



# CSTPR

University of Colorado

**CIRES Center for Science and Technology Policy Research**

**Annual Report**

**July 1, 2009 - June 30, 2010**

Creating new knowledge and improving the ways by which science and technology policies address societal needs.

**CENTER & FOR  
SCIENCE & TECHNOLOGY  
POLICY RESEARCH**

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Annual Report 2009-2010



# **CSTPR ANNUAL REPORT 2009 - 2010**

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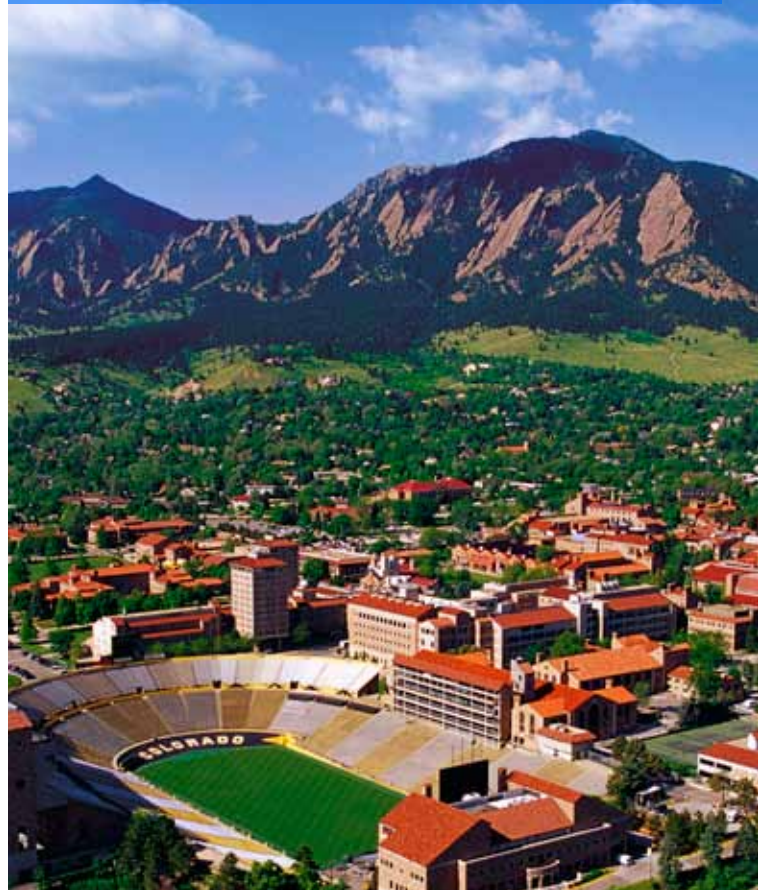


# CIRES CENTER FOR SCIENCE AND TECHNOLOGY POLICY RESEARCH

## INTRODUCTION

The Center for Science and Technology Policy Research (CSTPR or the Center) was established within the Cooperative Institute for Research in Environmental Sciences (CIRES), University of Colorado-Boulder, in 2001 to focus on research, education, and outreach at the interface of science, technology, and the needs of decision makers in public and private settings. The Center's research is highly integrated with the ongoing activities of CIRES, the National Oceanic and Atmospheric Administration, the University, and the broader science and technology community. The Center works to create new knowledge and improve the ways by which science and technology policies address societal needs, through research, education and service.

Boulder, Colorado is home to many scientific research facilities: The Cooperative Institute for Research in Environmental Sciences, The National Center for Atmospheric Research, The National Institute for Standards and Technology, and The National Oceanic and Atmospheric Administration.



# LETTER FROM THE DIRECTOR

*Our Center work is enlarging the range of choice considered by policy-makers, by analyzing options in areas such as energy technology, carbon management, science investments, and public lands and ecosystems management.*



The research conducted by Center faculty and graduate students is diverse, as you can see in this annual report, but a few themes pervade much of what we do. First, our work tends to be situated at the intersection of science, environment and policy, and is often aimed at understanding the choices that people and institutions make in pursuing goals under uncertainty, be

it an uncertain future climate, uncertain outcomes of investments in science and technology, or an uncertain future policy framework. One way to improve policy and decision-making is to remove the uncertainty, to improve the science and make sure scientific results are disseminated to decision-makers. But in many areas we have a long way to go to reduce scientific uncertainty, and even further to reduce social, economic, and political uncertainty. As Center faculty have pointed out, for example, even as we invest in better climate predictions we find growing uncertainty over the evolution of future energy systems and the potential for reducing greenhouse gas emissions. The goal of stabilizing the atmospheric concentrations at some “safe” level appears rather mired in social, political and physical uncertainty. Another approach that shows up in Center work is enlarging the range of choice considered by policy-makers, by analyzing options in areas such as energy technology, carbon management, science investments, and public lands and ecosystems management, to find those that offer perhaps not the most precisely targeted outcomes, nor necessarily the optimal result, but which are likely to fall within a broad range of acceptable, positive outcomes.

Many of the projects you see described in this report are multi-purpose, as befitting a university Center also situated in a cooperative institute that joins federal and university researchers. The SPARC project, for example, poses fundamental questions about the supply of and demand for science, as well as informing the design of climate research and applications programs. And like other Center projects, it also provides a platform for training graduate students, and support for post-docs. Roll-out of the project’s Handbook on Useable Science brought the Center to Washington in April for a briefing, including a keynote address by the former Presidential Science Advisor, Dr. John Marburger. SPARC also went on the road to Sweden to gather together science policy scholars around the theme of linking science to societal benefits. The Presidential Science Advisors project not only yielded a unique book drawing together lessons and theories of science and policy interaction, but enriched the campus and Boulder communities by bringing science advisors to Boulder for extended conversations. The new Colorado Climate Preparedness project is aimed at mapping out the state’s efforts at climate adaptation so that decision-makers in government and non-governmental roles can better apprehend strengths and weaknesses in this evolving policy realm.

Many thanks go to our visitors, collaborators and supporters during 2009-10. I hope you will frequently visit our new website for updates on projects and programs, and watch it for upcoming events as well as new products that cast light on the intersection of society, science and the environment.

Bill Travis  
Director  
[william.travis@colorado.edu](mailto:william.travis@colorado.edu)



# THE CENTER AT A GLANCE

FOR THE PERIOD JULY 1, 2009 - JUNE 30, 2010

316,633

Unique website visitors

4,095

Recipients of Center's Science Policy E Briefing

345

Subscribers to Ogmios, the Center newsletter

97

Media references to the Center and/or its personnel

52

Presentations by Center staff and students

86

Publications

67

Coauthors and collaborators

14

Talks by non-Center personnel

5

Graduate students who worked at the Center this year

# CENTER FACULTY

## MAX BOYKOFF



Max Boykoff is an Assistant Professor in Environmental Studies and a Fellow of the Cooperative Institute for Research in Environmental Sciences (CIRES) at the University of Colorado, Boulder. He also is a Senior Visiting Research Associate in the Environmental Change Institute (ECI) at Oxford University. Previously, Max was a James Martin 21st Century Research Fellow at the ECI as well as a Department Lecturer in the School of Geography at the Oxford University Centre for the Environment. Max has ongoing interests in environmental governance, science and policy interactions, and political economy and the environment. He has experience working in North America, Central America, South Asia and Europe. He holds a Ph.D. in Environmental Studies (with a parenthetical notation in Sociology) from the University of California-Santa Cruz and Bachelor of Sciences from The Ohio State University.

## LISA DILLING



Lisa Dilling is an Assistant Professor in Environmental Studies, a Fellow of the Cooperative Institute for Research in Environmental Sciences (CIRES) and a member of the Center for Science and Technology Policy Research at the University of Colorado, Boulder. Her career has spanned both research and practice arenas of the science-policy interface, including program leadership for NOAA and the U.S. Global Change

Research Program. Her current research focuses on the use of information in decision making and science policies related to climate change, adaptation, and the carbon cycle. She is a co-editor of the book *Creating a Climate for Change: Communicating climate change and facilitating social change* from Cambridge University Press. Lisa holds a Ph.D. in Biological Sciences from the University of California at Santa Barbara, and a B.A. *magna cum laude* in Biology from Harvard University.

## BENJAMIN HALE



Benjamin Hale is an Assistant Professor in Environmental Studies and Philosophy at the University of Colorado, Boulder. He works primarily in the area of environmental ethics and environmental policy, though his theoretical interests span much larger concerns in applied ethics, normative ethics, and even metaethics. As for applied questions, much of his work centers on ethical and environmental concerns presented by emerging technologies. Before joining the Environmental Studies program, Benjamin was the Director of the Center for Values and Social Policy in the Philosophy Department at the University of Colorado, Boulder, and earlier was the Interim Director of the Environmental Conservation Education Program at New York University. Benjamin has a Ph.D. in Philosophy from the State University of New York at Stony Brook and an M.P.A. in Natural Resource Policy from the University of Arizona.

## ROGER PIELKE, JR.



Roger A. Pielke, Jr. has been on the faculty of the University of Colorado since 2001 and is a Professor in the Environmental Studies Program and a Fellow of the Cooperative Institute for Research in Environmental Sciences (CIRES). At CIRES, Roger served as the Director of the Center for Science and Technology Policy Research from 2001-2007. Roger's research focuses on the intersection of science and technology and decision making. In 2006 Roger received the Eduard Brückner Prize in Munich, Germany for outstanding achievement in interdisciplinary climate research. Before joining the University of Colorado, from 1993-2001 Roger was a Scientist at the National Center for Atmospheric Research. Roger is a Senior Fellow of the Breakthrough Institute. He is also author, co-author or co-editor of seven books, including *The Honest Broker: Making Sense of Science in Policy and Politics* published by Cambridge University Press in 2007. His most recent book is *The Climate Fix: What Scientists and Politicians Won't Tell you About Global Warming* (September, 2010, Basic Books).

## WILLIAM TRAVIS



Bill Travis is Director of the Center for Science and Technology Policy Research and also an Associate Professor of Geography at the University of Colorado, Boulder. His teaching and research focus on human behavior in the environment, including studies of the human dimensions of climate change, land use and the interaction of people and ecosystems. His current projects focus on the theme of potential social response to extreme climate change, including warning systems, the most transformative and difficult adaptive choices, and geo-engineering responses in the face of a "climate emergency."

## RESEARCH

- Science Policy Assessment and Research on Climate
- Carbon Management and Land Use Decision Making
- Carbon Management on Public Lands
- Drought Vulnerability Indicators
- Cultural Politics of Climate Change
- Media Representations of Climate Change or Global Warming
- Decarbonization
- Evaluating Adaptive Policies for Urban Water Resource Management
- Colorado Climate Preparedness project
- Toward a Framework for Assessing Stakeholder Needs for Climate Information
- Understanding Demand for Climate Adaptation Information Across Scales
- Adaptation to Climate Change in Public Lands Management
- Carbon Based Industry and Society
- Dialing Down: Undoing the Climate Damage

Over the past year Center research has focused on producing policy-relevant information to better serve societal needs. Lisa Dilling along with a team of current and former students authored a handbook summarizing the 5-year SPARC research project that delved into how science funders might better orient scientific research to produce more socially usable science. Lisa Dilling's work (with Betsy Failey) has focused on carbon management through land use decision making in Colorado, and by examining the tradeoffs that land managers may face when contemplating incorporating carbon into a suite of multiple use objectives on the ground. Bill Travis and Kristin Gangwer spent the past year developing a set of drought indicators to help water managers assess drought impacts and changing vulnerabilities. Our new faculty member, Max Boykoff, adds to our research portfolio an examination of the cultural politics of climate change and media representation of climate change in an effort to better understand the role that celebrities and the media play in shaping climate change policy.

New directions for Center research include a focus on the "new carbon economy" and decarbonization, climate change adaptation and how it interacts with natural hazards, and the ethical implications of various policy responses. Roger Pielke, Jr., has taken a hard look at the challenge of decarbonizing industrial economies, which he discusses at length in his new book, *The Climate Fix* and elsewhere. Lisa Dilling's newly funded NOAA-SARP project will be looking at the interaction of drought policies and climate change adaptation, and asking whether responses to today's climate might make us

maladapted to future climates. Bill Travis is examining several potential modes of social response to extreme climate change, and coauthored a series of policy recommendations for public land managers adapting to climate change. Max Boykoff's research explores how urban societies adapt to one consequence of climate change - flooding. Ben Hale continues to explore the ethical implications of climate change responses such as ocean fertilization or other forms of "geo-engineering" as part of a larger research focus on undoing climate damage. Detailed descriptions follow.



*Max Boykoff being interviewed on April 5, 2010 for Seventh Generation video by One Earth Productions.*



## SCIENCE POLICY ASSESSMENT AND RESEARCH ON CLIMATE (SPARC)

*(Pielke and Dilling)*

### USABLE SCIENCE: A HANDBOOK FOR SCIENCE POLICY DECISION MAKERS

The Center's NSF-funded "SPARC" project released a new handbook, *Usable Science: A handbook for science policy decision makers*, which addresses the challenge of producing science that meets the changing needs of decision makers. The findings from the SPARC research program suggest some useful approaches to thinking about science management and science funding. The handbook includes specific examples from across the federal government in the hopes that science decision makers will find this an accessible and meaningful contribution to their work.



The handbook is aimed at anyone involved in the process of designing, directing, or implementing research -- those who decide what research gets done and whose needs the research is intended to serve. These ideas may be helpful to individuals and groups in a variety of different settings, including professionals in federal

agencies, Congressional staffers, scientists managing a lab or sitting on a panel at the National Research Council, or managers at a foundation with a science focus.

The handbook's findings were presented in April to approximately 75 science policy decision makers at a workshop in Washington, DC featuring a keynote address by the former Presidential Science Advisor, Dr. John Marburger.

### LINKING SCIENCE TO SOCIETAL BENEFITS WORKSHOP

Drawing upon many years of theoretical and empirical research on the societal use of science in a range of policy fields (climate change in particular), SPARC cosponsored a workshop last September that critically assessed how calls for usable science play out in practice. To that end, the workshop was organized around three thematic questions: why science should be linked to societal benefits, when it makes sense to link science to societal benefit, and how to best link science to societal benefits. Twenty science policy scholars from around the world met in Norrköping, Sweden to discuss these topics. The workshop report can be found at [http://sciencepolicy.colorado.edu/sparc/research/sweden\\_workshop/LSSB.pdf](http://sciencepolicy.colorado.edu/sparc/research/sweden_workshop/LSSB.pdf).



## CARBON MANAGEMENT AND LAND USE DECISION MAKING

*(Dilling)*

This NOAA-funded project examined the potential for carbon management through land use decision making in Colorado. Previous work has focused on the technical potential of vegetation or the economic incentives necessary to induce stakeholders to change practices, but thus far there has not been a focus on the ownership pattern across the landscape, and how it might affect whether the potential for additional carbon sequestration on land might be realized. Work has focused on land management in the private and public sectors, and examined influences on decision making at different scales. In Colorado, as in the greater U.S., different types of strategies will be necessary to incentive carbon sequestration across private and public lands. Public lands in particular must also be managed for a host of competing uses, and calculations of the adoption of carbon sequestration practices based on forces such as a price on carbon will not be adequate for estimating the role of public lands in carbon management. Failey, E. and Dilling, L. 2010. Carbon stewardship: Land management decisions and the potential for carbon sequestration in Colorado, USA. *Environmental Research Letters*, 5 doi:10.1088/1748-9326/5/2/024005. Dilling is also collaborating with R. Birdsey of the U.S. Forest Service on an invited chapter on carbon management on public lands for a new volume on land use and carbon cycling.



## CARBON MANAGEMENT ON PUBLIC LANDS

*(Dilling)*

### AN INTERDISCIPLINARY APPROACH TO POSITION CU BOULDER AS A LEADER IN ADAPTIVE BIOGEOCHEMICAL MANAGEMENT OF FEDERAL RANGELANDS AND FORESTS

Working with the San Juan Public Lands Center, Jason Neff and others have developed a carbon research plan intended to make Southwest Colorado a demonstration site for potential federal carbon management policy. The project's goal is to initiate a joint federal/CU effort to design protocols for, and evaluate the implications of, emerging carbon management plans. As part of the larger demonstration project aimed at evaluating C stocks on federal lands in Southwest Colorado, Dilling is collaborating with Professor Jana Milford and Mickey Ellenwood, an undergraduate, to examine the tradeoffs that land managers on the ground may face when contemplating incorporating carbon into a suite of multiple use objectives. Interviews of many land managers have been conducted and combined with expected carbon impacts of various actions (e.g. grazing, timber harvest, biomass use) to inform land managers and understand how carbon management might be undertaken in the future.



*We clarify choices for science policy decision makers ...*





We study the media's role in the climate change debate ...

**DROUGHT VULNERABILITY INDICATORS**  
(Travis)

This Western Water Assessment-funded project, “A Drought Impact and Vulnerability Indicator Suite” led by Center director Bill Travis with research assistant Kristin Gangwer, has spent the past year creating a set of indicators for assessing the impacts of drought across different sectors (urban, agricultural, water, recreation), with the goal of developing both research-quality time series that can be normalized and analyzed for trends, and applied indicators that can help managers assess impacts and changing vulnerabilities. The search for and collection of indicators goes back a long way in impacts research, so there is a track record to build on. However, a lack of continuity and changes in baselines, vulnerabilities, and monitoring programs, have made it difficult to develop indicators useful for inter-comparison, especially for drought with its diffuse impacts. The project has canvassed existing indicators and determined the appropriate time scales and geographical frameworks for measuring drought impacts and vulnerability, with an initial focus on the Interior West. A publicly accessible “dashboard” of drought indicators is under development.

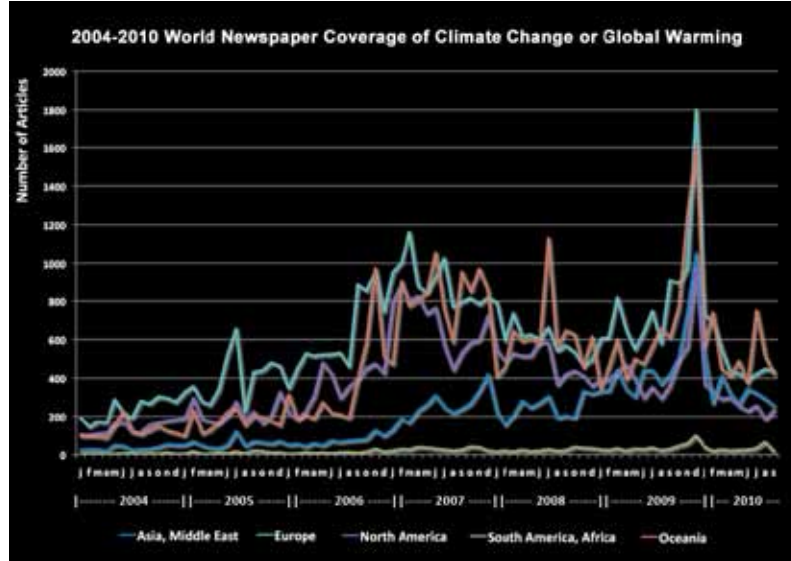
Politics of Climate Change: A Survey (edited by Max), released November 16, 2009. They have been working to theoretically and empirically explore some of the promises, pitfalls and contradictions of this increasingly entrenched set of amplified non-state “actor” voices.

**MEDIA REPRESENTATIONS OF CLIMATE CHANGE OR GLOBAL WARMING**  
(Boykoff)

Max Boykoff has also been examining media coverage of climate change in country contexts such as the United States, United Kingdom and India. He is completing a book this year for Cambridge University Press called *Who Speaks for the Climate? Making sense of mass media reporting on climate change*. In addition, he and colleague Maria Mansfield (University of Exeter) continue to track newspaper coverage of climate change or global warming in 50 newspapers across 20 countries and 6 continents. They update this figure on a monthly basis as a resource for journalists, researchers, and others who may be interested in tracking these trends.

**CULTURAL POLITICS OF CLIMATE CHANGE**  
(Boykoff)

Max Boykoff has examined the role of celebrity interventions at the interface with climate science, governance and the everyday (with Dr. Michael K. Goodman, Kings College London, and Dr. Jo Littler, University of Sussex). This examines how the (de)legitimation of a particular set of “privileged” non nation-state actors influence unfolding considerations and actions to grapple with anthropogenic climate change. One paper from this project is a book chapter called “The cultural politics of climate change: interaction in everyday spaces” in the edited book *The*





## DECARBONIZATION

*(Pielke)*

Roger Pielke, Jr., has discussed the challenge of decarbonizing advanced industrial economies this past year. *The Climate Fix: What Scientists and Politicians Won't tell You About Global Warming*, which was published by Basic Books, includes a chapter on the simple math of decarbonization (see the Outreach section for additional information). Roger has also addressed the topic in Pielke, Jr., R. A., 2010. The simple mathematics of decarbonisation in Australia, ABC News, <http://www.abc.net.au>; Pielke, Jr., R.A., 2009. The Folly of 'Magical Solutions' For Targeting Carbon Emissions, Yale Environment 360, July 29. Roger presented his analysis in a February 18 briefing of the Colorado Air Quality Control Commission titled "Decarbonization of the Colorado Economy." He informed the commission that "Achieving 20% reductions in Colorado's emissions by 2020 while maintaining modest economic growth requires rates of decarbonization of >5% per year" while historical rates of decarbonization have typically been 1-2% per year."



diversify energy supply technologies. The ultimate goal of doing this is to develop non-carbon energy supplies at unsubsidized costs less than those using fossil fuels. The Hartwell Paper advocates funding this work by low hypothecated (dedicated) carbon taxes. It opens discussion on how to channel such money productively."

## EVALUATING ADAPTIVE POLICIES FOR URBAN WATER RESOURCE MANAGEMENT

*(Dilling, Travis, Klein)*

### INTERACTIONS BETWEEN SHORT-TERM DROUGHT RESPONSES AND LONG-TERM CLIMATE CHANGE ADAPTATION STRATEGIES

This new project, which was recently funded by the NOAA Sectoral Applications Research Program (SARP), will examine how drought policies interact with both short-term drought and long-term climate change. It will ask whether adjustment today or in the past lead to more resilient systems across climate time scales. The project researchers hypothesize that the more effective a policy becomes in terms of increasing water use efficiency, the more reliant the system becomes on accurate information. They will thus also examine how more efficient and/or flexible water use may increase the need for, and value of, weather and climate information and technology. They plan to take a unique interdisciplinary approach to tackling these questions by including investigators from the natural hazards community, the climate adaptation community, experts in the use of climate information, and the water resource and policy community. They will also work in tandem with an Advisory Working Group of stakeholders from the water management and urban adaptation community to ensure

In *The Hartwell Paper: A new direction for climate policy after the crash of 2009*, Roger and coauthors Prins, G., Galiana, I., Green, C., Grundmann, R., Hulme, M., Korhola, A., Laird, F., Nordhaus, T., Rayner, S., Sarewitz, D., Shellenberger, M., Stehr, N., and H. Tezuka offered an alternative approach to Kyoto which emphasizes "the primacy of accelerating decarbonization of energy supply. This calls for very substantially increased investment in innovation in noncarbon energy sources in order to





We explore how cities can effectively respond to drought and reduce its impacts ...

that their work is relevant in this rapidly evolving context. The project includes conducting a literature review of the vulnerability and drought management literatures, developing indicators for urban water system vulnerability with respect to climate change, and conducting three in depth case studies of urban water systems to evaluate changing vulnerabilities with specific drought policies.

## COLORADO CLIMATE PREPAREDNESS PROJECT

*(Klein, Travis)*

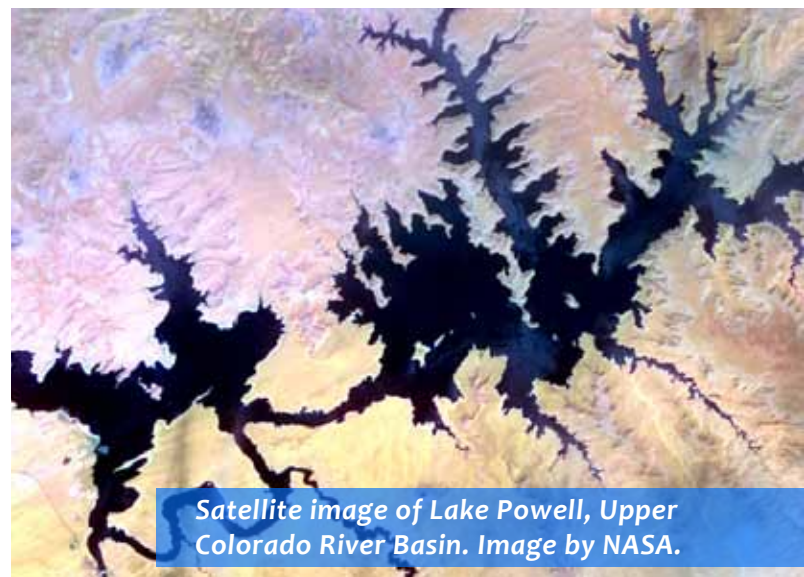
This Western Water Assessment-funded project will address the state of Colorado's progress toward the Governor's goal of preparing the state to adapt to unavoidable climate change. The primary purpose is to set the stage for the next governor to continue to plan for climate variability and change by providing a catalog of climate vulnerabilities and current activities, personnel, products, and projects from Colorado and other entities along with policy relevant, but not prescriptive, suggestions for future actions. The project will focus on five key sectors: (1) water, (2) agriculture, (3) wildlife, ecosystems and forestry, (4) climate-sensitive recreation and tourism, and (5) energy. Activities include a literature search, structured interviews with key decision makers and other personnel, and creation of a database of climate response activities underway, planned and/or desired. A final report, *Climate Preparedness in Colorado* will summarize these efforts.



## TOWARD A FRAMEWORK FOR ASSESSING STAKEHOLDER NEEDS FOR CLIMATE INFORMATION

*(Dilling)*

In support of NOAA's new Climate Service and moving toward a more ongoing national assessment function, the WWA was awarded additional funds to support the development of a database of stakeholder needs across the upper and lower Colorado Basin. Together with the Great Lakes and Carolinas RISAs, we will be developing this database from past and current stakeholder reports, meetings, and studies, coding the information for variables of interest (such as understanding how climate information needs change across time and sectors, levels of interaction with scientists, participation in networks, characterization of needs across scale and sectors, accuracy/level of uncertainty, spatial distribution, complementarities and synergies, patterns of knowledge uptake, etc.), and developing a comprehensive framework that can be accessed and tested by other RISAs and assessment groups.



Satellite image of Lake Powell, Upper Colorado River Basin. Image by NASA.



## UNDERSTANDING DEMAND FOR CLIMATE ADAPTATION INFORMATION ACROSS SCALES

*(Dilling)*

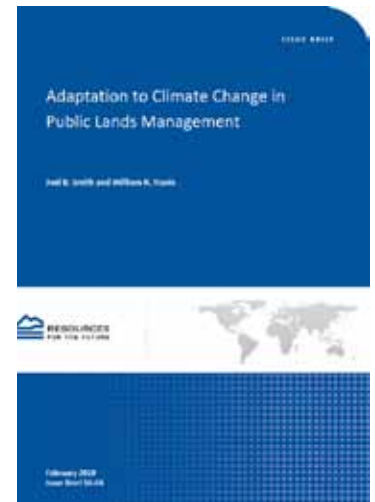
As part of the SPARC supplemental award, two new projects are being launched. These projects will focus on the demand function for climate information, as a complement to earlier work focusing on the supply and the reconciling functions. Christine Kirchhoff is a post-doc who will be examining how climate-related information is used in water management contexts across vertical scales, as well as in different contexts across comparable horizontal scales. We will be asking questions about how information is selected, what types of information is currently demanded, how information flows across scales, how trust factors into information use, and the like. In a related project, our new research assistant Kelli Archie will be examining demand for climate information in three different sectors, and comparing the effects of institutional and organization structure on information use (e.g. in different types of public lands agencies, different sized municipal governments, and so on).



## ADAPTATION TO CLIMATE CHANGE IN PUBLIC LANDS MANAGEMENT

*(Travis)*

Bill Travis (with Joel Smith) coauthored an issue brief about adaptation to climate change in public lands management. Their findings -- that fragmentation of land ownership is a barrier to ecological adaptation, that the statutes generally do not hamper consideration of climate change, but some barriers need to be addressed, and that public perception and stakeholder support for changes in land management practices in anticipation of or response to climate change may be a barrier to federal adaptation -- laid the groundwork for a series of policy recommendations for land managers trying to navigate the path to climate change adaptation. Smith, J. B. and W. R. Travis, 2010. Adaptation to Climate Change in Public Lands Management. Resources for the Future, Issue Brief 10-04, February.



*We explore the normative dimensions of environmental policy ...*



# CARBON BASED INDUSTRY AND SOCIETY

(Boykoff)

Max Boykoff is examining climate adaptation strategies in urban environments (with Dr. Emily Boyd, Leeds University). In this project they have focused on adaptation to flood events in Mumbai, India, and compare particular events in recent years to flooding in urban areas of the UK, and associated adaptive strategies. This project links with some of Max's past research that has examined vulnerability and livelihood issues in relation to global climate change and extreme events in Honduras. They are preparing one article from the project for a special issue of *Antipode* on "What is "new" about the carbon economy?" scheduled to appear in 2011, with a Wiley-Blackwell companion book in 2011. Max is co-editor of this special issue and book with Dr. Emily Boyd as well as Dr. Peter Newell (University of East Anglia).

# DIALING DOWN: UNDOING THE CLIMATE DAMAGE

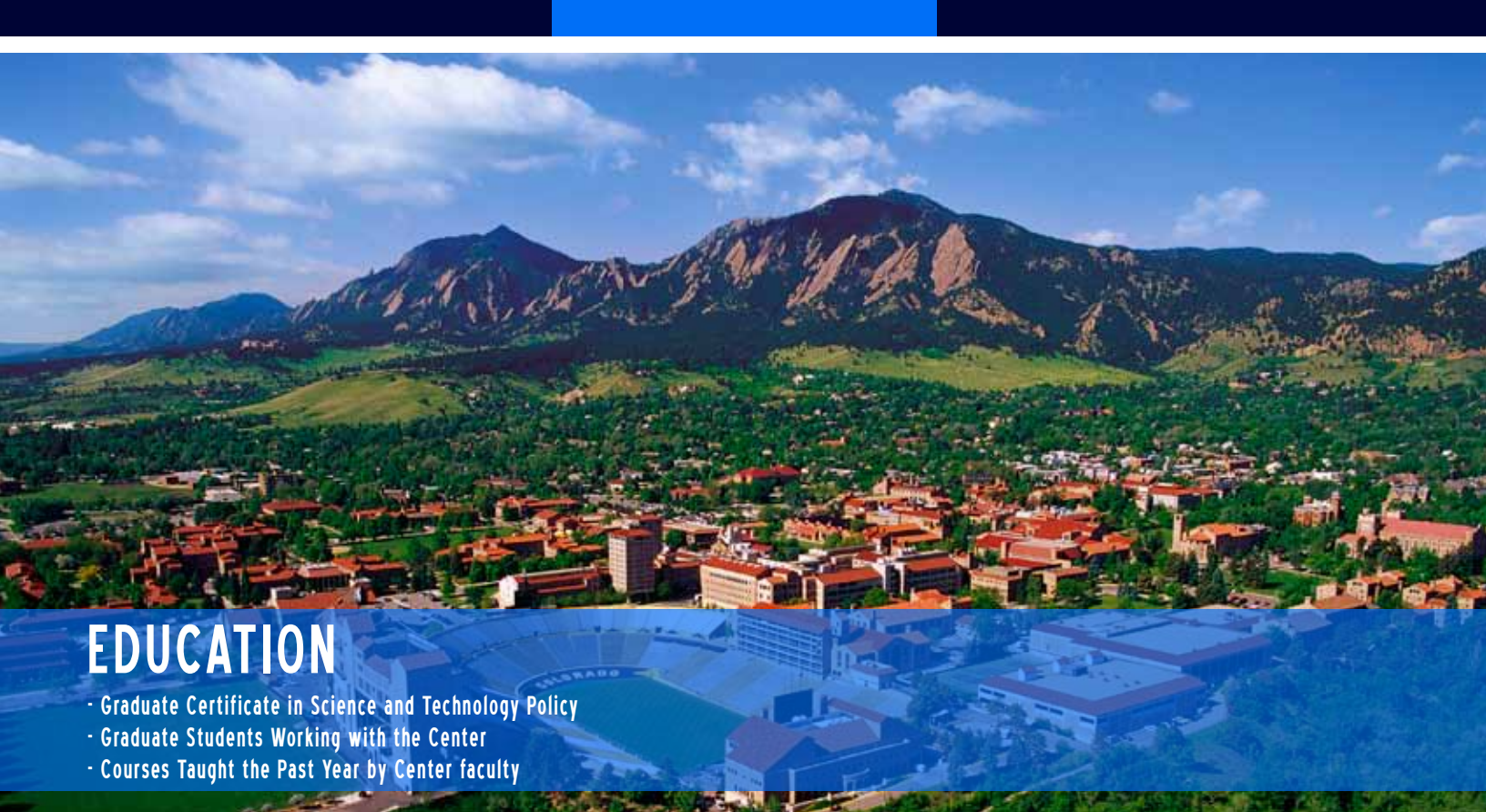
(Hale)

Ben Hale's research explores the ethics of climate change responses. An example of papers follows:

- Hale, B. and L. Dilling, 2010. *Geoengineering, Ocean Fertilization, and the Problem of Permissible Pollution*. Science, Technology and Human Values, doi: 10.1177/0162243910366150, Published August 2010.
- Getting the Bad Out, The Environment, MIT Press (forthcoming 2011). In this paper Ben argues that technologies like catalytic atmospheric scrubbing should be viewed as a morally justifiable approach to global emissions, so long as they are undertaken in direct proportion to the wrong-making emission on the part of individual actors, but only insofar as they are a direct response to wrong-making pollution.

- Non-Renewable Resources and the Inevitability of Outcomes (under review). Ben argues in this paper that the release of climate-altering CO<sub>2</sub> into the atmosphere is best understood as temporally inevitable, at least from the standpoint of moral theory. Namely, in the absence of alternative energy technologies and robust global remediation strategies, human activity is headed toward the same end: the complete exhaustion of fossil fuel resources.
- Private Ownership and Moral Jurisdiction. In this paper Ben argues that much of the time that we engage in behaviors that are considered environmentally unacceptable, we face challenges of moral jurisdiction. Generally speaking, we've used legal regimes of property ownership to trace out and specify cases in which moral jurisdiction belongs to one or the other agent, thereby resolving moral conflicts before they become problems. But recent developments in environmental science and policy threaten our traditional regimes of ownership. They do so because property regimes have relied on false models of ownership, on models that presuppose an owner with discrete boundaries and discrete responsibilities.





## EDUCATION

- Graduate Certificate in Science and Technology Policy
- Graduate Students Working with the Center
- Courses Taught the Past Year by Center faculty

The second prong of the Center's mission involves educating the next generation of science and technology policy scholars to work at the interface of science and decision making. In furtherance of this mission the Center, in collaboration with the Environmental Studies Program, sponsors a certificate in Science and Technology Policy for graduate students, and Center faculty also advise individual graduate students.

### GRADUATE CERTIFICATE IN SCIENCE AND TECHNOLOGY POLICY

The S&T Policy certificate program, now in its sixth year, is a rigorous educational program to prepare students pursuing graduate degrees for careers at the interface of science, technology, and decision making. Upon completion students will have attained a measure of understanding of the broad societal context of science and technology as well as an introduction to methodologies of policy analysis that are used in decision settings related to science and technology. The program currently includes twenty-two students from a variety of CU departments and institutes. Nineteen students have already completed the program and have followed interesting career paths in science policy as indicated below.

**Erik Fisher**, certificate 2005, in August became a tenure-track assistant professor in Arizona State University's Department of Political Science with a research

appointment at the Consortium for Science, Policy and Outcomes (CSPO). He and David H. Guston, Ph.D., director of CNS-ASU, have been awarded a three-year, \$540,000 grant from the National Science Foundation to study the extent to which collaborations between social and natural scientists working alongside one another in research laboratories may advance responsible innovation. The project will rely on a research method developed by Fisher in his doctoral research at CSTPR.

**Nat Logar**, certificate 2006, spent some time conducting research at Arizona State University's Consortium for Science, Policy and Outcomes on science policies for sustainability before accepting an appointment as a research fellow at Harvard's Kennedy School of Government where he works on energy technology and innovation. His role in the project is to examine energy innovation institutions, such as national laboratories like the National Renewable Energy Laboratory and industry consortia such as the Electric Power Research Institute. In doing so, he notes that he uses many of the tools, strategies, and concepts developed or taught by faculty at CSTPR.

**Genevieve Maricle**, certificate 2005, worked as a postdoctoral associate with the Consortium for Science, Policy and Outcomes at ASU before receiving a 2009-2010 AAAS Diplomacy Fellowship which placed her in the U.S. Agency for International Development (USAID). She works in areas of international science policy as it relates to the agency's mission to extend assistance to countries recovering from disaster, trying to escape poverty, and engaging in democratic reforms.



**Shep Ryen**, certificate 2005, served on the staff of the U.S. House of Representatives Committee on Science in Washington, D.C. from 2005 until 2009 when he accepted a position with the Government Accountability Office as an Analyst. The GAO's oversight work runs nearly government-wide, excepting intelligence matters and certain activities of the Federal Reserve, and includes reports in a number of areas that the Center focuses on such as water and energy policy, tax and budget issues, and nanotechnology.

## GRADUATE STUDENTS WORKING WITH THE CENTER

### MARILYN AVERILL



Marilyn Averill is a doctoral student in Environmental Studies at the University of Colorado, Boulder. Her research interests focus on international environmental governance, the politics of science, and science and technology policy, particularly in the context of global climate change. Her most recent work involves the use of science and the treatment of uncertainty in litigation relating to climate change, and the effects these cases may have on law, science, and policy.

Before returning to graduate school, Marilyn was an attorney with the Office of the Solicitor, United States Department of the Interior, where she provided legal advice to the U.S. Fish and Wildlife Service and the National Park Service. She holds Master's degrees in Public Administration from the Kennedy School of Government and in Educational Research and Evaluation Methodology from the University of Colorado, and a law degree from the University of Colorado.

Marilyn is a member of the planning committee for the RINGOs (Research and Independent NGOs), an approved observer organization to the UNFCCC, whose members include universities, think tanks, and other research institutions. She attended the November 2009 climate talks in Barcelona in order to chair three side events

intended to update negotiators on climate science since the IPCC Fourth Assessment Report was published. She also attended the June 2010 climate talks in Bonn, where she made side event presentations about research needs after Copenhagen and the role of science and academia in the climate negotiations.

### DAVID CHERNEY



David Cherney is a doctoral student at the University of Colorado, Boulder's Center for Science and Technology Policy Research and is a research associate with the Northern Rockies Conservation Cooperative in Jackson, WY. He holds a master's degree in environmental management from Yale University and a bachelor's degree in environment, economics, and politics from Claremont McKenna College. David serves on the executive council for the Society of Policy Scientists and on the program committee for the Society of Conservation Biology's Social Science Working Group. David was awarded the 2008-2009 Cooperative Institute for Research in Environmental Sciences (CIRES) Graduate Research Fellowship and the 2008-2009 Center for Humanities and the Arts Fellowship. David's dissertation research focuses on conservation non-governmental organizations in greater Yellowstone.

Dave was awarded the Morris K. Udall Dissertation Fellowship for 2010. The Udall Foundation awards two one-year fellowships of up to \$24,000 to doctoral candidates whose research concerns U.S. environmental public policy and/or environmental conflict resolution and who are entering their final year of writing the dissertation.



## KRISTIN GANGWER



Kristin Gangwer is a master's student in Geography and a Graduate Research Assistant at the Center for Science and Technology Policy Research. Her research interests focus on human-environment interactions, land-use, sustainable rangeland management, place-based conservation, and the human impacts of drought, primarily in the western United States. Kristin received her B.A. in Anthropological Sciences from Stanford University and worked for National Geographic magazine in Washington, D.C. before moving to Boulder.

Kristin presented the results of her work on the drought indicators project with Bill Travis at the Association of American Geographers Annual Meeting in Washington, DC April 14-18, 2010. Her presentation was titled "A Drought Impact and Vulnerability Indicator Suite: A Two-Tiered Exploration of Drought's Social Impacts."

## SHALI MOHLEJI



Shali Mohleji is a doctoral candidate at the Center for Science and Technology Policy Research and the Environmental Studies Department. Her dissertation uses disaster loss data as a tool for assessing natural disaster policy by analyzing trends in global and regional disaster-caused economic losses. Shali holds a Bachelor's degree in Environmental Sciences from the University of Virginia and a Master's degree in Atmospheric Sciences from Purdue University.

Shali was awarded the Summer Graduate School Fellowship - a new fellowship of the University of Colorado, Boulder Graduate School. The fellowship was awarded to ten doctoral candidates and provides support for students to pursue their dissertation during the summer term.

## JESSICA WEINKLE



Jessica Weinkle is a Ph.D. Student in Environmental Studies with a policy concentration. Her research interests are in the role of science in defining social problems and the formulation of public policy. She has a B.S. in Zoology from the University of Texas at Austin and a M.A. in Climate and Society from Columbia University.

## COURSES TAUGHT THE PAST YEAR BY CENTER FACULTY

Center faculty teach a variety of courses in their respective departments, including:

### Max Boykoff

- ENVS 4800: Culture, Politics and Climate Change
- ENVS 5720: The Problem Orientation

### Lisa Dilling

- ENVS 3800: Climate Policy and Responses
- ENVS 4800: The Art of Research

## Ben Hale

- ENVS 5001/PHIL 5240: Graduate Seminar in Environmental Philosophy
- ENVS 4800: Critical thinking: Environment, Property, and Protest
- ENVS 3140/PHIL 3140: Environmental Ethics

## Roger Pielke, Jr.

- ENVS 5000: Science and the Environment
- ENVS 5100: Science and Technology Policy

## Bill Travis

- GEOG 3402: Natural Hazards
- GEOG 2412: Environment and Culture



*Lisa Dilling giving a lecture in ENVS 1000: Intro to Environmental Studies.*



# OUTREACH

- New Books
- Steve Rayner Visit
- Benjamin Hale Co-editor of Ethics, Place & Environment
- New Journal, Weather, Climate and Society
- Carbon Cycle Science Working Group
- Highlights of Center Faculty and Student Presentations
- Faculty and Graduate Student Blogs
- Other Outreach Efforts

Center outreach strives to engage the science and technology policy community and others in discussion of and reflection on critical issues at the intersection of science, technology and decision making. In addition to our quarterly newsletter, Ogmios, dynamic website, and bimonthly email briefings, Center outreach efforts over the past year have included two books as well as a visit by internationally recognized climate policy expert Steve Rayner from Oxford, and editorships of scholarly journals.

## NEW BOOKS

### The Climate Fix: What Scientists and Politicians Won't tell You About Global Warming

*The Climate Fix: What Scientists and Politicians Won't tell You About Global Warming*, by Roger Pielke, Jr. seeks to reframe the debate over climate policy in the context of the disappointing results of the 2009 Copenhagen climate conference and the lost trust of the public in the climate science community. *The Climate Fix* discusses climate science, widely held



fallacies in conventional climate policy, the simple math of decarbonization (see Research section above), the misframing of climate change in international debates, adaptation and the politicization of climate science. *The Climate Fix* concludes by turning climate policy upside-down, recommending a pragmatic and oblique reframing of the issue as a way forward.

### Presidential Science Advisors: Perspectives and Reflections on Science, Policy and Politics

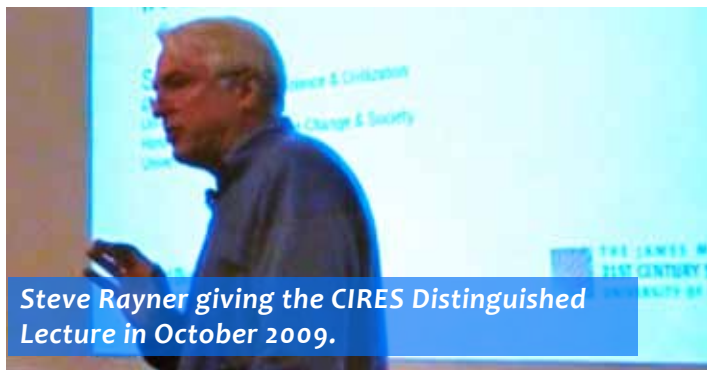
For the past 50 years a select group of scientists has provided advice to the US President, mostly out of the public eye, on issues ranging from the deployment of weapons to the launching of rockets to the moon to the use of stem cells to cure disease. The role of the presidential science advisor came under increasing scrutiny during the administration of George W. Bush, which was highly criticized by many for its use (and some say, misuse)



of science. This edited volume by Roger Pielke, Jr. and Roberta (Bobbie) Klein includes, for the first time, the reflections of the presidential science advisors from Donald Hornig who served under Lyndon B. Johnson, to John Marburger, on their roles within both government and the scientific community. It provides an intimate glimpse into the inner workings of the White House, as well as the political realities of providing advice on scientific matters to the presidential of the United States. The reflections of the advisors are supplemented with critical analysis of the role of the science advisor by several well-recognized science policy practitioners and experts. This volume will be of interest to science policy and presidential history scholars and students.

## STEVE RAYNER VISIT

Steve Rayner, James Martin Professor of Science and Civilization and Director of the Institute for Science, Innovation and Society at Oxford University's Saïd Business School, visited the Center for a week in October. In addition to collaborating with Center faculty, Steve was kept busy that week giving the keynote address at the Renewable and Sustainable Energy Institute's Third Annual Research Symposium titled "Finding the Right Trousers: Radically Rethinking Climate Policy and Low Carbon Energy" and the CIRES Distinguished Lecture titled "The Problem of Uncomfortable Knowledge in Science Policy Debates." Steve also participated in an ENVS Colloquium on Geo-engineering.



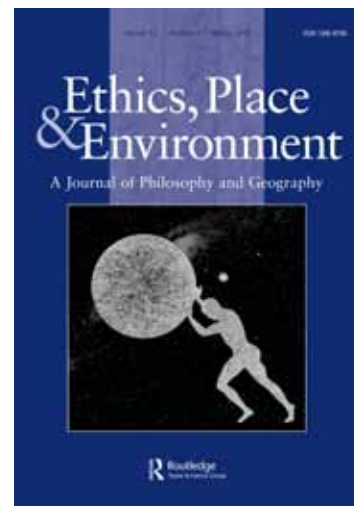
Steve Rayner giving the CIRES Distinguished Lecture in October 2009.



Steve Rayner giving the keynote lecture at the RASEI symposium in October 2009.

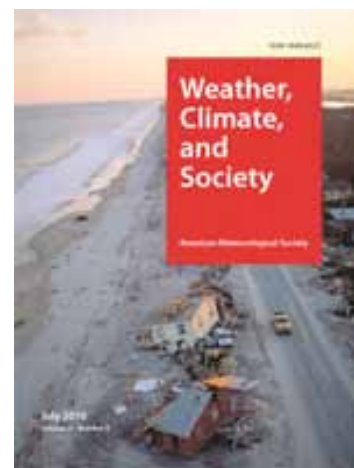
## BENJAMIN HALE CO-EDITOR OF ETHICS, PLACE & ENVIRONMENT

Benjamin Hale accepted co-editorship of the journal *Ethics, Place & Environment* where he serves with Andrew Light (George Mason University and Center for American Progress), one of the journal's founders. They are strengthening the journal's focus on environmental policy, ethics, and philosophy, and will encourage environmental philosophers to engage in applied research on environmental problems.



## NEW JOURNAL, WEATHER, CLIMATE AND SOCIETY

Lisa Dilling served as one of three editors for the founding and subsequent issues of *Weather, Climate, and Society*, a new interdisciplinary journal from the American Meteorological Society.



## CARBON CYCLE SCIENCE WORKING GROUP

Lisa Dilling continues to serve on the committee of the U.S. Global Change Research Program charged with producing a new strategic plan for carbon cycle science in the United States. She brings the perspective of CSTPR research on usable science and decision making under uncertainty to the committee and the report being generated.





Image credit: U.S. Global Change Research Program ([www.globalchange.gov](http://www.globalchange.gov))

## HIGHLIGHTS OF CENTER FACULTY AND STUDENT PRESENTATIONS

Center faculty and students have given 52 presentations over the past year on a variety of topics ranging from decarbonizing Colorado’s economy to the role of NGOs. A complete list can be found in the Appendix. Below are a few highlights.

- **Max Boykoff** participated on two panels at the 2009 Association of Environmental Studies and Sciences Meeting, Environment: The Interdisciplinary Challenge, University of Wisconsin-Madison, October 8-11, 2009. The panels were titled “Representing climate change through mass media: interdisciplinary challenges and opportunities” and “Answering the call: Experiences negotiating the institutional and interdisciplinary challenges of creating a hands sustainability undergraduate curriculum.”
- Last February the Royal Institution of Great Britain sponsored a debate between **Roger Pielke, Jr.** and Bob Ward, policy and communications Director of the Grantham Research Institute on Climate Change and the Environment at the London School of Economics and Political Science. The topic was whether global warming has increased the toll of disasters.
- **Roger Pielke, Jr.** also briefed the Colorado Air Quality Control Commission programs to address climate change in the United States and Colorado.
- **Bill Travis** led an informal discussion for the Forum on Science, Ethics and Policy (FOSEP)

on the promises and perils of geo-engineering. He also convened a discussion by university, state, and NGO participants in the COP-15 Copenhagen meeting, and gave a seminar on human dimensions of climate change to CU’s Scripps Journalism fellows.

- Graduate student **David Cherney** gave a talk on ‘Yellowstone’s Saviors? Non-governmental Organizations in Environmental Policy and American Democracy’ at the Policy Sciences Annual Institute in Boulder.



*Max Boykoff discussing the trends in media reporting of agriculture and climate change in 50 newspapers in 20 countries at the Third Global Media Forum titled, ‘The Heat is On: Climate Change and the Media’ held June 2010, in Bonn, Germany.*

## FACULTY AND GRADUATE STUDENT BLOGS

Despite the retirement of the Center's weblog, Prometheus, last June, blogging at the Center is thriving through the individual blogs of Center faculty and graduate students.

Roger Pielke, Jr.'s blog offers analysis and commentary on science, policy, politics, and occasionally other topics. <http://rogerpielkejr.blogspot.com>

Ben Hale's blog, Cruel Mistress, provides a discussion of environmental ethics, interspersed with links to articles about policy and philosophy, all aimed at covering what are to Ben the most interesting areas of academic study: ethics, policy, and the environment.

<http://cruelmistress.wordpress.com>

David Cherney's blog, The Counter Offensive: Policy Science, and the Environment, focuses on the environment, environmentalism, science policy, nonprofits, wildlife policy, and the Greater Yellowstone Ecosystem.

<http://thecounteroffensive.com>

## OTHER OUTREACH EFFORTS

- Articles in peer reviewed journals and non-peer reviewed publications (see Appendix)
- Content rich website (new design recently completed) <http://sciencepolicy.colorado.edu>
- Quarterly newsletter, Ogmius (<http://sciencepolicy.colorado.edu/ogmius>)
- Bimonthly briefing sent to over 3500 Washington, DC decision makers ([http://sciencepolicy.colorado.edu/outreach/cstpr\\_briefings](http://sciencepolicy.colorado.edu/outreach/cstpr_briefings))
- Frequent media references (see Appendix)





## PEOPLE

- Outreach Coordinator
- Visitors in Residence, Postdocs
- Administrative and Research Staff
- Coauthors, Collaborators, Speakers

### OUTREACH COORDINATOR

#### AMI NACU-SCHMIDT



The Center's outreach efforts are coordinated by Ami Nacu-Schmidt. Ami provides graphics and website design for all of the Center's websites including its home page, SPARC, workshops, and Presidential Science Advisor Series websites. She also serves as the associate editor for the Center's newsletter, *Ogmios*, and as the program coordinator for the Graduate Certificate Program in Science and Technology. She designs posters and flyers for events, provides logistical support for workshops and compiles workshop reports. Her design was recently featured as part of the cover of the new book by Pielke and Klein (eds.), *Presidential Science Advisors: Reflections and Perspectives on Science, Policy and Politics* (Springer, 2010). She manages the Center's noontime seminar series and provides support for other Center events.

### VISITORS IN RESIDENCE, POSTDOCS

#### ILA COTE



Ila Cote is on sabbatical from the Environmental Protection Agency and visiting the Center in 2009 and 2010. She is the former director of EPA's National Center for Environmental Assessment – Research Triangle Park Division, and science advisor to EPA senior management. Her expertise is in public health and environmental risk assessment, and the interface of science and public policy. She is trained as a toxicologist, is a former faculty member of New York University Medical Center's Department of Environmental Medicine, and taught courses in Risk Assessment and Air Quality Management at Duke University. She has also collaborated with the Environmental Ministries of several foreign governments to develop their environmental policies and programs. Ila's interests include: strategic planning for next generation risk assessment practices, policy implications of the European Union efforts to gather data on ~100,000 chemicals, and risk assessment and research coordination among federal agencies.

## URSULA RICK



Ursula was a Postdoctoral Researcher at both the Earth Science & Observation Center (ESOC) and the Center for Science and Technology Policy Research at the University of Colorado. Her work at ESOC involved using remote sensing, in situ data and numerical modeling to better understand the seasonal timing and mechanisms of the mass balance of the Greenland Ice Sheet. At CSTPR, she studied climate change metrics, such as CO<sub>2</sub> concentration, mean global temperature and sea level rise, and their use in climate policy debates. In 2008, Ursula finished her Ph.D. on the hydrology of meltwater in the Greenland Ice Sheet while at the Institute for Arctic and Alpine Research (INSTAAR) at CU. She studied Antarctic ice cores for her M.S. at Dartmouth College and got a B.S. in Material Science and Metallurgical Engineering at Michigan Technological University.

Ursula accepted an American Geological Institute (AGI) Congressional Geoscience Fellowship starting fall 2010. She is working in the office of Senator Mark Udall of Colorado.

## MELANIE ROBERTS

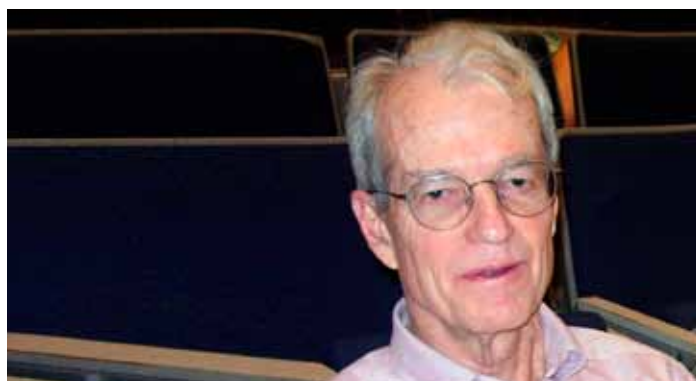


Melanie Roberts served as a CIRES visiting fellow at the Center in 2009 before assuming her current position as Assistant Director for Collaborative Research with the Colorado Initiative in Molecular Biotechnology where she facilitates research collaborations both internal and external to CU and contributes to overall strategy. From 2006-2008, she was an AAAS Science and Technology Policy Fellow in Washington, D.C., where she worked on

innovation and health policy in the United States Senate and on merit review policy for interdisciplinary and potentially transformative research proposals at the National Science Foundation. Melanie also founded the Forum on Science Ethics and Policy, an interdisciplinary organization of graduate students and postdocs that works to build bridges between science and society; and has worked in the pharmaceutical industry. Melanie received a Ph.D. in Neurobiology from the University of Washington in 2005, and a B.S. with honors in physiology & neurobiology from the University of Connecticut in 1997.

## ADMINISTRATIVE AND RESEARCH STAFF

### RAD BYERLY



Rad Byerly received his Ph.D. in experimental atomic and molecular physics at Rice University in 1967. After a postdoctoral fellowship at JILA, Rad moved to science management and policy at the National Institute of Standards and Technology. He joined the staff of the U.S. House of Representatives Committee on Science and Technology in 1975 with responsibility for environmental research programs. He became staff director of the House Space Subcommittee in 1985. In 1987 Rad became director the University of Colorado's Center for Space and Geosciences Policy. Rad was appointed Committee chief of staff in 1991. He retired in 1993, and now writes on science policy and serves on various committees. At the Center he works with students to offer his perspective as a practitioner and with faculty on various projects.



## ROBERTA (BOBBIE) KLEIN



Bobbie Klein is the Center's Managing Director. She obtained her law degree from the University of Wisconsin and worked as an attorney for fifteen years in state and federal government. She returned to the University of Colorado where she obtained a Masters in Public Policy with a focus on environmental policy. Bobbie's research interests include climate change policy, municipal response to drought in Colorado's Front Range, and climate change adaptation. In addition to her work with the Center she has served as the Renewable and Sustainable Energy Institute (RASEI)'s director of research.

## SARAH LESHAN



Sarah Leshan has provided invaluable administrative support at the Center for Science and Technology Policy Research since February 2008. Sarah graduated with a B.A. from Michigan State University and an M.A.L.S. from SUNY Plattsburgh in August 2008.

## COAUTHORS, COLLABORATORS, SPEAKERS

- [Sonia Akter](#), Australian National University (Speaker)
- [Deserai Anderson Crow](#), University of Colorado (Speaker)
- [Krister Andersson](#), University of Colorado (Speaker)
- [Ines Angulo](#), Yale University (Coauthor)
- [Mark Ashton](#), Yale University (Coauthor)
- [Richard Birdsey](#), US Forest Service (Collaborator)
- [Alice Bond](#), Wilderness Society (Coauthor)
- [Catherine Bottrill](#), University of Surrey (Coauthor)
- [Emily Boyd](#), Leeds University (Coauthor)
- [Peter Bridgewater](#), Former Secretary General, Ramsar Convention on Wetlands (Coauthor)
- [Adam Bumpus](#), University of Oxford (Coauthor)
- [Netra Chhetri](#), Arizona State University (Collaborator)
- [John Christy](#), University of Alabama (Coauthor)
- [Susan Clark](#), Yale School of Forestry (Coauthor)
- [Ian Curtis](#), Oxford University (Coauthor)
- [Jason Delborne](#), Colorado School of Mines (Speaker)
- [Rafael B. DeLeon](#), United Nations Development Programme (Collaborator)
- [Suraje Dessai](#), Tyndall Centre for Climate Change Research (Coauthor)
- [Elisabeth Failey](#), University of Colorado (Coauthor)
- [Barbara Farhar](#), University of Colorado (Speaker)
- [David Frame](#), University of Oxford (Coauthor)
- [Robert Frodeman](#), University of North Texas (Speaker)
- [Isabel Galiana](#), McGill University (Coauthor)
- [Michael Goodman](#), Kings College, London (Coauthor)
- [Chris Green](#), McGill University (Coauthor)
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- [Eija-Riitta Korhola](#), *University of Helsinki* (Coauthor)
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- [Maria Carmen-Lemos](#), *University of Michigan* (Coauthor)
- [Robert Lempert](#), *RAND Corporation* (Coauthor)
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- [Nathaniel Logar](#), *Harvard University* (Collaborator)
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- [Karen Maguire](#), *University of Colorado* (Speaker)
- [Maria Mansfield](#), *University of Exeter* (Collaborator)
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- [Richard Norgaard](#), *University of California-Berkeley* (Coauthor)
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- [Kevin Vranes](#), *Point 380 LLC* (Coauthor)
- [Olga Wilhelmi](#), *National Center for Atmospheric Research* (Collaborator)





## APPENDIX

- Publications
- Talks and Presentations
- Media References
- Boards and committee membership
- Grant Activity

### PUBLICATIONS

#### 2010

- Averill, M., 2010. Getting into Court: Standing, Political Questions, and Climate Tort Claims. *Review of European Community and International Environmental Law* 19:1, pp. 122-126.
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## 2009

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- Vranes, K., and R. A. Pielke, Jr., 2009. Normalized Earthquake Damage and Fatalities in the United States: 1900 - 2005, *Natural Hazards Review*, August, pp. 84-101.



## TALKS AND PRESENTATIONS BY CENTER STAFF OR SPONSORED BY THE CENTER

### 2010

- Max Boykoff, 2010 Climate Adaptation Futures Conference, June 29-July 1, 2010.
- Max Boykoff, Invited panelist at the United Nations Convention to Combat Desertification on 'land use and land use change in the climate debate and negotiations', Global Media Forum, Bonn, Germany, June 22, 2010.
- Max Boykoff, Invited panelist for Deutsche Welle Media Services session on 'coverage vs advocacy: does the media guide or reflect a cultural shift?', Global Media Forum, Bonn, Germany, June 22, 2010.
- Ben Hale, Moral Hazard Arguments Against Geoengineering, Association for Environmental Studies (AESS) Conference. Lewis and Clark College. Portland, Oregon, June 17-20, 2010.
- Ben Hale, Undoing and Disallowing, Joint Meeting of ISEE and IAEP, Allens Park, Colorado, June 8-10, 2010.
- Max Boykoff, Who Speaks for the Climate? Understanding Media Representations on Climate Change, May 4, 2010.
- Barbara Farhar, Community Acceptance of Concentrating Solar Power, May 3, 2010.
- Jonathan Hughes, Carbon Trading, Low Carbon Fuel Standards, Renewable Fuel Standards, April 29, 2010.
- Ben Hale, Can we Remediate Wrongs? UCCS Philosophy Department, Colorado Springs, Colorado. April 26, 2010.
- Adam Reed, Carbon Tales: Information Infrastructures for Sustainable Biofuels Governance, April 19, 2010.
- Marilyn Averill, How Climate Change Shifts Rights and Responsibilities, Integrating Development and Climate Change Ethics Conference, Penn State University, State College, April 15-16, 2010.
- Lisa Dilling, Usable Science: A CSTPR-CSPO Briefing Workshop on Science for Decision Making, April 12, 2010.
- Ben Hale, Comment on Deen Chatterjee, ENVS Colloquium, April 5, 2010
- Marilyn Averill, Roles for Academia and Science in Support of Climate Negotiations, Joint meeting and seminar of the European Climate Platform and the Research and Independent Non-Governmental Organizations (RINGOs), Bonn, Germany, April, 2010.
- Marilyn Averill, Research Needs after Copenhagen, European Climate Platform side session panel on "The Research Agenda Post-Copenhagen," United Nations Climate Talks, Bonn, Germany, April 2010.
- Max Boykoff, Lisa Dilling, Ben Hale, Roger Pielke, Jr., Bill Travis, Geoengineering and climate change: possibilities, promises, perils, CIRES Auditorium, March 29, 2010.
- Max Boykoff, Invited talk on 'media representations of climate change and geoengineering' at the International Conference on Climate Intervention Technologies, Asilomar Conference Center, Monterey, California, March 24, 2010.
- Max Boykoff, 'a critical exploration of the concept of 'climate stabilization' in contemporary climate policy,' Cooperative Institute for Research in Environmental Science Fellows Meeting, University of Colorado-Boulder, March 18, 2010.
- Marilyn Averill, Limits to Resilience Framing, State of the Arctic Conference, Miami, March 16-19, 2010.
- Max Boykoff, guest lecture, Science, Technology and Policy course at Colorado School of Mines, Golden CO, March 11, 2010.
- Karen Maguire, CSTPR/RASEI/ESP Noontime Seminar: Impacts of Regulation on Wind Energy Development, March 1, 2010.
- Roger Pielke, Jr., FOSEP Meeting: The Role of Science Advice and Science Advisors in Making Policy, March 1, 2010.
- Max Boykoff, Understanding Climate Change Skepticism panel, American Association for the Advancement of Science meeting, San Diego, CA, February 22, 2010.
- Ben Hale, Nonrenewable Resources and the Inevitability of Outcomes, Center for Values and Social Policy, CU-Boulder, February 2010.
- Roger Pielke, Jr., Climate Change and Effects on the Energy Industry, CO Dept of Public Health, February 18, 2010.
- Julie Lundquist, CSTPR/RASEI/ESP Noontime Seminar: Harnessing the Power of the Wind, February 15, 2010.
- ENVS Colloquium, Climate Change and Adaptation: Disparate Effects on American Indian Nations, February 15, 2010.

- Lisa Dilling, Lessons Learned but not Applied: Adaptation Knowledge and Policy Uptake. ICARUS (Initiative for Climate Adaptation Research and Understanding through the Social Sciences) Workshop on Climate Variability and Adaptation: Theory and Cases Workshop held at Beckman Institute, University of Illinois, Urban Champaign, February 10-13, 2010.
- Roger Pielke, Jr., Has Global Warming increased the toll of disasters?, Royal Institution of GB, February 5, 2010.
- Jennifer Schneider and Jason Delborne, Citizen Voices in the Global Climate & Energy Challenge, February 1, 2010.
- Max Boykoff, Exploring how climate change becomes meaningful in our everyday lives, January 22, 2010.
- Reflections on the COP15 Conference, CIRES S274, January 11, 2010.
- Max Boykoff, Climate and Weather - focusing on Wind Energy Solutions, January 7, 2010.
- Yohei Mitani, CSTPR/IBS-ESP Noontime Seminar, The Effects of Ecological Information Provision, December 7, 2009.
- Maxwell Boykoff, Who Speaks for the Climate? Historical Account of Media Coverage of Climate Change, 2009 Amsterdam Conference on Earth Systems Governance, Volendam, Netherlands, December 4, 2009.
- Maxwell Boykoff, Cultural Politics and Climate Change, at Oxford University, December 1, 2009.
- Marilyn Averill, CSTPR/IBS-ESP Noontime Seminar, The Role of the Judiciary in U.S. Climate Policy, November 16, 2009.
- Ursula Rick, CSTPR/IBS-ESP Noontime Seminar, Sea Level Rise as a Climate Change Metric, November 2, 2009.
- Bill Travis, FOSEP Meeting: The Promise and Perils of Geoengineering, October 27, 2009.
- Max Boykoff, CSTPR/IBS-ESP Noontime Seminar, Inconvenient Celebrity? Celebrities & Climate Change, October 26, 2009.

## 2009

- Ben Hale, Nonrenewable Resources and the Inevitability of Outcomes,” ISEE Group Meeting. Eastern Division APA, December 27-30, 2009.
- Ursula Rick, Relative Magnitude of Mass Change Mechanisms on the Greenland Ice Sheet, December 18, 2009.
- Ben Hale, Assessing the Mitigation and Remediation Options. COP15 United Nations Climate Change Conference, Credentialed Side Event, Copenhagen, Denmark, December 7-18, 2009.
- Lisa Dilling, Providing policy-relevant information for greenhouse gas management: Perspectives from science and technology policy research. Invited Presentation, American Geophysical Union, San Francisco, December 16, 2009.
- Lisa Dilling, Providing policy-relevant information for greenhouse gas management, December 16, 2009.
- Max Boykoff, AGU Workshop on Communicating Climate Change: Media, Dialogue, and Public Engagement, December 13, 2009.
- Maxwell Boykoff, NOAA Seminar: The cultural politics of climate change: Focusing on mass media, December 9, 2009.
- David Cherney, Yellowstone’s Saviors? Nongovernmental Organizations in Policy & American Democracy, October 24, 2009.
- Steve Rayner, CIRES Distinguished Lecture Series, October 23, 2009.
- Steve Rayner, Finding the Right Trousers: Radically Rethinking Climate Policy and Low Carbon Energy, October 21, 2009.
- Ben Hale, Comment on Steve Rayner’s “Climate Geoengineering: The Governance Dilemma” ENVS Colloquium. October 19, 2009
- Deserai Anderson Crow, CSTPR/IBS-ESP Noontime Seminar, Recreational water rights in Colorado, October 19, 2009.
- Max Boykoff, 2009 Association of Environmental Studies and Sciences Meeting, October 9, 2009.
- Rad Byerly, CSTPR/IBS-ESP Noontime Seminar, The Colorado Air Quality Control Commission, October 5, 2009.
- Marilyn Averill, The Role of International Environmental Law in Transnational Governance: Human Rights, International Law Association International Law Weekend, New York, October 2009.



- Sonia Akter, CSTPR/IBS-ESP Noontime Seminar, Climate change mitigation in Australia, September 28, 2009.
- Max Boykoff, Signals and noise: examining media representations of climate change, September 25, 2009.
- Robert Frodeman, CSTPR/IBS-ESP Noontime Seminar, What is interdisciplinarity?, September 21, 2009.
- Ben Hale, Benefits are No Good. Linking Science to Societal Benefits: Why, How and When? Workshop. Organized jointly by the Linköping University Centre for Climate Science and Policy Research and CU's Center for Science and Technology Policy Research. Linköping University, Sweden. September 14-17, 2009.
- Krister Andersson, CSTPR/IBS-ESP Noontime Seminar, Community Self-Governance of Forests in Bolivia, September 14, 2009.
- Roger Pielke, Jr., Lisa Dilling, others, The First 300 Days: An Assessment of Obama's Energy and Climate Policy, Panel Discussion at CU, September 3, 2009.
- Ben Hale, Comment on John Garthoff's "Meriting Concern and Meriting Respect," Second Annual Rocky Mountain Ethics (RoME) Congress, University of Colorado, Boulder, August 6-9, 2009.
- Marilyn Averill, Who Runs the Greenhouse? The Role of the Judiciary in U.S. Climate Policy, American Political Science Association Annual Meeting, Toronto, August 2009.
- Lisa Dilling, Social Science and Decision Support in Carbon Cycle Science Planning, Invited Plenary Speaker, Ocean Carbon and Biogeochemistry Program Summer Meeting, Woods Hole, MA, July 20, 2009.
- Erin Moore, The Conflict Between Growth and Goodness in International Development, SPT 2009, July 7-10, 2009.
- Roger Pielke, Jr., Efficiency Illusion & other Energy Myths: Why Cap & Trade Won't Work-and What Can, July 1, 2009.

## MEDIA REFERENCES

### 2010

- Roger Pielke, Jr. was referenced in 13 June 2010 Times Colonist article on Forum to discuss Vancouver Island's energy needs: Forum to explore Island's growing energy needs by Judith Lavoie.
- Max Boykoff was quoted in 8 June 2010 Discovery News article on public perception of climate change: Is Global Warming Real? by Robert Lamb.
- Max Boykoff was quoted in 27 May 2010 Reuters article on public view of climate change.
- Roger Pielke, Jr. quoted in 16 May 2010 Boston Globe article on global warming debate between Lindzen and Emanuel.
- Roger Pielke, Jr. cited in 12 May 2010 Science Insider article on Hartwell paper about how to reform climate policy.
- Pielke co-authored "Hartwell paper" referenced in 11 May 2010 BBC News article on new direction for climate policy.
- Benjamin Hale quoted in 18 April 2010 Washington Post article on conservation in the hotel business.
- Roger Pielke, Jr. quoted in 12 April 2010 ABC News article on the House of Commons committee.
- Max Boykoff and Ben Hale interviewed on 5 April 2010 for Seventh Generation video by One Earth Productions.
- Max Boykoff quoted in 12 March 2010 Guardian article on carbon footprint of the music industry.
- Max Boykoff quoted in 11 March 2010 Environmental Research article on greenhouse gases and the music industry.
- Roger Pielke, Jr. quoted in 11 March 2010 Washington Post article on the review of the IPCC.
- Roger Pielke, Jr. quoted in 10 March 2010 BBC News article on reviewing the IPCC.
- Max Boykoff quoted in 1 March 2010 Environmental Research Web article on the media and climate change.
- Roger Pielke, Jr. quoted in 27 February 2010 Associated Press article on review of the IPCC.
- Roger Pielke, Jr. quoted in 26 February 2010 Wall Street Journal article on restoring the IPCC.

- Roger Pielke, Jr. interviewed for 24 February 2010 Council on Foreign Relations publication on climate science.
- Roger Pielke, Jr. quoted in 24 February 2010 Denver Post article on Hickenlooper and decarbonization in Colorado.
- Roger Pielke, Jr. highlighted in 24 February 2010 New York Times blog on the future of climate research.
- Max Boykoff highlighted in 22 February 2010 Daily Camera article on media exaggerating climate change debate.
- Max Boykoff highlighted in 22 February 2010 University of Colorado News article on media's role in climate change.
- Max Boykoff quoted in March/April 2010 issue of World Watch magazine on news coverage of climate change.
- Roger Pielke, Jr. co-authored letter to the editor in 14 February 2010 Daily Camera article on the IPCC.
- Roger Pielke, Jr. quoted in 13 February 2010 Wall Street Journal article on Boulder being a 'green' role model.
- Roger Pielke, Jr. quoted in 13 February 2010 Sydney Morning Herald article on Australia's carbon emissions.
- Roger Pielke, Jr. quoted in 10 February 2010 Christian Science Monitor article on the IPCC.
- Roger Pielke, Jr. quoted in 8 February 2010 New York Times article on Rajendra Pachauri and the IPCC.
- Roger Pielke, Jr. cited in 6 February 2010 Telegraph UK article on factual errors in IPCC report.
- Roger Pielke, Jr. quoted in 6 February 2010 National Post blog on Climategate and the IPCC.
- Roger Pielke, Jr. referenced in two 4 February 2010 Economist articles on Rajendra Pachauri.
- Roger Pielke, Jr. appeared on BBC Newsnight with Professor Chris Field, the new head of IPCC Working Group II .
- Roger Pielke, Jr. cited in 30 January 2010 The Australian article on IPCC's reputation.
- Roger Pielke, Jr. quoted in 30 January 2010 Telegraph UK article on the changing of the Stern Report.
- Roger Pielke, Jr. quoted in 27 January 2010 National Post blog on the IPCC.
- Roger Pielke, Jr. quoted in 26 January 2010 Houston Chronicle article on perceptions of climate change.
- Roger Pielke, Jr. quoted in 26 January 2010 Telegraph UK article on IPCC controversy.
- Roger Pielke, Jr. co-wrote 25 Jan 2010 German magazine Der Spiegel op-ed on IPCC and its head, Rajendra Pachauri.
- Roger Pielke, Jr. quoted in 25 January 2010 Science Insider article on his recent op-ed on the IPCC.
- Roger Pielke, Jr. quoted in 25 January 2010 Telegraph UK blog on Nicholas Stern and the Stern Review.
- Roger Pielke, Jr. quoted in 21 January 2010 New York Times article on IPCC apology.
- Roger Pielke, Jr. quoted in 20 January 2010 Seattle Times article on recent IPCC error.
- Roger Pielke, Jr. quoted in 19 January 2010 Financial Post article on the IPCC.
- Roger Pielke, Jr. quoted in 19 January 2010 New York Times Blog on IPCC's findings on Asian Glaciers.
- Max Boykoff et al. interview featured in 11 January 2010 Eurozine article on the media and climate change.
- Benjamin Hale interviewed for a 10 January 2010 Washington Post article on conservation within 'green' hotels.
- Max Boykoff referenced in 2 January 2010 New York Times blog on media coverage on climate change.

## 2009

- Maxwell Boykoff quoted in 17 December 2009 Huffington Post's Q&A with Al Gore.
- Benjamin Hale cited in 16 December 2009 Washington Post article on COP15 Meetings.
- Roger Pielke, Jr. highlighted in 12 December 2009 Denver Post article on the lost credibility of climate science.
- Max Boykoff part of a discussion in Soundings Winter 2009 issue on the media and climate change.
- Roger Pielke, Jr. quoted in 9 December 2009 Forbes article on adaptation and climate change.
- Roger Pielke, Jr. quoted in numerous November/December 2009 National and International articles on ClimateGate.



- Max Boykoff's work on recent climate change survey highlighted in 6 December 2009 New York Times article.
- Roger Pielke, Jr. quoted in 5 December 2009 Daily Camera article on Boulder and the upcoming COP15 Meeting.
- Roger Pielke, Jr. quoted in 5 December 2009 The Australian article on reducing carbon emissions.
- Roger Pielke, Jr. cited in 22 November 2009 Wall Street Journal article on cyclones and global warming.
- Maxwell Boykoff's work "Balance as Bias" referenced in 13 November 2009 Columbia Journalism Review article.
- Roger Pielke, Jr. quoted in 13 November 2009 Science article on global warming and U.S. public concerns.
- Roger Pielke, Jr. quoted in 12 October 2009 Wall Street Journal blog on the Senate climate bill.
- Roger Pielke, Jr. highlighted in 8 October 2009 environmentalresearchweb article on Japan's Mamizu policy.
- Lisa Dilling quoted in October 2009 Himal Southasian magazine article on communicating about climate change.
- Roger Pielke, Jr. quoted in 30 September 2009 Bangor Daily News article on climate leadership.
- Roger Pielke, Jr. cited in 28 September 2009 Philadelphia Inquirer article on economics of El Niño.
- David Cherney co-authored article for 27 September 2009 New York Times blog on US National Parks.
- Roger Pielke, Jr. cited in 23 September 2009 Wall Street Journal blog on the business of the environment.
- Roger Pielke, Jr. cited in 23 September 2009 Christian Science Monitor article on recent UN global warming summit.
- Roger Pielke, Jr. cited in 22 September 2009 Science Insider article on China and Climate.
- Lisa Dilling interviewed in September 2009 CU-Boulder video on new energy for Colorado.
- Roger Pielke, Jr. quoted in 19 August 2009 New York Times blog on Climate Engineering.
- Roger Pielke, Jr. quoted in 10 August 2009 New York Times blog on climate engineering.
- Roger Pielke, Jr. quoted in 7 August 2009 Wall Street Journal blog on climate geoengineering.
- Roger Pielke, Jr. quoted in 4 August 2009 Wall Street Journal article on Climate Change in India and China.
- Roger Pielke, Jr. quoted in 30 July 2009 Wall Street Journal blog on clean-tech investments.
- Roger Pielke, Jr. quoted in 28 July 2009 Albuquerque Journal article on combating climate change with technology.
- Roger Pielke, Jr. cited in 20 July 2009 Wall Street Journal blog on emission reductions in India.
- Roger Pielke, Jr. wrote an Op-ed for 11 July 2009 Il Nuovo Riformista on reducing CO2 emissions.
- Roger Pielke, Jr. quoted in numerous June/July 2009 Examiner articles on global warming.
- Roger Pielke, Jr. cited in 10 July 2009 Seed Magazine's Week in Review.
- Roger Pielke, Jr. cited in 9 July 2009 Wall Street Journal blog on new Prins et al. climate policy paper.
- Roger Pielke, Jr. cited in 8 July 2009 Nature blog on recent Prins et al. climate policy paper.
- Roger Pielke, Jr. cited in 8 July 2009 Washington Post blog on El Nino and Hurricanes.
- Roger Pielke, Jr. quoted in 1 July 2009 Colorado Springs Gazette article on the Waxman-Markey bill.

## BOARDS AND COMMITTEE MEMBERSHIP

### MARILYN AVERILL

2010- Natural Resources Law Center, University of Colorado School of Law Member of the Board of Advisors.

2008- Research and Independent Non-Governmental Organizations (RINGOs), constituency to the United Nations Framework Convention on Climate Change Member of the Steering Committee.

### LISA DILLING

2008-2010 Editor of journal, Weather, Climate and Society

2008-present Member of UCAR President's Advisory Committee on University Relations

2008-present Member of Carbon Cycle Science Working Group (for CCSP IWG)

2009-2010 CIRES Visiting Fellow Committee

2008-2009 CIRES Graduate Student Fellowship Committee

2008-present CIRES Fellow

2008-2009 ENV5 Colloquium Committee

2008-2009 CSTPR Faculty Search Committee

2007-2008 ENV5 Graduate Committee

2007-2008 CSTPR Director Search Committee

2007-present CSTPR Associate Director

2004-present CSTPR Executive Committee

2004-2007 Co-Lead, State of the Carbon Cycle Report (SOCCR)/SAP 2.2, Climate Change Science Program

2005-2006 DISsertation Initiative for the advancement of Climate Change ReSearch (DISCCRS) Mentor

2004 SOARS (Significant Opportunities in Atmospheric Research and Science) Mentor

### BEN HALE

2007-2008- Pre-Professional Advising candidate search committee

2007-2008- ENV5 Colloquium Organizer with Diana Nemergut

### ROGER PIELKE, JR.

2007- Member, Editorial Board, Nature & Culture

2006- Member, Editorial Board, Global Environmental Change: Human and Policy Dimensions

2006- Member, Editorial Board, Environmental Hazards

2006- Member, Editorial Board, Water Resources Research

2004- Member, Editorial Board, Environmental Science and Policy

2004- Member, Editorial Board, Darwin

2003-2005 Member, Editorial Board, International Encyclopedia of Science, Technology and Ethics

2001-2007 Member, Editorial Board, Bulletin of the America Meteorological Society

2001- Member, Editorial Board, Policy Sciences

2001- Member, Editorial Board, Natural Hazards Review

2006-2007 CIRES/ENV5 Science Policy Faculty Search Committee

2006-2007 CIRES New Fellows Committee

2006 CIRES External Review Committee

2006 Environmental Studies Graduate Curriculum Committee

2006- Member, Steering Committee, The Nation's Coasts: A Vision for the Future, H. John Heinz III Center for Science, Economics and the Environment

2005- Member, Advisory Committee, Societal Impacts Group, National Center for Atmospheric Research

2003 Member, Advisory Committee, Pacific ENSO Applications Center



## GRANT ACTIVITY

**PROJECT TITLE:** Evaluating adaptive policies for urban water resource management: Interactions between short-term drought responses and long-term climate change adaptation strategies

**SOURCE:** Sectoral Applications Research Program (NOAA)

**AMOUNT:** \$298,255

**START DATE:** August 1, 2010

**END DATE:** July 31, 2012

**PROJECT TITLE:** Science Policy Assessment and Research on Climate – Decision Making Under Uncertainty

**SOURCE:** National Science Foundation

**AMOUNT:** \$2,400,000

**START DATE:** October 1, 2004

**END DATE:** September 30, 2011

**PROJECT TITLE:** Science Policy Assessment and Research on Climate – Decision Making Under Uncertainty supplemental award

**SOURCE:** National Science Foundation

**AMOUNT:** \$248,576

**START DATE:** July 19, 2009

**END DATE:** September 30, 2011

**PROJECT TITLE:** Reconciling Supply of and Demand for Research in the Science of Science and Innovation Policy

**SOURCE:** National Science Foundation

**AMOUNT:** \$39,435

**START DATE:** September 1, 2008

**END DATE:** July 31, 2011

**PROJECT TITLE:** Scholar's Award - Investigating the Origins and Evolution of "Basic Research" as a Political Symbol

**SOURCE:** National Science Foundation

**AMOUNT:** \$41,050

**START DATE:** August 1, 2008

**END DATE:** August 31, 2011

**PROJECT TITLE:** A Drought Impact and Vulnerability Indicator Suite

**SOURCE:** Western Water Assessment (NOAA)

**AMOUNT:** \$50,240

**START DATE:** July 1, 2009

**END DATE:** June 30, 2010

**PROJECT TITLE:** Drought Adaptation among Ranchers in the Intermountain West (and building a network of agriculturalists to inform WWA)

**SOURCE:** Western Water Assessment (NOAA)

**AMOUNT:** \$49,000

**START DATE:** July 1, 2010

**END DATE:** June 30, 2011

**PROJECT TITLE:** Colorado Climate Preparedness project

**SOURCE:** Western Water Assessment (NOAA)

**AMOUNT:** \$171,000

**START DATE:** May 1, 2010

**END DATE:** January 31, 2011



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