

## Daniel L. Swain

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## Research interests

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Dynamics & impacts of regional climate change, hydroclimate extremes, wildfires & climate, extreme event detection/attribution, natural hazard risk, climate adaptation, science writing & communication

## Education

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- Ph.D., Earth System Science, Stanford University** 2016  
Dissertation: “Character and causes of changing North Pacific climate extremes”  
Advisor: Dr. Noah Diffenbaugh
- B.S., Atmospheric Science, University of California, Davis (Highest Honors)** 2011

## Selected honors and awards

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- Vice Magazine “Human of the Year” 2020
- National Academy of Sciences Kavli Fellow 2019
- Finalist, AAAS Early Career Award for Public Engagement with Science 2018
- NatureNet Postdoctoral Fellowship, Nature Conservancy/University of California 2016-2018
- ARCS Fellowship, Achievement Rewards for College Scientists Foundation 2015-2016
- Switzer Environmental Fellowship, Robert and Patricia Switzer Foundation 2015-2016
- Graduate Student Award for Scholarly & Research Achievement, Stanford University 2015
- Fellow, Rising Environmental Leaders Program, Stanford Woods Inst. for the Environment 2013
- Centennial Teaching Assistant Award, School of Earth Sciences, Stanford University 2013
- College Medal, College of Agricultural & Environmental Sciences, Univ. of California, Davis 2011
- Departmental Citation, Atmospheric Science, University of California, Davis 2011
- Regents Scholarship, University of California, Davis 2009-2011
- American Meteorological Society Undergraduate Scholar 2007-2009
- NASA Ames/AIAA Galileo Memorial Scholarship 2007

## Grants

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- Principal Investigator, California Department of Water Resources Grant: “Developing plausible extreme storm and flood scenarios for disaster resilience planning and emergency” 2021-2023

response exercises in California,” **Award total: \$140,000**

Principal Investigator, Yuba Water Agency grant: “Developing California Megastorm Scenarios for ARkStorm 2.0,” **Award total: \$60,000** 2021

Co-Principal Investigator, National Science Foundation Prediction of and Resilience against Extreme Events (NSF PREEVENTS) Program, Track 2: “COEXIST: COnnected EXtremes In Space and Time,” Award ID: 1854761, **Award total: \$345,446** (UCLA portion) 2019-2021

## Publications

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30. Fish, M.A., Done, J., **Swain, D.L.**, Wilson, A.M., Michaelis, A.C., Gibson, P.B., and F. Martin Ralph. “Large-scale environments of successive atmospheric river events leading to compound precipitation extremes in California” (in press, *Journal of Climate*) 2022
29. Kalashnikov, D., J.L. Schnell, J.T. Abatzoglou, **D.L. Swain**, and D. Singh. Increasing co-occurrence of fine particulate matter and ground-level ozone extremes in the western United States. *Science Advances*, 8, eabi9386, doi: 10.1126/sciadv.abi9386, 2022.
28. Brunner, M.I., **Swain, D.L.**, Wood, R.R., Willkofer, F., Done, J.M., Gilleland, E., and R. Ludwig. An extremeness threshold determines the regional response of floods to changes in rainfall extremes. *Communications Earth and Environment*, 2, doi: 10.1038/s43247-021-00248-x, 2021.
27. Goldenson, N., Thackeray, C.W., Hall, A., **Swain, D.L.**, and N. Berg. Using large ensembles to identify regions of systematic biases in moderate to heavy daily precipitation. *Geophysical Research Letters*, 48, e2020GL092026, doi: 10.1029/2020GL092026, 2021.
26. †**Swain, D.L.** A shorter, sharper rainy season amplifies California wildfire risk. *Geophysical Research Letters*, 48, e2021GL092843, doi: 10.1029/2021GL092843, 2021.
25. Brunner, M.I., **Swain, D.L.**, Gilleland, E., and A. Wood. Increasing importance of temperature as a driver of streamflow drought spatial extent. *Environmental Research Letters*, 16, 024038, doi: 10.1088/1748-9326/abd2f0, 2021.
24. Gonzales, K.R., **Swain, D.L.**, Barnes, E.A., and N.S. Diffenbaugh. Moisture vs. Wind-Dominated Flavors of Atmospheric Rivers. *Geophysical Research Letters*, 47, e2020GL090042, doi: 10.1029/2020GL090042, 2020.
23. **Swain, D.L.**, Wing, O.E.J., Bates, P.D., Done, J.M., Johnson, K.A., and D.R. Cameron. Increased flood exposure due to climate change and population growth in the United States. *Earth's Future*, 8, e2020EF001777, doi: 10.1029/2020EF001778, 2020.
22. Persad, G.G., **Swain, D.L.**, Kouba, C., and J.P.O. Partida. Inter-Model Agreement on Projected Shifts in California Hydroclimate Characteristics Critical to Water Management. *Climatic Change*, 162, 1493–1513, doi: 10.1007/s10584-020-02882-4, 2020.
21. Abatzoglou, J., Smith, C., **Swain, D.L.**, Ptak, T., and C. Kolden. Population exposure to pre-emptive de-energization aimed at averting wildfires in Northern California. *Environmental Research Letters*, 15, 094046, doi: 10.1088/1748-9326/aba135, 2020.
20. \*Goss, M., **Swain, D.L.**, Sarhadi, A., Kolden, C.A., Abatzoglou, J.T., Williams, A.P., and N.S. Diffenbaugh. Climate change is increasing the risk of extreme autumn wildfire conditions across California. *Environmental Research Letters*, 15 (9), 094016,

doi: 10.1088/1748-9326/ab83a7, 2020.

[Named “Best Article of 2020” by *Environmental Research Letters* Editorial Board]

19. Huang, X., **Swain, D.L.**, and A. Hall. Large ensemble downscaling of extreme atmospheric River storms in California reveals large increase in fine-scale precipitation. *Science Advances*, 6, eaba1323, doi: 10.1126/sciadv.aba1323, 2020. 2020
18. Brunner, M.I., Gilleland, E., Wood, A., **Swain, D.L.**, and M. Clark. Spatial dependence of floods shaped by spatiotemporal variations in meteorological and land-surface processes. *Geophysical Research Letters*, 47, e2020GL088000, doi: 10.1029/2020GL088000, 2020. 2020
17. †**Swain, D.L.**, Singh, D., Touma, D., and N.S. Diffenbaugh. Attributing extreme events to climate change: A new frontier in a warming world. *One Earth*, 2, 522-527, doi: 10.1016/j.oneear.2020.05.011, 2020. 2020
16. Huang, X., **Swain, D.L.**, Walton, D.B., Berg, N., Stevenson, S., and A. Hall. Simulating and Evaluating Atmospheric River-Induced Precipitation Extremes along the U.S. Pacific Coast: Case Studies from 1980-2017. *Journal of Geophysical Research: Atmospheres*, 125, e2019JD031554, doi: 10.1029/2019JD031554, 2020. 2020
15. Gibson, P.B., Waliser, D.E., Guan, B., DeFlorio, M.J., and **D.L. Swain**. Ridging associated with drought in western and southwestern United States: characteristics, trends and predictability. *Journal of Climate*, 33, 2485-2408, doi: 10.1175/JCLI-D-19-0439.1, 2020. 2020
14. Gonzales, K.R., **Swain, D.L.**, Barnes, E.A., K. Nardi, and N.S. Diffenbaugh. Recent warming of landfalling atmospheric rivers along the West Coast of the United States. *Journal of Geophysical Research: Atmospheres*, 124, 6810-6826, doi: 10.1029/2018JD029860, 2019. 2019
13. †**Swain, D.L.**, 2019. Is society ready for precipitation whiplash?, In: “Toward a Resilient Global Society: Air, Sea Level, Earthquakes, and Weather.” *Earth's Future*, 7, 854-864, doi: 10.1029/2019EF001242, 2019. 2019
12. Thackeray, C.W., A.M. DeAngelis, A. Hall, **D.L. Swain**, and X. Qu. On the Connection Between Global Hydrologic Sensitivity and Regional Wet Extremes. *Geophysical Review Letters*, 45, doi: 10.1029/2018GL079698, 2018. 2018
11. Touma, D., A. M. Michalak, **D.L. Swain**, and N.S. Diffenbaugh. Characterizing the spatial characteristics of extreme precipitation over the United States. *Journal of Climate*, 31, 8023-8037, doi: 10.1175/JCLI-D-18-0019.1, 2018. 2018
10. \***Swain, D.L.**, B. Langenbrunner, J.D. Neelin, and A. Hall. Increasing precipitation volatility in twenty-first-century California. *Nature Climate Change*, 8, 427-433, doi: 10.1038/s41558-018-0140-y., 2018. 2018
9. **Swain, D.L.**, D. Singh, D.E. Horton, J.S. Mankin, T. Ballard, and N.S. Diffenbaugh. Remote linkages to anomalous winter atmospheric ridging over the northeastern Pacific. *Journal of Geophysical Research: Atmospheres*, 122, 12,194-12,209, doi: 10.1002/2017JD026575, 2017. 2017
8. \*Diffenbaugh, N.S., Singh, D., Mankin, J.S., Charland, A., Horton, D.E., Haugen, M., **Swain, D.L.**, Rajaratnam, B., and Touma, D. Quantifying the influence of global warming on unprecedented extreme climate events. *Proceedings of the National Academy of Sciences*, 114, 4881-4886, doi: 10.1073/pnas.1618082114, 2017. 2017

7. Singh, D., **D. L. Swain**, J.S. Mankin, D.E. Horton, L.N. Thomas, B. Rajaratnam, and N.S. Diffenbaugh. Recent amplification of the North American winter temperature dipole. *Journal of Geophysical Research: Atmospheres*, 121, 9911-9928, doi: 10.1002/2016JD025116, 2016. 2016
6. **Swain, D. L.**, Horton, D.E., Singh, D., and N.S. Diffenbaugh. Trends in atmospheric patterns conducive to seasonal precipitation and temperature extremes in California. *Science Advances*, 2, e1501344, doi: 10.1126/sciadv.1501344, 2016. 2016
5. **Swain, D.L.**, Lebassi-Habtezion, B., and N.S. Diffenbaugh. Evaluation of non-hydrostatic simulations of Northeast Pacific atmospheric rivers and comparison to in-situ observation. *Monthly Weather Review*, 143, 3556-3569, doi: 10.1175/MWR-D-15-0079.1, 2015. 2015
4. \*Horton, D.E., N.C. Johnson, D. Singh, **D.L. Swain**, B. Rajaratnam and N.S. Diffenbaugh. Contribution of changes in atmospheric circulation patterns to extreme temperature trends. *Nature*, 522, 465–469, doi: 10.1038/nature14550, 2015. 2015
3. \*Diffenbaugh, N.S., **D.L. Swain** and D. Touma. Anthropogenic warming has increased drought risk in California. 112, 3931-3936, *Proceedings of the National Academy of Sciences*, doi: 10.1073/pnas.1422385112, 2015. 2015
2. †**Swain, D.L.** A tale of two California droughts: Lessons amidst record warmth and dryness in a region of complex physical and human geography. *Geophysical Research Letters*, doi:10.1002/2015GL066628, 2015. 2015
1. \***Swain, D.L.**, M. Tsiang, M. Haugen, D. Singh, A. Charland, B. Rajaratnam and N.S. Diffenbaugh. The extraordinary California drought of 2013-2014: character, context, and the role of climate change [in "Explaining Extremes of 2013 from a Climate Perspective"]. *Bulletin of the American Meteorological Society*, 95 (9), S3–S7, 2014. 2014

\* = ISI Highly Cited Paper

† = Perspective, commentary, or subject matter primer

## Publications submitted/in preparation

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- Touma, D., S. Stevenson, **Swain, D.L.**, D. Singh, D. Kalashnikov, X. Huang “Increasing risk of post-wildfire hydrologic extremes due to climate change across Western United States (in revision) 2021

## Published reports

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- Persad, G.G., Partida, J.P.O., and **Swain, D.L.**, “Troubled Waters: Preparing for Climate Threats to California’s Water System,” *Union of Concerned Scientists*, 2020. 2020
- Mount, J., **Swain, D.L.**, and P. Ullrich, “Just the Facts: Climate Change and California’s Water,” *Public Policy Institute of California*, 2019. 2019
- Hanak, E. et al., “California’s Water,” *Public Policy Institute of California*, 2018. 2018
- Mount, J. et al., “Managing Drought in a Changing Climate: Four Essential Reforms,” *Public Policy Institute of California*, 2018. 2018

## Professional experience

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### Scientific research appointments

**Climate Scientist (Assistant Research Scientist)** 2018-Present

**Inst. of Environment & Sustainability, University of California, Los Angeles**

Lead research on dynamics & impacts of regional climate change and serve as primary media point of contact on weather/climate-related topics.

**California Climate Fellow** 2018-Present

**The Nature Conservancy**

Lead interdisciplinary research aimed at understanding of dynamics of future climate changes (including extreme events) and implications for human infrastructure and ecosystems; evaluate risk-reduction interventions & co-benefits to society & natural systems.

**Research Fellow** 2018-Present

**Capacity Center for Weather & Climate Extremes, Nat. Center for Atmospheric Res.**

Lead research into atmospheric/Earth system dynamics of hydrologic cycle extremes.

**Postdoctoral Fellow** 2016-2018

**Inst. of Environment & Sustainability, University of California, Los Angeles**

Investigate the character and causes of changes in hydrological cycle extremes in California.

**Graduate Research Assistant**

**Climate and Earth System Dynamics Group, Stanford University** 2011-2016

Develop and conduct scientific investigations of climate variability and change in the North Pacific/western North America region, with a focus on extreme meteorological events and persistent circulation patterns.

**Intern** 2010

**NASA/National Center for Suborbital Research, University of California, Irvine**

Obtain “ground truth” measurements for comparison to NASA overflights with hyperspectral imager as part of agricultural evapotranspiration study.

### Teaching

**Teaching Assistant, Department of Earth System Science, Stanford University** 2013

Course: “Atmosphere, Ocean & Climate Dynamics: The Atmospheric Circulation.” Give guest lectures, develop and implement practical laboratory sessions, hold office hours, and evaluate student performance.

**Invited Guest Lecturer**

*University of California, Los Angeles*

2016-2020

Courses: Advanced Topics in Environment and Sustainability; Climate Law and Policy; The Blue Planet: Introduction to Oceanography

*Stanford University*

2013-2016

Courses: Atmosphere, Ocean & Climate Dynamics I & II; Stanford Pre-Collegiate Institutes

## Science communication and science writing

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**Author & founder, Weather West blog ([www.weatherwest.com](http://www.weatherwest.com))** 2006-Present

Write regular articles focusing on a wide range of California/western North America weather

and climate topics; answer questions from public, decision-makers, and scientists regarding meteorology/climatology/general science/science policy. Strong emphasis on making scientific and technical topics accessible to a broad audience (>1 million visitors each year).

**Climate science engagement via social media**

2014-Present

Weather, climate, Earth science, and public policy discussion and outreach via Twitter as @Weather\_West (>10 million views each year). Direct engagement with public, scientists, wildland firefighters, water managers, local & regional government, and policymakers

**Atmospheric and climate science media liaison**

2013-present

Frequent, sustained engagement with local, national, and international news media on weather & climate-related issues. ~100 interviews each year with a wide range of outlets:

Newspaper: New York Times, Washington Post, USA Today, Wall Street Journal, Bloomberg, Los Angeles Times, San Francisco Chronicle, Sacramento Bee & numerous local papers

Long-form/magazine: Time, The Economist, Newsweek, The Atlantic, Wired, Scientific American, Popular Science, National Geographic, Vogue, Outside Magazine, Sunset Magazine, Bay Nature Magazine, Mother Jones, and others

Radio: NPR/Science Friday (and numerous local affiliates), BBC World Service, ABC & CBS national radio (and local affiliates), various local and university stations

Television: CNN, ABC, NBC, PBS, BBC, CBC, Al Jazeera, HBO, German, French, British, & Danish public television, Democracy Now, multiple documentaries, numerous local news affiliates

Web outlets: Vox, Slate Magazine, Vice Magazine, BuzzFeed, Mashable, The Verge

Climate/weather-focused: Climate Central, Climate Nexus, InsideClimate News, The Weather Channel, Wunderground, The Weather Network

**Science writing for broad audiences**

Occasional contributor of invited popular science/current event-related perspective pieces in print and online media, including selected publications below.

2010-present

**Swain, D.L.** “The Deadly Dynamics of Colorado’s Marshall Fire,” *Outside Magazine*, 11 January 2022.

Jan. 2022

**Swain, D.L.**, Kolden, C., and J. Abatzoglou, “The era of megafires: the crisis facing California and what will happen next,” perspective in *The Guardian*, 08 August 2018.

Aug. 2018

**Swain, D.L.**, *Outside Magazine* & KQED Public Media contributor, various articles

2015-2016

**Public policy engagement**

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Member, Scientific Advisory Committee for the Delta Stewardship Council’s Delta Science Program

2021-present

Member, Public Policy Institute of California Water Policy Research Network

2018-present

Invited Panelist, Climate Change Town Hall meeting hosted by California State Senator Mike McGuire

Oct. 2021

Invited Expert, science briefing on extreme atmospheric rivers, climate change, and flood risk in California, United States Representative Terrance John Cox Jul. 2020

Invited Expert, science briefing on weather extremes and climate change, United States Senator Sheldon Whitehouse Oct. 2019

## **Broader community engagement**

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Climate Feedback expert reviewer, assessing national/international media coverage on climate change and extreme weather as member of accredited fact-checking organization Sep. 2016-present

Invited Speaker, “Drought and wildfire in the warming climate of the American West,” Steamboat Weather Summit, Steamboat Springs, CO Jan. 2023

Invited Panelist, “California Dystopia: Understanding Climate Change and Social Collapse through Science Fiction,” USC Visions and Voices: The Arts and Humanities Initiative, University of Southern California, Los Angeles, CA Mar. 2022

Invited Speaker and Panelist, “Hanging Ourselves Out to Dry or The Beginning of a New Beginning?” California Foundation on the Environment and the Economy Conference on California Water\* Dec. 2021

Invited Speaker, California Water Action Collaboration Risk Discussion Session\* Dec. 2021

Invited Keynote Speaker, “California water in an era of increasing climate complexity,” “California Streamin’ ” Water Policy Conference\* Nov. 2021

Invited Speaker and Panelist, “Climate extremes and prediction in a warming California,” Drought and Climate Forecasting Panel, California Legislative Staff Education Institute Virtual Meeting\* Nov. 2021

Invited Panelist, “Making our water infrastructure climate-ready,” California Water Policy Conference, Public Policy Institute of California\* Nov. 2021

Invited Speaker and Panelist, “Climate extremes in a warming California,” California Climate Safe Policy Summit\* Aug. 2021

Invited Speaker, “Warmer and wilder: Increasing water resource variability in a changing California,” California Water Efficiency Partnership Annual Conference\* Jun. 2021

Invited Plenary Speaker, “Hotter, drier, and longer: Shifting seasonality and fire season in California,” The Nature Conservancy of California Leadership Meeting\* Jun. 2021

Invited Speaker, “Wildfire, flood, and drought risk in a warming California,” Bay Area Climate Adaptation Network Meeting\* May 2021

Invited Speaker, “Climate change in California: A drier or wetter future—or...both?” 2021 Thelma Hansen Virtual Symposium, University of California Cooperative Extension\* Apr. 2021

Invited Speaker, “Climate Change Issues Affecting Water Supply, Storage and Flood Control, and Endangered Species,” California Water Law and Policy Conference 2021*	Apr. 2021
Invited Speaker, “Increasing hydroclimate whiplash in California: Challenges (and opportunities) for wildfire and flood management,” ARCS Foundation webinar*	Apr. 2021
Invited Speaker, “Climate Change and Extreme Events in California,” Northern California Science Writers Association virtual meeting*	Mar. 2021
Invited Panelist, “Climate change in California and Nevada: Challenges and opportunities in an era of increasing variability,” Operation Sierra Storm Broadcast Meteorology Virtual Conference*	Jan. 2021
Invited Panelist, “A Meteorologist, a Seismologist, a Volcanologist, and a Decision-maker Walk into a Bar: Improving our own risk and impact communication by examining experiences from outside the weather, water, and climate enterprise,” American Meteorological Society Annual Virtual Meeting*	Jan. 2021
Invited Keynote Speaker, “Water woes in a warming California: Management challenges and opportunities in an era of increasing variability,” Association of California Water Agencies (ACWA) Virtual Fall Meeting*	Dec. 2020
Invited Speaker, “Fanning the Flames: The Reality of Climate Change and Wildfires in California,” Nature Conservancy of California Webinar*	Nov. 2020
Invited Keynote Speaker, “Climate Change in California: A Tale of Shifting Baselines, Sharpening Seasonality, and Increasing Precipitation Whiplash,” Interagency Ecological Program Annual Workshop, Folsom, CA*	Oct. 2020
Invited Panelist, “Early Career Leadership Academy Panel,” American Meteorological Society*	Oct. 2020
Invited Speaker, “Climate Change in California: Wetter wets, drier dries, and shifting seasonality,” San Bernardino Valley Municipal Water District Board Engineering Workshop*	Aug. 2020
Invited Panelist, “The Future of Wildfire, Climate Change, and Water in the West,” California Grantmakers Association*	July 2020
Invited Speaker, “Role of the scientist-communicator in an era of social media and climate change,” The Nature Conservancy of California Webinar *	Mar. 2020
Invited Speaker, “Climate change in California: A tale of fire and flood,” Water Education Foundation “Water Leaders” Orientation, Sacramento, CA*	Jan. 2020
Invited Speaker, “Wetter, drier, or both? Increasing hydroclimatic variability in 21 <sup>st</sup> century California,” University of California Agriculture & Natural Resources Water Strategic Initiative meeting, Davis, CA*	May 2019
Invited Speaker, “Is California ready for increasing precipitation whiplash?,” American River Operations Work Group meeting, Folsom, CA*	May 2019
Invited Speaker, “Forces of Nature: H2-Uh-Oh,” First Fridays event at Natural History Museum of Los Angeles, Los Angeles, CA	May 2019
Invited Speaker, “The Wild West of Online Science Communication,” University of	Apr. 2019



## Washington Program on Climate Change, Seattle, WA\*

Invited Panelist, "LA's New Abnormal: Megafires," UCLA Institute of the Environment and Sustainability & The Nature Conservancy, Los Angeles, CA	Feb. 2019
Invited Speaker, "Fire & Water from the 30,000-Foot Level," Water Education Foundation "Water Leaders" Orientation, Sacramento, CA*	Jan. 2019
Invited Keynote Speaker, "Drought, flood, and wildfire amidst increasing climate whiplash: the challenging road ahead for water management in the West," Water Education Foundation Water Summit, Sacramento, CA	Sep. 2018
Invited Interactive Speaker, "Climate Change Cliff Notes," A Climate Series for the Ages, hosted by UCLA Institute of Environment and Sustainability & Natural History Museum of Los Angeles, Los Angeles, CA	Oct. 2017
Invited Speaker, "Change in a land of extremes: what we know (and don't know) about California's climate future," Krotana Institute/Ojai Valley Conservancy, Ojai, California	May 2017
Featured Speaker, Stanford Connects 2016: "The Rise of the Ridiculously Resilient Ridge and the Future of California Drought," Stanford University, Stanford, CA	May 2016
Project Mentor, Stanford University course: "International Climate Negotiations (COP 21)"	Dec. 2015
Invited Speaker, "Flood in a time of drought? Effects of a powerful El Niño in the midst of California's record dry spell," Association of Bay Area Governments, Oakland, CA	Sep. 2015
Invited Speaker, "Climate Change in a Land of Extremes: Drought and Flood in California's Past, Present, and Future," U.S. National Park Service Parsons Memorial Lodge Lecture Series, Yosemite National Park, CA	Aug. 2015
Invited Speaker and Panelist, "California Drought Panel," Water in the West/Woods Institute for the Environment, Stanford University, Stanford, CA	Mar. 2015
Invited Panelist, "Earth Matters/A Matter of Degrees," Stanford Continuing Studies Program, Stanford University, Stanford, CA	Feb. 2015
Invited Science Speaker, "Stanford to the Sea" Science Hike, "The Ridiculously Resilient Ridge in Context: Climate Variability of California's Past, Present, and Future," Bill Lane Center for the American West, Stanford University, Stanford, CA	May 2014
Invited Speaker and Panelist, "Current Drought: Causes, how bad is it, and will we see more?" University of California Drought Summit, California State Capitol, Sacramento, CA	Apr. 2014
Invited Speaker and Panelist, "The California Drought: Causes, Context, and Response," Bill Lane Center for the American West/Woods Institute for the Environment, Stanford University, Stanford, CA	Feb. 2014
Founder and leader, Aggie Forecasting Team at University of California, Davis	2008-2011
Co-leader, Atmospheric Profiling & Stratospheric Photography Project, Univ. of Calif., Davis	2009-2011

\*Denotes remote attendance via teleconference software or telephone

## Invited scientific presentations

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- “Understanding extremes in a warming climate: On acknowledging uncertainty, embracing complexity, and asking societally relevant questions,” *American Physical Society Annual Meeting*, Chicago, IL\* (*invited speaker*) Mar. 2022
- “Rising California flood risk from stronger, wetter atmospheric rivers in a warming climate,” *California Extreme Precipitation Symposium*, University of California, Davis\* (*invited speaker*) June 2021
- “A worsening wildfire crisis in California and the broader West: The role of climate change,” *Cat Risk Management 2021 Conference*, Reinsurance Association of America\* (*invited speaker*) Mar. 2021
- “Sharpening seasonality and shifting hydrology: implications for wildfire and flood risk in a warming California,” *Geological and Planetary Sciences Division Seminar*, California Institute of Technology, Pasadena, CA\* (*invited speaker*) Mar. 2021
- “Climate communication in the Twitter era: Challenges, opportunities, and some personal Reflection,” *American Geophysical Union Fall Meeting*, San Francisco, CA\* (*invited speaker*) Dec. 2020
- “Regional downscaling of large ensemble simulations as a tool for understanding changing hydroclimatic extremes in a warming climate,” *CLIVAR Large Ensembles Workshop*, Boulder, CO (*invited speaker*) Jul. 2019
- “Hydroclimatic intensification in a warming world: is society ready for increasing precipitation whiplash?” *American Geophysical Union Fall Meeting*, Washington, D.C. (*invited speaker*) Dec. 2018
- “Thinking about climate risk in an era of extremes: California’s increasingly wide swings between drought and flood,” *Department of Geography Seminar*, University of California, Berkeley (*invited lecturer*) Oct. 2018
- “Atmospheric rivers as a scientific (and conversational) bridge between weather and climate,” *International Atmospheric Rivers Conference*, Scripps Institute of Oceanography, La Jolla, CA (*invited speaker*) Jun. 2018
- “California’s increasingly extreme climate future,” *Rusch Honors Colloquium*, Viterbi School of Engineering, Univ. of Southern California, Los Angeles, CA (*invited lecturer*) Nov. 2017
- “Causes and impacts of climate change—a California perspective,” *Climate and Law Policy Seminar*, UCLA School of Law, Los Angeles, CA (*invited lecturer*) Sep. 2017
- “Teleconnections and regional impacts under anthropogenic forcing” & “Global warming influence on extreme events,” *US Climate Variability and Predictability Program (CLIVAR) Summit*, Baltimore, MD (*invited speaker and panelist*) Aug. 2017
- “Trends in persistent seasonal-scale atmospheric circulation patterns responsible for precipitation and temperatures extremes in California,” *American Geophysical Union Fall Meeting*, San Francisco, CA (*invited speaker*) Dec. 2015
- “Drought causes,” *American Geophysical Union Chapman Conf. on California Drought: Causes, Impacts, & Policy*, Univ. of California, Irvine (*invited panelist*) Apr. 2015

- “The extraordinary 2012-2015 drought in California and its context in a warming world,” *Water Scarcity in the West: Past, Present, Future Conference*, Univ. of California, Davis (invited speaker and panelist) Apr. 2015
- “Persistent atmospheric patterns and the ongoing California drought: the role of the Ridiculously Resilient Ridge,” *NASA Earth Science Seminar*, NASA Ames, Mountain View, CA (invited speaker) Mar. 2015
- “The extraordinary California drought of 2012-2015: Historical context and the role of climate change,” *PACLIM Pacific Climate Workshop 2015*, Pacific Grove, CA (invited speaker) Mar. 2015
- “The extraordinary California drought of 2012-2015: Historical context and the role of climate change,” *Atmosphere and Energy Departmental Seminar*, Stanford University, Stanford, CA (invited speaker) Mar. 2015

## Other awards and recognitions

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- “Most Important Changemaker in the West,” *Deseret Magazine* 2022
- Environmental Research Letters* Editorial Board “Best Article of 2020” (Goss et al. 2020) 2021
- “Must Follow” Social Media Meteorologist/Climatologist, *Forbes Magazine* 2016
- Best Talk Award, Environmental Science, SES Research Review, Stanford University 2016
- Oakland Museum of California “Agent of Change” 2015
- “Ten under 30: Young leaders changing the American West,” *High Country News* 2015
- “Research as Art” competition winner, School of Earth Sciences, Stanford University 2015, 2012
- ThinkSwiss Award, Swiss National Science Foundation, “NCCR Climate Summer School,” Grindelwald, Switzerland 2013
- Invitee, NCAR Undergraduate Leadership Workshop, Boulder, CO 2010
- Guillermo Salazar Rodriguez Undergraduate Scholarship, American Meteorological Society 2010
- Winner, Prized Writing Competition, Scientific & Technical Writing, Univ. of California, Davis 2010, 2008
- UC Davis Integrated Studies Honors Program International Education Award 2008
- UC Davis International Relations Study Abroad Award 2008
- Edward Kraft Prize, University of California, Davis 2008
- Henry A. Jastro Recruitment Scholarship, University of California, Davis 2007-2009

## Other scientific presentations

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### Oral presentations

- “ARkStorm 2.0: Developing a new extreme atmospheric river storm scenario for 21<sup>st</sup> century California,” *International Atmospheric Rivers Conference* (virtual meeting)\* Oct. 2020
- “Dynamics of and precursors to California megafloods, present and future,” *American Meteorological Society Annual Meeting*, Phoenix, AZ Jan. 2019

- “Increasing climate whiplash in 21st century California,” *American Geophysical Union Fall Meeting*, New Orleans, LA Dec. 2017
- “California precipitation extremes in a warming world,” *Sustainable LA Water Research Grand Challenge Research Symposium*, Los Angeles, CA Nov. 2017
- Poster presentations***
- “Is society ready for increasing climate whiplash?” *2019 Israeli-American Kavli Frontiers of Science Symposium*, Jerusalem, Israel Sep. 2019
- “Connections between the tropical Pacific Ocean, Arctic sea ice, and anomalous northeastern Pacific ridging,” *American Geophysical Union Fall Meeting*, San Francisco, CA Dec. 2016
- “Character and causes of changing Pacific climate extremes: Special focus on the extraordinary 2012-2015 California drought,” *Young Environmental Scholars Conference*, Stanford, CA Dec. 2015
- “The Extraordinary California Drought of 2013-2014: Character, Context, and the Role of Climate Change,” *American Geophysical Union Fall Meeting*, San Francisco, CA Dec. 2014
- “The Extraordinary California Drought of 2013-2014: Character, Context, and the Role of Climate Change,” *Graduate Climate Conference*, Seattle, WA Nov. 2014
- “The Extraordinary California Drought of 2013-2014: Character, Context, and the Role of Climate Change,” *Fourth Workshop on understanding Climate Change from Data*, National Center for Atmospheric Research, Boulder, CO Jun. 2014
- “Evaluation of high-resolution simulations of Northeast Pacific atmospheric rivers,” *American Geophysical Union Fall Meeting*, San Francisco, CA Dec. 2013
- “Mid-Latitude Precipitation Extremes: Latitudinal Linkages and Climate Change,” *Swiss National Center for Competence in Research (NCCR Climate)*, Grindelwald, Switzerland Sep. 2013
- “High-resolution seasonal simulations of Northeast Pacific atmospheric rivers and comparison to in-situ observations,” *American Geophysical Union Fall Meeting*, San Francisco, CA Dec. 2012

## Professional affiliations and other service activities

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- Journal Manuscript Referee (*Nature*, *Nature Climate Change*, *Proceedings of the National Academy Of Sciences*, *Climatic Change*, *Geophysical Research Letters*, *Journal of Climate*, *Bulletin of the American Meteorological Society*, *Science Advances*, *Scientific Reports*, *Advances in Water Resources*, *Journal of Geophysical Research: Atmospheres*, *Environmental Research Letters*, *International Journal of Climatology*) 2013-present
- Associate Editor, *Frontiers in Climate*, Climate, Ecology, and People section 2021-2022
- Ad Hoc Reviewer, NSF Paleo Perspectives on Climate Change (P2C2) Program 2021
- Ad Hoc Reviewer, NSF Industry-University Research Partnerships 2021
- AGU Outstanding Student Presentation Award Judge, AGU Fall Meeting 2019
- Expert Reviewer, United Nations International Strategy for Disaster Reduction (UNISDR) Global Assessment Report on Disaster Risk Reduction (GAR) 2019 2019

Expert Reviewer, California's Fourth Climate Change Assessment	2018
President, American Meteorological Society Student Chapter, UC Davis	2009-2011
AGU Fall Meeting session co-convener: "Bridging the Gap from Climate to Extreme Weather: Observations, Theory and Modeling" (2019), "Tropical Cyclones in the Global Climate System" (2010)	2019, 2010
Member, American Association for the Advancement of Science (AAAS)	2017-present
Member, American Geophysical Union (AGU)	2010-present
Member, American Meteorological Society (AMS)	2007-present