

# David A. Randall

*Personal data:*

Born September 8, 1948 in Columbus, Ohio  
Married, two grown children

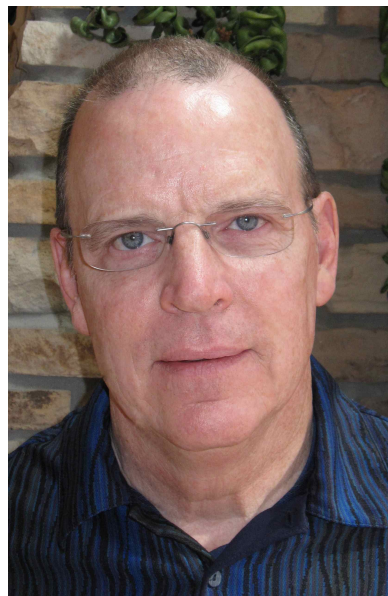
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- Present position:* University Distinguished Professor, Department of Atmospheric Science, Colorado State University
- Research interests:* General circulation modeling, cloud-climate studies, cloud parameterization
- Education:* **B.S.**, 1971, Aeronautical and Astronautical Engineering, The Ohio State University. **M.S.**, 1971, Aeronautical and Astronautical Engineering, The Ohio State University. **Ph.D.**, 1976, Atmospheric Sciences, University of California, Los Angeles (Professor A. Arakawa, advising).
- Previous positions:* 09/76-09/79: Assistant Professor, Department of Meteorology, Massachusetts Institute of Technology.  
09/79-06/88: Meteorologist, Global Modeling and Simulation Branch, NASA/Goddard Space Flight Center.  
07/88-06/92: Associate Professor, Department of Atmospheric Science, Colorado State University  
07/92--6/12: Professor, Department of Atmospheric Science, Colorado State University

## Professional Society Memberships

American Meteorological Society (Fellow), American Geophysical Union (Fellow), American Association for the Advancement of Science (Fellow)

## Hobbies, Outside Interests

Hiking, bicycling, computers, reading, music

## Honors and Awards

Jule Charney Award of the American Meteorological Society, 2014. Distinguished Lecturer, Cooperative Institute for Research in Environmental Sciences (CIRES), 2012. University Distinguished Professor, Colorado State University, 2012. Coordinating Lead Author for the Fifth Assessment of the Intergovernmental Panel on Climate Change. Coordinating Lead Author for the Fourth Assessment of the Intergovernmental Panel on Climate Change, which shared the 2007 Nobel Peace Prize. Abell Faculty Research Award, CSU College of Engineering, 2007. NASA's Medal for Distinguished Public Service, 2006; Distinguished Lecturer, University of Utah Department of Meteorology, 2006; Scholarship Impact Award, Colorado State University, 2005; Robert D. Cess Distinguished TAOS Seminar Speaker, 2005; NASA Group Achievement Award, 2003; Fellow, American Geophysical Union, 2002; Fellow, American Association for the Advancement of Science, 2001; ISI Web of Science Highly Cited list, ISI HighlyCited.com; Bjerknes Lecturer, Fall AGU Meeting, 2001; Cermak Outstanding Graduate Advisor Award, 1999; Abell Faculty Research and Graduate Program Support Award for Excellence, 1996; Creativity Award from the National Science Foundation, 1995; NASA Group Achievement Award, 1995; Award for "Outstanding Contributions to the ARM Program," 1995; Meisinger Award of the American Meteorological Society, 1994; American Geophysical Union Editors' Citation for Excellence in Refereeing, JGR-Atmospheres, 1992; NASA Group Achievement Award, 1992; Dean's Council Award, College of Engineering, Colorado State University, 1991; NASA Medal for Exceptional Scientific Achievement, 1988; GLA Best Paper Award, 1987; Fellow, American Meteorological Society, 1986; GLAS Best Paper Award, 1983; Goddard Exceptional Performance Award, 1982; GLAS Special Achievement Award, 1982.

## Courses Taught

Planetary Boundary Layer and Cumulus Convection (at M.I.T.); Introduction to the General Circulation Advanced General Circulation; Introduction to Atmospheric Modeling; An Introduction to the Colorado State University General Circulation Model; Climate Change: Past and Future; Venus, Earth, Mars: A Comparison of Three Planetary Atmospheres; Tales of the Tropical Pacific; Large-Scale Circulations in Convecting Atmospheres; General Circulation Model Development; Boundary Layer

## Selected Special Experience

Member, Board of Trustees for the University Corporation for Atmospheric Research (UCAR), 2018 - . **Chair**, Committee of Visitors, U.S. Department of Energy's Biological and Environmental Research Programs, 2016. Member, AMS Awards Committee, 2016-18, and **Chair** for 2018. Reviewing Editor, *Science* magazine, 2014 - 2020. Member, Blue Waters Science and Engineering Team Advisory Committee Member, 2014 -. Science Advisory Committee, Research Institute for Global Change (RIGC), Japan Agency for Maritime Earth Science and Technology (JAMSTEC), 2013. Member, Advisory Board, Korea Institute of Atmospheric Prediction Systems (KIAPS), 2012 -. Member, External Advisory Board, Byrd Polar Research Center, The Ohio State University, 2013 -. Member, CISL High Performance Computing Advisory Panel, 1997 - 2011. **Chair**, Fellows Committee for the Atmospheric Science Section of the American Geophysical Union, 2009-2011. **Coordinating Lead Author** (with Olivier Boucher) for Chapter 7 (Clouds and Aerosols) of the IPCC Fifth Assessment Report. Mentor, DISCRSS V, 2010. Member, Review Committee for the Lawrence Berkeley National Laboratory's Earth Science Division, 2009 - . Member, Earth Day Global Advisory Committee, 2009-. **Founding Chief Editor**, *Journal of Advances in Modeling the Earth System (JAMES)*, 2008 - 2014. Member, University Review Panel for Computer Science Department, Colorado State University, 2009. **Chair** (from the U.S. side), U.S.-Japan Workshop on Global Change Research, 2008. **Chair**, Review Panel for NOAA's Climate Research and Modeling Program, 2008. Member, External Advisory Panel, Max Planck Institute for Meteorology, Hamburg, Ger-

many, 2008-16. **Chair**, External Advisory Panel, Center for Climate System Research, University of Tokyo, 2007. **Director**, Center for Multiscale Modeling of Atmospheric Processes, an NSF Science and Technology Center, 2006 - 2016. Member, Biological and Environmental Research Advisory Committee, U.S. Department of Energy, 2006 - 2017. **Coordinating Lead Author** (with Richard Wood) for Chapter 8 (Model Evaluation) of the IPCC Fourth Assessment Report. Member, Advisory Board for the Earth and Sun Systems Laboratory, National Center for Atmospheric Research, 2006-. **Chair**, Advisory Committee for the Mesoscale and Microscale Meteorology Division, National Center for Atmospheric Research, 2003-. Member and former **Chair** (1993-1995), Scientific Computing Division Advisory Panel. **Chair**, U. S. Department of Energy Oversight Committee for CAPT. Member, External Review Panel for NOAA's Climate Diagnostics Center, 2001. Member, GEWEX Scientific Steering Group, 2001 -. **Chief Editor**, *J. Climate* 1995-2004. **Chair**, Information Systems Committee, American Meteorological Society, 2001-2005. Member, GISS External Advisory Panel, 2000-2003. Member, Directorate Review Committee, Fundamental Science Directorate, Pacific Northwest National Laboratories, 2004-2007. **Chair** ARM Science Team Executive Committee, 1993-1995. Member, Editorial Advisory Board for Kluwer Academic Publishers' Atmospheric and Oceanographic Sciences Library. **Chair**, GEWEX Modeling and Prediction Panel, 1997-2002. Member, American Meteorological Society Awards Committee, 1997. **Chair**, Advisory Panel for Center for Clouds, Chemistry, and Climate (C<sup>4</sup>), 1997-1999 (Member since 1994). Member, Scientific Steering Committee for the Climate System Model, 1996 -2001. **Co-Chair**, Atmospheric Model Working Group, Climate System Model, 1996-2002. Member at Large, Steering Group, AAAS Section on Atmospheric and Hydrospheric Sciences. Member, Information Systems Committee, American Meteorological Society, 1997. **Chair**, GEWEX Cloud Systems Study Science Panel, 1996-2000. Member, Atmospheric Model Intercomparison Project Panel, 1995-1997. **Co-Chair**, Science Working Group for SHEBA (Surface Heat Balance of the Arctic) Project, 1994-1996. **Co-Chair**, FIRE Science Team, 1983-2000. For DOE's CHAMMP Project, Coordinator for Atmospheric GCM Research and Liaison with ARM Science Team. **Guest Editor**, *J. Atmos. Sci.*, 1994. Member, Working Group on Numerical Experimentation (WGNE) of the World Climate Research Program, 1994-1997. Member, AMS Committee on Tropical Meteorology and Tropical Cyclones, 1994. Lecturer, Summer Colloquium on Clouds and Climate, National Center for Atmospheric Research, 1993. Participant, ASTEX Field Program, 1992. Member, Goddard DAAC User Working Group, 1991-1994. **Chair**, College of Engineering Computing Committee, 1989-1991. **Panel Chair**, DOE Carbon Dioxide Research Program Workshop. Member, LITE Science Steering Group, National Aeronautics and Space Administration. **Lead Author** for Chapter 3 (Processes and Modeling) of the IPCC First Assessment. **Chair**, Modeling Sub-Panel, Eos Interdisciplinary Review Panel, National Aeronautics and Space Administration. Member, Eos Review Group, National Aeronautics and Space Administration. **Associate Editor**, *J. Atmos. Sci.* Member, Source Evaluation Board, Support Contract for Global Modeling and Simulation Branch, NASA/Goddard Space Flight Center. Participant, FIRE Marine Stratocumulus Field Program, 1987. **Chair**, Science Requirements Committee for Next Generation Computer, NASA Space and Earth Sciences Computer Users Committee. **Chair and Co-Program Chair**, AMS Committee on Cloud Physics. Participant in various Workshops and Seminars at the European Centre for Medium Range Weather Forecasts since 1980. Scientific Visitor (three months) European Centre for Medium Range Weather Forecasts, 1986. Member, National Research Council Advisory Panel for the International Satellite Cloud Climatology Project. Acting Head, Climate Modeling Group, Goddard Laboratory for Atmospheric Science. Scientific Visitor (two months), University of Stockholm, Sweden, 1982. Participant, Mesoscale Air-Sea Interaction Experiment (MASEX). Scientific Visitor (three months), National Center for Atmospheric Research. Secretary, Computer Users' Committee, Goddard Modeling and Simulation Facility. Scientific Visitor (two consecutive summers, three months each), National Center for Atmospheric Research. Member, Technical Evaluation Panel for High-Speed Vector Processing Computer System, NASA/ Goddard Space Flight Center, Greenbelt Maryland. Consultant, Goddard Institute for Space Studies and Goddard Laboratory for Atmospheric Sciences.

### Master of Science Students Supervised

1. Christina Carolyn Schmitt, 1990: *The Effects of Surfaced Temperature and Clouds on the CO<sub>2</sub> Forcing*.
2. Lancelot Michael Braunstein, 1993: *The Air-Sea Interaction and the Evolution of Stratocumulus Cloud Regimes*.
3. Ross Parker Heikes, 1993: *The Shallow Water Equations on a Spherical Geodesic Grid*.
4. Richard David Krasner, 1993: *Further Development and Testing of a Second-Order Bulk Boundary Layer Model*.
5. Michael Kelly, 1994: *Investigations of the Earth's Entropy Budget: Comparison with a General Circulation Model*.
6. Douglas Cripe, 1994: *Investigation of GCAPE Quasi-Equilibrium in the Midlatitudes*.
7. Aidong Chen, 1996: *Studies of Stratocumulus Cloud, Drizzle, and Aerosol Interaction*. (Co-Advised with Sonia Kreidenweis.)
8. Zachary Eitzen, 1996: *The Simulation of the Asian Summer Monsoon by a General Circulation Model*.
9. Rob Levy, 1996: *An Analysis of Southern Great Plains ARM Cloudiness and Surface Radiation Data*.
10. Kevin Shaeffer, 1999: *A comparison of methods for modeling aerosol condensation and gravitational setting*.
11. Daniel Lindsey, 2002: *Analysis of convective downdrafts using simple model results and doppler radar data*.
12. Maik Ahlgrimm, 2004: *Diagnosing Monthly Mean Boundary Layer Properties from Re-analysis Data using a Mixed-Layer Model*.
13. Michelle l'Heureux, 2004: *Observed Relationships Between the El Nino-Southern Oscillation and the Annular Modes*. (Co-Advised with David Thompson).
14. James J. Benedict, 2005: *The Birth and Death of the MJO: An observational study*.
15. Takanobu Yamaguchi, 2005: *Analysis of cloud-top entrainment using LES*.
16. Luke Van Roekel, 2006: *Examination of the influence of sill overflow on overturning in a fully Lagrangian framework*.
17. Kate Thayer-Calder, 2008: *The role of moisture in the MJO: A comparison of tropical convection processes in the CAM and super-parameterized CAM*.
18. Melissa Burt, 2008: *Paleo-feedbacks in the hydrological and energy cycles in the Community Climate System Model 3*.
19. Rachel Rose McCrary, 2008: *Great Plains Drought in Simulations of the Twentieth Century*.

20. Grant Firl, 2009: *Development of a Second-Order Closure Turbulence Model with Subgrid-Scale Condensation and Microphysics.*
21. Todd Jones, 2010: *Quantifying the Limits of Convective Parameterizations: A Statistical Characterization of Simulated Cumulus Convection.*
22. Allyson Clark, 2013: *The Impact of Reforestation in the Northeast United States on Precipitation and Surface Temperature.*
23. Alex Goodman, 2016: *A novel approach to modeling atmospheric convection.* (Non-thesis M.S.).
24. Leah Lindsey, 2016: *The impacts of Amazon deforestation on the Pacific climate.*
25. Alexandra Naegel, 2016: *Observations and simulations of the interactions between clouds, radiation, and precipitation.*
26. Andrea Jenney, 2017: *Skillful long-range forecasts of North American heat waves from Pacific storm propagation.*
27. Casey Patrizio, 2017: *The Spatial Scale of Convective Aggregation in Cloud Resolving Simulations of Radiative-Convective Equilibrium.* (Co-Advised with David Thompson).
28. Michael Needham, 2021: *Links between Atmospheric Cloud Radiative Effects and Tropical Circulations.*

### Ph.D. Students Supervised

1. Qi Hu, 1992: *Low Frequency Oscillations in Radiative-Convective Models.*
2. Qingqiu Shao, 1994: *The Effects of Cloud-Top Processes on Convection in the Cloud-Topped Boundary Layer.*
3. Junyi Wang, 1994: *Generalized Convective Available Potential Energy and Its Application to Cumulus Parameterization.*
4. A. Scott Denning, 1994: *Investigation of the Transport, Sources, and Sinks of Atmospheric CO<sub>2</sub> Using a GCM.*
5. Dzung-Ming Pan, 1995: *Development and application of a prognostic cumulus parameterization.*
6. Ping Ding, 1995: *A parameterization of cumulus convection with multiple cloud base levels.*
7. Michael A. Kelly, 1998: *A simple model of ocean-atmosphere interactions in the tropical climate system.*
8. Cara-Lyn Lappen, 1999: *The unification of mass flux and higher-order closure in the simulation of boundary-layer turbulence.*
9. Anning Cheng, 2001: *A theory of the mesoscale organization of moist convection and the associated vertical momentum transport.*
10. Zachary Eitzen, 2001: *Simulation and parameterization of vertically propagating convectively generated gravity waves.*
11. Ross Parker Heikes, 2002: *A comparison of vertical coordinate systems for numerical modeling of the general circulation of the atmosphere.*
12. Stefan Tulich, 2003: *On the interactions between tropical convection and gravity waves: Comparisons between simple models and numerical simulations.*
13. Cristiana Stan, 2005: *The Mean Meridional Circulation: A New Potential-Vorticity, Potential-Temperature Perspective.*
14. Maik Ahlgrimm, 2007: *Model Evaluation Using Space-Borne Lidar Observations.*
15. Michael Toy, 2008: *Design of a nonhydrostatic atmospheric model based on a generalized vertical coordinate.*
16. James Benedict, 2009: *Analysis of the Structure of the Madden-Julian Oscillation in Coupled and Uncoupled Versions of the Superparameterized Community Atmosphere Model.*
17. Luke Van Roekel, 2010: *The Influence of Penetrating Solar Radiation on the Diurnal and Intraseasonal Structure of the Oceanic Boundary Layer.*
18. Takanobu Yamaguchi, 2010: *Cloud-Top Entrainment Analyzed with a Lagrangian Parcel Tracking Model in Large-Eddy Simulations.*

19. Rachel Rose McCrary, 2012: *Seasonal, Synoptic and Intraseasonal Variability of the West African Monsoon*.
20. Grant Firl, 2013: *A study of low cloud climate feedbacks using a generalized higher-order closure subgrid model*.
21. Katherine Thayer-Calder, 2013: *Downdraft Impacts on Tropical Convection*.
22. Jason Brant Dodson, 2014: *Comparison of convective clouds observed by spaceborne w-band radar and simulated by cloud-resolving atmospheric models*.
23. Christopher Eldred, 2015: *Linear and Nonlinear Properties of Numerical Methods for the Rotating Shallow Water Equations*.
24. Melissa Ann Burt, 2016: *Interactions of Arctic clouds, radiation, and sea ice in present-day and future climates*.
25. Todd Jones, 2017: *Examining chaotic convection with superparameterization ensembles*.
26. Andrea Michelle Jenney, 2020: *Quantifying and understanding current and future links between tropical convection and the large-scale circulation*. (Co-advised with Elizabeth Barnes)
27. Alexandra Naegele, 2020: *The Influence of Cloud Radiative Effects on Hydrologic Sensitivity and Variability*
28. Casey Patrizio, 2021: *Understanding the Role of Ocean Dynamics in Climate Variability*. (Co-advised with David Thompson)

## Refereed Publications

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ResearcherID: E-6113-2011

Google Scholar: <https://scholar.google.com/citations?user=MpWrx7AAAAAJ&hl=en>

1. Randall, D. A., 1980: Conditional Instability of the First Kind Upside-Down. *J. Atmos. Sci.*, **37**, 125-130.
2. Randall, D. A., 1980: Entrainment Into a Stratocumulus Layer with Distributed Radiative Cooling. *J. Atmos. Sci.*, **37**, 148-159, 1980.
3. Randall, D. A., and G. J. Huffman, 1980: A Stochastic Model of Cumulus Clumping. *J. Atmos. Sci.*, **37**, 2068-2078.
4. Randall, D. A., and S. Rambaldi, 1981: Quasi-Lagrangian Models of Nascent Thermals. *Mon. Wea. Rev.*, **109**, 1939-1951.
5. Randall, D. A., and G. J. Huffman, 1982: Entrainment and Detrainment in a Simple Cumulus Cloud Model. *J. Atmos. Sci.*, **39**, 2793-2806.
6. Suarez, M., A. Arakawa, and D. A. Randall, 1983: Parameterization of the Planetary Boundary Layer in the UCLA General Circulation Model: Formulation and Results. *Mon. Wea. Rev.*, **111**, 2224-2243.
7. Randall, D. A., 1984: Buoyant Production and Consumption of Turbulence Kinetic Energy in Cloud- Topped Mixed Layers. *J. Atmos. Sci.*, **41**, 402-413.
8. Moeng, C.-H., and D. A. Randall, 1984: Problems in Simulating the Stratocumulus-Topped Boundary Layer with a Third-Order Closure Model. *J. Atmos. Sci.*, **41**, 1588-1600, 1984.
9. Randall, D. A., J. Coakley, C. Fairall, R. Kropfli, and D. Lenschow, 1984: Outlook for Research on Marine Subtropical Stratocumulus Clouds. *Bull. Amer. Meteor. Soc.*, **65**, 1290-1301.
10. Randall, D. A., 1984: Stratocumulus Cloud Deepening Through Entrainment. *Tellus*, **36A**, 446-457.
11. Randall, D. A., and M. J. Suarez, 1984: On the Dynamics of Stratocumulus Formation and Dissipation. *J. Atmos. Sci.*, **41**, 3052-3057.
12. Randall, D. A., J. A. Abeles, and T. G. Corsetti, 1985: Seasonal Simulations of the Planetary Boundary Layer and Boundary-Layer Stratocumulus Clouds with a General Circulation Model. *J. Atmos. Sci.*, **42**, 641-676.
13. Moeng, C.-H., Randall, D. A., 1985: Problems with the Stratocumulus-Topped Boundary Layer with a 3rd-Order Closure-Model-Reply. *J. Atmos. Sci.*, **42**, 1562.
14. Harshvardhan, and D. A. Randall, 1985: Comments on "The Parameterization of Radiation for Numerical Weather Prediction and Climate Models." *Mon. Wea. Rev.*, **113**, 1832-1833.



15. Harshvardhan, R. Davies, D. A. Randall, and T. G. Corsetti, 1987: A Fast Radiation Parameterization for Atmospheric Circulation Models. *J. Geophys. Res. Atmos.*, **92**, 1009-1016.
16. Cox, S. K., D. McDougal, D. A. Randall, and R. A. Schiffer, 1987: FIRE-The First ISCCP Regional Experiment. *Bull. Amer. Meteor. Soc.*, **68**, 114-118.
17. Randall, D. A., 1987: Turbulent Fluxes of Liquid Water and Buoyancy in Partly Cloudy Layers. *J. Atmos. Sci.*, **44**, 850-858.
18. Albrecht, B. A., D. A. Randall, and S. Nicholls, 1988: Observations of Marine Stratocumulus Clouds During FIRE. *Bull. Amer. Meteor. Soc.*, **69**, 618-626.
19. Harshvardhan, D. A. Randall, T. G. Corsetti, and D. A. Dazlich, 1989: Earth Radiation Budget and Cloudiness Simulations with a General Circulation Model. *J. Atmos. Sci.*, **46**, 1922-1942.
20. Randall, D. A., Harshvardhan, D. A. Dazlich, and T. G. Corsetti, 1989: Interactions Among Radiation, Convection, and Large-Scale Dynamics in a General Circulation Model. *J. Atmos. Sci.*, **46**, 1943-1970.
21. Cess, R. D., G. L. Potter, J. P. Blanchet, G. J. Boer, S. J. Ghan, J. T. Kiehl, H. Le Treut, Z.-X. Li, X.-Z. Liang, J. F. B. Mitchell, J.-J. Morcrette, D. A. Randall, M. R. Riches, E. Roeckner, U. Schlese, A. Slingo, K. E. Taylor, W. M. Washington, R. T. Wetherald, and I. Yagai, 1989: Interpretation of Cloud-Climate Feedback as Produced by Fourteen Atmospheric General Circulation Models. *Science*, **245**, 513-516.
22. Sato, N., P. J. Sellers, D. A. Randall, E. K. Schneider, J. Shukla, J. L. Kinter III, Y.-T. Hou, and E. Albertazzi, 1989: Effects of Implementing the Simple Biosphere Model (SiB) in a General Circulation Model. *J. Atmos. Sci.*, **46**, 2757-2782.
23. Randall, D. A., 1989: Cloud Parameterization for Climate Models: Status and Prospects. *Atmos. Res.*, **23**, 345-362.
24. Cess, R. D., G. L. Potter, J. P. Blanchet, G. Boer, A. DelGenio, M. Deque, V. Dymnikov, V. Galin, W. L. Gates, S. J. Ghan, J. T. Kiehl, A. Lacis, H. Le Treut, Z.-X. Li, X.-S. Liang, B. J. McAvaney, V. P. Meleshko, J. F. B. Mitchell, J. J. Morcrette, D. A. Randall, L. Rikus, E. Roeckner, J. F. Royer, U. Schlese, D. A. Sheinin, A. Slingo, A. P. Sokolov, K. E. Taylor, W. M. Washington, R. T. Wetherald, I. Yagai, and M.H. Zhang, 1990: Intercomparison and Interpretation of Climate Feedback Processes in 19 Atmospheric General Circulation Models. *J. Geophys. Res.*, 16601-16615.
25. Harshvardhan, D. A. Randall, and D. A. Dazlich, 1990: Relationship between the longwave cloud radiative forcing at the surface and the top of the atmosphere. *J. Climate*, **3**, 1435-1443.
26. Intergovernmental Panel on Climate Change (D. A. Randall, Contributing Author), 1990: *Scientific Assessment of Climate Change*. WMO/UNEP, Cambridge University Press, 365 pp.

27. Randall, D. A., Harshvardhan, and D. A. Dazlich, 1991: Diurnal Variability of the Hydrologic Cycle in a General Circulation Model. *J. Atmos. Sci.*, **48**, 40-62.
28. Randall, D. A., and S. Tjemkes, 1991: Clouds, the Earth's Radiation Budget, and the Hydrologic Cycle. *Palaeogeogr., Palaeoclimatol., Palaeoecol. (Global Planet. Change Sect.)*, **90**, 3-9.
29. Schmitt, C., and D. A. Randall, 1991: Effects of surface temperature and clouds on the CO<sub>2</sub> forcing. *J. Geophys. Res. Atmos.*, **96**, 9159-9168.
30. Cess, R. D., G. L. Potter, M.-H. Zhang, J.-P. Blanchet, S. Chalita, R. Coleman, D. Dazlich, A. D. Del Genio, V. Dymnikov, V. Galin, D. Jerrett, E. Keup, A. Lacis, H. Le Treut, X.-Z. Liang, J.-F. Mahfouf, B. J. McAvaney, V. P. Meleshko, J. F. B. Mitchell, J.-J. Morcrette, P. M. Norris, D. A. Randall, L. Rikus, E. Roeckner, J.-F. Royer, U. Schlese, D. A. Sheinin, J. M. Slingo, A. P. Sokolov, K. E. Taylor, W. M. Washington, R. T. Wetherald, and I. Yagai, 1991: Interpretation of Snow-Climate Feedback as Produced by 17 General Circulation Models. *Science*, 888-892.
31. Randall, D. A., and J. Wang, 1992: The moist available energy of a conditionally unstable atmosphere. *J. Atmos. Sci.*, **49**, 240-255.
32. Randall, D. A., R. D. Cess, J. P. Blanchet, G. Boer, A. DelGenio, M. Deque, V. Dymnikov, V. Galin, W. L. Gates, S. J. Ghan, J. T. Kiehl, A. Lacis, H. Le Treut, Z.-X. Li, X.-S. Liang, B. J. McAvaney, V. P. Meleshko, J. F. B. Mitchell, J. J. Morcrette, G. L. Potter, L. Rikus, E. Roeckner, J. F. Royer, U. Schlese, D. A. Sheinin, A. Slingo, A. P. Sokolov, K. E. Taylor, W. M. Washington, R. T. Wetherald, I. Yagai, and M.H. Zhang, 1992: Intercomparison and Interpretation of Surface Energy Fluxes in Atmospheric General Circulation Models. *J. Geophys. Res. Atmos.*, **97**, 3711-3724.
33. Randall, D. A., Q. Shao, and C.-H. Moeng 1992: A Second-Order Bulk Boundary-Layer Model. *J. Atmos. Sci.*, **49**, 1903-1923.
34. Moeng, C.-H., S. Shen, and D. A. Randall, 1992: Physical Processes within the Nocturnal Stratus-topped Boundary Layer. *J. Atmos. Sci.*, **49**, 2384-2401
35. McCormick, M. P., D. M. Winker, E. V. Browell, J. A. Coakley, C. S. Gardner, R. M. Hoff, G. S. Kent, S. H. Melfi, R. T. Menzies, C. M. R. Platt, D. A. Randall, and J. A. Reagan, 1993: Scientific Investigations Planned for the Lidar In-Space Technology Experiment (LITE). *Bull. Amer. Meteor. Soc.*, **74**, 205-214.
36. Stephens, G. L., D. A. Randall, S. J. Tjemkes, I. L. Wittmeyer, and D. A. Dazlich 1993: The Earth's Radiation Budget and Its Relation to Atmospheric Hydrology. Part III. Comparison of Observations Over the Oceans With a GCM. *J. Geophys. Res. Atmos.*, **98**, 4931-4950.
37. Randall, D. A., and D.-M. Pan, 1993: Implementation of the Arakawa-Schubert cumulus parameterization with a prognostic closure. In *The Representation of Cumulus Convection in Numerical Models*, a Meteorological Monograph published by the American Meteorological Society, K. Emanuel and D. Raymond, Eds., pp. 137-144.

38. Cess, R. D., M.-H. Zhang, G. L. Potter, H. W. Barker, R. A. Colman, D. A. Dazlich, A. D. Del Genio, M. Esch, J. R. Fraser, V. Galin, W. L. Gates, J. J. Hack, W. J. Ingram, J. T. Kiehl, A. A. Lacis, H. Le Treut, Z.-X. Li, X.-Z. Liang, J. F. Mahfouf, B. J. McAvaney, V. P. Meleshko, J.-J. Morcrette, D. A. Randall, E. Roeckner, J.-F. Royer, A. P. Sokolov, P. V. Sporyshev, K. E. Taylor, W.-C. Wang, and R. T. Wetherald, 1993: Uncertainties in Carbon Dioxide Radiative Forcing in Atmospheric General Circulation Models. *Science*, **262**, 1252-1255.
39. Randall, D. A., Q. Hu, K.-M. Xu, and S. K. Krueger, 1994: Radiative-Convective Disequilibrium. *Atmos. Res.*, **31**, 315-327.
40. Wang, J., and D. A. Randall, 1994: The moist available energy of a conditionally unstable atmosphere, II: Further analysis of the GATE data. *J. Atmos. Sci.*, **51**, 703-710.
41. Hu, Q., and D. A. Randall, 1994: Low-Frequency Oscillations in Radiative-Convective Systems. *J. Atmos. Sci.*, **51**, 1089-1099.
42. Randall, D. A., 1994: Geostrophic adjustment and the finite-difference shallow-water equations. *Mon. Wea. Rev.*, **122**, 1371-1377.
43. Stephens, G. L., A. Slingo, M. J. Webb, P. J. Minnett, P. H. Daum, L. Kleinman, I. L. Wittmeyer, and D. A. Randall, 1994: Observations of the Earth's Radiation Budget in Relation to Atmospheric Hydrology. Part IV: Atmospheric Column Radiative Cooling Over the Worlds' Oceans. *J. Geophys. Res. Atmos.*, **99**, 18,585-18,604.
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