

**Bin Guan**

Researcher

Joint Institute for Regional Earth System Science and Engineering  
4242 Young Hall, Mailcode 722805  
University of California, Los Angeles  
607 Charles E. Young Drive East, Los Angeles, CA 90095-7228  
&

Jet Propulsion Laboratory, M/S 233-300  
California Institute of Technology  
4800 Oak Grove Drive, Pasadena, CA 91109

+1 818-354-0252 | [bin.guan@jpl.nasa.gov](mailto:bin.guan@jpl.nasa.gov) | <https://science.jpl.nasa.gov/people/bguan/>

 <https://orcid.org/0000-0002-8428-5984>

ResearcherID: [F-6735-2010](https://pubs.acs.org/doi/10.1021/acs.chemlett.3c00101) (*h*-index: 32; verified peer reviews: 148)

**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**, “A Global Database of Tropical Intraseasonal Oscillations Based on Life-cycle Tracking of Large-scale Precipitation Features”, NOAA Climate Observations and Monitoring (COM), 2023–2026.
- **Associate Investigator**, “Understanding the Changing Nature of Atmospheric Rivers in a Warming World”, Marsden Fund, New Zealand, 2023–2026.
- **Institutional PI**, “AR Program Phase 4”, California Department of Water Resources, 2022–2023.

- **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.
- **Institutional PI**, “AR Program Phase 3”, California Department of Water Resources, 2021–2022.
- **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.
- **Institutional PI**, “AR Program Phase 2”, California Department of Water Resources, 2019–2020.
- **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), 2015–2019.
- **Co-I**, “Development of Seasonal Outlooks for Atmospheric Rivers”, California Department of Water Resources, 2015–2016.

### Honors/Awards/Recognitions

- 2023 (ongoing) Invited contributor to *Encyclopedia of Atmospheric Sciences, Third Edition* (Elsevier), chapter on “Atmospheric Rivers”.
- 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

- **Researcher** (Full Professor Equivalent; July 2023–present), **Project Scientist** (2020–June 2023), **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

- **Co-mentor**, Melia Leclercq, undergraduate student of University of California, Los Angeles, intern at Joint Institute for Regional Earth System Science and Engineering, July–September 2023.
- **Member of Thesis Committee**, Arjun Babu Nellikkattil, Ph.D. in Climate System, Pusan National University, graduated December 2023.
- **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–present.
- **Guest Editor**, Special Issue on “[Moisture Transport](#)”, Weather and Climate Extremes, 2021–2022.

### Refereeing Services

- **Reviewer/reference for promotion or hiring**: University of Colorado Boulder; University of California, San Diego; Pacific Northwest National Laboratory; Oak Ridge National Laboratory; Lawrence Berkeley National Laboratory.
- **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); Chilean National Agency for Research and Development (ANID).
- **Reviewer** for book proposals submitted to: Wiley; Elsevier.
- **Reviewer** for manuscripts submitted to: Advances in Atmospheric Sciences; Advances in Statistical Climatology, Meteorology and Oceanography; Annals of the New York Academy of Sciences; Artificial Intelligence for the Earth Systems; Climate Dynamics; Climatic Change; Communications Earth & Environment; 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; Meteorological Applications; Natural Hazards and Earth System Sciences; npj Climate and Atmospheric Science; One Earth; Quarterly Journal of the Royal Meteorological Society; Remote Sensing; Water; Scientific Reports; Water Resources Research; Weather and Climate Extremes. ([148 verified peer reviews](#))
- **Judge** for Outstanding Student Paper Award (OSPA), AGU Fall Meetings, San Francisco, California, 2011–present.

- **Judge** for 62<sup>nd</sup> 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 61<sup>st</sup> 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, Pyeongchang, Republic of Korea, 23–28 June 2024.
- **Co-chair**, Session on “Atmospheric Rivers: Processes, Impacts, and Communicating Uncertainty”, AMS Annual Meeting, Baltimore, Maryland, 28 January–1 February 2024.
- **Lead convener**, Poster cluster on “Atmospheric Rivers: The Nexus between Weather, Water, and Climate Extremes”, WCRP Open Science Conference, Kigali, Rwanda, 23–27 October 2023.
- **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**, 33<sup>rd</sup> Conference on Climate Variability and Change at 100<sup>th</sup> AMS Annual Meeting, Boston, Massachusetts, 12–16 January 2020.
- **Chair**, Session on “Atmospheric Rivers: Global Science and Applications”, 100<sup>th</sup> 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”, 43<sup>rd</sup> 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”, 1<sup>st</sup> 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 85<sup>th</sup> Annual Conference, Coronado, California, 14–16 November 2016.
- **Panelist**, “Converging on a Definition of Atmospheric Rivers”, 1<sup>st</sup> 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

- **BBC**: [Inside the giant ‘sky rivers’ swelling with climate change](#), 14 May 2024.
- **Newsweek**: [California’s Latest Atmospheric River Is Badly Needed](#), 28 February 2024.
- **The Weather Network**: [Atmospheric Rivers Becoming So Intense We Need to Rank Them Like Hurricanes](#), 27 April 2023.
- **Jefferson Public Radio** (NPR station in Ashland, Oregon): [The Jefferson Exchange live interview on atmospheric rivers](#), 29 March 2023.
- **CBC**: [Quirks and Quarks interview on atmospheric rivers](#), 25 March 2023.
- **Reckon**: [What the Heck Are Atmospheric Rivers and Why Should We Care? A Simple Explainer](#), 23 March 2023.
- **KPCW** (NPR station in Park City, Utah): [This Green Earth live interview on atmospheric rivers](#), 21 March 2023.
- **NASA News Release**: Ranking Atmospheric Rivers: New Study Finds World of Potential, 16 March 2023. Featured by [NASA](#), [JPL](#), [CW3E](#).
- **The Water Diplomat**: [New Scale for Atmospheric Rivers Could Be Applied Globally](#), 14 March 2023.
- **AGU News Release**: The World’s Atmospheric Rivers Now Have an Intensity Ranking Like Hurricanes, 9 March 2023. Featured by [AGU](#), [The Guardian](#), [UN Office for Disaster Risk Reduction \(UNDRR\)](#).
- **Penn State News Release**: [More frequent atmospheric rivers hinder seasonal recovery of Arctic sea ice](#), 6 February 2023.
- **Epsilon**: The Atmospheric River: A Flood Capable of Carrying Down Dams (Print, 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](https://doi.org/10.1002/9781118872086.ch10).

## Journal Articles

6. **Guan, B.**, and D. E. Waliser (2024), A regionally refined quarter-degree global atmospheric rivers database based on ERA5, *Scientific Data*, 11, 440, doi:[10.1038/s41597-024-03258-4](https://doi.org/10.1038/s41597-024-03258-4).
7. Asharaf, S., **B. Guan**, and D. E. Waliser (2024), ROTATE: A coordinate system for analyzing atmospheric rivers, *Geophysical Research Letters*, 51, e2023GL106736, doi:[10.1029/2023GL106736](https://doi.org/10.1029/2023GL106736).
8. Ma, W., G. Chen, **B. Guan**, C. A. Shields, B. Tian, and E. Yanez (2023), Evaluating the representations of atmospheric rivers and their associated precipitation in reanalyses with satellite observations, *Journal of Geophysical Research: Atmospheres*, 128, e2023JD038937, doi:[10.1029/2023JD038937](https://doi.org/10.1029/2023JD038937).
9. Hicks, J., **B. Guan**, S. Nigam, and A. Ruiz-Barradas (2023), Large-scale circulation context for North American west coast atmospheric rivers: Influence of the subseasonal NPO/WP teleconnection, *Journal of Geophysical Research: Atmospheres*, 128, e2023JD038693, doi:[10.1029/2023JD038693](https://doi.org/10.1029/2023JD038693).
10. Nellikkattil, A. B., J.-Y. Lee, **B. Guan**, A. Timmermann, S.-S. Lee, J.-E. Chu, and D. Lemmon (2023), Increased amplitude of atmospheric rivers and associated extreme precipitation in ultra-high-resolution greenhouse warming simulations, *Communications Earth and Environment*, 4, 313, doi:[10.1038/s43247-023-00963-7](https://doi.org/10.1038/s43247-023-00963-7).
11. **Guan, B.**, and S. Nigam (2023), Pacific–North American teleconnection tumbles snowfall records west of the Cascades during Christmas week 2021, *Bulletin of the American Meteorological Society*, 104, E1314–E1322, doi:[10.1175/BAMS-D-22-0021.1](https://doi.org/10.1175/BAMS-D-22-0021.1).
12. Park, C., S.-W. Son, and **B. Guan** (2023), Multiscale nature of atmospheric rivers, *Geophysical Research Letters*, 50, e2023GL102784, doi:[10.1029/2023GL102784](https://doi.org/10.1029/2023GL102784).
13. Zhang, Z., and Coauthors (including **B. Guan**) (2023), Multi-model subseasonal prediction skill assessment of water vapor transport associated with atmospheric rivers over the western U.S., *Journal of Geophysical Research: Atmospheres*, 128, e2022JD037608, doi:[10.1029/2022JD037608](https://doi.org/10.1029/2022JD037608).
14. Shields, C. A., and Coauthors (including **B. Guan**) (2023), Future atmospheric rivers and impacts on precipitation: Overview of the ARTMIP Tier 2 high-resolution global warming experiment, *Geophysical Research Letters*, 50, e2022GL102091, doi:[10.1029/2022GL102091](https://doi.org/10.1029/2022GL102091).
15. 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*, 13, 266–273, doi:[10.1038/s41558-023-01599-3](https://doi.org/10.1038/s41558-023-01599-3).
16. **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](https://doi.org/10.1029/2022JD037180). **Featured** by [AGU](#), [NASA](#).
17. 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](https://doi.org/10.1175/JHM-D-22-0089.1).
18. 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](https://doi.org/10.1029/2022GL100381).



19. 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](https://doi.org/10.1175/JCLI-D-22-0114.1).
20. 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](https://doi.org/10.5194/gmd-15-5461-2022).
21. 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](https://doi.org/10.5194/acp-22-8175-2022).
22. 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](https://doi.org/10.1088/1748-9326/ac7343).
23. 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](https://doi.org/10.1029/2021JD036155).
24. 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](https://doi.org/10.1029/2021JD036013).
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### Conference Presentations (as Leading and/or Presenting Author)

- Guan, B., and D. E. Waliser: A New Quarter-degree Global Atmospheric Rivers Database Based on ERA5, 1940–2022. Poster presentation, AMS Annual Meeting, Baltimore, Maryland, 28 January–1 February 2024.
- Guan, B., J. Hicks, S. Nigam, and A. Ruiz-Barradas: Large-Scale Circulation Context for North American West Coast Atmospheric Rivers: Influence of the Subseasonal NPO/WP Teleconnection. Poster presentation, AGU Fall Meeting, San Francisco, CA and Online Everywhere, 11–15 December 2023.
- Guan, B., D. E. Waliser, and F. M. Ralph: Global Application of the Atmospheric River Scale. Poster presentation, WCRP Open Science Conference, Kigali, Rwanda, 23–27 October 2023.
- 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, 4<sup>th</sup> 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, 43<sup>rd</sup> 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, 2<sup>nd</sup> 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.
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- 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.
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- Guan, B., J. J. Rutz, and A. Gershunov: Global perspective of atmospheric rivers: Climatology, and climate modulation. Oral presentation, 1<sup>st</sup> International Atmospheric Rivers Conference, La Jolla, California, 8–11 August 2016.
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- 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.
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- 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, 31<sup>st</sup> 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**

- Atmospheric rivers: A tale of feast or famine. Seminar, IBS Center for Climate Physics, Pusan National University, Busan, South Korea, 28 June 2023.
- Pacific-North American teleconnection tumbles snowfall records west of the Cascades during Christmas week 2021. Poster 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 2023.
- Lightning and Wind Structure of Atmospheric Rivers Affecting the Continental US Observed by GOES-16/17, NOAA/NASA ROSES Science Review, College Park, Maryland, 12–13 October 2022.
- S2S prediction of winter precipitation: Determination from innovative spatiotemporal analyses of observations for facilitating improved management of water resources in the western U.S., NASA Water Resources Team Meeting, Salt Lake City, Utah, October 4–7, 2022.



- 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.