). ISBN 978-981-270-706-2

Bluestein, H. B., 2013: Severe Convective Storms and Tornadoes: Observations and Dynamics. Springer.

Cotton, William R., George H. Bryan, and Susan C. Van den Heever. 2011. *Storm and cloud dynamics: the dynamics of clouds and precipitating mesoscale systems*. Burlington, MA: Academic Press.

Dawkins, R. (1989). The selfish gene. Oxford University Press.

Doswell, C. III, 2001: *Severe convective storms*. Meteor. Monographs, American Meteorological Society, Boston.

Houze, R. A., Jr., 2014: Cloud Dynamics. Academic Press, 496pp

Emanuel 1994: Atmospheric convection. Oxford University Press.

Emanuel, K., 2005: Divine Wind: The History and Science of Hurricanes, Oxford University Press, New York.

Lovejoy, S., and D. Schertzer, 2013: *The Weather and Climate: Emergent Laws and Multifractal Cascades*. Cambridge University Press, 475 pp.

Markowski and Richardson 2010: *Mesoscale meteorology in midlatitudes*. Wiley-Blackwell, 430 pp. ISBN: 978-0470742136.

Mcgrayne, Sharon Bertsch. *The Theory That Would Not Die: How Bayes' Rule Cracked the Enigma Code, Hunted Down Russian Submarines, and Emerged Triumphant from Two Centuries of Controversy.* Yale University Press, 2011. *JSTOR*, <a href="www.jstor.org/stable/j.ctt1np76s">www.jstor.org/stable/j.ctt1np76s</a>.

Mohling, F., 1982: Statistical Mechanics: Methods and Applications. Wiley and Sons, New York. 608 pp.

Pearl, J., and D. Mackenzie, 2018: *The Book of Why: The New Science of Cause and Effect.* Basic Books, New York, 432 pages.

Plant, R., and J.-I. Yano, 2015: *Parameterization of Atmospheric Convection*. World Scientific Press, Singapore, 1172 pages (in 2 volumes). doi: <a href="https://doi.org/10.1142/p1005">https://doi.org/10.1142/p1005</a>

Starr, V. I., 1968: Physics of Negative Viscosity Phenomena. McGraw-Hill, New York, 256 pp.

Sutherland, B. (2010). *Internal Gravity Waves*. Cambridge: Cambridge University Press. doi:10.1017/CBO9780511780318

Trapp, R. J., 2013: *Mesoscale-convective processes in the atmosphere*. Cambridge University Press, 377pp, ISBN: 9780521889421

Vallis, G. K., 2017. *Atmospheric and Oceanic Fluid Dynamics: Fundamentals and Large-scale Circulation*, 2nd edn. Cambridge University Press. 946 pp.

Wallace, J. M., & Hobbs, P. V. (2006). *Atmospheric science: An introductory survey*. Second edition. Amsterdam, Elsevier Academic Press.

## Journal papers

Adames, Á.F., D. Kim, S.K. Clark, Y. Ming, and K. Inoue, 0: <u>Scale analysis of moist</u> thermodynamics in a simple model and the relationship between moisture modes and gravity waves. *J. Atmos. Sci.*, **0**, https://doi.org/10.1175/JAS-D-19-0121.1

Alexakis, A., and L. Biferale, 2018: Cascades and transitions in turbulent flows. *Physics Reports*, <a href="https://doi.org/10.1016/j.physrep.2018.08.001">https://doi.org/10.1016/j.physrep.2018.08.001</a>

Anber, U., S. Wang, and A. Sobel, 2014: Response of Atmospheric Convection to Vertical Wind Shear: Cloud-System-Resolving Simulations with Parameterized Large-Scale Circulation. Part I: Specified Radiative Cooling. *J. Atmos. Sci.*, **71**, 2976–2993, <a href="https://doi.org/10.1175/JAS-D-13-0320.1">https://doi.org/10.1175/JAS-D-13-0320.1</a>

André, J. C., G. DeMoor, P. Lacarrere, and R. DuVachat, 1976: Turbulence approximation for inhomogeneous flows: Part I. The clipping approximation. J. Atmos. Sci, 33, 476–481.

Arakawa, A., and W. H. Schubert, 1974: Interaction of a cumulus cloud ensemble with the large-scale environment, Part I. *J. Atmos. Sci.*, **31**, 674–701.

Arakawa, A., 2004: The cumulus parameterization problem: Past, present, and future. *J. Climate*, **17**, 2493–2525.

Arakawa, A. and C. Wu, 2013: A Unified Representation of Deep Moist Convection in Numerical Modeling of the Atmosphere. Part I. *J. Atmos. Sci.*, **70**, 1977–1992, <a href="https://doi.org/10.1175/JAS-D-12-0330.1">https://doi.org/10.1175/JAS-D-12-0330.1</a>

Berry, G.J., M.J. Reeder, and C. Jakob, 2012: Coherent Synoptic Disturbances in the Australian Monsoon. *J. Climate*, **25**, 8409–8421, https://doi.org/10.1175/JCLI-D-12-00143.1

Betts, A. K., 1974: Further comments on "A comparison of the equivalent potential temperature and the static energy". *J. Atmos. Sci.*, **31**, 1713-1715.

Betts, A. K., and M. J. Miller, 1984: A new convective adjustment scheme, Pts. I and II. ECMWF technical Report No. 43, ECMWF, Reading, RG2 9AX, England, 68 pp. Available at <a href="http://alanbetts.com/workspace/uploads/bettemiller84-ecmwf-tr43-1276986585.pdf">http://alanbetts.com/workspace/uploads/bettemiller84-ecmwf-tr43-1276986585.pdf</a>

<u>Beucler, T.</u> (P), M. Pritchard, S. Rasp, P. Gentine, J. Ott and P. Baldi, 2019: Enforcing Analytic Constraints in Neural-Networks Emulating Physical Systems, <a href="https://arxiv.org/abs/1906.06622">https://arxiv.org/abs/1906.06622</a>

Bogenschutz, P. A., Gettelman, A., Hannay, C., Larson, V. E., Neale, R. B., Craig, C., and Chen, C.-C., 2018: The path to CAM6: coupled simulations with CAM5.4 and CAM5.5, Geosci. Model Dev., 11, 235–255, https://doi.org/10.5194/gmd-11-235-2018.

Böing, SJ, Dritschel, DG, Parker, DJ, Blyth, AM. Comparison of the Moist Parcel-in-Cell (MPIC) model with large-eddy simulation for an idealized cloud. *Q J R Meteorol Soc.* 2019; 1–17. https://doi.org/10.1002/qj.3532

Bretherton, F. P. (1969), Waves and Turbulence in Stably Stratified Fluids, *Radio Sci.*, 4(12), 1279–1287, doi:10.1029/RS004i012p01279.

Bretherton, C.S. and P.K. Smolarkiewicz, 1989: Gravity Waves, Compensating Subsidence and Detrainment around Cumulus Clouds. *J. Atmos. Sci.*, **46**, 740–759, <a href="https://doi.org/10.1175/1520-0469(1989)046<0740:GWCSAD>2.0.CO;2">https://doi.org/10.1175/1520-0469(1989)046<0740:GWCSAD>2.0.CO;2</a>

Bretherton, C. S., 1993: The nature of adjustment in cumulus cloud fields. *Meteorological Monographs*, **24**, 63-74

Bretherton, C. S., J. R. McCaa, and H. Grenier, 2004: A new parameterization for shallow cumulus convection and its application to marine subtropical cloud-topped boundary layers, Part I: Description and 1-D results, Mon. Weather Rev., 132, 864–882, 2004.

Bretherton, C. S., and Khairoutdinov, M. F. (2015), Convective self-aggregation feedbacks in near-global cloud-resolving simulations of an aquaplanet, J. Adv. Model. Earth Syst., 7, 1765–1787, doi:10.1002/2015MS000499.

Brooks, H.E., C.A. Doswell III, X. Zhang, A.M. Chernokulsky, E. Tochimoto, B. Hanstrum, E. de Lima Nascimento, D.M. Sills, B. Antonescu, and B. Barrett, 2018: <u>A Century of Progress in Severe Convective Storm Research and Forecasting.</u> *Meteorological Monographs*, **59**, 18.1–18.41, <a href="https://doi.org/10.1175/AMSMONOGRAPHS-D-18-0026.1">https://doi.org/10.1175/AMSMONOGRAPHS-D-18-0026.1</a>

Bryan, G. H., and J. M. Fritsch, 2000: Moist absolute instability: The sixth static stability state. *Bull. Amer. Meteor. Soc.*, **81**, 1207–1230, <a href="https://doi.org/10.1175/1520-0477(2000)081<1287:MAITSS>2.3.CO;2">https://doi.org/10.1175/1520-0477(2000)081<1287:MAITSS>2.3.CO;2</a>.

Cheedela, S., and B. E. Mapes, 2018: Cumulus friction in the Asian monsoon of a global model with 7km mesh. Peer-reviewed chapter in INTROSPECT-2016, Elsevier, D. Randall, ed. Available at <a href="https://weather.rsmas.miami.edu/bmapes/http/pagestuff/cumulus-friction-asian.pdf">https://weather.rsmas.miami.edu/bmapes/http/pagestuff/cumulus-friction-asian.pdf</a>

Chen, B., and B. E. Mapes, 2018: Effects of a simple convective organization scheme in a two-plume GCM. *Journal of Advances in Modeling Earth*Systems, 10, 867–880. https://doi.org/10.1002/2017MS001106

Colombo, M. & Wright, C., 2018: First principles in the life sciences: the free-energy principle, organicism, and mechanism. *Synthese*, Springer. https://doi.org/10.1007/s11229-018-01932-w or https://rdcu.be/bVcH2

Crook, N.A. and M.W. Moncrieff, 1988: The Effect of Large-Scale Convergence on the Generation and Maintenance of Deep Moist Convection. *J. Atmos. Sci.*, **45**, 3606–3624, <a href="https://doi.org/10.1175/1520-0469(1988)045<3606:TEOLSC>2.0.CO;2">https://doi.org/10.1175/1520-0469(1988)045<3606:TEOLSC>2.0.CO;2</a>

de Roode, S. R., A. P. Siebesma, H. J. J. Jonker, and Y. de Voogd, 2012: Parameterization of the vertical velocity equation for shallow cumulus clouds. Mon. Wea. Rev., 140, 2424–2436, doi:10.1175/MWR-D-11-00277.1.

de Rooy, W. C., Bechtold, P., Fröhlich, K., Hohenegger, C., Jonker, H., Mironov, D., Pier Siebesma, A., Teixeira, J. and Yano, J., 2013: Entrainment and detrainment in cumulus convection: an overview. Q.J.R. Meteorol. Soc., 139: 1-19. doi:10.1002/qj.1959

Del Genio, A. D., 2012: Representing the sensitivity of convective cloud systems to tropospheric humidity in general circulation models. *Surv. Geophys.*, **33**, 637–656, doi:https://doi.org/10.1007/s10712-011-9148-9.

Emanuel, K.A., 1991: A Scheme for Representing Cumulus Convection in Large-Scale Models. *J. Atmos. Sci.*, **48**, 2313–2329, <a href="https://doi.org/10.1175/1520-0469(1991)048<2313:ASFRCC>2.0.CO;2">https://doi.org/10.1175/1520-0469(1991)048<2313:ASFRCC>2.0.CO;2</a>

Fleming, J. (2007). A 1954 COLOR PAINTING OF WEATHER SYSTEMS AS VIEWED FROM A FUTURE SATELLITE. *Bulletin of the American Meteorological Society, 88*(10), 1525-1527. Retrieved from http://www.jstor.org/stable/26216736

Fovell, R.G. and P. Tan, 1998: The Temporal Behavior of Numerically Simulated Multicell-Type Storms. Part II: The Convective Cell Life Cycle and Cell Regeneration. *Mon. Wea. Rev.,* **126**, 551–577, <a href="https://doi.org/10.1175/1520-0493(1998)126<0551:TTBONS>2.0.CO;2">https://doi.org/10.1175/1520-0493(1998)126<0551:TTBONS>2.0.CO;2</a>

Fritts, D. C., and Alexander, M. J. (2003), Gravity wave dynamics and effects in the middle atmosphere, *Rev. Geophys.*, 41, 1003, doi:10.1029/2001RG000106, 1.

Glenn, I. B., and Krueger, S. K. (2017), Connections matter: Updraft merging in organized tropical deep convection, *Geophys. Res. Lett.*, 44, 7087–7094, doi:10.1002/2017GL074162.

Gross, M., H. Wan, P.J. Rasch, P.M. Caldwell, D.L. Williamson, D. Klocke, C. Jablonowski, D.R. Thatcher, N. Wood, M. Cullen, B. Beare, M. Willett, F. Lemarié, E. Blayo, S. Malardel, P. Termonia, A. Gassmann, P.H. Lauritzen, H. Johansen, C.M. Zarzycki, K. Sakaguchi, and R. Leung, 2018: Physics—Dynamics Coupling in Weather, Climate, and Earth System Models: Challenges and Recent Progress. *Mon. Wea. Rev.*, **146**, 3505—3544, https://doi.org/10.1175/MWR-D-17-0345.1

Haghi, K.R., B. Geerts, H.G. Chipilski, A. Johnson, S. Degelia, D. Imy, D.B. Parsons, R.D. Adams-Selin, D.D. Turner, and X. Wang, 2019: Bore-ing into Nocturnal Convection. *Bull. Amer. Meteor. Soc.*, **100**, 1103–1121, https://doi.org/10.1175/BAMS-D-17-0250.1

Hagos, S., Feng, Z., Plant, R. S., Houze, R. A., Jr., & Xiao, H. (2018). A stochastic framework for modeling the population dynamics of convective clouds. Journal of Advances in Modeling Earth Systems, 10, 448–465. https://doi.org/10.1002/2017MS001214

Han, J. and H. Pan, 2011: Revision of Convection and Vertical Diffusion Schemes in the NCEP Global Forecast System. *Wea. Forecasting*, **26**, 520–533, <a href="https://doi.org/10.1175/WAF-D-10-05038.1">https://doi.org/10.1175/WAF-D-10-05038.1</a>

Hannah, W.M., 2017: Entrainment versus Dilution in Tropical Deep Convection. *J. Atmos. Sci.*, **74**, 3725–3747, https://doi.org/10.1175/JAS-D-16-0169.1

Held, I.M., R.S. Hemler, and V. Ramaswamy, 1993: Radiative-Convective Equilibrium with Explicit Two-Dimensional Moist Convection. J. Atmos. Sci., 50, 39093927, https://doi.org/10.1175/1520-0469(1993)050j3909:RCEWET¿2.0.CO;2

Herman, M. J., and Kuang, Z. (2013), Linear response functions of two convective parameterization schemes, *J. Adv. Model. Earth Syst.*, 5, 510–541, doi:10.1002/jame.20037.

Hoel, E.P. (2018) Agent Above, Atom Below: How Agents Causally Emerge from Their Underlying Microphysics. In: Aguirre A., Foster B., Merali Z. (eds) Wandering Towards a Goal. The Frontiers Collection. Springer, Cham. Available at <a href="https://uberty.org/wp-content/uploads/2017/05/Hoel FQXi EPH wandering goa.pdf">https://uberty.org/wp-content/uploads/2017/05/Hoel FQXi EPH wandering goa.pdf</a>

Holloway, C.E., A.A. Wing, S. Bony, C. Muller, H. Masunaga, T.S. L'Ecuyer, D.D. Turner, and P. Zuidema, 2017: Observing convective aggregation. Surveys in Geophysics, 38, 1199-1236, doi:10.1007/s10712-017-9419-1.

Houze, R. A., Jr., and Betts, A. K., 1981: Convection in GATE. *Rev. Geophys.*, 19(4),541–576, doi:10.1029/RG019i004p00541.

Houze, R. A., Jr., 1997: Stratiform Precipitation in Regions of Convection: A Meteorological Paradox? *Bull. Amer. Meteor. Soc.*, **78**, 2179–2196, <a href="https://doi.org/10.1175/1520-0477(1997)078<2179:SPIROC>2.0.CO;2">https://doi.org/10.1175/1520-0477(1997)078<2179:SPIROC>2.0.CO;2</a>

Houze, R. A., Jr., 2004: Mesoscale convective systems. *Rev. Geophys.*, 42, RG4003, doi:10.1029/2004RG000150.

Hurley, J. V. and Boos, W. R., 2015:, A global climatology of monsoon low-pressure systems. Q.J.R. Meteorol. Soc., 141: 1049-1064. doi:10.1002/qj.2447

Jaynes, E.T., 1957: Information theory and statistical mechanics. *Physical Review*. **106** (4): 620–630. Bibcode:1957PhRv..106..620J. doi:10.1103/PhysRev.106.620.

Jevanjee, N. and D. M. Romps, 2015: Effective Buoyancy, Inertial Pressure, and the Mechanical Generation of Boundary Layer Mass Flux by Cold Pools. *J. Atmos. Sci.*, **72**, 3199–3213, https://doi.org/10.1175/JAS-D-14-0349.1

Kain, J. S. and J. M. Fritsch. 1990. A one-dimensional entraining/detraining plume model and its application in convective parameterization. J. Atmos. Sci. 47:2784–2802.

Kato, S., Rose, F. G., Ham, S. H., Rutan, D. A., Radkevich, A., Caldwell, T. E., et al. (2019). Radiative heating rates computed with clouds derived from satellite-based passive and active sensors and their effects on generation of available potential energy. *Journal of Geophysical Research: Atmospheres*, 124, 1720–1740. https://doi.org/10.1029/2018JD028878

Kessar M, Hughes DW, Kersale E, Mizerski KA, Tobias SM (2018) Scale selection in the stratified convection of the solar photosphere. ArXiv e-prints <a href="mailto:arXiv:1802.01309"><u>arXiv:1802.01309</u></a>

Khairoutdinov, M. F., and D. A. Randall (2003), Cloud resolving modeling of the ARM summer 1997 IOP: Model formulation, results, uncertainties, and sensitivities, J. Atmos. Sci., 60, 607–625.

Khairoutdinov, M. and D. Randall, 2006: High-Resolution Simulation of Shallow-to-Deep Convection Transition over Land. *J. Atmos. Sci.*, **63**, 3421–3436, https://doi.org/10.1175/JAS3810.1

Khairoutdinov, M. F., Krueger, S. K., Moeng, C.-H., Bogenschutz, P. A., and Randall, D. A. (2009), Large-Eddy Simulation of Maritime Deep Tropical Convection, *J. Adv. Model. Earth Syst.*, 1, 15, doi:10.3894/JAMES.2009.1.15.

Kiladis, G. N., Wheeler, M. C., Haertel, P. T., Straub, K. H., and Roundy, P. E., 2009: Convectively coupled equatorial waves. *Rev. Geophys.*, 47, RG2003, doi:10.1029/2008RG000266.

Kim, D., A. H. Sobel, E. D. Maloney, D. M. W. Frierson, and I.-S. Kang, 2011: A systematic relationship between intraseasonal variability and mean state bias. *J. Climate*, **24**, 5506–5520, doi:https://doi.org/10.1175/2011JCLI4177.1.

Kingsmill, D. E., and R. A. Houze, Jr, 1999: Thermodynamic characteristics of air flowing into and out of precipitating convection over the west Pacific warm pool. *Quarterly Journal of the Royal Meteorological Society* **125**:556, 1209-1229.

Kolmogorov, A. N., 1941: The Local Structure of Turbulence in Incompressible Viscous Fluid for Very Large Reynolds Numbers. in *Proceedings: Mathematical and Physical Sciences*, vol. 434, no. 1890, 1991, pp. 9–13. *JSTOR*, www.jstor.org/stable/51980.

Kuang, Z. and C.S. Bretherton, 2006: A Mass-Flux Scheme View of a High-Resolution Simulation of a Transition from Shallow to Deep Cumulus Convection. *J. Atmos. Sci.*, **63**, 1895–1909, https://doi.org/10.1175/JAS3723.1

Kuang, Z., 2008: A Moisture-Stratiform Instability for Convectively Coupled Waves. *J. Atmos. Sci.*, **65**, 834–854, https://doi.org/10.1175/2007JAS2444.1

Kuang, Z., 2010: Linear response functions of a cumulus ensemble to temperature and moisture perturbations and implications for the dynamics of convectively coupled waves. *J. Atmos. Sci.*, **67**, 941–962.

Kuang, Z., 2011: The Wavelength Dependence of the Gross Moist Stability and the Scale Selection in the Instability of Column-Integrated Moist Static Energy. *J. Atmos. Sci.*, **68**, 61–74, <a href="https://doi.org/10.1175/2010JAS3591.1">https://doi.org/10.1175/2010JAS3591.1</a>

Kuang, Z., 2012: Weakly Forced Mock Walker Cells. *J. Atmos. Sci.*, **69**, 2759-2786, https://doi.org/10.1175/JAS-D-11-0307.1

Kuang, Z., 2018: Linear Stability of Moist Convecting Atmospheres. Part I: From Linear Response Functions to a Simple Model and Applications to Convectively Coupled Waves. *J. Atmos. Sci.*, **75**, 2889–2907, <a href="https://doi.org/10.1175/JAS-D-18-0092.1">https://doi.org/10.1175/JAS-D-18-0092.1</a>

Labbouz, L., Z. Kipling, P. Stier, and A. Protat, 2018: How Well Can We Represent the Spectrum of Convective Clouds in a Climate Model? Comparisons between Internal Parameterization Variables and Radar Observations. *J. Atmos. Sci.*, **75**, 1509–1524, <a href="https://doi.org/10.1175/JAS-D-17-0191.1">https://doi.org/10.1175/JAS-D-17-0191.1</a>

Lee, S.-K., C. Wang and B. E. Mapes, 2009: A simple atmospheric model of the local and teleconnection responses to tropical heating anomalies. *J. Climate*, 22, 272-284, https://doi.org/10.1175/2008JCLI2303.1.

Levine, J., 1959: Spherical vortex theory of bubble-like motion in cumulus clouds. J. Meteor., 16, 653–662, doi:10.1175/1520-0469(1959)016,0653:SVTOBL.2.0.CO;2

Liu Y, Liu Ch, Wang D. 2011. Understanding atmospheric behaviour in terms of entropy: A review of applications of the second law of thermodynamics to meteorology. *Entropy* **13**: 211–240.

López, R.E., 1977: The Lognormal Distribution and Cumulus Cloud Populations. *Mon. Wea. Rev.,* **105**, 865–872, <a href="https://doi.org/10.1175/1520-0493(1977)105<0865:TLDACC>2.0.CO;2">https://doi.org/10.1175/1520-0493(1977)105<0865:TLDACC>2.0.CO;2</a>

Lord, S.J. and A. Arakawa, 1980: Interaction of a Cumulus Cloud Ensemble with the Large-Scale Environment. Part II. *J. Atmos. Sci.*, **37**, 2677–2692, <a href="https://doi.org/10.1175/1520-0469(1980)037<2677:IOACCE>2.0.CO;2">https://doi.org/10.1175/1520-0469(1980)037<2677:IOACCE>2.0.CO;2</a>

Lord, S. J., 1982: Interaction of a cumulus cloud ensemble with the large-scale environment. Part III: Semi-prognostic test of the Arakawa–Schubert cumulus parameterization. *J. Atmos. Sci.*, **39**, 88–103.

Ludlam, F.H., and R.S. Scorer, 1953: Convection in the atmosphere. QJRMS, 79, pp 317-341

Mapes, B.E., 1993: <u>Gregarious Tropical Convection</u>. *J. Atmos. Sci.*, **50**, 2026–2037, https://doi.org/10.1175/1520-0469(1993)050<2026:GTC>2.0.CO;2

Mapes, B.E. and R.A. Houze, 1995: <u>Diabatic Divergence Profiles in Western Pacific Mesoscale Convective Systems.</u> *J. Atmos. Sci.*, **52**, 1807–1828, <a href="https://doi.org/10.1175/1520-0469(1995)052<1807:DDPIWP>2.0.CO;2">https://doi.org/10.1175/1520-0469(1995)052<1807:DDPIWP>2.0.CO;2</a>

Mapes, B. E., and P. Zuidema, 1996: Radiative-dynamical consequences of dry tongues in the tropical troposphere. *J. Atmos. Sci.*, **53**, 620–638.

Mapes, B. E., 1997: Equilibrium versus activation control of large-scale variations of tropical deep convection. *The Physics and Parameterization of Moist Convection*, R. K. Smith, Ed., Kluwer Academic, 512 pp. Available at <a href="https://weather.rsmas.miami.edu/bmapes/http/pagestuff/Activation control.pdf">https://weather.rsmas.miami.edu/bmapes/http/pagestuff/Activation control.pdf</a>

Mapes, B. E., 1998: The Large-Scale Part of Tropical Mesoscale Convective System Circulations. *Journal of the Meteorological Society of Japan. Ser. II* **76**:1, 29-55.

Mapes, B. E., 2000: Convective inhibition, subgrid-scale triggering energy, and stratiform instability in a toy tropical wave model. *J. Atmos. Sci.*, **57**, 1515–1535.

Mapes, B. E., 2001: Water's two height scales: The moist adiabat and the radiative troposphere. *Q.J.R. Meteorol. Soc.*, 127: 2353-2366. doi:10.1002/qj.49712757708

Mapes, B.E. and X. Wu, 2001: NOTES AND CORRESPONDENCE Convective Eddy Momentum Tendencies in Long Cloud-Resolving Model Simulations. J. Atmos. Sci., 58, 517–526, https://doi.org/10.1175/1520-0469(2001)058i0517:NACCEM¿2.0.CO;2

Mapes, B.E. and J. Lin, 2005: Doppler radar observations of mesoscale wind divergence in regions of tropical convection. Mon. Wea. Rev., 133, 1808–1824.

Mapes, B., S. Tulich, T. Nasuno, and M. Satoh, 2008: Predictability aspects of global aqua-planet simulations with explicit convection. *J. Meteor. Soc. Japan*, 86A, 175-185.

Mapes, B., and Neale, R. (2011), Parameterizing Convective Organization to Escape the Entrainment Dilemma, J. Adv. Model. Earth Syst., 3, M06004, doi:10.1029/2011MS000042.

Mapes, B. E., 2016: Gregarious convection and radiative feedbacks in idealized worlds, *J. Adv. Model. Earth Syst.*, 8, 1029–1033, doi:10.1002/2016MS000651.

Mapes, B., Chandra, A.S., Kuang, Z. et al., 2017: Importance profiles for water vapor. *Surv. Geophys.* 38: 1355. https://doi-org.access.library.miami.edu/10.1007/s10712-017-9427-1

Mapes, B., A.S. Chandra, Z. Kuang, S. Song, and P. Zuidema, 2019: Estimating Convection's Moisture Sensitivity: An Observation—Model Synthesis Using AMIE-DYNAMO Field Data. *J. Atmos. Sci.*, **76**, 1505–1520, https://doi.org/10.1175/JAS-D-18-0127.1

Markowski, P., and Y. Richardson, 2010: Mesoscale Meteorology in Midlatitudes. Wiley-Blackwell, 430 pp.

Moncrieff, M. W., 1978: The dynamical structure of two-dimensional steady convection in constant vertical shear. *Quarterly Journal of the Royal Meteorological Society*, 104, 543-567.

Moncrieff, M. W., 2006: Organized Convective Systems: Archetypal Dynamical Models, Mass and Momentum Flux Theory, and Parametrization, *Quarterly Journal of the Royal Meteorological Society*, **118**, 819-850.

Moncrieff, M.W. and T.P. Lane, 2015: Long-Lived Mesoscale Systems in a Low–Convective Inhibition Environment. Part II: Downshear Propagation. *J. Atmos. Sci.*, **72**,4319–4336, <a href="https://doi.org/10.1175/JAS-D-15-0074.1">https://doi.org/10.1175/JAS-D-15-0074.1</a>

Moorthi, S., and M. J. Suarez, 1992: Relaxed Arakawa–Schubert: A parameterization of moist convection for general circulation models. *Mon. Wea. Rev.*, **120**, 978–1002.

Morrison, H., 2017: An Analytic Description of the Structure and Evolution of Growing Deep Cumulus Updrafts. J. Atmos. Sci., **74**, 809–834, https://doi.org/10.1175/JAS-D-16-0234.1

Morrison, H. and J.M. Peters, 2018: <u>Theoretical Expressions for the Ascent Rate of Moist Deep Convective Thermals.</u> *J. Atmos. Sci.*, **75**, 1699–1719, <a href="https://doi.org/10.1175/JAS-D-17-0295.1">https://doi.org/10.1175/JAS-D-17-0295.1</a>

Morrison, H., J. M. Peters, A. C. Varble, S. Giangrande, W. M. Hannah, 2019: Thermal chains and entrainment in cumulus updrafts, Part 1: Theoretical description. *J. Atmos. Sci.*, Submitted.

Morton, B. R., Taylor, G. I., and Turner, J. S., 1956: Turbulent gravitational convection from maintained and instantaneous sources, P. Phys. Soc., 74, 744–754.

Munk, W. H., 1980: Affairs of the Sea. Annual Review of Earth and Planetary Sciences 8:1, 1-17

Neelin, J. D., and N. Zeng, 2000: A quasi-equilibrium tropical circulation model---formulation. *J. Atmos. Sci.*, **57**, 1741-1766.

Nicholls, S., 1984: The dynamics of stratocumulus: aircraft observations and comparisons with a mixed layer model. Quart. J. Roy. Meteor. Soc., **110**, pp. 783-820.

Nober, F. J., and H-F. Graf, 2005: A new convective cloud field model based on principles of self-organisation. *Atmos. Chem. Phys.*, **5**, 2749–2759.

Nolan, D. S. (2007). What is the trigger for tropical cyclogenesis? *Australian Meteorological Magazine*, *56*(4), 241-266.

Orville, H. D., Y.-H. Kuo, R. D. Farley, and C. S. Hwang, 1980: Numerical simulation of cloud interactions. *J. Rech. Atmos.*, **14**, 499-516.

Ozawa H, Ohmura A, Lorenz RD, Pujol T. 2003. The second law of thermodynamics and the global climate system: A review of the maximum entropy production principle. *Rev. Geophys.* **41**4 1–24, doi: <a href="https://doi.org/10.1029/2002RG000113">10.1029/2002RG000113</a>.

Palmer, T. N., 2019: Stochastic weather and climate models. *Nature Reviews Physics*, volume 1, 463-471. Available at <a href="https://www.nature.com/articles/s42254-019-0062-2.epdf?shared\_access\_token=NTUP2o3zPRmrbYc3n\_ct4tRgN0jAjWel9jnR3ZoTv0OYY1utT\_3Qf7-5BoayYXiqirMhLELF4e50ASuCZROGu80BLY6qOdXk0Gy77vjtfrw9iEyH7M8ITOQIeCyejUHgxXL2H\_9cSURpdMQt55uX2IMA%3D%3D

Paltridge, G.W., 2001: A physical basis for a maximum of thermodynamic dissipation of the climate system. *Q. J. R. Meteorol. Soc.* **127**: 305–313.

Paluch, I. R.: The entrainment mechanism of Colorado cumuli, *J. Atmos. Sci.*, **36**, 2467–2478, 1979.

Pan, D. and Randall, D. A. (1998), A cumulus parameterization with a prognostic closure. *Q.J.R. Meteorol. Soc.*, **124**: 949-981. doi:10.1002/qj.49712454714

Park, S., 2014: A Unified Convection Scheme (UNICON). Part I: Formulation. *J. Atmos. Sci.*, **71**, 3902–3930, <a href="https://doi.org/10.1175/JAS-D-13-0233.1">https://doi.org/10.1175/JAS-D-13-0233.1</a>

Parsons, D.B., K.R. Haghi, K.T. Halbert, B. Elmer, and J. Wang, 2019: The Potential Role of Atmospheric Bores and Gravity Waves in the Initiation and Maintenance of Nocturnal Convection over the Southern Great Plains. J. Atmos. Sci., 76, 43–68, https://doi.org/10.1175/JAS-D-17-0172.1

Pauluis, O., and I. M. Held, 2002a: Entropy budget of an atmosphere in radiative—convective equilibrium. Part I: Maximum work and frictional dissipation. J. Atmos. Sci., 59, 125–139.

Pauluis, O., and I. M. Held, 2002b: Entropy budget of an atmosphere in radiative—convective equilibrium. Part II: Latent heat transport and moist processes. J. Atmos. Sci., 59, 140—149.

Perry, K.D. and P.V. Hobbs, 1996: Influences of Isolated Cumulus Clouds on the Humidity of Their Surroundings. *J. Atmos. Sci.*, **53**, 159–174, <a href="https://doi.org/10.1175/1520-0469(1996)053<0159:IOICCO>2.0.CO;2">https://doi.org/10.1175/1520-0469(1996)053<0159:IOICCO>2.0.CO;2</a>

Peters, J.M., W. Hannah, and H. Morrison, 2019: The Influence of Vertical Wind Shear on Moist Thermals. *J. Atmos. Sci.*, **76**, 1645–1659, https://doi.org/10.1175/JAS-D-18-0296.1

Pincus, R., E. J. Mlawer, and J. S. Delamere, 2019: Balancing accuracy, efficiency, and flexibility in radiation calculations for dynamical models. JAMES, in review.

Plant, R. S.: A review of the theoretical basis for bulk mass flux convective parameterization, Atmos. Chem. Phys., 10, 3529–3544, doi:10.5194/acp-10-3529-2010, 2010.

Pritchard, M.S. and C.S. Bretherton, 2014: Causal Evidence that Rotational Moisture Advection is Critical to the Superparameterized Madden–Julian Oscillation. *J. Atmos. Sci.*, **71**, 800–815, https://doi.org/10.1175/JAS-D-13-0119.1

Ramirez, J. A., and Bras, R. L. (1990), Clustered or regular cumulus cloud fields: The statistical character of observed and simulated cloud fields, *J. Geophys. Res.*,95(D3), 2035–2045, doi:10.1029/JD095iD03p02035.

Ramirez, J. A., Bras, R. L., and Emanuel, K. A. (1990), Stabilization functions of unforced cumulus clouds: Their nature and components, *J. Geophys. Res.*, 95(D3),2047–2059, doi:10.1029/JD095iD03p02047.

Randall, D.A. and G.J. Huffman, 1980: <u>A Stochastic Model of Cumulus Clumping.</u> *J. Atmos. Sci.,* **37**, 2068–2078, <a href="https://doi.org/10.1175/1520-0469(1980)037<2068:ASMOCC>2.0.CO;2">https://doi.org/10.1175/1520-0469(1980)037<2068:ASMOCC>2.0.CO;2</a>

Randall, D. A., M. Khairoutdinov, A. Arakawa, and W. Grabowski, 2003: Breaking the Cloud Parameterization Deadlock. *Bull. Amer. Meteor. Soc.*, **84**, 1547–1564.

Rasp, S, H. Schulz, S. Bony and B. Stevens, 2019: Combining crowd-sourcing and deep learning to understand meso-scale organization of shallow convection. https://arxiv.org/abs/1906.01906

Raymond, D.J., 1983: <u>Wave-CISK in Mass Flux Form.</u> *J. Atmos. Sci.,* **40**, 2561–2574, https://doi.org/10.1175/1520-0469(1983)040<2561:WCIMFF>2.0.CO;2

Raymond, D.J. and A.M. Blyth, 1986: A Stochastic Mixing Model for Nonprecipitating Cumulus Clouds. *J. Atmos. Sci.*, **43**, 2708–2718, <a href="https://doi.org/10.1175/1520-0469(1986)043<2708:ASMMFN>2.0.CO;2">https://doi.org/10.1175/1520-0469(1986)043<2708:ASMMFN>2.0.CO;2</a>

Raymond, D.J. and H. Jiang, 1990: <u>A Theory for Long-Lived Mesoscale Convective Systems.</u> *J. Atmos. Sci.,* **47**, 3067–3077, <a href="https://doi.org/10.1175/1520-0469(1990)047<3067:ATFLLM>2.0.CO;2">https://doi.org/10.1175/1520-0469(1990)047<3067:ATFLLM>2.0.CO;2</a>

Raymond, D. J., Sessions, S. L., Sobel, A. H., and Fuchs, Ž., 2009: The Mechanics of Gross Moist Stability, *J. Adv. Model. Earth Syst.*, 1, 9, doi:10.3894/JAMES.2009.1.9.

Reynolds, O., 1876: On the resistance encountered by vortex rings, and the relation between the vortex rings and the streamlines of a disc. Nature, 14, 477–479.

Riehl, H., Malkus, J. S., 1958: On the heat balance of the equatorial trough zone. *Geophysica* (Helsinki), **6**, (3–4), 503–538.

Riehl, H., Simpson, J., 1979: The heat balance of the equatorial trough zone, revisited. *Contrib. Atmos. Phys.*, **52**, 287–305.

Riley, E. M., 2013: Examining the Form-Function Relationship of Convective Organization and the Larger Scale with Observations and Models. Coral Gables, Florida]: PhD dissertation, University of Miami,

https://scholarlyrepository.miami.edu/cgi/viewcontent.cgi?article=2072&context=oa dissertati ons

Rincon, F. & Rieutord, M., 2018: *Living Rev. Sol. Phys.* 15: 6, <a href="https://doi.org/10.1007/s41116-018-0013-5">https://doi.org/10.1007/s41116-018-0013-5</a>

Rio, C., Del Genio, A.D. & Hourdin, F., 2019: Curr. Clim. Change Rep. 5: 95. https://doi.org/10.1007/s40641-019-00127-w Robe, F.R. and K.A. Emanuel, 2001: The Effect of Vertical Wind Shear on Radiative—Convective Equilibrium States. *J. Atmos. Sci.*, **58**, 1427–1445, <a href="https://doi.org/10.1175/1520-0469(2001)058<1427:TEOVWS>2.0.CO;2">https://doi.org/10.1175/1520-0469(2001)058<1427:TEOVWS>2.0.CO;2</a>

Romps, D.M., 2008: The Dry-Entropy Budget of a Moist Atmosphere. J. Atmos. Sci., 65, 3779–3799, https://doi.org/10.1175/2008JAS2679.1

Romps, D. M., 2010: A Direct Measure of Entrainment. Journal of the Atmospheric Sciences 67:6, 1908-1927.

Romps, D.M. and Z. Kuang, 2011: A Transilient Matrix for Moist Convection. *J. Atmos. Sci.*, **68**, 2009–2025, https://doi.org/10.1175/2011JAS3712.1

Romps, D.M., 2015: MSE Minus CAPE is the True Conserved Variable for an Adiabatically Lifted Parcel. J. Atmos. Sci., 72, 3639–3646,

Romps, et al. (2015), Projected increase in lightning strikes in the United States due to global warming, *Science*, doi:10.1126/science.1259100.

Romps, D. M., and A. B. Charn, 2015: Sticky thermals: Evidence for a dominant balance between buoyancy and drag in cloud updrafts, JAS 72, 2890-2901.

Romps, D. M. (2016), The Stochastic Parcel Model: A deterministic parameterization of stochastically entraining convection, *J. Adv. Model. Earth Syst.*, 8, 319–344, doi:10.1002/2015MS000537.

Rotunno, R., J. B. Klemp, and M. L. Weisman, 1988: A theory for strong, long-lived squall lines. *J. Atmos. Sci.*, **45**, 463–485.

Sànchez, O., D.J. Raymond, L. Libersky, and A.G. Petschek, 1989: The Development of Thermals from Rest. *J. Atmos. Sci.*, **46**, 2280–2292, <a href="https://doi.org/10.1175/1520-0469(1989)046<2280:TDOTFR>2.0.CO;2">https://doi.org/10.1175/1520-0469(1989)046<2280:TDOTFR>2.0.CO;2</a>

Satoh, M, Stevens B, Judt F, Khairoutdinov M, Lin S-J, Putman WM, Düben P (2019) Global cloud resolving models. Curr Clim Change Rep. <a href="https://doi.org/10.1007/s40641-019-00131-0">https://doi.org/10.1007/s40641-019-00131-0</a>.

Schlemmer, L., Bechtold, P., Sandu, I., and Ahlgrimm, M. (2017), Uncertainties related to the representation of momentum transport in shallow convection, *J. Adv. Model. Earth Syst.*, 9, 1269–1291, doi:10.1002/2017MS000915.

Schultz, D.M., P.N. Schumacher, and C.A. Doswell, 2000: The Intricacies of Instabilities. *Mon. Wea. Rev.*, **128**, 4143–4148, https://doi.org/10.1175/1520- 0493(2000)129<4143:TIOI>2.0.CO;2

Schultz, D. M., et al. (2006), The mysteries of mammatus clouds: Observations and formation mechanisms, J. Atmos. Sci., 63(10), 2409 – 2435, doi:10.1175/JAS3758.1.

Schultz, D. M. and Hancock, Y., 2016: Contrail lobes or mamma? The importance of correct terminology. *Weather*, 71: 203-209. doi:10.1002/wea.2765

Scorer, R. S. and Ludlam, F. H.: Bubble theory of penetrative convection, Q. J. Roy. Meteor. Soc., 79, 94–103, 1953.

Shannon, C. E., 1948: A Mathematical Theory of Communication. *Bell System Technical Journal*. 27 (4): 623–666.

Sherwood, S.C., 2000: On Moist Instability. Mon. Wea. Rev., **128**, 4139-4142, https://doi.org/10.1175/1520-0493(2000)129<4139:OMI>2.0.CO;2

Sherwood, S. C., D. Hernandez-Deckers, M. Colin, and F. Robinson, 2013: Slippery thermals and the cumulus entrainment paradox. J. Atmos. Sci., 70, 2426–2442, doi:10.1175/JAS-D-12-0220.1.

Simpson, J.: On cumulus entrainment and one-dimensional models, J. Atmos. Sci., 28, 449–455, 1971.

Simpson, J.: Reply, J. Atmos. Sci., 29, 220–225, 1972.

Singh & O'Gorman (2015), <u>Increases in moist-convective updraft velocities with warming in</u> radiative-convective equilibrium. *Q. J. R. Meteorol. Soc.*, doi:10.1002/qj.2567.

Stevens, B., 2005: <u>ATMOSPHERIC MOIST CONVECTION</u>. Annual Review of Earth and Planetary Sciences 33:1, 605-643.

Stevens, B., D. Farrell, L. Hirsch, F. Jansen, L. Nuijens, I. Serikov, B. Brügmann, M. Forde, H. Linne, K. Lonitz, and J.M. Prospero, 2016: The Barbados Cloud Observatory: Anchoring Investigations of Clouds and Circulation on the Edge of the ITCZ. *Bull. Amer. Meteor. Soc.*, **97**, 787–801, <a href="https://doi.org/10.1175/BAMS-D-14-00247.1">https://doi.org/10.1175/BAMS-D-14-00247.1</a>

Stevens B, Satoh M, Auger L, et al. (2019) DYAMOND: the DYnamics of the Atmospheric general circulation Modeled On Non-hydrostatic Domains. *Prog Earth Planet Sci.*, **6**, 1, https://doi.org/10.1186/s40645-019-0304-z

Stommel, H., 1947: Entrainment of air into a cumulus cloud, *J. Meteorol.*, 4, 91–94. Stommel, H., 1951: Entrainment of air into a cumulus cloud II, *J. Meteorol.*, 8, 127–129.

Squires, P., 1958: Penetrative downdraughts in cumuli, Tellus, 10, 381–389.

Sun, Y.Q., R. Rotunno, and F. Zhang, 2017: <u>Contributions of Moist Convection and Internal</u> <u>Gravity Waves to Building the Atmospheric –5/3 Kinetic Energy Spectra.</u> *J. Atmos. Sci.*, **74**, 185–201, <a href="https://doi.org/10.1175/JAS-D-16-0097.1">https://doi.org/10.1175/JAS-D-16-0097.1</a>

Tan, Z., Kaul, C. M., Pressel, K. G., Cohen, Y., Schneider, T., & Teixeira, J. (2018). An extended eddy-diffusivity mass-flux scheme for unified representation of subgrid-scale turbulence and convection. Journal of Advances in Modeling Earth Systems, 10, 770–800. https://doi.org/10.1002/2017MS001162

Terasaki, K., Tanaka, H.L., Satoh, M.: Characteristics of the kinetic energy spectrum of NICAM model atmosphere. SOLA. **5**, 180–183 (2009). <a href="https://doi.org/10.2151/sola.2009-046">https://doi.org/10.2151/sola.2009-046</a>

Thorpe, A. J., M. J. Miller, and M. W. Moncrieff, 1982: Two-dimensional convection in non-constant shear: A model of mid-latitude squall lines. *Quart. J. Roy. Meteor. Soc.*, **108**, 739–762.

Thuburn, J., H. Weller, G. K. Vallis, R. J. Beare, and M. Whitall, 2018: A framework for convection and boundary-layer parameterization derived from conditional filtering. *Journal of the Atmospheric Sciences*, **75**, 965–981, <a href="https://doi.org/10.1175/JAS-D-17-0130.1">https://doi.org/10.1175/JAS-D-17-0130.1</a>

Tian, Y. and Z. Kuang, 2019: Why Does Deep Convection Have Different Sensitivities to Temperature Perturbations in the Lower versus Upper Troposphere?. *J. Atmos. Sci.*, **76**, 27–41, https://doi.org/10.1175/JAS-D-18-0023.1

Tian, Y., Kuang, Z., Singh, M., & Nie, J. (2019). The vertical momentum budget of shallow cumulus convection: Insights from a Lagrangian perspective. *Journal of Advances in Modeling Earth Systems*, 11,113–126. https://doi.org/10.1029/2018MS001451

Tokioka, T., K. Yamazaki, A. Kotoh, and T. Ose, 1988: The equatorial 30-60 day oscillation and the Arakawa–Schubert penetrative cumulus parameterization. *J. Meteor. Soc. Japan*, **66**, 883–900.

Tomassini, L., Voigt, A. and Stevens, B. (2015), On the connection between tropical circulation, convective mixing, and climate sensitivity. Q.J.R. Meteorol. Soc., 141: 1404-1416. doi:10.1002/qj.2450

Tulich, S. N., D. A. Randall, and B. E. Mapes, 2007: Vertical-mode and cloud decomposition of large-scale convectively coupled gravity waves in a two-dimensional cloud-resolving model. *J. Atmos. Sci.*, **64**, 1210–1229, <a href="https://doi.org/10.1175/JAS3884.1">https://doi.org/10.1175/JAS3884.1</a>.

Tulich, S., and B. E. Mapes, 2010: Transient environmental sensitivities of explicitly simulated tropical convection. *J. Atmos. Sci.*, **67**, 923–940.

Turner, J. S., 1962: The "starting plume" in neutral surroundings. *J. Fluid Mech.*, 13, 356–368, https://doi.org/10.1017/S0022112062000762.

Turner, J. S.: Turbulent entrainment: the development of the entrainment assumption, and its application to geophysical flows, *J. Fluid Mech.*, 173, 431–471, 1986.

Telford, J. W.: Turbulence, entrainment and mixing in cloud dynamics, *Pure Appl. Geophys.*, 113, 1067–1084, 1975.

Taylor, G. R. and Baker, M. B.: Entrainment and detrainment in cumulus clouds, *J. Atmos. Sci.*, 48, 112–121, 1991.

Vallis, G. K., Colyer, G., Geen, R., Gerber, E., Jucker, M., Maher, P., Paterson, A., Pietschnig, M., Penn, J., and Thomson, S. I.: Isca, v1.0: a framework for the global modelling of the atmospheres of Earth and other planets at varying levels of complexity, Geosci. Model Dev., 11, 843-859, https://doi.org/10.5194/gmd-11-843-2018, 2018.

Vallis, G., Parker, D., & Tobias, S. (2019). A simple system for moist convection: The Rainy–Bénard model. *Journal of Fluid Mechanics*, *862*, 162-199. doi:10.1017/jfm.2018.954

Virman, K., M. Bister, V. A. Sinclair, J. Räisänen, and H. Järvinen, 2019: Vertical temperature structure associated with evaporation of stratiform precipitation in idealized WRF simulations.

Wagner, T. M., and H.-F. Graf, 2010: An ensemble cumulus convection parameterization with explicit cloud treatment. *J. Atmos. Sci.*, **67**, 3854–3869.

Wagner, T. M., H.-F. Graf, and M. Herzog, 2011: Reply. J. Atmos. Sci., 68, 1545–1546.

Wang, B., and T. Li (1994), Convective interaction with boundary-layer dynamics in the development of a tropical intraseasonal system, J. Atmos. Sci., 51, 1386–1400.

Warner, J.: On steady-state one-dimensional models of cumulus convection, J. Atmos. Sci., 27, 1035–1040, 1970.

Warner, J.: Comments "On cumulus entrainment and one–dimensional models", J. Atmos. Sci., 29, 218–219, 1972.

Wikle, C.K., R.F. Milliff, and W.G. Large, 1999: <u>Surface Wind Variability on Spatial Scales from 1 to 1000 km Observed during TOGA COARE.</u> *J. Atmos. Sci., 56*, 2222–2231, <a href="https://doi.org/10.1175/1520-0469(1999)056<2222:SWVOSS>2.0.CO;2">https://doi.org/10.1175/1520-0469(1999)056<2222:SWVOSS>2.0.CO;2</a>

Wilkins, E.M., Y.K Sasaki, G.E. Gerber, and W. H. Chaplin, Jr. (1976): Numerical simulation of the lateral interaction between buoyant clouds. *J. Atmos. Sci.*, **33**, 1321-1329.

Wing, A.A., K. Emanuel, C.E. Holloway, and C. Muller, 2017: Convective self-aggregation in numerical simulations: A review. Surveys in Geophysics, 38, 1173-1197, doi:10.1007/s10712-017-9408-4.

Wing, A. A., 2019: <u>Self-aggregation of deep convection and its implications for climate</u>, Curr. Clim. Change Rep., 5, 1-11, doi:10.1007/s40641-019-00120-3.

Wolding, B., J. Dias, G. Kiladis, E. Maloney, and M. Branson, 2019: Interactions Between Moisture and Tropical Convection. Part II: The Convective Coupling of Equatorial Waves. *J. Atmos. Sci.*, in review.

Würtz, P, and A. Annila, 2010: Ecological succession as an energy dispersal process. *Biosystems*, 100, pp. 70–78. doi:10.1016/j.biosystems.2010.01.004

Yanai, M., S. Esbensen, and J. Chu, 1973: Determination of Bulk Properties of Tropical Cloud Clusters from Large-Scale Heat and Moisture Budgets. *J. Atmos. Sci.*, **30**,611–627, https://doi.org/10.1175/1520-0469(1973)030<0611:DOBPOT>2.0.CO;2

Yano, J.-I., and R. S. Plant, 2016: Generalized convective quasi-equilibrium principle. *Dyn. Atmos. Oceans*, **73**, 10–33, <a href="https://doi.org/10.1016/j.dynatmoce.2015.11.001">https://doi.org/10.1016/j.dynatmoce.2015.11.001</a>.

Yuan, J. and R.A. Houze, 2010: Global Variability of Mesoscale Convective System Anvil Structure from A-Train Satellite Data. *J. Climate*, **23**, 5864–5888, https://doi.org/10.1175/2010JCLI3671.1

Yuter, S.E. and R.A. Houze, 1995: Three-Dimensional Kinematic and Microphysical Evolution of Florida Cumulonimbus. Part III: Vertical Mass Transport, Mass Divergence, and Synthesis. *Mon. Wea. Rev.,* **123**, 1964–1983, <a href="https://doi.org/10.1175/1520-0493(1995)123<1964:TDKAME>2.0.CO;2">https://doi.org/10.1175/1520-0493(1995)123<1964:TDKAME>2.0.CO;2</a>

Zhang, G.J., J. Fan, and K. Xu, 2015: Comments on "A Unified Representation of Deep Moist Convection in Numerical Modeling of the Atmosphere. Part I". *J. Atmos. Sci.*, **72**, 2562–2565, https://doi.org/10.1175/JAS-D-14-0246.1

Zhao, M., I.M. Held, and S. Lin, 2012: Some Counterintuitive Dependencies of Tropical Cyclone Frequency on Parameters in a GCM. *J. Atmos. Sci.*, **69**, 2272–2283, <a href="https://doi.org/10.1175/JAS-D-11-0238.1">https://doi.org/10.1175/JAS-D-11-0238.1</a>

Zhu, T., Lee, J., Weger, R. C., and Welch, R. M. (1992), Clustering, randomness, and regularity in cloud fields: 2. Cumulus cloud fields, *J. Geophys. Res.*, 97(D18), 20537–20558, doi:10.1029/92JD02022.

Zipser, E.J., 1970: The Line Islands Experiment, Its Place in Tropical Meteorology and the Rise of the Fourth School of Thought. *Bull. Amer. Meteor. Soc.*, **51**, 1136–1147, https://doi.org/10.1175/1520-0477-51.12.1136

Zuidema, P., B. Mapes, J. Lin, C. Fairall, and G. Wick, 2006: The Interaction of Clouds and Dry Air in the Eastern Tropical Pacific. *J. Climate*, **19**, 4531–4544, <a href="https://doi.org/10.1175/JCLI3836.1">https://doi.org/10.1175/JCLI3836.1</a>

Zuidema P, Mapes B (2008) Cloud vertical structure observed from space and ship over the Bay of Bengal and eastern tropical Pacific. J Meteorol Soc Japan 86A:205–218.