



CSTPR

University of Colorado
Cooperative Institute for Research in Environmental Sciences
Center for Science and Technology Policy Research

Annual Report
July 1, 2010 - December 31, 2011

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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University of Colorado
Boulder

CSTPR ANNUAL REPORT

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Cooperative Institute for Research in Environmental Sciences

Center for Science & Technology Policy Research

INTRODUCTION

The Center for Science and Technology Policy Research (CSTPR) was established within CIRES in 2001 to conduct research, education, and outreach at the interface of science, technology, and the needs of decision makers in public and private settings. The Center focuses on the intersection of the environment and society, applying the social and policy sciences to problems of environmental change, management, and sustainability. The Center's research is integrated with the ongoing activities of CIRES, NOAA, CU-Boulder, and the broader science and technology community.

We dedicate this 10th anniversary report to former CIRES Director Dr. Susan Avery whose support for a CIRES science policy center formed the backbone for the Center's accomplishments over the past 10 years.

Dr. Susan Avery, Director of Cooperative Institute for Research in Environmental Sciences 1994-2004 and currently the President and Director of the Woods Hole Oceanographic Institution.



LETTER FROM THE DIRECTOR

As a social science unit in a natural science institute, the Policy Center represents a continuing effort to illuminate that society box in the old earth system diagrams, an effort now heading into its second decade.



Formulations of earth systems science are often encapsulated in so-called “wiring diagrams” of interacting variables meant to sum up whole systems. In early formulations a box resided somewhere in this wiring diagram that was labeled something like “society” or “humans”. Like the other “subsystems” in the diagram, this one

encompassed much more complexity than its modest size and appearance in the diagram signaled. Even as other system boxes were filled in with detail, the social box often sat blank, not because social scientists knew so little about human behavior, but because so few social scientists were yet engaged in the enterprise of explaining how earth systems functioned, and this was partly because few social scientists saw humans as part of the earth system. Still, the mostly-blank box beckoned, and some social scientists joined in the effort with theories and evidence for how humans behaved in the environment, how they changed earth systems, and

responded to those changes.

As a social science unit in a natural science institute, the Policy Center represents a continuing effort to illuminate that society box in the old earth system diagrams, an effort now heading into its second decade. In the last decade, and indeed in the four decades since the first earth system diagrams were created, a growing body of work on human behavior, decision-making, policy choices, and environmental impacts, has enriched our understanding of both the earth and people. As reflected in this and previous annual reports, our growing group of faculty and students has contributed to the effort in a myriad of ways, especially focused on the choices that people make in treating the environment and in responding to challenges like natural hazards, climate change, and variability in earth sub-systems such as the carbon and hydrologic cycles. The complexity hidden in the “society” box of those early earth system diagrams has been partially clarified, and in just the decade that the Center has existed, the questions put to social scientists increasingly attend not only to how humans operate in the earth systems, but how humans should manage earth systems, that is, what should be our policy on earth systems.

Bill Travis
Director
william.travis@colorado.edu

THE CENTER AT A GLANCE

FOR THE PERIOD JULY 1, 2010 - DECEMBER 31, 2011*

33,797

Unique website visitors

4,184

Recipients of Center’s Science Policy E Briefing

782

Subscribers to Ogmios, the Center newsletter

173

Media references to the Center and/or its personnel

93

Presentations by Center staff and students

72

Publications (25 journal articles)

44

Coauthors and collaborators

37

Talks by non-Center personnel

10

Graduate students who worked at the Center

**Because this report is transitioning from a fiscal year report to a calendar year report, it covers July 1, 2010 through December 31, 2011. Subsequent reports will cover January 1 – December 31.*



HIGHLIGHTS

The idea of creating a science policy center within CIRES was first discussed over a decade ago by then-CIRES director Susan Avery and Roger Pielke, Jr., then a scientist at NCAR. With the support and encouragement of Susan, we were shown a historic bungalow at the north edge of campus as a possible home for our offices. The building at the time had been unoccupied for a while, and suffered from neglect and wear. But we saw a lot of potential and told Susan we'd take it.

The Center for Science and Technology Policy Research opened its doors at 1333 Grandview with a staff of two in the summer of 2001. Over the course of the following year the Center added staff and students, and then was approved as an official University of Colorado center. Since that time the Center has grown to include a staff of 6 tenured and tenure-track faculty, and has developed a rich and varied research portfolio and effective outreach and educational programs. Our work has been influential in science policy decision making circles in Washington and elsewhere, thus fulfilling our mission to “serve as a resource for science and technology decision makers and those providing the education of future decision makers.” Our programs have been emulated at other universities and our record of scholarly achievement quite literally speaks for itself. Consistently from the start, the support of CIRES for creating a vibrant research center focused on science and technology policy research has been the backbone of everything that we have done since those first days.

While all of our accomplishments over the past 10+ years are too extensive to list, below are a few of our proudest achievements.

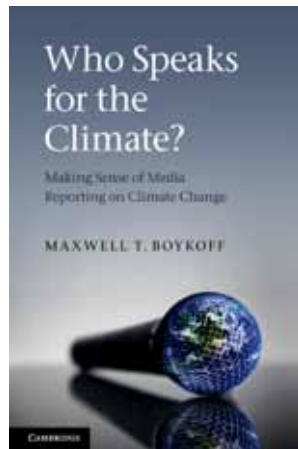
RESEARCH AND PUBLICATIONS

- Our five-year, \$2.4 million National Science Foundation project – “Science Policy Assessment and Research on Climate” (SPARC)–examined the relationship between science policy decisions and climate policy decisions. SPARC resulted in more than eleven master’s theses and dissertations and over 200 publications, the vast majority in peer-reviewed publications. SPARC organized numerous workshops on usable science, reconciling supply and demand for information, and assessing the public values in climate science. These activities have directly engaged science policy practitioners from the U.S., Australia, Norway, Germany, and the United Kingdom, among others, and have advanced SPARC’s initial goal of a highly integrated research and outreach agenda. They have also contributed to the creation of an international network of researchers and practitioners who are now sharing and applying the conceptual and methodological contributions of the SPARC effort. One particularly notable culmination of SPARC’s outreach effort was the production of a handbook on usable science written for practitioners that summarized SPARC research findings, and which was widely distributed across the community. The handbook was unveiled at a symposium in Washington, D.C. with a keynote speech by the late Dr. Jack



Marburger, science advisor to President George W. Bush. The symposium was attended by over 100 people including science managers from numerous agencies. Subsequently, SPARC senior personnel were asked to brief the leadership of the U.S. Climate Change Research Program on the implications of SPARC's work. SPARC completed its work in the fall of 2011.

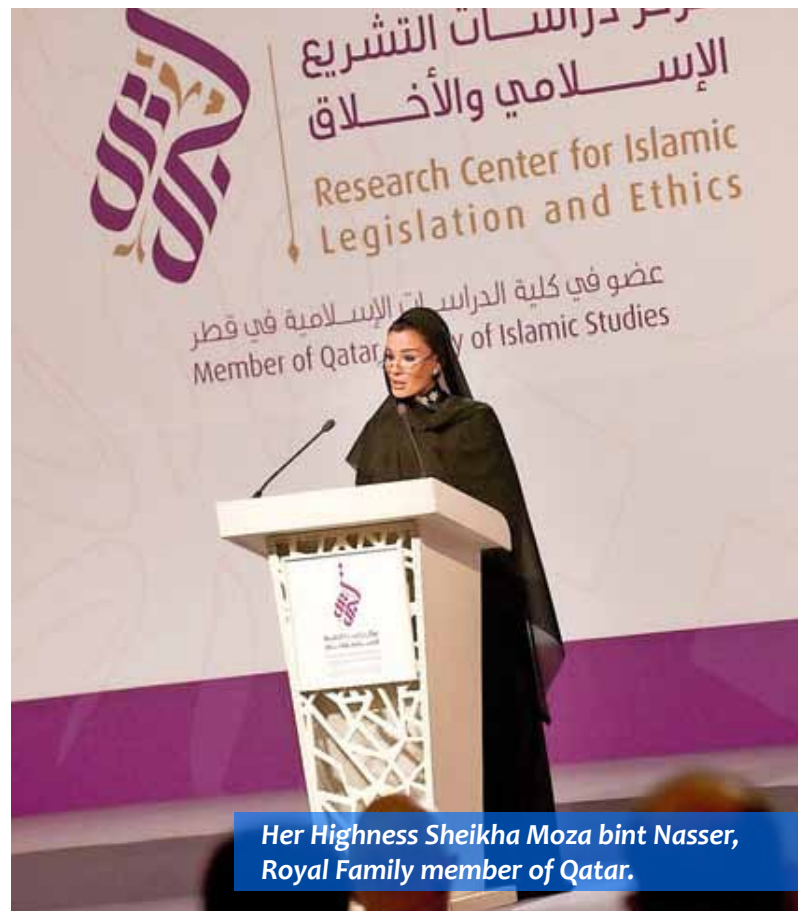
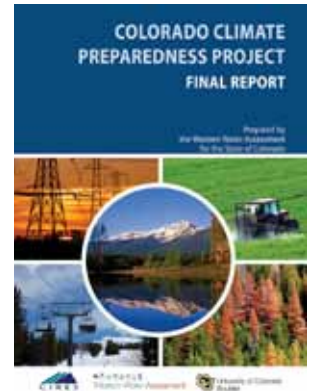
- Center faculty members have published a series of highly regarded books, most recently *The Climate Fix: What Scientists and Politicians Won't Tell you about Global Warming* (Pielke 2010), and *Who Speaks for the Climate? Making Sense of Media Reporting on Climate Change* (Boykoff 2011). *The Climate Fix* has been widely praised by reviewers such as Sean Sublette, broadcast meteorologist at ABC News 13 in Virginia; Bob Ryan, chief meteorologist for WJLA TV in Washington, D.C.; Mike Smith of Accuweather; Booklist; United Nations University National Post (Canada); Nature The Library Journal; The Economist; Peter Kareiva, chief scientist of The Nature Conservancy; and the American Society of Landscape Architects. *Who Speaks for the Climate?* was selected as one of Scotsman Environmental Books of the Year. Roger's 2007 book, *The Honest Broker*, was identified by Sir Peter Gluckman, New Zealand's science advisor, as one of the books that has influenced his thinking and "the best manual for a person in [his] position." *The Honest Broker* was featured on the front page of the New York Times science section. Lisa Dilling and Susi Moser's 2007 book, *Creating a Climate for Change: Communicating Climate Change and Facilitating Social Change*, has been described as "packed with useful information" that can help scientists and others communicating about climate change choose what to emphasize and what to avoid.



- Lisa Dilling co-lead and was a lead author of the 2007 "First State of the Carbon Cycle Report (SOCCR): The North American Carbon Budget and Implications for the Global Carbon Cycle", A Report by the U.S. Climate Change Science Program and the Subcommittee on Global Change Research. The report was part of a program designed to provide accurate, unbiased, and policy-relevant scientific information concerning

the carbon cycle to a broad range of stakeholders.

- Bill Travis and Bobbie Klein were co-authors of the 2011 "Colorado Climate Preparedness Project Final Report", prepared for the governor of the State of Colorado. The report catalogued climate impacts and adaptation activities and options in five climate-sensitive sectors in the state of Colorado, and provided a list of sectoral options and overarching recommendations for climate adaptation planning in Colorado.
- Ben Hale was invited by the Royal Family of Qatar and the Qatar Foundation to speak at the inauguration of the Center for Islamic Legislation and Ethics in January 2012.
- Center faculty members have testified by invitation before the House Committees on Science and Technology and on Government Reform, and the Senate Committee on Environment and Public Works, and have briefed the Colorado Air Quality Control Commission and the Italian Parliament.
- The Center has published 367 articles, books, chapters, reports, and opinion pieces since its inception.



Her Highness Sheikha Moza bint Nasser, Royal Family member of Qatar.

EDUCATION AND STUDENTS

- Center faculty advised seven graduate students who have been awarded Ph.D.s: Adam Briggles, Dave Cherney, Erik Fischer, Nat Logar, Genevieve Maricle, Elizabeth McNie, and Shali Mohleji. Their dissertation topics include: “The President’s Council on Bioethics: Science, Democracy, and the Good Life?”; “Environmental Saviors? The Effectiveness of Nonprofits in Greater Yellowstone”; “Midstream Modulation of Technology: A Case Study in the Implementation Possibilities for U.S. Federal Legislation on Integrating Societal Considerations into Nanotechnology Research and Development”; “Shaping Science: How to Turn Science Studies into Science Action”; “Co-producing useful climate science information for policy: Lessons from the RISA program”; and “Gaining From Losses: Using Disaster Loss Data As A Tool For Appraising Natural Disaster Policy.”
- Our former students have found positions on the faculty at Purdue University, the University of North Texas, and Arizona State University; with the American Meteorological Society, USAID, Government Accountability Office (GAO), U.S. Senate, and House Science Committee; and running successful businesses.
- Center graduate students have interned in federal science policy decision making bodies including the U.S. State Department, House Science Committee, and Office of Management and Budget, as well as the City of Westminster Water Utility Department.
- Center graduate students have been awarded the CIRES Graduate Research Fellowship, the CIRES Graduate Student Seminar Series “Best Talk” award,



Congressman Jared Polis speaking with University of Colorado students in April 2011.

the Morris K. Udall Dissertation Fellowship, the Center for Humanities and the Arts Fellowship, and the Summer Graduate School Fellowship.

- Nineteen students have been awarded a certificate in Science and Technology Policy since the program was established in 2004.
- The Center hosted a Campus2 Congress event that allowed students to speak with Congressman Jared Polis about climate policy and politics.

OUTREACH

- Our highly acclaimed 2005-06 lecture series, “Policy, Politics and Science in the White House: Conversations with Presidential Science Advisors” hosted visits and public lectures by seven current and former science advisors to U.S. presidents, including Dr. Donald Hornig (President Johnson); Dr. Edward David (President Nixon); Dr. Frank Press (President Carter); Dr. George Keyworth (President Reagan); Dr. John Gibbons (President Clinton’s first science advisor); Dr. Neal Lane (President Clinton’s second science advisor); and the late Dr. John Marburger (President G.W. Bush). The Center’s 2010 book, *Presidential Science Advisors: Perspectives and Reflections on Science, Policy and Politics* (Pielke and Klein, eds.), summarizes the advisors’ remarks and includes the perspectives of several science policy scholars.
- In the wake of 9/11 the Center organized a symposium titled “Science, Technology and Security: Knowledge for the Post-9/11 World” which brought together experts from all four CU campuses, NCAR, NOAA, NREL, NIST, CSU, University of Denver, CO School of Mines, and the U.S. Air Force Academy to discuss the connections between science and homeland security.



Former Center graduate students participated in 2009 Oslo workshop “Reconciling the Supply of and Demand for Research in the Science of Science and Innovation Policy”.



Roger Pielke, Jr. interviewing Dr. Neal Lane during Presidential Science Advisors Series in 2005.

- Other symposia, workshops and lecture series organized by the Center include “Science, Technology and Decision Making”; “Linking Science to Societal Benefits”; “The Science of Science and Innovation Policy”; and “The Energy and Climate Challenge” (with the CU Energy Initiative).
- The Center has hosted visits and lectures by prominent international science policy experts including Steve Rayner (Oxford) and Mike Hulme (University of East Anglia).
- The Center’s popular noontime seminar series and newsletter are now in their 10th year.
- The Center’s website, which was completely redesigned in 2010, has been one of the most heavily trafficked websites on the CU-Boulder campus. Aside from the CU homepage and various housekeeping sites, only four CU sites receive more traffic than the Center’s site.
- Roger Pielke, Jr., continues to write a very popular blog addressing a wide range of science policy issues. His blog has been named one of the 50 most popular science blogs by Nature magazine and described as an “excellent, informative site” by Science magazine.
- Lisa Dilling is a member of the U.S. Environmental Protection Agency’s (EPA) Board of Scientific Counselors (BOSC) and a member of the advisory boards of two large scale research programs on science for decision making, and served as a founding editor of the new interdisciplinary journal, *Weather Climate and Society*.
- Ben Hale is Vice President-elect of the International Society for Environmental Ethics and has been co-editor of the journal *Ethics, Place and Environment* since 2009.
- Bobbie Klein and Ami Nacu-Schmidt were awarded the CIRES Outstanding Service Award for their efforts in organizing the presidential science advisor lecture series.

FACULTY AND STAFF RECOGNITION

- Roger Pielke, Jr., received the Eduard Brückner Prize for outstanding achievement in interdisciplinary climate science. He chaired the 2010 Gordon Research Conference on Science and Technology Policy, the major professional meeting in this field. He was recently awarded an Honorary Doctor of Philosophy by Linköping University in Sweden.



Mike Hulme of University of East Anglia giving a lecture in the CIRES Auditorium in 2011.



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 Ohio State University.

LISA DILLING



Lisa Dilling is 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. She studies decision making, the use of information and science policies related to climate change, adaptation, and carbon management. Her current projects examine drought in urban water systems, water governance and climate change, municipal adaptation to hazards, and public lands management in the context of climate change. 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. She has authored numerous articles and is co-editor of the book, “Creating a Climate for Change: Communicating climate change and facilitating social change” from Cambridge University Press. She

received her Ph.D. in Biological Sciences from the University of California, 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 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). Roger's research focuses on science, innovation and politics and in 2011 he began to write and

research on the governance of sports organizations, including FIFA and the NCAA. Roger holds degrees in mathematics, public policy and political science, all from the University of Colorado. In 2012 Roger was awarded an honorary doctorate from Linköping University in Sweden and was also awarded the Public Service Award of the Geological Society of America. Roger also received the Eduard Brückner Prize in Munich, Germany in 2006 for outstanding achievement in interdisciplinary climate research. At CIRES, Roger served as the Director of the Center for Science and Technology Policy Research from 2001-2007. Before joining the faculty of 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, and holds academic appointments at Macquarie University in Sydney, Australia and the London School of Economics. 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 (2007). His most recent book is *The Climate Fix: What Scientists and Politicians Won't Tell you About Global Warming* (2010, Basic Books). He is currently working on a book on technology, innovation and economic growth.

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

Over the past 1 ½ years Center research has increasingly focused on climate change adaptation. Roger Pielke, Jr. argued in his book *The Climate Fix* that an effective climate policy will necessarily include both mitigation and adaptation policies, and discussed what an effective adaptation policy might look like. Lisa Dilling’s IDCA project is asking whether adaptation to current climate variability (drought) makes urban water utilities more or less able to adapt to future climate change. Bill Travis has been modeling the adaptive behavior of a Great Plains wheat farm in response to drought to understand whether extreme events might act as pacemakers of adaptation. Two projects catalogued the current state of climate change adaptation decision making, one within western U.S. public lands agencies, the other within the State of Colorado and other states.

The Center has also continued to explore some familiar themes. Lisa Dilling led a project looking at the role of information in state-level decision making about water management. Roger Pielke, Jr., teased out the effects of climate change vs socioeconomic change on increasing disaster losses. Max Boykoff continues to track media coverage of climate change around the world, and his new book *Who Speaks for the Climate?* asks about the impact such coverage has on responses to the climate challenge. Ben Hale questions the ethics of environmental responses such as geo-engineering.

These projects and others are described in detail below.

MAX BOYKOFF

Max’s research concentrates on the interactions between state and non-state actors at the interface of environmental science, policy and practice. He works primarily in two areas: the cultural politics of climate change, and transforming carbon-based economies and societies.

CULTURAL POLITICS OF CLIMATE CHANGE

Max 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. 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.

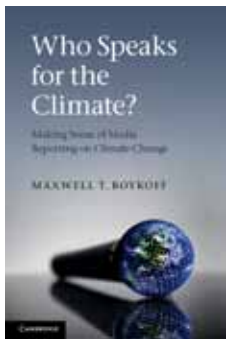
MEDIA REPRESENTATIONS OF CLIMATE CHANGE OR GLOBAL WARMING

Max continues to examine media coverage of climate change in country contexts such as the United States, United Kingdom and India. He completed a book this year for Cambridge University Press, *Who Speaks for the Climate? Making sense of mass media reporting on climate*

2004-2012 World Newspaper Coverage of Climate Change or Global Warming



Max Boykoff's work on media coverage of climate change.



change, which provides a bridge between academic considerations and real world developments, helping students, academic researchers and interested members of the public make sense of media reporting on climate change as it explores 'who speaks for climate' and what effects this may have on the spectrum of possible responses to contemporary climate challenges.

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. See Media Coverage of Climate Change/Global Warming graphs (updated regularly), http://sciencepolicy.colorado.edu/media_coverage.

CARBON BASED INDUSTRY AND SOCIETY

Max 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 U.K., 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.

LISA DILLING

Lisa's current research is focused in three areas:

- 1) how do science policies shape the usability of research

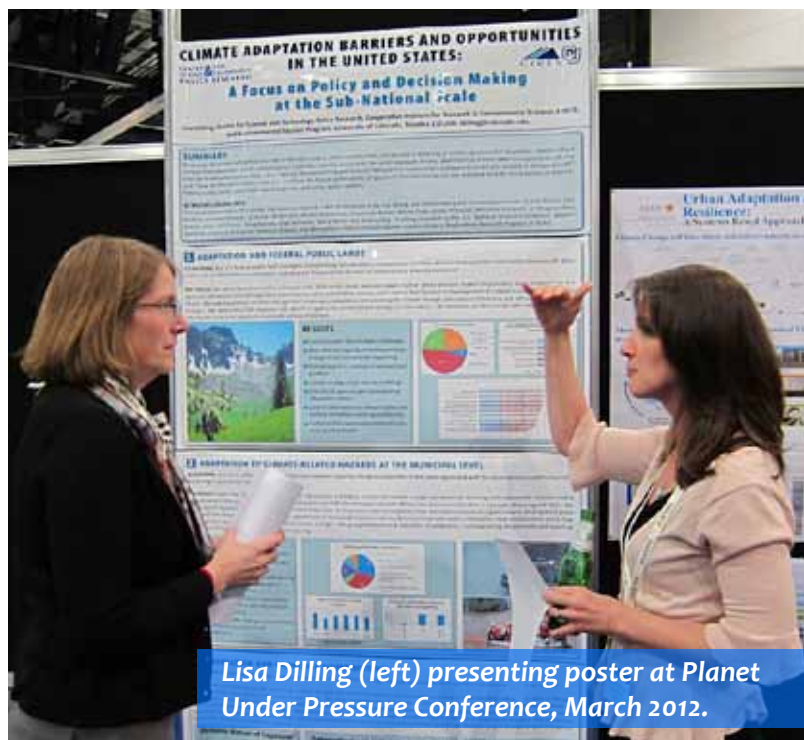
for decision making;

- 2) how do current decision processes incorporate climate-related risk or opportunity;
- 3) what factors shape the adaptive capacity of organizations?

INTERACTIONS OF DROUGHT AND CLIMATE ADAPTATION (IDCA) FOR URBAN WATER

(with Travis and Klein)

This NOAA Sectoral Applications Research Program (SARP) project is examining how drought policies interact with both short-term drought and long-term climate change, asking whether adjustment today or in the past leads to more resilient systems across climate time



Lisa Dilling (left) presenting poster at Planet Under Pressure Conference, March 2012.

scales. It is taking 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, as well as working in tandem with an Advisory Working Group of stakeholders from the water management and urban adaptation community to ensure that the work is relevant in this rapidly evolving context. The project is conducting a literature review of the vulnerability and drought management literatures, interviewing 21 water managers from around the country about drought history and response, and conducting three in depth case studies of urban water systems to evaluate changing vulnerabilities with specific drought policies.

EVALUATING STAKEHOLDER NEEDS IN SUPPORT OF A NEW NATIONAL ASSESSMENT FUNCTION

This WWA-funded project is developing a database of stakeholder needs across the upper and lower Colorado Basin. Together with the Great Lakes and Carolinas RISAs, we have developed a 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.

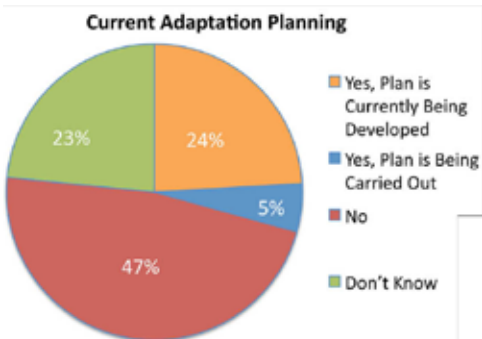
SCIENCE POLICY AND ADAPTATION FOR CLIMATE CHANGE

As part of the SPARC supplemental award, Lisa led two new projects focusing on the demand function for climate information, as a complement to earlier work focusing on the supply and the reconciling functions. Lisa and post-doc Christine Kirchhoff examined the role of U.S. states in governing water planning and allocation, with an emphasis on the use of information and the interaction of decision making across scales. Five U.S. states were studied in a total of 45 interviews of planners, water managers, data providers and the like. Results indicate that the role of information varies with the type of allocation governance structure, and that values and constituent demands can act as either motivators or barriers to change, depending on circumstances. These results have been presented at several international meetings and are being written up in two publications.

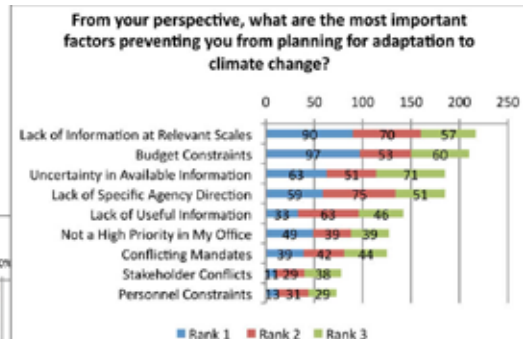
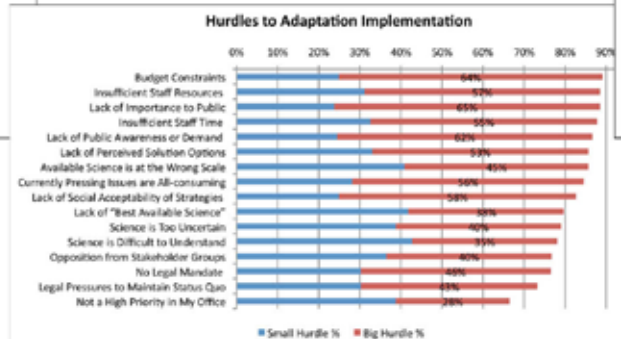
In the second project, Lisa and graduate student Kelli Archie examined the status of decision making on climate change and adaptation in the U.S. public lands context with an emphasis on opportunities and barriers to action, as well as the role of information in supporting decision making on adaptation. Over 600 public lands officials in three western states were surveyed and results are being written up for publication as well as part of a dissertation.

UNDERSTANDING THE DRIVERS OF ADAPTATION AT THE MUNICIPAL LEVEL IN CO, WY AND UT

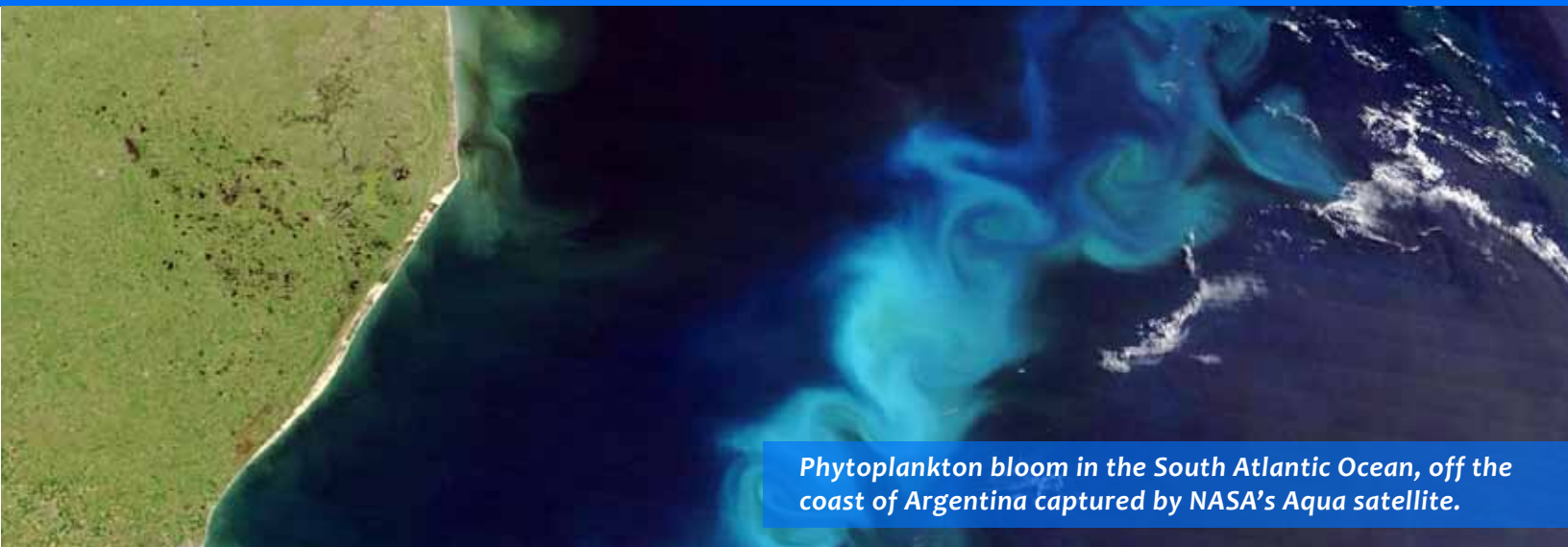
Lisa is co-leading this WWA-funded project to investigate why some local decision makers choose to adapt to



ADAPTATION AND FEDERAL PUBLIC LANDS



Lisa Dilling's work on adaptation and federal public lands.



Phytoplankton bloom in the South Atlantic Ocean, off the coast of Argentina captured by NASA's Aqua satellite.

climate-related stress and risk while others do not. Our idea is to systematically investigate the conditions under which local decision-makers in cities and large towns in Colorado, Utah, and Wyoming decide to adapt (or not) to increased climate-related risk and hazards. The two-fold objective of the project is (1) to collect, organize, and analyze original data on the causes and consequences of local adaptation decision making, and (2) to produce new knowledge that is relevant to the work of WWA and its key constituents.

CARBON MANAGEMENT ON PUBLIC LANDS IN THE INTERMOUNTAIN WEST: MULTI-SCALE ANALYSIS OF CARBON STOCK RESPONSES TO HUMAN AND NATURAL DISTURBANCES

Lisa is collaborating on a USDA-funded project with colleagues to understand the decision process on public lands in southwest Colorado and how carbon information might be incorporated into decision making. Part of the effort will include designing and developing a decision support tool that will be tested and refined with colleagues at the San Juan Public Lands Center.

GOVERNING GEO-ENGINEERING RESEARCH: WHY, WHEN AND HOW?

Lisa is collaborating with graduate student Rachel Hauser on an effort to look at analogs from other areas of research to understand under what circumstances we might want to apply extra scrutiny to proposed geo-engineering research and for what reasons.

BEN HALE

Ben's work is directed toward advancing a more deliberative and interdisciplinary approach to environmental issues. He focuses primarily on ethical questions associated with environmental remediation,

public health, moral status and public policy tools. Ben's 2010-11 work includes the following:

Hale, Benjamin. "Applied Philosophy and the Tools of the Policy Sciences." *The International Journal of Applied Philosophy*. 25(2). 2011.

Hale, Benjamin. "Moral Considerability: Deontological, not Metaphysical." *Ethics & the Environment*. 16(2). 2011.

Hale, Benjamin. "Nonrenewable Resources and the Inevitability of Outcomes." *The Monist*. 94(1). July 2011.

Hale, Benjamin and Lisa Dilling. "Geoengineering, Ocean Fertilization, and the Problem of Permissible Pollution," *Science, Technology, and Human Values*. 36(2): 190-212. 2011.

ROGER PIELKE, JR.

Roger's research focuses on the intersection of science, technology and decision making. He recently wrapped up the 5-year NSF SPARC research project and published *The Climate Fix: What scientists and politicians won't tell you about global warming*.

SCIENCE POLICY ASSESSMENT AND RESEARCH ON CLIMATE (SPARC)

(with Dilling)

Roger supervised graduate student Shali Mohleji's research under the SPARC award to determine whether an anthropogenic climate change signal can be identified in natural disaster loss trends. Shali found that global economic losses caused by natural disasters are increasing, largely due to socioeconomic factors.

Roger also collaborated with colleagues in Australia to evaluate the history of building damage and loss of life due to bushfire in Australia since 1925, concluding there

was no evidence that normalized building damage was being affected by climate change from greenhouse gas emissions.

Roger's 2010 book, *The Climate Fix*, recommends we should first understand why the current approach to climate change is failing and then consider better alternatives. It calls for an alternative to the various wishful proposals, typified by the Kyoto Protocol, that hold essentially that ordering climate change to go away will make it go away. The book provides a comprehensive exploration of the problem and its resolution - such as investing to create a more carbon-efficient economy and cost-efficient carbon-capture technologies.



BILL TRAVIS

Bill supervised two Western Water Assessment-funded projects addressing drought vulnerability indicators and rancher response to drought, culminating in a masters thesis by Kristin Gangwer. He has started to explore several hypotheses about climate change adaptation.

DROUGHT VULNERABILITY INDICATORS

This Western Water Assessment-funded project with graduate student Kristin Gangwer created 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. A white paper is available on the WWA website, and a publicly accessible “dashboard” of drought indicators is under development.

DRYNESS AND DESPERATE MEASURES: THE IMPLICATIONS OF LAND TENURE ON ROCKY MOUNTAIN RANCHERS’ DROUGHT EXPERIENCES AND BEHAVIORS

The goal of this Western Water Assessment-funded study by graduate student Kristin Gangwer was to explore the implications of land tenure on ranchers’ drought coping behaviors and adaptive capacity. What adjustments and adaptations do ranchers deploy to cope with drought? How do ranchers’ drought experiences and management strategies differ across land holdings? What role do institutions play? And what factors influence the future adaptability of the system, particularly to potential climate change? The project resulted in a masters thesis, Gangwer, K., 2011. *Dryness and desperate measures: The implications of land tenure on Rocky Mountain ranchers’ drought experiences and behaviors.*

EXTREME EVENTS: AGENTS OF ADAPTATION?

Graduate student Gene Longenecker and Bill are studying the possibility that some responses to natural hazards increase losses in the long run. They are using the latest hazard loss simulation model to test ways in which this effect could be detected.

Bill and graduate student Mary Huisenga are using a simulation model to test hypotheses about whether extreme events might act as pacemakers of adaptation to underlying trends such as climate change. They are modeling the adaptive behavior of a Great Plains wheat farm in response to drought.

BOBBIE KLEIN

Bobbie served as project manager for a State of Colorado-funded project concerning Colorado’s preparedness for climate variability and change. She, along with Bill



Herding cattle in Colorado.



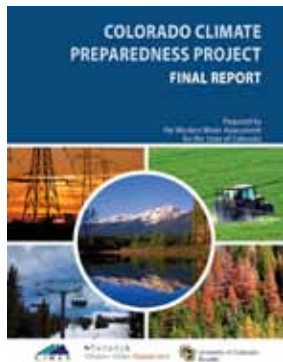
Pine Beetle deforestation in the mountains near Granby, Colorado. Photo courtesy University Corporation for Atmospheric Research.

Travis and several others, co-authored the project’s final report.

COLORADO CLIMATE PREPAREDNESS PROJECT

(with Travis)

This project addressed the state of Colorado’s progress toward the Governor’s goal of preparing the state to adapt to unavoidable climate change. The primary purpose was 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 interviewed decision makers in state and federal government, regulated utilities, and NGOs from five key sectors:

- (1) water
- (2) agriculture
- (3) wildlife, ecosystems and forestry
- (4) climate-sensitive recreation and tourism
- (5) energy

The findings were summarized in Averyt, K., K. Cody, E. Gordon, R. Klein, J. Lukas, J. Smith, W. Travis, B. Udall, and J. Vogel (2011), Colorado Climate Preparedness Project Final Report. Western Water Assessment for the State of Colorado, 108 pp. The project also produced a publicly accessible, searchable database of climate adaptation activities, <http://www.coloadaptationprofile.org>.



An important part 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. Center faculty also teach classes and advise individual graduate students.

GRADUATE CERTIFICATE IN SCIENCE AND TECHNOLOGY POLICY

The Science & Technology Policy certificate program, now in its seventh 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.

RECENT CENTER GRADS

We said farewell to several of our graduate students in 2011 as they obtained their degrees and went on to make their marks in the world.

DAVID CHERNEY

(Ph.D., Environmental Studies 2011)



David Cherney’s dissertation “Environmental Saviors? The Effectiveness of Nonprofits in Greater Yellowstone,” looked at the Greater Yellowstone Ecosystem as a case study to answer the question: How can environmental nonprofits do better? Dave recently took a position as an energy consultant with PA Consulting Group.

KRISTIN GANGWER

(M.A., Geography 2011)

Kristin Gangwer’s M.A. thesis, “Dryness and Desperate Measures: The Implications of Land Tenure on Rocky Mountain Ranchers’ Drought Experiences And Behaviors”, examined the implications of land tenure on ranchers’ drought coping behaviors and adaptive



capacity. Following graduation Kristin managed the Central New Mexico LandLink, a program that links aspiring farmers with land and mentorship opportunities. Additionally, she completed a research project for the Rocky Mountain office of the Environmental Defense Fund, which involved interviewing ranchers in both the Upper Green and Yampa River Valleys about irrigated agriculture and land ownership change.

SHALI MOHLEJI

(Ph.D., Environmental Studies 2011)



Shali Mohleji's dissertation used disaster loss data as a tool for assessing natural disaster policy by analyzing trends in global and regional disaster-caused economic losses. She is now employed as a fellow at the American Meteorological Society's Policy Group in Washington,

D.C. where she works directly with the AMS Policy Director Dr. Bill Hooke on federal natural disaster policy and science policy issues.

COURSES TAUGHT BY CENTER FACULTY

Center faculty taught the following courses from July 1, 2010 through 2011:

- ENVS 1000: Introduction to Environmental Studies (Lisa Dilling)
- ENVS 4100: Climate Change Politics and Policy (Max Boykoff)
- ENVS 4800: Culture, Politics and Climate Change (Max Boykoff)
- ENVS 5000: Policy, Science and the Environment (Roger Pielke, Jr.)
- ENVS 5001/PHIL 5240: Graduate Seminar in Environmental Philosophy (Ben Hale)
- ENVS 5100: Science and Technology Policy (Lisa Dilling)
- ENVS 5120: Quantitative Methods of Policy Analysis (Roger Pielke, Jr.)
- ENVS 5720: The Problem Orientation (Max Boykoff)
- GEOG 3402: Natural Hazards (Bill Travis)
- GEOG 4173: Research Seminar (Bill Travis)
- PHIL 3140: Environmental Ethics (Ben Hale – 3 sections)



Professors Beth Osnes and Maxwell Boykoff, illustrating a point during Inside the Greenhouse class.

A SPARC sponsored briefing workshop on Usable Science and Decision Making in Washington, DC.



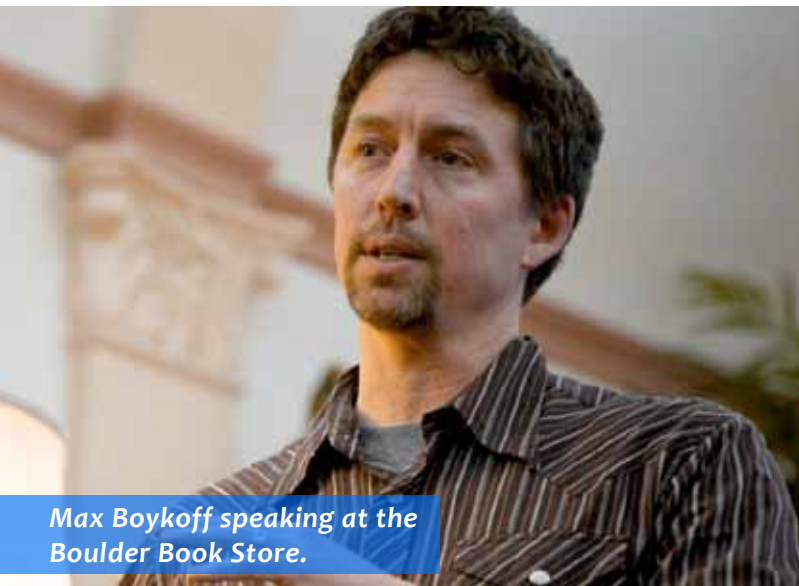
O UTREACH

Center outreach engages 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. Center outreach efforts over the past 1 ½ years have included the following:

NEW BOOKS

Roger spoke to audiences around the world about his book *The Climate Fix*. The book has received favorable reviews in *Nature*, *Library Journal*, *The Economist*, the *Financial Times*, and *Issues in Science and Technology*, among others. It has been highly recommended by the American Society of Landscape Architects and meteorologists Sean Sublette and Mike Smith.

Max's book *Who Speaks for the Climate?* was highlighted in the December issue of *CU Connections* as well as *CU's Arts & Sciences Magazine*. The book has been selected as one of *Scotsman Environmental Books of the Year*.



Max Boykoff speaking at the Boulder Book Store.



Roger Pielke, Jr. signing books after a speaking event.

CENTER FACULTY AND STUDENT PRESENTATIONS

Center faculty and students have given 93 presentations over the past 1 1/2 years on a variety of topics ranging from “Climate adaptation strategies and cultural engagements in India: exploring paths of climate governance via mass media communications”, to “Declaring a Climate Emergency: Geo-engineering and the Doctrine of Last Resort.” Faculty and graduate students gave presentations at venues including:

- International Climate Change Adaptation Conference on Climate Adaptation Futures, Gold Coast, Australia;
- Association of Japanese Environmental Journalists, Waseda University, Japan;
- National Institute for Environmental Studies, Tsukuba, Japan;
- Society for the Social Studies of Science and Japanese Society for Science and Technology Studies conference, University of Tokyo, Japan;
- Workshop on The Ethics of Geoengineering: Investigating the Moral Challenges of Solar Radiation Management, Missoula, MT;
- Sixteenth Conference of the Parties (COP16), Cancun Mexico;
- Colorado Conference on Earth System Governance, Colorado State University, Fort Collins, CO;
- Association of American Geographers Annual Meeting, Seattle, WA;
- 19th Conference on Applied Climatology Practical Solutions for a Warming World: AMS Conference on Climate Adaptation, Asheville, North Carolina; and
- 242nd American Chemical Society National Meeting, Denver, CO.

A complete list can be found in the Appendix.

NOONTIME SEMINAR SERIES

Every semester during the school year the Center sponsors a noontime seminar series with a different theme, bringing together researchers and students from across campus to discuss their work. In the past 1 1/2 years noontime seminar series themes have included Decision Making Under Uncertainty, and The Water's Edge: Innovative Research in Water, Climate and Sustainability. See the Appendix for a complete list of talks in the series.



Mark Serreze giving a Noontime Seminar talk.

In addition, the Center cosponsored the Environmental Studies and the Geography colloquia series (see Appendix).

OTHER OUTREACH EFFORTS

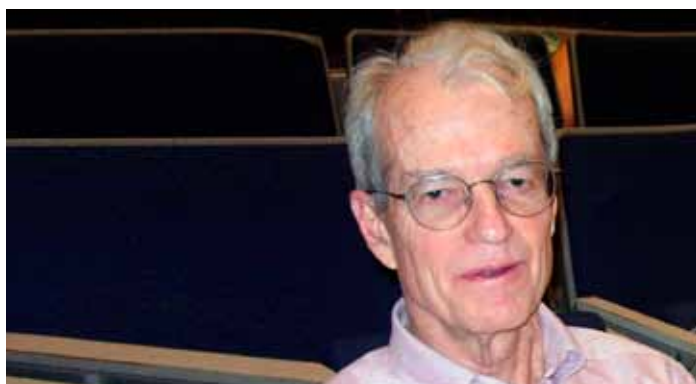
- Articles in peer reviewed journals and non-peer reviewed publications (see Appendix)
- Content rich website
<http://sciencepolicy.colorado.edu>
- Regular newsletter, Ogmios
<http://sciencepolicy.colorado.edu/ogmios>
- Briefing sent to over 3500 Washington, D.C. decision makers
http://sciencepolicy.colorado.edu/outreach/cstpr_briefings.html
- Roger Pielke, Jr.'s science policy blog
<http://rogerpielkejr.blogspot.com>
- Frequent media references (see Appendix)
- Twitter and Facebook presence
https://twitter.com/cu_cstpr
<http://www.facebook.com/groups/106860292679929>



OTHER CENTER PERSONNEL

ADMINISTRATIVE & 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.

SARAH ERSKINE



Sarah provided invaluable administrative support at the Center through November 2011. Sarah graduated with a B.A. from Michigan State University and an M.A.L.S. from SUNY Plattsburgh in August 2008.

ELIZABETH HALL



Elizabeth has provided administrative support at the

Center since November 2011. She graduated with a B.A. and licensure in Education from the University of Colorado-Boulder in 2010.

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 obtained an M.A. in Public Policy with a focus on environmental policy at the University of Colorado. Bobbie's research interests include municipal response to drought and climate change adaptation.

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. 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.

GRADUATE STUDENTS

KELLI ARCHIE

Kelli worked as a CIRES graduate research fellow and as a graduate research assistant at the Center. Her dissertation research covers climate change adaptation planning on public lands in the Western U.S. and in Colorado mountain communities. She, along with Professors Lisa Dilling,



Jana Milford, and Fred Pampel, recently had a paper accepted to Ecology and Society titled "Climate Change and Western Public Lands: A Survey of U.S. Federal Land Managers on the Status of Adaptation Efforts". Kelli has an M.S. in Environmental Studies from CU Boulder and a B.A. in Economics from CSU.

JOHN BERGGREN



John is a Ph.D. student in Environmental Studies at the University of Colorado, with a secondary focus on water policy. His academic research will be on western water policy and governance, with a focus on the Colorado River. John worked with Lisa Dilling on the Framework for Assessing Stakeholder Needs for Climate Information project. John holds a B.A. in Public Health Studies from the Johns Hopkins University, and an M.H.S. in Environmental Health from the Johns Hopkins Bloomberg School of Public Health.

MEAGHAN DALY



Meaghan Daly is a Ph.D. student in the Environmental Studies program and a research assistant for the

Interactions of Drought and Climate Adaptation (IDCA) for Urban Water project. Prior to attending the University of Colorado, Meaghan was a consultant for the Red Cross/Red Crescent Climate Centre and the International Research Institute for Climate and Society, working in Senegal, Kenya, Tanzania, South Africa, and Malaysia, to identify and support strategies to enhance climate risk management in the humanitarian sector. Her academic research will focus on climate change adaptation and risk management in East Africa. Meaghan holds a B.A. in Environmental Science from Colorado College and an M.A. in Climate and Society from Columbia University.

RACHEL HAUSER



Rachel is in the first year of a Ph.D. program in Environmental Studies, focusing on climate science policy. She is working on a project involving geoengineering and governance related to geoengineering research with Lisa Dilling. Rachel also works as a science writer at the National Center for Atmospheric Research.

MARY HUISENGA



Mary recently completed her masters degree in Geography with a focus on environment-society relations, landscape changes and social implications of water quality/supply. She and Bill Travis are using a simulation model to test hypotheses about whether extreme events might act as pacemakers of adaptation to underlying trends such as climate change. They are modeling the adaptive behavior of a Great Plains wheat farm in response to drought.

ARIELLE TOZIER DE LA POTERIE



Arielle grew up in Portland, Oregon. She has a B.A. in anthropology from Vassar College and recently earned an M.Sc. in Sustainable Development from Utrecht University in the Netherlands. Before deciding to pursue her masters, she taught English in France and worked for several years in environmental education, restoration, and policy in the Portland area. She has many interests but hopes to focus her research on environmental issues related to international development.

JESSICA WEINKLE



Jessica Weinkle is a Ph.D. student in the Environmental Studies program with a secondary core in Policy. While working on her M.A. in Climate and Society at Columbia University she became interested in natural hazards and risk perception and communication. She has come to Colorado to continue to pursue those interests. Jessica did her undergraduate work in zoology at the University of Texas at Austin.

VISITORS AND POSTDOCS

FRAN HOLLENDER



Fran joined us in the fall of 2011 from the University of Vienna, Institute for Social Studies of Science, where she is pursuing an M.A. in Science, Technology and Society. While here she collaborated with Max Boykoff on a project examining climate change and social media.

CHRISTINE KIRCHHOFF



Christine Kirchhoff received her Ph.D. from the University of Michigan's School of Natural Resources and Environment in Resource Policy and Behavior. Prior to enrolling at the University of Michigan she was a practicing professional engineer in Austin, Texas. Christine worked as a postdoc on the SPARC project under the guidance of Lisa Dilling, focusing on science policy and information supply and demand for adaptation.

GESA LÜDECKE



Gesa joined us during the fall of 2010 from the Institute for Environmental and Sustainability Communication at the Leuphana University, Lüneburg, Germany where she is a Ph.D. student. Her dissertation focuses on climate change communication on television in Germany and explores the impact of TV coverage on climate change issues on climate-related responsible behavior among adolescents.

SAFFRON O'NEILL



Saffron joined us in May 2011 from the Department of Resource Management and Geography at the University of Melbourne. There she is a research fellow in the Social, Economic and Institutional dimensions of climate adaptation network, part of the Australian National Climate Change Adaptation Research Facility NCCARF. She completed her Ph.D. at UEA and the Tyndall Centre for Climate Change Research in 2008. Her research interests focus on the social dimensions of climate change. Specifically, she conducts interdisciplinary research investigating the emotional, cognitive and behavioral components of risk perception, risk communication and public engagement with environmental change. She and Max Boykoff are collaborating on research about climate imagery and public understanding and engagement.

SARAH TRAINOR



Sarah visited CSTPR from the University of Alaska Fairbanks during the fall of 2011. At UA, Sarah is a research assistant professor and also a coordinator at the Alaska Center for Climate Assessment and Policy. Sarah conducts research related to human-dimensions of climate change in Alaska.

ALUMNI

Marilyn Averill is a former doctoral student in Environmental Studies with interests in international environmental governance, the politics of science, and science and technology policy, particularly in the context of global climate change.



Marilyn was formerly an attorney with the 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.

Adam Briggie (Ph.D., ENVS, 2006), is an assistant professor in the Department of Philosophy and Religion Studies and a faculty fellow in the Center for the Study of Interdisciplinarity at the University of North Texas. He is author of *A Rich Bioethics: Public Policy, Biotechnology, and the Kass Council* (University of Notre Dame Press, 2010) and co-author with Carl Mitcham of *Science and Ethics: An Introduction* (Cambridge University Press, 2012). His latest work is on the ethics and politics of shale gas drilling.



Kelsey Cody completed his MS in Environmental Studies on the Water and Society track/secondary core under Doug Kenney. The title of his thesis is "Climate Change, Growth, and Regional Integration: Lessons for Colorado's Front Range Municipal and Industrial Water Providers." He is now moving on to the Ph.D. program in ENVS (dissertation is related to adaptation) and teaching with the Program for Writing and Rhetoric.



Erik Fisher (Ph.D., ENVS, 2006), is 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).



Joel Gratz (M.S., Meteorology and Policy, M.B.A., 2006), really likes snow, so he started OpenSnow.com to help everyone who adores fresh powder. The business got its start



as an email list in 2007 and has grown each year, now serving skiers and snowboarders across the U.S. with snow forecasts, reports, and travel recommendations.

Jimmy Hague (M.A., ENVS 2007), received his masters in Environmental Studies with a focus on science and environment policy in 2007. He currently works for U.S. Senator Mark Udall in Washington, D.C., where he is responsible for environment, science and natural resource issues.



Nat Logar (Ph.D., ENVS, 2007), is a research fellow at Harvard's Kennedy School of Government, contributing to a larger project on energy technology and innovation. There he examines energy innovation institutions, such as national laboratories like the National Renewable Energy Laboratory and industry consortia such as the Electric Power Research Institute.



Eva Lövbrand (postdoc 2006), is an Assistant Professor in the Centre for Climate Science and Policy Research, Linköping University, Norrköping, Sweden. Her research focuses on the interface of science, politics and democracy.



Jessica Lowery (M.S., ENVS, 2004), recently graduated from the University of Colorado-Boulder school of law. From 2004 - 2009, Jessica worked for the NOAA/CU Western Water Assessment analyzing the annual and long-term policies, and the potential use of climate information forecasts of municipal water providers in the Intermountain West. Jessica received her M.S. in Environmental Studies in 2004 where she focused her research on environmental and water policy issues in the West.



Genevieve Maricle (Ph.D., ENVS, 2008), recently accepted a new position at USAID in the Bureau of Policy, Planning, and Learning where she serves as USAID's Environment and Climate Change Policy Advisor. In this role, she is responsible for coordinating climate change policy and strategic planning efforts across the agency, and for representing USAID in its work with the other U.S. government agencies responsible for the President's



international Global Climate Change Initiative. She recently managed the release of USAID's new Climate Change and Development Strategy.

Elizabeth McNie (Ph.D., ENVS, 2008), is an assistant professor at Purdue University in Political Science and Earth and Atmospheric Sciences.



Shali Mohleji (Ph.D., ENVS, 2011) is a fellow with the American Meteorological Society's Policy Group in Washington, D.C. She works directly with the AMS Policy Director, Dr. Bill Hooke, on federal natural disaster policy and science policy issues.



Ursula Rick (postdoc 2009), recently completed a Congressional Geoscience Fellowship with Senator Mark Udall of Colorado.



Melanie Roberts (CIRES Visiting Fellow 2009), founded the first chapter of the Forum on Science Ethics and Policy (FOSEP) in 2004, as a Ph.D. student in neurobiology and behavior at the University of Washington in Seattle. After completing her Ph.D., she went to Washington D.C. as an AAAS Science and Technology Policy Fellow. In 2006-07, she worked for Senator Jeff Bingaman on innovation and competitiveness, health policy, and improving science advice for congress. She then moved to the National Science Foundation, where she addressed peer review for interdisciplinary and transformative research, broader impacts of research, and ethics education. Roberts moved to the University of Colorado Boulder in 2009, where she was a visiting fellow at CSTPR and Assistant Director at the Biofrontiers Institute. She co-founded the second chapter of FOSEP at CU Boulder and continues to mentor the group while building a national infrastructure.



Shep Ryen (M.S., ENVS, 2005), worked for several years for the House Committee on Science and Technology before transitioning to his present position at the Government Accountability Office (GAO).



Suzanne Tegen (Ph.D., ENVS, 2006), is a Senior Policy Analyst at NREL's Strategic Energy Analysis Center. Her main focus is on wind energy



economics, including employment impacts and the quantification of wind deployment barriers. She also researches state, federal and local renewable energy policy, and reports on the costs of renewable power to the Department of Energy.

Kevin Vranes (CIRES Visiting Fellow 2006-08), is currently the Director of Energy Management Services for E Source. He has more than a decade of experience working on greenhouse gas (GHG) and climate-change issues. He has worked with numerous corporations and utilities on GHG management (inventories, auditing, and reporting), carbon risk, supply chain emissions and life-cycle assessments, and project analysis. Kevin was a senior legislative staffer in the Washington, D.C., office of Senator Ron Wyden, where he worked on energy and environmental legislation, including the Energy Policy Act of 2005. He holds a Ph.D. in geophysics (physical oceanography, climatology, and atmospheric sciences) from Columbia University, and he was a Public Policy Fellow of Columbia's School of International and Public Affairs.



AFFILIATES

- [Wayne Ambler](#)
- [Krister Andersson](#)
- [Susan K. Avery](#)
- [Thomas Chase](#)
- [David N. Cherney](#)
- [Martyn P. Clark](#)
- [Richard Conant](#)
- [Erik Fisher](#)
- [Robert Frodeman](#)
- [Rudy Juliano](#)
- [Robert W. Kates](#)
- [Douglas Kenney](#)
- [Lisa Keränen](#)
- [Paul Komor](#)
- [Carl Koval](#)
- [Sarah Krakoff](#)
- [Frank Laird](#)
- [Juan Lucena](#)
- [Roop Mahajan](#)
- [Diane McKnight](#)

- Elizabeth McNie
- Jana Milford
- Carl Mitcham
- Gunilla Öberg
- Paul Ohm
- Jerry Peterson
- Balaji Rajagopalan
- Joseph Ryan
- Daniel Sarewitz
- Mark Squillace
- Kathleen Tierney
- Brad Udall
- Jason Vogel
- Philip Weiser
- Qian Ye
- Tom Yulsman
- Michael Zimmerman

and Public Affairs. She is hard at work on her second book, *Envisioning Viral Apocalypse: A Rhetorical History of Biological Weapons from World War II to the War on Terror*, which, among other things, tracks changing policy discourses about bioweapons and bioterrorism.

GUNILLA ÖBERG



Dr. Gunilla Öberg is Professor at the Institute for Resources, Environment and Sustainability, (IRES) at the University of British Columbia, Vancouver, Canada. She is presently on sabbatical leave and will be spending her year as visiting professor with the Gino Germani Institute at the University of Buenos Aires, Argentina and Uniwater at the University of Melbourne where she will be focussing on sustainable (waste) water management in growing urban areas. Dr. Öberg recently finished her five year term as director of IRES (2006-2011), a period after which the institute received a very strong external review. Before arriving at UBC, she was the founding director of the Centre for Climate Science and Policy Research at Linköping University, Sweden. She works in a number of seemingly disparate research fields, takes pleasure in creating collaborative teams consisting of unorthodox combinations of expertise and is a dedicated teacher who publishes with scholars in the educational field.

DANIEL SAREWITZ



Daniel Sarewitz is Professor of Science and Society, and co-director and co-founder of the Consortium for Science, Policy, and Outcomes (CSPO), at Arizona State University (<http://www.cspo.org>). His work focuses on revealing the connections between science policy

Below are the profiles of a few of our affiliates.

LISA KERÄNEN



Dr. Lisa Keränen is Associate Professor and Director of Graduate Studies in the Communication Department at the University of Colorado Denver, where she studies and teaches rhetorical theory and criticism with an emphasis on the rhetoric of medicine, health care, and bioethics. Lisa's first book, *Scientific Characters, Rhetoric, Politics, and Trust in Breast Cancer Research*, received the 2011 Marie Hochmuth Nichols Award for Outstanding Scholarship from the Public Address Division of the National Communication Association. Her essays appear in places such as *Academic Medicine*, *Argumentation & Advocacy*, *Communication Yearbook*, *Cultural Studies-Critical Methodologies*, *Journal of Applied Communication Research*, *Journal of Medical Humanities*, *Quarterly Journal of Speech*, and *Rhetoric*

decisions, scientific research and social outcomes. His most recent book is *The Techno-Human Condition* (co-authored with Braden Allenby; MIT Press). He is also a regular columnist for the journal *Nature*. From 1989-1993 he worked on R&D policy issues for the U.S. House of Representatives Committee on Science, Space, and Technology. He received a Ph.D. in Geological Sciences from Cornell University in 1986. He now directs the Washington, DC, office of CSPO, and focuses his efforts on a range of activities to increase CSPO's impact on federal science and technology policy processes, and to improve public debate about scientific and technological issues.

COAUTHORS, COLLABORATORS, SPEAKERS

- [W. Abdalati](#) (Speaker)
- [M.R. Auer](#) (Coauthor)
- [K. Averyt](#) (Collaborator, coauthor)
- [S. Beck](#) (Coauthor)
- [R. Bilham](#) (Speaker)
- [C.D. Bottrill](#) (Coauthor)
- [E. Boyd](#) (Coauthor)
- [J.K. Campbell](#) (Coauthor)
- [K. Chen](#) (Coauthor)
- [P. Chinowsky](#) (Speaker)
- [S.G. Clark](#) (Coauthor)
- [D.A. Clark](#) (Coauthor)
- [R.P. Crompton](#) (Coauthor)
- [L. Foote](#) (Coauthor)
- [M. Glantz](#) (Speaker)
- [B. Goldstein](#) (Speaker)
- [E. Gordon](#) (Collaborator, coauthor)
- [L. Hale](#) (Coauthor)
- [K. Haynes](#) (Coauthor)
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- [R. Jonassen](#) (Coauthor)
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- [N. Krogman](#) (Coauthor)
- [J. Lazo](#) (Speaker)
- [M.C. Lemos](#) (Coauthor)
- [A. Light](#) (Coauthor)
- [B. Ola Linnér](#) (Visitor)
- [M. Liverman](#) (Coauthor)
- [I. Lorenzoni](#) (Coauthor)
- [E. Lövbrand](#) (Coauthor)
- [J. Lukas](#) (Collaborator, coauthor)
- [G. Maricle](#) (Speaker, visitor)
- [D.J. Mattson](#) (Coauthor)
- [J. McGoodwin](#) (Speaker)
- [K.J. McAneny](#) (Coauthor)
- [S. McNeely](#) (Speaker)
- [E. McNie](#) (Speaker)
- [G.A. Meehl](#) (Coauthor)
- [J. Milford](#) (Collaborator, coauthor)
- [K. Miller](#) (Collaborator)
- [R. Morss](#) (Speaker, coauthor)
- [J. Neff](#) (Collaborator)
- [M. Newell](#) (Coauthor)
- [S.J. O'Neill](#) (Coauthor, visitor, speaker)
- [M. O'Rourke](#) (Coauthor)
- [A. Ray](#) (Collaborator)
- [U. Rick](#) (Coauthor)
- [M.B. Rutherford](#) (Coauthor)
- [D. Sarewitz](#) (Collaborator)
- [M. Serreze](#) (Speaker)
- [M. Slater](#) (Coauthor)
- [T. Steelman](#) (Coauthor)
- [B. Udall](#) (Speaker, collaborator, coauthor)
- [R.L. Wallace](#) (Coauthor)
- [R. Waskom](#) (Speaker)
- [J. White](#) (Speaker)
- [L. Whitmarsh](#) (Coauthor)
- [O. Wilhelmi](#) (Collaborator, coauthor)
- [P. Wilshusen](#) (Coauthor)

APPENDIX.

APPENDIX

PUBLICATIONS

(Center personnel bolded)

2011

Journal Articles

- Boyd, E., **Boykoff, M.**, and Newell, P (2011), The “New” Carbon Economy: What’s New? *Antipode* 43 (3) 601-611, June.
- **Cherney, D. N.** (2011), Securing the Free Movement of Wildlife: Lessons from the American West’s Longest Land Mammal Migration. *Environmental Law* 41(2) 599-617.
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 - Lövbrand, E, **R.A. Pielke, Jr.**, and S. Beck (2011), A Democracy Paradox in Studies of Science and Technology. *Sci. Technol. Hum. Values* 36 (4) 474-496, July.
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- Other Publications**
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 - Atkinson, R. N. Chhetri, J. Freed, I. Galiana, C. Green, S. Hayward, J. Jenkins, E. Malone, T. Nordhaus, **R. Pielke Jr.**, G. Prins, S. Rayner, D. Sarewitz, and M. Shellenberger (2011), *Climate Pragmatism: Innovation, Resilience and No Regrets*. The Hartwell Analysis in an American Context, 32 pp., July.
 - Averyt, K., K. Cody, E. Gordon, **R. Klein**, J. Lukas, J. Smith, **W. Travis**, B. Udall, and J. Vogel (2011), *Colorado Climate Preparedness Project Final Report*. Western Water Assessment for the State of Colorado, 108 pp.
 - **Boykoff, M.** (2011), *COP17: Global vs Local Solutions*. Think Africa Press, December 1.
 - **Boykoff, M.** (2011), *Who Speaks for the Climate? Making sense of mass media reporting on climate change*, 240 pp., Cambridge University Press, October.
 - **Boykoff, M.**, K. Richardson, W. Steffen, and D. Liverman (Ed.) (2011), *Box 16.1: The role of the media in mobilizing the population*. In *Climate Change: Global Risks, Challenges and Decisions* 455-458, Cambridge University Press, March.
 - **Boykoff, M.T.**, and J. Smith, C. Lever-Tracy (Ed.) (2010), *Media Presentations of Climate Change*. *Routledge Handbook of Climate Change and Society* 210-218, Routledge, July 2.
 - **Cherney, D.N.** (2011), *Science Student Profile: Why I Picked University of Colorado—Boulder*. U.S. News and World Report, March 16.
 - Michalak, A. et al. (**with L. Dilling**) (2011). *A U.S. Carbon Cycle Science Plan*. University Corporation for Atmospheric Research. 69 pp.
 - Moser, S.C., **L. Dilling**, J.S. Dryzek, R.B. Norgaard and D. Schlosberg (Ed.) (2011), *Communicating Climate Change: Closing the Science-Action Gap*. *The Oxford Handbook of Climate Change and Society* 161-174, Oxford University Press, September.
 - O’Neill, S.J., **M. Boykoff**, L. Whitmarsh, S.J. O’Neill, and I. Lorenzoni (Ed.) (2011), *The role of new media in engaging the public with climate change*. *Engaging the Public with Climate Change: Communication and Behaviour Change* Chapter 13, Earthscan, London.
 - **Pielke, Jr., R. A.** (2011), *Can World Soccer Root Out Corruption? Holding the Agency Accountable*. *New York Times*, July 20.
 - **Pielke, Jr., R. A.** (2011), *Commentary: Pay-for-play in college athletics*. *Boulder Daily Camera*, July 24.
 - **Pielke, Jr., R.A.** (2011), *Correspondence: Challenging convention*. *Nat. Clim. Chang.* 1 (2) 70-70, May.
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 - **Pielke, Jr., R. A.** (2011), *Extreme Weather and Climate Change*. *National Journal*, July 5.
 - **Pielke, Jr., R. A.** (2011), *Innovation Policy Lessons of the Vasa*. *Bridges* 32, December.
 - **Pielke, Jr., R. A.** (2011), *John H. “Jack” Marburger 1941–2011*. *Policy Sciences*, August 21.
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- **Pielke, Jr., R. A.** (2011), Klinsmann Will Find There Are No Points for Style. *New York Times*, August 6.
- **Pielke, Jr., R.A.** (2011), Lessons of the L'Aquila Lawsuit. *Bridges* 31, October.
- **Pielke, Jr., R.A.** (2011), Let There Be More Efficient Light. *New York Times*, March 10.
- **Pielke, Jr., R. A.** (2011), The Policy Advisor's Dilemma. *Bridges* 30, July 20.
- **Pielke, Jr., R. A.** (2011), Politics is about acting alike, not thinking alike. *Bulletin of the Atomic Scientists*, December 15.
- **Pielke, Jr., R. A.** (2011), Putting trust in science at risk. *Financial Times*, December 10.
- **Pielke, Jr., R.A.** (2011), The messy business of cleaning up carbon policy (and how to sell it to the electorate). *ABC News Australia*, April 1.
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- **Pielke, Jr., R. A.** (2011), When politicians distort science. *Bulletin of the Atomic Scientists*, October 27.
- **Travis, W.R.** (2011), A Future of Mass Evacuations. *New York Times*, August 29.
- Trenberth, K., A. Watson, **R.A. Pielke, Jr.**, K. Emanuel, J. Curry, L. Bouwer, G.C. Hegerl, and W. Hooke (2011), Forum: Is Extreme Weather Linked to Global Warming? *Yale Environment* 360, June 2.
- von Storch, H., I. Meinke, N. Stehr, B. Ratter, W. Krauss, **R. A. Pielke, Jr.**, R. Grundmann, M. Reckermann, and R. Weisse (2011), Regional Climate Service. Paper presented at the 4th International Perspective on Water Resources & the Environment, National University of Singapore, January 4-6.
- Hale, L. and **B. Hale** (2010), Treat the Source not the Symptoms: Why Thinking about Sleep Informs the Social Determinants of Health, *Health Education Research*. 25(3): 395-400.
- **Hale, B.** (2010), Sustainability as Justifiability, Sustainability Ethics: 5 Questions. Eds. Robison, W., Raffelle, R., and Selinger, E. Automatic/VIP Press.

Other Publications

- Crompton, R.P., S. Schmidt, L. Wu, **R. Pielke, Jr.**, R. Musulin and E. Michel-Kerjan (2010), Economic impacts of tropical cyclones, *Seventh International Workshop on Tropical Cyclones*, 23 pp.
- O'Neill, S.J. and **M. Boykoff** (2010), Climate denier, skeptic or contrarian? *Proceedings of the National Academy of Sciences*, October.
- **Pielke, Jr., R. A.** (2010), A Positive Path for Meeting: The Global Climate Challenge. *Yale* 360, October 18.
- **Pielke, Jr., R. A.** (2010), Beyond the Annual Climate Confab. *Bridges* 28.
- **Pielke, Jr., R.A.** (2010), The Climate Fix: What scientists and politicians won't tell you about global warming. Basic Books, September.
- **Pielke, Jr., R.A.** (2010), Climate Engineering: Alternative Perspective. Chapter in Bjorn Lomborg (ed), *Smart Solutions to Climate Change: Comparing costs and benefits*, 52-61, Cambridge University Press.
- **Pielke, Jr., R. A.** (2010), Climate policy wars: People want affordable solutions. *Crosscut*, August 20.
- **Pielke, Jr., R. A.** (2010), Decelerating Decarbonization of the Global Economy. *Energy Tribune* 4579, July 7.
- **Pielke, Jr., R.A.** (2010), In Retrospect: Science - The Endless Frontier. *Nature* 466 (7309) 922-923, August 19.
- **Pielke, Jr., R. A.** (2010), Letter to the editor: RMS forecast methods. *Sarasota Herald Tribune*, November 26.
- **Pielke, Jr., R. A.** (2010), Quel pasticciaccio brutto del clima. *Edizioni Riformiste*, October 6.
- **Pielke, Jr., R. A.** (2010), Sport: An Academic's Perfect Laboratory. *Bridges* 26, July.
- **Pielke, Jr., R. A.** (2010), Success is not Guaranteed. *Bridges* 27, October.
- **Pielke, Jr., R. A.** (2010), The iron law of climate policy. *National Post*, October 5.
- **Pielke, Jr., R. A.** (2010), Wacht endlich auf! *Capital*, November 26.

JULY 1 – DECEMBER 31, 2010

Journal Articles

- **Boykoff, M.T.** (2010), Climate quarrels: 'It's not you, it's me ... well it's us'. Forum review for 'Why We Disagree About Climate Change. Understanding Controversy, Inaction and Opportunity' by M. Hulme. *The Geographical Journal* 176 (3) 267-269, September.
- Crompton, R. P., K. J. McAneney, K. Chen, **R. A. Pielke Jr.**, and K. Haynes (2010), Influence of Location, Population and Climate on Building Damage and Fatalities due to Australian Bushfire: 1925-2009. *Weather, Climate, and Society* 2 300-310.
- **Dilling, L.** and M.C. Lemos (2010), Defining Usable Science: What can we learn for science policy from the seasonal climate forecasting experience? *Global Environmental Change*.

TALKS AND EVENTS SPONSORED BY THE CENTER

(Center personnel bolded)

CSTPR NOONTIME SEMINAR SERIES (BOULDER, CO)

- Paul S. Chinowsky, Climate Change Impacts on Infrastructure, September 16, 2010
- **Christine Kirchhoff**, Integrating Science and Policy: Climate Change Assessments and Water Resources Management, September 23, 2010
- Mark Serreze, Arctic Sea Changes: Prospects for Increased Marine Traffic With Unpredictable Sea Ice Conditions, October 7, 2010
- **Bill Travis**, Declaring a Climate Emergency: Geo-engineering and the Doctrine of Last Resort, October 14, 2010
- Mike Hulme, How Climate Models Gain and Exercise Authority, November 4, 2010
- Waleed Abdalati, Observing and Understanding Changes in Ice Sheets, November 11, 2010
- **Gesa Lüedecke**, Media and Climate-Related Responsible Behaviour: The Impact of Television Program on Individual Action for Climate Protection Regarding Adolescents in Germany, November 18, 2010
- Rebecca Morss, Improving communication of weather forecasts and warnings to aid decisions, December 2, 2010
- Elizabeth McNie, Producing Useful Science for Policy: How Scientists Perceive the Likely Utility of their Research, December 16, 2010
- **Roger Pielke, Jr.**, Quantification of the Treatment of Uncertainty by the IPCC AR4, January 27, 2011
- Michael Glantz, Reports card for the environment: 1C, 3Bs 1A and 1 Incomplete, January 20, 2011
- James R. (Russ) McGoodwin, Enhancing the Resilience of Small High-Latitude Fishing Communities to Climatic and Marine-Ecosystem Change, February 17, 2011
- Roger Bilham, Global earthquake fatalities: Nature vs. Human nature, March 3, 2011
- **Kristin Gangwer**, Dryness and Desperate Measures: Ranching, Land Tenure, and Drought Coping in the Rocky Mountain West, March 31, 2011
- Jeffrey K. Lazo, Inundation or Ignorance? Public Perception of Storm Surge Risk, April 7, 2011
- **Roger Pielke, Jr.**, Normalized Tornado Losses in the United States, September 15, 2011

- Shannon McNeeley, Climate Adaptation by Any Other Name - Social Learning in Colorado Water Governance, October 6, 2011
- Jim White, Abrupt Climate Change - What is it and should I fear it? October 13, 2011
- Bruce Goldstein, Collaborative Resilience - Moving Through Crisis to Opportunity, October 27, 2011
- Brad Udall, Twenty Years of Water Reform in Australia - Any Lessons for the American West? November 3, 2011
- **Lisa Dilling** and **Meaghan Daly**, Adapting to What? Interactions of Drought Management, Climate Adaptation & Shifting Vulnerability, December 1, 2011
- Reagan Waskom, Climate Change Impacts on Agriculture in the Colorado River Basin, December 8, 2011

ENVS COLLOQUIUM (BOULDER, CO) (CO-SPONSORED BY CSTPR)

- **Lisa Dilling**, Adapting To Climate Change: Are We Asking The Right Questions? September 8, 2010
- Julie Teel, Climate Change Impacts in Indian Country, October 13, 2010
- Ted Nordhaus & Michael Shellenberger, Adaptation and the Construction of Risk, November 10, 2010
- Jim White, Climate Change: Why We Are in Too Deep Already (comments from **Roger Pielke, Jr.**), December 8, 2010
- William Boyd, **Ben Hale**, **Marilyn Averill**, Mickey Glantz, and Jorge Rafael Figeroa, COP16 Roundtable Panel on Climate Adaptation, January 19, 2011
- Dawn Adams, Burning Through The Roots: Mythos And Meaning In Wildfire, February 23, 2011
- Will Toor, Planning for Climate Change Mitigation and Adaptation in Boulder County, March 30, 2011
- Kristopher Wilson, Adapting To Climate Change: How Television News Directors and Weathercasters Report the Science, April 27, 2011
- S. Ravi Rajan (with comments by **Meaghan Daly**), Environmental Human Rights, August 31, 2011
- Andrew Light, Sustainable Climate Ethics - Moving from Mitigation to International Finance, September 7, 2011
- Sharon Collinge, Sustainable Food Systems - Going Beyond 'The Omnivore's Dilemma', October 26, 2011
- Diane McKnight (with comments by **Ben Hale** and **John Berggren**), Acid Mine Drainage and Climate Change in the Rocky Mountains, November 30, 2011

OTHER TALKS AND PRESENTATIONS BY CENTER PERSONNEL

- Max Boykoff and Lisa Dilling presented research at International Climate Change Adaptation Conference on Climate Adaptation Futures, Gold Coast, Australia, July 1, 2010
- Ben Hale (panel participant), Connections between curriculum and campus sustainability, Council of Environmental Deans and Directors Annual Conference, Boulder, CO, July 8, 2010
- Max Boykoff, Climate adaptation strategies and cultural engagements in India: exploring paths of climate governance via mass media communications, AEJMC Preconference Panel session, Communication and the Environment: Theory and Practice, Denver, CO, August 3, 2010
- Ben Hale, comment on Justin Weinberg's "When is Moral Hazard Hazardous?" Third Annual Rocky Mountain Ethics (RoME) Congress, Boulder, CO, August 5-8, 2010
- Lisa Dilling, When is geoengineering research "just research"? The role of research framing in light of the use of technology. Gordon Research Conference on Science and Technology Policy, Waterville, NH, August 8-13, 2010
- Max Boykoff, Science, Politics, and Emotion: Talking Climate Change, Boulder, CO, August 19, 2010
- Max Boykoff, invited talk for Association of Japanese Environmental Journalists, Waseda University, Japan, August 25, 2010
- Max Boykoff, invited talk at National Institute for Environmental Studies, Tsukuba, Japan, August 25, 2010
- Max Boykoff, invited talk, Society for the Social Studies of Science and Japanese Society for Science and Technology Studies conference, University of Tokyo, Japan, August 26, 2010
- Ben Hale, Undoing and disallowing, Center for Values and Social Policy, Boulder, CO, September 17, 2010
- Max Boykoff, United Kingdom media coverage of climate change, Climate change controversies in the media: Sociological insights, Paris, France, September 20, 2010
- Jessica Weinkle, Hurricane Intensity, Frequency, and Controversy: Presenting Information Useful to Those Living on Land, ENVIS Graduate Student Seminar Series, Boulder, CO, September 29, 2010
- Lisa Dilling, invited panelist, NCAR/UCAR's 50th Anniversary Symposium, Boulder, CO, October 5, 2010
- Roger Pielke, Jr., The Climate Fix: What Scientists and Politicians Won't Tell You About Global Warming. Rome, Italy, October 6, 2010.
- Roger Pielke, Jr., The Climate Fix: What Scientists and Politicians Won't Tell You About Global Warming. Bergamo, Italy, October 9, 2010.
- Kelli Archie, Climate Change Adaptation and Western Public Lands: Do Stakeholders Share Understanding of Associated Concepts? Managing for Climate Change Resiliency in the San Juan Mountains - Adaptation and Planning for Climate Change. Silverton, CO, October 2010
- Roger Pielke, Jr., Climate Collapse - and the Climate Fix, National Press Club, Washington, D.C., October 11, 2010
- Roger Pielke, Jr., The Climate Fix, San Francisco, CA, October 15, 2010
- Roger Pielke, Jr., Repairing Climate Policy, Seattle, WA, October 18, 2010
- Roger Pielke, Jr., The Climate Fix: What Scientists and Politicians Won't Tell You About Global Warming, Tempe, AZ, October 19, 2010
- Ben Hale, Moral Hazards and Geoengineering, Workshop on "The Ethics of Geoengineering: Investigating the Moral Challenges of Solar Radiation Management", Missoula, MT, October 22, 2010
- Roger Pielke, Jr., The Climate Fix: A Pragmatic Future for Climate Change, University of Michigan, Ann Arbor, MI, October 25, 2010
- Roger Pielke, Jr. (on panel with Judith Curry and Andrew Revkin), Beyond "Climategate": What Role for Science and the Media in the Making of Climate Policy? Purdue University, West Lafayette, IN, November 3, 2010
- Roger Pielke, Jr., The Climate Fix: What Scientists and Politicians Won't Tell you About Global Warming, University of Wisconsin, Madison, WI, November 4, 2010
- Kelli Archie, Climate Change Adaptation in Western US Public Lands, ENVIS Graduate Student Seminar Series, Boulder, CO, November 4, 2010
- Roger Pielke, Jr., What Roles for Scientists in Policy and Politics, University of Wisconsin, Madison, WI, November 5, 2010
- Ben Hale, poster presentation, Social justice and sleep: Policy implications of social disparities in sleep. APHA, Denver, CO, November 6-10, 2010.
- Roger Pielke, Jr., The Climate Fix: What should the government subsidise? Renewables, R&D, or neither? Legatum Institute, London, U.K., November 16, 2010
- Roger Pielke, Jr., Fixing Climate Policy, London School of Economics, London, U.K., November 17, 2010
- Max Boykoff and Ben Hale (panel participants), Covering Climate in a Changing Media Climate, Sixteenth Conference

- of the Parties (COP16), Cancun Mexico, December 2, 2010
- Max Boykoff and Ben Hale (panel participants), Climate change and cities: Science for adaptation and mitigation, Sixteenth Conference of the Parties (COP16), Cancun Mexico, December 3, 2010
 - Ben Hale, Adaptation, Opportunism, and Intergenerational Justice, Side Event, Sixteenth Conference of the Parties (COP16), Cancun, Mexico, December 3, 2010
 - Roger Pielke, Jr. (debate participant with David Golston and Alexander Ochs), A Debate on Global Climate Change Policy, Embassy of Austria, Washington, D.C., December 14, 2010
 - Kelli Archie, Climate Change Adaptation and Western Public Lands: Do Managers Have the Tools and Understanding They Need to Make Decisions? Association of American Geographers Annual Meeting. Seattle, WA, February 2011
 - Roger Pielke, Jr., Fixing Climate through Energy Innovation, Illahee Lectures, Portland, OR, February 3, 2011
 - Roger Pielke, Jr., Science in Society Author Interview with Roger Pielke, American University, Washington, D.C., February 25, 2011
 - Ben Hale, Fixing the wrong wrong: Geoengineering and the end of the world, University of Washington, March 2, 2011
 - Ben Hale, Geoengineering research, the demands of knowledge and the right reasons, Three Rivers Philosophy Conference: Knowledge, Science and Democracy, University of South Carolina, April 1-3, 2011
 - Roger Pielke, Jr., The Climate Fix, MIT Energy Club, Cambridge, MA, April 14, 2011
 - Christine Kirchhoff and Lisa Dilling, Managing Water Resources in a Changing Climate: Understanding Drivers and Constraints to Adaptation Policy and Planning across Scales and Levels of Decision Making Association of American Geographers. Association of American Geographers. Seattle, WA, April 12-16, 2011
 - Kelli Archie and Lisa Dilling, Climate Change Adaptation and Western Public Lands: Do Decision Makers Have the Information and Tools They Need to Govern? Association of American Geographers. Seattle, WA. April 12-16, 2011
 - Max Boykoff, Non-state actors in earth system governance and the public-private divide, Colorado Conference on Environmental Governance, Ft. Collins, CO, April 19, 2011
 - Roger Pielke, Jr., The Climate Fix: What Scientists and Politicians Won't Tell You about Global Warming, Pacific Institute for Climate Solutions, University of Victoria, B.C., April 20, 2011
 - Roger Pielke, Jr. (panel participant), Climate Science in a Democratic Society, Hamburg, Germany, May 4, 2011
 - Roger Pielke, Jr., The Climate Fix, Helmholtz Centre for Environmental Research, Leipzig, Germany, May 9, 2011
 - Saffron J. O'Neill, Defining and Assessing Maladaptation, Boulder, CO, May 17, 2011
 - Max Boykoff (panel participant), Analysing the makeup and discourse of UNFCCC national delegations through 15 years of COPs, Colorado Conference on Earth System Governance, Colorado State University, Fort Collins, CO, May 17-20, 2011
 - Christine Kirchhoff and Lisa Dilling, Managing Water Resources in a Changing Climate: Understanding Drivers and Constraints to Adaptation Policy and Planning across Scales and Levels of Decision Making, Colorado Conference on Earth System Governance, Colorado State University, Fort Collins, CO, May 17-20, 2011
 - Kelli Archie and Lisa Dilling, Climate Change Adaptation and Western Public Lands: Do Decision Makers Have the Information and Tools They Need to Govern? Colorado Conference on Earth System Governance, Colorado State University, Fort Collins, CO, May 17-20, 2011
 - Roger Pielke, Jr., Climate Change and Global warming. Denver 9News Your Show, May 19, 2011
 - Shalini Mohleji, Gaining from Losses: Using Disaster Loss Data as a Tool for Appraising Natural Disaster Policy, Boulder, CO, May 26, 2011
 - Max Boykoff, What Media Analysis Can Tell Us about Effective Climate Change Communication, International Climate Communication Summit, Dalfsen, Netherlands, June 20, 2011
 - Max Boykoff, invited talk/participant, Glamorous environmentalisms workshop, Kings College, London, U.K., July 7-9, 2011
 - Roger Pielke, Jr., The New Economic Loss Model, M.O.R.E. 25 on Mapping and Modelling Risks and Opportunities (MMR+O 2), hosted by the Bermuda Underwater Exploration Institute (BUEI), Bermuda, July 12, 2011
 - Max Boykoff, Who speaks for climate? Making sense of media reporting on climate change, Oxford University, Oxford, U.K., July 14, 2011
 - Meaghan Daly and Lisa Dilling, Urban water management and adaptation to climate change: preliminary research on how responses to drought condition adaptive capacity. Invited presentation, University Council on Water Resources, Boulder, CO, July 14, 2011
 - Ben Hale, Invited paper, Fixing the Wrong Wrong: Geoengineering and the End of the World, Foundation for Research on Economics and the Environment, Seminar on Environmental Economics of Creation Stewardship, Bozeman, MT, July 18-22, 2011

- Ben Hale, *The Wicked and the Wild: Why you don't have to love nature to be green*, Foundation for Research on Economics and the Environment, Seminar on Environmental Economics of Creation Stewardship, Bozeman, MT, July 18-22, 2011
- Christine Kirchhoff and Lisa Dilling, *Science Informing Policy? Understanding Drivers and Constraints to Improved Water Management in a Changing Climate*. 19th Conference on Applied Climatology Practical Solutions for a Warming World: AMS Conference on Climate Adaptation, Asheville, North Carolina, July 18-20, 2011
- Kelli Archie and Lisa Dilling, *The Role of Information in Climate Change Adaptation on Western Public Lands*. 19th Conference on Applied Climatology Practical Solutions for a Warming World: AMS Conference on Climate Adaptation, Asheville, North Carolina, July 18-20, 2011
- Lisa Dilling, K. Dow, M. C. Lemos, K. Lackstrong, John Berggren, S. Kalafatis, B. Haywood and R. Henry, *Building and comparing stakeholder databases and networks across RISAs*. 19th Conference on Applied Climatology Practical Solutions for a Warming World: AMS Conference on Climate Adaptation, Asheville, North Carolina, July 18-20, 2011
- John Berggren and Lisa Dilling, *Analyzing expressed stakeholder needs in the Western Water Assessment RISA*. 19th Conference on Applied Climatology Practical Solutions for a Warming World: AMS Conference on Climate Adaptation, Asheville, North Carolina, July 18-20, 2011
- R. Morss, O. Wilhelmi, Lisa Dilling, M.H. Hayden and G. Meehl, *Extreme weather and community-based climate adaptation: An integrated framework with an application to extreme heat*. 19th Conference on Applied Climatology Practical Solutions for a Warming World: AMS Conference on Climate Adaptation, Asheville, North Carolina, July 18-20, 2011
- Meaghan Daly, Roberta Klein, Lisa Dilling, William Travis, D. Kenney, O. Wilhelmi, K. Miller and A.J. Ray, *Evaluating interactions of drought and climate change adaptation policy for urban water resource management (poster presentation)*. 19th Conference on Applied Climatology Practical Solutions for a Warming World: AMS Conference on Climate Adaptation, Asheville, North Carolina, July 18-20, 2011
- Ben Hale, *Comment on Nick Beckstead's "The Case for Focusing on Existential Risk,"* Fourth Annual Rocky Mountain Ethics Congress, August 4-7, 2011
- Max Boykoff, *Peak to Peak: teaching sustainability workshop*, University of Colorado, Boulder, CO, August 16, 2011
- Lisa Dilling, *Facilitating usable science: Experience from the use of seasonal climate forecasts*, 242nd American Chemical Society National Meeting, Denver, CO, September 1, 2011
- Lisa Dilling, *Matching the production of scientific knowledge to needs across scales: The implications of climate adaptation decision making for science policy*. 2011 Atlanta Conference on Science, Technology and Innovation Policy, Atlanta, GA, September 15-17, 2011
- Ben Hale, *Geoengineering Research, the Demands of Knowledge and the Right Reasons*, Workshop in Applied Philosophy: Ethical Issues in Engineering Biological and Ecological Systems, Northeastern University, September 30-October 2, 2011
- Max Boykoff, *The impact of U.K. and U.S. media coverage on awareness, understanding and political responses around climate change*, Institute for Public Policy Research Media Leaders and Climate Change Round Table 2 Meeting, London, U.K., October 6, 2011
- Ben Hale, *Co-Chair, Climate Ethics Workshop, Advancing Publicly Engaged Philosophy Conference*, Washington, D.C., October 7-9, 2011
- Ben Hale, *Philosophy and the Tools of the Policy Sciences, Advancing Publicly Engaged Philosophy Conference*, Washington, D.C., October 7-9, 2011
- Max Boykoff, *Carbon smarts: learning science on the go conference*, University of Massachusetts, Lowell, MA, October 20-21, 2011
- Ben Hale, *invited paper, Engineering Ethics for a Globalized World*, Texas A&M University workshop, Doha, Qatar, October 23-28, 2011
- Roger Pielke, Jr., *Scientists in Policy and Politics*, COSI Seminar, Boulder, CO, October 24, 2011
- Max Boykoff, *University of Colorado-Boulder Peace Corps event*, Boulder, CO, October 26, 2011
- Max Boykoff, *Making Sense of Media Reporting on Climate Change*, The Leonard and Jayne Abess Center for Ecosystem Science and Policy, University of Miami, Coral Gables, FL, November 14, 2011
- Max Boykoff (panel participant), *Climate change in the media: problems and best practices*, II Climate Change Communication Forum, Mexico City, November 25, 2011
- Max Boykoff, *Shapers of the debate what happens to science in the hands of stakeholders' panels*, American Geophysical Union, San Francisco, CA, December 5-9, 2011
- Ben Hale, *Moral Friction*, Eastern Division APA, December 2011
- Ben Hale, *Comment on Matthew Altman's "Future Generations and the Problem of Consent: A Free Market Defense of Environmental Sin Taxes,"* Eastern Division APA, December 2011

WORKSHOP, CONFERENCE, SYMPOSIUM AND MEETING ORGANIZATION

- Max Boykoff chaired the session Exploring How Mass Media Confront Complexity When Covering Climate Change, 2011 AESS Meeting, Burlington, VT, June 25, 2011
- Lisa Dilling co-chaired the AMS Conference on Climate Adaptation, Asheville, NC, July 18-20, 2011
- Ben Hale co-organized the annual Rocky Mountain Ethics Congress, Boulder, CO in early August, 2008-present.
- Roger Pielke, Jr. co-chaired the Gordon Research Conference on Science and Technology Policy, Waterville Valley, NH, August 8-13, 2010
- Roger Pielke, Jr., moderated a discussion on “Knowledge gaps, new research ideas” in a workshop titled “Democratising Expertise in Theory and Practice: Exploring Knowledge Gaps and New Research Ideas” at Linköping University’s Centre for Climate Science and Policy Research, Linköping, Sweden, November 21, 2011

GUEST SPEAKERS AND MISC EVENTS

- Mike Hulme, Roundtable Discussion with Graduate Students, Boulder, CO, November 3, 2010
- Genevieve Maricle, Climate Change and Development Policy: Reflections from 1.5 years in the US Government, Boulder, CO, April 26, 2011
- Campus2 Congress - speak with your US Senator offices about climate policy and politics! April 29, 2011

GEOGRAPHY COLLOQUIUM (BOULDER, CO) – FALL 2011 (CO-SPONSORED BY CSTPR)

- John O’Loughlin, Andrew Linke, Frank Witmer, Arlene Laing, The Climate Change-Conflict Controversy - The Evidence from East Africa, 1990-2009, September 2, 2011
- Simon Dalby, Environmental Geopolitics in the Twenty First Century, September 16, 2011
- Myanna Lahsen, Research on Global Environmental Change - Time for Change, September 23, 2011
- Maxine Burkett, The Nation Ex-Situ: Climate-Induced Migration, Deterritorialized Nationhood, and the Post-Climatic Era, September 30, 2011
- Tracey Osborne, Interrogating the Tradeoffs - Carbon Commodification and Community Forest Governance in Chiapas, Mexico, October 7, 2011
- Susan Solomon, Ozone Depletion and Antarctic Climate Change, October 14, 2011

- Judit Hersko, Pages from the Book of the Unknown Explorer, November 4, 2011
- Andrea Nightingale, What does it mean to ‘adapt’? Gender, climate change, post-conflict transition and forestry governance in Nepal, December 2, 2011

MEDIA REFERENCES

Center personnel were quoted, cited, interviewed or referred to 173 times in 90 media including ABC News, Arizona Republic, Associated Press, Australian International Business Times, Christian Science Monitor, Denver Post, Energy Tribune, Environmental Research, Financial Times, Forbes, Greentech Enterprises, Guardian, Houston Chronicle, Idaho Statesman, iNamibia, International Business Times, In These Times, Investors Business Daily, National Public Radio, New York Times, Oregonian, Orlando Sentinel, Philadelphia Inquirer, Reuters Africa, Reuters UK, Sarasota Herald Tribute, Space.com, Spiegel online, St. Louis Today, Sun Sentinel, Sustainability Journal, The Economist, Time magazine, USA Today, US News and World Report, Wall St. Journal, and the Washington Post. A complete list with links to articles is located here: <http://sciencepolicy.colorado.edu/news/in-the-news.html>

SERVICE ACTIVITIES

MAX BOYKOFF

- Associate Deputy Editor, Climatic Change
- Contributing Editor, Los Angeles Review of Books
- ENVS PUEC
- Geography department colloquium committee
- ENVS endowed chair search committee
- ENVS program colloquium committee
- CIRES distinguished lecture committee
- CIRES visiting scholar selection committee
- CSTPR Executive Committee
- Associate Editor, *Ethics, Policy & Environment*
- Editorial board, *Environmental Communication A Journal of Nature and Culture*

LISA DILLING

- Advisory Board, Advancing Knowledge Systems to Inform Climate Adaptation Decisions (ICAD), European Research Council project based at University of Exeter, UK
- Board of Scientific Counselors (BOSC), Office of Research and Development, U.S. EPA
- Advisory Board, Decision Center for a Desert City, Arizona State University, Tempe AZ

- Co-chair, AMS Conference on Climate Adaptation, Asheville, NC
- American Meteorological Society Policy Curriculum Advisory Committee
- Renewable and Sustainable Energy Institute affiliate
- Center of the American West affiliate
- ENVS PUEC
- CIRES Career Track Committee
- ENVS Executive Committee
- UCAR President’s Advisory Committee on University Relations
- Carbon Cycle Science Working Group (for CCSP IWG)
- CIRES Visiting Fellow Committee
- CIRES Fellow
- CSTPR Associate Director
- CSTPR Executive Committee

BEN HALE

- Co-editor *Ethics, Policy & Environment*, 2009-present.
- Chair of the ENVS Advisor Search, Fall 2011
- Conference Organizer: RoME IV, 2011 (with Alastair Norcross)
- Graduate Committee, ENVS 2010-present
- Executive Committee, Critical Theory Certificate, 2009-present
- Responsible Conduct of Research Training Committee. With the Vice-Chancellor’s Office of Research
- Executive Committee, CSTPR, 2009-present
- ENVS Colloquium Committee (with Lisa Dilling and Jana Milford), 2008-2010
- CSTPR Spring 2010 Symposium Planner
- Conference Organizer: RoME III, 2010 (with Alastair Norcross)

ROGER PIELKE, JR.

- Advisory Committee, Pacific ENSO Applications Center
- Research Fellow, Risk Frontiers, Macquarie University, Sydney, Australia
- Senior Visiting Scholar, Arizona State University Consortium for Science, Policy and Outcomes
- Senior Fellow, The Breakthrough Institute
- Science Advisory Board, CliSAP, University of Hamburg,

Germany

- Committee on Science for Policy, Bipartisan Policy Center
- International Advisory Board, QUEST, University of Bristol
- Visiting Senior Fellow, Mackinder Institute, London School of Economics
- CIRES Executive Committee
- ENVS Executive Committee
- ENVS Self-Study Committee
- Associate Editor, Natural Hazards Review
- Editorial Board, WIREs Reports Climate Change
- Editorial Board, Minerva
- Editorial Board, Nature & Culture
- Editorial Board, Global Environmental Change
- Editorial Board, Environmental Hazards
- Editorial Board, Water Resources Research
- Editorial Board, Environmental Science and Policy
- Editorial Board, Darwin
- Editorial Board, Policy Sciences
- Editorial Board, Natural Hazards Review
- Steering Committee, The Nation’s Coasts: A Vision for the Future, H. John Heinz III Center for Science, Economics and the Environment
- Advisory Committee, Societal Impacts Group, National Center for Atmospheric Research

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 (Lisa Dilling)

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 (Roger Pielke, Jr. and Lisa Dilling)

SOURCE: National Science Foundation

AMOUNT: \$2.4 million

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 (Roger Pielke, Jr. and Lisa Dilling)

SOURCE: National Science Foundation

AMOUNT: \$248,576

START DATE: September 1, 2009

END DATE: September 30, 2011

PROJECT TITLE: Reconciling Supply of and Demand for Research in the Science of Science and Innovation Policy (Roger Pielke, Jr.)

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 (Roger Pielke, Jr.)

SOURCE: National Science Foundation

AMOUNT: \$41,050

START DATE: August 1, 2008

END DATE: August 31, 2011

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

SOURCE: Western Water Assessment (NOAA)

AMOUNT: \$49,000

START DATE: July 1, 2010

END DATE: June 30, 2011

PROJECT TITLE: Climate related decision making on public lands in the Mountain West (Lisa Dilling)

SOURCE: Western Water Assessment (NOAA)

AMOUNT: \$46,993

START DATE: September 1, 2010

END DATE: August 31, 2011

PROJECT TITLE: Carbon management on public lands in the Intermountain West: Multi-scale analysis of carbon stock responses to human and natural disturbances (Lisa Dilling)

SOURCE: US Department of Agriculture

AMOUNT: \$717,927

START DATE: 2011

END DATE: 2014

PROJECT TITLE: Understanding the Drivers of Adaptation at the Municipal Level in CO, WY and UT (Lisa Dilling)

SOURCE: Western Water Assessment (NOAA)

AMOUNT: \$126,467

START DATE: 2011

END DATE: 2013

PROJECT TITLE: Evaluating stakeholder needs in support of a new National Assessment function (Lisa Dilling)

SOURCE: Western Water Assessment (NOAA)

AMOUNT: \$40,000

START DATE: 2010

END DATE: 2011

PROJECT TITLE: Colorado Climate Preparedness project (Bill Travis and Bobbie Klein)

SOURCE: State of Colorado

AMOUNT: \$171,000

START DATE: May 1, 2010

END DATE: January 31, 2011

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<http://sciencepolicy.colorado.edu>