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EDUCATION

University of Chicago	Ph.D.	June 1993
University of Chicago	M.S.	March 1990
University of Miami	B.S.	May 1988

EXPERIENCE

Academic:

Professor, University of Miami	6/2008 – present
Assoc. Dean, University of Miami	6/2010 – 5/2024
Associate Professor, University of Miami	6/2004 – 5/2008
Lecturer, Princeton University	9/1998 – 5/2004

Non-Academic:

Physical Scientist, Geophysical Fluid Dynamics Laboratory, National Oceanic and Atmospheric Administration, Princeton, NJ.	6/1994 – 6/2004
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Visiting Scientist Atmospheric and Oceanic Sciences Program, Princeton University	7/1993 - 5/1994
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PUBLICATIONS

Refereed articles (Google Scholar 3/2025: 40K+ citations, h-index: 71, i10-index: 140)
(**bold names** indicate students or post-docs under my supervision)

1. Wang, C., W. Yang, G. Vecchi, B. Zhang, B.J. Soden, D. Chan, 2025: Diagnosing the factors that contribute to the intermodel spread of climate feedback in CMIP6, *J. Climate*, **38**, 663-674, <https://doi.org/10.1175/JCLI-D-23-0528.1>
2. **Wu, S.-N.**, and Soden, B. J., 2024: Radiative feedback from dry environmental air accelerates tropical cyclogenesis. *Geophys. Res. Lett.*, **51**, e2024GL110143. <https://doi.org/10.1029/2024GL110143>
3. **Mischell, E.**, Soden, B., Zhang, B., Hsieh, T.-L., & Vecchi, G. (2024). Why does atmospheric radiative heating weaken midlatitude cyclones? *Geophys. Res. Lett.*, **51**, e2024GL110754. <https://doi.org/10.1029/2024GL110754>
4. **Raghuraman, S. P.**, Soden, B., Clement, A., Vecchi, G., Menemenlis, S., and Yang, W., 2024: The 2023 global warming spike was driven by the El Niño–

- Southern Oscillation, *Atmos. Chem. Phys.*, **24**, 11275–11283, <https://doi.org/10.5194/acp-24-11275-2024>
5. Hsieh T-S., et al., 2024: Dependence of tropical cyclone seeds and climate sensitivity on tropical cloud response. *Sci. Adv.* **10**, eadi2779, <https://doi.org/10.1126/sciadv.adi2779>
 6. Harrop, B. E., et al., 2024.: An overview of cloud–radiation denial experiments for the Energy Exascale Earth System Model version 1, *Geosci. Model Dev.*, **17**, 3111–3135, <https://doi.org/10.5194/gmd-17-3111-2024>
 7. Hsieh, T.L., B. Zhang, W. Yang, G.A. Vecchi, B.J. Soden, C. Wang, 2023: The influence of large-scale radiation anomalies on tropical cyclone frequency, *J. Climate*, **36**, <https://doi.org/10.1175/JCLI-D-22-0449.1>
 8. **He, H.**, R.J. Kramer, B.J. Soden, N. Jevanjee, 2023: State dependence of CO₂ forcing and its implications for climate sensitivity, *Science*, **382**, 1051-1056. <https://doi.org/10.1126/science.abq6872>
 9. Dunn, R. et al., 2023: Global Climate, *Bull. Amer. Meteor. Soc.*, **104** (9), S11-S145, 40, 2023.
 10. **Liu, M.**, B.J. Soden, G.A. Vecchi, C. Wang, 2023: The spread of ocean heat uptake efficiency traced to ocean salinity, *Geophys. Res. Lett.*, **50**, <https://doi.org/10.1029/2022GL100171>
 11. **Shrestha, S.** and B.J. Soden, 2023: Anthropogenic weakening of the atmospheric circulation during the satellite era, *Geophys. Res. Letters*, **50** (22), e2023GL104784. <https://doi.org/10.1029/2023GL104784>
 12. **Wu, S.-N.**, Soden, B. J., & Alaka, G. J., 2023: The influence of radiation on the prediction of tropical cyclone intensification in a forecast model. *Geophys. Res. Lett.*, **50**, e2022GL099442. <https://doi.org/10.1029/2022GL099442>
 13. Zhang, B. M. Zhao, H. He, B.J. Soden, Z. Tan, B. Xiang, C. Wang, 2023: The dependence of climate sensitivity on the meridional distribution of radiative forcing, *Geophys. Res. Letters*, **50** (18), e2023GL105492. <https://doi.org/10.1029/2023GL105492>
 14. **Zhang, B.**, B.J. Soden, G.A. Vecchi, 2023: A vertically-resolved analysis of radiative feedbacks on moist static energy variance in tropical cyclones, *J. Climate*, **22**, 1125–1141, <https://doi.org/10.1175/JCLI-D-22-0199.1>
 15. Dunn, R., et al. 2022: Global Climate, *Bull. Amer. Meteor. Soc.*, **103**, S11-S142, <https://doi.org/10.1175/BAMS-D-22-0092.1>
 16. Shi, L., Schreck III, C. J., John, V. O., Chung, E.-S., Lang, T., Buehler, S. A., and Soden, B. J., 2022: Assessing the consistency of satellite-derived upper tropospheric humidity measurements, *Atmos. Meas. Tech.*, **15**, 6949–6963, <https://doi.org/10.5194/amt-15-6949-2022>
 17. Colman, R., B.J. Soden, 2021: Water vapor and lapse rate feedbacks in the climate system, *Rev. Mod. Phys.* **93**, <https://doi.org/10.1103/RevModPhys.93.045002>.
 18. **Dai, N., R.J. Kramer**, B.J. Soden, T.S. L’Ecuyer, 2021: Evaluation of CloudSat Radiative Kernels Using ARM and CERES Observations and ERA5 Reanalysis, *J. Geophys. Res.*, <https://doi.org/10.1029/2020JD034510>
 19. Dunn, R., et al. 2021: Global Climate, *Bull. Amer. Meteor. Soc.*, **102**, S11-S142, <https://doi.org/10.1175/bams-d-21-0098.1>

20. **He, H., R.J. Kramer,** and B.J. Soden, 2021: Evaluating observational constraints on the intermodel spread in cloud and water vapor feedback, *Geophys. Res. Lett.*, **48**, <https://doi.org/10.1029/2020GL092309>.
21. **Kramer, R.J., H. He,** B.J. Soden, L. Oreopoulos, G. Myhre, P.M. Forster, and C.J. Smith, 2021: Observational evidence of increasing global radiative forcing, *Geophys. Res. Lett.*, **48**, <https://doi.org/10.1029/2020GL091585>.
22. **Liu, M.,** G.A. Vecchi, B.J. Soden, W. Yang, **B. Zhang,** 2021: Enhanced hydrological cycle increases ocean heat uptake and moderates transient climate sensitivity, *Nature Climate Change*, **11** (10), 848-853, <https://doi.org/10.1038/s41558-021-01152-0>.
23. Sun, J., G.A. Vecchi, B.J. Soden, 2021: Influence of vertical wind shear on the ocean response to tropical cyclones based on satellite observations, *Geophys. Res. Lett.*, **48**, <https://doi.org/10.1029/2021GL095451>
24. Sun, J., G.A. Vecchi, B.J. Soden, 2021: Sea Surface Salinity Response to Tropical Cyclones Based on Satellite Observations, *Remote Sens.*, **13**, 420, <https://doi.org/10.3390/rs13030420>.
25. Wang, C., B.J. Soden, W. Yang, G. Vecchi, 2021: Compensation between cloud feedback and aerosol-cloud interaction in CMIP6 models, *Geophys. Res. Lett.*, **48**, <https://doi.org/10.1029/2020GL091024>.
26. **Wu, S.N.,** B.J. Soden, D. Nolan, 2021: Examining the role of cloud radiative interactions in tropical cyclone development using satellite measurements and WRF simulations, *Geophys. Res. Lett.*, **48**, <https://doi.org/10.1029/2021GL093259>.
27. **Wu, S.N.,** B.J. Soden, Y. Miyamoto, D. Nolan, S. Buehler, 2021: Using Satellite Observations to Evaluate the Relationships Between Ice Condensate, Latent Heat Release, and Tropical Cyclone Intensification in a mesoscale model, *Mon. Weath. Rev.*, **149**, 113-129, <https://doi.org/10.1175/MWR-D-19-0348.1>
28. **Zhang, B.,** B.J. Soden, G.A. Vecchi, W. Yang, 2021: Investigating the Causes and Impacts of Convective Aggregation in a High Resolution Atmospheric GCM, *J. Adv. Modeling Earth Systems*, **13**, <https://doi.org/10.1029/2021MS002675>
29. **Zhang, B.,** B.J. Soden, G.A. Vecchi, W. Yang, 2021: The role of radiative interactions on tropical cyclone development under realistic boundary conditions, *J. Climate*, **34**, 2079-2091. <https://doi.org/10.1175/JCLI-D-20-0574.1>
30. Bony, S., Semie, A., Soden, B., **Kramer, R. J.,** Tompkins, A. M., & Emanuel, K. A., 2020: Observed modulation of the tropical radiation budget by deep convective organization and lower tropospheric stability. *AGU Advances*, **1**, e2019AV000155. <https://doi.org/10.1029/2019AV000155>
31. **Dai, N. &** Soden, B., 2020: Convective aggregation and the amplification of tropical precipitation extremes. *AGU Advances*, **1**, e2020AV000201. <https://doi.org/10.1029/2020AV000201>
32. **Wu, S.N.,** B.J. Soden, G.J. Alaka Jr., 2020: Ice Water Content as a Precursor to Tropical Cyclone Rapid Intensification, *Geophys. Res. Lett.*, **47**, e2020GL089669, <https://doi.org/10.1029/2020GL089669>.
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37. Ramaswamy, V. et al., 2019: The historical evolution of the radiative forcing concept and its applications, AMS Centenary, Meteorological Monographs **59**, 14.1-14.101, <https://doi.org/10.1175/AMSMONOGRAPHS-D-19-0001.1>
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42. He, J., Kirtman, B., Soden, B. J., Vecchi, G. A., Zhang, H., & Winton, M. (2018). Impact of ocean eddy resolution on the sensitivity of precipitation to CO2 Increase. *Geophys. Res. Lett.*, **45**, 7194-7203. <https://doi:10.1029/2018GL078235>
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48. **Chung, E.**, and Soden, B. J, 2017: Hemispheric climate shifts driven by anthropogenic aerosol-cloud interactions. *Nature Geoscience*, 10(8), 566-571. doi:10.1038/NGeo2988, <https://doi.org/10.1038/ngeo2988>
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57. Ma, J., Foltz, G. R., Soden, B. J., Huang, G., He, J., & Dong, C., 2016: Will surface winds weaken in response to global warming? *Environmental Research Letters*, **11**(12) <https://doi:10.1088/1748-9326/11/12/124012>
58. **Chung, E.**, and Soden, B. J., 2015: An assessment of methods for computing radiative forcing in climate models. *Environmental Research Letters*, **10**(7) <https://doi:10.1088/1748-9326/10/7/074004>
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64. **Gastineau, G.**, Soden, B. J., Jackson, D. L., & O'Dell, C. W., 2014: Satellite-based reconstruction of the tropical oceanic clear-sky outgoing longwave radiation and comparison with climate models. *Journal of Climate*, **27**(2), 941-957. <https://doi:10.1175/JCLI-D-13-00047.1>
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Books & monographs published:

1. Hartmann, D. and co-authors, 2013: **Observations: Surface and Atmosphere**. In *Climate Change 2013: The Physical Science Basis*, Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge, UK: Cambridge University Press, 159-254.
2. Randall D. A., and co-authors, 2007: **Climate Models and Their Evaluation**. In *Climate Change 2007: The Physical Science Basis*, Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge, UK: Cambridge University Press, 589-662.
3. Trenberth, K. E., and co-authors, 2007: **Observations: Surface and Atmospheric Climate Change**. In *Climate Change 2007: The Physical Science Basis*, Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge, UK: Cambridge University Press, 235-335.

4. Soden, B.J., 2007: **Water Vapor**. *Our Changing Planet: The View from Space*, Cambridge, UK: Cambridge University Press, 26-29.
5. Soden, B.J., 2006: **Water Vapor Observations**. *Frontiers of Climate Modeling*, Cambridge, UK: Cambridge University Press, 285-311.
6. Stocker, T. F. and co-authors, 2001: **Physical climate processes and feedbacks**. In *Climate Change 2001: Contribution of Working Group I to the Third Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge, UK: Cambridge University Press, 418-470.
7. Penner, J. E. and co-authors, 2001: **Aerosols, their Direct and Indirect Effects**. In *Climate Change 2001: Contribution of Working Group I to the Third Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge, UK: Cambridge University Press, 289-348.

Invited Talks (2010-present)

- “*Aerosols, Clouds and Recent Trends in Earth’s Energy Imbalance*”, Earth System Science Interdisciplinary Center, Univ. of Maryland, April 2025
- “*Weakening the CO2 Greenhouse Effect*”, Program in Atmospheres Oceans and Climate, MIT, March 2025
- “*Aerosols, Clouds and Recent Trends in Earth’s Energy Imbalance*”, NOAA/GFDL, February 2025
- “*Negligible Contribution from Aerosols to Recent Trends in Earth’s Energy Imbalance*”, NASA/JPL, October 2024.
- “*The Water Cycle and Climate Change*”, Dept. of Atmospheric Science, Wake Forest University, AGU College of Fellows Distinguished Lecture Series, April 2024.
- “*The Water Cycle and Climate Change*”, Dept. of Atmospheric Science, Northland College, AGU College of Fellows Distinguished Lecture Series, November 2023.
- “*The Water Cycle and Climate Change*”, Dept. of Atmospheric Science, North Carolina State University, AGU College of Fellows Distinguished Lecture Series, October 2023.
- “*The Water Cycle and Climate Change*”, Antioquia University, Medellin Colombia, AGU College of Fellows Distinguished Lecture Series, September 2023.
- “*Hurricanes in a warming climate*”, 2023 Florida Resilience Conference. Ft. Lauderdale FL, September 2023.
- “*Radiative Feedbacks on Tropical Cyclone Development*”, Dept. of Atmospheric Sciences, Texas A&M University, February 2023.

- “*Radiative Feedbacks on Convective Organization and Tropical Cyclone Development*”, AMS 15th Symposium on Aerosol-Cloud-Climate Interactions, January 2023.
- “*The Overlooked Side of Climate Sensitivity*”, AGU Fall Meeting, Fellows Symposium, December 2022.
- “*The Overlooked Side of Climate Sensitivity*”, Dept. of Atmospheric Sciences, Univ. of Illinois Urbana-Champaign, November 2022.
- “*The Role of Radiative Interactions on Tropical Cyclone Development*”, Asia Oceania Geosciences Society, AOGS 2022, August 2022.
- “*Monitoring Radiative Forcing and Radiative Feedbacks using AIRS Measurements*”, AIRS 20th Anniversary Science Meeting, NASA/JPL, May 2022.
- “*Monitoring Radiative Forcing from Space*”, European Geophysical Union, Vienna Austria, May 2022.
- “*Emergent Constraints on Clear-Sky Radiative Feedbacks*”, ECS and Cloud Feedback Virtual Symposia, May 2020.
- “*Progress and Challenges in Understanding the Atmospheric Hydrological Cycle*”, AGU Fall Meeting: Atmospheric Sciences: From the Past Into the Future, San Francisco, Dec. 2019.
- “*Mid-Tropospheric Humidity and Tropical Cyclone Intensification*” Asia Oceania Geosciences Society, AOGS 2019, Singapore, August, 2019.
- “*The Impact of Asymmetries in External Forcing on the Climate Response*”, National Academies of Science, Reflecting Sunlight: Recommendations for Solar Geoengineering Research and Research Governance, Boulder, August 2019.
- “*Reducing Uncertainty in Radiative Forcing and Projections of Climate Change*”, EGU: Earth radiation budget, radiative forcing and climate change, Vienna, Austria, April 2019.
- “*The Visibilities and Invisibilities of a Changing Climate*”, Museum of Art and Design, Miami-Dade College, Miami, Feb 2019.
- “*The Dynamical Response of Clouds to Aerosol Forcing*”, GFDL/Princeton University Heldfest Symposium, Princeton, October 2018.
- “*Constraining GCM Predictions of Regional Precipitation Change*”, Univ. of Washington, Program on Climate Change, Seattle, September 2018.
- “*Bounding the aerosol effective radiative forcing*”, Max-Planck-Institut für Meteorologie, Ringberg Castle Workshop, Ringberg, Feb 2018.
- “*Application of 183 GHz Humidity Measurements for Tropical Cyclone Research*”, TROPICS Application Workshop, Miami, May 2017.
- “*Water Vapor Trends*”, AIRS Science Team Meeting, Cal Tech/JPL, April 2017.
- “*Implications of Climate Change for Hurricane Activity in South Florida*” University of Florida Workshop on Coastal Resiliency, February 2017.
- “*Reducing Uncertainties in Radiative Feedbacks*”, Conference on Water and Energy cycles in the Tropics, Paris, Nov. 2015.
- “*Sea Level Rise and Storm Surge*”, Florida Governor's Hurricane Conference, Orlando, FL May 2015.

- “A Satellite Analysis of Mid Tropospheric Humidity and Atlantic TC Activity”, NOAA National Hurricane Center, Miami, April 2015.
- “Mechanisms of Regional Precipitation Change from Anthropogenic Forcing”, Klima Campus Kolloquium, University of Hamburg, Nov. 2014.
- “An Assessment of Radiative Forcing and Radiative Feedbacks in Climate Models”, Royal Society, Feedbacks on Climate in the Earth System, London, Dec. 2014.
- “Assessing Radiative Forcings in CMIP5”, Solar Radiation and Climate (SORCE) Science Meeting, January 2014.
- “Impact of Sea Level Rise on Storm Surge in S. Florida“, 4th International Summit on Hurricanes and Climate Change, Kos, Greece, June 2013.
- “Climate Feedbacks: Magnitude & Uncertainty in Global Warming”, Simons Foundation Presidential Lectures, NYC, April 2013.
- “Climate Feedbacks”, BERAC (Biological and Energy Research Advisory Committee) of the U.S. Department of Energy, Washington DC, June 2012.
- “Changes in the Atmospheric Hydrologic Cycle in Response to Global Warming”, Oxford University, Atmospheric, Oceanic & Planetary Physics, May 2012.
- “Water Vapor Feedback and Global Warming”, CLEAN Climate Complexity Workshop, May 2012.
- “Monitoring and Predicting Future Changes in the Hydrological Cycle” Univ. of California-Berkeley, BASC Symposium, February 2012.
- “Recent Progress in Understanding Climate Feedbacks and Forcings”, Center for Multiscale Modeling of Atmospheric Processes, January 2012.
- “Recent Advances in Constraining Climate Feedbacks”, Dept. of Geology and Geophysics Seminar Series, Yale University, October 2011.
- “Clouds and Climate Sensitivity” Radiation and Climate, Gordon Research Seminar, Colby College, Maine, July 2011.
- “Radiative Feedbacks from Water Vapor and Clouds”, WAVACS-COST Winter School on Water Vapor in the Climate System, Venice, Italy, February 2011.
- “Earth’s Energy and Radiation Balance”, International Space Science Institute, Bern Switzerland, December 2010.
- “Climate Change Monitoring Requirements: Constraints on the Water and Energy Budget”, Workshop on Continuity of Earth Radiation Budget (CERB) Observations, Asheville, NC, July 2010.
- “Modeling and Interpreting the Impact of Severe Storms and Their Relation to Climate” AAPG Annual Convention, Global Climate Change Forum, New Orleans, April 2010.
- “The Reality of Global Warming: Cold Facts on a Hot Topic”, Hoosier Environmental Council, Indiana University, January 2010.

Editorial Responsibilities:

Chief Editor (Founding Editor), Current Climate Change Reports	2013- 2022
Editor, Journal of Climate	2009 - 2014
Associate Editor, Journal of Climate	2004 - 2009

Associate Editor, Journal of Geophysical Research

Professional Activities:

Lead Author, Intergovernmental Panel on Climate Change, AR5.

Lead Author, Intergovernmental Panel on Climate Change, AR4.

Member, NOAA Model Diagnostic Task Force

Member, NOAA Climate Sensitivity Task Force

Member, NASA Ocean Salinity Science Team

Member, DOE RGMA Science Team

Member, NASA Precipitation Measurement Mission Science Team

Member, NASA CloudSat Science Team

Member, NASA CLARREO Science Team

Member, NASA/CERES Climate Advisory Team

Member, NPOESS ERB/OAT

Member, USGCRP Global Water Cycle Scientific Steering Group

Chairman, GEWEX Water Vapor Project: GVap

Contributing Author, Intergovernmental Panel on Climate Change, AR3.

Chairman, AMS 10th Conference on Atmospheric Radiation.

Chairman, AMS Committee on Atmospheric Radiation

Honors & Awards:

Fellow, American Geophysical Union (2022).

Fellow, American Meteorological Society (2012).

AMS Henry G. Houghton Award (2001).

NASA Langley H.E. Reid Award (2002).

NASA Langley Lawrence Award (2014).

NSC David S. Johnson Award (2001).

NOAA Outstanding Scientific Paper Award (2000, 2003, 2007).

NOAA Outstanding Review Paper Award (2002).

AGU Editors' Citation for Excellence in Refereeing – Geophys. Res. Lett. (2021)

Teaching:

Intro. to Weather & Climate (ATM102), Survey of Modern Meteorology (ATM103),

Intro to Atmos. Science (ATM614), Climate Dynamics (MPO632)

Thesis & Dissertation Advising:

Angela Colbert (2008-2013), Andrew Hagen (2008-2011), Roque Cespedes (2008-2013),

David Yeomans (2009-2012), Christine Standohar (2009-2012), Jie He (2008-2013),

Ryan Kramer (2013-2018), Shun-Nan Wu (2015-2019), Bosong Zhang (2017-2020),

Haozhe He (2018-), Sisam Shethra (2019-), Eric Mischell (2021-), David Moreno

(2021-), Aiden Mahoney (2022-), Evan Wellmeyer (2024-).