

# FRANCES CLAIRE MOORE

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## RESEARCH INTERESTS

Social and economic impacts of climate change; agriculture and food-security; climate change policy and adaptation; environmental economics; econometrics; inference and decision-making under uncertainty; risk management; integrated assessment modeling; detection and attribution of climate change impacts.

## EDUCATION

**Ph.D.** Emmett Interdisciplinary Program in Environment and Resources, Stanford University, 2015

Dissertation: *Empirical Constraints on the Rate and Effectiveness of Private Adaptation to Climate Change in Agriculture*

**M.A.** Economics, Stanford University, 2015

**M.E.Sc.** Global Change Science and Policy, Yale School of Forestry and Environmental Studies, 2010

**B.A.** Earth and Planetary Sciences, *summa cum laude*, Harvard University, 2006

## ACADEMIC POSITIONS

July 2016 - Current      Assistant Professor, Department of Environmental Science and Policy, University of California Davis

2015 – June 2016      Ciriacy-Wantrup Postdoctoral Fellow, Department of Agricultural and Resource Economics, University of California Berkeley

## HONORS AND AWARDS

Stanford Interdisciplinary Graduate Fellow, 2012-2015

National Science Foundation Graduate Research Fellow, 2009-2012

Switzer Foundation Fellow, 2009

Undergraduate: Phi Beta Kappa, John Harvard Scholar, Harvard College Scholar, Detur Book Prize, National Merit Scholar, Fisher Prize for Excellence in Geographic Information Science

## PUBLICATIONS AND PRESENTATIONS

### Working Papers

Frances C. Moore, Uris Baldos, Thomas Hertel, and Delavane B. Diaz, 2016, "Welfare Effects of Climate Change Impacts on Agriculture: Evidence from Over 1,000 Yield Studies"

### Peer-Reviewed Journal Publications

Frances C. Moore, in review, "Learning and Risk Exposure in a Changing Climate".

Frances C. Moore and David B. Lobell, 2015, "The Fingerprint of Climate Trends on European Crop Yields", *Proceedings of the National Academy of Sciences*, doi: 10.1073/pnas.1409606112

Frances C. Moore and Delavane B. Diaz, 2015, "Temperature Impacts on Economic Growth Warrant Stringent Mitigation Policy", *Nature Climate Change*, **5**, 127-131.

Frances C. Moore and David B. Lobell, 2014, “The Adaptation Potential of European Agriculture in Response to Climate Change”, *Nature Climate Change*, **4**, 610-614.

Frances C. Moore, 2012, “Negotiating Adaptation: Norm Selection and Hybridization in International Climate Negotiations,” *Global Environmental Politics*, **12**, vol.4.

Frances C. Moore, 2012. “Costing Adaptation: Revealing Tensions in the Normative Basis of Adaptation Policy in Adaptation Cost Estimates”, *Journal of Science, Technology and Human Values*, **37**, vol. 2, 171-198.

Frances C. Moore, 2011. “Toppling the Tripod: Sustainable Development, Constructive Ambiguity and the Environmental Challenge”, *Consilience: The Journal of Sustainable Development*, **5**, vol. 1, 141-150.

Frances C. Moore, 2010. “Doing Adaptation: The Construction of Adaptive Capacity and its Function in the International Climate Negotiations,” *St Antony’s International Review*, **6** vol. 2, 66-88.

Frances C. Moore, 2009. “Climate Change and Air Pollution: Exploring the Synergies and Potential for Mitigation in Developing Countries,” *Sustainability*, **1**, 43-54.

Frances C. Moore and Michael C. MacCracken, 2009. “Lifetime-Leveraging: An Approach to Achieving International Agreement and Effective Climate Protection Using Mitigation of Short-Lived Greenhouse Gases,” *International Journal of Climate Change Strategies and Management*, **1**, 42-62.

### **Books and Book Chapters**

Frances C. Moore, Justin Mankin, and Austin Becker, 2015, “Challenges in Integrating the Climate and Social Sciences for Studies of Climate Change Impacts and Adaptation,” in *Climate Cultures: Anthropological Perspectives on Climate Change*, Jessica Barnes and Michael Dove, eds., Yale University Press, New Haven, CT, pp. 169-195.

Frances C. Moore and Michael C. MacCracken, 2011. “Short-Lived Greenhouse Gases and Climate Fairness”, in *China’s Responsibility for Climate Change: Ethics, Fairness and Environmental Policy*, Paul G. Harris, ed., Bristol, UK: The Policy Press, pp 145-170.

Michael C. MacCracken, Frances Moore, and John C. Topping, Jr., eds., *Sudden and Disruptive Climate Change: Estimating the Real Risks and How We Can Avoid Them*, London: Earthscan Publications, 2008.

### **Conference and Workshop Presentations**

Frances C. Moore, Uris Baldos, Thomas Hertel and Delavane Diaz, 2016. “Welfare Effects of Climate Change Impacts on Agriculture: Evidence from Over 1,000 Yield Studies”, *19<sup>th</sup> Annual Conference on Global Economic Analysis*, Washington, DC, June 15<sup>th</sup> -17<sup>th</sup>

Frances C. Moore, Uris Baldos, Thomas Hertel and Delavane Diaz, 2016. “Welfare Effects of Climate Change Impacts on Agriculture: Evidence from Over 1,000 Yield Studies”, *AERE Summer Conference*, Breckenridge, CO, June 9<sup>th</sup>-11<sup>th</sup>.

Frances C. Moore, Uris Baldos and Thomas Hertel, 2016. “Economic Impacts of Climate Change on Agriculture: Comparing Process-Based and Empirical Yield Models”, *Comparing Methods and Improving the Empirical Foundations of Agriculture Impacts*, Seville, Spain, 6<sup>th</sup>-7<sup>th</sup> June.

Frances C. Moore, 2015. Invited. “Adjustment Costs, Learning, and Extremes in a Changing Climate,” oral presentation at *American Geophysical Union Fall Meeting*, San Francisco, CA. December 14<sup>th</sup>-18<sup>th</sup>.

Frances C. Moore and Marshall Burke, 2015. “Estimating the Importance of Private Adaptation to Climate Change in Agriculture: A Review of Empirical Methods”, poster presentation at *American Geophysical Union Fall Meeting*, San Francisco, CA. December 14<sup>th</sup>-18<sup>th</sup>.

Frances C. Moore and Delavane B. Diaz, 2014. Invited. “Stringent Mitigation Policy Implied by Temperature Impacts on Economic Growth,” oral presentation at *American Geophysical Union Fall Meeting*, San Francisco, CA. December 15<sup>th</sup> – 19<sup>th</sup>.

Frances C. Moore and David B. Lobell, 2014. “The Fingerprint of Climate Change on European Crop Yields,” poster presentation at *American Geophysical Union Fall Meeting*, San Francisco, CA. December 15<sup>th</sup> – 19<sup>th</sup>.

Frances C. Moore and David B. Lobell, 2013. “Empirically Estimating the Potential for Farm-Level Adaptation to Climate Change in Western European Agriculture,” oral presentation at *American Geophysical Union Fall Meeting*, San Francisco, CA. December 9<sup>th</sup>-13<sup>th</sup>.

Frances C. Moore and David B. Lobell, 2012. “A Ricardian Hindcast: Constraining the Rate of Autonomous Adaptation in Agriculture from Observations of European Land Values,” poster presentation at *Adaptation Futures 2012: International Conference on Climate Adaptation*, University of Arizona, Tuscon, AZ. May 29<sup>th</sup> – 31<sup>st</sup>.

Frances C. Moore, 2011. “Investigating the Effect of Agent Rationality Assumptions on Models of Agricultural Adaptation,” poster presentation at *American Meteorological Society Conference on Climate Adaptation and 19<sup>th</sup> Conference on Applied Climatology*, Asheville, NC. July 18<sup>th</sup>-20<sup>th</sup>.

Frances C. Moore, 2011. “Defining Adaptation: Creating Knowledge in a New Area of Climate Change Policy,” oral presentation at *American Meteorological Society Sixth Symposium on Policy and Socio-Economic Research*, Seattle, WA. January 27<sup>th</sup>. Student presenter award.

Frances C. Moore, 2010. “Negotiating Adaptation: Competing Equity and Development Discourses in the International Adaptation Negotiations,” oral presentation at *Integrating Climate Change and Development Ethics*, Pennsylvania State University, PA. April 14-16<sup>th</sup>.

Frances C. Moore and Michael C. MacCracken, 2009. “Lifetime-Leveraging: Mitigation of Short-Lived Greenhouse Gases as a Pathway to International Agreement and Climate Protection,” poster presentation at *International Scientific Congress on Climate Change*, Copenhagen, Denmark.

Frances C. Moore, 2006. “A Hydrochemical Study of the Linnevatnet Catchment”, poster presentation at *International Arctic Workshop*, Boulder, CO.

### **Seminars and Invited Talks**

“Learning, Risk Exposure and Extreme Events in a Changing Climate”, *Lawrence Berkeley National Laboratory*, March 7<sup>th</sup> 2016.

“Growth Rate Impacts and the Social Cost of Carbon”, *Center for Energy and Environmental Policy Research Fall Workshop*, Massachusetts Institute of Technology, November 19<sup>th</sup> 2015.

“Climate Change Impacts on Economic Growth: Empirical Evidence and Policy Implications”, *Energy and Resources Group Colloquium*, UC Berkeley, September 23<sup>rd</sup> 2015.

## TEACHING EXPERIENCE

### **ENVRES 300: Economics for Environmental Management**

*Teaching Assistant, Prof. Charlie Kolstad*

**Stanford University, Fall 2014**

Graduate student class covering energy, environmental and natural resource problems through the lens of economic analysis. An emphasis on hands-on, practical problem-solving.

### **EESS 184/284: Climate and Agriculture**

*Teaching Assistant, Prof. David Lobell*

**Stanford University, Spring 2012**

Advanced undergraduate and graduate student class on the relationship between climate change and food production. Covered climate modeling, plant physiological responses to temperature, precipitation and elevated CO<sub>2</sub>, statistical and process-based modeling of the climate-yield relationship, and mitigation and adaptation policies in agriculture.

### **Law 428: Conservation in the Face of Climate Change**

*Teaching Assistant, Prof. Buzz Thompson*

**Stanford University, Spring 2011**

Interdisciplinary seminar course on the threats to conservation goals in California posed by climate change and possible adaptations, with a focus on land trusts and conservation easements.

### **F&ES 851a,b: Environmental Diplomacy Practicum**

*Teaching Assistant, Prof. Roy Lee*

**Yale School of Forestry, Fall 2009-Spring 2010**

Practicum class in which students learn about the UN system and environmental diplomacy through internships at UN small island and LDC missions. Developed climate change negotiation teaching materials, taught multiple classes on climate change science and policy, worked with UN missions and participated in UNFCCC COP15 negotiations on a small island state delegation.

## GRANT FUNDING

*Pending*

“Monitoring and Managing Food, Energy, and Water Systems Under Stress: The California Crucible” with Steve Davis, Jennifer Burney, Jack Brouwer, Scott Samuelson, and Amir AghaKouchak. Submitted to *Innovations at the Nexus of Food, Energy, and Water Systems, National Science Foundation*.

## ACADEMIC SERVICE AND MEMBERSHIP

**Peer Reviews:** Environmental Research Letters, Climatic Change, Climate Change Economics, Global Change Biology, Ecological Economics, Agricultural and Forest Meteorology, Bulletin of the American Meteorological Society, American Anthropologist, Global Environmental Politics, International Environmental Politics.

**Member:** American Geophysical Union, American Economic Association, American Environmental and Resource Economics Association

## WORKSHOPS AND SUMMER SCHOOLS

European Association of Environmental and Resource Economists, *European Summer School on the Economics of Adaptation to Climate Change*, Venice, Italy. July 6<sup>th</sup> – 12<sup>th</sup>, 2014.

Columbia University, *Fourth Interdisciplinary PhD Workshop in Sustainable Development*, New York, NY. April 25<sup>th</sup>-26<sup>th</sup>, 2014.

Santa Fe Institute, *Complex Systems Summer School*, Santa Fe, NM. June 8<sup>th</sup> – July 1<sup>st</sup>, 2011.

## PUBLIC OUTREACH

### Public Lectures

“New Economic Thinking About Climate Change and Why it Matters”, *The Most Urgent Untold Environmental Stories of Our Time*, Nevada City, CA, Jan 16<sup>th</sup> 2016.

“So You Think You Can Adapt? Heuristics and Biases in the Perception of Climate Risk” with Nik Sawe, *Connecting the Dots 2014: The Climate, Energy, Food and Water Nexus*, Stanford University, April 18<sup>th</sup>, 2014.

“Climate Change and Food Security”, *American Association for University Women*, Walnut Creek, CA, March 8<sup>th</sup>, 2014.

“Modern Climate Change: The Carbon Cycle and Climate vs. Weather,” *Alliance for Climate Education Teacher Workshop*, Sacramento, CA, Aug 5<sup>th</sup>, 2013.

“An Introduction to Modern Climate Change: What Has Happened? What Will Happen? How Do We Know?”, *Geoscape Bay Area Teacher Workshop*, Stanford, CA, July 16<sup>th</sup>, 2013.

### Media Coverage and Appearances

“Updated Climate Change Costs Make Coal-Fired Power Less Attractive” by Elizabeth Dunbar, [Minnesota Public Radio](#), April 19<sup>th</sup>, 2016.

“Social Cost of Carbon in Spotlight” by Jeff Tollefson, [Nature](#), Nov 13<sup>th</sup>, 2015.

“Climate Deadline” *Radio Ecoshock*, Feb 25<sup>th</sup>, 2015.

“Climate Change Could Impact the Poor Much More Than Previously Thought” by Dana Nuccitelli, [The Guardian](#), Jan 26<sup>th</sup> 2015.

“How Much is Climate Change Going to Cost Us?” by David Robers, [grist.org](#), Jan 15<sup>th</sup>, 2015.

“The Dangerous Underestimation of Climate Change’s Cost” by Nicholas St Fleur, [The Atlantic](#), Jan 14<sup>th</sup>, 2015.

“Researchers Say the Social Cost of Carbon Will be 6 Times the Obama Administration Estimate” by Evan Lehmann, [Climate Wire](#), Jan 13<sup>th</sup>, 2015.

“Farmland in Flux,” *Climate Prep Blog: Adaptation Stories, Lessons and Explorations*, July 8<sup>th</sup>, 2014.

“Young Scientists Take on Climate Change”, *KQED California Report*, Dec 16<sup>th</sup>, 2011.

“Countdown to Copenhagen,” *WNPR Where we Live*, Dec 1<sup>st</sup>, 2009.

## **OTHER WORK EXPERIENCE**

**Research Assistant, Yale Center for Environmental Law and Policy** **New Haven, CT**  
Writing and research to assist the center's work promoting data-driven environmental decision-making. September 2008 – August 2009.

**International Climate Policy Intern, Center for Clean Air Policy** **Washington, DC**  
Researched and authored background policy papers on international adaptation policy and interviewed participants at the international climate negotiations. May 2009 – August 2009.

**Staff Researcher, Earth Policy Institute** **Washington, DC**  
Research and analysis of environmental issues such as climate change, food-fuel competition, water shortages and agricultural development. May 2007 – June 2008.

**Research Associate, Climate Institute** **Washington, DC**  
Authored articles for the website on climate change and the effects of sea-level rise, edited a compilation of papers on the potential for sudden and disruptive climate change, and developed a model of greenhouse gas emissions and radiative forcing by world region. January – May 2007.

**Research Assistant, ICF International** **Fairfax, VA**  
Technical and administrative support in the production of environmental regulatory documents such as environmental impact statements and analysis of environmental regulations for federal agencies. July 2006 – January 2007.