

# Solomon Hsiang

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## Current Appointment:

- 7/2018- *Chancellor's Professor of Public Policy*  
Principal Investigator, Global Policy Laboratory (<http://globalpolicy.science>)  
**University of California, Berkeley**
- 7/2021- Chapter 19: Economics, Lead Author  
**Fifth National Climate Assessment of the US Global Change Research Program**

## Affiliations:

- 5/2016- *Co-Director*, Climate Impact Lab (<http://impactlab.org>)  
**Consortium: U.C. Berkeley, U. Chicago, Rutgers, Rhodium Group**
- 5/2020- *Andrew Carnegie Fellow*, **Carnegie Corporation of New York**  
12/2018- *Explorer*, **National Geographic Society**  
9/2016- *Research Associate*, **National Bureau of Economic Research**  
12/2018- *Research Affiliate*, **Center for Economic Policy Research**
- 8/2016- *Co-Director*, Climate and Environment Initiative, UC Berkeley Opportunity Lab  
5/2015- *Faculty Affiliate*, Department of Agriculture and Resource Economics  
9/2018- *Faculty Affiliate*, Energy Resource Group  
5/2015- *Faculty Affiliate*, Center for Effective Global Action  
**University of California, Berkeley**

## Previous Appointments / Affiliations:

- 2/2019-6/2019 *Gloria and Richard Kushel Visiting Scholar*  
Center on Food Security and the Environment / Freeman Spogli Institute
- 9/2018-1/2019 *Noosheen Hashemi Visiting Scholar*  
Center on Global Poverty & Development / Stanford Institute for Econ. Policy Research  
**Stanford University**
- 7/2015- 6/2018 *Chancellor's Associate Professor of Public Policy*  
8/2013-6/2015 *Assistant Professor*, Goldman School of Public Policy  
1/2014-6/2014 *Visiting Scholar*, Energy Institute at Haas  
**University of California, Berkeley**
- 8/2011-7/2013 *Post-Doctoral Research Fellow in Science, Technology & Environmental Policy*  
Woodrow Wilson School of Public & International Affairs  
**Princeton University**
- 5/2013-9/2016 *Faculty Research Fellow*  
1-7/2011 *Post-Doctoral Research Fellow in Applied Econometrics*  
**National Bureau of Economic Research**

## Education:

### **Columbia University**

Ph.D. Sustainable Development (2011), *with distinction*

### **Massachusetts Institute of Technology**

B.S. Earth, Atmospheric and Planetary Science (2006), thesis awarded *Goetze Prize*

B.S. Urban Studies and Planning (2006), thesis awarded *Outstanding Thesis Award*

### **Journal Articles & Circulating Working Papers:**

#### **Estimating a Social Cost of Carbon for Global Energy Consumption**

Rode, A, T Carleton, M Delgado, M Greenstone, T Houser, S Hsiang, A Hultgren, A Jina, R Kopp, K McCusker, I Nath, J Rising, J Yuan, *Nature* (2021)

#### **A Generalizable and Accessible Approach to Machine Learning with Global Satellite Imagery**

Rolf, E, J Proctor, T Carleton, I Bolliger, V Shankar, M Ishihara, B Recht, S Hsiang, *Nature Communications* (2021)

#### **Using Satellite Imagery and Deep Learning to Evaluate the Impact of Anti-Poverty Programs**

Huang, LY, S Hsiang, M Gonzalez-Navarro. arXiv preprint arXiv:2104.11772 (2021).

#### **Public mobility data enables covid-19 forecasting and management at local and global scales**

Ilin, C, S Annan-Phan, XH Tai, S Mehra, S Hsiang, J Blumenstock, *Scientific Reports* (2021)

#### **Combined modeling of US fluvial, pluvial, and coastal flood hazard under current and future climates**

Bates, P.D., Quinn, N., Sampson, C., Smith, A., Wing, O., Sosa, J., Savage, J., Olcese, G., Neal, J., Schumann, G. and Giustarini, L., *Water Resources Research* (2021)

#### **The effect of large-scale anti-contagion policies on the COVID-19 pandemic**

Hsiang, S, D Allen, S Annan-Phan, K Bell, I Bolliger, T Chong, H Druckenmiller, L.Y. Huang, A Hultgren, E Krasovich, P Lau, J Lee, E Rolf, J Tseng, T Wu, *Nature* (2020). <https://doi.org/10.1038/s41586-020-2404-8>

#### **Valuing the Global Mortality Consequences of Climate Change Accounting for Adaptation Costs and Benefits**

Carleton, T, A Jina, M Delgado, M Greenstone, T Houser, S Hsiang, A Hultgren, R Kopp, K McCusker, Kelly, I Nath, J Rising, A Rode, HK Seo, J Simcock, A Viaene, J Yuan, Jiacan, A Zhang, *NBER Working Paper 27599* (2020) – revisions requested: *Quarterly Journal of Economics*

#### **The COVID-19 lockdowns: a window into the Earth System**

Diffenbaugh, Field, Appel, Azevedo, Baldocchi, Burke, Burney, Ciais, Davis, Fiore, Fletcher, Hertel, Horton, Hsiang, Jackson, Jin, Levi, Lobell, McKinley, Moore, Montgomery, Nadeau, Pataki, Randerson, Reichstein, Schnell, Seneviratne, Singh, Steiner, Wong-Parodi, *Nature Reviews Earth & Environment* (2020). DOI: 10.1038/s43017-020-0079-1

#### **Reply to: Temporal displacement, adaptation and the effect of climate on suicide rates**

Burke, M, F Gonzalez, P Baylis, S Heft-Neal, C Baysan, S Basu, S Hsiang, *Nature Climate Change* (2020) DOI: 10.1038/s41558-020-0792-2

#### **Destructive Behavior, Judgment, and Economic Decision-making Under Thermal Stress**

Almås, I, M Auffhammer, T Bold, I Bolliger, A Dembo, S Hsiang, S Kitamura, E Miguel, R Pickmans, *NBER Working Paper No. 25785* (2019)

### **The Distribution of Environmental Damages**

Hsiang, S, P Oliva, WR Walker, *Review of Environmental Economics and Policy* (2019)  
DOI: 10.1093/reep/rey024

### **Non-economic factors in violence: Evidence from organized crime, suicides and climate in Mexico**

Baysan, Burke, Gonzalez, Hsiang, Miguel, *Journal of Economic Behavior & Organization* (2019) DOI:  
10.1016/j.jebo.2019.10.021

### **Strengthened scientific support for the Endangerment Finding for atmospheric greenhouse gases**

Duffy, P, C Field, N Diffenbaugh, S Doney, Z Dutton, S Goodman, L Heinzerling, S Hsiang, D Lobell, L Mickle, S Myers, S Natali, C Parmesan, S Tierney, AP Williams, *Science* (2019)  
DOI: 10.1126/science.aat5982

### **Spatial Correlation, Trade, and Inequality: Evidence from the Global Climate**

Dingle, J, K Meng, S Hsiang, *NBER Working Paper No. 25447* (2019)

### **An Economist's Guide to Climate Change Science**

Hsiang, S, R Kopp, *Journal of Economic Perspectives* (2018) DOI: 10.1257/jep.32.4.3

### **Accounting for Unobservable Heterogeneity in Cross Section Using Spatial First Differences**

Druckenmiller, H, S Hsiang *NBER Working Paper No. 25177* (2018)

### **Estimating the global agricultural effects of geoengineering using volcanoes**

Proctor\*, J, S Hsiang\*, J Burney, M Burke, W Schlenker, *Nature* (2018) DOI: 10.1038/s41586-018-0417-3 (\* equal contribution)

### **Warming increases suicide rates in the United States and Mexico**

Burke, M, F Gonzalez, P Baylis, S Heft-Neal, C Baysan, S Basu, S Hsiang, *Nature Climate Change* (2018)  
DOI: 10.1038/s41558-018-0222-x

### **The Marginal Product of Climate**

Deryugina, T, S Hsiang, *NBER Working Paper No. 24072* (2017)

### **Temperature and Human Capital in the Short- and Long-Run**

Graff Zivin, J, S Hsiang, M Neidell, *Journal of the Association of Environmental and Resource Economists* (2017) DOI: dx.doi.org/10.1086/694177

### **Estimating economic damage from climate change in the United States**

Hsiang\*, S, R Kopp\*, A Jina\*, J Rising\*, M Delgado, S Mohan, DJ Rasmussen, R Muir-Wood, P Wilson, M Oppenheimer, K Larsen, T Houser, *Science* (2017) 356(6345):1362-1369 (\* equal contribution)

### **Social and economic impacts of climate**

Carleton\*, T, S Hsiang\*, *Science* (2016) DOI: 10.1126/science.aad9837 (\* equal contribution)

**Does legalization reduce black market activity? Evidence from a global ivory experiment and elephant poaching data**

Hsiang, S, N Sekar, *NBER Working Paper No. 22314* (2016)

**Climate Econometrics**

Hsiang, S, *Annual Review of Resource Economics* (2016) DOI: 10.1146/annurev-resource-100815-095343

**Potentially Extreme Population Displacement and Concentration in the Tropics Under Non-Extreme Warming**

Hsiang, S, AH Sobel, *Scientific Reports* (2016) DOI:10.1038/srep25697

**Conflict in a Changing Climate**

Carleton, T, S Hsiang, M Burke, *European Physical Journal Special Topics* (2016) DOI:10.1140/epjst/e2015-50100-5

**Opportunities for advances in climate change economics**

Burke, M., M. Craxton, C. D. Kolstad, C. Onda, H. Allcott, E. Baker, L. Barrage, R. Carson, K. Gillingham, J. Graf-Zivin, M. Greenstone, S. Hallegatte, W.M. Hanemann, G. Heal, S. Hsiang, B. Jones, D. L. Kelly, R. Kopp, M. Kotchen, R. Mendelsohn, K. Meng, G. Metcalf, J. Moreno-Cruz, R. Pindyck, S. Rose, I. Rudik, J. Stock, R. S. J. Tol, *Science* (2016) 352(6283):292-293

**Global non-linear effect of temperature on economic production**

Burke\*, M., S.M. Hsiang\*, E. Miguel, *Nature* (2015) DOI: 10.1038/nature15725 (\* equal contribution)

**Climate and conflict**

Burke, M., S.M. Hsiang, E. Miguel, *Annual Review of Economics* (2015) DOI:10.1146/annurev-economics-080614-115430

**The causal effect of environmental catastrophe on long-run economic growth: Evidence from 6,700 cyclones**

Hsiang, S.M., A.S. Jina, *NBER working paper No. 20352* (2014) – revisions requested, *J. of Political Economy*

**Does the Environment Still Matter? Daily Temperature and Income in the United States**

Deryugina, T., S.M. Hsiang, *NBER Working Paper No. 20750* (2014)

**Nonlinear permanent migration response to climatic variations but minimal response to disasters**

Bohra-Mishra, P., M. Oppenheimer, S.M. Hsiang, *Proceedings of the National Academy of Sciences* (2014)

**Reconciling disagreement over climate–conflict results in Africa**

Hsiang, S.M., K.C. Meng, *Proceedings of the National Academy of Sciences* (2014)

**Reconciling climate-conflict meta-analyses: Reply to Buhaug et al.**

Hsiang, S.M., M. Burke, E. Miguel, *Climatic Change* (2014) DOI: 10.1007/s10584-014-1276-z

**Quantifying the Influence of Climate on Human Conflict**

Hsiang\*, S.M., M. Burke\*, E. Miguel, *Science*, **341** (2013) 1235367 (\* equal contribution)

### **Climate, Conflict and Social Stability: What does the evidence say?**

Hsiang, S.M., M. Burke, *Climatic Change*, (2013) DOI 10.1007/s10584-013-0868-3

### **Using Weather Data and Climate Model Output in Economic Analyses of Climate Change**

Auffhammer, M., S.M.Hsiang, W. Schlenker, A.H. Sobel. *Review of Environmental Economics and Policy*, **7** (2013) 181–198

### **Destruction, Disinvestment, and Death: Economic and Human Losses Following Environmental Disaster**

Anttila-Hughes, J., S.M. Hsiang. *Mimeo* (2012)

### **Adaptation to Cyclone Risk: Evidence from the Global Cross-Section**

Hsiang, S.M., D. Narita. *Climate Change Economics: Special Issue on Adaptation*, **3** (2012)

### **Civil conflicts are associated with the global climate**

Hsiang, S.M., K.C. Meng, M.A. Cane. *Nature*, **476** (2011) 438-441

### **Temperatures and cyclones strongly associated with economic production in the Caribbean and Central America**

Hsiang, S.M. *Proceedings of the National Academy of Sciences*, **107** (2010) 15367-15372

### **Books:**

#### **Economic Risks of Climate Change: An American Prospectus**

Houser, T., S.M. Hsiang, R. Kopp, K. Larson, M. Delgado, A.S. Jina, M. Mastreandrea, S. Mohan, R. Muir-Woods, D.J. Rasmussen, J. Rising, P. Wilson, *Columbia University Press* (2015)

### **Reviewed Conference Papers:**

#### **Ground Control to Major Tom: the importance of field surveys in remotely sensed data analysis**

Bolliger, I., T Carlton, S Hsiang, J Kadish, J Proctor, E Rolf, B Recht, V Shankar, (2017) *Bloomberg Data for Good*, New York

#### **Tropical Economics**

Hsiang, S.M., K.C. Meng, *American Economic Review* (2015) Papers & Proceedings, 105(5): 257–261

#### **Geography, Depreciation, and Growth**

Hsiang, S.M., A.S. Jina, *American Economic Review* (2015) Papers & Proceedings, 105(5): 252-256

#### **Empirically calibrating damage functions and considering stochasticity when integrated assessment models are used as decision tools**

Kopp, R.E., S.M. Hsiang, M. Oppenheimer (2013) International Conference on Climate Change Effects, Potsdam.

### **Reviewed Reports & Book Chapters:**

#### **Tropical Cyclones: From the Influence of Climate to their Socio-Economic Impacts**

Camargo, S., S.M. Hsiang, in "Extreme Events: Observations, Modeling, and Economics", Eds. Chavez, M., M. Ghil, J.U. Fucugauchi, Wiley (2015) DOI 10.1002/9781119157052.ch18.

## **Chapter 18: Detection and Attribution of Observed Impacts**

Cramer, W, GW Yohe, et al. (2014). In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability*. Ed. by V Barros, C Field, et al. Cambridge, UK: Cambridge University Press.

## **Chapter 19: Emergent Risks and Key Vulnerabilities**

Oppenheimer, M, M Campos, R Warren, et al. (2014). In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability*. Ed. by V Barros, C Field, et al. Cambridge, UK: Cambridge University Press.

## **Comments & Short Mimeos:**

### **Climate and conflict: no stigma (Correspondence)**

Hsiang, S, M Burke, *Nature* (2018) DOI: 10.1038/d41586-018-03798-x

### **Ivory crisis: Growing no-trade consensus (Letter)**

Sekar, N, W Clark, A Dobson, P Coelho, P Hannam, R Hepworth, S Hsiang, P Kahumbu, P Lee, K Lindsay, C Lopes Pereira, S Wasser, K Nowak, *Science* (2018) DOI: 10.1126/science.aat1105

### **Analysis of Statistical Power Reconciles Climate-Conflict Results in Africa**

Hsiang, S.M., M. Burke, E. Miguel, M. Cane, K. Meng, *CEGA working paper* (2015)

### **Temperature and Violence (Correspondence)**

Cane, M.A., E. Miguel, M. Burke, S.M. Hsiang, D.B. Lobell, K.C. Meng, S. Satyanath, *Nature Climate Change* (2014) **4**, 234–235

### **Reconciling temperature-conflict results in Kenya**

Hsiang, S.M., M. Burke, E. Miguel, *CEGA working paper* (2013)

### **Visually-Weighted Regression**

Hsiang, S.M (2012)

## **Written Testimony:**

### **The Costs of Climate Change: Risks to the U.S. Economy and the Federal Budget**

*United States House Committee on the Budget*, June 10, 2019

### **Evidence Should Be Used in Global Management Of Endangered Species: A Reply To The Cites Technical Advisory Group**

*Convention On International Trade in Endangered Species of Wild Fauna and Flora; Seventeenth meeting of the Conference of the Parties*, Johannesburg, South Africa, 24 September-5 October 2016 (with N. Sekar)

## **Awards & Fellowships:**

2020	President's Medal, Geological Society of America
2020	Andrew Carnegie Fellow, Carnegie Corporation of New York
2019	AI for the Earth Innovation Grant Fellow, Microsoft Corporation & National Geographic Society
2019	Kushel Visiting Scholar, Center on Food Security and the Environment, Stanford University
2018	Hashemi Visiting Scholar, Center on Global Poverty & Development, Stanford University
2016	Kavli Fellow, National Academy of Sciences
2014	30 Under 30, Forbes
2013	Science for Solutions Award, American Geophysical Union
2009	Columbia University President and Provost Award
2008	Science to Achieve Results Fellow, Environmental Protection Agency

2007 Integrative Graduate Educ. & Research Traineeship Fellow, National Science Foundation  
 2006 Goetze Prize for Thesis in Earth, Department of Atmospheric and Planetary Sciences, MIT  
 2006 Outstanding Thesis Award, Department of Urban Studies and Planning, MIT

### **Grants:**

2020 “A New Approach to Measuring the Wealth of Nations” Riksbankens Jubileumsfond (\$6M w. A. Madestam, A. Tompsett)  
 2021 “Innovative Measurement Tools for Resource-Poor Settings” USAID (\$500K w. T. Carleton)  
 2021-22 “Equity in Environmental and Energy Economics” (\$300k w. M. Fowlie & R. Walker)  
 2018-19 “The Social cost of carbon” Alfred P. Sloan Foundation (\$600k w. M. Greenstone, B. Kopp, A. Jina)  
 2016 “Labor Productivity in a Warmer World” Inst. for Research on Labor and Employment (\$12,436)  
 2016-19 “Quantitative Sustainable Development” (\$1.5M)  
 2016 “Optimal Use of Spatial Information in Crowd-Sourced Meta-Analysis of Understudied Populations” CEQA-BITSS-SSMART (\$30,000 w. James Rising)  
 2015-17 “Food Security and Social Stability in Africa” International Growth Center (£99,091. w. M. Greenstone, A. Jina, A. Rode)  
 2015-16 “Developing Tools for the Security, Conflict Prevention and Humanitarian Assistance Communities” Skoll Global Threats Fund (\$200,000. w. T. Houser)  
 2015 “Coordinating Leisure” Institute for Research on Labor and Employment (\$15,141)  
 2015-16 Weiss Family Program Fund for Research in Development Economics (\$25,507. w. J. Magruder)  
 2015-20 “Environment and Society: Data Science for the 21st century” NSF Research Traineeship program (\$2,790,000. Co-Investigator)  
 2015 “Deploying Interdisciplinary Data Science to Understand the Global Impact of Climate Change” Social Science Matrix Prospecting Seminar  
 2015 “Climate and global poverty” (\$50,000. Co-investigator with M. Burke)  
 2013-14 “Econometric assessment of climate change impacts in the USA” (\$143,908)  
 2013-14 “Quantifying agricultural adaptation to climate change” (\$25,500. w. E. Miguel & M. Burke)  
 2011 Center for International Business Education & Research Grant (with Jina, A. & von der Goltz, J.)  
 2010 Center for International Business Education & Research Grant (with Anttila-Hughes J. & Narita, D.)

### **Selected Opinion & Popular Writing:**

#### **Don’t Let Puerto Rico Fall Into an Economic Abyss**

with Trevor Houser, *New York Times*, 9/29/2017

#### **Would a legal ivory trade save elephants or speed up the massacre?**

with Nitin Sekar, *The Guardian*, 10/1/2016

#### **Climate change is indeed a cause of social conflict**

with Marshall Burke, *Los Angeles Times*, 12/17/2015

#### **Costs and Benefits, Yes, but Whose Numbers?**

with Marshall Burke, *The Wall Street Journal*, 11/22/2015

#### **El Nino: a global weather event that may save California – and destroy the tropics**

with Kyle Meng, *The Guardian*, 9/21/2015

#### **Facing the storm after the storm in Vanuatu**

with Amir Jina, *Reuters*, 3/19/2015

#### **Weather and Violence**

with Marshall Burke and Edward Miguel, *New York Times*, 8/30/2013

## **Teaching:**

### **Global Challenges** (Undergraduate & MPP)

Semesters of instruction: F19

### **Good Data: Machine Learning & Causal Inference Working Group** (PhD)

*Co-organized with Josh Blumenstock, Moritz Hardt, Ben Recht*

Semesters: F18, S19, F19

### **Spatial Data and Analysis** (MPP & PhD)

Semesters of instruction: F13, F14, F15, F16, F17, F19

### **Foundations of Sustainable Development** (MPP)

Semesters of instruction: F14, F15, F16

### **Interdisciplinary Research Methods: Environment, Society, & Global Change** (PhD)

*Co-taught with Laurel Larsen, David Ackerly, Maximillian Auffhammer*

Semesters of instruction: F16, F17, F19

### **Data-Science for the 21<sup>st</sup> Century and Global Change Colloquium** (PhD)

Semesters of instruction: F17

### **Climate Economics Seminar** (PhD)

*Co-organized with David Anthoff, Maximillian Auffhammer*

Semesters: F16, S16, F16, S17, F17, S18, F19

### **Workshop in Climate Econometrics** (PhD)

Instruction: Summer 2015

## **Doctoral and Post-Doctoral Advising (placement), most recent first :**

Peiley Lau	(Environmental Protection Agency National Center for Environmental Econ)
Gabe Englander	(UC Santa Barbara postdoc / World Bank Development Research Group)
Hannah Druckenmiller	(Resources for the Future)
Luna Huang	(Waymo, Alphabet)
Andrew Hultgren	(U. Chicago, Economics postdoc)
Ian Bolliger	(Rhodium Group)
Jonathan Proctor	(Harvard U. Center for the Env. postdoc & Harvard Data Science Fellow postdoc)
Tamma Carleton	(U. Chicago, Economics postdoc / UC Santa Barbara, Bren School faculty)
Jonathan Kadish	(Elastic Data Lab / UC Berkeley postdoc)
Kendon Bell	(Landcare Research / Rutherford Foundation postdoc)
Felipe González	(Pontificia Universidad Católica de Chile, Economics faculty)
James Rising	(London School of Economics, Grantham faculty)
Patrick Baylis	(Stanford, FSE postdoc / U. British Columbia, Economics faculty)
Francis Moore	(UC Davis, Environmental Science and Policy faculty)
Amir Jina	(U. Chicago, Economics postdoc / U. Chicago, Public Policy faculty)
Sam Heft-Neal	(Stanford, FSE postdoc)

## **Current Doctoral Students (primary advisor)**

Esther Rolf	(yr 6)
Sebastien Annan Phan	(yr 5)



Jaechol Lee	(yr 5)
Miyabi Ishihara	(yr 5)
Nicholas Depsky	(yr 4)
Hikari Murayama	(yr 3)
Simon Greenhill	(yr 2)

### **Academic Service:**

University of California Environmental Economics Working Group Co-Founder & Co-Chair (2019-2020)  
 Social Science Research Council, Working Group on Climate Change (2019)  
 CITRIS Faculty advisory Committee (2019-)  
 The California-China Climate Policy Institute at the UC Academic Advisory Committee (2019-)  
 Environmental Resilience Accelerator Steering Committee (2018-)  
 Work Group for Berkeley Roadmap on Environment, Climate, and Energy Efficiency Research (2017)  
 Goldman School of Public Policy Faculty Search Co-Chair (2019)  
 Goldman School of Public Policy Admissions Committee (2017)  
 Goldman School of Public Policy Faculty Search Committee (2014-15, 2017-18)  
 UCSF Climate Change and Global Health Steering Committee (2016)  
 Data Science Planning Initiative Faculty Advisory Panel (2016)  
 Data Science for the Twenty-First Century Faculty Steering Committee (2015-19)  
 Berkeley Research Computing Advisory Group (2016-)  
 NSF Dynamics of Coupled Natural and Human Systems (CNH) advisory panel (2015)  
 American Geophysical Union Science for Solutions Award Committee (2015-16)

Blog Contributor: [www.fight-entropy.com](http://www.fight-entropy.com), [www.G-FEED.com](http://www.G-FEED.com)

Conference Sessions Organized:

*Climate Change Economics Symposium* (2018, 2020)  
*Sustainable Development Research Symposium* (2016)  
*American Economic Association* (2015, 2016, 2017)  
*American Geophysical Union* (2011, 2012, 2014)  
*Association of Environmental & Resource Economists* (2012)  
*Ph.D. Workshop on International Climate Policy* (2009)

### **Invited Presentations:**

**2020 –**

United Nations Environment Program / Development Program  
 Paris School of Economics (Regulation & Environment Seminar)  
 New Zealand-wide Economics Seminar  
 UC Berkeley (Benjamin Wheeler Society Lecture)  
 Berkeley Atmospheric Sciences Center Symposium (keynote)  
 Health and Pandemics Economics Working Group  
 Planet Labs (colloquium)  
 UCLA (Climate Adaptation Research Symposium)  
 CITRIS (Research Exchange)  
 Federal Reserve Bank of Richmond  
 Security and Sustainability Forum / Planetary Health Alliance  
 Symposium on Hurricane Risk (*canceled*)

**2019 –**

October, 2021

9/13

International Monetary Fund  
 United Nations Secretariat (Sustainable Development Outlook 2019 EGM)  
 Federal Reserve Bank of San Francisco  
 US House of Representatives (Budget Committee)  
 Household in Conflict Network (Keynote)  
 National Chengchi University, Taipei (Keynote)  
 Princeton University (Princeton Environmental Institute)  
 Stanford University (Center on Global Poverty & Development / Food Security & Environment Institute)  
 Columbia University (Center for Env Econ & Policy)  
 London School of Economics (Grantham)  
 American Geophysical Union (Centennial Plenary)  
 National Bureau of Economic Research (EEE Summer Institute)  
 Université libre de Bruxelles (ECARES Seminar)  
 University of British Columbia (Food and Resource Economics)  
 University of Oregon (Workshop in Environmental Econ & Data Science)  
 UC San Diego (Global Policy Seminar)  
 UC Berkeley (CDAR Plenary)  
 Stanford University (Planetary Health Series, *canceled*)  
 Association of Environment and Resource Economists (Summer Conference)

#### 2018 –

Aspen Institute (Program on the World Economy, Keynote)  
 University of Pennsylvania (Wharton Risk-Regulation Seminar)  
 Stanford University (Environmental & Energy Policy Analysis Center)  
 UC Berkeley (150 Academic Forum in Shanghai)  
 UC Santa Barbara (Demography Seminar)  
 U Southern California (INET Seminar)  
 National Bureau of Economic Research (EEE Summer Institute)  
 Brown University (Macroeconomics Seminar)  
 National Academy of Sciences (Sackler Colloquium)  
 Columbia University (Sustainable Development Seminar)  
 Columbia University (Initiative on Extreme Weather and Climate, Keynote)  
 Harvard University (Solar Engineering Seminar)  
 Stanford University (Environmental Economics Forum)  
 Johns-Hopkins University (SAIS Seminar)

#### 2017 –

Stockholm University (Economics Departmental Seminar)  
 Toulouse School of Economics (Environmental Economics Seminar)  
 Bocconi University-FEEM (Environmental Economics Seminar)  
 World Conference of Science Journalists (Keynote)  
 UC Berkeley (Environment and Energy Economics Seminar)  
 Government Accountability Office  
 Stanford (SEEPAC Research Workshop)  
 UC Santa Barbara (Climate Change and Macro-Economics)  
 Cornell (Environment Economics Seminar)  
 National Bureau of Economic Research (EEE Summer Institute)  
 National Bureau of Economic Research (EEE Spring Meeting)  
 American Economics Association

#### 2016 –

National Academy of Sciences (Kavli Frontiers of Science)

MIT (EmTech)  
 MIT (Earth, Atmospheric and Planetary Science Departmental Seminar)  
 MIT (Urban Studies and Planning Environmental Policy Lunch)  
 Harvard University (Environmental Economics Seminar)  
 Yale University (Environmental Economics/Forestry Seminar)  
 Columbia University (SusDeveR)  
 International Agricultural Trade Research Consortium  
 National Bureau of Economic Research (EFJK Growth Group Winter Meeting)  
 National Bureau of Economic Research (EEE Spring Meeting)  
 Effective Altruism Global  
 Blackrock (Scientific Active Equity)  
 Sandia National Labs  
 Duke University/NC State (Triangle Resource & Environmental Economics Seminar)  
 Arizona State University (Tipping Points Forum)  
 MIT (TIM Talks)  
 The White House  
 UC Berkeley (Public Policy Seminar)  
 UC Berkeley (Energy Camp)  
 UC Berkeley (Demography)  
 UC Berkeley (Institute for Research on Labor and Employment)  
 American Economic Association

**2015 –**

UC Davis (Environmental Economics Seminar)  
 National Academy of Sciences  
 US State Department  
 British Consulate-General, San Francisco  
 American Geophysical Union  
 UC Santa Barbara (Occasional Workshop)  
 Haas School of Business, UC Berkeley (Real Estate)  
 PERC (Market Adaptation to Climate Change)  
 International Food Policy Research Institute (Applied Microeconomics and Development)  
 California Energy Commission (IEPR workshop)  
 National Bureau of Economic Research (Environmental Econ & Energy Summer Institute)  
 National Bureau of Economic Research (Income Distribution & Macro Summer Institute)  
 Stanford University (Stanford Energy and Environmental Economics Policy Analysis Center)  
 Stanford University (Environmental Economics Seminar)  
 Oxford University (OxCarre Centre for the Analysis of Resource Rich Economies)  
 London School of Economics (Climate Change and Environment)  
 University of Chicago (Public Policy)  
 University of Maryland (Economics Seminar)  
 Princeton University (Development / Center for Health and Well-Being)  
 Princeton University (Science, Technology & Environmental Policy)  
 Rutgers University (Earth and Planetary Science)  
 Oklahoma University (Geography and Environmental Sustainability)  
 Strata + Hadoop World (Keynote)  
 UC Berkeley (Agricultural and Resource Economics/Energy Institute Seminar)  
 American Economic Association

**2014 –**

Discrete Mathematics & Theoretical Computer Science (Workshop on Global Change)  
 National Bureau of Economic Research Winter Meeting (Environmental Econ & Energy)

MIT (CEEPR)  
 Stanford University (Climate Risk Forum)  
 Stanford University (The Hamilton Project)  
 Lawrence Berkeley National Laboratory (Climate Sciences Seminar)  
 Bloomberg Philanthropies  
 Resources for the Future  
 California Governor's Office  
 The White House  
 Columbia University (Sustainable Development Seminar)  
 Columbia University (Sustainable Development 10 Year Anniversary Speaker)  
 Boston University (Program in Mathematics for Young Scientists, Alumni Reunion Keynote)  
 Risk Management Solutions (Annual Meeting, Keynote Speaker)  
 University of Chicago (Energy Policy Institute at Chicago)  
 American Geophysical Union (Fall Meeting)  
 Potsdam Institute for Climate Impact Research  
 USGS (Western Region Colloquium)  
 UC Berkeley (Geography)  
 UC Berkeley (CEGA)  
 UC Berkeley (Energy Institute at Haas Seminar)  
 UC Berkeley (Environmental Resource Group Seminar)  
 UC Berkeley (Institute for the Study of Societal Issues)  
 UC Berkeley (Summer Seminar in Applied Microeconomics)  
 UC Berkeley (Agricultural and Resource Economics Seminar)  
 UC Berkeley (Berkeley Institute for Transparency in Social Sciences)  
 UC Berkeley (UCE3)

## 2013 –

American Geophysical Union (Fall Meeting Awards Session)  
 Cornell University (Northeast Workshop on Energy Policy and Environmental Economics)  
 Columbia University (Earth Summit)  
 Columbia University (Abrupt Climate Change Studies Symposium)  
 Department of Energy (Energy Frontier Research Center for gas separations relevant to clean air tech.)  
 Geophysical Fluid Dynamics Laboratory (Lunch Seminar)  
 Harvard University (Humanitarian Action Summit)  
 IBM Research (Mathematics of a Smarter Planet Seminar)  
 IZA (Labor Market Effects of Environmental Policies Workshop)  
 Lamont-Doherty Earth Observatory (World-Wide Human Geography Data Working Group)  
 Princeton University (Science, Technology and Environmental Policy Seminar)  
 Carnegie Institute/Stanford University (Department of Global Ecology Seminar)  
 Syracuse University (Public Affairs Seminar)  
 UC Berkeley (Philomathia Forum: Food, Population, Security)  
 UC Berkeley (Center for Environmental Public Policy)  
 UC Berkeley (Development Economics Seminar)  
 UC Berkeley (Berkeley Institute for Data Science)  
 UC Berkeley (Berkeley Atmospheric Sciences Center)  
 UC San Diego (Economic Development Seminar)  
 UC San Diego (Symposia on Water Issues in Climate Change)  
 University of Lausanne (DEEP Advanced Seminar in Economics)  
 University of Zurich (Macro-Finance-Labor Seminar)  
 Williams College (Urbanization and Economic Development Conference)  
 World Bank (Green Growth symposium)

## 2012 –

American Economics Association  
 American Association of Geographers  
 American Geophysical Union (Fall Meeting)  
 British Council in Paris (Climate and Security)  
 Cercle National des Armées (Climate and Security)  
 Columbia University (Applied Microeconomics Seminar)  
 Columbia University (SIPA Alumni Weekend)  
 Columbia University (IPWSD “Frontiers of Sustainable Development”)  
 Environmental Defense Fund (Applied Environmental Economics Seminar)  
 Environmental Protection Agency (Climate Economics Seminar)  
 Harvard (Environmental Economics Seminar)  
 MIT (Terrascope Alumni Dinner Keynote)  
 National Bureau of Economic Research (Health Care / Environmental Econ & Energy joint meeting)  
 Princeton (Science, Technology and Environmental Policy)  
 UC Berkeley (Public Policy Seminar)  
 UC Berkeley (Energy Institute Seminar)  
 UC Santa Barbara (Occasional California Workshop on Environmental and Resource Economics)  
 University of San Francisco (Economics Seminar)

## 2011 –

American Geophysical Union (Fall Meeting)  
 Columbia University (Applied Physics & Applied Math Seminar)  
 Columbia University (Sustainable Development Seminar)  
 Columbia University (Applied Microeconomics Seminar)  
 Environmental Defense Fund (Applied Environmental Economics Seminar)  
 Mailman School of Public Health (Climate and Health Seminar)  
 MIT (Sloan Applied Economics Seminar)  
 Property & Environment Research Center  
 Stanford University (Environmental Earth System Science Seminar)  
 Woodrow Wilson Center  
 UC Santa Barbara (Environmental Management Seminar)

## **Referee Service:**

*American Economic Journal: Applied*  
*American Economic Journal: Macro*  
*American Economic Review*  
*American Economic Review: Insights*  
*American Political Science Review*  
*American Journal of Agricultural Economics*  
*American Journal of Political Science*  
*California Energy Commission*  
*Climatic Change*  
*Climate Change Economics*  
*Columbia University Press*  
*Ecological Economics*  
*Econometrica*  
*Emerging Infectious Diseases*  
*Energy Economics*  
*Environment and Development Economics*  
*Environmental Research Letters*  
*European Physics Journal Special Topics*  
*Global Environmental Change*

*Global Environmental Politics*  
*Journal of Development Economics*  
*Journal of Economic Literature*  
*Journal of Economic Studies*  
*Journal of Econometrics*  
*J. of Environmental Economics & Management*  
*J. of the Assoc. of Envir. & Resource Economists*  
*Journal of the European Economics Association*  
*Journal of Peace Research*  
*Journal of Political Economy*  
*National Science Foundation*  
*Nature*  
*Nature Climate Change*  
*Nature Communications*  
*PLOS One*  
*Proceedings of the National Academy of Science*  
*Quarterly Journal of Economics*  
*Review of Economics and Statistics*  
*Review of Economic Studies*

*Science*  
*Science Advances*

*The Economic Journal*  
*Weather, Climate and Society*