Bin Guan

Project Scientist

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ResearcherID: F-6735-2010 (*h*-index: 28; verified peer reviews: 136)

Research Interests

- High-impact weather and climate
- Water cycle in the climate system
- Large-scale climate variability and trend

Education

- **Ph.D.**, 2008, Atmospheric and Oceanic Science, University of Maryland, College Park.
  Thesis: Pacific sea surface temperatures in the twentieth century: variability, trend, and connections to long-term hydroclimate variations over the Great Plains. GPA=4.0. Advisor: Sumant Nigam.
- **M.Phil.**, 2003, Applied Physics, City University of Hong Kong.
  Thesis: Summer monsoon over the western North Pacific: the onset and the intraseasonal variations. Advisor: Johnny Chan.
- **B.S.**, 2000, Atmospheric Sciences, Nanjing University.
  Thesis: A monotonic filter for limited area modeling. Advisor: Yuan Wang.

Formal Training

- **Certificate of Completion**, Advanced School and Workshop on Subseasonal to Seasonal (S2S) Prediction and Application to Drought Prediction, Co-sponsored by World Meteorological Organization (WMO), Geneva, Switzerland and Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy, 23 November–4 December 2015.

Funded Projects

- **PI**, "Subseasonal-to-seasonal Prediction of Winter Precipitation: Determination from Innovative Spatiotemporal Analyses of Observations for Facilitating Improved Management of Water Resources in the Western U.S.", NASA Earth Science Applications: Water Resources, 2022–2024.
- **PI**, "Understanding Atmospheric River Life Cycles with CYGNSS: A Multi-variate Process Study and Model Evaluation", NASA CYGNSS Competed Science Team, 2021–2024.

- **PI**, "Lightning and Wind Structure of Atmospheric Rivers Affecting the Continental US Observed by GOES-16/17", NASA Earth Science Research from Operational Geostationary Satellite Systems, 2020–2023.
- **Co-I**, "Vertical Structure and Lightning of Atmospheric Rivers Affecting the Continental US Observed by GOES-16/17", NASA GOES-16/17 Special Task, 2018–2019.
- **Co-PI & Institutional PI**, "Subseasonal Prediction of Atmospheric Rivers and the Madden-Julian Oscillation for Water Management in California", California Department of Water Resources, 2016–2021.
- **Co-I**, "Atmospheric Rivers: Water Extremes that Impact Global Climate, Regional Weather and Water Resources", NASA Energy and Water cycle Study (NEWS) Program, 2015–2019.
- **Co-I**, "Development of Seasonal Outlooks for Atmospheric Rivers", California Department of Water Resources, 2015–2016.

Honors/Awards/Recognitions

2020 Outstanding Reviewer of 2019, American Geophysical Union (awarded in 2020).
2020 Paper on atmospheric rivers (co-author & co-mentor of student first author) among the top 10% most downloaded papers in *Geophysical Research Letters* in the 12 months following online publication.
2019 Paper on atmospheric rivers cited by the American Meteorological Society's *Glossary of Meteorology* in the updated definition of "atmospheric river" (1 among the 2 papers added in this update).
2018 Climate Science Service Award, California Department of Water Resources.
2017 Paper on atmospheric rivers cited by the American Meteorological Society's *Glossary of Meteorology* in its inaugural definition of "atmospheric river" (1 among the total of 5 papers cited).
2017 Paper on atmospheric rivers highlighted in *Nature* Research Highlights.
2015: U.S. Permanent Residency for "Extraordinary Ability" in Weather/Climate Research.
2011: Listed in *Who's Who in America*.
2008: Member, The Honor Society of Phi Kappa Phi.
2007–2008: Ann G. Wylie Dissertation Fellowship, University of Maryland, College Park.
2007: Jacob K. Goldhaber Travel Award, University of Maryland, College Park.
2003–2008: Research Assistantship, University of Maryland, College Park.
2001–2003: Postgraduate Studentship, City University of Hong Kong.
1997, 1998: Outstanding Student, Nanjing University.
1996–1999: People's Scholarship, Nanjing University.

Research Experience

- **Project Scientist** (2020–present), **Associate Project Scientist** (2016–2020), **Assistant Researcher** (2012–2016), Joint Institute for Regional Earth System Science and Engineering, University of California, Los Angeles, and Visiting Scientist, Jet Propulsion Laboratory, California Institute of Technology, November 2012–present.
  Focus areas: Observational characterization, model simulation, and prediction/predictability study of atmospheric rivers regionally and globally.
- **Postdoctoral Scholar** (advisors: Duane Waliser and Noah Molotch), Jet Propulsion Laboratory, California Institute of Technology, March 2009–November 2012.

Focus areas: Characteristics and impacts of atmospheric rivers in California; Energy-balanced, distributed modeling of the Sierra Nevada snowpack.

- **Research Associate** (January–February 2009), **Ann G. Wylie Dissertation Fellow** (2007–2008), **Research Assistant** (2003–2008) (advisor: Sumant Nigam), Department of Atmospheric and Oceanic Science, University of Maryland, College Park, August 2003–February 2009.
  Focus areas: Improved characterization of Pacific/Atlantic natural climate variability in the context of climate change; Impacts of Pacific/Atlantic climate on North American droughts and hurricanes.
- **Graduate Researcher** (advisor: Johnny Chan), Department of Physics and Materials Science, City University of Hong Kong, September 2001–August 2003.
  Focus areas: Onset and intraseasonal variations of the western North Pacific summer monsoon.

Mentoring/Teaching Experience

- **Member of Thesis Committee**, Michelle De Luna, M.A. in Geography, California State University, Los Angeles, graduated May 2021.
- **Member of Thesis Committee**, Chuxuan Li, M.S. in Marine Sciences, University of North Carolina at Chapel Hill, graduated June 2020.
- **Member of Thesis Committee**, Terence Pagano, M.A. in Geography, California State University, Los Angeles, graduated May 2019.
- **Member of Thesis Committee**, Deanna Nash, M.A. in Geography, California State University, Los Angeles, graduated May 2017.
- **Co-mentor**, Michelle De Luna, M.A. student of California State University, Los Angeles, intern at Jet Propulsion Laboratory, November 2019–September 2021.
- **Co-mentor**, Sophie Uluatam, undergraduate student of Cornell University, intern at Jet Propulsion Laboratory, June–August 2019.
- **Co-mentor**, Himanshu Kankal, undergraduate student of Indian Institute of Technology, Madras, intern (remote) at Jet Propulsion Laboratory, January–June 2018.
- **Co-mentor**, Terence Pagano, M.A. student of California State University, Los Angeles, intern at Jet Propulsion Laboratory, September 2017–August 2019.
- **Co-mentor**, Vicky Espinoza, M.S. student of University of Southern California, intern at Jet Propulsion Laboratory, June 2016–August 2017.
- **Co-mentor**, Homero Lopez, Ph.D. student of Oxford University, intern at Jet Propulsion Laboratory, June–August 2016.
- **Co-mentor**, Jordan Anderson, STEM Teacher and Researcher (STAR) fellow of California State University, Fresno at Jet Propulsion Laboratory, June–August 2011.
- **Guest Lecturer**, North American Hydroclimate (graduate course), Department of Atmospheric and Oceanic Science, University of Maryland, College Park, November 2007.
- **Tutor**, Department of Physics and Materials Science, City University of Hong Kong, September 2001–August 2003.
  Courses: Physics of the Atmosphere; Atmospheric General Circulation and Climate.
  Duties: In-class tutorials; Grading homework assignments and exam papers.

Professional Association

- American Meteorological Society (AMS), 2018–present.
- Chinese-American Oceanic and Atmospheric Association (COAA), 2010–present.

- American Geophysical Union (AGU), 2004–present.

Editorship

- **Editor**, Atmospheric Oscillations (book), Elsevier, 2021–2023.
- **Guest Editor**, Special Issue on "Atmospheric Rivers: Toward Global Understanding and Applications", Atmosphere, 2021–2022.
- **Guest Editor**, Special Issue on "Moisture Transport", Weather and Climate Extremes, 2021–2022.

Refereeing Services

- **External reviewer for promotion**: University of Colorado Boulder; University of California, San Diego
- **Panel reviewer** for research proposals submitted to: US Department of Energy (DOE); National Aeronautics and Space Administration (NASA).
- **Reviewer** for research proposals submitted to: National Aeronautics and Space Administration (NASA); National Oceanic and Atmospheric Administration (NOAA); National Science Foundation (NSF); US Department of Energy (DOE); French National Research Agency (ANR).
- **Reviewer** for book proposal submitted to: Wiley.
- **Reviewer** for manuscripts submitted to: Advances in Atmospheric Sciences; Advances in Statistical Climatology, Meteorology and Oceanography; Annals of the New York Academy of Sciences; Climate Dynamics; Climatic Change; Dynamics of Atmospheres and Oceans; Earth Interactions; Earth System Dynamics; Geophysical Research Letters; Hydrology; Journal of Applied Meteorology and Climatology; Journal of Atmospheric and Oceanic Technology; Journal of Climate; Journal of Geophysical Research; Journal of Hydrology; Journal of Hydrometeorology; Journal of Marine Systems; Journal of the Atmospheric Sciences; Natural Hazards and Earth System Sciences; Quarterly Journal of the Royal Meteorological Society; Remote Sensing; Water; Scientific Reports; Water Resources Research. (136 verified peer reviews)
- **Judge** for Outstanding Student Paper Award (OSPA), AGU Fall Meetings, San Francisco, California, 2011–present.
- **Judge** for 62nd Annual Los Angeles County Science & Engineering Fair, Pasadena Convention Center, Pasadena, California, 30 March 2012.
- **Grand award judge** for 2011 Intel International Science and Engineering Fair (ISEF), Los Angeles Convention Center, Los Angeles, California, 8–13 May 2011.
- **Judge** for 61st Annual Los Angeles County Science & Engineering Fair, Pasadena Convention Center, Pasadena, California, 15 April 2011.

Conference Organization

- **Lead convener**, Session on "Atmospheric Rivers: Toward Global Understanding and Applications", AOGS Annual Meeting (held virtually), 1–5 August 2022.
- **Co-chair**, Session on "Atmospheric Rivers: Processes, Impacts, and Uncertainty Quantification", AMS Annual Meeting (held virtually), 23–27 January 2022.
- **Co-chair**, Session on "Causes and Impacts of Climate Change on Coastal Communities", AMS Annual Meeting (held virtually), 23–27 January 2022.
- **Co-chair**, Session on "Atmospheric Rivers: Processes, Impacts, and Uncertainty Quantification", AMS Annual Meeting (held virtually), 10–15 January 2021.

- **Program co-chair**, 33rd Conference on Climate Variability and Change at 100th AMS Annual Meeting, Boston, Massachusetts,12–16 January 2020.
- **Chair**, Session on "Atmospheric Rivers: Global Science and Applications", 100th AMS Annual Meeting, Boston, Massachusetts, 12–16 January 2020.
- **Co-chair**, Session on "Atmospheric Rivers", AMS Annual Meeting, Phoenix, Arizona, 6–10 January 2019.
- **Chair**, Session on "Climate variability and prediction in relation to the hydrologic cycle and in particular Western water resources", The 43rd Annual Climate Diagnostics and Prediction Workshop, University of California, Santa Barbara, California, 23–25 October 2018.
- **Chair**, Session on "Global and Regional Perspectives of Atmospheric Rivers", 1st International Atmospheric Rivers Conference, Scripps Institution of Oceanography, University of California, San Diego, La Jolla, California, 8–11 August 2016.

Professional Activities

- **Affiliate Member**, World Climate Research Program Lighthouse Activity on Explaining and Predicting Earth System Change, 2022–present.
- **Member**, American Meteorological Society Committee on Climate Variability and Change – Membership Subcommittee, 2022–2024.
- **Member**, JIFRESSE Summer Internship Program Committee, 2021–2023.
- **Member**, Drafting Committee, American Meteorological Society Statement on Weather Analysis and Forecasting, 2021 (statement in force until December 2026).
- **Member**, American Meteorological Society Committee on Climate Variability and Change, 2018–2024.
- **Participant**, Atmospheric River Tracking Method Intercomparison Project (ARTMIP), 2017–present.
- **Panelist**, "Advanced Weather Forecasting and Water Supply", National Water Resources Association 85th Annual Conference, Coronado, California, 14–16 November 2016.
- **Panelist**, "Converging on a Definition of Atmospheric Rivers", 1st International Atmospheric Rivers Conference, Scripps Institution of Oceanography, University of California, San Diego, La Jolla, California, 8–11 August 2016.
- **Co-lead**, Chapter on "Global and Regional Perspectives", Atmospheric Rivers (book published by Springer).
- **Member**, Multi-center NASA Working Group on Dynamic Downscaling, 2014–2015.
- **Invited presentation** on "atmospheric rivers" to staff members of congressional, state, and local elected officials at the Caltech/JPL Legislative Holiday Reception, The Athenaeum at Caltech, Pasadena, California, 5 December 2013.
- **Briefing** to Director of NASA Jet Propulsion Laboratory on "atmospheric rivers", 21 November 2013.
- **Member**, *Nature* Reader Advisory Panel, 2010–2011.
- **Developer**, MATLAB program for detection and tracking of atmospheric rivers globally, 2015–present. Available at https://dataverse.ucla.edu/dataverse/ar.
- **Developer**, GrADS script library for advanced data analysis and visualization, 2004–present. Available at http://bguan.bol.ucla.edu/bGASL.html.

Media Appearances

- **Penn State News Release**: More frequent atmospheric rivers hinder seasonal recovery of Arctic sea ice, 6 February 2023.
- **Epsiloon**: The Atmospheric River: A Flood Capable of Carrying Down Dams (in French), 23 October 2022.
- **NASA Earth Observatory**: Image of the Day: An Atmospheric River of Dust, 17 March 2022.
- **NASA Earth Observatory**: Image of the Day: Potent Atmospheric Rivers Douse the Pacific Northwest, 22 January 2021.
- **California Department of Water Resources:** DWR Honors UCLA Scientist for Large Storm Forecasting Efforts with NASA, 6 December 2018.
- **Radio Golden Vintage** (based in Southern California): Tech and Life interview on global warming (in Chinese), 25 August 2018.
- **Science & Vie**: Atmospheric Rivers: The Hidden Climate Monsters (in French), 19 March 2018.
- **NASA Earth Observatory**: Image of the Day: A River of Rain Connecting Asia and North America, 26 October 2017.
- **NASA News Release**: In Atmospheric River Storms, Wind Is a Risk, Too, 21 February 2017. Featured by CBS, NASA, JPL, Christian Science Monitor, Camarillo Acorn, Space Daily, Fairfax Media New Zealand, Phys.org, UCLA.
- **NASA News Release**: Study: Atmospheric River Storms Can Reduce Sierra Snow, 2 March 2016. Featured by NASA, JPL, Scripps Institution of Oceanography, Phys.org, Capital Public Radio, Clarksville Online, Land Trust Alliance.
- **NASA Earth Observatory**: Image of the Day: Early Winter Weather Across North America, 19 November 2015.
- **Physics World**: New Study Could Help Predict Floods Caused by Atmospheric Rivers, 12 June 2015.
- **The Sacramento Bee**: NASA Sees Hurricane-force Culprits Behind Big Storms (Print Version), NASA Identifies Rare Weather Pattern That Will Help Predict California's Big Winter Storms (Web Version), 20 November 2013.
- **NASA News Release**: Study Finds Climate Link to Atmospheric-River Storms, 8 November 2013. Featured by Yahoo, AccuWeather, Reuters, NASA, JPL, RedOrbit, Phys.org, UCLA.
- **NASA News Feature**: JPL Scientists Reflect on World Water Day, 22 March 2013.
- **Wired**: U.S. Drought and Climate Change: Science Points to Link, 31 July 2012.

Book Chapters

1. Massoud, E., T. Massoud, D. Waliser, **B. Guan**, and A. Sengupta (2022), Atmospheric rivers and precipitation in the Middle East, In Satellite Monitoring of Water Resources in the Middle East, A. Shaban, Ed., Springer, Cham, Switzerland, 49–70, doi:10.1007/978-3-031-15549-9_4.
2. Sodemann, H., H. Wernli, P. Knippertz, J. M. Cordeira, F. Dominguez, **B. Guan**, H. Hu, F. M. Ralph, and A. Stohl (2020), Structure, process and mechanism, In Atmospheric Rivers, Ralph, F. M., M. D. Dettinger, J. J. Rutz, and D. E. Waliser, Eds., Springer, Cham, Switzerland, 15–43, doi:10.1007/978-3-030-28906-5_2.
3. Rutz J. J., **B. Guan**, D. Bozkurt, I. Gorodetskaya, A. Gurshunov, D. A. Lavers, et al. (2020), Global and regional perspectives, In Atmospheric Rivers, Ralph, F. M., M. D. Dettinger, J. J. Rutz, and D. E. Waliser, Eds., Springer, Cham, Switzerland, 89–140, doi:10.1007/978-3-030-28906-5_4.
4. Ralph, F. M., D. E. Waliser, M. D. Dettinger, J. J. Rutz, M. L. Anderson, I. Gorodetskaya, **B. Guan**, and W. Neff (2020), The future of AR research and applications, In Atmospheric Rivers,

Ralph, F. M., M. D. Dettinger, J. J. Rutz, and D. E. Waliser, Eds., Springer, Cham, Switzerland, 219–247, doi:10.1007/978-3-030-28906-5_8.

5. Molotch, N. P., M. T. Durand, **B. Guan**, S. A. Margulis, and R. E. Davis (2014), Snow cover depletion curves and snow water equivalent reconstruction, In Remote Sensing of the Terrestrial Water Cycle, Geophys. Mono. Ser., vol. 206, edited by V. Lakshmi, D. Alsdorf, M. Anderson, S. Biancamaria, M. Cosh, J. Entin, G. Huffman, W. Kustas, P. van Oevelen, T. Painter, J. Parajka, M. Rodell, and C. Rüdiger, John Wiley & Sons, Inc, Hoboken, NJ, 159–174, doi:10.1002/9781118872086.ch10.

Journal Articles

6. Zhang, P., G. Chen, M. Ting, L. Ruby Leung, **B. Guan**, and L. Li (2023), More frequent atmospheric rivers slow the seasonal recovery of Arctic sea ice, Nature Climate Change, doi:10.1038/s41558-023-01599-3.
7. **Guan, B.**, D. E. Waliser, and F. M. Ralph (2023), Global application of the atmospheric river scale, Journal of Geophysical Research: Atmospheres, 128, e2022JD037180, doi:10.1029/2022JD037180.
8. Wang, J., M. J. DeFlorio, **B. Guan**, and C. M. Castellano (2023), Seasonality of MJO impacts on precipitation extremes over the western United States, Journal of Hydrometeorology, 24, 151–166, doi:10.1175/JHM-D-22-0089.1.
9. Lee, S. H., L. M. Polvani, and **B. Guan** (2022), Modulation of atmospheric rivers by the Arctic stratospheric polar vortex, Geophysical Research Letters, 49, e2022GL100381, doi: 10.1029/2022GL100381.
10. Sengupta, A., D. E. Waliser, E. C. Massoud, **B. Guan**, C. Raymond, and H. Lee (2022), Representation of atmospheric water budget and uncertainty quantification of future changes in CMIP6 for the seven U.S. National Climate Assessment regions, Journal of Climate, 35, 3635–3658, doi:10.1175/JCLI-D-22-0114.1.
11. Kim, S., L. R. Leung, **B. Guan**, and J. C. H. Chiang (2022), Atmospheric river representation in the Energy Exascale Earth System Model (E3SM) version 1.0, Geoscientific Model Development, 15, 5461–5480, doi:10.5194/gmd-15-5461-2022.
12. Chakraborty, S., **B. Guan**, D. E. Waliser, and A. M. da Silva (2022), Aerosol atmospheric rivers: climatology, event characteristics, and detection algorithm sensitivities, Atmospheric Chemistry and Physics, 22, 8175–8195, doi:10.5194/acp-22-8175-2022.
13. Raymond, C., D. Waliser, **B. Guan**, H. Lee, P. Loikith, E. Massoud, A. Sengupta, D. Singh, and A. Wootten (2022), Regional and elevational patterns of extreme heat stress change in the US, Environmental Research Letters, 17, 064046, doi:10.1088/1748-9326/ac7343.
14. Collow, A. B. M., C. A. Shields, **B. Guan**, S. Kim, J. M. Lora, E. E. McClenny, et al. (2022), An overview of ARTMIP's Tier 2 Reanalysis Intercomparison: Uncertainty in the detection of atmospheric rivers and their associated precipitation. Journal of Geophysical Research: Atmospheres, 127, e2021JD036155, doi:10.1029/2021JD036155.
15. O'Brien, T. A., and Coauthors (including **B. Guan**) (2022), Increases in future AR count and size: Overview of the ARTMIP Tier 2 CMIP5/6 experiment, Journal of Geophysical Research: Atmospheres, 127, e2021JD036013, doi:10.1029/2021JD036013.
16. Francis, D., R. Fonseca, N. Nelli, D. Bozkurt, G. Picard, and **B. Guan** (2022), Atmospheric rivers drive exceptional Saharan dust transport towards Europe, Atmospheric Research, 266, 105959, doi:10.1016/j.atmosres.2021.105959.

17. Prince, H. D., P. B. Gibson, M. J. DeFlorio, T. W. Corringham, A. Cobb, **B. Guan**, F. M. Ralph, and D. E. Waliser (2021), Genesis locations of the costliest atmospheric rivers impacting the western United States, Geophysical Research Letters, 48, e2021GL093947, doi:10.1029/2021GL093947.
18. Ryu, Y., H. Moon, J. Kim, T.-J. Kim, K.-O. Boo, **B. Guan**, et al. (2021), A multi-inventory ensemble analysis of the effects of atmospheric rivers on precipitation and streamflow in the Namgang-dam basin in Korea, Water Resources Research, 57, e2021WR030058, doi:10.1029/2021WR030058.
19. Pagano, T. J., D. E. Waliser, **B. Guan**, H. Ye, F. M. Ralph, and J. Kim (2021), Extreme surface winds during landfalling atmospheric rivers: the modulating role of near-surface stability, Journal of Hydrometeorology, 22, 1681–1693, doi:10.1175/JHM-D-20-0165.1.
20. Jepsen, S. M., T. C. Harmon, and **B. Guan** (2021), Analyzing the suitability of remotely sensed ET for calibrating a watershed model of a Mediterranean montane forest, Remote Sensing, 13, 1258, doi:10.3390/rs13071258.
21. Chakraborty, S., **B. Guan**, D. E. Waliser, A. Da Silva, S. Uluatam, and P. Hess (2021), Extending the atmospheric river concept to aerosols: climate and air quality impacts, Geophysical Research Letters, 48, e2020GL091827, doi:10.1029/2020GL091827.
22. Bozkurt, D., O. L. Sen, Y. Ezber, **B. Guan**, M. Viale, and F. Caglar (2021), Influence of African atmospheric rivers on precipitation and snowmelt in the Near East's highlands, Journal of Geophysical Research: Atmospheres, 126, e2020JD033646, doi:10.1029/2020JD033646.
23. Kim, J., H. Moon, **B. Guan**, D. E. Waliser, J. Choi, T.-Y. Gu, and Y.-H. Byun (2020), Precipitation characteristics related to atmospheric rivers in East Asia, International Journal of Climatology, 41 (Suppl. 1), E2244–E2257, doi:10.1002/joc.6843.
24. Ionita, M., V. Nagavciuc, and **B. Guan** (2020), Rivers in the sky, flooding on the ground: the role of atmospheric rivers in inland flooding in central Europe, Hydrology and Earth System Sciences, 24, 5125–5147, doi:10.5194/hess-24-5125-2020.
25. Ma, W., G. Chen, and **B. Guan** (2020), Poleward shift of atmospheric rivers in the Southern Hemisphere in recent decades, Geophysical Research Letters, 47, e2020GL089934, doi:10.1029/2020GL089934.
26. Arabzadeh, A., M. R. Ehsani, **B. Guan**, S. Heflin, and A. Behrangi (2020), Global intercomparison of atmospheric rivers precipitation in remote sensing and reanalysis products, Journal of Geophysical Research: Atmospheres, 125, e2020JD033021, doi:10.1029/2020JD033021.
27. Massoud, E., T. Massoud, **B. Guan**, A. Sengupta, V. Espinoza, M. De Luna, C. Raymond, D. Waliser (2020), Atmospheric rivers and precipitation in the Middle East and North Africa (MENA), Water, 12, 2863, doi:10.3390/w12102863.
28. Slinskey, E. A., P. C. Loikith, D. E. Waliser, **B. Guan**, and A. Martin (2020), A Climatology of atmospheric rivers and associated precipitation for the seven U.S. National Climate Assessment regions, Journal of Hydrometeorology, 21, 2439–2456, doi:10.1175/JHM-D-20-0039.1.
29. Guo, Y., T. Shinoda, **B. Guan**, D. E. Waliser, and E. K. M. Chang (2020), Statistical relationship between atmospheric rivers and extratropical cyclones and anticyclones, Journal of Climate, 33, 7817–7834, doi:10.1175/JCLI-D-19-0126.1.
30. **Guan, B.**, D. E. Waliser, and F. M. Ralph (2020), A multimodel evaluation of the water vapor budget in atmospheric rivers, Annals of the New York Academy of Sciences, 1472, 139–154, doi:10.1111/nyas.14368.
31. Gibson, P. B., D. E. Waliser, **B. Guan**, M. J. DeFlorio, F. M. Ralph, and D. L. Swain (2020), Ridging associated with drought across the western and southwestern United States: characteristics,

trends and predictability sources, Journal of Climate, 33, 2485–2508, doi:10.1175/JCLI-D-19-0439.1.
32. Rutz, J. J., C. A. Shields, J. M. Lora, A. E. Payne, **B. Guan**, P. Ullrich, et al (2019), The Atmospheric River Tracking Method Intercomparison Project (ARTMIP): Quantifying uncertainties in atmospheric river climatology, Journal of Geophysical Research: Atmospheres, 124, 13777–13802, doi:10.1029/2019JD030936.
33. **Guan, B.**, and D. E. Waliser (2019), Tracking atmospheric rivers globally: Spatial distributions and temporal evolution of life cycle characteristics, Journal of Geophysical Research: Atmospheres, 124, 12523–12552, doi:10.1029/2019JD031205.
34. DeFlorio, M. J., D. E. Waliser, F. M. Ralph, **B. Guan**, A. Goodman, P. B. Gibson, et al. (2019), Experimental subseasonal-to-seasonal (S2S) forecasting of atmospheric rivers over the western United States, Journal of Geophysical Research: Atmospheres, 124, 11242–11265, doi:10.1029/2019JD031200.
35. Massoud, E. C., V. Espinoza, **B. Guan**, and D. E. Waliser (2019), Global climate model ensemble approaches for future projections of atmospheric rivers, Earth's Future, 7, 1136–1151, doi:10.1029/2019EF001249.
36. Huning, L. S., **B. Guan**, D. E. Waliser, and D. P. Lettenmaier (2019), Sensitivity of seasonal snowfall attribution to atmospheric rivers and their reanalysis-based detection, Geophysical Research Letters, 46, 794–803, doi:10.1029/2018GL080783.
37. DeFlorio, M. J., D. E. Waliser, **B. Guan**, F. M. Ralph, and F. Vitart (2019), Global evaluation of atmospheric river subseasonal prediction skill, Climate Dynamics, 52, 3039–3060, doi:10.1007/s00382-018-4309-x.
38. Ralph and Coauthors (including **B. Guan**) (2019), ARTMIP-early start comparison of atmospheric river detection tools: How many atmospheric rivers hit northern California's Russian River watershed? Climate Dynamics, 52, 4973–4994, doi:10.1007/s00382-018-4427-5.
39. Zhou, Y., H. Kim, and **B. Guan** (2018), Life cycle of atmospheric rivers: Identification and climatological characteristics, Journal of Geophysical Research: Atmospheres, 123, 12,715–12,725, doi:10.1029/2018JD029180.
40. Li, J.-L., S. Lee, H.-Y. Ma, G. Stephens, and **B. Guan** (2018), Assessment of the cloud liquid water from climate models and reanalysis using satellite observations, Terrestrial, Atmospheric and Oceanic Sciences, 29, 653–678, doi:10.3319/TAO.2018.07.04.01.
41. Nash, D., D. Waliser, **B. Guan**, H. Ye, and M. Ralph (2018), The role of atmospheric rivers in extratropical and polar hydroclimate, Journal of Geophysical Research: Atmospheres, 123, 6804–6821, doi:10.1029/2017JD028130.
42. Shields, C. A., and Coauthors (including **B. Guan**) (2018): Atmospheric River Tracking Method Intercomparison Project (ARTMIP): project goals and experimental design, Geoscientific Model Development, 11, 2455–2474, doi:10.5194/gmd-11-2455-2018.
43. Espinoza, V., D. E. Waliser, **B. Guan**, D. A. Lavers, and F. M. Ralph (2018), Global analysis of climate change projection effects on atmospheric rivers, Geophysical Research Letters, 45, 4299–4308, doi:10.1029/2017GL076968.
44. DeFlorio, M. J., D. E. Waliser, **B. Guan**, D. A. Lavers, F. M. Ralph, and F. Vitart (2018), Global assessment of atmospheric river prediction skill, Journal of Hydrometeorology, 19, 409–426, doi:10.1175/JHM-D-17-0135.1.
45. **Guan, B.**, D. E. Waliser, and F. M. Ralph (2018), An intercomparison between reanalysis and dropsonde observations of the total water vapor transport in individual atmospheric rivers, Journal

of Hydrometeorology, 19, 321–337, doi:10.1175/JHM-D-17-0114.1, Special Collection on Modern-Era Retrospective analysis for Research and Applications version 2 (MERRA-2).
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Conference Presentations (as Leading and/or Presenting Author)

- Guan, B., D. E. Waliser, and F. M. Ralph: Lightning Characteristics of Atmospheric Rivers over the Americas Observed by GOES Geostationary Lightning Mappers. iPoster presentation, AGU Fall Meeting, Chicago, IL and Online Everywhere, 12–16 December 2022.
- Guan, B., D. E. Waliser, and F. M. Ralph: Global Application of the Atmospheric River Scale. Oral presentation, 4th International Atmospheric Rivers Conference (attended virtually), Santiago, Chile, 10–14 October 2022.
- Guan, B., D. E. Waliser, and F. M. Ralph: Global Application of the Atmospheric River Scale. Oral presentation, AOGS Annual Meeting (held virtually), 1–5 August 2022.
- Guan, B., D. E. Waliser, and F. M. Ralph: Lightning Characteristics of Atmospheric Rivers Observed by the GOES-16/17 Geostationary Lightning Mappers. Oral presentation, AMS Annual Meeting (held virtually), 23–27 January 2022.
- Guan, B., D. E. Waliser, and F. M. Ralph: Global Application of the Atmospheric River Scale. eLightning presentation, AGU Fall Meeting, New Orleans, LA and Online Everywhere, 13–17 December 2021.
- Guan, B., D. E. Waliser, and F. M. Ralph: Global Application of the Atmospheric River Scale. Poster presentation, AMS Annual Meeting (held virtually), 10–15 January 2021.
- Guan, B., and D. E. Waliser: Tracking Atmospheric Rivers Globally: Spatial Distributions and Life Cycle Evolutions. Lightning presentation, Virtual Symposium by the International Atmospheric Rivers Conference (IARC) Community, 5–9 October 2020.
- Guan, B., D. E. Waliser, and F. M. Ralph: Lightning Characteristics Associated with Atmospheric Rivers Affecting the Continental US Using the GOES-16/17 Geostationary Lightning Mappers, Poster presentation, AMS Annual Meeting, Boston, Massachusetts, 12–16 January 2020.
- Guan, B., D. E. Waliser, and F. M. Ralph: Lightning Characteristics Associated with Atmospheric Rivers Affecting the Continental US Using the GOES-16/17 Geostationary Lightning Mappers, Oral presentation, AGU Fall Meeting, San Francisco, California, 9–13 December 2019.
- Guan, B., and D. E. Waliser: Tracking Atmospheric Rivers Globally: Spatial Distributions and Life Cycle Evolutions. Oral presentation, AMS Annual Meeting, Phoenix, Arizona, 6–10 January 2019.
- Guan, B., and D. E. Waliser: Tracking Atmospheric Rivers Globally: Spatial Distributions and Life Cycle Evolutions. Poster presentation, AGU Fall Meeting, Washington, DC, 10–14 December 2018.
- Guan, B., D. E. Waliser, and F. M. Ralph: Water Vapor Budget in Atmospheric Rivers: A Multi-Model Evaluation. Oral presentation, 43rd Annual Climate Diagnostics and Prediction Workshop, University of California, Santa Barbara, California, 23–25 October 2018.

- Guan, B., D. E. Waliser, and F. M. Ralph: Water Vapor Budget in Atmospheric Rivers: A Multi-Model Evaluation. Oral presentation, 2nd International Atmospheric Rivers Conference, La Jolla, California, 25–28 June 2018.
- Guan, B., D. E. Waliser, and F. M. Ralph: An Inter-comparison Between Reanalysis and Dropsonde Observations of the Total Water Vapor Transport in Individual Atmospheric Rivers. Oral presentation, AMS Annual Meeting, Austin, Texas, 7–11 January 2018.
- Guan, B., D. E. Waliser, and F. M. Ralph: Water Vapor Budget in Atmospheric Rivers: A Multi-model Evaluation. Poster presentation, AMS Annual Meeting, Austin, Texas, 7–11 January 2018.
- Guan, B., D. E. Waliser, and F. M. Ralph: An Inter-comparison Between Reanalysis and Dropsonde Observations of the Total Water Vapor Transport in Individual Atmospheric Rivers. Poster presentation, AGU Fall Meeting, New Orleans, Louisiana, 11–15 December 2017.
- Guan, B., and D. E. Waliser: Atmospheric rivers in weather and climate simulations: A Multi-model, global evaluation. Oral presentation, AMS Annual Meeting, Seattle, Washington, 22–26 January 2017.
- Waliser D. E., and B. Guan (presenter): Atmospheric river impacts on global near-surface wind extremes. Oral presentation, AMS Annual Meeting, Seattle, Washington, 22–26 January 2017.
- Guan, B., and D. E. Waliser: Atmospheric rivers in climate simulations: A Multi-model, global evaluation. Poster presentation, AGU Fall Meeting, San Francisco, California, 12–16 December 2016.
- Guan, B., D. E. Waliser, M. J. DeFlorio, and V. Espinoza: Toward subseasonal-to-seasonal prediction of atmospheric rivers: Global and regional perspectives. Oral presentation, National Water Resources Association 85th Annual Conference, Coronado, 14–16 November 2016.
- Guan, B., J. J. Rutz, and A. Gershunov: Global perspective of atmospheric rivers: Climatology, and climate modulation. Oral presentation, 1st International Atmospheric Rivers Conference, La Jolla, California, 8–11 August 2016.
- Guan, B., D. E. Waliser, F. M. Ralph, E. J. Fetzer, and P. J. Neiman, Hydrometeorological characteristics of rain-on-snow events associated with atmospheric rivers. Oral presentation, 2016 AIRS Science Team Meeting, Pasadena, California, 22–24 March 2016.
- Guan, B., and D. E. Waliser: Detection of atmospheric rivers: An algorithm for global climatology and model evaluation studies. Oral presentation, AGU Fall Meeting, San Francisco, California, 14–18 December 2015.
- Guan, B., N. P. Molotch, D. E. Waliser, E. J. Fetzer, and P. J. Neiman: Influence of large-scale climate modes on atmospheric rivers that drive regional precipitation extremes. Oral presentation, AGU Fall Meeting, San Francisco, California, 15–19 December 2014.
- D. E. Waliser, B. Guan (presenter), J. Kim, L. R. Leung, and F. M. Ralph: Atmospheric river model simulation diagnostics and performance metrics. Poster presentation, AGU Fall Meeting, San Francisco, California, 15–19 December 2014.
- Guan, B., N. P. Molotch, D. E. Waliser, E. J. Fetzer, and P. J. Neiman: Influence of large-scale climate modes on atmospheric rivers that drive regional precipitation extremes. Oral presentation, World Weather Open Science Conference, Montreal, Canada, 16–21 August 2014.
- Waliser, D. E., X. Jiang, N. P. Klingaman, P. K. Xavier, S. J. Woolnough, J. Petch, and B. Guan (presenter): Vertical structure and physical processes of the MJO: A global model evaluation project. Oral presentation, 31st conference on Hurricanes and Tropical Meteorology, San Diego, California, 30 March–4 April, 2014.

- Guan, B., D. J. Halkides, T. Lee (presenter), and D. E. Waliser: Sea surface salinity signature of the Madden-Julian Oscillation in two years of Aquarius observations. Oral presentation, 2014 Ocean Sciences Meeting, Honolulu, Hawaii, 23–28 February 2014.
- Guan, B., N. P. Molotch, D. E. Waliser, E. J. Fetzer, and P. J. Neiman: The 2010/2011 snow season in California's Sierra Nevada: Role of atmospheric rivers and modes of large-scale variability. Poster presentation, International Conference on Subseasonal to Seasonal Prediction, College Park, Maryland, 10–13 February 2014.
- Guan, B., X. Jiang, and D. E. Waliser: Evaluating vertical moisture structure of the Madden-Julian Oscillation in contemporary GCMs. Poster presentation, AGU Fall Meeting, San Francisco, California, 9–13 December 2013.
- Guan, B., D. E. Waliser, T. Lee, and D. J. Halkides: Indian Ocean cross-equatorial heat transport associated with the MJO. Poster presentation, AGU Fall Meeting, San Francisco, California, 3–7 December 2012.
- Guan, B., N. P. Molotch, D. E. Waliser, S. M. Jepsen, and J. Dozier: Snow water equivalent in the Sierra Nevada: Blending snow sensor observations with snowmelt model simulations. Oral presentation, AGU Fall Meeting, San Francisco, California, 5–9 December 2011.
- Guan, B., N. P. Molotch, D. E. Waliser, Eric J. Fetzer, and P. J. Neiman: Extreme snowfall events linked to atmospheric rivers via satellite measurements. Oral presentation, NASA Sounder Science Team Meeting, Greenbelt, Maryland, 8–11 November 2011.
- Guan, B., D. E. Waliser, N. P. Molotch, Eric J. Fetzer, and P. J. Neiman: Does the Madden-Julian Oscillation influence wintertime atmospheric rivers and snowpack in the Sierra Nevada? Poster presentation, WCRP Open Science Conference, Denver, Colorado, 24–28 October 2011.
- Guan, B., D. E. Waliser, N. P. Molotch, Eric J. Fetzer, and P. J. Neiman: Does the Madden-Julian Oscillation influence wintertime atmospheric rivers and snowpack in the Sierra Nevada? Poster presentation, YOTC International Science Symposium and Asian Monsoon Years International Workshop, Beijing, China, 16–19 May 2011.
- Guan, B., D. E. Waliser, N. P. Molotch, Eric J. Fetzer, and P. J. Neiman: Does the Madden-Julian Oscillation influence the frequency and precipitation of wintertime atmospheric rivers in California? Poster presentation, AGU Fall Meeting, San Francisco, California, 13–17 December 2010.
- Guan, B., N. P. Molotch, D. E. Waliser, Eric J. Fetzer, and P. J. Neiman: Local and synoptic-scale characteristics of high- and low-impact atmospheric rivers in California. Poster presentation, 2010 Western Pacific Geophysics Meeting, Taipei, Taiwan, 22–25 June 2010.
- Guan, B., N. P. Molotch, D. E. Waliser, Eric J. Fetzer, and P. J. Neiman: Local and synoptic-scale characteristics of high- and low-impact atmospheric rivers in California. Oral presentation, 2010 AIRS Science Team Meeting, Pasadena, California, 21 April 2010.
- Guan, B., N. P. Molotch, D. E. Waliser, Eric J. Fetzer, and P. J. Neiman: Atmospheric rivers and snow accumulation in the Sierra Nevada connected by surface air temperature. Poster presentation, AGU Fall Meeting, San Francisco, California, 14–18 December 2009.
- Guan, B., N. P. Molotch, D. E. Waliser, Eric J. Fetzer, and P. J. Neiman: Atmospheric rivers and snow accumulation in the Sierra Nevada: relationship with mountain surface air temperature. Oral presentation, 34th Annual Climate Diagnostics and Prediction Workshop, Monterey, California, 26–30 October 2009.
- Guan, B., and S. Nigam: Pacific sea surface temperatures in the twentieth century: An evolution-centric analysis of variability and trend. Poster presentation, AGU Fall Meeting, San Francisco, California, 10–14 December 2007.

- Guan, B., and S. Nigam: Pacific decadal SST variability 1900–2002: Structure and evolution. Oral presentation, 11th Annual CCSM Workshop, Breckenridge, Colorado, 20–22 June 2006.

Seminars/Other Formal Presentations

- Global Application of the Atmospheric River Scale. Oral presentation, Center for Western Weather and Water Extremes (CW3E) Annual Meeting, Scripps Institution of Oceanography, University of California, San Diego, La Jolla, California, 6–8 June 2022.
- Tracking atmospheric rivers globally: spatial distributions and life cycle evolutions. Oral presentation, Center for Western Weather and Water Extremes (CW3E) Annual Meeting, Scripps Institution of Oceanography, University of California, San Diego, La Jolla, California, 15–18 April 2019.
- Atmospheric rivers in observations and model simulations: A global perspective. Seminar, Earth System Science Interdisciplinary Center (ESSIC), University of Maryland, College Park, Maryland, 25 April 2018.
- Frequency and seasonality of atmospheric rivers: Portrait diagrams. Oral presentation, Atmospheric River Tracking Method Intercomparison Project (ARTMIP) Workshop, Gaithersburg, Maryland, 23–24 April 2018.
- Water vapor budget in atmospheric rivers: A multi-model evaluation. Oral presentation, Center for Western Weather and Water Extremes (CW3E) Annual Meeting, Scripps Institution of Oceanography, University of California, San Diego, La Jolla, California, 16–19 April 2018.
- Atmospheric rivers and climate variability: Implications to subseasonal-to-seasonal prediction. Oral presentation, CW3E Subseasonal-to-seasonal Prediction Science Meeting, Scripps Institution of Oceanography, University of California, San Diego, La Jolla, California, 13 June 2017.
- Observed impacts and model representation of atmospheric rivers: A global perspective. Yuk L. Yung Lunch Seminar, Division of Geological and Planetary Sciences, California Institute of Technology, Pasadena, California, 16 May 2017.
- Atmospheric rivers in weather and climate simulations: A multi-model, global evaluation. Oral presentation, Center for Western Weather and Water Extremes (CW3E) Meeting Week, Scripps Institution of Oceanography, University of California, San Diego, La Jolla, California, 18 January 2017.
- Toward subseasonal-to-seasonal prediction of atmospheric rivers: Science points to discuss. Oral presentation, California Department of Water Resources Winter Outlook Workshop, Scripps Institution of Oceanography, University of California, San Diego, La Jolla, California, 16–18 November 2016.
- Simulation, prediction, and projection of atmospheric rivers: Ongoing research activities at JPL and UCLA. Oral presentation, California Department of Water Resources Winter Outlook Workshop, Scripps Institution of Oceanography, University of California, San Diego, La Jolla, California, 16–18 November 2016.
- Atmospheric rivers and climate variability: Global connections and implications. Oral presentation, Center for Western Weather and Water Extremes (CW3E) Meeting Week, Scripps Institution of Oceanography, University of California, San Diego, La Jolla, California, 20 January 2016.
- Hydrometeorological characteristics of rain-on-snow events associated with atmospheric rivers. Oral presentation, Center for Western Weather and Water Extremes (CW3E) Meeting Week, Scripps Institution of Oceanography, University of California, San Diego, La Jolla, California, 19 January 2016.

- Atmospheric rivers and climate variability: Regional and global connections. Oral presentation, Open House of the Joint Institute for Regional Earth System Science and Engineering (JIFRESSE), University of California, Los Angeles, California, 12 November 2015.
- Atmospheric rivers and climate variability: Regional and global connections. Yuk L. Yung Lunch Seminar, Division of Geological and Planetary Sciences, California Institute of Technology, Pasadena, California, 18 August 2015.
- Atmospheric rivers and climate variability: Regional and global connections. Oral presentation, Atmospheric Rivers Science Planning Workshop, Scripps Institution of Oceanography, University of California, San Diego, La Jolla, California, 15–17 June 2015.
- Oceanic components of the Madden-Julian Oscillation: Surface Salinity and Cross-equatorial heat transport. Center for Climate Sciences Research Seminar, Jet Propulsion Laboratory, Pasadena, California, 13 February 2015.
- Aquarius surface salinity and the Madden-Julian Oscillation: The role of salinity in surface layer density and potential energy. Oral presentation, Ocean Surface Mixed-Layer Workshop, Jet Propulsion Laboratory, Pasadena, California, 20–22 January 2015.
- Influence of large-scale climate modes on atmospheric rivers that drive precipitation extremes in California. Center for Climate Sciences Research Seminar, Jet Propulsion Laboratory, Pasadena, California, 25 April 2014.
- The 2010/2011 snow season in California's Sierra Nevada: Role of atmospheric rivers and modes of large-scale variability. AOS271 Special Seminar, University of California, Los Angeles, California, 12 November 2013.
- Evaluating the impact of orbital sampling on satellite–climate model comparisons. Center for Climate Sciences Research Seminar, Jet Propulsion Laboratory, Pasadena, California, 3 August 2012.
- Atmospheric rivers, MJO, and the Sierra Nevada snowpack. Oral presentation, High-performance Computing Workshop on Climate Modeling, University of Texas, Austin, Texas, 30 January–1 February 2012.
- Does the Madden-Julian Oscillation influence wintertime atmospheric rivers and snowpack in the Sierra Nevada? Poster presentation, 2011 JPL Postdoc Research Day, Pasadena, California, 7 September 2011.
- Does the Madden-Julian Oscillation influence wintertime atmospheric rivers and snowpack in the Sierra Nevada? Postdoctoral Seminar, Jet Propulsion Laboratory, Pasadena, California, 22 September 2011.
- Does the Madden-Julian Oscillation influence wintertime atmospheric rivers and snowpack in the Sierra Nevada? Oral presentation, CalWater Science Workshop, Scripps Institution of Oceanography, University of California, San Diego, La Jolla, California, 8–10 June 2011.
- Extreme snowfall events in the Sierra Nevada linked to atmospheric rivers and surface air temperature via satellite measurements. Poster presentation, 2010 JPL Postdoc Research Day, Pasadena, California, 25 August 2010.
- Atlantic sea surface temperatures and tropical cyclones: Decadal/multidecadal variations and trends. Yuk L. Yung Lunch Seminar, Division of Geological and Planetary Sciences, California Institute of Technology, Pasadena, California, 20 April 2010.
- Atmospheric rivers: observation and modeling studies on the connections between tropical convection and West Coast hydrology. Oral presentation (co-presenter), CalWater Atmospheric Rivers Planning Meeting, Scripps Institution of Oceanography, University of California, San Diego, La Jolla, California, 9–10 June 2009.

- Twentieth century SST trend and natural variability: clarified structure, and implications to Atlantic hurricane activities. Seminar, Shanghai Typhoon Institute, China Meteorological Administration, Shanghai, China, 29 December 2008.
- Pacific sea surface temperatures and long-term hydroclimate variations over the Great Plains. Yuk L. Yung Lunch Seminar, Division of Geological and Planetary Sciences, California Institute of Technology, Pasadena, California, 11 December 2008.
- Pacific sea surface temperatures and long-term hydroclimate variations over the Great Plains. Seminar, Joint Institute for Regional Earth System Science and Engineering (JIFRESSE), University of California, Los Angeles, California, 10 December 2008.
- Pacific and Atlantic SSTs in the twentieth century: a clarifying analysis of decadal/multidecadal variability structure. Seminar, Earth System Science Interdisciplinary Center (ESSIC), University of Maryland, College Park, Maryland, 8 December 2008.
- Pacific sea surface temperature variability in the twentieth century: ENSO, decadal variability, and secular trend. Oral presentation at the Laboratory for Atmospheric Research, City University of Hong Kong, Hong Kong, China, 15 January 2008.
- Pacific sea surface temperature variability in the twentieth century: Spatiotemporal structures, and connections to long-term droughts over the Great Plains. Seminar, NOAA/Geophysical Fluid Dynamics Laboratory, Princeton University, Princeton, New Jersey, 9 January 2008.