

Christopher W. Callahan

Department of Earth System Science
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RESEARCH INTERESTS

Socioeconomic impacts of climate change | extreme climate events | climate econometrics | detection and attribution | loss and damage

ACADEMIC APPOINTMENTS

Stanford University	Stanford, CA
Postdoctoral Scholar	2023 – Present
Department of Earth System Science	
Doerr School of Sustainability	

EDUCATION

Dartmouth College	Hanover, NH
Ph.D., Ecology, Evolution, Environment, and Society	2018 – 2023
NSF Graduate Research Fellow	
Northwestern University	Evanston, IL
B.A., Environmental Science, with honors	2014 – 2018

PUBLICATIONS

8. **Callahan, C.W.** & Mankin, J.S. (2023) “Persistent effect of El Niño on global economic growth.” *Science*, 10.1126/science.adf2983
7. **Callahan, C.W.**, Dominy, N.J., DeSilva, J.M., & Mankin, J.S. (2023) “Global warming, home runs, and the future of America’s pastime.” *Bulletin of the American Meteorological Society*, 10.1175/BAMS-D-22-0235.1
6. **Callahan, C.W.** & Mankin, J.S. (2022) “Globally unequal effect of extreme heat on economic growth.” *Science Advances*, 10.1126/sciadv.add3726
5. **Callahan, C.W.** & Mankin, J.S. (2022) “National attribution of historical climate damages.” *Climatic Change*, 10.1007/s10584-022-03387-y
4. **Callahan, C.W.**, Chen, C., Rugenstein, M., Bloch-Johnson, J., Yang, S., & Moyer, E.J. (2021) “Robust decrease in El Niño/Southern Oscillation amplitude under long-term warming.” *Nature Climate Change*, 10.1038/s41558-021-01099-2
3. Erbaugh, J.T., **Callahan, C.W.**, Finger Higgins, R., DeSiervo, M., Bolger, D.T., Cox, M., & Howarth, R.B. (2021) “Sociotechnical stability and equilibrium.” *Current Opinion in Environmental Sustainability*, 10.1016/j.cosust.2021.01.003
2. **Callahan, C.W.** & Mankin, J.S. (2020) “The influence of internal climate variability on projections of synoptically driven Beijing haze.” *Geophysical Research Letters*, 10.1029/2020GL088548

1. **Callahan, C.W.**, Schnell, J.L., & Horton, D.E. (2019) “Multi-index attribution of extreme winter air quality in Beijing, China.” *Journal of Geophysical Research: Atmospheres*, 10.1029/2018JD029738

MANUSCRIPTS IN PROGRESS

5. **Callahan, C.W.** & Mankin, J.S. (Revised and resubmitted) “Carbon majors and the scientific case for climate liability.” *Nature*
4. **Callahan, C.W.** (In review) “Adaptation to climate damages is not inevitable.” *Nature Sustainability*
3. Gould, C.F., Heft-Neal, S., Heaney, A.K., Kiang, M.V., **Callahan, C.W.**, Bendavid, E., Graff Zivin, J., & Burke, M. (In review) “Temperature extremes impact mortality and morbidity differently.” *PNAS* | NBER working paper 32195
2. Kotz, M., **Callahan, C.W.**, Stechemesser, A., & Wenz, L. (Drafting) “The social cost of subnational productivity impacts from temperature and precipitation.”
1. **Callahan, C.W.**, Baldwin, J.W., Jing, R., Burke, M., & Diffenbaugh, N.S. (Drafting) “Indirect economic impacts of tropical cyclone winds exceed direct costs.”

INVITED TALKS

9. Department of Meteorology and Atmospheric Sciences, Penn State University, Feb. 2024
8. Department of Marine and Environmental Sciences, Northeastern University, Feb. 2024
7. O’Neill School of Public and Environmental Affairs, Indiana University, Jan. 2024
6. O’Neill School of Public and Environmental Affairs, Indiana University, Nov. 2023
5. Department of Economics and Geosciences, United States Air Force Academy, Sep. 2023
4. Irving Institute New Energy Series, Dartmouth College, Jan. 2023
3. Doerr School of Sustainability, Stanford University, Jan. 2023
2. Geospatial Day, Dartmouth College, Oct. 2022
1. Potsdam Institute for Climate Impact Research RD4 seminar, Sep. 2022

CONTRIBUTED PRESENTATIONS

13. **Callahan, C.W.**, Baldwin, J.W., Burke, M., & Diffenbaugh, N.S. (2023) “Direct and indirect losses from tropical cyclones in the United States.” AGU Fall Meeting (Oral)
12. **Callahan, C.W.** & Mankin, J.S. (2022) “The social cost of intensified extreme heat.” AGU Fall Meeting (Poster)
11. **Callahan, C.W.** & Mankin, J.S. (2022) “Internal variability shapes climate damage projections.” The Workshop in Environmental Economics and Data Science (Oral)

10. **Callahan, C.W.** & Mankin, J.S. (2021) “Persistent effects of El Niño on economic growth mediated by atmospheric teleconnections.” AGU Fall Meeting (Poster)
9. **Callahan, C.W.** (2021) “Persistent effects of El Niño on economic growth in present and future climates.” Graduate Climate Conference (Oral)
8. **Callahan, C.W.** & Mankin, J.S. (2021) “El Niño variability mediates 21st century growth effects of climate change.” SMILE large ensemble webinar series (Oral)
7. **Callahan, C.W.** & Mankin, J.S. (2021) “El Niño variability mediates 21st century growth effects of climate change.” EGU General Assembly (vPICO)
6. **Callahan, C.W.** & Mankin, J.S. (2020) “National attribution of climate damages under Earth system uncertainty.” AGU Fall Meeting (eLightning)
5. **Callahan, C.W.** & Mankin, J.S. (2020) “On the use of large ensembles for studying climate and air quality.” AMS Annual Meeting (Oral)
4. **Callahan, C.W.** & Mankin, J.S. (2019) “National attribution of climate damages under deep uncertainty.” AGU Fall Meeting (Poster)
3. **Callahan, C.W.** & Mankin, J.S. (2019) “The influence of internal variability on synoptically driven Beijing haze.” US CLIVAR Large Ensembles Workshop (Oral)
2. **Callahan, C.W.** & Mankin, J.S. (2018) “Linkages between synoptic circulation and poor air quality in Beijing.” AGU Fall Meeting (Poster)
1. **Callahan, C.W.**, Diffenbaugh, N.S. & Horton, D.E. (2017) “Multi-index attribution of Beijing’s 2013 Airpocalypse.” AGU Fall Meeting (Poster)

OTHER WRITING

3. Mankin, J.S. & **Callahan, C.W.** “El Niño is back. What does that mean for an already overheated California?” *LA Times*, 25 May 2023
2. **Callahan, C.W.** & Mankin, J.S. “MLB home run counts are rising – and global warming is playing a role.” *The Conversation*, 7 April 2023
1. Mankin, J.S. & **Callahan, C.W.** “The scientific case for climate liability and loss and damage claims.” *Lawfare*, 14 November 2022

FUNDING

NSF Graduate Research Fellowship (\$102,000)	2020 – 2023
Department of Education GAANN Fellowship (\$34,000)	2018 – 2019

HONORS AND AWARDS

Neukom Institute Prize for Outstanding Computational Science Research, 1 st Place	2023
Outstanding Graduate Student Teacher (nominated by undergraduate)	2021
Best Senior Thesis, Northwestern Program in Environmental Sciences	2018
Northwestern Conference Travel Grant	2017
AGU Fall Meeting Student Travel Grant	2017

Updated March 2024

National Champion in Policy Debate, National Speech and Debate Tournament 2014

TEACHING

Teaching Assistant, ENVS 55: Ecological Economics Spring 2022
Dept. of Environmental Studies, Dartmouth College

Teaching Assistant, BIOL 16: Ecology Spring 2020, Fall 2018
Dept. of Biological Sciences, Dartmouth College

Teaching Assistant, ENVS 12: Energy and the Environment Winter 2020
Dept. of Environmental Studies, Dartmouth College

Teaching Assistant, ENVS 15: Environmental Issues of the Earth's Cold Regions Spring 2019
Dept. of Environmental Studies, Dartmouth College

SERVICE

Peer review: *Atmospheric Chemistry and Physics*, *Bulletin of the American Meteorological Society*, *Climatic Change*, *Earth's Future*, *Earth System Dynamics*, *Economics of Disasters and Climate Change*, *Environmental Modelling and Software*, *Environmental Research Letters*, *Scientific Reports*, *The Geographical Bulletin*, *Weather Climate and Society*, *World Development*

Organizing committee, Graduate Organized Laborers of Dartmouth (UE Local 261) 2022 – 2023

Community Working Group member for Dartmouth sustainability master plan 2023

Student representative to EEES Curriculum Committee 2019 – 2020, 2022 – 2023

Mentor to middle and high school science students, Dartmouth ManyMentors 2019 – 2021

PROFESSIONAL DEVELOPMENT

Stanford Doerr School Respectful Communities Workshop 2023

Swiss Climate Summer School (theme: “Extreme weather and climate: from atmospheric processes to impacts on ecosystems and society”), Grindelwald, Switzerland 2022

Time Series Analysis, course in the ICPSR Summer Program in Quantitative Methods of Social Research, virtual 2022

Bayesian Modeling for the Social Sciences, course in the ICPSR Summer Program in Quantitative Methods of Social Research, virtual 2022

Community Terrestrial Systems Model tutorial, hosted by NCAR, Boulder, CO 2019

“Lessons in Professional Conduct at Field Sites,” workshop led by Katie Hinde and Robin Nelson, hosted by Dartmouth College 2018

MISCELLANEOUS

Computing skills: Python/Jupyter, R, Julia, NCL, MATLAB, L^AT_EX, Unix/bash

Media interviews and coverage of research:

New York Times, Washington Post, Guardian, AP, CNN, Reuters, Bloomberg, BBC, NPR, Nature, Axios, Vox, Grist, Carbon Brief, Yale Climate Connections (selected)

Top 20 most-covered climate papers of 2023, according to Altmetric, for “Persistent effect of El Niño on global economic growth”

Assistant Debate Coach

Dartmouth College

2020 – Present

Northwestern University

2018 – 2020

Member, American Geophysical Union

2017 – Present