



## Stanford Experts on Climate Change

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### Biology

#### [Elizabeth Hadly](#)

Hadly has conducted extensive research throughout North and South America on the ecology and evolution of vertebrates. In 2012, Hadly co-authored a paper that found that the planet may be nearing a critical threshold beyond which environmental changes will be rapid and unpredictable. Based on the findings, California Gov. Jerry Brown asked Hadly to compile a scientific consensus statement on climate change, which Brown has distributed to dozens of world leaders. Recently, Hadly co-authored the book "Tipping Point for Planet Earth: How Close Are We to the Edge?" about the risks of climate change and overpopulation. Hadly is the Paul S. and Billie Achilles Professor in environmental biology at Stanford's School of Earth, Energy & Environmental Sciences and a senior fellow at the Stanford Woods Institute for the Environment.

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**Expertise:** Biology

### Climate and Carbon Accounting

#### [Rob Jackson](#)

Jackson studies the effects of climate change and droughts on forests and grasslands, and recently mapped thousands of natural gas leaks across cities such as Boston and Washington, D.C. He chairs the Global Carbon Project, which compiles data on fossil fuel emissions and deforestation, and previously chaired the Department of Energy's National Institute for Climate Change Research in the southeastern U.S. His recent work has focused on what window of time is left to limit warming to below 2 degrees Celsius. Jackson is the Douglas Provostial Professor at Stanford's School of Earth, Energy & Environmental Sciences; senior fellow at the Stanford Woods Institute for the Environment; and senior fellow at the Precourt Institute for Energy.

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**Expertise:** Climate change, drought, land use, full life-cycle carbon accounting, effects of climate and drought on forest mortality, fracking and drinking water quality, and urban natural gas leaks.

### Climate and Food Security

#### [David Lobell](#)

Lobell was a lead author for Chapter 7, "Food Production Systems and Food Security", of the report issued in March 2014 by Intergovernmental Panel on Climate Change (IPCC) Working Group II. His

research focuses on identifying opportunities to raise crop yields in major agricultural regions, with a particular emphasis on adaptation to climate change. He is an associate professor of Earth System Science at Stanford's School of Earth, Energy & Environmental Sciences; William Wrigley Senior Fellow at the Stanford Woods Institute for the Environment and the Freeman Spogli Institute for International Studies; and Deputy Director of the Center on Food Security and the Environment.

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**Expertise:** Food security, crop yields and climate change.

### Climate and Oceans

#### [Stephen Palumbi](#)

Palumbi is an internationally recognized expert on climate change impacts on marine life. His current work focuses on how coral reefs can adapt to climate change and the genetics of marine reserves designed for conservation and fisheries enhancement, with projects in the Philippines, Bahamas and U.S. West Coast. Palumbi is the Harold A. Miller Professor in Marine Sciences, director of Stanford's Hopkins Marine Station and a senior fellow at the Stanford Woods Institute for the Environment.

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**Expertise:** Climate change and ocean acidification.

### Climate, Water and Drought

#### [Noah Diffenbaugh](#)

Diffenbaugh studies the climate system, including the processes by which climate change could increase extreme weather events such as drought and impact agriculture, water resources, and human health. He has served as a lead author for Working Group II of the IPCC, and has provided testimony and scientific expertise to the White House, the Governor of California, and U.S. congressional offices. Diffenbaugh is an associate professor of Earth System Science at Stanford's School of Earth, Energy & Environmental Sciences and the Kimmelman Family Senior Fellow at the Stanford Woods Institute for the Environment.

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**Expertise:** The climate system, including the processes by which climate change could impact agriculture, water resources, extreme weather events, and human health.

### Conservation

#### [Jim Leape](#)

A 30-year veteran of conservation work on every continent, Leape is the former director of WWF International and leader of the global WWF Network, one of the world's largest conservation organizations. Leape is the Cox Consulting Professor in Stanford's School of Earth, Energy & Environmental Sciences and a consulting professor with the Stanford Woods Institute for the Environment.

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**Expertise:** Climate change, conservation and natural resource management; Chinese environmental policy, forest protection, marine conservation, water resources management and sustainability in global commodity markets.

## Economics

### [Charles Kolstad](#)

Kolstad is an internationally known environmental economist with a focus on industrial organization and public economics. He has been a convening lead author for the IPCC. His research interests are in information, uncertainty and regulation, with much of his applied work in the area of climate change and energy markets. He is a professor, by courtesy, of economics; senior fellow at the Precourt Institute for Energy; and senior fellow at the Stanford Institute for Economic Policy Research.

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**Expertise:** Economics of greenhouse-gas regulation and climate-change policies.

### [Marshall Burke](#)

Burke's research focuses on social and economic impacts of environmental change, and on the economics of rural development in Africa. He has recently published on the global economic impacts of climate change, and on the relationship between high temperatures and human conflict, including armed violence and civil wars. Burke is assistant professor of Earth System Science at Stanford's School of Earth, Energy & Environmental Sciences; center fellow at the Freeman Spogli Institute for International Studies and center fellow (by courtesy) at the Stanford Woods Institute for the Environment.

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**Expertise:** Food security, climate change, economic development.

## Energy

### [Arun Majumdar](#)

Majumdar is co-director of Stanford's Precourt Institute for Energy, which is focused on the transition to affordable, low-carbon energy systems. His current research focuses on using electrochemical reactions for thermal energy conversion, thermochemical water splitting reactions to produce carbon-free hydrogen, understanding the limits of heat transport in nanostructured materials and a new effort to re-engineer the electricity grid. Majumdar is the Jay Precourt Professor at Stanford and a senior fellow at the Precourt Institute for Energy.

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**Expertise:** As founding director the Department of Energy's ARPA-E program, he can discuss the role of clean-energy technologies in shaping U.S. and global climate and energy policy, as well as energy in the developing world.

### [Sally Benson](#)

A groundwater hydrologist and reservoir engineer, Benson is a leading authority on carbon capture and storage and emerging energy technologies. Benson is a professor of energy resources engineering in Stanford's School of Earth, Energy & Environmental Sciences; co-director of the Precourt Institute for

Energy; and director of the Global Climate & Energy Project. She is also a senior fellow at the Precourt Institute for Energy and an affiliate at the Stanford Woods Institute for the Environment.

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**Expertise:** Geologic storage of CO<sub>2</sub> in deep underground formations, technologies and energy systems for a low-carbon future, energy in the developing world and global energy policy.

### **Mark Z. Jacobson**

The main goal of Jacobson's research is to understand physical, chemical, and dynamical processes in the atmosphere better in order to solve atmospheric problems, such as global warming and urban air pollution, with improved scientific insight and more accurate predictive tools. He has recently published on how 139 countries can get all of their power from renewable sources. Jacobson is a professor of civil and environmental engineering in Stanford's School of Engineering; director of Stanford's Atmosphere/Energy program; a senior fellow at the Precourt Institute for Energy; and a senior fellow at the Stanford Woods Institute for the Environment.

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**Expertise:** Renewable energy, atmospheric science

## **Environmental Law**

### **Michael Wara**

Wara's research focuses on climate policy and regulation, both domestically and internationally. His current scholarship addresses the performance of the emerging global market for greenhouse gases and mechanisms for reducing emissions, especially in developing countries after the expiration of the Kyoto Protocol. Wara is an associate professor of Law, a research fellow at the Program in Energy and Sustainable Development in Stanford's Freeman Spogli Institute for International Studies and an affiliate of the Stanford Woods Institute for the Environment.

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**Expertise:** Environmental law and policy.

## **IPCC Processes, Climate Resilience and Adaptation**

### **Chris Field**

Field's research emphasizes field and laboratory studies of impacts of climate change, from the molecular to the global scale. From 2008 to 2015, Field was co-chair of Working Group II of the IPCC. He is the Perry L. McCarty Director of the Stanford Woods Institute for the Environment; founding director of the Carnegie Institution for Science's Department of Global Ecology; the Melvin and Joan Lane Professor for Interdisciplinary Environmental Studies at Stanford's School of Humanities and Sciences and School of Earth, Energy & Environmental Sciences; and senior fellow at the Precourt Institute for Energy.

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**Expertise:** Climate change, including impacts, adaptation and vulnerability. Global perspective crossing regions and sectors. Special expertise on ecosystems and agriculture.

### [Katharine Mach](#)

Mach's research is focused on integrative assessment of climate change risks and response options. From 2010 to 2015, Mach co-directed the scientific activities of Working Group II of the IPCC, which focuses on impacts, adaptation and vulnerability. Mach is the director of the Stanford Environment Assessment Facility (SEAF) at the Stanford Woods Institute for the Environment, a Senior Research Scientist in Stanford's School of Earth, Energy & Environmental Sciences and a Visiting Investigator at the Carnegie Institution for Science.

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**Expertise:** Climate change, including impacts, adaptation and vulnerability, climate change assessment, climate policy

## Politics and Negotiations

### [Kenneth Scheve](#)

Scheve's research interests include a focus on the role of interdependent preferences in opinion formation about international environmental cooperation. Scheve co-authored a study indicating that support is higher for global climate agreements with specific characteristics. Scheve is a professor of political science at Stanford University, a senior fellow at the Freeman Spogli Institute for International Studies and an affiliate of the Stanford Woods Institute for the Environment.

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**Expertise:** Public opinion

## Sea Level Rise, Ice Sheets and Glaciers

### [Dustin Schroeder](#)

Schroeder's research focuses on subglacial water and assessing the stability of continental ice sheets, such as Antarctica, and their contribution to the rate of sea level rise. Schroeder uses airborne ice-penetrating radar to measure the thickness of ice sheets, bed conditions underneath glaciers, and ice melt from underneath the glacial surface. Schroeder is a professor of geophysics in Stanford's School of Earth, Energy & Environmental Sciences and an affiliate of the Stanford Woods Institute for the Environment.

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**Expertise:** Sea level rise, ice sheets, Antarctica, Greenland, glaciers

**Additional Stanford climate experts can be found at**

<https://experts.stanford.edu/climate-change>