

# EARTH DAY 2014

Connecting the Dots: The Climate, Energy, Food, And Water Nexus

FRANCES C. ARRILLAGA ALUMNI CENTER

FRIDAY, APRIL 18, 2014

12:30 – 6:30 p.m.

**IN CELEBRATION OF EARTH DAY**, leading researchers at Stanford University will discuss the interconnections and interactions among humanity's needs for climate, energy, food, water and the environment. This year we will start with climate and examine the impacts, adaptation and vulnerabilities due to climate change, as covered in the Intergovernmental Panel on Climate Change (IPCC) Working Group (WG) II Report, released on March 31, 2014.

Stanford faculty and researchers will discuss their findings and attendees will participate in breakout discussions led by Stanford students on a range of challenges associated with climate change.

Leading authors of the IPCC WG I, II, and III Reports will then discuss key points on how climate relates to water, land use, and environmental impacts. Finally, Dr. Gro Brundtland, The Elders and former Prime Minister of Norway will reflect on our common future.

We will cap the afternoon with a reception including Jon Krosnick and his Charged Particles Jazz Band.

## PROGRAM

12:30	Registration
1:00	Welcome, Stacey Bent
1:05	IPCC Working Group II: Impacts, Adaptation and Vulnerability, Chris Field
1:30	IPCC Working Group II: Key Findings, Katharine Mach & Michael Mastrandrea
2:05	Break
2:15	Breakout Discussions (choice of five topics, additional details on the following pages): <ul style="list-style-type: none"><li>• Blake Francis, <i>Ethics and Adaptation: Who is Most Vulnerable to Climate Change?</i> Fisher Conference Center, Lyons/Lodato Conference RM</li><li>• Frances C. Moore and Nik Sawe, <i>So You Think You can Adapt? Heuristics and Biases in the Perception of Climate Risk</i> Fisher Conference Center, McDowell/Cranston Conference RM</li><li>• Deepti Singh and Dan Horton, <i>Weather Going Wild: Will Global Warming Lead to More Extremes?</i> McCaw Hall</li><li>• Aaron Strong, <i>What Makes Something Anthropogenic Anyway? The Devils in the Details of Climate Policies</i> Fisher Conference Center, Lane Conference RM</li><li>• Delavane Turner, <i>Rising Seas: Should I Stay or Should I Go?</i> Barnes Conference RM</li></ul>
3:15	Break
3:30-4:30	Plenary Discussion: Our Changing Climate Moderated by Lauren Sommer, KQED With Noah Diffenbaugh, Charles Kolstad, Jon Krosnick, Terry Root
4:30-5:30	Keynote: Gro Brundtland, The Elders, Mimi and Peter E. Haas Distinguished Visitor, Haas Center
5:30-6:30	Reception featuring Jon Krosnick and the Charged Particles Jazz Band

## CONNECTING THE DOTS

Breakout discussions led by Stanford graduate students and postdoctoral scholar

### Ethics and Adaptation: Who Is Most Vulnerable to Climate Change?

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#### Blake Francis, PhD candidate, Philosophy

The UN Framework Convention on Climate Change says developed countries ought to “assist developing countries that are particularly vulnerable to the adverse effects of climate change in meeting the costs of adaptation to those adverse effects.” Several international funds have been created to provide financial resources for particularly vulnerable nations. If you were in charge of an adaptation fund, how would you interpret the meaning of “particularly vulnerable” in deciding how to allocate scarce financial resources? Answering this question requires sound empirical information, as well as value judgments about which adverse effects from climate change are most concerning and why. In considering value judgments, ethics can help clarify our thinking and expose our assumptions

to critical scrutiny. In this breakout session, Blake will present a set of ethical tools to evaluate proposals for allocating financial resources for adaptation.

**Biography:** Blake’s research interests include social and political philosophy and environmental ethics. He is currently working on a dissertation on climate change ethics, which examines how to make trade-offs between the harms of climate change and the social benefits provided by fossil-fuel use. He received an M.A. in philosophy from the University of Montana, where he also conducted research in the Department of Forestry and Conservation. Prior to pursuing graduate work, Blake had a career in wilderness management and trail construction with the US Forest Service in Arizona and Alaska.

### So You Think You Can Adapt? Heuristics and Biases in the Perception of Climate Risk

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#### Frances C. Moore and Nik Sawe, PhD candidates, Emmett Interdisciplinary Program in Environment & Resources

How quickly and how effectively will people adapt? At least part of this answer depends on how serious and immediate climate change risks are perceived to be. Psychology tells us that the perception of risk is not perfect, because it depends on a number of innate perceptual biases and decision heuristics, (e.g. “common sense,” “educated guess”). These could significantly affect how well and how quickly people will adapt. In this breakout session, Fran and Nik will use interactive experiments and quizzes to explore heuristics and biases relevant to the perception of climate risk. Participants will discuss how heuristics and biases might apply to climate change adaptation.

#### Biographies:

**Fran** works with David Lobell to study how farmers are likely to adapt to climate change. Understanding the rate and effectiveness of this autonomous adaptation is important for accurately estimating the future impact of climate change on global agricultural production and food security. Fran is combining experimental, statistical and field-based methods

from economics, anthropology and psychology with climate data and models in order to better understand adaptation in agriculture.

**Nik’s** work adapts neuroeconomics—the study of financial decision-making in the brain—to environmental applications. By combining neural data with behavioral economics and survey work, Nik is able to discover which individual differences best predict the usage of different heuristics in environmental decision-making. He is applying this method to consumer responses toward eco-labeling, environmental philanthropy and the valuation of natural resources, with the hope of informing environmental policy within a heterogeneous population. Nik designed and teaches the course “Environmental Decision-Making and Risk Perception” to fellow graduate students. Before graduate school, Nik utilized his neuroscience background in the biotech field.

### Weather Going Wild: Will Global Warming Lead to More Extremes?

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#### Deepti Singh, PhD candidate, Environmental Earth System Science

#### Dan Horton, postdoctoral scholar, Environmental Earth System Science

What is an “extreme” weather event? What tools do scientists have to determine the role of global warming in extreme events such as Typhoon Haiyan? What types of future extreme events are most likely to affect the world’s most vulnerable citizens? The impacts of extreme events depend on the time and place of their occurrence (climate risk), and on the ability of the local population to deal with the challenges and consequences of these events (vulnerability and exposure). Many of the effects of anthropogenic climate change are projected to disproportionately impact the developing world due both to high vulnerabilities and increased climatic risk. In this session, participants will discuss the science of climate extremes, the detection and attribution of global warming in extreme event

occurrence, and the challenges related to these extremes that are likely to confront developing nations in the near-term future.

#### Biographies:

**Deepti** works in the Climate & Earth System Dynamics research group. Her current study focuses on understanding regional-scale climate dynamics and climate change impacts in the world’s most vulnerable regions. Deepti uses advanced statistical tools and climate model simulations to examine the role of human activities and natural climate variability on observed changes in extreme events with a view to quantifying the climate risks in developing countries associated with continued global anthropogenic emissions. Before pursuing climate change studies, she earned her master’s degree in

## Weather Going Wild: Will Global Warming Lead to More Extremes? (continued)

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Aeronautics & Astronautics from Purdue University studying cleaner alternatives to currently used jet fuels.

**Daniel's** research focuses on the intersection of climate change and humans with a particular emphasis on public health impacts. His research uses numerical models and observational data to investigate potential changes in air quality and disease vector evolution. Daniel earned bachelor's degrees in physics

from Tulane University and in atmospheric science from Texas A&M University, and a PhD in geological sciences from the University of Michigan. Prior to studying climate science, Daniel was a weather officer in the United States Air Force.

## What Makes Something Anthropogenic Anyway? The Devils in the Details of Climate Policies

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### Aaron Strong, PhD candidate, Emmett Interdisciplinary Program in Environment & Resources

All of our management approaches to avoid anthropogenic climate change—the Kyoto Protocol, cap and trade, personal carbon footprints, corporate sustainability metrics—focus on reducing anthropogenic emissions of greenhouse gases. But what makes a GHG emission “anthropogenic” in the first place? The glib answer is that it is an emission “caused by human activity,” and people assume that with a modicum of scientific attention getting the number right is not too difficult. We then fundamentally separate this anthropogenic question from the political challenges of passing legislation, getting industry buy-in, and effecting individual behavior and life-style changes. Yet, time and again, we find that the choices and assumptions of what we define as being “caused by human activity” actually lie at the heart of the challenge, and that they are as political and social as they are technical. This session will explore these

challenges through examples and discuss how a typology of what we mean by anthropogenic might actually be a useful policy-instrument.

**Biography:** Aaron studies how carbon cycling in ecosystems responds to different anthropogenic inputs. His research also uses social scientific approaches to study conditions under which environmental managers take actions to assess such carbon cycle impacts. Aaron also has been actively involved in the development of California's cap and trade policies. Prior to arriving at Stanford, he was an environmental policy research associate at MIT. Previously, he was a research scientist at the Marine Biological Laboratory in Woods Hole, Mass. and at the University of Montana. Aaron earned his master's degree from the Fletcher School of Law and Diplomacy at Tufts University.

## Rising Seas: Should I Stay or Should I Go?

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### Delavane Turner, PhD candidate, Management Science & Engineering

Rising sea levels threaten tens of millions of people who live in low-lying coastal areas, as well as infrastructure, vulnerable ecosystems, cultural heritage and major cities, like New York, Shanghai, Mumbai, London, Miami and Venice. This session will cover the current understanding of sea level rise, including key drivers of global and local change, projections for 2100, and implications for coastal storms and extreme events. After considering the range of possible impacts, participants will discuss the pros and cons of various adaptation strategies for certain locations, in particular the choice between protect and retreat.

**Biography:** Advised by John Weyant, Delavane researches climate and energy policy modeling under uncertainty, with an emphasis on the representation of climate change impacts and technology costs in integrated assessment models. She is also a member of the Electric Power Research Institute's energy and environmental analysis program. Delavane is a distinguished graduate of the U.S. Air Force Academy with a bachelor's degree in astronautical engineering. She earned a master's degree in environmental change and management from the University of Oxford as a Rhodes Scholar.



## STANFORD GUEST NETWORK ACCESS

No username or password needed

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