

# CSTPR

## ANNUAL REPORT

January 1 - December 31, 2016

Working to improve how

# SCIENCE & TECHNOLOGY

policies address societal needs, through  
research, education and service

CENTER FOR  
SCIENCE & TECHNOLOGY  
POLICY RESEARCH



# CENTER & FOR SCIENCE & TECHNOLOGY POLICY RESEARCH

CENTER FOR SCIENCE AND TECHNOLOGY POLICY RESEARCH  
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Annual Report  
January 1 - December 31, 2016

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Cover photo: Marking the 100th anniversary of the Rocky Mountain National Park on January 26, 2015, Expedition 42 Flight Engineer Terry Virts posted this photograph, taken from the International Space Station, to Twitter. Virts wrote, "Majestic peaks and trails! Happy 100th anniversary @RockyNPS So much beauty to behold in our @NatlParkService." Photo: NASA/Terry Virts.





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# 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's vision is to serve as a resource for science and technology decision makers and those providing the education of future decision makers. Our mission is to improve how science and technology policies address societal needs, through research, education and service.

## LETTER FROM THE DIRECTOR

As 2017 begins, it is a great opportunity to reflect on our accomplishments and ongoing endeavors here in the Center for Science and Technology Policy Research (CSTPR). In these urgent and opportune times, CSTPR core faculty, staff, postdocs, graduate and undergraduate students have constructively addressed many pressing, dynamically changing and important science, technology, and policy issues before us. These efforts have further been invigorated by visitors we have hosted during 2016, who have contributed to furthering our CSTPR mission. Through research, teaching and service projects to improve our understandings of how the quality of decision-making can catalyze and enhance webs of interaction between science, technology, politics, policy and society, members of the CSTPR community have engaged in a range of activities that are outlined in the pages that follow here.



Collectively, we in CSTPR have identified four priority areas of engagement with our ongoing work:

- 1. Science and Technology Policy:** we forge ahead with analyses of decisions at the science-policy interface, including making public and private investments in science and technology, governing the usability of scientific information, and critically engaging the scientific and technical construction of emerging issues.
- 2. Innovations in Governance and Sustainability:** we continue to study innovations in governance and the complexity of sustainability challenges, including the development of new institutions that transcend conventional political boundaries or bring actors together in new ways, new tools and experimental interventions for inducing behavioral change or enabling participation in decision making, and new forms of association in the creation and protection of collective goods.
- 3. Drivers of Risk Management Decisions:** we move ahead with interrogations regarding how individuals and institutions – at local, regional, national, and international scales – make decisions to respond and adapt to perceived risks, and what factors promote or inhibit effective decision making.
- 4. Communication and Societal Change:** we press forward with experimentation and critical analyses of communication strategies and engagement in varying cultural, political and societal contexts.

You'll spot imprints of these key themes among the highlights noted in this report, through our ongoing investment in the Science and Technology Policy graduate certificate program, the revamped Prometheus 2.0 blog, our brownbag seminar series, the American Association for the Advancement of Science Catalyzing Advocacy in Science and Engineering (AAAS CASE) workshop student competition, and the CU-Red Cross/Red Crescent Climate Centre internship program. These are just some of the many important commitments that we have made in 2016 that continue into this year and beyond.

From my vantage point as Director of CSTPR, I am very proud of our CSTPR efforts to develop, maintain and

continue active collaborations so that scientific work finds traction in science-policy and public arenas at CU Boulder and beyond. I hope you will enjoy reading through this report and getting a sense of our accomplishments from 2016, and our activities going forward.

A handwritten signature in blue ink that reads "Max Boykoff". The letters are stylized and connected, with a prominent "M" and "B".

Max Boykoff, Director  
[boykoff@colorado.edu](mailto:boykoff@colorado.edu)

# THE CENTER AT A GLANCE

FOR THE PERIOD

JANUARY 1 - DECEMBER 31, 2016



26,127

Unique website visitors



27

Graduate students advised by Center faculty

28

Center students who have graduated since 2001 (13 PhDs, 14 masters, 1 Masters/MBA)

63

External visitors, coauthors and collaborators



12

Noontime Seminar talks



NEWS

22

Media references to the Center and/or its personnel



41

Other presentations by Center staff and students

7

Events cosponsored by the Center

1,132

Subscribers to Ogmios, the Center newsletter

*Ogmios*



22

Peer-reviewed journal articles, books and book chapters

3

Other publications

16

University of Colorado courses taught by Center personnel







# 2016 HIGHLIGHTS

## RESEARCH HIGHLIGHTS

### Research Grants and Awards

- Lisa Dilling is part of a new 2-year \$286,368 NOAA SARP award, "Advancing the Use of Drought Early Warning Systems in the Upper Colorado River Basin."
- Lisa Dilling was awarded a Grand Challenge Seed Grant from CU's Offices of the Provost and the Vice Chancellor for Research. Her project is titled "Bringing Innovative Data Science Down to Earth."
- Lisa Dilling was awarded a Leverhulme Visiting Professor Award for 2016-17 from the UK Leverhulme Foundation.
- CSTPR graduate student John Berggren received the CIRES Graduate Student Research Award for his project "Transitioning to a New Era in Western United States Water Governance: Examining Adaptive Capacity and Equitable Water Policy in the Colorado River Basin."
- CSTPR graduate students Juhi Huda and Lucy McAllister were awarded grants from the Center to Advance Research and Teaching in the Social Sciences (CARTSS) to fund their research.
- CSTPR graduate student Elizabeth Koebele, a doctoral candidate in the Environmental Studies Program at CU Boulder, received the following awards: (1) full funding from the National Science Foundation to attend the 2016 AMS Summer Policy Colloquium; (2) a \$7,500 grant from the Horowitz Foundation for Social Policy to help fund her research in water governance in the Colorado River Basin. She was one of only 19 award winners from 535 applications for this grant.
- CSTPR graduate student Marisa McNatt was awarded the following grants: (1) a travel grant through the University of Colorado Environmental Studies Program to attend the American Wind Energy Association (AWEA) Offshore WINDPOWER 2016 Conference. Marisa presented her dissertation research at the conference in October; (2) a 2016 CIRES Graduate Student Travel Award to attend and present her dissertation research at the 2017 American Association for the Advancement of Science (AAAS) Annual Meeting in February.
- CSTPR graduate students Elizabeth Koebele, Marisa McNatt and Arielle Tozier de la Poterie were awarded Beverly Sears Graduate Research Grants to fund their research at University of Colorado Boulder.
- The Media and Climate Change Observatory (MeCCO) project, which tracks newspaper coverage of climate change or global warming on a monthly basis, was awarded a \$2,000 CARTSS grant at the University of Colorado Boulder.
- CSTPR created the Radford Byerly, Jr., Award in Science and Technology Policy in recognition of Rad's contributions to and impact on the CSTPR community. Rad passed away in January.

*Left Photo: Women in Navrongo, Ghana, cook jollof rice using an EcoZoom Dura stove to test out its suitability for meeting local cooking needs. October 2016. Photo: Katie Dickinson.*

## EDUCATION HIGHLIGHTS

For the third year the Center organized a competition to select two CU-Boulder students to attend the AAAS “Catalyzing Advocacy in Science and Engineering” workshop in Washington, D.C. The past winners participated in a panel discussion in the fall. The competition is generously supported by the University of Colorado Graduate School and Center for STEM Learning.

Now in its 4th year, the CU Boulder Red Cross/Red Crescent Climate Centre Internship Program selected Sierra Gladfelter as the 2016 intern. She spent her summer in Zambia supporting the monitoring and evaluation component of the ‘City Learning Lab processes’ Zambia Red Cross Society program.

## OUTREACH HIGHLIGHTS

In 2016 CSTPR revived its blog, Prometheus, to regularly feature content from CSTPR core faculty, research associates, postdocs, visitors, students and affiliates and serve as a resource for science and technology decision makers. This new dynamism reflects the new energies and pursuits taking place in and around CSTPR. The blog now features a broader range of news, research updates and opinion writing, including profiles of CSTPR and other research endeavors, initiatives and commitments. CSTPR brought on two new writing interns, Abigail Ahlert and Alison Gilchrist, whose regular contributions to Prometheus have greatly assisted with revival of the blog.

Max Boykoff was interviewed about his media and climate change work for the cover story of the Winter/Spring 2016/17 issue of Boulder Magazine.

Max Boykoff presented on three different panels during the Conference of Parties conference in Marrakech in November. He was interviewed by KGNU radio about the event.

Deserai Crow’s “Wildfire Outreach and Citizen Entrepreneurs in the Wildland-Urban Interface: A Cross-Case Analysis in Colorado” was the subject of an article in the Colorado Arts and Sciences Magazine, Citizen ‘sparkplugs’ can reduce red-zone fire danger.

Katie Dickinson’s research on cookstove use in Africa was the subject of a CIRES News feature article.

## PERSONNEL

2016 was a year of transition for CSTPR faculty.

- CSTPR Founding Director Roger Pielke, Jr., moved to the University of Colorado Athletic Department to launch a Sports Governance Center;

- CSTPR Core Faculty Member Max Boykoff assumed the role of CSTPR Director;
- CSTPR Core Faculty Member Deserai Crow began a new position as Associate Professor in the School of Public Affairs, University of Colorado-Denver in the fall;
- CSTPR Core Faculty Member Ben Hale relocated to the CU Environmental Studies program;
- CSTPR Core Faculty Member Lisa Dilling was awarded a Leverhulme Visiting Professorship. It is hosted by Oxford University, UK, where she is spending her sabbatical during the 2016-17 academic year. There she is collaborating with Professor Steve Rayner of Oxford’s Institute for Science, Innovation and Society to explore how cultural theory informs our understanding of the use of knowledge in adaptation decision making at the local level. As part of her award Lisa is presenting four Leverhulme Lectures and holding a colloquia for graduate students.

Five CSTPR graduate students earned degrees in 2016:

- Meaghan Daly (Ph.D., Environmental Studies). Meaghan has accepted a postdoc position at Leeds University, UK.
- Lydia Lawhon (Ph.D., Environmental Studies)
- Alexander Lee (Ph.D., Environmental Studies)
- Rebecca Schild (Ph.D., Environmental Studies)
- Michael Weiss (M.S., Environmental Studies)

Dan Zietlow, our writing intern for the past 2 years, graduated and started his career.

Many thanks to all for their contributions, and congratulations to our 2016 graduates! While we were sorry to see them go, we were excited to welcome the following new faculty, staff, students and visitors. Their full bios are found later in this report.

## Faculty

- Bruce Goldstein joined CSTPR in May as a Core Faculty Member.

## Staff

- Jessica Rich joined CSTPR in September as a CIRES Post-Doctoral Research Associate.

## Graduate Students

- Sarah Schweizer is a PhD student in the College of

Architecture and Planning at the University of Colorado.

- Jeremiah Osborne-Gowey is a Ph.D. student in Environmental Design (ENVD) and Environmental Studies (ENVS).
- Lee Frankel-Goldwater is a Ph.D. student with the Environmental Studies and Design programs.

### Student Office Interns

- Celeste Moldanado
- Curtis Gile

### Student Writing Interns

- Alison Gilchrest
- Abby Ahlert

### Visitors

- Professor Justin Farrell is an Assistant Professor of Sociology in the Yale School of Forestry and Environmental Studies, with a secondary appointment in the Department of Sociology. He is spending the year at CSTPR under the CIRES Visiting Fellows Sabbatical Program.
- Augusto González is Adviser to the Director-General for Space Matters at the Directorate-General for Internal Market, Industry, Entrepreneurship and Small and Medium Enterprises (SMEs) with the European Commission. He joined CSTPR this fall under the EU Fellowship program.
- Professor Jack Stilgoe is a senior lecturer in the

Department of Science and Technology Studies at University College London spending his sabbatical year at CSTPR.

- Julia Schubert is a Research Associate at the Forum Internationale Wissenschaft (FIW) in Bonn. She is visiting CSTPR for six months under a scholarship from the Fulbright Doctoral Program.
- Dr. Leah Goldfarb is an experienced international environmental policy expert with scientific training in the area of climate change. She is currently an adviser to C3 Boulder: Climate Culture Collaborative.
- Professor Reiner Grundman is Professor of Science and Technology Studies at the University of Nottingham (UK) with longstanding interests in sustainability and global environmental problems.
- Scott Gwozdz teaches at the Leeds School of Business in the Center for Education on Social Responsibility (CESR). In addition to The World of Business and an entrepreneurship class called "New Venture Creation", he also teaches a course he created called "Values and The Power of the Consumer."
- Dr. Bonnie Rusk is a Conservation Biologist with 25 years of experience in the West Indies focusing on biodiversity, terrestrial ecosystems and protected areas, and more recently on climate change adaptation strategies for coastal forests and strategies for their integration into local policy.
- Dr. Suzanne Tegen manages the Wind and Water Deployment section at the National Renewable Energy Laboratory where she has been for 12 years.

*CSTPR Visitor, Augusto González giving a talk on October 12, 2016. Photo: Robin Moser.*





# CORE FACULTY

## MAX BOYKOFF

Max Boykoff is an Associate Professor in Environmental Studies and a Fellow in 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 cultural politics and environmental governance, science and policy interactions, science and environmental communication, disaster risk reduction, climate adaptation, and political economy and the environment. He has experience working in North America, Central America, Oceania, 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.

Home page: [http://sciencepolicy.colorado.edu/about\\_us/meet\\_us/max\\_boykoff](http://sciencepolicy.colorado.edu/about_us/meet_us/max_boykoff).

Twitter: [@boykoff](https://twitter.com/boykoff)



## DESERAI ANDERSON CROW

Deserai Anderson Crow was on the Environmental Studies faculty at the University of Colorado Boulder through the summer of 2016. She was Associate Director of the Center for Environmental Journalism and affiliated with the Center for Science and Technology Policy Research. She joined the faculty of the School of Journalism and Mass Communication in 2008 and moved to the Environmental Studies Program in 2012. She earned her Ph.D. from Duke University's Nicholas School of the Environment and Earth Sciences and a Master of Public Administration from the University of Colorado at Denver's School of Public Affairs. After earning her B.S. in Journalism from the University of Colorado Boulder, she worked as a broadcast reporter, anchor, and producer in Nebraska, West Virginia, California, Colorado Springs, and Denver.

Deserai began a new position as Associate Professor in the School of Public Affairs, University of Colorado-Denver in the fall of 2016, but remains engaged with CSTPR as a Faculty Affiliate.



*Left Photo: Max Boykoff, Deserai Crow, and Lisa Dilling at 2016 CU Boulder Graduation Ceremony. Photo: Katherine Powell.*

## LISA DILLING

Lisa Dilling is Associate Professor of 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 is Director of the Western Water Assessment, a NOAA Regional Integrated Sciences and Assessment project that studies and facilitates the use of climate information in decision making in the Intermountain West. Her scholarship focuses on decision making, the use of information and science policies related to climate change, adaptation, carbon management and geoengineering. Her current projects examine drought in urban water systems, water governance and climate change, municipal adaptation to hazards, decision making in public lands management, and knowledge for adaptation among pastoralists. 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.



Lisa is spending the 2016-17 academic year on sabbatical at Oxford.

Home page: [http://sciencepolicy.colorado.edu/about\\_us/meet\\_us/lisa\\_dilling](http://sciencepolicy.colorado.edu/about_us/meet_us/lisa_dilling)

## BRUCE GOLDSTEIN

Bruce Goldstein joined CSTPR in May 2016. He is an Associate Professor in the Program in Environmental Design and the Program in Environmental Studies at the University of Colorado Boulder, and a faculty research associate in the Institute for Behavioral Science. His work focuses on how planners, activists, public agency managers and other stakeholders collaborate to address daunting social-ecological challenges, such as restoring fire regimes in a densely populated wildlands-urban interface, harmonizing common-property resource management with international efforts to protect biodiversity, and of course climate change. He is particularly interested in how learning networks can catalyze change in stable and durable institutions that are approaching dramatic social and ecological thresholds. His past work includes a 6-year



study of the U.S. Fire Learning Network, a novel multi-scalar collaborative approach to restoring disrupted fire regimes across multi-jurisdictional landscapes, and the edited book "Collaborative Resilience: Moving Through Crisis to Opportunity" (MIT Press 2011), which focuses on how crises can be opportunities for collaboration, consensus building, and transformative resilience. Currently, he is collaborating with members of his project team on four projects – a community and network-scale resilience assessment in partnership with the Fire Adapted Communities Learning Network, a study of critical infrastructures within the Rockefeller Foundation's 100 Resilient Cities Initiative, design and implementation of a nation-wide STEM learning network, and a study of the Locally-Managed Marine Areas Network in the South Pacific.

Home page: [http://sciencepolicy.colorado.edu/about\\_us/meet\\_us/bruce\\_goldstein](http://sciencepolicy.colorado.edu/about_us/meet_us/bruce_goldstein)

## BENJAMIN HALE

Benjamin Hale is an associate 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 meta-ethics. 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.



Ben relocated to the CU Environmental Studies program in May.

## STEVE VANDERHEIDEN

Steve Vanderheiden (Ph.D., University of Wisconsin-Madison) is Associate Professor of Political Science and Environmental Studies at the University of Colorado at Boulder, as well as Professorial Fellow at the Centre for Applied



Philosophy and Public Ethics (CAPPE) in Australia. He joined the CU-Boulder faculty in 2007, and specializes in normative political theory and environmental politics, with a particular focus on global governance and climate change. In addition to numerous published articles and book chapters on topics ranging from Rousseau's environmental thought to the politics of SUVs, and edited books on political theory approaches to climate change, energy politics, and environmental rights, his

Atmospheric Justice: A Political Theory of Climate Change (Oxford, 2008) won the 2009 Harold and Margaret Sprout award from the International Studies Association for the best book on international environmental politics. He is currently completing a book entitled Doing Our Bit: Individual Responsibility for Climate Change.

Home page: [http://sciencepolicy.colorado.edu/about\\_us/meet\\_us/steven\\_vanderheiden](http://sciencepolicy.colorado.edu/about_us/meet_us/steven_vanderheiden)

*Lisa Dilling running a workshop on Knowledge Brokering in Theory and Practice at University of Oxford's School of Geography and the Environment. Photo: James Palmer.*







# RESEARCH

The Center conducts research at the interface of science and decision making on a broad range of topics. The Center's 2016 research projects are described below.

## MAX BOYKOFF

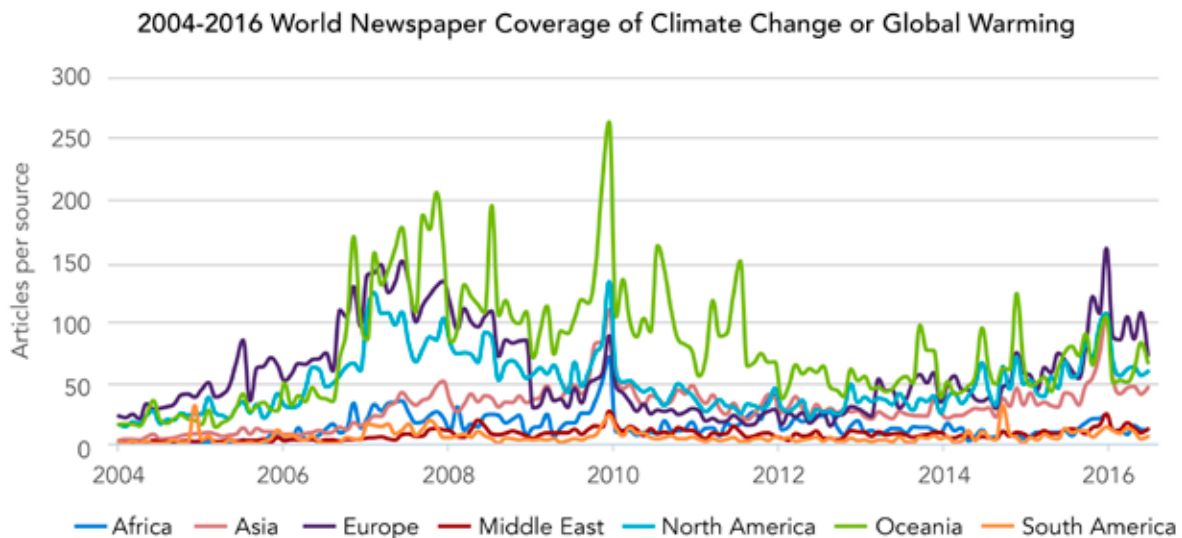
Max Boykoff's research and creative work focuses on cultural politics and environmental governance, science and environmental communications, science-policy interactions, disaster risk reduction, climate adaptation and political economy and the environment. Through many connected projects and collaborations, his research commitments have been fueled by his passion to examine how climate science and policy find meaning in people's everyday lives, as well as how this, in turn, feeds back into science-policy decision-making.

## Cultural Politics of Climate Change

The first strand of Max's work that focuses on the cultural politics of climate change has two components: (a) media coverage of climate change, and (b) the relationship of cultural values and norms with policy and politics.

### **Media Coverage of Climate Change**

Over the past decade, Max has published many peer-reviewed papers and book chapters addressing this subject. Also, with colleague Maria Mansfield (University



Left Photo: Hayden Pass Fire in Southern Colorado. Photo: i.redd.it, partialycylon.



Max Boykoff presenting at the 2016 United Nations Climate Change Conference in Marrakech, Morocco. Photo: Christine Pereira.

of Oxford) and then beginning in 2013 with colleagues Ami Nacu-Schmidt, Lucy McAllister, Kevin Andrews, Gesa Ludecke, Lauren Gifford and Meaghan Daly, Max developed methods to monitor media coverage of climate change at the international and various national scales (updated monthly [http://sciencepolicy.colorado.edu/media\\_coverage](http://sciencepolicy.colorado.edu/media_coverage)).

### ***The Relationship of Cultural Values and Norms with Policy and Politics***

This component of work has sought to critically analyze the role of various actors and organizations shaping political and cultural dimensions of climate science and policy discussions in the public arena.

### **Transformations of Carbon-Based Industry and Society**

The second strand of research has focused on aspects of the transformations of carbon-based industry and society. This engagement has taken many forms. Among them was a co-edited volume with colleague Dr. Susi Moser (Stanford University) entitled 'Successful adaptation to climate change: Linking science and policy in a rapidly changing world' (Routledge, 2013). This edited volume makes significant progress toward unpacking the question of successful adaptation, offering both scientifically informed and practice-relevant answers from various sectors and regions of the world. The book demonstrates how the question of success in important ways is normative and context specific, and appraises what role

science does and can play in adaptation decision making, and how trade-offs and other concerns and priorities shape adaptation planning and implementation on the ground.

### **International Collective on Environment, Culture and Politics (ICE CaPs)**

Founded in 2012 at the University of Colorado Boulder, the International Collective on Environment, Culture and Politics is a research group that examines some of today's most pressing environmental issues. ICE CaPs members and affiliates cross disciplines to apply a wide range of theories and perspectives to study issues at the human-environment interface and work across scales from the individual to the global.

ICE CaPs explores the complex and dynamic cultural and political dimensions of environmental problems at the intersection of science and society. Individual members confront a broad range of issues such as adaptation to environmental hazards, energy conflicts, polarization of climate politics, disposal of hazardous materials, alternative environmental policies, and public engagement with and understanding of complex environmental problems. Through both empirical and theoretical work, ICE CaPs seeks to improve understanding and broaden the discussion about the nature of evolving environmental challenges.

## Inside the Greenhouse

Max Boykoff, Rebecca Safran (Associate Professor, Ecology and Evolutionary Biology) and Beth Osnes (Associate Professor, Department of Theater and Dance) at the University of Colorado Boulder are working to deepen our understanding of how issues associated with climate change are/can be communicated, by creating artifacts through interactive theatre, film, fine art, performance art, television programming, and appraising as well as extracting effective methods for multimodal climate communication.

The objectives for this project are:

1. To generate multimodal compositions on the subject of climate change
2. Engage with various dimensions and issues associated with sustainability
3. Build capacity, competence and confidence among CU-Boulder undergraduate students working on creative climate communications

## DESERAI ANDERSON CROW

Deserai Anderson Crow researches environmental policy, particularly how local- and state-level policy decisions are made. She also studies the role that information in the form of media, expertise, and citizen-produced knowledge plays in local decisions. Her work often focuses on environmental and natural resource issues in

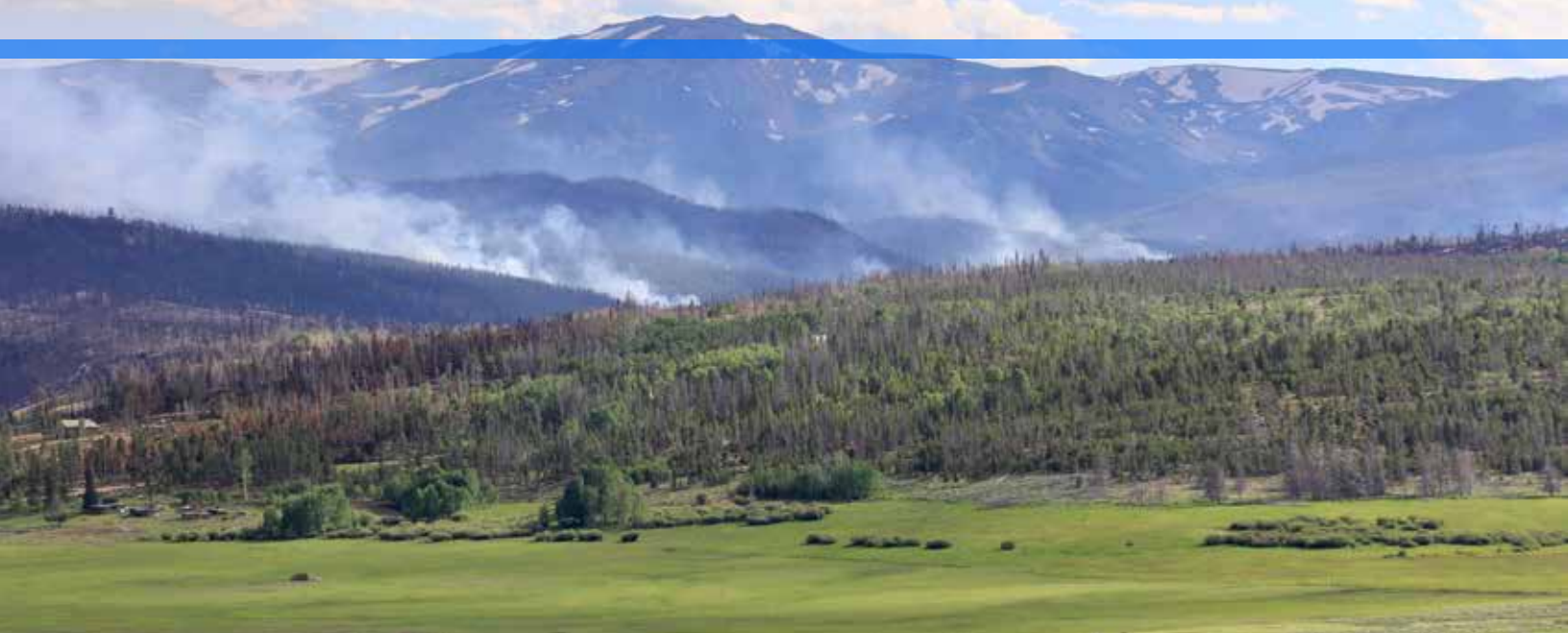
the western United States. Her current research includes studies on policy learning after extreme floods, the influence and limits of information in promoting wildfire mitigation by homeowners, information in environmental regulation, and the influence of various narrative strategies in environmental policymaking. Her previous research focuses on the adoption of non-consumptive recreational water rights by Colorado communities and the factors that influenced policy change within these communities, including mass media, policy entrepreneurs, stakeholder group involvement, and citizen engagement.

## Evaluating Informational Inputs in Rulemaking Processes: A Multi-State Regulatory Analysis

This study analyzes the informational inputs and strategic actions of coalitions of actors within the regulatory context and the resulting regulatory outcomes. Scholars understand the resources of coalitions of actors to be important to influencing policy outcomes. The study investigates one such category of resources: information. Information that can influence policymaking in the regulatory context can include science and other expert-produced information, advocacy-oriented information, industry-focused information, or media-produced information. Citizens can also, at times, produce effective information that can be influential to informing and influencing regulatory decisions. Not only is the information itself a resource, used to inform and persuade, but also the strategy with which the information is used can be important to understand when studying coalitions of actors.

*Colorado National Guardsmen respond to floods in Boulder County, Colorado. Photo: United States Department of Defense.*





2016 Beaver Creek Fire near Walden, Colorado. Photo: U.S. Department of Agriculture.

## Narratives, Media, and Issue Framing in Environmental Policymaking

As part of this umbrella of studies, we are investigating stakeholder strategies and effectiveness as key components in a complete analysis of policy change and policy coalition dynamics. Using a comparative study of stakeholder coalitions in environmental policymaking, researchers are analyzing stakeholder narrative strategy, effectiveness, and framing of winners and losers by policy actors. Additionally, we are evaluating the difference between narratives used in direct stakeholder outreach and those used in and through media sources, in an attempt to understand the variation in narratives used in different communication channels. This project will contribute to the methodological conversations related to narratives in policymaking as well as expanding our understanding of the role of these narratives. We are now using our wildfire project (below) to analyze these narrative patterns within local communities, focusing on how communities debate and understand wildfire risk.

## Policy Learning and Political Context: Analyzing Responses to Colorado's Extreme Flood Events of 2013

With Elizabeth Albright, a colleague at Duke University, this National Science Foundation funded project is working to understand the policy responses in the aftermath of the September 2013 floods along Colorado's Front Range. Understanding the factors that encourage policy learning and adaptation in local policy contexts may prove critical, since this can mean the difference between ongoing flood vulnerability as a consequence of extreme weather events rather than long-term resilience. Determining the factors that increase the likelihood of successful policy adaptation in response to these extreme events will

produce policy-relevant knowledge that may encourage long-term local-level adaptability and resilience to extreme climatic events.

## Risk Perceptions and Support for Management Regimes in Wildland-Urban Interface Zones: A Comparative Analysis of Wildfire Policy and Citizen Response in the Intermountain West

Western states are experiencing significant population growth and development combined with prolonged drought conditions and predictions of climate change that indicate increasing drought in the West. An area that is geographically and climatically prone to catastrophic wildfires and which also overlaps with high rates of population growth is termed the Red Zone. More fires are expected in the Red Zone in future years, necessitating appropriate and well-informed policy in order to reduce risk to life and property as well as sustain ecological benefits.

Understanding residents' perceptions of risk and responsibility in regards to fire mitigation and management in the Red Zone is important to shaping policy and land management decisions. Though this is an increasingly urgent topic, little research has been conducted to investigate the nexus between fire and residents' values, beliefs, and the role of information in promoting support for fire management as well as influencing individual beliefs about the locus of responsibility for fire abatement (local, state, federal government, or individual homeowners).

With a team of graduate students, this study attempts to gain insight into the role that individual beliefs and external information sources (science, policy/management prescriptions, media coverage, advocacy communication) play in shaping residents' behavior, risk perception, and policy support regarding fire management in the wildland-urban interface.

## KATIE DICKINSON

Katie is an environmental economist whose interdisciplinary research examines human behaviors and decision making in the face of environmental and health risks. She is particularly interested in the role of social interactions and social networks in shaping risk perceptions and behaviors.

### Playing With Fire: Social Interactions and Homeowners' Wildfire Mitigation Behaviors

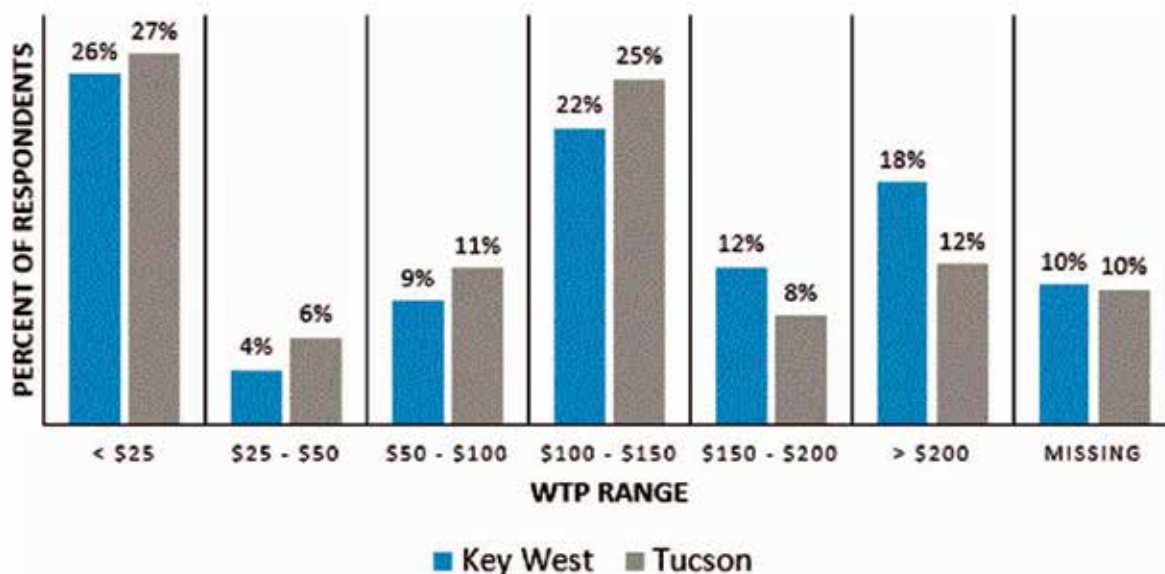
Homeowners' decisions in fire-prone areas play a crucial role in shaping wildfire occurrence and, especially, impacts. These decisions are interdependent: what one household does can affect the choices of neighbors and other social contacts. Conceptually, there are at least five pathways through which social interactions among homeowners in fire-prone areas can influence mitigation choices: information and learning; social amplification of risk perceptions; risk interdependency (or risk externalities); social norms; and social capital. Using survey data from Boulder and Larimer counties, we have shown that social interactions have multiple and varying relationships with risk perceptions, beliefs about mitigation options and wildfire risk mitigation behaviors (particularly actions to reduce vegetative fuels on one's property). However, inferring causality from these observational relationships can be difficult. Working with Hannah Brenkert-Smith (CU-IBS) and Nicholas Flores (CU-IBS/ECON), Katie conducted choice experiments in a web-based survey of homeowners living in fire-prone areas of Colorado's Western Slope to measure the effects of risk interdependency, social norms, and costs on risk

reduction decisions. By combining experimental and observational approaches, this body of research seeks to deepen our understanding of the role(s) of social interactions in shaping risk-related decisions, and the ways in which policies and programs can harness the power of these social effects to encourage homeowners to take action. This project is funded by a grant from the NSF's Decision Risk and Management Sciences program.

### Social and Economic Aspects of Vector-Borne Disease

Vector-borne diseases impose wide-ranging costs on human societies. Human behaviors and decision-making at various scales influence the transmission and impacts of these diseases. As part of Katie's dissertation research, she examined determinants of malaria prevention, diagnosis, and treatment behaviors in Tanzania. Specifically, she examined how these behaviors varied with socioeconomic status, and also looked at knowledge and behaviors around environmental management for malaria control. A related project has worked with malaria control policymakers in Tanzania, Kenya, and Uganda, building decision support tools to assess different control strategies. Katie has also used economic stated preference methods to measure willingness to pay for mosquito control. A study in Madison, WI, used choice experiments total willingness to pay as well as measuring whether demand for control was motivated by a desire for disease risk reduction or a reduction in nuisance biting (or both). A contingent valuation approach was used to measure willingness to pay for mosquito control in two cities with varying recent exposure to vector-borne disease, Key West, Florida, and Tucson, Arizona.

Willingness to pay for mosquito control by city. Figure 1 from Dickinson et al. (2016), *Willingness to Pay for Mosquito Control in Key West, Florida and Tucson, Arizona*. *American Society of Tropical Medicine and Hygiene* 94.





*As part of her study, Katie Dickinson presents an improved wood stove to the winner of an auction that was held in Katiu, Northern Ghana, to measure willingness to pay for a cookstove. Photo: Katie Dickinson.*

## RESEARCH HIGHLIGHT

### IMPROVED COOKSTOVE RESEARCH IN NORTHERN GHANA

**by Alison Gilchrist, CSTPR Writing Intern**

Three billion people, a little over half the world's population, cook over open fires every day. Those of us with access to microwaves, toasters, rice cookers and waffle irons might not be able to truly grasp what that means for the health of people doing the cooking without such appliances, let alone what it means for the environment to be burning so much solid fuel.

The World Health Organization (WHO) estimates that the exposure to smoke from cooking is responsible for about four million premature deaths a year. Much of the health burden of open fire cooking falls on the women and children, who are in the house while food is being prepared. There are also serious environmental effects, both on the regional scale (poor air quality) and on a much larger scale (the production of black carbon, a serious contributor to climate change). Moreover, the reliance on renewable fuels means greater deforestation in regions where open fires are primarily used for cooking.

Katie Dickinson, a Research Scientist with the CIRES Center for Science and Technology Policy Research (CSTPR), studies how this situation could be improved by a shift to cleaner cooking.

"There are a lot of different options out there," she says "An open fire isn't the only way to cook, there are a lot of technological alternatives. But it turns out that finding a technology that works-- that is appropriate for a particular culture and their cooking needs, and then getting people to change behaviors towards that technology—there are a lot of steps in there that are very tricky."

Katie undertook a major project on this topic in 2013 in Ghana that recently wrapped up. Now, she has a grant to do a follow-up study in the same area.

In 2013, Katie started working with a team of researchers from CU-Boulder, the National Center for Atmospheric Research (NCAR), and Ghana's Navrongo Health Research Centre (NHRC) on an intervention project with funding from the NSF's Dynamics of Coupled Natural Human Systems program and an EPA STAR grant. This study was called Research of

Emissions, Air quality, Climate, and Cooking Technologies in Northern Ghana (REACTING). Two hundred households were randomly selected from the district and were randomly assigned into one of four groups: a group that received two Gyapa cookstoves, a group that received two Philips cookstoves, a group that received one of each, and a control group. The Gyapa stove was specially designed for the study and is appropriate for cooking some of the Ghanaian meal staples; the Philips stove comes with a battery powered fan and is more expensive but potentially cleaner. Both are still wood-burning, but are more efficient than a traditional “three stone stove” (think campfire).

The households were surveyed about how much they liked the stoves and how much they used them. Katie’s group also took objective measurements of how often the stoves were being used, as well as data about what dishes were being cooked with them. They also studied environmental exposure to particulate matter and carbon monoxide, to determine whether the new cook stoves impacted air quality. Finally, they took blood samples from people in the households to study biomarkers that might provide insight about the health impacts of different stoves.

Overall the participants liked the stoves, and used them regularly, although neither of the improved stoves was a perfect fit for the type of cooking and culture in the community—most of the households continued to cook over open fires in parallel. However, households that got the improved stoves did have a lower exposure to some pollutants. This is promising data that suggests improved cooking stoves could have positive health impacts in developing nations.

“As somebody who has always wanted to do interdisciplinary work, I hold this work up as a pinnacle of that kind of study,” says Katie. “I don’t need to be an expert in stove use monitors, because I can rely on an excellent team.” But as an economist, Katie is even more excited about the follow-up study she will conduct over the next few years. It will build on the past work, and will ask whether people actually buy these cleaner-burning stoves. “This is a sign of the adoption of technology change,” says Katie. A stove given as a gift is much appreciated, but whether people consider them worth the price is still an open question.

Prices, Peers and Perceptions (P3) was designed to look at how prices and peers—that is, knowing people who have used the stoves before—influence perceptions of the stoves and the likelihood that the stoves are actually purchased.

A new group of participants will be selected based on whether they know people who have used the stoves before, and the experiment will be designed to test whether hearing about the stove influences how much they will spend for it.

The first step was to set an appropriate price, which led to the first field work for this project—an auction. Women were invited to bid for new stoves (updated versions from the first study) in order for Katie’s group to pick a price that would entice some buyers and dissuade others. If the stoves are too cheap, everybody buys one—if the stoves are too expensive, nobody does. If they are priced just right, it’s possible to look at whether other variables influence buying habits.

The auction has informed the price levels that Katie’s group will set for the stoves in the current study, and team members from the NHRC will help monitor who actually buys the stoves and whether the stoves are used. For this phase, Katie’s team is also working with a local NGO that will market the stoves. Her team hopes the research will inform efforts to improve lives and livelihoods in the area.

The goal of the project is to identify which factors are important for changing cooking behaviors and promoting adoption of cleaner stoves. These projects can help us understand what will convince communities to switch to cleaner technology, and may affect the way in which stoves like these are introduced into regions where open fires are still the norm. Hopefully this will decrease exposure to pollutants from solid fuel, and even decrease the environmental burden of wood burning.



*Ghanaian woman stirs rice cooked over improved woodstoves during “Prices, Peers, and Perceptions (P3)” project stove demonstration and marketing meeting. Photo: Katie Dickinson.*

## LISA DILLING

Lisa Dilling's research program focuses on decision making, the use of information and science policies related to climate change, adaptation, carbon management and geoengineering. Her current projects examine drought in urban water systems, water governance and climate change, municipal adaptation to hazards, decision making in public lands management, and knowledge for adaptation among pastoralists. She is Director of the Western Water Assessment, a NOAA Regional Integrated Sciences and Assessment project that studies and facilitates the use of climate information in decision making in the Intermountain West.

### Advancing the Use of Drought Early Warning Systems in the Upper Colorado River Basin

Collaborators: Ben Livneh, Lead PI, CEAE CU Boulder, Lisa Dilling, Co-PI, ENVIS CU Boulder, Bill Travis, Co-PI, GEOG CU Boulder, Jeff Lukas, Co-PI, WWA CU Boulder, Nolan Doesken, Co-PI, CO State Climatologist and Colorado State University, Eric Kuhn, Co-PI, Colorado River District

The largely rural Western Slope of Colorado encompasses much of the headwaters of the Colorado River, a critical regional water resource used to meet multiple demands across a landscape that is frequently subject to drought. Water managers and users in this region rely on snowpack as a form of seasonal water storage as well as an indicator of drought. Climate change projections indicate that the regional warming trend will continue, causing the snowpack to melt earlier and produce less runoff for the same precipitation input, and potentially reducing its utility as a drought indicator. This project will identify opportunities to improve drought risk management by characterizing decision processes related to drought risk and describing the current use of information among water providers in the Western Slope. Then, we will assess whether snowpack indicators will remain good predictors of seasonal water supplies under a warming climate. The first element of the project will consist of in-depth interviews, participant observation, document analysis and focus groups of five Western Slope water entities. The second element will evaluate the robustness of current snow-based drought indicators, estimate the change in robustness under projected future climate warming using modeled data, and explore the implications of changing robustness for climate adaptation resilience through focus groups with water managers.

### Grand Challenge Seed Grant: Bringing Innovative Data Science Down to Earth

Collaborators: Elizabeth "Bets" McNie (WWA), Jennifer Balch (Geography)

Earth Lab is poised to address the next "grand challenge" of earth science—making sense and use of the hundreds

of terabytes of data per hour now being generated, day in and day out, year in and year out by NASA missions and other sources. Earth Lab uses new data harmonization techniques and innovative visualization tools to identify and characterize changes in key processes and sensitive biomes to be able to predict "tipping points" in the earth system. Even the most promising of data analytics and new discoveries of earth science processes, however, can fail to improve decision making if the research design and the resulting knowledge are not sensitive to the needs of decision makers. We (drawing on the experience of Western Water Assessment, WWA) are partnering with Earth Lab researchers to pilot research co-production processes and training to fully harness the power of the Earth Lab enterprise to improve societal decision making. This partnership brings together some of the most innovative and transformational data science with new techniques to connect science with decision makers in private and public sectors and thus create impact beyond the university.

### Balancing Severe Decision Conflicts under Climate Extremes in Water Resource Management

Collaborators: Joseph Kasprzyk and Rebecca Smith (University of Colorado Department of Civil, Environmental and Architectural Engineering), Imtiaz Rangwala, Kristen Averyt, and Eric Gordon (CIRES Western Water Assessment), Larna Kaatz (Denver Water), and Leon Basdekas (Colorado Springs Utility). This project is funded by the NOAA Sectoral Applications Research Program

An interdisciplinary team (policy, social science, engineering, operations research, climatology) including academics and water utility practitioners from 6 water providers in Colorado's Front Range managers and researchers worked together to define the problem formulation (policy levers, objectives and constraints) that will inform multi-objective evolutionary algorithms (MOEAs) and be combined with a representative water resources simulation model for a range of extreme climate scenarios. This Testbed approach will result in a visualization of the decision space that, we argue, may in fact expand the alternatives that still meet managers' decision criteria and allow managers to be able to visualize these more clearly than traditional tools. In our final step we held a workshop in June 2016 about the tool, its results, and the process involved in incorporating such a tool into practice for helping to make decisions in anticipation of future extreme events. We are analyzing these results and will make some inferences about the viability of MOEAs and the larger issue of incorporating new tools into practice for urban water utilities.

### 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. Under new requirements, U.S. National Forests are required to evaluate their carbon stocks and potential for management in the future for an agency-wide 'Performance Scorecard.' However, the potential for carbon management is limited by existing management priorities and location of adequate carbon stocks to justify management. Moreover, our work suggests the main tool and data that managers use for decision making have significant limitations for supporting carbon management. This research utilizes GIS to understand the opportunities for managing carbon where management designations and carbon stocks portfolios are in alignment. Results have now been published in the Journal Environmental Management.

### Interactions of Drought and Climate Adaptation (IDCA) for Urban Water

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 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 conducted a literature review of the vulnerability and drought management literatures, interviewed 21 water managers from around the country about drought history and response, and conducted three in depth case studies of urban water systems to evaluate changing vulnerabilities with specific drought policies.

### Knowledge, Power and the Coproduction of Climate Information For Adaptation To Climate Change In Tanzania

Lisa Dilling, Meaghan Daly, Mara Goldman and Eric Lovell are conducting a project that aims to improve understanding of processes to effectively link climate information and adaptation at national and local scales in Tanzania. The approach is to explicitly recognize and examine the ways in which the varying epistemological traditions and relations of power among vulnerable communities, disaster management professionals, and climate experts influence the perceived value of climate information for improved early warning and climate adaptation. The primary research question is "what processes or institutions can support improved application of technical climate information to facilitate successful adaptation to climate related disasters?" This research draws upon theoretical contributions from the fields of science policy, disaster research, science and technology studies (STS), and political ecology to support a mixed-methods research approach to explore practices and modes of engagement that may best facilitate the production of usable science that can be successfully

*Lisa Dilling at workshop held in Dar Es Salaam, Tanzania in August 2016 to share results and obtain feedback from project participants for NSF-funded project on knowledge co-production for adaptation in arid regions. Photo: Lisa Dilling.*



integrated within adaptation decision-making and policy development processes. This project is supported by the NSF, CU Seed Grant Fund and the USAID. Meaghan Daly successfully defended her dissertation in fall 2016 on this project and we are in the process of writing up publications.

### The Role of U.S. States in Building Adaptive Capacity for Water Resource Management

Lisa and post-doc Christine Kirchoff 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 published in the journal *Water Resources Research* in 2016.

### 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 climate-related stress and risk while others do not. The project is systematically investigating 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. Results were published in the journal *Environment and Planning A* in 2016.

### BRUCE GOLDSTEIN

Bruce Goldstein's current research focuses on community and network-scale resilience assessment in partnership with the Fire Adapted Communities Learning Network (described below), and a study of the Locally-Managed Marine Areas Network. Members of his lab group and CSTPR doctoral affiliates Jeremiah Osbourne-Gowey, Lee Frankel-Goldwater, Julie Risien, Sarah Schweizer, and Claire Chase are working on an analysis of these and other networks, included the 100 Resilient Cities Network and the National Alliance for Broader Impacts, and they collaborated on a report for APLU (the Association of American Public Land Grant Universities) on how to design and implement transformative learning networks.

### A "Social-Impact Network" for Wildfire Adaptation

In the face of natural hazards, resource scarcity, climate change, and other social-ecological challenges, how does a community adapt, and how can communities combine forces to contribute to transformational change? Dr. Bruce Goldstein, an associate professor in Environmental Design and Environmental Studies and core faculty at the Center for Science and Technology Policy Research (CSTPR) at the University of Colorado Boulder, takes on this pressing question.

Goldstein sees communities as the engine for institutional transformation. By organizing themselves into "learning networks," communities can apply local knowledge to address issues that are very specific to their place and time, and team together to transform unstable practices into sustainable ones. Learning networks enable people to create

*Prescribed fire training exchange and demonstration held during the Fire Adapted Communities Learning Network (FAC Net) annual meeting, held in April 2016 in Jacksonville, Florida. Photo: Jeremiah Osborne-Gowey.*



new ideas by serving as a laboratory for best practices, and a forum for addressing basic questions like, “What is the system in which I live and how do I want to change it?”

Goldstein has been studying a Forest Service – Nature Conservancy initiative called the “Fire Learning Network” since 2006; however, communities were never a large part of this conversation, and they are a critical part of reforming how we address wildfire. Beginning in 2013, Goldstein began studying a new learning network, the Fire Adapted Communities Learning Network (FACNET), which is aimed at connecting communities from across the United States in order to solve complex issues associated with wildfire adaptation. Membership is diverse, including city fire departments, state forest services, fire councils, Native American tribes, scientists, and various other individuals.

Goldstein leads his CSTPR-based research group in studying FACNET, including interviewing stakeholders in FACNET communities to determine the cultural, political, social, and ecological context of fire adaptation, and attending meetings between FACNET members in Ashland, OR who seek to exchange ideas and foster collaboration across their communities. The project has built trust and shared understanding, beginning over ten years ago when it began studying the U.S. Fire Learning Network. Its aim is to enhance our insight into the network through constant interaction and exchange with the netweavers, applying a participatory action research approach, and learning together in ways that enhance their ability to adapt their network design.

## **BEN HALE**

Ben Hale’s work is directed toward advancing a more deliberative and interdisciplinary approach to environmental issues. His research has focused primarily on ethical questions associated with environmental remediation, public health, moral status, and the tools of public policy.

### [The Committee on Environmental Thought \(ComET\)](#)

The Committee on Environmental Thought (ComET) is an environmental theory research group located at the University of Colorado Boulder. The Committee was initially convened by Professor Benjamin Hale in early 2010 as a means of collaborating on projects related to environmental theory. Members of the group seek to investigate and explore environmental problems and the normative presuppositions that inform, frame, and guide solutions to these problems.

Using the tools and resources of philosophical inquiry, ComET engages in environmental problem solving, theory, and education by presenting its ideas through academic and multimedia outlets, with the hope of engaging philosophy in environmental discourse. It hopes to foster deeper thought and reflection on the values

espoused by actions with regard to the natural world.

Current and past committee members include Benjamin Hale, Adam Pérou Hermans, Alexander Lee, Lucy McAllister, Amanda Magee, Jordan Kincaid, and others.

### [Deliberation and Communication--Building Practical Skills in the Next Generation of Environmental Scientists](#)

In 2012 Ben was part of a successful joint NSF proposal between Northern Arizona University, the University of Montana, and the University of Colorado. The CU portion is supporting Ben and his team of students in the creation of ten short ethics videos on the normative dimensions of climate change. They will place particular emphasis on the mountain west and steer the topic matter to suit the classroom.

## **STEVE VANDERHEIDEN**

Steve Vanderheiden’s research is focused on social values and governance issues in environmental politics and policy, especially climate change.

### [Environmental Rights and Adaptation to Climate Change](#)

Steve Vanderheiden, who specializes in normative political theory and environmental politics with a particular interest in equity issues, democratic issues, and environmental issues as they pertain to climate change, is exploring what environmental rights should now look like, particularly territorial and water rights.

Vanderheiden is collaborating with philosophers, lawyers, and scientists to investigate the governance and allocation of surface waters under increasing scarcity. By looking at policies in California, Australia, and the Netherlands, Vanderheiden and his colleagues hope to inform funding bodies and government agencies how water use can be fairly prioritized. In the western U.S., senior water rights are currently over-allocated because they are based on historical amounts of water; however, these assumptions on available water no longer hold as water has become scarcer. There are constraints on what we can feasibly do with water since for any reasonable water reform to occur, the water rights holders must first see the benefit of the reform. Fortunately, many recognize that our existing system of dealing with surface water is not sustainable given expected changes in rain, water flow, and population growth. Possible solutions range from community-driven efforts such as xeriscaping to federal-level efforts such as buying up water rights (as is happening in Australia). Vanderheiden will look at the case of the Colorado River, linking it to a very similar, overdrawn river in Australia and parsing out the similarities and differences in governance and what kind of reform opportunities are available.



# EDUCATION

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. The Center's Red Cross/Red Crescent internship for graduate students is now in its 4th year. The Center organizes an annual competition to send two CU students to the AAAS "Catalyzing Advocacy in Science and Engineering" workshop.

## GRADUATE CERTIFICATE IN SCIENCE AND TECHNOLOGY POLICY

The Graduate Certificate in Science and Technology Policy program, now in its 13th 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 27 students from a variety of CU departments and institutes. Twenty-nine students have received certificates from the program and have found careers in government, academia and non-profits.

## COURSES TAUGHT BY CENTER FACULTY IN 2016

- ENVD 4100, Inclusive Community Design for Global Cities, Bruce Goldstein
- ENVD 5346-003, Tricks of the Trade: A Doctoral Seminar, Bruce Goldstein
- ENVS 3032, Environment, Media and Society, Deserai Crow
- ENVS 3173/THTR 4173/ATLS 4173, Creative Climate Communications, Max Boykoff
- ENVS 3521/GEOG 4120, Climate Change Politics and Policy, Max Boykoff
- ENVS 3621, Energy Policy and Society, Lisa Dilling
- ENVS 5110 Science, Technology, and Society, Alex Lee
- ENVS 5120, Quantitative Methods of Policy Analysis, Katie Dickinson
- ENVS 5701, Policy, Politics and Management Foundations, Deserai Crow
- ENVS 5702, Policy, Politics and Management: Theory and Practice, Lisa Dilling
- ENVS 5930, Internship, Deserai Crow
- PSCI 3064-001, Environmental Political Theory, Steve Vanderheiden
- PSCI 3206-001, The Environment and Public Policy, Steve Vanderheiden
- PSCI 3064-001, Environmental Political Theory, Steve Vanderheiden
- PSCI 3206-001, The Environment and Public Policy, Steve Vanderheiden
- PSCI 7004-001, Seminar: Political Theory, Steve Vanderheiden



ENVS 5120/CSTP 5120 Quantitative Methods of Policy Analysis taught by Dr. Katherine Dickinson.  
Photo: Ami Nacu-Schmidt.

## EDUCATION HIGHLIGHT

### HOW DO SCIENCE AND TECHNOLOGY AFFECT POLICYMAKING? HOW DOES POLICYMAKING AFFECT SCIENCE AND TECHNOLOGY?

by Abigail Ahlert, Science Writing Intern

For the past 12 years, the Graduate Certificate in Science and Technology Policy program has been helping people explore these questions and more. The goal of the program is to prepare graduate students for careers at the interface of science, technology, and decision making. Certificate program students strive to understand the broad societal context of science and technology, as well as gain insight to the methodologies of policy analysis. Courses that satisfy the program's 18-credit requirement span environmental science, economics, law and philosophy.

Recently, an informal survey of current and former students was conducted to gauge satisfaction with the certificate program. The survey spans the perspectives of students who have participated in the program as early as 2004 and as recently as this year. One wrote, "While I have only completed one core and one elective course so far, I already feel that the program has broadened my exposure to possible roles for people with scientific and technical backgrounds to influence policy. I have also learned much about the ways in which data is gathered to assess public opinion of scientific research and science policy."

Another student said, "The certificate program introduced me to new perspectives about the role of science that did not come with my research training. I left the program with the ability to think broadly about the implications of research on the policy process, as well as the impact of policy on the scientific community. Importantly, when I applied for fellowship programs and awards, the certificate was documented proof of my interest and commitment to science policy."

The survey results indicate that the Graduate Certificate has been crucial for many students' professional development

and very helpful for job entry. One student said that the course “Science, Technology and Society” (STS) was “one of the most important classes I have ever taken”.

I sat down with Dr. Alexander Lee, a lecturer for CSTPR and CU’s Department of Environmental Studies, who this semester is teaching STS—one of the required courses for the Graduate Certificate. Dr. Lee’s curriculum for the course centers around seminal science and technology policy texts (such as Thomas Kuhn’s *The Structure of Scientific Revolutions*) and, admittedly, topics that he finds interesting. Though he specializes in environmental ethics, he likes to keep the course broad. “It wouldn’t be unusual for a class like this [in an ENVS program] to focus on just issues like climate change or ecological degradation, whereas I think it’s very important to understand those issues in the broader context of science and society,” says Dr. Lee.

He says that the idea of providing scientists with policy and communication skills is not new, but the formalization of it into a certificate program is relatively uncommon. “Often scientists—and when I worked as a glaciologist I found this—are required to use technical language and put technical constraints on how you present things, and that’s not always the most effective way science can be communicated and works in the world as a tool,” says Dr. Lee. He thinks that scientists should be able to effectively write and talk about science in a general way.

So why is it important to engage scientists in policymaking? Dr. Lee noted that scientists are often acknowledged as “experts” in their field and believes that it’s important for scientists to understand this responsibility and what it means in a social context.

In terms of the future of science policy, he says, “We’re hitting a lot of really novel issues in science policy...we are facing what I think are truly new types problems as a global community, whether it be climate change or the technological revolution that we’re currently in. It seems like these are global in scale, exponential in growth, and not well analogous to problems in the past.”

All in all, programs like CSTPR’s Graduate Certificate help to bridge disciplines and effectively utilize new information and diverse skill sets.

*ENVS 5110/CSTP 5110 Science, Technology, and Society taught by Dr. Alex Lee. Photo: Robin Moser.*







## 2016 CENTER GRADUATES

Five CSTPR graduate students received degrees in 2016:

- Meaghan Daly (Ph.D., Environmental Studies). Her dissertation was titled "Co-production and the Politics of Usable Knowledge for Climate Adaptation in Tanzania."
- Lydia Lawhon (Ph.D., Environmental Studies). Her dissertation was titled "Is there Harmony in the Howling? An Analysis of the Wolf Policy Subsystem in Wyoming."
- Alexander Lee (Ph.D., Environmental Studies). His dissertation was titled "Conservation Ethics: An Obligation Centered Approach."
- Rebecca Schild (Ph.D., Environmental Studies). Her dissertation was titled "Civic Recreation: The Promise of United Outdoor Recreation and Environmentalism in the 21st Century."
- Michael Weiss (M.S., Environmental Studies). He did an internship with the City of Boulder.



*Sierra Gladfelter presenting the findings of her fieldwork in rural communities located in the Kazungula District of Zambia's Southern Province to the Zambia Red Cross Society. Photo: Sierra Gladfelter.*

## RED CROSS/RED CRESCENT CLIMATE CENTRE INTERNSHIP PROGRAM

The Red Cross/Red Crescent Climate Centre Internship Program seeks to improve climate change communication and adaptation decision-making in response to climate variability and change within the humanitarian sector. It connects humanitarian practitioners from the Red Cross/Red Crescent Climate Centre (RC/RC CC) with science policy graduate student researchers at the University of Colorado to accomplish three specific goals:

1. to improve the capacity of humanitarian practitioners at the interface of climate science, policy and practice
2. to forge a unique partnership and facilitate collaborations between CU and RC/RC CC
3. to help meet needs and gaps as well as work as a research clearinghouse in the stated themes climate change communication and adaptation decision-making in response to climate variability and change, as identified through RC/RC CC priorities and projects

*Left Photo: Young boy paddles across a water-logged area of Kawewa, Kazungula District, one of the Zambia Red Cross Society's target communities for their Building Resilient African Communities project. Photo: Sierra Gladfelter.*

Now in its 4th year, the program has placed graduate student interns in Zambia, South Africa, Uganda, and Kenya. The 2016 intern, Sierra Gladfelter, spent the summer in Zambia supporting the monitoring and evaluation component of the 'City Learning Lab processes' Zambia Red Cross Society program. Her extensive notes from the field are posted at <http://sciencepolicy.colorado.edu/students/redcross/gladfelter>.

## AAAS CASE WORKSHOP COMPETITION

For the third year the Center organized a competition to send two University of Colorado graduate students to the American Association for the Advancement of Science "Catalyzing Advocacy in Science and Engineering" Workshop in Washington, D.C. Financial support for the competition is provided by the University of Colorado Graduate School and Center for STEM Learning. The program is described below.



AAAS Case Workshop Winners Sarah Welsh-Huggins and Angela Boag speak with Senator Cory Gardner. Photo: Heather Bene.

## EDUCATION HIGHLIGHT

### AAAS CASE COMPETITION

**by Alison Gilchrist, CSTPR Writing Intern**

CSTPR organizes a competition each winter to select two students from CU Boulder to attend the AAAS Catalyzing Advocacy in Science and Engineering or “CASE” workshop, all expenses paid. The competition is open to both well-qualified upper class students and graduate students.

The CASE workshop was developed by a number of academic institutions, CU Boulder among them, to give young scientists a chance to experience research advocacy and policy design. Students in the workshop learn about important aspects of government such as the structure of Congress and how the federal budget and appropriations processes proceed. They also learn about communicating science and how to stay engaged in local and national politics.

Students attending the workshop will also get a chance to apply what they learn about influencing policy directly: on the last day of the workshop, they will form teams and speak with their elected Members of Congress and congressional staff members about a topic of their choice.

This unique opportunity was designed to empower young scientists and encourage science advocacy in an effective, meaningful way. Science communication, an integral component of influencing policy, is an especially important element of the CASE workshop.

While Associate Vice President of Government Relations at CU, Abby Benson, one of the founders of the CASE workshop, advocated for increased support for policy education. About founding the workshop, Benson stressed the importance of appealing to young scientists:

“I was most excited about getting scientists and engineers interested in science policy early in their careers, so they could

build a strong foundation to carry throughout their careers. I also think it is very useful to have younger advocates in Washington talking about how the decisions made by Congress and funding agencies impact their path.”

Sure enough, the CASE workshop has already had an impact on young scientists who won the competition at CU Boulder.

Sarah Joy Welsh-Huggins, a 2016 winner and Ph.D. candidate in the Civil Systems program within the Department of Civil, Environmental and Architectural Engineering, says the workshop affirmed her career path decision. She had long been interested in science policy, and was thrilled by the chance to go to Washington, D.C. to experience policy making in action.

“Every workshop session, every guest speaker, and especially our interactions with our Colorado Congressmen and their staff demonstrated to me how valuable my technical background in civil engineering may be when advocating for policies that impact and are impacted by advances in specific areas of engineering research and practice.”

She described how rewarding it was to meet people who were equally interested in science communication and policy, while learning how Congress “really” works.

“It was so exciting to be in our nation’s capital this spring and imagine working there myself, striving to make my mark on the decision-making processes that shape and improve our society.”

Angela Boag, another 2016 winner and a Ph.D. candidate in Environmental Studies, echoed Welsh-Huggins’ enthusiasm for meeting other students who were interested in policy issues.

“I found the best part of the workshop was meeting other like-minded Ph.D. students who want to do work at the science-policy interface. I am interested in pursuing applied research or “alternative academic” positions, and it was really encouraging meeting people with similar goals.”

She also described a new appreciation for the importance of being actively involved in policy decisions.

“Programs that fund certain types of research may be cut or boosted for a myriad of reasons often unrelated to the program itself, and therefore it’s critical for scientists to be their own advocates and frequently share the importance of their work with politicians and the public.”

Nick Valcourt, one of the 2015 winners with an MS in Civil Systems Engineering from CU, was particularly interested in the scientific communication component of the workshop. He remembers getting tips from Congressional staff:

“There were a number of presentations from current and former Legislative staffers who provided excellent insights about how their offices need to have science-based information packaged for them in order for it to be useful and actionable to Lawmakers.”

He also gained a greater understanding of how to influence science policy as an individual using the resources of a collective. As a member of the workshop, he was in a unique position to speak with legislators about research policy.

“Our Congressional Representatives are inundated with requests for meetings from special interest groups every day and as a member of the ‘special interest group’ of academic-based science and engineering research I found it to be a very powerful platform to communicate directly with those in Federal decision-making positions.”

The opportunity to attend the CASE workshop is both educational and inspiring, judging by student testimonials.



*Angela Boag, Senator Michael Bennet, and Sarah Welsh-Huggins. Photo: Heather Bene.*



# OUTREACH

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 year have included the following below.

## NOONTIME SEMINAR SERIES

The Center held 12 talks in its noontime seminar series. See the Appendix for a complete list of titles and speakers. The Center now provides live webcasts of our noontime talks to allow remote viewing. The webcasts are also available on our website after the event: <http://sciencepolicy.colorado.edu/news/webinars>.

## PRESENTATIONS

In addition to noontime seminar talks, Center personnel gave 41 presentations over the past year on a wide variety of topics. A complete list can be found in the Appendix.

## OTHER ONGOING 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>)
- Twitter ([https://twitter.com/cu\\_cstpr](https://twitter.com/cu_cstpr)) and Facebook (<https://www.facebook.com/pages/Center-for-Science-and-Technology-Policy-Research/279714958827043>) presence

Left Photo: Former US Secretary of State John Kerry speaking at the Conference of Parties meeting on November 16, 2016. Photo: Max Boykoff.

## PROMETHEUS 2.0

CSTPR revived its blog, Prometheus, to regularly feature content from CSTPR core faculty, research associates, postdocs, visitors, students and affiliates and serve as a resource for science and technology decision makers. The background of Prometheus is described below.

*CSTPR Noontime Seminar "AAAS "Catalyzing Advocacy in Science and Engineering" Workshop Student Competition Panel Discussion" with past competition winners, Angela Boag, Sarah Welsh-Huggins, and Nicholas Valcourt, and Abby Benson, University of Colorado AeroSpace Ventures. Photo: Robin Moser.*



# OUTREACH HIGHLIGHT

## PROMETHEUS, PAST AND PRESENT

by Abigail Ahlert, Science Writing Intern

In 2004, blogging was in its infancy. According to Google Trends, online interest in blogs was at a mere 16% of its eventual peak in 2009. Social networks that help people share their blogs today were years away from popularity. It was at this time that Shep Ryen, a student at the University of Colorado's Center for Science and Technology Policy Research (CSTPR), created the blog "Prometheus."

Ryen, who now holds a position at the Government Accountability Office (GAO) on the Natural Resources and Environment Team, started Prometheus as a term project for one of his graduate courses in science policy offered by CSTPR. Prometheus was—and is today—designed as an informal outlet for news, information, and opinion on science and technology policy. Inspired by this novel outlet for information, Roger Pielke, Jr., then the director of CSTPR, took it upon himself to support Ryen's project and provide material for the blog.

By 2006, Prometheus had garnered significant attention. It was featured in multiple articles praising the role of scientists in the "blogosphere", including one in National Geographic News and another in Science Policy Forum. It was named as one of the 50 most popular science blogs in Nature News.

As blogging gained popularity and public interest in climate change grew, Prometheus readership expanded. In 2010 the CSTPR website was one of the most heavily trafficked websites on the CU Boulder campus, in large part due to Prometheus. But when the blog required more upkeep than Pielke and CSTPR were able to provide, Pielke retired Prometheus and continued blogging on his personal site.

Prometheus lay dormant until 2013, when it was revived mostly as a source for CSTPR news. Today, there are big plans for its future. Prometheus 2.0 has begun to regularly feature content from CSTPR core faculty, research associates, postdocs, visitors, students and affiliates to serve as a resource for science and technology decision makers. This new dynamism will reflect the new energies and pursuits taking place in and around CSTPR. The blog will now span a broader range of news, research updates and opinion writing. Prometheus is being revamped to improve how science and technology policies address societal needs, through research and education.

*Roger Pielke, Jr., Shep Ryen, Shobita Parthasarathy, and Suraje Dessai at the "Reconciling the Supply of and Demand for Research in the Science of Science and Innovation Policy" workshop in Oslo, Norway in May 2009. Photo: Ami Nacu-Schmidt.*





Max Boykoff presenting at the 2016 United Nations Climate Change Conference in Marrakech, Morocco. Photo: Christine Pereira.

## OUTREACH HIGHLIGHT

### THE 'GET ON WITH IT' CONFERENCE OF PARTIES MEETING IN MARRAKECH

by Max Boykoff, CSTPR Director

Partly in the shadow of the recent US election of Donald J. Trump, the United Nations Climate Negotiations here in Marrakech have pressed forward in the face of the existential threat of 21st century climate change. As US Secretary of State John Kerry put it (albeit vaguely) in his talk, "even the strongest skeptics must recognize that something disturbing is happening". Possible double-entendres aside, Kerry provided a decidedly determined view of the work ahead. His comments were consistent with those of US delegates and observers throughout the Conference of Parties meeting ('the COP').

After all, going into the 2016 Marrakech round, this has interchangeably been called the 'COP of action', the 'COP of implementation' and the like. While some of this could be discounted as mind over matter, it is also an indication of the strong momentum that has built since the meeting in Paris nearly a year ago. As the Paris round of talks in December 2015 was dubbed the 'end of the beginning of work', Marrakech marks the opening of high-level talks in the next chapter of this global story.

Riding a wave of productivity, punctuated by international progress to curtail aviation emissions (agreed in Montreal, Canada Oct 6) and hydrochlorofluorocarbons (agreed in Kigali, Rwanda Oct 15), along with the 'entry into force' of the Paris Agreement on November 4, delegates and observers have set to work on the implementation elements of the Paris Agreement. These centrally include policy measures involving climate finance, loss and damage and rules on reviewing pledges. Within this milieu, actors from the US voiced enthusiasm for business, industry, government and civil society to continue to keep pace with these development, and not to squander opportunities to move forward with the global community.

Donald J. Trump may swim into these waters as a big fish (representing the US and approximately 16% of global greenhouse gas emissions). However, he will have to make some careful calculations as to whether it is wiser to swim with these strong currents, or to swim upstream against them.

Representing the University of Colorado and the Cooperative Institute for Research in Environmental Sciences (CIRES), I have presented on three different panels during the week, hosted by Climate Outreach, the International Environmental Communication Association and EcoArts Connections. These have been opportunities to share work from research projects including the Media and Climate Change Observatory and Inside the Greenhouse, as well as from my own ongoing research in cultural politics and climate change. In addition, this has been an opportunity to listen, learn and connect with researchers, practitioners and delegates engaged in intersecting work at the climate science-policy and public interface.

As talks wrap up here in Marrakech, the work clearly continues. There won't be a second chance to get this right and time is not on our side.



CENTER FOR SCIENCE AND TECHNOLOGY POLICY RESEARCH



Acera, Ghana

Canberra, Australia





# CENTER PERSONNEL

## ADMINISTRATIVE AND RESEARCH STAFF

### Rad Byerly

Rad Byerly received his Ph.D. in experimental atomic and molecular physics at Rice University in 1967. After a postdoctoral fellowship at JILA, Rad moved to science management and policy at the National Institute of Standards and Technology. He joined the staff of the U.S. House of Representatives Committee on Science and Technology in 1975 with responsibility for environmental research programs. He became staff director of the House Space Subcommittee in 1985. In 1987 Rad became director of 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 wrote about science policy and served on various committees. At the Center Rad worked with students to offer his perspective as a practitioner and with faculty on various projects. Rad passed away in January 2016. He will be greatly missed by all Center participants for his insight, warmth and wit.



### Katie Dickinson

Katherine "Katie" Dickinson joined the Center as a Research Associate/Research Scientist in October 2013. Katie is an environmental economist who studies how humans behave in the face of environmental risks. Her research topics have included sanitation behaviors in India, malaria-related decision making in Tanzania, willingness to pay for mosquito control in Wisconsin and Florida, and homeowners' wildfire mitigation choices in Colorado. Across these diverse topics, Katie has examined how people perceive different environmental risks and what costs and benefits people consider in deciding how to respond to those risks. She is particularly interested in how neighbors and social contacts influence a person's own choices. Katie received Bachelor and Master of Science degrees from Stanford University, and a Ph.D. from Duke University's Nicholas School of the Environment. She was a Robert Wood Johnson Health and Society Scholar at the University of Wisconsin before joining NCAR in 2010 as a Postdoctoral Fellow with support from the Advanced Study Program and the Integrated Sciences Program.



*Left Photo: Katie Dickinson and Maxwell Dalaba on May 4, 2016 during Dalaba's talk on cookstove research in Northern Ghana. Photo: Robin Moser.*

## Roberta (Bobbie) Klein

Bobbie Klein is the Center's Managing Director. She has a law degree from the University of Wisconsin and an M.A. in Public Policy with a focus on environmental policy from the University of Colorado. Bobbie's recent research interests include climate change adaptation and vulnerability.



## Robin Moser

Robin is the Center Office Manager. She provides expert assistance in all areas of office administration.



## 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 in Science and Technology Policy. She designs posters and flyers for events, provides logistical support for workshops and compiles workshop reports.



## Jessica Rich

Jessica Rich, Ph.D., joined CSTPR in the fall of 2016 as a CIRES Post-Doctoral Research Associate. Jessica's research investigates how work and labor are evolving in light of global environmental change. She examines the relationships between labor and the natural environment in conflicts over oil and gas drilling in the United States. In particular, she studies the implications of conflict discourses for professional identities, how extraction workers negotiate meanings of nature, and how nature itself shapes human action. Along with her academic work,



Jessica's professional experience includes a decade of non-profit organizing in the areas of workforce development and community advocacy. Her publications can be found in *Environmental Communication* and *Ephemera: Theory & Politics in Organization*. Jessica earned her doctorate in 2016 from the Department of Communication at the University of North Carolina at Chapel Hill.

## STUDENTS

### Kevin Adams

Kevin is an environmental sociologist, pursuing his Ph.D. in CU's Department of Environmental Studies. His research revolves around the intersection of social and environmental systems, particularly with regard to global climate change policy. He uses political economic frameworks to understand the ways in which ecologically unequal exchange manifests at the global level, and is perpetuated by political, social, and economic structures. His work is often highly quantitative and international.



### Abigail Ahlert

*(writing intern)*

Abigail Ahlert is a graduate student in the Department of Atmospheric and Oceanic Sciences and the Institute of Arctic and Alpine Research. Her Ph.D. work involves modeling of the Arctic climate system and the improvement of sea ice models.



### Jackie Albert

Jackie Albert is an M.S. student in the Environmental Studies Program in the Sciences core. She graduated from Cornell University in 2013 and spent two years working in various seasonal positions in New Mexico, Arizona, New York, and Florida gaining experience in wildlife conservation, resource management, and environmental policy. She wants to better understand the decision making process in the context of controversial wildlife species.



## Marilyn Averill

Marilyn Averill is a Senior Fellow with the Getches-Wilkinson Center for Natural Resources, Energy and the Environment at the University of Colorado Law School. She previously served as an attorney for the U.S. Department of the Interior, where her primary clients were the U.S. Fish and Wildlife Service and the National Park Service. Marilyn's research interests focus on international environmental governance, the politics of science, and the ethical implications of environmental issues, primarily in the context of global climate change. She is particularly interested in the role of the courts in shaping public policy in response to complex and controversial environmental problems.



Marilyn is a member of the steering committee for the Research and Independent Non-Governmental Organizations (RINGOs), one of the nine civil society constituencies to the United Nations Framework Convention on Climate Change secretariat. She also serves as an observer member of the Emerging and Cross-Cutting Issues Task Force, which is a working group of the UNFCCC Technical Executive Committee. Marilyn holds a J.D. and an M.A. in Educational Research and Evaluation Methods from the University of Colorado at Boulder, an M.P.A. from the Harvard Kennedy School of Government, and a B.A. from Wellesley College.

## John Berggren

John is a Ph.D. candidate 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.



## Paul Bowman

Paul Bowman is an M.S. student in Environmental Studies at the University of Colorado in the Values and Theory core. He has an M.A. from Northern Illinois University and a B.A. from the University of Virginia.

## Meaghan Daly

Meaghan Daly was awarded a Ph.D. in 2016. Her dissertation was titled "Co-production and the Politics of Usable Knowledge for Climate Adaptation in Tanzania." 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 focuses 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.



## Chris Dunn

Chris Dunn is a Ph.D. student in the Environmental Studies Program. He is interested in working across disciplines, including philosophy, anthropology, and indigenous studies, to address the role that science and technology play in forming our relations with the natural and social worlds and how this may affect land management policy. He completed his MA in philosophy from the University of Montana in 2009 focusing his thesis on conceptions, and the surrounding societal context, of wilderness and wildness. He worked for the National Park Service from 2010 until 2015. Originally from Georgia, Chris has called the West and far Northwest home for over 10 years.



## Roger Emmelhainz

Roger is a Ph.D. candidate in the Department of Political Science and the University of Colorado.

## Alison Gilchrist

*(writing intern)*

Alison Gilchrist is a graduate student in the department of Molecular, Cellular, and Development Biology. She is currently studying how flaviviruses, including Dengue virus and Zika virus, hijack



elements of our own immune systems. She also writes for the CU STEM blog, Science Buffs: <http://www.sciencebuffs.org>.

## Lee Frankel-Goldwater

Lee is a professional environmental educator, travel writer, and social innovator working with the Goldstein Lab to better understand the 100 Resilient Cities network. His research investigates how co-created and ecologically informed approaches to community program development improve the design, implementation, and assessment of cross-border environmental initiatives. Lee holds an MA in Environmental Conservation Education from NYU, and a BS in Computer Science from the University of Rochester. His recent positions include teaching Environmental Studies at Pace University, co-leading several community development projects in Costa Rica and Israel with The Sustainability Laboratory, and researching rural community learning models with the Earth Child Institute in Brazil. Lee's dreams include building new programs in transformative environmental education, being a rock star, and bridging worldwide gaps in cultural understanding towards a more unified human society.



English Literature from University of Pune, India and an M. A. in English (Literature and Environment emphasis) from University of Nevada, Reno. Her current research investigates the role of narratives in the policy process and for her doctoral research she is studying the varied narratives in agricultural biotechnology policy with a specific focus on a case study in India. Other current research projects include investigating the role of information in wildfire mitigation policy. Her past research has explored issues of uncertainty in climate change mitigation and adaptation policy, state climate policy networks in US, the relationship of environmental justice and environmental policy in environmental literature, and narrative strategies used in environmental discourse.

## Jordan Kincaid

Jordan is a student and teacher of environmental philosophy, policy, and science. He is a Ph.D. student in Environmental Studies at the University of Colorado at Boulder, holds an M.S. in Environmental Policy from Bard CEP, and a B.A. in Philosophy and Government from the University of Texas at Austin. He is also a Visiting Fellow at the University of North Texas' Center for the Study of Interdisciplinarity involved with the Future of Energy Project. His professional experience is in higher education, ethical analysis, energy and environmental policy analysis, municipal and state legislative procedure, statistical analysis, political advocacy, and medical research. His current research includes analyzing the role of mythology in environmental philosophy; the ideology and politics of risk; philosophy of energy; the ethics of natural gas development; and the politics of fracking.



## Michael Henry

Mike Henry examines the response of the U.S. Congress to climate change in order to gain a deeper understanding of how and why Members of Congress act (or fail to act) on one of the defining global issues of the 21st Century. A Ph.D. student pursuing the Policy Track in ENVIS since 2009, Mike also works full-time as a Legislative Specialist in the UCAR/NCAR Office of Government Affairs. Before becoming an ENVISer, Mike was a Legislative Correspondent for U.S. Senator Ben Cardin in Washington, D.C. He graduated from Williams College in 2004 with a B.A. in Political Science.



## Elizabeth Koebele

Elizabeth Koebele was awarded a Ph.D. in Environmental Studies (ENVIS) at the University of Colorado Boulder in 2016. She was a research affiliate with CU's Center for Science and Technology Policy Research (CSTPR), and a Graduate Research Fellow with NSF's Socio-Environmental Synthesis Center (SESYNC). She holds BAs in English literature and secondary education from Arizona State University's Barrett, the Honors College, and an MS in Environmental Studies from CU Boulder. Elizabeth's research focuses broadly on environmental policymaking in a changing world. Using a theoretically-rigorous,



## Juhi Huda

Juhi Huda is a doctoral student in the Environmental Studies Program (policy core) and an instructor for the Program for Writing and Rhetoric (PWR) at the University of Colorado Boulder. She holds a B.A. in



mixed-methods approach, her dissertation research investigates stakeholder interactions and policy change in three collaborative water governance processes in the Colorado River Basin. She is also involved in research on the role of information in wildfire mitigation, stakeholder participation in environmental regulatory processes, policy learning in response to floods, and transitions toward sustainability in urban water management. Elizabeth's research has been funded by CU's Graduate School, the Horowitz Foundation for Social Policy, and CU's Center to Advance Research and Teaching in the Social Sciences (CARTSS), among others, and has been published in numerous academic journals. Elizabeth also has extensive university-level teaching experience, having served as an instructor for both ENVS and the Program for Writing and Rhetoric (PWR), as well as a Lead Graduate Teacher with CU's Graduate Teacher Program (GTP).

## Cara Lauria

Cara is an MS student in the Environmental Studies program at the University of Colorado Boulder with interests in climate change & paleoclimate studies, water resources, the Anthropocene. She has a B.S. in Geology from the College of Charleston.



## Lydia (Dixon) Lawhon

Lydia Lawhon received her Ph.D. in Environmental Studies in 2016. Her dissertation was titled "Is there Harmony in the Howling? An Analysis of the Wolf Policy Subsystem in Wyoming." Her research broadly investigates the drivers of practical conflicts between people and large carnivores and the political conflicts between people over large carnivore management. She is interested in finding ways to improve policy at the local and regional scales for the benefit of large carnivore populations as well as rural communities. Her work is currently focused on understanding how different stakeholder groups contributed to the policy-making process for wolf management in the state of Wyoming, as well as the implications of this management policy on the ground. She uses several methods of inquiry in her work, including interviews, surveys, and participatory mapping. Lydia is also a research associate with the Northern Rockies Conservation Cooperative (NRCC) in Jackson, WY. She received an A.B. from Dartmouth College and an M.E.M. from the Yale School of Forestry and Environmental Studies.



## Alexander Lee

Alex received his Ph.D. from the Environmental Studies Program in 2016. His dissertation was titled "Conservation Ethics: An Obligation Centered Approach." He was a member of the Committee on Environmental Thought (ComET). He has focused on applied ethics and the environment, using ethical theory and applied philosophy to better understand human impacts on the natural world. Alex received his A.B. from Dartmouth College as double major in environmental earth science and philosophy. He completed his M.S. working on the ethics of environmental restoration, work he has continued with ComET. His dissertation has focused on moral responsibility and the ontology of environmental change.



## Lucy McAllister

Lucy McAllister graduated *summa cum laude* from Connecticut College in 2009 with a B.A. in Environmental Studies and German Studies. Before coming to study at the University of Colorado Boulder in the fall of 2011, Lucy spent time in Hamburg, Germany on a Fulbright scholarship and worked at the German Consulate in Chicago, Illinois. This past summer Lucy worked at the University of Hamburg's climate change campus, where she conducted research for her master's thesis on e-waste governance. She was awarded a master's in 2013 and is now pursuing a doctoral degree. Broadly, Lucy is interested in the nexus of environmental justice, development and political ecology at the international level. For her Ph.D. research, she is exploring transboundary movements and governance of e-waste, particularly between India and the U.S.



## Marisa McNatt

Marisa is a Ph.D. candidate in the Environmental Studies Program with a policy focus and a member of the research group the International Collective on Environment, Culture & Politics (ICE CaPs). Marisa is generally interested in the factors that influence and shape the public and policy-makers' opinions on



climate and energy policy in the U.S., ranging from geographical, to socioeconomic, to cultural values. Marisa was chosen as a 2013 Climate Media Fellow for the Heinrich Boll Foundation with the goal of familiarizing U.S. energy experts with the European and German experiences transitioning toward a low carbon economy. Marisa received her B.A. in English Literature from Davidson College in 2007 and earned her Master in Journalism and Broadcast and a Graduate Certificate on Environment, Policy and Society from the University of Colorado Boulder in 2011.

## David Oonk

David Oonk studies how students learn about controversial science topics, such as climate change, and how multimedia and artistic tools can be used to help facilitate their learning. For the past four years, he has worked for the Cooperative Institute for Research in Environmental Sciences (CIRES) Education and Outreach, and communications groups. In that time he has worked with Navajo Nation tribal college students on a project documenting environmental and land use change on the reservation through photography, and with middle and high school students across Colorado on climate change documentaries. Oonk received a B.A. in Anthropology and a B.F.A. in Film Studies from the University of Colorado-Boulder.



## Jeremiah Osborne-Gowey

Jeremiah is a Ph.D. student interested in the development of adaptive capacity, evolution and resilience of learning networks. He is currently working with the Fire Adapted Communities Learning Network and the Locally Managed Marine Area (LMMA) Network of the Indo-Pacific, a not-for-profit network that supports community-driven marine resource management and conservation. Jeremiah's interests are diverse and include statistics, ecology, behavioral interactions, community structure, impacts of introduced species, science communication and policy and the interplay between humans and the rest of the natural world (coupled natural-human systems). Before joining the Goldstein lab at CU-Boulder, Jeremiah worked for >15 years as an aquatic/landscape ecologist with Federal and State agencies, universities and private and non-profit consulting firms throughout the Western United



States. He holds an Honors Bachelor of Science degree in Fisheries and Wildlife and a Master of Science degree in Quantitative Fish Ecology from Oregon State University. Jeremiah is also completing a Masters of Public Policy degree from Oregon State University.

## Rebecca Page

Rebecca is a Master's student in the Environmental Studies program at University of Colorado Boulder. Her research interests lie in understanding how natural resource managers and other stakeholders make decisions around natural hazard mitigation and climate adaptation, and specifically the usability of climate science in adaptation planning. She also has a strong interest in public participation in environmental governance and decision making. She is a graduate research assistant within the Western Water Assessment, where she will focus on understanding how water managers in Western Colorado utilize information about snow pack to manage and prepare for drought. Prior to moving to Boulder, Rebecca worked in international development, focusing primarily on sustainable development capacity building initiatives in China, India and Bangladesh. From 2010-2011 she was a Fulbright Research Fellow in China, where she researched public participation in water quality monitoring. Rebecca received her B.A. in Environmental Studies and East Asian Studies from Oberlin College.



## Emily Ruby

Emily is a Masters student in Environmental Studies at the University of Colorado, specializing in energy science and policy. She is interested in researching the development and application of energy storage (batteries, compressed air, etc.) as a means to allow further penetration of renewables onto the grid. An avid environmental activist since 1998, she has most recently been working with non-profits in the San Francisco Bay Area, researching energy policy and encouraging the adoption of local clean energy. She holds a B.A. in Environmental Science and Toxicology from University of California, Santa Cruz.



## Rebecca Schild

Rebecca Schild received a Ph.D. from the Environmental Studies Program at the University of Colorado Boulder

in 2016. Her dissertation was titled "Civic Recreation: The Promise of United Outdoor Recreation and Environmentalism in the 21st Century." Her research examined the link between citizenscience and civicecology on individual environmental values and literacy and community capacity to address environmental change. She received her B.A. at Colorado College in International Sustainable Development and a Masters of Environmental Management at the Nicholas School of the Environment, Duke University.



### Sarah Schweizer

Sarah is a Ph.D. student in the College of Architecture and Planning at the University of Colorado and the Director of Programs at START, where her work is focused on understanding and enhancing human and institutional capacities to effectively respond to critical global environmental change challenges. Sarah has a keen interest in collaborative governance, learning processes, social-ecological resilience, and participatory research methods. She holds a M.S. in Human Dimensions of Natural Resources and a B.S. in Environmental Communication from Colorado State University.



### Claire Stumpf

Clare Stumpf is a graduate student in Environmental Studies focusing on policy. She completed her undergraduate degree at the University of Rochester, double-majoring in Psychology and Philosophy with a concentration in Law and Ethics. While her interests lie in both moral and ethical fields relating to environmental justice, Clare hopes to gain a more practical understanding of policy formation at CU Boulder, and eventually work for an NGO or non-profit organization.



### Arielle Tozier De La Poterie

Arielle is a Ph.D. candidate in the Environmental Studies Program. She has a B.A. in anthropology from Vassar College and an M.Sc. in Sustainable Development from

Utrecht University in the Netherlands. Before deciding to pursue her master's, 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.



### Michael Weiss

Michael received an MS in Environmental Studies in 2016. He did an internship with the City of Boulder. He attended the US Air Force Academy, graduating from there in 1992. While in the Air Force, he was an intelligence analyst. During his career, he lived in nine US states (including Alaska) and lived in or visited Saudi Arabia, France, South Korea, Thailand, Australia, Japan, Germany, Qatar, Iraq, Kuwait, South Africa, Zambia, Kenya, and Afghanistan. In August 2014, he began the Master's in Environmental Studies program, focusing on policy. He chose the policy track because he liked that CU emphasizes that policy is really about decision making. He is looking for ways to be in the middle of making decisions on how best to protect our environment. Currently he is doing that by writing a conservation blog.



### Daniel Zietlow

*(writing intern)*

Dan received a Ph.D. in Geophysics at the University of Colorado. His research focused on utilizing seismic data to better characterize anisotropy in the mantle underlying the South Island of New Zealand. Using data recorded on both the New Zealand National Seismograph Network and a recent deployment by CU of ocean bottom seismometers, he aims to resolve the presently debated topic of whether seismic anisotropy under the South Island occurs in a diffuse region in the mantle lithosphere or a more localized zone that extends to the asthenosphere.



## VISITORS

### Justin Farrell

Justin Farrell is an Assistant Professor of Sociology in the Yale School of Forestry and Environmental Studies, with a secondary appointment in the Department of Sociology. He studies environment, culture, and social movements using a mixture of methods from large-scale computational text analysis, qualitative fieldwork, network science, and machine learning. He is spending a year at CSTPR under the CIRES Visiting Fellows Sabbatical Program.



Studies from University of Salford (United Kingdom). He joined the European Commission in 1989 and has worked in several policy areas including education and vocational training, space and research. His experience encompasses EU policy and law-making, international relations as well as human resources, financial and programme management. He is currently Adviser to the Director-General for Space Matters at the Directorate-General for Internal Market, Industry, Entrepreneurship and Small and Medium Enterprises (SMEs). Augusto lives in Brussels but maintains very close ties with his home town in Spain, where he holds elected public office (municipal councillor).

### Scott Gwozdz

Scott Gwozdz has more than 20 years of experience in Consumer Insight and Brand Development for Local Companies, Non Profits and Fortune 1000 Corporations. Since 2009, Scott has taught at The Leeds School of Business in the Center for Education on Social Responsibility (CESR). In addition to The World of Business and an entrepreneurship class called “New Venture Creation”, he also teaches a course he created called “Values and The Power of the Consumer.” Scott is focused on sustainability in business and the impact business can have not only in minimizing its own externalities but also in promoting progress on environmental issues more broadly. As more consumers demand sustainability from the brands they support, more businesses will strive to meet this demand. Scott has a BA in Sociology from Harvard University and an MBA from the Leeds School of Business at The University of Colorado.



### Leah Goldfarb

With twenty years of service, Dr. Leah Goldfarb is an experienced international environmental policy expert with scientific training in the area of climate change. She has extensive knowledge of the scientific community, international environmental bodies, and governmental agencies.



For just over a decade, she worked at the International Council for Science (ICSU), where she represented the Council at meetings with organizations such as, UN's Environment Programme, the UN's Commission on Sustainable Development, UNESCO and many international environmental research organizations. While her academic training was done in the U.S., she has been based in France for the majority of her professional career. Currently she is an adviser to C3 Boulder: Climate Culture Collaborative. She has authored and contributed to many academic articles, including an article in Science dealing with the Grand Challenges in the area of Global Sustainability. Leah has a Ph.D. in Chemistry from the University of Colorado (1997).

### Bonnie Rusk

Bonnie Rusk joined CSTPR this April as a visiting scholar. Bonnie is a Conservation Biologist with 25 years of experience in the West Indies focusing on biodiversity, terrestrial ecosystems and protected areas, and more recently on climate change adaptation strategies for coastal forests and strategies for their integration into local policy. Bonnie has been consulting for multilateral, bilateral and international donor organizations since the mid 1990's in the West Indies, including for World Bank, UNDP, USAID, and has extensive experience with both the development and implementation of Global Environment Facility funded projects. She has been the Senior Biologist and Founding Director of the



### Augusto González

Augusto González joined CSTPR this fall under the EU Fellowship program. He holds the degree of Licenciado in Geography and History from Universidad Complutense de Madrid (Spain) as well as a Master's degree in International





Grenada Dove Conservation Programme since 1991, carrying out research and management for an IUCN Critically Endangered species and its habitat, including the development of new protected areas. Her on-the-ground work incorporates a stakeholder participatory approach to planning and management. She has a 25 year collaboration with the Government of Grenada, providing technical expertise that supports development and implementation of international and national programs and strategies to further commitments to Multilateral Environmental Agreements. She has ongoing collaborations with numerous international organizations. While her professional training was done primarily in the United States, most of her career has been working in the West Indies. She is originally from Montreal, Canada. Bonnie has an M.S. in Conservation Biology and Sustainable Development from the University of Wisconsin-Madison (1993).

## Julia Schubert

Julia Schubert is a Research Associate at the Forum Internationale Wissenschaft (FIW) in Bonn, where she is working on her dissertation project on “Scientific Expertise in Politics. The Case of Climate Engineering in the U.S.” within the Junior Research Group “Discovering, Exploring, and Addressing Grand Societal Challenges” funded by the Mercator Foundation. Her main areas of research are sociological theory (with an emphasis on differentiation- and communication-theoretical approaches), political sociology and the sociology of science with a focus on the science-politics relation.



Julia obtained her B.A. in Social Sciences from the Philipps-University of Marburg (2010) and a M.A. in Sociology from the Ruprecht-Karls-University of Heidelberg (2014) with a thesis on the “Conditions and Prospects of Science-Based Political Decision-Making”. In 2011 she completed a Traineeship at the Consulting Department of the German American Chamber of Commerce of the Midwest (GACCoM) in Chicago. She was awarded the “Alumni Preis 2014” for outstanding achievements in the Masters-Studies of Sociology by the Max-Weber-Institute for Sociology of the University of Heidelberg.

Julia has been awarded a scholarship by the Fulbright Doctoral Program and has chosen to spend her research stay at CSTPR where she will focus on the question of how scientific expertise is becoming relevant and structurally integrated into the political decision-making process. In this context, she will study the institutional interface of scientific expertise and politics in the case of political decision-making on Climate Engineering technologies in the US.

## Jack Stilgoe

Jack Stilgoe is a senior lecturer in the Department of Science and Technology Studies at University College London. He teaches courses on science and technology policy, responsible science and innovation and the governance of emerging technologies. His most recent book is *Experiment Earth: Responsible Innovation in Geoengineering* (Routledge-Earthscan). The paperback was published in June 2016.



Before joining UCL he was Senior Research Fellow at the University of Exeter, working on a framework for responsible innovation for the UK Research Councils. He was Senior Policy Adviser at the Royal Society, where he ran work on the science base, innovation, emerging technologies and public engagement. Before this, he spent four years at the independent think tank Demos, leading work on science and society. He is on the editorial board of *Public Understanding of Science*, a member of the Government’s Sciencewise steering group and a member of the European Commission’s expert group on Science with and for Society. He is co-editor the Guardian’s Political Science blog. He will be spending his sabbatical at CSTPR.

## Suzanne Tegen

Suzanne Tegen manages the Wind and Water Deployment section at the National Renewable Energy Laboratory where she has been for 12 years. She has authored technical reports on economic impacts from distributed wind, utility-scale wind, offshore wind, community wind, and water power projects. She also studies the domestic wind and water power workforces including which types of jobs are needed in the long term. Suzanne spent one year as an NREL liaison to the Department of Energy’s Wind Program in Washington, D.C. She has provided invited testimony for the state of Colorado and Colorado Energy Office, has participated in National Academy of Sciences research, and was a reviewer for the Intergovernmental Panel on Climate Change. She holds a Ph.D. in Environmental Studies (Energy Policy) from the University of Colorado at Boulder and a Bachelor of the Arts in German Literature from the University of Wisconsin-Madison. Her interests include local, domestic and global energy and environmental policy, climate change, environmental justice, and wind and water power systems.



# VISITOR HIGHLIGHT

## A FOCUS ON AUGUSTO GONZÁLEZ

by Alison Gilchrist, Science Writing Intern

Augusto González gave a seminar (available via webcast: <http://cirescolorado.adobeconnect.com/p2jv8o9iaiz>) at the Center for Science and Technology Policy Research (CSTPR) about the European Union and space: the history of Europe's space policy, how Europe is currently handling space policy and commercialization, and future EU objectives.

Augusto González has worked for the European Union (EU) for almost 30 years. He started on a temporary contract and in 1991 he became an official in the European Commission (the executive body of the European Union) where he has worked ever since. Since 1991, González has been involved in numerous aspects of the European Commission's policy. He has worked in education policy, program design and legislation, finance of space programs, and in human resources. Along the way he became most interested in space policy and programs. Now, he works as Adviser to the Director for EU Satellite Navigation Programmes in the Directorate-General for Internal Market, Industry, Entrepreneurship and Small and Medium Enterprises.

The EU gives fellowships for officials to take a visitor position at participating universities, where they can conduct research as well as give seminars about EU organization, objectives and priorities. González chose to come to Colorado to study commercial activities in space. Besides being a beautiful place to spend a year, Colorado has a rich history in space commercialization and research. While he is here, he gave a number of seminars on EU policy and space commercialization and regulation.

His October 12th seminar focused on three areas: the reasons that the EU is interested in space policy, its present programs and current reflections on future objectives.

As González says, "the EU is not a space agency. Why are we involved in space?" He discussed why the EU has defined objectives for space policy and what it is doing to achieve these objectives.

"This will not be a personal talk," he explains when asked if he will be discussing his own part in writing space policy. "I want students to understand how the EU works and what we do in space."

The talk was a fascinating look at regulation of a quickly changing and ever expanding field as well as an opportunity to gain a deeper understanding of how EU policy-making proceeds.

*CSTPR Visitor, Augusto González. Photo: Ami Nacu-Schmidt.*



## GRADUATE STUDENT ALUMNI

**Adam P.H. Amir** received his Ph.D. in Environmental Studies in 2016.



**Kevin Andrews** received his M.S. in the Environmental Studies program at the University of Colorado Boulder in 2015. He earned a B.S. in the Biological Sciences from Salisbury University in 2008 and transitioned into a career as a science educator and outdoor enthusiast. He is interested in the role of science and its ability to formulate effective environmental policy. More specifically, his research interests include climate change adaptation and communication, environmental law and policy, and natural resource management.



**Kelli Archie** received her Ph.D. in Environmental Studies in 2012. Her dissertation is titled "Climate Change Adaptation in the Western U.S.: Examining Barriers to Planning, Hurdles to Implementation, and Demand for Information by Federal Public Lands Managers and Colorado Mountain Communities." She is now a Lecturer (Assistant Professor) of Climate Change, at the NZ Climate Change Research Institute, Victoria University of Wellington.



**Adam Briggie** received his Ph.D. in Environmental Studies in 2006. He is an Associate Professor at the University of North Texas. He served for three years as a postdoctoral fellow working on the philosophy of technology at the University of Twente in The Netherlands. His research and teaching interests focus on the intersections of ethics and policy with science and technology. He is author of *A Rich Bioethics: Public Policy, Biotechnology, and the Kass Council* (2010, University of Notre Dame Press), co-author of *Ethics and Science: An Introduction* (2012, Cambridge University Press), and co-editor of *The Good Life in a Technological Age* (2012, Routledge Press). He has written about fracking in *Slate*, *Truthout*, *Science Progress*, and *The Guardian*, and he also recently published a book titled *A Field Philosopher's Guide to Fracking*.



**David Cherney** received a Ph.D. in Environmental Studies in 2011. He is now a Consultant in PA Consulting Group's Energy Capital Markets Practice, with expertise in public policy analysis, electricity market dynamics, and program evaluation. Cherney is well



published having authored more than 20 publications in scholarly journals, technical book chapters, and popular outlets. In addition to his Ph.D. from the University of Colorado-Boulder, he holds a Master's degree from Yale University, and a B.A. from Claremont McKenna College. His dissertation is titled "Environmental Saviors? The Effectiveness of Nonprofits in Greater Yellowstone."

**Brian Devine** received an M.S. in Environmental Studies at the University of Colorado Boulder in 2015. After undergraduate study in History and Political Science at Washington and Lee University, Brian went into the weird world of Western water, as a project manager restoring and protecting Colorado watersheds from the effects of legacy mining and wildland fire. His research investigated the economic and cultural impacts of water transfers from small agricultural communities to thriving municipalities. His thesis is titled "Moving Waters: The Legacy of Buy-and-Dry and the Challenge of Lease-Following in Colorado's Arkansas River Basin."



**Erik Fisher** received his Ph.D. in Environmental Studies in 2006. He is an Assistant Professor with a joint appointment in the School of Politics and Global Studies and the Consortium for Science, Policy and Outcomes at Arizona State University. He also serves as the Associate Director of Integration at CNS-ASU. His dissertation is titled "US Nanotechnology Policy and Midstream Modulation."



**Kristin Gangwer** received an M.A. in Geography in 2011.



**Joel Gratz** received an M.S. in Meteorology and Policy and an M.B.A. in 2006. He 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. His thesis is titled "Unlocking the treasure chest: A study of technology transfer in the case of level-II radar data."



**Jimmy Hague** received his master's in Environmental Studies with a focus on science and environment policy in 2007. Jimmy joined the Theodore Roosevelt Conservation Partnership (TRCP) in May 2013 as the initiative manager for water



resources conservation and is now the Director of the Center for Water Resources for TRCP. In this capacity, he directs the TRCP's efforts to better manage the nation's water supplies for the benefit of sportsmen. Prior to working for the TRCP, Jimmy previously worked for U.S. Senator Mark Udall of Colorado as his advisor for various conservation and natural resources issues, including water resources management and environmental regulation. He also worked for the U.S. House of Representatives Committee on Science.

**Rachel Hauser** received an M.S. in Environmental Studies in 2012.



**Abby Kuranz** received an M.S. in the Environmental Studies Program in 2014. Her thesis is titled "Multi-level Governance of Colorado's Instream Flow Program." Abby is now working as a Communications Specialist at Milwaukee Riverkeeper, which is part of a larger network of the Waterkeeper Alliance.



**Nat Logar** received his Ph.D. in Environmental Studies in 2007, followed by a law degree from the University of Colorado Boulder and is now working in energy law in Alaska. Previously he was a research fellow at Harvard's Kennedy School of Government, contributing to a larger project on energy technology and innovation by examining energy innovation institutions, such as national laboratories like the National Renewable Energy Laboratory and industry consortia such as the Electric Power Research Institute.



**Jessica Lowery** received an M.S. in Environmental Studies in 2004 and a J.D. in Law in 2012. 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. She is now employed as an attorney.



**Genevieve Maricle** received a Ph.D. in Environmental Studies in 2008. She served as a Policy Adviser to the US Ambassador (ECOSOC) US Mission to the UN. Genevieve previously served as



USAID's Environment and Climate Change Policy Advisor where she was 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. Her dissertation is titled "Shaping Science: How to Turn Science Studies into Science Action."

**Elizabeth McNie** received a Ph.D. in Environmental Studies in 2008. She is now a Research Scientist at the Western Water Assessment in the Cooperative Institute for Research in Environmental Sciences, University of Colorado where she is also a Research Affiliate at its Center for Science and Technology Policy Research. She is an expert in science policy and the design and implementation of use-inspired research, particularly in the field of climate-change adaptation. Her research also focuses on understanding the effectiveness of actionable research and boundary organizations. Previously she was an Assistant Professor at Purdue University in the departments of Political Science and Earth & Atmospheric Sciences.



**Shali Mohleji** received a Ph.D. in Environmental Studies in 2011. She served as Senior Advisor to the Under Secretary with the National Oceanic and Atmospheric Administration. Previously she was a Senior Policy Fellow with the American Meteorological Society Policy Program. Her interest areas focus on science policy, including how scientists engage in the policy process and the culture of science, and natural disaster policy related to socioeconomic impacts, institutional dynamics, and governance. Her dissertation is titled "Gaining from Losses: Using Disaster Loss Data as a Tool for Appraising Natural Disaster Policy."



**Shawn Olson** received an M.S. in Environmental Studies in 2013. She has a BA in Environmental Studies and Social Movements from The Evergreen State College. Since then, she spent several seasons as an environmental educator in Alaska's Wrangell Mountains and as a wilderness therapy field leader in the deserts of south-central Utah. At CU, she studied the politics, history, and ideological polarizations that lead to conflicts over public lands in the American West. Her thesis is titled "Power Politics: The Political Ecology of Wind Energy Opposition in Wyoming." Shawn is the co-author of two books: *Defending Wild Washington: A Citizen's Action Guide* (Mountaineers Books, 2004) and *Community and Copper in a Wild Land* (Wrangell Mountains Center & National Park Service, 2005).



**Shep Ryen** received an M.S. in Environmental Studies in 2005. He spent several years at the House Committee on Science and Technology before transitioning to his present position at the Government Accountability Office (GAO) on the Natural Resources and Environment team.



**Kanmani Venkateswaran** received an M.S. in Environmental Studies in 2014. She graduated from Kenyon College in May 2011 with a Bachelors in Biology and a concentration in Environmental Studies. Her thesis is titled "The Vulnerability of Zambian Communities Living Along the Zambezi River Basin to Floods."



**Xi Wang** received an M.S. in Environmental Studies in 2014. She is a doctoral student in the Department of Geography at University of Colorado-Boulder. She is broadly interested in energy transitions to a low-carbon economy, particularly in the electricity



sector. She is interested in understanding the role of policy in facilitating such transitions, as well as how different stakeholders negotiate the policy making process. Her Masters thesis is titled "The Emergence of the Renewable Portfolio Standard as the Renewables Policy of Choice: A Case Study of Negotiating Power in California."



**Jessica Weinkle** received a Ph.D. from the Environmental Studies Program at the University of Colorado with a secondary core in Policy in 2013. While working on her MA in Climate and Society at Columbia University she became interested in natural hazards, risk perception and the use of climate and weather forecasts in policy and society. Jessica worked as a postdoc with the Center in partnership with the catastrophic insurance company and Lloyd's syndicate, ICAT, studying the science and politics of insurance with special attention given to public insurance programs used to manage catastrophic risk. She is currently an assistant professor in the Department of Public and International Affairs at the University of North Carolina-Wilmington.

*Marilyn Averill delivering a statement on behalf of the Research and Independent Non-governmental Organizations (RINGOs) at the opening plenary of the Subsidiary Body for Science and Technology Advice (SBSTA) at the May 2016 meeting of the United Nations Framework Convention of Climate Change (UNFCCC) in Bonn, Germany. Photo: Kiara Worth.*





*CIRES Director, Waleed Abdalati, handing out employee awards "in appreciation for 35 years of loyal service and outstanding accomplishments" at the 2016 CIRES Rendezvous. Photo: Robin Strelow.*

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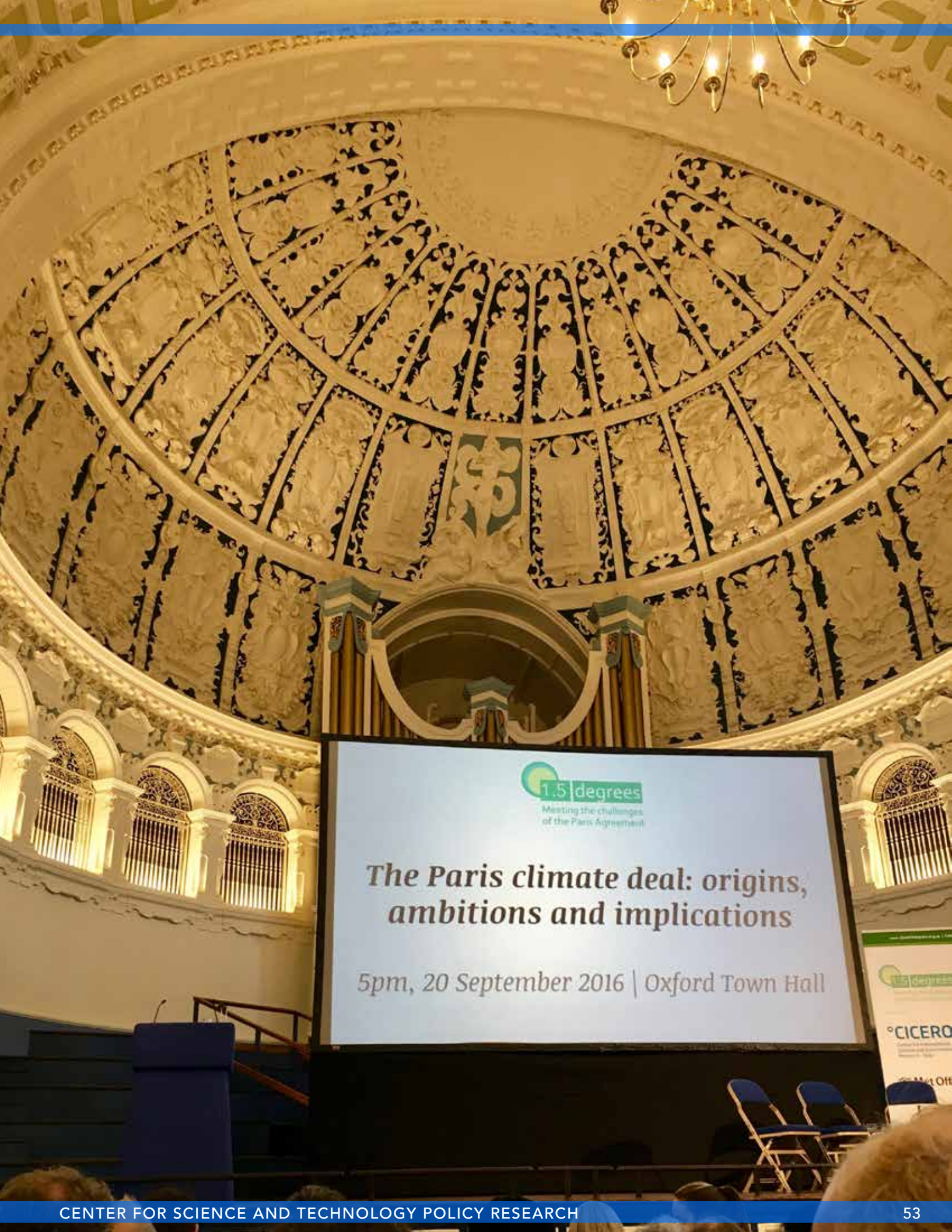
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- Rex Alirigia (Coauthor)
- William Becker (Speaker)
- Abby Benson (Speaker)
- Angela Boag (Speaker)
- Dror Boymel (Coauthor)
- Dan Brockington (Coauthor)
- Dave Cipllet (Speaker)
- Elizabeth A. Coffey (Coauthor)
- Maxwell Dalaba (Speaker, Visitor)
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- Sarah Welsh-Huggins (Speaker)
- Christopher Wiedinmyer (Coauthor)
- Jeffrey Zax (Speaker)

*CSTPR graduate student, Meaghan Daly with field assistants, Shayo and Sarah, in the village of Kiserian in northern Tanzania, where she conducted ethnographic data collection during the course of her research. Photo: Meaghan Daly.*





## *The Paris climate deal: origins, ambitions and implications*

5pm, 20 September 2016 | Oxford Town Hall

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# APPENDIX

## PUBLICATIONS

### (Center personnel in bold)

#### Journal Articles

- Albright, E.A. and **D.A. Crow** (2016). Learning in the Aftermath of Extreme Floods: Community Damage and Stakeholder Perceptions of Future Risk. *Risk, Hazards & Crisis in Public Policy* 6 (3) 308-328, doi: 10.1002/rhc3.12085.
- **Boykoff, M.T.** and G. Luedecke (2016). Elite News Coverage of Climate Change. *Oxford Research Encyclopedia, Climate Science*, doi: 10.1093/acrefore/9780190228620.013.357.
- **Crow, D.A.**, E.A. Albright, and **E. Koebele** (2016). Public Information and Regulatory Processes: What the Public Knows and Regulators Decide. *Review of Policy Research* 33 (1) 90-109, doi: 10.1111/ropr.12154.
- **Dickinson, K.L.**, A.J. Monaghan, I.J. Rivera, L. Hu, E. Kanyomse, R. Alirigia, J. Adoctor, R.E. Kaspar, A.R. Oduro, and C. Wiedinmyer (2016). Changing weather and climate in Northern Ghana: Comparison of local perceptions with meteorological and land cover data. *Regional Environmental Change* 1-14, doi: 10.1007/s10113-016-1082-4.
- **Dickinson, K.L.**, M.H. Hayden, S. Haenchen, A. J. Monaghan, K.R. Walker, and K.C. Ernst (2016). Willingness to Pay for Mosquito Control in Key West, Florida and Tucson, Arizona. *Am. J. Trop. Med. Hyg.* 94 (4) 775-779, Times Cited: 6, issn: Feb-37, ids: D11FQ, doi: 10.4269/ajtmh.15-0666.
- **Dilling, L.**, K.C. Kelsey, D.P. Fernandez, Y.D. Huang, J.B. Milford, and J.C. Neff (2016). Managing Carbon on Federal Public Lands: Opportunities and Challenges in Southwestern Colorado. *Environmental Management* 58 (2) 283-296, Times Cited: 2, issn: 0364-152X, ids: DQ4FK, doi: 10.1007/s00267-016-0714-2.
- Fischhendler, I., D. Boymel, and **M.T. Boykoff** (2016). How Competing Securitized Discourses over Land Appropriation Are Constructed: The Promotion of Solar Energy in the Israeli Desert. *Environ. Commun.* 10 (2) 147-168, issn: 1752-4032, ids: DE5DN, doi: 10.1080/17524032.2014.979214.
- Goodman, M.K., J. Littler, D. Brockington, and **M.T. Boykoff** (2016). Spectacular environmentalisms: Media, knowledge and the framing of ecological politics. *Environmental Communication* 10 (6) 677-688, doi: 10.1080/17524032.2016.1219489.
- Kirchhoff, C. and **L. Dilling** (2016). The role of U.S. states in facilitating effective water governance under stress and change. *Water Resources Research* Volume 52, Issue 4: 2951–2964.
- Piedrahita, R., **K.L. Dickinson**, E. Kanyomse, E. Coffey, R. Alirigia, Y. Hagar, I. Rivera, A. Oduro, V. Dukic, C. Wiedinmyer, and M. Hannigan (2016). Assessment of Cookstove Stacking in Northern Ghana Using Surveys and Stove Use Monitors. *Energy for Sustainable Development* 34 67-76, doi: 10.1016/j.esd.2016.07.007.
- **Schramski, S.** and Z.J. Huang (2016). Spatial Social Network Analysis of Resource Access in Rural South Africa. *Prof. Geogr.* 68 (2) 281-298, Times Cited: 13, issn: 0033-0124, ids: DG1FJ, doi: 10.1080/00330124.2015.1065545.
- Stevens, J.R. and **D.A. Crow** (2016). Teaching Millennials to engage THE environment instead of THEIR environment: A pedagogical analysis. *Applied Environmental Education & Communication* 15 (1) 18-29, doi: 10.1080/1533015X.2016.1141721.
- **Vanderheiden S.** (2016). Climate Change and Free Riding. *Journal of Moral Philosophy* 13 (1): 1-27.
- **Vanderheiden, S.** (2016). Climate Justice Beyond International Burden Sharing. *Midwest Studies in Philosophy*, doi: 10.1111/misp.12045.
- **Vanderheiden, S.** (2016). Justice and Democracy in Climate Change Governance. *Taiwan Human Rights Journal* 6 3-26.
- **Vanderheiden S.** (2016). Territorial Rights and Carbon Sinks. *Sci Eng Ethics*.

#### Chapter in a Book

- Bailey, A., L. Giangola, and **M.T. Boykoff** (2016). How Grammatical Choice Shapes Media Representations of Climate (Un)certainly. In *Media Research on Climate Change*, Ed. U. Olausson and P. Berglez, Routledge.
- Gordon, E., **L. Dilling**, E. McNie, and A. Ray (2016). Navigating scales of knowledge and decision-making in the Intermountain West: Implications for science policy. In *Climate in Context: Science and Society Partnering for Adaptation*, Ed. A. Parris and G. Garfin 235-254, Wiley and Sons.

Left Photo: View of Oxford Town Hall. Photo: Lisa Dilling.

- **Hale, B.** (2016). Rights, Rules, and Respect for Nature. In *The Oxford Handbook of Environmental Ethics*, Ed. S. M. Gardiner and A. Thompson, Oxford University Press, doi: 10.1093/oxfordhb/9780199941339.013.19.
- **Pielke, Jr., R.A.** (2016). Technology Assessment as Political Myth? In *The Next Horizon of Technology Assessment*, Ed. C. Scherz, T. Michalek, L. Hennen, L. Hebáková, J. Hahn, and S. B. Seitz 403-408, Proceedings from the PACITA 2015 Conference in Berlin, isbn: 978-80-7333-121-4.
- Simpson, C., **L. Dilling**, K. Dow, K. Lackstrom, M.C. Lemos, and R. Riley (2016). Assessing needs and decision contexts: RISA approaches to engagement research. In *Climate in Context: Science and Society Partnering for Adaptation*, Ed. A. Parris and G. Garfin 3-26, Wiley and Sons.
- **Vanderheiden, S.** (2016). Environmental and Climate Justice. In *Oxford Handbook of Environmental Political Theory*, Ed. T. Gabrielson, C. Hall, J.M. Meyer, and D. Schlosberg 321-332, Oxford University Press, isbn: 9780199685271, Published March 7 2016.

#### Letter/Report/Note/Memo/

- Meadow, A., E. McNie, **J. Berggren**, R. Norton, B. McMahan, G. Owen, and L. Rae (2016). NOAA Western Region: Climate Service Providers Database Development and Preliminary Analysis. Western Water Assessment, Cooperative Institute for Research in Environmental Sciences, University of Colorado Boulder 18.

#### Reviews

- **Boykoff, M.T.** (2016). Climate Change as Social Drama: Global Warming in the Public Sphere by Philip Smith and Nicolas Howe. *American Journal of Sociology* 122.
- **Vanderheiden, S.** (2016). Review of L. Baier, Inside the Equal Access to Justice Act, for *Environmental History*.

## TALKS AND EVENTS SPONSORED BY THE CENTER

### (Center personnel in bold)

#### CSTPR Noontime Seminar Series (Boulder, CO)

#### Spring

February 3  
Climate Change from the Audience's Perspective  
by Ines Lörcher, Institute for Journalism and Communication,  
University of Hamburg

February 4  
Panel Discussion: AAAS "Catalyzing Advocacy in Science and Engineering" Workshop Student Competition  
With previous competition winners, moderated by Abby Benson, CU's Office of Government Relation

March 4  
Coming to the Rescue? Tech Firms and the Harms of the Electronics Commodity Chain  
by **Lucy McAllister**, Environmental Studies Program and Center for Science and Technology Policy Research

March 9  
Media Coverage of Climate Change in a Comparative Perspective  
by Reiner Grundmann, Science and Technology Studies, University of Nottingham

March 16  
A Real Polêmica: An Approach to Scientific Controversy and its Uncertain Reach  
by **Sam Schramski**, Center for Science and Technology Policy Research

April 7  
Communicating Plastic Pollution: The (conflicting) values of media producers, scientists & lay publics?  
by Dr. Lesley Henderson, Institute of Environment, Health and Societies Brunel University London

May 4  
Prices, Peers, and Perceptions (P3): Improved Cookstove Research in Northern Ghana  
by Maxwell Dalaba, Navrongo Health Research Centre, Ghana

#### Fall

September 7  
Collaborating for System Change: Learning Networks for City Resilience, Wildfire Protection, Climate Adaptation, and Impactful Science  
by **Bruce Goldstein** and the Collaborative Learning Networks

September 28  
AAAS "Catalyzing Advocacy in Science and Engineering" Workshop Student Competition Panel Discussion  
Cosponsored by the Forum on Science Ethics and Policy Abby Benson, University of Colorado AeroSpace Ventures, moderator  
and past competition winners, Nicholas Valcourt, Angela Boag, and Sarah Welsh-Huggins, panelists

October 12  
EU Space Policy  
by Augusto González, European Commission

October 19  
Student Expertise and the Legislative Process  
by Jeffrey Zax, University of Colorado Department of Economics

October 26  
Collaboration in Energy and Materials Sustainability  
by Alan Hurd, Los Alamos National Laboratory

#### Other Talks and Presentations by Center Personnel

##### Max Boykoff

- University of Colorado Boulder, Environmental Studies colloquium, January 25



Max Boykoff talks about whether we are effectively communicating climate change issues in a special series organized by the Royal Society of New Zealand on science communication: Talking Science. Photo: Royal Society Te Apārangi.

- Invited participant, Deep South International Science Panel, New Zealand, February 6-10
- Royal Society of New Zealand (Wellington), invited keynote lecture, February 9
- League of Women Voters (Denver, Colorado), invited presentation and panel discussion, March 22
- National Parks Service, Climate Change Response Program, invited presentation, October 17
- Workshop participant, Data Visualization, Aldo Leopold Leadership Program Advanced Training, Duke University, October 21-22
- United Nations Conference of Parties meeting on climate change, Marrakech, invited speaker at side event hosted by International Environmental Communication Association, November 15
- United Nations Conference of Parties meeting on climate change, Marrakech, invited speaker at side event hosted by Climate Outreach (UK), November 15
- United Nations Conference of Parties meeting on climate change, Marrakech, invited speaker at side event hosted by EcoArts Connections, November 16

**Deserai Crow**

- Science in Public Policy, Molecular Biology Graduate Student Roundtable, University of Colorado Anschutz Medical Campus, February
- When Focusing Events Meet Opportunities for Reflection: Policy Learning from Wildfire “Anniversary” Stories and Other Media Coverage (coauthors:

- Adrienne Kroepsch, Elizabeth Koebele, Lydia Lawhon, John Berggren, Juhi Huda), Western Political Science Association Annual Conference, San Diego, CA, March
- The Emergence of Policy Coalitions in the Aftermath of Extreme Events: Colorado’s Flood Recovery in Comparative Context (coauthor: Elizabeth A. Albright), Midwest Political Science Association’s Annual Conference, Chicago, IL, April
- A Narrative Policy Framework Analysis of Wildfire Policy Responses (coauthors: Lydia Lawhon, John Berggren, Juhi Huda, Elizabeth Koebele, Adrienne Kroepsch), Midwest Political Science Association’s Annual Conference, Chicago, IL, April
- Evaluating Stakeholder Participation and Influence on State-Level Rulemaking Outcomes (coauthor: Elizabeth A. Albright), Midwest Political Science Association’s Annual Conference, Chicago, IL, April
- Mixed Messages: Navigating Climate Change Coverage in the Modern Media Landscape, The Alliance for Sustainable Colorado, Denver, CO, June
- Panelist: Enhancing Resilience through Research, Collaboration, and Advocacy, Natural Hazards Research and Applications Workshop, Broomfield, CO, July

**Lisa Dilling**

- Usable science in a contentious world: Science policy, risk tolerance and moving toward clumsy solutions. Invited Presentation, Sarmiento Symposium, Princeton University, March
- Learning from Stakeholder Needs and Enabling



Power Dialog Panel on April 4, 2016. Panelists include David Ciptet, Rosemarie Russo, Stephanie Malin, Suzanne Tegen, William Becker, and Michelle Gabrieloff-Parish. Photo: Ami Nacu-Schmidt.

Adaptive Capacity: A synthesis from the US West. Climate Adaptation Futures: Fourth International Climate Change Adaptation Conference, Rotterdam, Netherlands, May 8-13

- Drought, Growth, and Climate Adaptation: A Case Study of Water Management in Las Vegas (coauthors: S. Lincoln, A. Ray, and M. Daly), Hollings Scholar Summer Colloquium, Washington DC. August 2
- Power and Process: Shaping Knowledge Landscapes for Adaptation in Tanzania (coauthors: M. Daly, M. S. Goldman, and E. Lovell), 4S/EASST Annual Meeting, Barcelona, Spain August 31-Sept. 4
- Participatory Framework for Assessment and Improvement of Tools (ParFAIT): Increasing the impact and relevance of water management decision support research (coauthors: R. Smith, J.R. Kasprzyk), Washington, DC. November 16-17
- Producing regionally-relevant multiobjective tradeoffs to engage with Colorado water managers (coauthors: R. Smith, J.R. Kasprzyk, and L. Basdekas), Fall Meeting of the American Geophysical Union, San Francisco, CA, December
- Improving the relevance and impact of decision support research: A co-production framework and water management case study (coauthors: R. Smith, J.R. Kasprzyk, L. Basdekas, and L. Kaatz), Fall Meeting of the American Geophysical Union, San Francisco, CA, December

#### **Bruce Goldstein**

- Transformative Learning Networks. Proceedings of the 60th Annual Meeting of the International Society for the Systems Sciences (ISSS) and 1st Policy Congress of ISSS (coauthors: C. Chase, L. Frankel-Goldwater, J.

Osborne-Gowey, J. Risien, and S. Schweizer), University of Colorado, Boulder, USA. July 23-30, [http://iss.org/world/Colorado\\_2016](http://iss.org/world/Colorado_2016)

- It's a Wonderful Life: How Learning Networks Can Catalyze Adaptation and Transformation. Invited Speaker, Workshop on Cultivating Stewardship, Recovery, and Resilience", New York City. Hosted by the US Forest Service Northern Research Station - New York City Urban Field Station, June 8-9

#### **Ben Hale**

- ENVIS Colloquium: The Lingering Value of Technological Artifacts: a Clog in the E-waste Stream, February 1

#### **Jessica Rich**

- Critical Engagements with Materiality and Human-Nature Relationships, National Communication Association's Annual Convention, Philadelphia, PA. November.
- Identities in Conflict: Labor-Environment Relations in U.S. Shale Fields. Paper presented at the Association for Humanist Sociology Conference, Denver, CO, November

#### **Steve Vanderheiden**

- Security, Justice, or Sovereignty? Competing Frames for Food, presented at the Western Political Science Association annual meeting, San Diego, CA, March 24-26
- The Principle of Justice: From Economic to Environmental Justice, invited talk at Universitas Gadjah Mada, Yogyakarta, Indonesia, 26 August
- Security, Justice, or Sovereignty? Competing Frames for Food, presented at the American Political Science Association annual meeting, Philadelphia, PA, September 1-4

## Other Presentations by Center Personnel

### Augusto Gonzalez, The EU Discussion Series

- Session 1: September 14, The EU Treaties
- Session 2: September 21, The EU: Who Does What
- Session 3: October 5, The EU Ordinary Legislative Procedure
- Session 4: November 2, The EU Top Ten Priorities
- Session 5: November 9, The EU Strategy for Growth
- Session 6: November 16, The Single Market Strategy
- Session 7: November 23, Circular Economy Package
- Session 8: December 7, EU Research and Innovation: The Horizon 2020 Programme

### ENVS Colloquium

- Emerging Technologies as Collective Experiments, by Jack Stilgoe, University College London Department of Science and Technology Studies and CSTPR visitor, September 23
- Climate Change Politics and Machine Learning, by Justin Farrell, Yale University Department of Sociology and CSTPR visitor, November 4

## Events Cosponsored by the Center

- March 17, 2016: Standing Up for Climate: An Experiment with Creative Climate Comedy
- April 4, 2016: Panel Discussion: Power Dialog
- April 19, 2016: Creative Climate Communications with Mike Nelson, Chief Meteorologist 7NEWS Weather Denver
- April 25, 2016: Having a Direct Impact on Science Policy after Your PhD: A Panel Discussion on the AAAS Science & Technology Policy Fellowship
- August 17, 2016: FOSEP Discussion: Advocating for Science at the State and Federal Level
- September 14, 2016: More than Scientists
- November 17, 2016: Performance for Resilience

## MEDIA REFERENCES

Center personnel and alumni were quoted, cited, interviewed or referred to numerous times in numerous media including New York Times Dot Earth, Desert Sun, EOS, Washington Post, Daily Camera, Guardian, and KGNU radio. A complete list with links to articles is located at <http://sciencepolicy.colorado.edu/news/in-the-news.html>.

## SERVICE ACTIVITIES 2016

### Max Boykoff

- Environmental Studies program Graduate Committee

- Environmental Studies program Executive Committee
- Boulder Faculty Assembly (BFA) Environmental Studies program representative
- Environmental Studies natural resources governance tenure-track faculty search committee Chair
- Environmental Studies program Inclusive Excellence Committee
- CIRES Center for Science and Technology Policy Research Director
- CIRES CSTPR Academic Review and Program Advising Committee report
- CIRES Center for Science and Technology Policy Research Executive Committee
- Co-organized CU Boulder and City of Boulder dialogue on City of Boulder Climate Commitment (12 October 2016), CIRES Center for Science and Technology Policy Research (with Sarah Thomas and Brett KenCairn)
- Co-organized Science and Environmental Communication workshop (7 October 2016), Al Bartlett Science Communication Center (with Phaedra Pezzullo, Katya Haflich, Shelly Sommer and Tom Yulsman)
- Co-organized Inside the Greenhouse: A Presentation with More Than Scientists, Eric Michelman (14 September 2016), Williams Village Residence Academic Program (with Beth Osnes and Rebecca Safran)
- Co-organized Power Dialog: Discussing Colorado's Engagement for a Clean Energy Economy in the 21st Century (4 April 2016), CIRES Auditorium (with David Cipler, Stephanie Malin and Kristen Averyt)
- Co-organized Inside the Greenhouse: An Encounter with Mike Nelson (19 April 2016), CIRES Auditorium (with Beth Osnes and Rebecca Safran)
- Co-organized Inside the Greenhouse: Standing Up for Climate: An Experiment with Creative Climate Comedy (17 March 2016), Black Box Theater, Atlas Institute (with Beth Osnes and Rebecca Safran)
- University of Colorado co-organizer of UN observer credentialing (with Prof Jim White and Marilyn Averill)
- Advisory role, Center for Sports Governance, University of Colorado
- Lisa Barlow Primary Unit Evaluation Committee
- University of Colorado Forum on Science, Ethics and Policy (FOSEP) Faculty Advisor
- Boulder Faculty Assembly (BFA) Intercollegiate Athletics Committee
- BFA Coalition for Intercollegiate Athletics (COIA) representative
- Deputy Editor (history/social science): Climatic Change

- Associate Editor: Ethics, Policy & Environment
- Editorial Board: Environmental Communication: A Journal of Nature & Culture
- Editorial Board: Global Environmental Change
- Climate Literacy and Energy Awareness Network (CLEAN) reviewer
- Austrian Climate and Energy Fund reviewer
- Climatic Change letters reviewer
- Boulder Valley School District, Talented and Gifted District Advisory Committee
- E-town Editorial Advisory Board
- Advisory Board member: Colorado Ocean Coalition
- Advisory role, Climate Change Comedy Project (Emily Coren [PI])

#### DESERAI CROW

- Executive Committee, CSTPR
- Associate Director, Center for Environmental Journalism
- Midwest Political Science Association Annual Conference panel discussion

#### LISA DILLING

- Member of DOI North Central Climate Science Center Director Search Committee
- Affiliate, Center of the American West
- Affiliate, Renewable and Sustainable Energy Institute (RASEI)
- CIRES Executive Committee
- CIRES Fellow (governance meetings)
- ENVS Undergraduate Committee
- Hydrologist Search Committee, CIRES
- Natural Hazards Center Director Search Committee
- Director of Science and Technology Policy Certificate
- Subject Area Editor (Social Sciences) for Bulletin of the American Meteorological Society
- National Science Foundation reviewer
- Reviewer for Bulletin of Atmospheric Sciences
- Reviewer for Climate Policy
- Reviewer for Global Environmental Change
- Reviewer for WILEY Interdisciplinary Reviews Climate Change
- Reviewer for Weather, Climate and Society
- Reviewer for journal Climatic Change

- Reviewers for Environment and Planning C
- Reviewer for journal Climate Risk Management
- Advisory Board, Advancing Knowledge Systems to Inform Climate Adaptation Decisions
- (ICAD), European Research Council project based at University of Exeter, UK
- Advisory Board, Decision Center for a Desert City, Arizona State University, Tempe AZ
- Western Water Director
- Board Member, Aspen Global Change Institute

#### Bruce Goldstein

- Contributing to the creation and management of the new Masters of the Environment Program in Environmental Studies.
- Associate Editor of five peer-reviewed journals
- Guest editor of two special issues underway

#### Steve Vanderheiden

- Senior Research Fellow, Earth Systems Governance Project
- Participant in conference roundtable on Political Science Studies of Climate Change (selected as represented for political theory subfield), American Political Science Association annual meeting, Philadelphia, PA, September 2016.
- Comprehensive exam committee member, political theory subfield, September 2016
- Faculty Associate, CU Center for Science and Technology Policy (CSTPR)
- Faculty Fellow, CU Center for Values and Social Policy
- Member, CU ENVS Professional Education Committee
- Member, CU PSCI Graduate Committee (Spring 2016)
- Member, ENVS Environmental Justice Steering Committee (tasked with overseeing the teaching of undergraduate courses in PSCI, PHIL, and ENVS).
- Non-rostered core faculty member, ENVS program.
- Member, PSCI Policy Committee (Fall 2016)
- Member, ENVS Undergraduate Curriculum Committee (Fall 2016)
- Member, MENV program Executive Committee (professional masters program, approved by Regents in 2015, launched in Fall 2016).
- Chair, BFA Student Affairs committee (Spring 2016)
- Member, BFA Executive Committee (Spring 2016)
- PSCI representative, Boulder Faculty Assembly (BFA)

- Organizer, Town Hall on Campus Social Climate (sponsored by the Provost's Office), April 2016.
- Associate Editor, Ethics, Policy & Environment (journal)
- Editorial Board Member, Environmental Politics (journal) 14 journal articles and 3 book manuscripts reviewed during 2016
- Environmental Politics Series Editor, Routledge (full year)

## GRANT ACTIVITY

**PROJECT TITLE:** The Media and Climate Change Observatory (MECCO) (Boykoff, PI)

**SOURCE:** Center to Advance Research and Teaching in the Social Sciences, University of Colorado Boulder

**AMOUNT:** \$2,000

**PERIOD OF GRANT:** 2016

**PROJECT TITLE:** Building the Public-facing Media and Climate Change Observatory (MeCCO) (Boykoff)

**SOURCE:** University of Colorado Outreach and Engagement

**AMOUNT:** \$11,995

**PERIOD OF GRANT:** 2016

**PROJECT TITLE:** Collaborative Research: Community Recovery and Colorado's Extreme Floods of 2013: Policy Learning in the Context of Resources, Coalitions, and Political Conditions (Crow, PI)

**SOURCE:** National Science Foundation

**AMOUNT:** \$216,344 (CU portion), \$401,856 (total budget)

**PERIOD OF GRANT:** 2015-2018

**PROJECT TITLE:** Collaborative Research: Prices, Peers, and Perceptions: Field Experiments on Technology Adoption in the Context of Improved Cookstoves (Dickinson, PI)

**SOURCE:** National Science Foundation

**AMOUNT:** \$456,282 (CU portion)

**PERIOD OF GRANT:** 2015-2018

**PROJECT TITLE:** Balancing Severe Decision Conflicts under Climate Extremes in Water Resource Management (Dilling, PI)

**SOURCE:** National Oceanic and Atmospheric Administration

**AMOUNT:** \$261,689

**PERIOD OF GRANT:** 2014-2016

**PROJECT TITLE:** Advancing The Use Of Drought Early Warning Systems In The Upper Colorado River Basin (Dilling, co-PI)

**SOURCE:** National Oceanic and Atmospheric Administration

**AMOUNT:** \$286,000

**PERIOD OF GRANT:** 2016-2018

**PROJECT TITLE:** Bringing Innovative Data Science Down to Earth (Dilling, PI)

**SOURCE:** University of Colorado Grand Challenge Seed Grant

**AMOUNT:** \$76,000

**PERIOD OF GRANT:** 2016-2017

**PROJECT TITLE:** Western Water Assessment: Building Climate Resilience by Design (Dilling, PI)

**SOURCE:** National Oceanic and Atmospheric Administration

**AMOUNT:** \$4.5 million

**PERIOD OF GRANT:** 2015-2020

Chief Meteorologist 7NEWS Weather Denver, Mike Nelson, giving a talk "Creative Climate Communications" on April 19, 2016. Photo: Robin Moser.



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SCIENCE & TECHNOLOGY  
POLICY RESEARCH

Center for Science and Technology Policy Research  
Cooperative Institute for Research in Environmental Sciences  
University of Colorado Boulder  
<http://sciencepolicy.colorado.edu>