CSTPR
ANNUAL REPORT

January 1 - December 31, 2017

Working to improve how

SCIENCE & TECHNOLOGY

policies address societal needs, through research, education and service

CENTER FOR SCIENCE & TECHNOLOGY POLICY RESEARCH

CIRES

University of Colorado Boulder

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Cooperative Institute for Research in Environmental Sciences
University of Colorado Boulder

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Annual Report
January 1 - December 31, 2017

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Cover design: Ami Nacu-Schmidt. Background photo: The Earth seen from space as the sun rises. iStock, artcasta.

CIRES

University of Colorado **Boulder**

CSTPR ANNUAL REPORT

January 1 - December 31, 2017


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INTRODUCTION

The Center for Science and Technology Policy Research (CSTPR) was initiated within the Cooperative Institute for Research in Environmental Sciences (CIRES) at the University of Colorado-Boulder in the summer of 2001 and was recognized as an official University center in the summer of 2002 to conduct research, education, and outreach at the interface of science, technology, and the needs of decision makers in public and private settings. Our long-term 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, including research, education and service.

The following report includes CSTPR highlights from 2017 as well as a complete list of activities. Also included are selected activities of CSTPR faculty affiliates as an indication (not exhaustive accounting) of what those affiliates engage in.

LETTER FROM THE DIRECTOR

In 2017, we were pleased to celebrate our 15th anniversary of the Center for Science and Technology Policy Research (CSTPR) against the backdrop of our parent institution's 50th anniversary (the Cooperative Institute for Research in Environmental Sciences) here at CU Boulder. Throughout our celebrations (see page 7 for more) and reflections on our accomplishments in this 'quinceañera' year, we also contemplate our ongoing ambitions going forward as a Center.

Amid the dynamism of contemporary science and technology policy activities in the US and around the world, we remain steadfast in our mission to improve how science and technology policies address societal needs through research, education and service. Today we are a Center that draws strength through our commitments to non-partisan and inclusive engagement with diverse and varied perspectives.

> "CSTPR has then served effectively as a resource for science and technology decision-making as we also work to build capacity among future science-policy scholars and practitioners."

For readers of our annual report who may not know our history, CSTPR was initiated in the summer of 2001 and was recognized as an official University center in the summer of 2002 through the hard work of founding Director Roger Pielke Jr. Roger served as Director from 2001-2008 and again from 2013-2015. In between, Professor William Travis served honorably as Director from 2008-2013. The founding of CSTPR was made possible in part through the leadership of then-CIRES Director Susan Avery. (Susan has recently returned to CIRES and joined CSTPR in 2017 as a Faculty Affiliate (see page 43 for more.)) CSTPR has benefitted greatly from unwavering leadership from CIRES Directors Konrad Steffen (2005-2012) and Waleed Abdalati (2012-present), along with support from Graduate School Dean Ann Schmiesing and Research and Innovation Office Vice Chancellor Terri Fiez at CU Boulder.

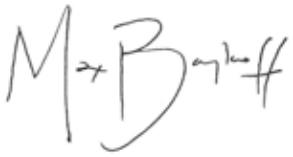
Left Photo: CSTPR Open House event on October 27, 2017. Photo: Max Boykoff.

Together, CSTPR has then served effectively as a resource for science and technology decision-making as we also work to build capacity among future science-policy scholars and practitioners.

As one example of capacity building, in 2017, four members of our CSTPR community stepped up into tenure-track appointments:

- former Research Scientist Katie Dickinson accepted an Assistant Professor position in the Colorado School of Public Health's Environmental and Occupational Health department.
- former Research Affiliate (and former graduate student) Elizabeth "Bets" McNie (Ph.D. CU ENVS 2008) joined the California State University Maritime Academy in Vallejo, CA as an Assistant Professor.
- former Postdoctoral Researcher Jessica Rich joined the Communications and Environmental Studies departments at Merrimack College (Massachusetts) as an Assistant Professor.
- former Graduate Student Elizabeth Koebele (Ph.D. CU ENVS 2017) took up an Assistant Professor post in the Department of Political Science at the University of Nevada Reno.

This annual report contains many highlights emerging from robust collaborations, projects and partnerships. To me, these are indications of the great community of people –core faculty and affiliates, staff, visitors, postdocs, graduate and undergraduate students – here in CSTPR. I am proud of our ongoing efforts and accomplishments while I aspire for us to achieve much more going forward. I hope you enjoy this report on our research, teaching and service in 2017.



Max Boykoff, Director
boykoff@colorado.edu

THE CENTER AT A GLANCE

JANUARY 1 - DECEMBER 31, 2017

*15 PhDs
17 masters
1 Masters/MBA


Forests, Finance & Conservation:
A Turn in US Climate Policy

2017 HIGHLIGHTS

- CSTPR selected four projects through a seed funding competition (described in the Research section below) to develop its four themes in 2018. CSTPR will provide initial support for further development of the winning proposals which will then help carry out the CSTPR mission and vision.

- Rad Byerly, Jr. who passed away in 2016, provided inspiration to and guidance in the creation of CSTPR. In recognition of Rad Byerly's contributions, in 2017 CSTPR established the Radford Byerly, Jr. Award in Science and Technology Policy. The first winner of the Byerly award was Lauren Gifford, a Ph.D. candidate in Geography at CU Boulder (see Education section below for further details).

- The following CSTPR graduate students earned degrees:
  - Kevin Adams (MS, ENVS)
  - Jackie Albert (MS, ENVS)
  - Elizabeth Koebele (PhD, ENVS)
  - Lucy McAllister (PhD, ENVS)
  - Claire Stumpf (MS, ENVS)

- Several CSTPR personnel moved on to pursue new opportunities:
  - Meaghan Daly (Ph.D. CU ENVS 2016) is now a Research Fellow with the ESRC (Economic and Social Research Council) Centre for Climate Change Economics and Policy at the Sustainability Research Institute at the School of Earth and Environment, University of Leeds, UK.
  - Katie Dickinson (Ph.D. Duke University 2008, former CSTPR Research Scientist) is now on the faculty of the Colorado School of Public Health's Environmental and Occupational Health department.
  - Elizabeth Koebele (Ph.D. CU ENVS 2017) began a new position July 1 as Assistant Professor in the Department of Political Science at the University of Nevada Reno.
  - Lydia A. Lawhon (Ph.D. CU ENVS 2016) is an Instructor in the Masters of Environment Program at the University of Colorado Boulder.
  - Lucy McAllister (Ph.D. CU ENVS 2017) began a new position August 1 as a Core Visiting Assistant Professor/Core Renewal Fellow in Environmental Studies at Boston College.
  - Elizabeth "Bets" McNie (Ph.D. CU ENVS 2008, former Western Water Assessment Evaluation Coordinator) began a tenure track position at the California State University Maritime Academy in Vallejo, CA (her alma mater).
  - Amy Quandt (Ph.D. CU ENVS 2017, 2013 Red Cross intern) accepted the position of Global Coordinator with the LandPKS (Land Potential Knowledge System) project, a collaboration between the University of Colorado and New Mexico State University.
  - Jessica Rich (Ph.D. University of North Carolina 2016, former CSTPR Research Scientist) began a new position September 1 as an Assistant Professor in the Communications and Environmental Studies departments at Merrimack College (Massachusetts).
  - Bobbie Klein (JD, University of Wisconsin, 1981; MA, University of Colorado, 1997; former CSTPR Managing Director) retired May 31 but continues to be involved with CSTPR projects.
  - Robin Moser (former CSTPR office manager) took a position as the CIRES Main Office Manager.

- CSTPR welcomed several new additions to the community: faculty affiliates Cassandra Brooks, Amanda Carrico, Katie Dickinson, Justin Farrell (formerly a CSTPR visitor), Kathleen Hancock, Peter Newton, and Phaedra Pezzullo; visiting researcher Matthew Druckenmiller; graduate students Patrick Chandler and Olivia Pearman; and visitor Anna Kukkonen. Faculty affiliate and CSTPR co-founder Susan Avery has returned to Boulder and now has office space at CSTPR, as do faculty affiliates Cassandra Brooks and Amanda Carrico and visiting researcher Matthew Druckenmiller.

- Lisa Dilling was awarded a Leverhulme Visiting Professorship, hosted by Oxford University, United Kingdom, where she spent her sabbatical during the 2016-2017 academic year.

- Lisa Dilling, Abigail Ahlert, and Matthew Druckenmiller presented at the 2017 Fall American Geophysical Union meeting (titles listed in Appendix).

- Lisa Dilling was featured in an issue of the CIRES magazine "Spheres" focusing on water.

- Max Boykoff contributed to the Lancet Countdown Report. This report was mentioned by 297 media outlets including The Guardian, NBC News, Forbes, NPR, and Time magazine.

Left Photo: Carol Byerly introducing Lauren Gifford, the first winner of the Byerly award, at a noontime seminar on September 13, 2017. Photo: Jennifer Katzung.

CSTPR Director, Max Boykoff, giving an introduction at CSTPR's 15th Anniversary on September 28, 2017. Photo: Katie Weeman.

2017 HIGHLIGHT

THE 15TH ANNIVERSARY OF CSTPR: SCIENCE AND TECHNOLOGY POLICY RESEARCH IN A UNIQUE SPACE

by Alison Gilchrist, CSTPR Writing Intern

This year, the Center for Science and Technology Policy Research (CSTPR) celebrates its fifteenth anniversary since being recognized as an official University center in 2002. In its fifteen years, CSTPR has weathered major political, social and economic changes—not to mention some severe cold snaps. Through it all, the center has been an important bridge between science and policy for all of the faculty and students who have been involved, as well as the many CSTPR collaborators.

To celebrate the anniversary, CSTPR hosted a keynote address by Brian Deese, Former Climate and Energy Advisor to US President Obama. At the event, Max Boykoff, current director of CSTPR, gave a short introduction in which he talked about the Center's beginnings.

He quoted Susan Avery, the Cooperative Institute for Research in Environmental Sciences (CIRES) Director from 1994 to 2004 and Assistant Director of CSTPR at the time it was founded: "Developing the Center provided a means of establishing research and education programs that focused on the growing need for a connection between science and society."

Avery called the period in which CSTPR was developed an "interesting and exciting time"—sentiments expressed by many of the people who were instrumental in founding the Center and defining its goals. Boykoff, who arrived in 2009, says that CSTPR was already an exciting and unique place by the time he became director in January 2016.

"There aren't that many places where there can be these kinds of cross-disciplinary collaborations undertaken in consistent, sustained and systematic ways," said Boykoff. "So an institute like CIRES—well, that was one of the reasons I came to Boulder to take this job. CSTPR really occupies a unique and important space."

In 2016, Boykoff took the opportunity to clearly define the goals and priorities of CSTPR.

"When I stepped in as Director, we had an opportunity to take a fresh look," said Boykoff. "There's a really broad expanse of science and technology policy research, so we went through a process of identifying some of our priority areas and themes."

Four themes solidify the vision and mission of CSTPR in 2017 and going forward. The first, 'Science and Technology Policy', involves studying decisions made at the science-policy interface. This theme describes studies of research processes intended to co-produce science between scientists and stakeholders—a critically important goal for those who want to make science immediately useful for policy makers and the public.

'Innovations in Governance and Sustainability', a key theme for many CSTPR researchers, involves studying how sustainability challenges can be addressed by policy. As climate change becomes increasingly addressed in policy, projects related to this theme continue to be incredibly important contributions that CSTPR makes. Similarly, pursuing research along the 'Drivers of Risk Management Decisions' theme, for example by studying how individuals and institutions make decisions to respond and adapt to perceived risks, can help us understand the ways in which governments can respond to crises related to climate change.

Brian Deese, former climate and energy advisor to US President Obama, giving a keynote address at CSTPR's 15th Anniversary on September 28, 2017. Photo: Katie Weeman.

Finally, projects in the theme of 'Communication and Societal Change' helps analyze how representations of science and technology can increase or hamper their reach and impact in various target sectors and in the greater public. Boykoff discussed how all four of the themes are clearly visible in the research projects being carried out by CSTPR scientists today.

Students and faculty who have passed through CSTPR know well the importance that the Center serves in the scientific and policy communities. Elizabeth "Bets" McNie, one of the first graduate students at CSTPR, spoke about the role that CSTPR played in her own career path.

"CSTPR has created a community that has really supported me and my research over the years and has given me resources to help me do my research better," said McNie. "Most of those resources have been the people here and communicating with them and getting ideas from them and knowing that there are like-minded folks who "get it"—get the science-policy nexus and the challenges of working at the nexus."

Over fifteen years, CSTPR has been in a unique position to house graduate students, visitors, postdocs, faculty, and staff who feel similarly, and has formed a strong network of scientists and researchers who feel passionately about combining science and policy research.

"I like having a foot in the sciences, and then bridging into social sciences and humanities questions from there," said Boykoff. "It's important to recognize the challenges and threats to science and environment and some of the critical issues around policy decision making."

Boykoff is optimistic about the future of CSTPR.

"The state of our center—we're in a really strong position. We have a great group of core faculty, we're strengthening with affiliates, the four areas we've identified and now are pursuing are ones that I feel really good about," said Boykoff. "While I feel like the scale of challenge is as big as it has been, there's also a skilled response that we've put together that I feel proud of. We're stepping up in CSTPR in this critical time. "

Bruce Goldstein introducing Andrew Rumbach and Esther Sullivan for their talk "The Socio-Spatial Dimensions of Disaster Risk in Mobile Home Parks: Learning from the 2013 Colorado Floods" on November 1, 2017. Photo: Jennifer Katzung.

CORE FACULTY

CSTPR core faculty are University of Colorado faculty who conduct research through CSTPR in accordance with agreements with their home departments, and who typically maintain an office and active presence in the Center. They are appointed by the CSTPR Director for renewable 2- year terms.

MAX BOYKOFF

Director

Maxwell T. Boykoff is the Center Director in the Center for Science and Technology Policy, which is part of the Cooperative Institute for Research in Environmental Sciences at the University of Colorado-Boulder. He also is Associate Professor in the Environmental Studies program and is Adjunct faculty in the Geography Department. In addition, Max is a Senior Visiting Research Associate in the Environmental Change Institute at the University of Oxford.

He holds a Ph.D. in Environmental Studies from the University of California-Santa Cruz and Bachelor of Sciences in Psychology from The Ohio State University. Max has ongoing interests in climate adaptation, cultural politics and environmental governance, science-policy interactions, and political economy and the environment, and he has experience working in North America, Central America, South Asia and Europe.

Home page: http://sciencepolicy.colorado.edu/about_us/meet_us/max_boykoff

Twitter: @boykoff

LISA DILLING

Associate Director

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 spent the 2016-17 academic year on sabbatical at Oxford under a Leverhulme Visiting Professorship, hosted by University of Oxford, UK. Leverhulme Foundation UK.

Home page: http://sciencepolicy.colorado.edu/about_us/meet_us/lisa_dilling

Twitter: @LisaD144

BRUCE GOLDSTEIN

Bruce Goldstein 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

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

RESEARCH

CSTPR conducts research at the interface of science and decision making on a broad range of topics, organized under the following themes:

- Science and Technology Policy
- Innovations in Governance and Sustainability
- Drivers of Risk Management Decisions
- Communication and Societal Change

CSTPR researchers also engage in many related cross-cutting projects. Examples of CSTPR's 2017 research projects are described below.

SCIENCE AND TECHNOLOGY POLICY

Under this theme we analyze 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. Projects include:

Balancing Severe Decision Conflicts Under Climate Extremes in Water Resource Management

Lisa Dilling; PI; project team includes Joseph Kasprzyk and Rebecca Smith, University of Colorado Department of Civil, Environmental and Architectural Engineering; Imtiaz Rangwala, Kristen Averyt, and Eric Gordon, CIRES/WWA; Laurna Kaatz, Denver Water; Leon Basdekas, Colorado Springs Utility

The project team represents an interdisciplinary collaboration (policy, social science, engineering, operations research, climatology) between academics and water utility practitioners from 6 water providers in Colorado's Front Range. Water managers and researchers are working 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 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 will query managers 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 will analyze these results and make some inferences about the viability of MOEAs and the larger issue of incorporating new tools into practice for urban water utilities.

Knowledge, Power and the Coproduction of Climate Information for Adaptation to Climate Change in Tanzania

Lisa Dilling, Meaghan Daly, Mara Goldman and Eric Lovell

This project aims to improve understanding of processes to effectively link climate information and adaptation at

Left Photo: View of the South Platte River in Cheesman Canyon above Deckers and Sedalia, Colorado. Photo: Jeremiah Osborne-Gowey.

Photo from the 2017 Colorado Climate Retreat which met to examine recent and emerging research on the interface of climate change and social psychology, broadly construed. Pictured above are Ken Savitsky (Williams College), Adam Pearson (Pomona College), Kimin Eom (UC Santa Barbara), Amanda Carrico (CU Boulder), David Sherman (UC Santa Barbara), Lisa Dilling (CU Boulder) Sarah Anderson (UC Santa Barbara), Leaf Van Boven (CU Boulder), Phillip Ehret (UC Santa Barbara), Shahzeen Attari (Indiana University), Jenny Cole (CU Boulder). Photo: Shahzeen Attari.

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 integrated within adaptation decision-making and policy development processes. This project is supported by the NSF, CU Seed Grant Fund and the USAID.

Making Sense of Climate Engineering

Lisa Dilling and Rachel Hauser with partners in Sweden, Japan and New Zealand

Climate engineering refers to technologies for large-scale, deliberate manipulation of the Earth's climate by either removing greenhouse gases from the air or by applying solar reflective approaches in order to avoid an escalating global warming. It includes a wide range of proposed methods such as ocean fertilization, space mirrors, air capture, injecting sulfur aerosols into the stratosphere, and enhancing marine-cloud reflectivity. These methods vary greatly in their technical aspects, scope in time and space, potential environmental impacts, timescales of operation and the legal, ethical, and governance issues that they pose. This project aims to explore the formation of social representations around emerging and complex technologies for large-scale, deliberate manipulation of the global climate, often referred to as geoengineering or climate engineering. The project is examining sense-making around climate engineering in four different countries (the United States, Japan, New Zealand, and Sweden are currently included in the study).

The project produced the following article in 2017:

Victoria Wibeck, Anders Hansson, Jonas Anshelm, Shinichiro Asayama, Lisa Dilling, Pamela M. Feetham, Rachel Hauser, Atsushi Ishii, Masahiro Sugiyama, 2017. Making sense of climate engineering: a focus group study of lay publics in four countries. Climatic Change 145: 1. https://doi.org/10.1007/s10584-017-2067-0.

INNOVATIONS IN GOVERNANCE AND SUSTAINABILITY

Under this theme we study innovations in governance and the complexity of sustainability challenges, including the development of (1) new institutions that transcend conventional political boundaries or bring actors together in new ways, (2) new tools and experimental interventions for inducing behavioral change or enabling participation in decision making, and (3) new forms of association in the creation and protection of collective goods. Projects include:

Environmental Rights and Adaptation to Climate Change

Steve Vanderheiden

This project is a collaboration 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.

Locally Managed Marine Areas

Bruce Goldstein, PI; **Jeremiah Osborne-Gowey**, graduate student; Vicki Goldstein, associate

Natural resource and conservation practitioners are increasingly realizing the importance of having networks of locally managed marine areas (LMMAs). These are areas of ocean managed by local, coastal communities for the protection of fisheries, culture, and biodiversity and have proven effective in reducing local conflicts over fisheries, conserving marine biodiversity and improving catches. Globally, there are number of marine area networks each encompassing a diversity of approaches to coastal management and governance. What is common to LMMA's, however, is the shared involvement of coastal communities in marine and fisheries management.

The LMMA Network is a group of practitioners involved in various community-based marine conservation projects around the globe who have joined together to learn

The Grand Falls of the Little Colorado River, located on the Navajo Nation in northern Arizona. Photo: Phil Konstantin/Creative Commons.

how to improve their management efforts and spans the people and cultures of Southeast Asia, Melanesia, Micronesia, Polynesia and the Americas. One of the primary goals of the LMMA Network is to learn under what conditions using an LMMA strategy works, doesn't work, and why. We are working with the LMMA Network to better understand how learning networks evolve and adapt to changing knowledge and attitudes via adaptive policy-making.

"Social-Impact Network" for Wildfire Adaptation

Bruce Goldstein

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 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 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 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. The project's 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.

STEM Learning Network

Bruce Goldstein

STEM Education Centers serve as incubators for transformational changes of higher education practices and culture. By creating and studying a national network of university-based centers of STEM education, we will incubate, support, and leverage key institutional resources – both individual centers and a national network of centers. Research on a network of these centers can delineate the potential impacts of the network itself, the nature of such a network, and foundational studies on how such a network is created. These studies will serve to inform the development of the network itself, providing a dynamic, more robust, and more likely-to-be-sustained network. This project will engage in three intertwined components:

1. seeding the development of a network through programmatic work,

2. studying the capacities and mechanisms of individual centers (how they operate within institutional contexts), and

3. researching the development of a network of such centers, identifying how such a network forms, and what this network may accomplish.

DRIVERS OF RISK MANAGEMENT DECISIONS

Under this theme we interrogate 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. Projects include:

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

Lisa Dilling, co-PI: Ben Livneh, Lead PI, CEAE 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; Rebecca Smith, ENVS Graduate Student Researcher

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.

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

Lisa Dilling

Municipalities have responded in various ways to past droughts, enacting a variety of policies to cope with temporary shortages in water supply. These measures have been largely successful at reducing short-term demand during drought events, as well as constraining the long-term per capita consumption of water even as population grows. Now, though, water systems also face the likelihood of long-term climate change, raising a fundamental question: have previous responses to short-term drought events led to more resilient urban water systems across climate time scales? This line of inquiry requires addressing the dynamic nature of vulnerability, which may vary across scales, sectors, and over time. With this in mind, we propose to examine how drought policies interact with both short-term drought and long-term climate change through detailed quantitative and qualitative analysis of selected municipal water systems. We are pursuing a three-step approach that includes a comparative literature review of the drought management and climate adaptation literatures, preliminary interviews focused on drought response of 20 municipalities across the U.S. and in-depth case studies of three metropolitan water systems.

Red Cross/Red Crescent Climate Centre Internship Program

Max Boykoff

CU-Boulder has partnered with the Red Cross Red Crescent Climate Centre (RCRCCC) to place graduate students in locations in eastern and southern Africa each summer. This collaborative program targets improvements in environmental communication and adaptation decision-making as well as disaster prevention and preparedness in the humanitarian sector. It connects humanitarian practitioners from the Red Cross/Red Crescent Climate Centre – an affiliate of the International Federation of Red Cross and Red Crescent Societies – with graduate student researchers at the University of Colorado who are interested in science-policy issues. Through this program we strive to accomplish three key objectives:

1. to improve the capacity of humanitarian practitioners within International Federation of Red Cross and Red Crescent Societies network at the interface of science, policy and practice

2. to help meet needs and gaps as well as work as a research clearing house in environmental communication and adaptation decision-making in response to climate

Red Cross/Red Crescent Climate Centre Intern, Katie Chambers traveled to Ethiopia in 2017 to develope flood inundation maps for communities downstream of hydroelectric dams. Here she shows in the photo that water from the Koka lake is used to irrigate farmland. Photo: Katie Chambers.

Green Suits Your City is a participatory photography project by Inside the Greenhouse that infuses embodied creativity into the greening of our cities. It is a collection of photographs from cities around the world by over fifty different photographers of people in full green suits in nearly every pose imaginable. Photo: Beth Osnes.

variability and change, as identified through Red Cross/ Red Crescent Climate Centre priorities and projects

3. to benefit graduate students by complementing the classes and research that they undertake in their graduate program with real-world experience in climate applications and development work

Understanding the Drivers of Adaptation at the Municipal Level in CO, WY and UT

Lisa Dilling

This Western Water Assessment-funded project is investigating why some local decision makers choose to adapt to climate-related stress and risk while others do not. Our idea is to systematically investigate the conditions under which local decision-makers in cities and large towns in Colorado, Utah, and Wyoming decide to adapt (or not) to increased climate-related risk and hazards. The two-fold objective of the project is:

1. to collect, organize, and analyze original data on the causes and consequences of local adaptation decision making

2. to produce new knowledge that is relevant to the work of WWA and its key constituents

The project produced the following journal article in 2017:

Dilling, L., E. Pizzi, J. Berggren, A. Ravikumar, and K. Andersson, 2017. Drivers of adaptation: Responses to weather- and climate-related hazards in 60 local governments in the Intermountain Western U.S. Environment and Planning A 1-21, doi: 10.1177/0308518X16688686.

COMMUNICATION AND SOCIETAL CHANGE

Under this theme we experiment and conduct critical analysis as we study communication strategies and engagement in varying cultural, political and societal contexts. Projects include:

Inside the Greenhouse

Max Boykoff, Beth Osnes, Rebecca Safran, co-founders

Inside the Greenhouse works 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.

Media and Climate Change Observatory (MeCCO)

Max Boykoff

MeCCO monitors fifty-two sources across twenty-eight countries in seven different regions around the world for coverage of climate change. We assemble the data by accessing archives through the Lexis Nexis, Proquest and Factiva databases via the University of Colorado libraries. These sources are selected through a decision processes involving weighting of three main factors:

1. geographical diversity (favoring a greater geographical range)
2. circulation (favoring higher circulating publications)
3. reliable access to archives over time (favoring those accessible consistently for longer periods of time)

This project produced the following:

Boykoff, M., Andrews, K., Daly, M., Katzung, J., Luedecke, G., Maldonado, C. and Nacu-Schmidt, A., 2017. 'Media and Climate Change Observatory Monthly Summary of News' Center for Science and Technology Policy Research, Cooperative Institute for Research in Environmental Sciences, University of Colorado, http://sciencepolicy.colorado.edu/icecaps/research/media_coverage/summaries.

Boykoff, M., Daly, M., McAllister, L., McNatt, M., Nacu-Schmidt, A., Oonk, D., and Pearman, O., 2017. World Newspaper Coverage of Climate Change or Global Warming, 2004-2017. Center for Science and Technology Policy Research, Cooperative Institute for Research in Environmental Sciences, University of Colorado, http://sciencepolicy.colorado.edu/media_coverage.

An example of a CSTPR cross-cutting project that falls within more than one of the other themes.

ICECaPs: International Collective on Environment, Culture & Politics

Max Boykoff

The International Collective on Environment, Culture and Politics is a research group that examines some of today's most pressing environmental issues. ICECaPs members and affiliates cross disciplines to apply a wide range of theories and perspectives to study issues at the human-environment interface. We work across scales from the individual to the global. ICECaPs 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, we seek to improve understanding and broaden the discussion about the nature of evolving environmental challenges.

SEED FUNDING COMPETITION

CSTPR launched an internal seed funding competition to support projects that would further develop its new research themes. The following proposals were selected for initial support. These projects will help carry out CSTPR's mission and vision:

- Science and Technology Policy Theme and Drivers of Risk Management Decisions Theme: Emerging Responses to Genetically Modified Crops in Boulder County (Amanda Carrico, lead)
- Innovations in Governance and Sustainability Theme: Water Equity Project Workshop (Steve Vanderheiden, lead)
- Science and Technology Policy Theme and Drivers of Risk Management Decisions Theme: Building a Network of VAR (Vulnerability, Adaptation, Resilience) Researchers in the Intermountain West (Lisa Dilling, lead)
- Communication and Societal Change Theme: Environmental and Science Communication Workshops and Curriculum (Phaedra C. Pezzullo, lead)

RESEARCH HIGHLIGHT

2017 LANCET COUNTDOWN ON HEALTH AND CLIMATE CHANGE RELEASED

CSTPR Director, Max Boykoff contributed to comprehensive, UK-led report on critical connections between climate change and human health.

Climate change is unequivocally affecting the health of people around the world today, with a disproportionate impact on vulnerable populations, according to an international report published in the prestigious medical journal Lancet: http://www.lancetcountdown.org/the-report.

The delayed response to climate change during the past 25 years has already jeopardized human life and livelihoods around the globe, concluded the report, whose 55 authors includes CIRES Fellow Max Boykoff, a University of Colorado Boulder associate professor of Environmental Studies and Director of the Center for Science and Technology Policy Research.

Boykoff and his colleagues contributed to the Lancet report an assessment of trends in scientific publications about climate change and human health—such papers are increasing markedly, the team found. And they found that media coverage of climate change and human health is on the rise globally, but not so in Europe or North America.

"We care about media coverage because the media help foster individual and community discussion about the challenges associated with a changing climate," said Boykoff. "And media coverage can influence policy decision making, too," said Boykoff.

The new report, "The 2017 Report of the Lancet Countdown on Health and Climate Change," is an international research collaboration that provides a global overview of the relationship between public health and climate change. This year's report follows the 2015 Lancet Commission on Health and Climate Change.

After considering 40 indicators, the report's authors described several overarching conclusions:

1. The human symptoms of climate change are unequivocal and potentially irreversible, affecting the health of populations around the world, today.
2. The delayed response to climate change over the past 25 years has jeopardized human lives and livelihoods.

3. Health professionals are essential to drive forward progress on understanding and responding to the impacts of climate change.
4. Although action has been historically slow, the past five years have seen an accelerated response to climate change, and in 2017, momentum is building across a number of sectors.

Report contributors include academics and technical experts from 24 institutions around the globe, such as the World Bank, World Health Organization, University College London, and Tsinghua University in Beijing.

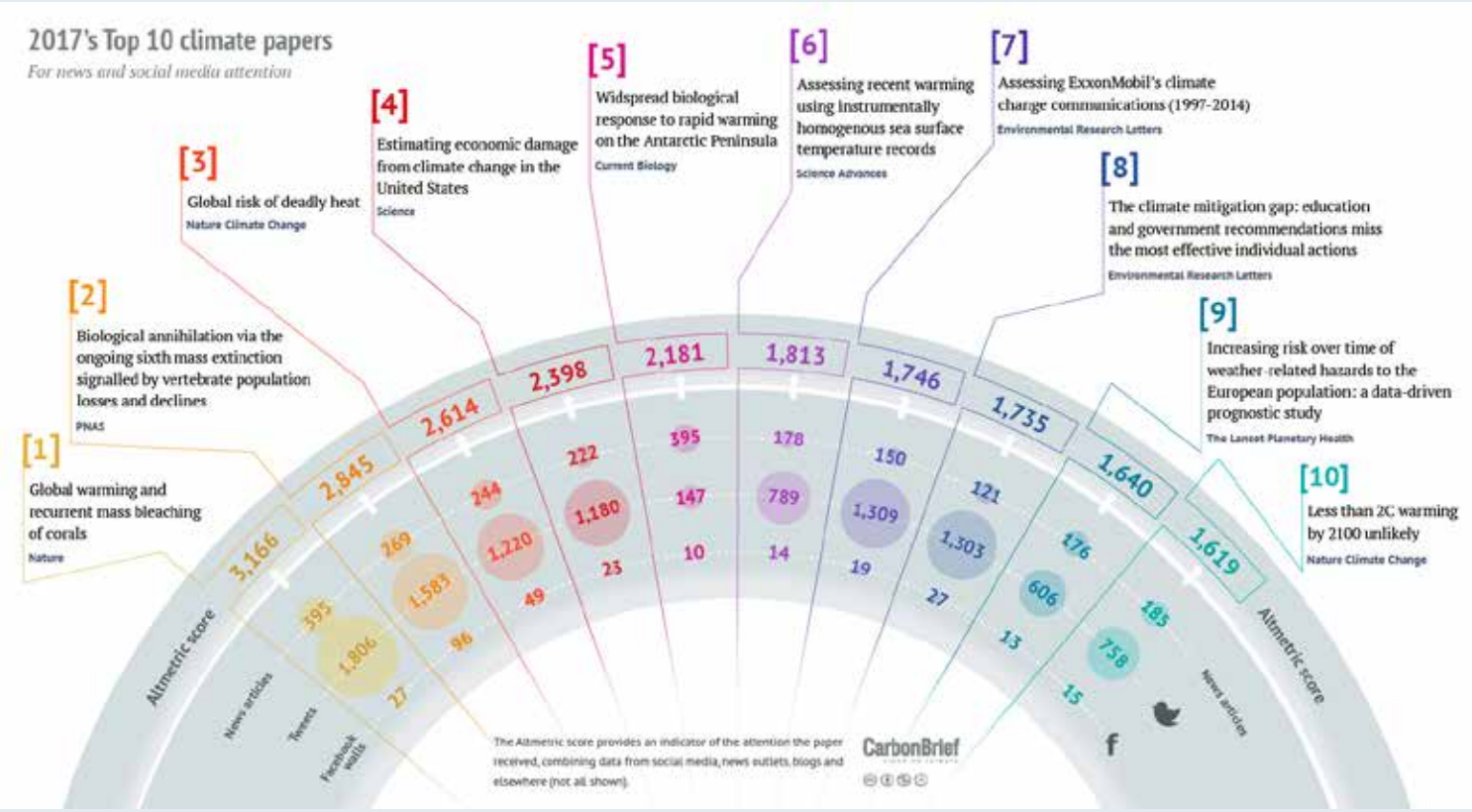
Researchers used 40 unique indicators (including health themes such as exposure and vulnerability to climate change, mitigation techniques, and economic impacts) to assess the global response to climate change and its associated impacts on human health. For example:

- 125 million medically vulnerable adults are exposed to heatwaves globally between 2000 and 2016.
- 87 percent of cities globally are in breach of the World Health Organization's air pollution guidelines.
- Undernutrition is the largest health impact of climate change in the 21st century.
- Over one billion people globally will need to migrate within 90 years due to a rise in sea level.
- Weather-related disasters are up 46 percent since 2000.

The report calls for global action in the wake of these impacts, recommending:

- Investing in climate change and public health research,
- Scaling up financing for climate-resilient health systems, and
- With human health concerns in mind, phasing out coal-fired power and expanding access to renewable energy to help the 2.7 billion people in the world who rely for energy on the burning of unsafe and unsustainable solid fuels.

This CIRES News story was modified from Lancet Communications: https://cires.colorado.edu/news/2017-lancet-countdown-health-and-climate-change-released.



The Lancet Report was the 11th most featured climate paper in the media in 2017 according to CarbonBrief. Source: https://www.carbonbrief.org/analysis-the-climate-papers-most-featured-in-the-media-in-2017.

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

EDUCATION

An important part of CSTPR'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 CSTPR, in collaboration with the Environmental Studies Program, sponsors a certificate in Science and Technology Policy for graduate students. CSTPR faculty also teach classes and advise individual graduate students. The Red Cross/Red Crescent internship for graduate students is now in its 5th year. For the 4th year CSTPR organized an annual competition to send two highly qualified CU students to the AAAS "Catalyzing Advocacy in Science and Engineering" workshop. In 2017 CSTPR launched the Rad Byerly, Jr., Award in Science and Technology Policy.

RAD BYERLY, JR., AWARD IN SCIENCE AND TECHNOLOGY POLICY

Rad Byerly, Jr., who provided inspiration and guidance for the founding of CSTPR, passed away in January 2016 after an impressive career that included more than twenty years as staff on and ultimately Director of the Science Committee of the U.S. House of Representatives. He also was Director of the Center for Space and Geosciences Policy at CU Boulder. Rad spent the last years of his career with CSTPR, where he was known as a mentor, adviser and friend with a wicked sense of humor.

In recognition of Rad's contributions to and impact on the CSTPR community, in 2017 CSTPR established the Radford Byerly, Jr. Award in Science and Technology Policy. Through this program CSTPR will periodically present a monetary award to a CU Boulder graduate student with a demonstrated commitment to making a significant contribution to science and technology policy in his or her work.

The first winner of the Byerly award was Lauren Gifford, a Ph.D. candidate in Geography at CU Boulder. Her research explores the intersection of global climate change policy, conservation, markets and justice. Her dissertation asks how, and by whom, climate and conservation policies are enacted– with a focus on forest carbon offset development in Maine and Peru. She holds an MA in Environmental Studies from Dartmouth College and a

Lauren Gifford, recipient of the 2017 Rad Byerly, Jr. Award in Science and Technology Policy. Photo: Lauren Gifford.

BA in Communications from American University. Lauren used the grant, in part, to support summer dissertation research in Grand Lake Stream, Maine, and shared some of her research findings at the CSTPR seminar series on September 13, 2017. She also wrote a piece for the CSTPR blog, What is a forest carbon offset, anyway?

GRADUATE CERTIFICATE IN SCIENCE AND TECHNOLOGY POLICY

The Graduate Certificate in Science and Technology Policy program, now in its 14th 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 9 students from a variety of CU departments and institutes. Thirty students have received certificates from the program and have found careers in government, academia and non-profits.

COURSES TAUGHT BY CENTER CORE FACULTY IN 2017

- ENVM 5003: Ethics and Values in Environmental Leadership (Vanderheiden)
- ENVS 1000: Introduction to Environmental Studies (Boykoff)
- ENVS 3022: Climate Politics and Policy (Boykoff)
- ENVS 3173: Creative Climate Communications (Boykoff)
- ENVS 4840: Undergraduate Independent Study (Boykoff)
- ENVS 5100: Special Topics in Environmental Studies: Analyzing Socio-Environmental Systems (Goldstein)
- ENVS 5100: Special Topics in Environmental Studies: Environmental Collaboration (Goldstein)
- FYSM 1000: First Year Seminar – Science and Environmental Communication (Boykoff)
- PSCI 2004: Intro to Western Political Thought (Vanderheiden—spring and fall semesters)
- PSCI/ENVS 3064: Environmental Political Theory (Vanderheiden)
- PSCI 3206: Environment and Public Policy (Vanderheiden)

COURSES TAUGHT BY CENTER VISITORS

- ENVS 5100: Science and Technology Policy (Paty Romero Lankao and Jack Stilgoe)
- ENVS 4100: How to Effectively Represent Climate Change in a 21st Century Multi-Media World, Summer (Bienvenido León)

Bienvenido León speaking to polar researchers as part of the US National Committee of the Association of Polar Early Career Scientists (USAPECS) preceding the International Glaciological Society meeting. Photo: Max Boykoff.

2017 Red Cross/Red Crescent Climate Centre Fieldwork team enjoying fresh sugar cane after completing a set of interviews. Photo: Katie Chambers.

Koka Dam spillway, where water exits and flows to downstream communities. Photo: Katie Chambers.

2017 CENTER GRADUATES

The following CSTPR graduate students earned degrees in 2017:

- Kevin Adams (MS, ENVS)
- Jackie Albert (MS, ENVS)
- Elizabeth Koebele (Ph.D., ENVS)
- Lucy McAllister (Ph.D., ENVS)
- Claire Stumpf (MS, ENVS)

RED CROSS/RED CRESCENT CLIMATE CENTRE INTERNSHIP PROGRAM

Now in its 5th year, the Red Cross/Red Crescent Climate Centre Internship Program has placed graduate student interns in Zambia, South Africa, Uganda, Kenya and Ethiopia. The 2017 intern, Katie Chambers, spent the summer in Ethiopia developing flood inundation maps for communities downstream of hydroelectric dams. These maps will guide the development of Early Warning Early Action frameworks for the Ethiopian Red Cross Society and IFRC. Her extensive notes from the field are posted at: http://sciencepolicy.colorado.edu/students/redcross/chambers.

AAAS CASE WORKSHOP COMPETITION

For the 4th year CSTPR organized a competition to select two highly qualified University of Colorado students to attend the American Association for the Advancement of Science "Catalyzing Advocacy in Science and Engineering" Workshop in Washington, D.C. Those students--Adalyn Fyhrie (Astrophysical and Planetary Science) and Caroline Havrilla (Ecology and Evolutionary Biology)—participated in a CSTPR panel discussion about the workshop and also provided reports about their experiences. Financial support for the competition is provided by the University of Colorado Graduate School and Center for STEM Learning.

2017 AAAS "CASE" Workshop Competition winners Caroline Havrilla and Adalyn Fyhrie meet with U.S. Congressman Jack Bergman (from Michigan). Photo: Heather Bené.

EDUCATION HIGHLIGHT

AAAS CASE COMPETITION

Each year CSTPR hosts a competition to send two CU Boulder students to Washington, DC to attend the AAAS "Catalyzing Advocacy in Science and Engineering" workshop. During the workshop portion, the winners learned about the structure and organization of Congress, the federal budget and appropriations processes, and tools for effective science communication and civic engagement. In addition, the winners participated in interactive seminars about policy-making and communication. Below are comments by Caroline Havrilla and Adalyn Fyhrie about this year's workshop.

Participating in the 2017 AAAS Workshop in Washington, D.C. was a truly transformative experience for me as a scientist. The three-day workshop was a thought-provoking crash course in science policy, in the company of a diverse cohort of scientists from around the country, and exposed me to the complex world of policymaking. Each day of the workshop was jam-packed with a cohesive line-up of sessions with talks from speakers who shared with us their expertise on a wide range of topics in science policy. We learned about policymaking, the federal budget process, and importantly, how scientists can advocate for science and contribute to decision making within the science policy realm.

One consistent message throughout the workshop was the important distinction between "policy for science" and "science for policy." Policy for science mostly refers to the federal budget process and the allocation of federal funds to scientific research and development. Science for policy, on the other hand, is the process whereby scientists communicate science to policymakers to inform policy-making. During the CASE workshop, my cohort first learned about policy for science, mainly focusing on the many challenges of the federal budget process, and how these challenges impact science. One particularly striking issue we were exposed to concerned the balance, or perhaps more fittingly, the imbalance, between mandatory and discretionary spending in the US federal budget. Mandatory spending, comprised of entitlement programs like Medicare, Medicaid, and Social Security, makes up about two thirds of the circa $4.1 trillion US federal budget. Discretionary spending on the other hand, makes up only a third of the federal budget. Because there is bipartisan opposition to cutting entitlement programs, when the budget needs to be trimmed, cuts are made to the non-defense discretionary budget, which is already a fairly small slice of the budgetary pie. Unfortunately, this is the category in which funding for scientific organizations like NSF, NASA, and the EPA falls, making those programs

vulnerable to budget cuts when their activities are not deemed "necessary" spending. For me, learning about this aspect of the federal budget process brought into perspective the overarching challenges of continued federal science funding, and made it clear that effective advocacy for science is critical.

After learning about the intricacies of policy for science, we turned our focus to science for policy, and how to become more effective science communicators. According to many of the science policy officials we met with in Washington, scientists often miss out on valuable opportunities to effectively communicate their science for policy because their messages often misalign with the needs of policymakers. This misalignment often results from fundamental differences in what information science and policy spheres incorporate into their decision making processes. Policymakers often make decisions based on big-picture, culturally-based value systems, while, in contrast, scientists typically make decisions based on highly specific, data-based evidence. Scientists can more effectively communicate with policymakers by 1) recognizing this communication barrier exists, and 2) incorporating storytelling and discussions of the applications and benefits of their research to addressing broader societal issues. Science is only one small piece of the decision making process, but by aligning research to economic, environmental, and societal outcomes, we can better advocate for incorporation of science into policymaking.

Caroline Havrilla - Ecology and Evolutionary Biology, University of Colorado Boulder

Caroline Havrilla and Adalyn Fyhrie meet with U.S. Congressman John Garamendi (from California).

I reached the end of two and a half days invigorated, inspired, and exhausted. I left with more questions than I had arrived with, which I took as a sign of the intensity and breadth of knowledge that I had been exposed to. The CASE workshop provided discussions with an impressive lineup of experts in the field of science policy, from members of Congress to employees of national science agencies. Each moment and every speaker was an opportunity to crack the world of science policy open and I was not about to let that chance go to waste.

I was impressed to learn about the breadth of science policy that is present in our nation's capitol. For starters, "science policy" has different definitions — there is science for policy (using science to make policy decisions that are backed by scientific facts) and policy for science (making policy that provides scientific funding and support for research and development). The CASE workshop focused on policy for science, how it is made, and how to advocate for it.

The workshop also exposed me to the wide variety of people who contribute to policy for science. Going in, I knew that members of Congress were important to science policy (they are the ones making the policies, after all), but the CASE workshop demonstrated that they are just the tip of the iceberg. Among many other contributors, there are also scientists who are employed to provide reports and briefings on science-related matters for members of government, employees of national science agencies, and scientists who come for a single day to advocate for science funding. During the CASE workshop I fit into the final category (scientist/advocate), but I had a lot of learning to do before I felt ready to meet with our members of Congress and their staff on the final day of the workshop.

In order to effectively advocate for policy for science, we had to first understand how policy is made and the essence of the mechanics of government. The two biggest takeaways for me were: first, that government doesn't work the way it appears to in the news or during election time (it is, in general, much less partisan). Second, that governance is much more emotional than logical (stories can be more effective than facts). Honestly, these were counterintuitive to me, especially the importance of stories instead of facts in getting policy to pass. Many scientists (and I am no exception) want to solve problems with logic and facts, but this is not the most effective way to advocate for science and science funding to Congress. People respond to stories, and that is what we had to deliver.

Adalyn Fyhrie, Astrophysical and Planetary Science, University of Colorado Boulder

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OUTREACH

CSTPR 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. Outreach efforts over the past year have included the following below.

CSTPR 15TH ANNIVERSARY CELEBRATION

CSTPR celebrated its 15th anniversary September 28 with a public keynote address by Brian Deese, Former Climate and Energy Advisor to US President Obama. Deese presented "The Case for Clear-Eyed Optimism for Future U.S. and International Science-Policy."

CSTPR OPEN HOUSE

CSTPR held an 'Open House' for alumni and friends of CSTPR on October 27, in partnership with the CU Alumni Association's 2017 Homecoming Weekend.

NOONTIME SEMINAR SERIES

CSTPR held 15 talks in its noontime seminar series. See the Appendix for a complete list of titles and speakers. CSTPR provides live webcasts of noontime talks to allow remote viewing. The webcasts are also available on our website after the event: http://sciencepolicy.colorado.edu/news/webinars.

PROMETHEUS 2.0

CSTPR revived its blog, Prometheus, in 2016 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. Examples of 2017 Prometheus blog posts include:

- Renewable Energy: Now This Is How Policy Is Supposed To Work!, by Paul Komor, CSTPR Faculty Affiliate and Suzanne Tegen, CSTPR Visiting Scholar
- Why Can't We All Just Get Along?: Collaborative Governance On The Colorado River, by Elizabeth Koebele, former CSTPR graduate student
- Tax Reforms, Tuition Waivers, And The Role Of Policy-Relevant Knowledge Production In A Contemporary Society, by Steve Vanderheiden, CSTPR Core Faculty member, Political Science and ENVS Faculty

Left Photo: CIRES Director, Waleed Abdalati, making a toast at CSTPR's 15th Anniversary reception on September 28, 2017. Photo: Katie Weeman.

CSTPR Noontime Seminar "AAAS "Catalyzing Advocacy in Science and Engineering" Workshop Student Competition Panel Discussion" with Heather Bené, University of Colorado Office of Government Relations and past competition winners, Angela Boag, Carrie Havrilla, and Adalyn Fyhrie (via skype). Photo: Ami Nacu-Schmidt.

FACULTY AND STUDENT PRESENTATIONS

In addition to noontime seminar talks, CSTPR faculty and students gave numerous presentations over the past year on a wide variety of topics. A complete list can be found in the Appendix.

MEDIA

CSTPR core faculty or their work were quoted, cited, interviewed or referred to 323 times in numerous media including the Associated Press, CNN, The Guardian, Nature, New York Times, Reuters, and Washington Post. A complete list with links to articles is located at http://sciencepolicy.colorado.edu/news/in-the-news.html

Examples of faculty affiliates media references:

David Ciplet

- Colorado Arts and Sciences Magazine, University of Colorado Boulder. "Global climate-change pacts moving toward market-based approaches, scholar finds," research profile, November 29.
- CU Engage. "New podcast series "The Brink" shares stories of inequality, struggle and transformation."
- KGNU. Connections. "The Just Transition Collaborative." Extended interview on live radio broadcast, January 6.

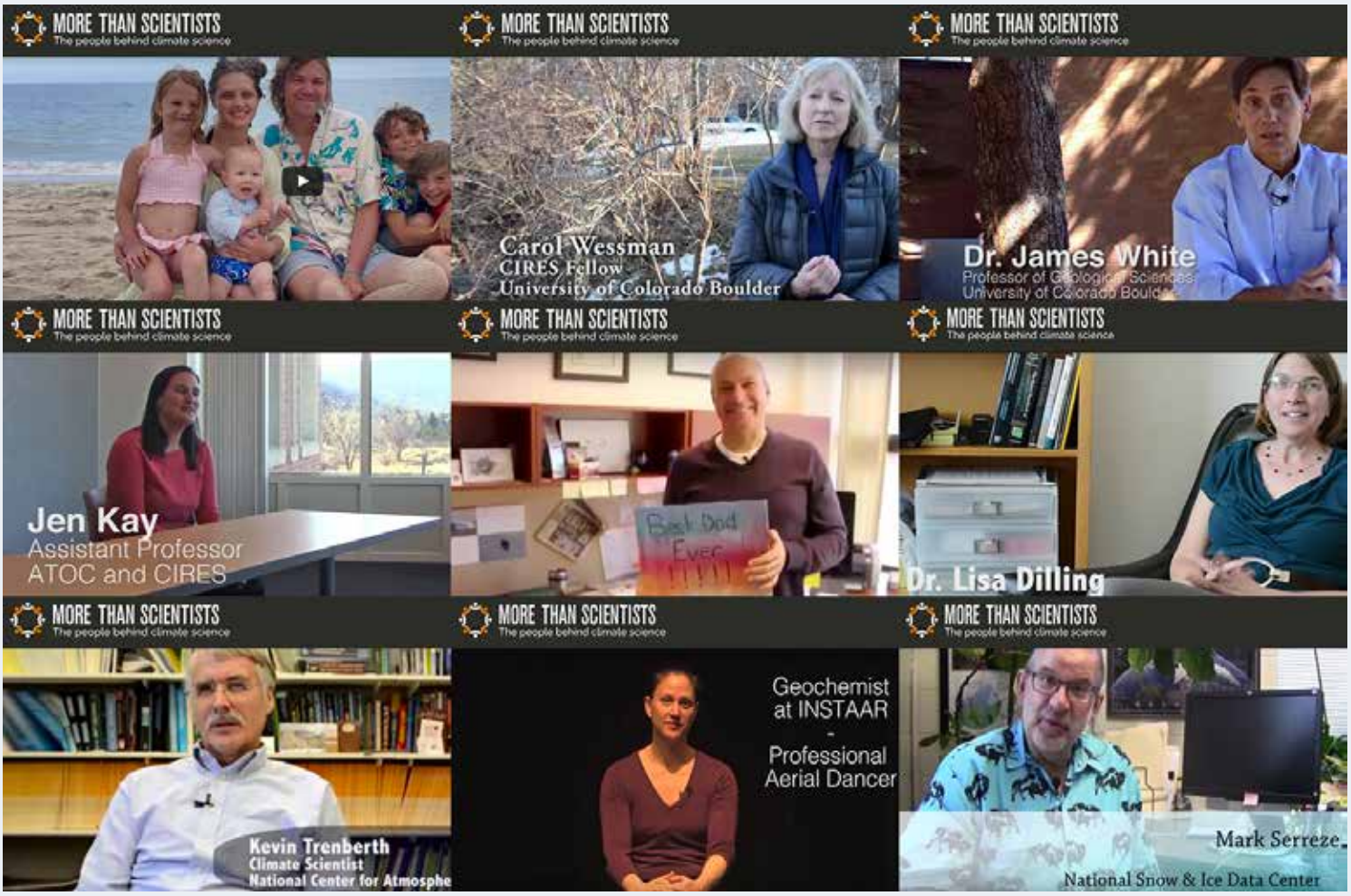
Phaedra Pezzullo

- What can you do about Paris/Trump/Our World going to Hell in a Handbasket (with climate change expert Phaedra Pezzullo)," Facebook Live interview with Waylon Lewis. Walk the Talk show. (Over 34,000 views). June 6.

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, Ogmius (http://sciencepolicy.colorado.edu/ogmius)
- Twitter (https://twitter.com/cu_cstpr) and Facebook (https://www.facebook.com/pages/Center-for-Science-and-Technology-Policy-Research/279714958827043) presence

Max Boykoff being interviewed on December 4, 2017 for an Al Jazeera news report on "Climate Sceptics and the News Media".



OUTREACH HIGHLIGHT

MORE THAN SCIENTISTS

In this Inside the Greenhouse Project, 'Climate and Film' (ATLS 3519/EBIO 4460) students and 'Creative Climate Communication' (ENVS3173/THTR4173) students have created and produced a short video based on an interview of a climate researcher in the local Boulder area for the More than Scientists campaign, depicting human/personal dimensions of their work.

Inside the Greenhouse (ITG) principally helps students build competence and confidence to re-tell stories of climate change in ways that are resonant and meaningful for target audiences. The spirit of the More than Scientists (MTS) campaign is primarily operationalized through a set of interviews conducted on a growing community of climate scientists sharing their personal views and feelings about climate change through short videos that feature their personal lives and views along with their research. The ITG-MTS interviews - approximately 50 to date - have been conducted by undergraduate students at the University of Colorado, and interviewees have been climate researchers from the natural and social sciences who work in institutions in the Boulder area. ITG and MTS produced these interviews over the past three years.

ITG and MTS interviews with Dr. Phil Taylor [top left] (Institute for Arctic and Alpine Research (INSTAAR) Research Associate), Professor Carol Wessman [top middle] (Cooperative Institute for Research in Environmental Sciences (CIRES) and Environmental Studies, University of Colorado Boulder), Professor James White [top right] (Arts & Sciences Dean, University of Colorado Boulder), Assistant Professor Jen Kay [middle left] (CIRES and Atmospheric and Ocean Sciences department, University of Colorado Boulder), Professor Waleed Abdalati [middle] (CIRES Director and Geography department), Associate Professor Lisa Dilling [middle right] (CIRES and Environmental Studies at the University of Colorado Boulder), Dr. Kevin Trenberth [bottom left] National Center for Atmospheric Research (NCAR) Climate Scientist), Dr. Valerie Morris [bottom middle] (INSTAAR Research Associate), and Professor Mark Serreze [bottom right] (National Snow and Ice Data Center (NSIDC) Director, CIRES and Geography department, University of Colorado Boulder).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CENTER PERSONNEL

ADMINISTRATIVE AND RESEARCH STAFF

Katie Dickinson

Katherine "Katie" Dickinson joined CSTPR 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.

Katie took a faculty position in the Colorado School of Public Health's Environmental and Occupational Health department starting fall 2017. She continues her involvement with CSTPR as a faculty affiliate.

Jennifer Katzung

Jennifer Katzung assumed the position of CSTPR Office Manager in June. She moved to Colorado to enjoy her favorite activities, hiking and skiing. Previously, she lived in Switzerland and worked at the Swiss Federal Institute of Technology in Lausanne. She has experience in program coordination, event planning, advising and general administrative support. She is originally from Oklahoma and attended the University of Oklahoma.

Roberta (Bobbie) Klein

Bobbie Klein was the CSTPR Managing Director from 2001-May 2017 when she retired. 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.

Left Photo: Ami Nacu-Schmidt, Jennifer Katzung, and Celeste Maldonado preparing for CSTPR's 15th Anniversary Celebration. Photo: Max Boykoff.

Robin Moser

Robin Moser served as CSTPR's Office Manager through May before taking a position as the CIRES Main Office Manager.

Ami Nacu-Schmidt

Ami Nacu-Schmidt is the Center's Outreach and Engagement Director. She manages CSTPR's website, email communications, and social media channels, and works to implement various programs. Ami also serves as the Co-editor for the Center's newsletter, Ogmius, academic advisor for the Graduate Certificate in Science and Technology Policy, and program coordinator for the AAAS "CASE" Workshop Student Competition and the CSTPR Noontime Seminar Series.

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.

Jessica began a new position September 1 as an Assistant Professor in the Communications and Environmental Studies departments at Merrimack College (Massachusetts).

STUDENTS

Kevin Adams

Kevin Adams is an environmental sociologist, pursuing his Ph.D. in 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. Kevin earned an M.S. in 2017.

Abigail Ahlert

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. She is a writing intern with CSTPR.

Jackie Albert

Jackie Albert was 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. Jackie earned an M.S. in 2017.

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 Berggren is a Ph.D. candidate in Environmental Studies at the University of Colorado, with a secondary focus on water policy. His academic research is in 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. He also worked with her on the Drivers of Adaptation project and is a key contributor to the Western Water Assessment 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.

Katie Chambers

Katie Chambers is a second-year Ph.D. Student in Environmental Engineering and Engineering for Developing Communities. Her research examines resilience and sanitation infrastructure in resource-limited communities. She was the 2016-2017 Red Cross Red Crescent Centre intern and worked on a flood modelling and assessment project in Ethiopia from May to August 2017.

Patrick Chandler

Patrick Chandler has ten years' experience working in and developing environmental education, stewardship and science programs. His current focus is learning how the arts and emotional engagement can be used to raise awareness of environmental issues and promote responsible consumerism.

Before beginning graduate work at CU, he worked as the Education Director for the Washed Ashore Project, and retains his role with them as a consultant. Washed Ashore raises awareness about marine debris by creating sculptures from items found on the beach and using those sculptures to spark changes in consumer habits.

Prior to joining the Washed Ashore team, Patrick spent five years in Alaska where he taught biology for Kenai Peninsula College, served as the International Coastal Cleanup Coordinator for Alaska, and worked as the Special programs coordinator for the Center for Alaskan Coastal Studies.

Sofia Corley

Sofia Corley is an undergraduate senior honors student pursuing an Environmental Studies degree with an Ecology and Evolutionary Biology minor at University of Colorado Boulder. She wants to work for a conservation organization after college, which inspired the research question for her thesis. Sofia is writing her honors thesis on the methods that lead to success of endangered/threatened species conservation programs. To do this, she completed a meta-analysis and ran statistical tests on the results. Sofia then created her own criteria for "success," supported by scholarly sources. She tested the criteria on data she has collected from an environmental justice nonprofit in Boulder. Finally, Sofia compared the results from the meta-analysis to results from the "success" criteria analysis. Sofia will defended her honors thesis in April 2018.

Roger Emmelhainz

Roger Emmelhainz is a Ph.D. candidate in Political Science, studying under Steve Vanderheiden. He works in the fields of political theory and public policy, with a focus on environmental issues. Before beginning graduate school at CU, he earned an interdisciplinary M.A. in the social sciences at the University of Chicago. He also spent a number of years as an operations manager in the energy industry, working with communities and local governments to coordinate development projects. Roger's dissertation research explores the role (both normative and empirical) of scientific expertise in democracy, with an emphasis on the need to reconceptualize our idea of democratic legitimacy.

Lee Frankel-Goldwater

Lee Frankel-Goldwater 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.

Alison Gilchrist

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 Buffs: http://www.sciencebuffs.org. She is a writing intern with CSTPR.

Celeste Maldonado

Celeste Maldonado is an undergraduate in Integrative Physiology at the University of Colorado who plans to attend medical school upon graduation. Her future goals include graduating from Medical School and becoming an Emergency Room Physician. She is interested in seeing how both environmental policies can have an effect on medical policies and how that can affect patients as a whole. Outside of school, she loves to volunteer, go on runs, and explore the community around her. She is an office intern with CSTPR.

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. Lucy earned a Ph.D. in 2017. Her dissertation was titled "Blind Spots: Multinational Electronics Firms, Impression Management, and the Harms of the Electronics Commodity Chain."

Marisa McNatt

Marisa McNatt 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. She was selected by the Environmental Studies Department and the Graduate School to receive a 2017 Summer Graduate School Fellowship. She also received Honorable Mention in the Social Sciences category for the 2017 American Association for the Advancement of Science (AAAS) Student Poster Competition, held at the AAAS Annual Meeting in Boston, MA in February. For the award, Marisa was recognized in the March 24, 2017 issue of Science and on the AAAS Annual Meeting website.

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 Osborne-Gowey 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 Page 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 focuses 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.

Olivia Pearman

Olivia Pearman is a Ph.D. student in the Environmental Studies Program and is interested in improving approaches to complex environmental problems through policy. She is particularly focused on how institutions and organizations

make decisions about the environment and especially how individuals' beliefs, values, and worldviews influence the making of those decisions. Olivia holds a BS in Environment and Natural Resources from Clemson University and a Master of Environmental Management (MEM) from the Yale School of Forestry and Environmental Studies. Her Master's project focused on policy approaches to address conflicts between oil and gas development and greater sage-grouse conservation on lands owned by the Bureau of Land Management.

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.

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

Claire Stumpf was 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, Claire hopes to gain a more practical understanding of policy formation at CU Boulder, and eventually work for an NGO or non-profit organization. She earned an M.S. in 2017.

VISITORS

Leslie Dodson

Leslie earned her Ph.D.in Technology, Media & Society from the ATLAS Institute at CU-Boulder's College of Engineering and Applied Science. Her research and practice integrates climate change, livelihoods vulnerability, and communication technologies to support resilience in communities facing environmental distress. She has expertise in Information and Communication Technology for Development (ICTD); Integrated Water Resource Management (IWRM); and the ICTs, Climate Change and Development (ICCD) model.

Leslie is currently the Executive Director of Tifawin Institute, an NGO advocating participatory development, user-centered design and gender equity in international development initiatives. Through Tifawin, she collaborates with Dar Si Hmad for Development, Education and Culture to design and deploy communications systems for North Africa's largest fogwater harvesting project, which serves hundreds of rural Berber residents in southwest Morocco.

Also as a Faculty Teaching Fellow at Worcester Polytechnic Institute (WPI), Leslie develops experimental courses in Humanitarian Engineering and Transmedia Storytelling. Additional pursuits include the incorporation of art and creativity in STEM education.

Prior to pursuing a Ph.D., Leslie was a senior foreign correspondent for CNBC, MSNBC, NHK-Tokyo and Reuters Financial Television. She specialized in reporting on international finance, emerging market economics, international development and global environmental issues.

Leslie has a Masters Degree in Journalism from Northwestern University; a Certificate in Conservation Biology from the Center for Environmental Research and Conservation at the Earth Institute, Columbia University; and a Certificate in Permaculture Design.

Matthew Druckenmiller

Matthew Druckenmiller is a Research Scientist at the University of Colorado Boulder's National Snow and Ice Data Center (NSIDC) and Research Faculty with Rutgers University's Department of Marine and Coastal Sciences. Matthew's work primarily focuses on understanding and communicating the societal implications of Arctic sea-ice loss.

Currently, he serves as the coordinator of the Sea Ice Action Network within the Study of Environmental Arctic Change (SEARCH) – a collaborative program of Arctic researchers, funding agencies, and stakeholders.

Matthew earned his doctorate in 2011 from the University of Alaska Fairbanks where he combined geophysical monitoring with local and indigenous knowledge to study how Iñupiat communities use and rely on a changing sea-ice environment for their traditional travel and hunting. During his time as a PACE (Postdocs Applying Climate Expertise) Fellow, he collaborated with Alaska's North Slope Borough to investigate the impacts of changing Arctic marine habitat on the health and feeding success of bowhead whales. With long-held interests in science policy, he has served as a Science Policy Fellow at the National Academies' Polar Research Board (2005), a project manager at the Arctic Research Consortium of the U.S. (2006), a AAAS Science Policy Fellow at the U.S. Agency for International Development (2013-2015), and currently as the second U.S. delegate to the International Arctic Science Committee (IASC).

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 spent the 2016-17 academic year sitting with CSTPR through the CIRES Visiting Fellows Sabbatical Program. His research is described on page 39.

Anna Kukkonen

Anna Kukkonen is a Fulbright visiting scholar at the Center for Science and Technology Policy Research.

Anna's PhD research deals with comparative climate change politics, comparing media debates on climate change in five different countries: the US, Canada, Brazil, India and Finland. More specifically, she is interested in examining the formation of advocacy coalitions, the centrality of international organizations and the role of different moral justifications in the climate change debates in these diverse political-economic contexts.

Anna was awarded a Fulbright Graduate Grant to continue her PhD research at the University of Colorado Boulder where she aims to develop her knowledge on environmental governance, science-policy interactions and media's role in the politics of climate change. Anna holds a Master's degree in Sociology from University of Helsinki where she also begun her graduate studies in 2014. She has specialized in comparative and political sociology but has recently become increasingly interested in combining comparative sociology with the study of public policy.

Anna is part of the international research project Comparing Climate Change Policy Networks (COMPON) which analyzes cross-country differences in climate change responses and currently includes 20 countries. She has been involved in the COMPON project for almost 4 years, collaborating with research teams around the world by sharing data, developing common research protocols and publishing articles in peer-reviewed journals.

Bienvenido León

During the summer of 2017, through the Faculty in Residence Summer Teaching Program (FIRST) in the Office of Continuing Education, the Environmental Studies program and Inside the Greenhouse hosted Professor Bienvenido León from the University of Navarra (Spain) to CU Boulder to teach a course he called 'How to Effectively Represent Climate Change in a 21st Century Multi-Media World'. During his time in Boulder he also presented on 'New Coordinates for Environmental Documentary' as part of the Center for Science and Technology Policy Research (CSTPR) Fall seminar series and to take part in the Lens on Climate Change summer film festival held in the Atlas Institute on campus. Bienvenido León studies audio-visual science and environment communication. In particular, he's interested in how climate change is being addressed with online videos.

VISITOR HIGHLIGHT

INCONVENIENT MISTRUTHS: JUSTIN FARRELL TALKS ABOUT THE SPREADING OF MISINFORMATION ON CLIMATE CHANGE

by Alison Gilchrist, CSTPR Writing Intern

A lie is more convincing if it's backed up by multiple sources. For the many organizations deliberately sowing mistrust of climate science, this was clearly a lesson taken to heart. Justin Farrell, a visiting professor from Yale currently stationed at the CIRES Center for Science and Technology Policy Research (CSTPR), has been studying how the seemingly unconnected organizations distributing misinformation about climate change are actually part of a broader network, a network that has managed its information flow to be as convincing as possible.

In 2012, Farrell had a hunch – he thought that organizations spreading misinformation about climate change were probably working together to create a cohesive message. He decided to try using social network analysis to confirm this theory. "I tried to look at it as objectively as I could," said Farrell. "I said: 'Let's trace the connections between organizations who are involved in spreading misinformation about climate change.'"

Farrell focused on Exxon and the Koch family foundations, prominent corporations involved in spreading of misinformation. He was especially interested in identifying the organizations that received money from Exxon or the Koch foundations, which justified their connection in his recreated network. He also looked at who was sitting on the boards of every organization in the network to try and find the individuals who linked two or more organizations.

Justin Farrell giving a talk at CSTPR on March 15, 2017 on "Climate Change Politics and Machine Learning". Photo: Ami Nacu-Schmidt.

"I was really trying to get a handle on the cohesiveness of this movement," said Farrell. "Instead of blaming one organization, let's understand how it's structured. Let's understand who's more powerful, who has the most connections." This "bird's eye view" of the network is a valuable tool in understanding the movement to deny climate change.

"Money really has power within this movement, but not in the sense of providing resources, like advertising and things, it more signifies the cohesiveness of the movement," said Farrell. "You start seeing an inner core of organizations—they're funded by the same sources, sit on the same boards, that sort of thing. This means they are able to organize each other more effectively."

How do these connections, and specifically the receipt of money, change the messages that an organization disseminates? Farrell collected all publicly available writings from the organizations in his network, a collection that includes web pages, pamphlets, and other written material, between 1993 and 2013. He used machine-learning methods—essentially helping the computer to identify patterns hidden to us—to characterize themes in the writing disseminated by these groups. These themes included temperature trends, human health—even Al Gore.

"Over time, organizations who received money differed from organizations who didn't," said Farrell. Organizations receiving money tended to write about the same themes at the same time, suggesting that they were being directed to focus on particular things.

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 spent his sabbatical at CSTPR.

During his visit with CSTPR Jack studied machine learning, social learning and the governance of self-driving cars. He published an article on this topic in Social Studies of Science (Nov. 21, 2017), as well as "What will happen when a self-driving car kills a bystander?", The Guardian (June 24, 2017).

Suzanne Tegen

Suzanne Tegen manages the Technology, Engineering and Deployment Group for wind and water power at the National Renewable Energy Laboratory where she has been for 14 years. She has authored technical reports on economic impacts from wind (including offshore wind) and water power projects. She researches the domestic wind and water power workforces including which types of jobs are needed in the long term and therefore which educational programs are necessary to train the future workforce. Suzanne spent one year as an NREL liaison to the Department of Energy's Wind Program in Washington, D.C. She has provided 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 won a mid-career award from the Clean Energy Ministerial's Clean Energy Education & Empowerment group. 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 communicating science to decision-makers.

ALUMNI HIGHLIGHT

NAVIGATING WITH INTENTION: CSTPR ALUMNUS BETS MCNIE TALKS ABOUT HER CAREER AND FUTURE

by Alison Gilchrist, Science Writing Intern

Elizabeth "Bets" McNie was part of the first ever graduate student cohort at the Center for Science and Technology Policy Research (CSTPR). She knows that CSTPR is a special place. "Being part of the community here was the best part," says McNie. "I'm still really good friends with a lot of the students who were in my cohort. There's a sense that the people here 'get' the importance of the science-policy nexus, and that's one of the things that really appeals to me."

McNie has studied the connections between science and policy ever since. During her PhD, McNie studied how a program called The Regional Integrated Sciences and Assessment (RISA) produces usable data for decision makers. These studies showed her how difficult it can be to cross the stormy waters between scientists and policy-makers, but how important it is to cross those waters.

"CSTPR made me appreciate how complex the landscape is between science and policy, and how it needs to be navigated with intention," said McNie. "It's not simply about producing the information and plopping it on someone's desk in a glossy brochure. It's really about working intentionally with the intended users of the information to try and produce information that they can use and will use."

She says that "navigating with intention" requires that those two groups of people, the scientists and the users of the science, interact frequently and work to understand each other's capabilities and limitations. McNie had navigating experience before joining her PhD cohort at CSTPR—but in a very different context. After graduating from the California State University Maritime Academy, she worked as a U.S. Merchant Marine Officer on containerships, oil tankers, and offshore oil-drilling rigs. She also worked as a training officer and lecturer at her alma mater.

"Teaching has been my passion," McNie says about her career so far, and it shows. Her explanation of how to navigate with sextants makes even a landlubber like myself feel more confident about stepping onto a ship.

McNie left CSTPR with her PhD and worked at Purdue University before returning to Boulder to join Western Water Assessment, where she worked until recently. Western Water tries to produce usable climate information for users in the Rocky Mountain West. They aim to connect scientists to decision makers so that users of the data that the scientists produce can specify what kind of data is most helpful. There are times when the scientist can't produce the information that the decision makers want, so the scientists will propose what they can do instead.

"It's an iterative, back-and-forth dialogue between researchers and decision makers," says McNie. "I love the colleagues I get to work with at Western Water. They're passionate about creating climate information that people can work with."

Ever navigating with intention, however, McNie recently began a tenure-track job at the California State University Maritime Academy. She teaches in the department of Marine Transportation and continues to do research on usable science, but in the maritime industry. Although this is a job she was elated to take, she was sad to leave CSTPR behind.

"This is a special place. I have a lot of fond memories here, and I've had the opportunity to work with really great people here." She hopes to continue collaborating with people from CSTPR, and she will continue to spread the word that CSTPR is a community of like-minded people who really understand the science-policy nexus.

GRADUATE STUDENT ALUMNI

Adam P.H. Amir earned his Ph.D. in Environmental Studies in 2016. He is a Postdoctoral Associate at Florida State University.

Kevin Andrews earned his M.S. in Environmental Studies in 2015. He is a Senior Research Analyst at E Source.

Kelli Archie earned her Ph.D. in Environmental Studies in 2012. She is now an Assistant Professor at the NZ Climate Change Research Institute, Victoria University of Wellington.

Adam Briggle earned his Ph.D. in Environmental Studies in 2006. He is an Assistant 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.

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

Meaghan Daly earned a Ph.D. in ENVS in 2016 and is now a Research Fellow with the ESRC (Economic and Social Research Council) Centre for Climate Change Economics and Policy at the Sustainability Research Institute at the School of Earth and Environment, University of Leeds, UK.

Brian Devine earned an M.S. in Environmental Studies in 2015. He is now a Water Quality and Water Resources Professional with the San Juan Basin Health Department.

Erik Fisher earned his Ph.D. in Environmental Studies in 2006. He is an Associate Professor at Arizona State University with a joint appointment in the School of Politics and Global Studies and the Consortium for Science, Policy and Outcomes. He also serves as the Associate Director of Integration at CNS-ASU. Fisher leads the Socio-Technical Integration Research (STIR; NSF #0849101) project as its PI and leads RTTA 4: Integration & Reflexivity.

Kristin Gangwer earned an M.A. in Geography in 2011. She is the Board Co-Chair, Cultivate! Ohio Valley.

Joel Gratz earned an M.S. in Meteorology and Policy and an M.B.A. in 2006. He is the Founder and Meteorologist for Opensnow.com.

Jimmy Hague earned his master's in Environmental Studies in 2007. Jimmy is currently a Senior Water Policy Advisor at The Nature Conservancy. He previously worked with the Theodore Roosevelt Conservation Partnership as the Director of the Center for Water Resources, and 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 earned an M.S. in Environmental Studies in 2012. She is the Engagement Manager for the Capacity Center for Climate Extremes at the National Center for Atmospheric Research.

Michael Henry earned an M.S. in Environmental Studies in 2012. He is currently Director of Science Policy at American Institute of Physics.

Mary Huisenga earned an M.A. in Geography in 2012. She is the Founder at Watershed Consulting Services LLC

Abby Kuranz earned an M.S. in Environmental Studies in 2014. Abby is now working as a Communications Specialist at Milwaukee Riverkeeper, which is part of a larger network of the Waterkeeper Alliance.

Lydia Lawhon earned a Ph.D. in Environmental Studies in 2016 and is now an Instructor in the Masters of Environment Program at the University of Colorado Boulder.

Alexander Lee earned a Ph.D. in Environmental Studies in 2016 and is now an Assistant Professor of Philosophy at the Alaska Pacific University Institute for Culture and Environment.

Nat Logar earned his Ph.D. in Environmental Studies in 2007, followed by a law degree from the University of Colorado Boulder. Currently he is an Emmett/ Frankel Fellow in Environmental Law & Policy at University of California, Los Angeles School of Law. Previously he was a research fellow at Harvard's Kennedy School of Government.

Jessica Lowery earned 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 an Assistant Attorney General with the Colorado Attorney General's Office.

Genevieve Maricle earned a Ph.D. in Environmental Studies in 2008. She currently is the Global Knowledge and Innovation Lead, Climate and Energy Practice, for the World Wildlife Fund. Previously she served as a Policy Adviser to the US Ambassador (ECOSOC) US Mission to the UN. She also served as USAID's Environment and Climate Change Policy Advisor.

Elizabeth McNie earned a Ph.D. in Environmental Studies in 2008. She recently began a tenure-track position as

an Assistant Professor of Marine Transportation at the California State University Maritime Academy where she teaches in the department of Marine Transportation and continues to do research on usable science, but in the maritime industry. She is also a CSTPR Research Affiliate. Previously she was an Assistant Professor at Purdue University in the departments of Political Science and Earth & Atmospheric Sciences, and a Research Scientist at the Western Water Assessment in the Cooperative Institute for Research in Environmental Sciences, University of Colorado.

Shali Mohleji earned a Ph.D. in Environmental Studies in 2011. She is currently a Government and Regulatory Affairs-Technology Policy executive with IBM. She previously served as Senior Advisor to the Under Secretary with the National Oceanic and Atmospheric Administration. She also was a Senior Policy Fellow with the American Meteorological Society Policy Program.

Shawn Olson-Hazboun earned an M.S. in Environmental Studies in 2013. She is now an Assistant Professor at Evergreen State College.

Shep Ryen earned 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 as a Policy Analyst at the Government Accountability Office (GAO) on the Natural Resources and Environment team.

Rebecca Schild earned a Ph.D. in Environmental Studies in 2016. She is currently the Gap Program Co-Director at High Mountain Institute.

Arielle Tozier de la Poterie earned a Ph.D. in Environmental Studies in 2017. She is currently a Research Consultant with Integrated Risk Management Associates and Research Delegate, German Red Cross, placed in Mozambique.

Kanmani Venkateswaran earned an M.S. in Environmental Studies in 2014. She is currently a research associate with the Institute for Social and Environmental Transition (ISET).

Edouard von Herberstein earned an M.S. in Environmental Studies in 2004. He is currently a Partner at Hudson Structured and Chief Underwriting Officer of HSCM Bermuda with primary responsibilities in the Re/Insurance Fund.

Xi Wang earned an M.S. in Environmental Studies in 2014. She is currently a Ph.D. candidate in Geography.

Jessica Weinkle earned a Ph.D. in Environmental Studies in 2013. She is currently an assistant professor in the Department of Public and International Affairs at the University of North Carolina-Wilmington. Jessica also worked as a postdoctoral researcher 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.

Michael Weiss earned an M.S. in Environmental Studies in 2016 and currently works as a freelance writer.

AFFILIATES

CSTPR affiliates are individuals conducting joint research with CSTPR staff but whose primary support is from outside CSTPR. They are appointed for renewable 2-year terms.

- Krister Andersson, University of Colorado Boulder
- Susan Avery, University of Colorado Boulder
- Cassandra Brooks, University of Colorado Boulder
- Amanda Carrico, University of Colorado Boulder
- David Ciplet, University of Colorado Boulder
- Deserai Crow, University of Colorado Denver
- Jason Delborne, North Carolina State University
- Katie Dickinson, Colorado School of Public Health, University of Colorado Denver
- Matthew Druckenmiller, University of Colorado Boulder
- Justin Farrell, Yale University
- Kathleen Hancock, Colorado School of Mines
- Doug Kenney, University of Colorado Boulder
- Paul Komor, University of Colorado Boulder
- Adrianne Kroepsch, Colorado School of Mines
- Alice Madden, University of Colorado Boulder
- Elizabeth McNie, California State University Maritime Academy
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- Peter Newton, University of Colorado Boulder
- Beth Osnes, University of Colorado Boulder
- Jerry Peterson, University of Colorado Boulder
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- Paty Romero-Lankao, National Center for Atmospheric Research

- Rebecca Saffran, University of Colorado Boulder
- Gregory Simon, University of Colorado Denver
- Jessica Smith, Colorado School of Mines
- Mark Squillace, University of Colorado Boulder
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- Jason Vogel, ABT Associates

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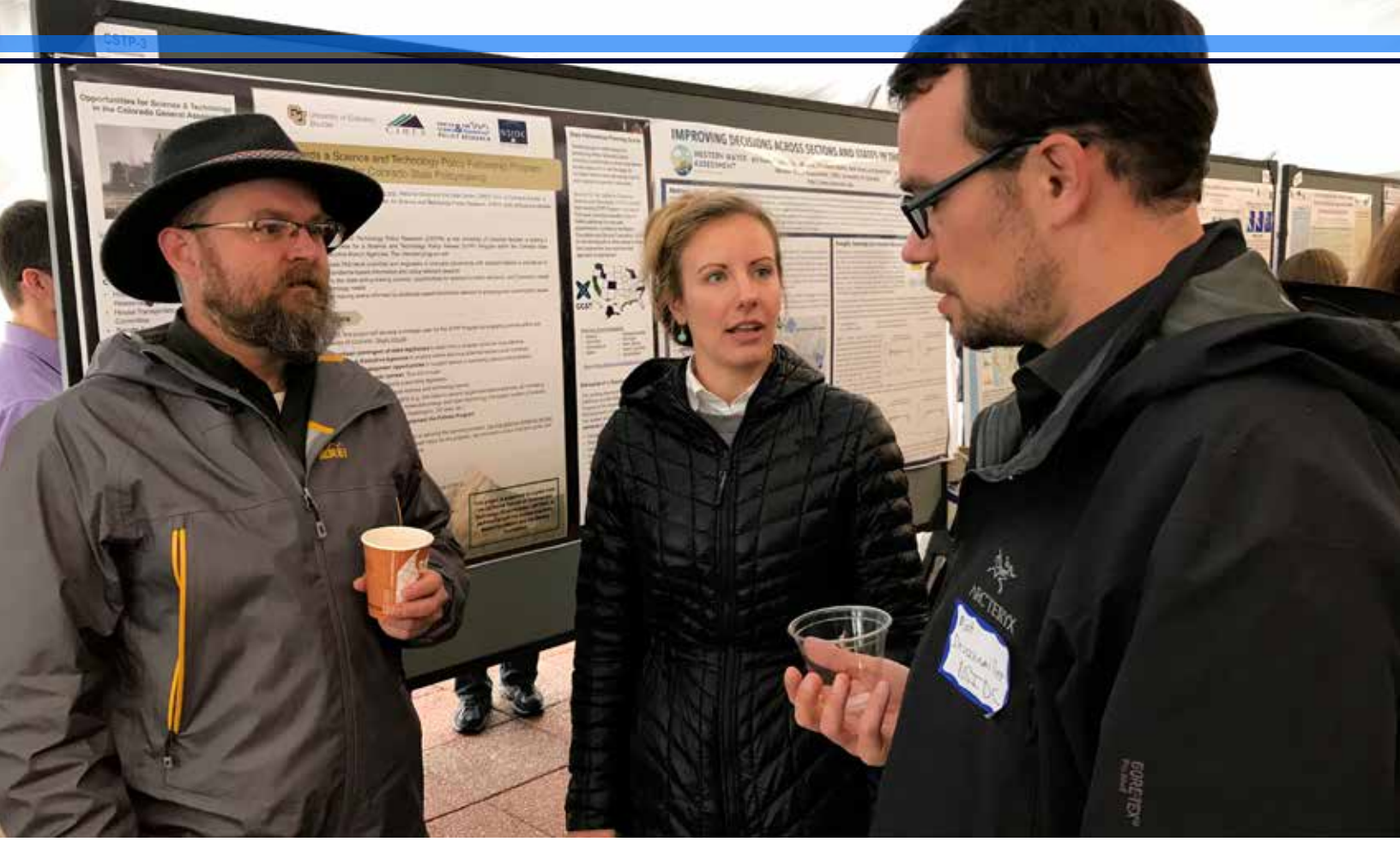
- Leslie Dodson (Visitor)
- Paula Dominguez-Salas (Coauthor)
- Matthew Druckenmiller (Visitor)

David Oonk presenting at the Lens on Climate Change (LOCC) summer workshop on the University of Colorado Boulder campus where high school students learn about climate change and make short films about environmental issues affecting their community. Photo: Lesley Smith.



Jeremiah Osborne-Gowey, Marisa McNatt, and Matthew Druckenmiller at the 2017 CIRES Rendezvous. Photo: Max Boykoff.

- Paul Drummond (Coauthor)
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- Christine Wiedinmyer (Coauthor)
- Victoria Wibeck (Coauthor)
- Paul Wilkinson (Coauthor)

CSTPR faculty affiliate, Amanda Carrico (Environmental Studies, CU Boulder), and Garrett Bredeson (Philosophy Department, CU Boulder) at CSTPR's Open House on October 27, 2017. Photo: Max Boykoff.

Matt Druckenmiller, right, and Hajo Eicken, a professor of Geophysics, on an ice floe near Barrow. Photo by Daniel Pringle.

FACULTY AFFILIATE HIGHLIGHT

MATTHEW DRUCKENMILLER: A CAREER-LONG COLLABORATOR

by Alison Gilchrist, Science Writing Intern

Matthew Druckenmiller, a current research affiliate with the Center for Science and Technology Policy Research (CSTPR), understands the value of community collaborations. Throughout his career, he's made it a priority to connect with communities in the areas he's worked in.

Originally from Pennsylvania, Druckenmiller moved to Alaska to get his PhD from the University of Alaska Fairbanks. A biophysicist interested in sea ice, he worked closely with the Alaskan North Slope borough—the largest county in the country. He was interested in combining sea ice research and marine biology, an interest that benefited from a close working relationship with native communities in the North Slope borough.

During his PhD, Druckenmiller designed coastal observatories around native communities. For example, Druckenmiller built up an observatory in the Alaskan city of Barrow designed to observe sea ice. The Barrow observatory helped him observe how arctic sea ice affects feeding success and body condition of bowhead whales.

"The Barrow sea ice observatory had a number of different components," said Druckenmiller. "One might fit your definition of an observatory: the tallest building in the village (about three or four stories) had a coastal radar on it. That would be the same kind of radar that a ship would have, and we used it to observe sea ice moving in and out along the coast."

In fact, Druckenmiller used several methods to study the changing arctic ice, including installing instruments directly into the ice as well as working with local hunters to keep diaries of ice conditions. He was even able to venture out onto the ice regularly by sled.

"In Barrow, during the Spring, they still maintain traditional Bowhead Whale hunts," explained Druckenmiller. "They glide onto the shore-fast ice, the ice that freezes close to shore. I had an instrument that I installed in a long sled, that I would pull or drag by snow-machine across these trails to survey the ice along the trails that the communities were using."

The instrument that Druckenmiller used collected trail data and measured the ice thickness distribution. The goal was to record areas of the ice that were very thin or very thick. This was useful data for Druckenmiller's research but was also incredibly useful for the community in Barrow. Druckenmiller and his group were able to make maps of this ice for the people who directly benefit from that information in the short-term. For whaling communities in Barrow, for example, it's important to know where ice is dangerously thin.

After Druckenmiller left Alaska, he spent two years in Boulder at the National Snow and Ice Data Center (NSIDC). He then worked for two years in Washington, D.C. as a AAAS Science Policy Fellow, with the United States Agency for International Development. Finally, he moved back to Boulder to take a research scientist position at NSIDC.

Currently, Druckenmiller is a coordinator of the Sea Ice Action Network within the Study of Environmental Arctic Change (SEARCH). This study is a collaboration between Arctic researchers, funding agencies, and stakeholders and aims to study the implications of a changing arctic.

"I'm working with a team of researchers focusing on arctic sea ice," said Druckenmiller. "A lot of what I do is not basic research, but more synthesizing existing research into sources that are accessible to other researchers and accessible to the public."

Druckenmiller explained that SEARCH will be a valuable tool for science communicators to use when studying and writing about climate change.

"We're trying to position this organization to be an easy organization for journalists to go to when writing stories."

As well as coordinating this initiative to make climate science more accessible, Druckenmiller continues to collaborate with the scientists working in Barrow. Throughout his career, he has focused on the types of research partnerships that scientists make with communities and formed long-lasting and effective collaborations. At the National Snow and Ice Data Center and in collaboration with CSTPR, he is well poised to continue these important initiatives.

A local hunter looks at drift ice near the edge of shorefast ice in Utqiaġvik, Alaska. Photo credit: Matthew Druckenmiller.

1

APPENDIX

PUBLICATIONS

(Center personnel in bold)

Journal Articles

- **Dilling, L.**, E. Pizzi, **J. Berggren**, A. Ravikumar, and K. Andersson (2017). Drivers of adaptation: Responses to weather- and climate-related hazards in 60 local governments in the Intermountain Western US. Environ. Plan. A 49 (11) 2628-2648, issn: 0308-518X, ids: FM4PM, doi: 10.1177/0308518X16688686, November.

- **Goldstein, B. E.**, C. Chase, **L. Frankel-Goldwater**, **J. Osborne-Gowey**, J. Risien, and **S. Schweizer** (2017). Transforming with a Soft Touch: Comparing Four Learning Networks. Systems Research and Behavioral Science, 34(5), 537-543.

- Smith, R., J. Kasprzyk, and **L. Dilling** (2017). Participatory Framework for Assessment and Improvement of Tools (ParFAIT): Increasing the impact and relevance of water management decision support research. Environ. Modell. Softw. 95, 432-446, issn: 1364-8152, ids: FB5JO, doi: 10.1016/j.envsoft.2017.05.004, September.

- **Vanderheiden, S.** (2017). Human Rights, Global Justice, or Historical Responsibility? Three Potential Appeals. The Journal of Value Inquiry 51, 3: 397-415.

- **Vanderheiden, S.** (2017). Territorial Rights and Carbon Sinks. Science and Engineering Ethics 23, 5: 1273-87.

- Watts, N., M. Amann, S. Ayeb-Karlsson, K. Belesova, T. Bouley, **M. Boykoff**, P. Byass, W. Cai, D. Campbell-Lendrum, J. Chambers, P.M. Cox, M. Daly, N. Dasandi, M. Davies, M. Depledge, A. Depoux, P. Dominguez-Salas, P. Drummond, P. Ekins, A. Flahault, H. Frumkin, L. Georgeson, M. Ghanei, D. Grace, H. Graham, R. Grojsman, A. Haines, I. Hamilton, S. Hartinger, A. Johnson, I. Kelman, G. Kiesewetter, D. Kniveton, L. Liang, M. Lott, R. Lowe, G. Mace, M. Odhiambo Sewe, M. Maslin, S. Mikhaylov, J. Milner, A.M. Latifi, M. Moradi-Lakeh, K. Morrissey, K. Murray, T. Neville, M. Nilsson, T. Oreszczyn, F. Owfi, D. Pencheon, S. Pye, M. Rabbaniha, E. Robinson, J. Rocklöv, S. Schütte, J. Shumake-Guillemot, R. Steinbach, M. Tabatabaei, N. Wheeler, P. Wilkinson, P. Gong, H. Montgomery, and A. Costello (2017). The Lancet Countdown on health and climate change: From 25 years of inaction to a global transformation for public health. The Lancet, doi: 10.1016/S0140-6736(17)32464-9.

- Wibeck, V., A. Hansson, J. Anshelm, S. Asayama, **L. Dilling**, P. M. Feetham, R. Hauser, A. Ishii, and M. Sugiyama (2017). Making sense of climate engineering: a focus group study of lay publics in four countries. Clim. Change 145 (2-Jan) 1-14, issn: 0165-0009, ids: FM4XI, doi: 10.1007/s10584-017-2067-0, November.

- Wiedinmyer, C., **K. Dickinson**, R. Piedrahita, E. Kanyomse, E. Coffey, M. Hannigan, R. Alirigia, and A. Oduro (2017). Rural–Urban Differences in Cooking Practices and Exposures in Northern Ghana. Environmental Research Letters 12 (6), doi: 10.1088/1748-9326/aa7036.

Chapter in a Book

- Luedecke, G. and **M. T. Boykoff** (2017). Environment and the Media. The International Encyclopedia of Geography , Ed. D. Richardson, N. Castree, M. F. Goodchild, A. Kobayashi, W. Liu, and R. A. Marston, John Wiley & Sons, Ltd., doi: 10.1002/9781118786352.wbieg0464.

- Osnes, B., R. Safran, and **M. Boykoff** (2017). Student Content Production of Climate Communications. What is Sustainable Journalism? Ed. P. Berglez, U. Olausson, and M. Ots 93-111, Peter Lang.

- **Vanderheiden, S.** (2017). Human Rights and the Environment, in Oxford Handbook of Environmental Ethics, ed. by S. Gardiner and A. Thompson (Oxford University Press).

Letter/Report/Note/Memo/

- **Goldstein, B. E.**, C. Chase, **L. Frankel-Goldwater**, J**. Osbourne-Gowey**, J. Risien, and **S. Schweizer** (2017). Transformative Learning Networks: Guidelines and Insights for Netweavers. Washington D.C.: Association of Public and Land Grant Universities (APLU).

- **Vanderheiden, S.** (2017). Anti-Immigrant Populism & Climate Change Denial. The Critique's January/ February 2017 Issue "Stick It to The Man: A Year of Anglo-American Populist Revolt Against A Changing Culture And An Obtuse Political Establishment."

Reviews

- **Vanderheiden, S.** (2017). Review of Lowell E. Baier's Inside the Equal Access to Justice Act, in Environmental History 22, no. 1: 172-74.

Left Photo: Beth Osnes, CSTPR Faculty Affiliate and Co-Director of Inside the Greenhouse, engaging with students at Saint Dominic's School in New Orleans on "Who Wants to be the Trilobite?". Photo: Rebekah Anderson.

Examples of publications of faculty affiliates and visitors

Journal Articles

- Bogaerts, M., L. Cirhigiri, I. Robinson, M. Rodkin, R. Hajjar, C., Costa Junior, and **P. Newton** (2017). Climate change mitigation through intensified pasture management: Estimating greenhouse gas emissions on cattle farms in the Brazilian Amazon. Journal of Cleaner Production 162: 1539-1550.
- **Ciplet, D.** and J. T. Roberts (2017). Climate change and the transition to neoliberal environmental governance. Global Environmental Change 46: 148-156.
- **Ciplet, D.** (2017). Subverting the status quo? Climate debt, vulnerability and counter-hegemonic frame integration in United Nations climate politics – a framework for analysis. Review of International Political Economy 24(6): 1052-1075.
- **Ciplet, D.** and J. T. Roberts (2017). Splintering South: Ecologically Unequal Exchange Theory in a Fragmented Global Climate. Journal of World-Systems Research 23(2): 372-398.
- Cohn, A., **P. Newton**, J. Gil, L. Kuhl, L. Samberg, V. Ricciardi, J. Manly, and S. Northrop (2017). Smallholder agriculture and climate change. Annual Review of Environment and Resources 42:347–75.
- Gil, J., A. Cohn, J. Duncan, **P. Newton**, and S. Vermeulen (2017). The resilience of integrated agricultural systems to climate change. WIRES Climate Change 8.
- Jung, S., L.V. Rasmussen, C. Watkins, **P. Newton**, and A. Agrawal (2017). Brazil's national environmental registry of rural properties: Implications for livelihoods. Ecological Economics 136: 53-61.

Books and Book Chapters

- **Osnes, B.** (2017). Performance for Resilience: Engaging Youth on Energy and Climate Through Music, Movement, and Theatre. London: Palgrave Pivot.
- **Pezzullo, P.** (2017). Environment. In the Oxford Research Encyclopedia of Communication and Critical Studies, Dana Cloud, ed. Vol. 1. Oxford: Oxford University Press. DOI: 10.1093/acrefore/9780190228613.013.575.

Reports

- González, A. (2017). A Snapshot of Commercial Space, An EU Fellowship Report. Center for Science and Technology Policy Research (CSTPR) White Paper 2017-01, 30 pp.

CSTPR TALKS AND EVENTS

CSTPR Noontime Seminar Series (Boulder, CO)

Spring

January 25, 2017
Supraregulatory Agreements and Public Perceptions of Unconventional Energy Development in Colorado
Jessica Smith, Liberal Arts and International Studies, Colorado School of Mines

February 8, 2017
Transitioning Research to Operations in an Applied Science Program
Elizabeth McNie, Western Water Assessment

Sierra Gladfelter giving a talk "Anticipating Disaster: Local Dependence on Formal Climate Information vs. Traditional Ways of Knowing" on April 26, 2017. Photo: Robin Moser.

Max Boykoff introducing Grant Couch for his talk "Climate & Congress - The Making of a Citizen" on October 25, 2017. Photo: Jennifer Katzung.

February 15, 2017
The High Water Mark: Policy Lessons Learned from Colorado's 2013 Floods
Deserai Crow, School of Public Affairs, University of Colorado Denver

February 22, 2017
Addressing Climate Change as an Engineering Challenge: Scientific Expertise in U.S. Geoengineering Politics
Julia Schubert, Forum Internationale Wissenschaft, Bonn, Germany

March 8, 2017
Emerging Biotechnologies and Public Engagement
Jason Delborne, Science, Policy, and Society, North Carolina State

March 15, 2017
Climate Change Politics and Machine Learning
Justin Farrell, Yale University

March 22, 2017
Machine Learning, Social Learning and Self-Driving Cars
Jack Stilgoe, Department of Science and Technology Studies, University College London

April 12, 2017
Renewable Energy in Africa: Findings from the Social Sciences
Kathleen Hancock, Colorado School of Mines

April 26, 2017
Anticipating Disaster: Local Dependence on Formal Climate Information vs. Traditional Ways of Knowing
Sierra Gladfelter, Geography Department, University of Colorado Boulder

Fall

August 3, 2017
New Coordinates for Environmental Documentary
Bienvenido León, School of Communication, University of Navarra (Spain), FIRST Scholar, CU Boulder

September 13, 2017
Forests, Finance and Conservation: A Turn in US Climate Policy
Lauren Gifford, Geography, University of Colorado Boulder
Winner of the 2017 Radford Byerly Award

October 18, 2017
Sustained Assessment in the US Southwest
Benét Duncan, Western Water Assessment

October 25, 2017
Energy and Climate: The Making of a Citizen
Grant Couch, Citizen's Climate Lobby

November 1, 2017
The Socio-Spatial Dimensions of Disaster Risk in Mobile Home Parks: Learning from the 2013 Colorado Floods
Andrew Rumbach, Urban and Regional Planning, CU Denver

November 29, 2017
AAAS "Catalyzing Advocacy in Science and Engineering" Workshop Student Competition Panel Discussion
Past competition winners, Adalyn Fyhrie, Carrie Havrilla, and Angela Boag
Moderator: Heather Bené, CU Office of Government Relations

Max Boykoff giving a talk "Navigating Climate Change: Communication and Cultural Politics in the 21st Century" at Colorado Renewable Energy Society on May 25, 2017. Photo: Colorado Renewable Energy Society.

Other Talks and Presentations by Center Personnel

Max Boykoff

- Communicating Climate Change in Troubled Times workshop, Reading University, November 14
- Climate Reality, invited panel presentation, University of Colorado Boulder, October 26
- National Parks Service, Climate Change Response Program, invited presentation, October 18
- Forum on Science Ethics and Policy (FOSEP), University of Colorado, invited presentation, October 4
- Policy panel for Communication Science Conference (CommSciCon) Rocky Mountain West, University of Colorado, September 24
- Understanding and Adapting to Future Climate in Aotearoa/New Zealand, Deep South Inaugural National Science Challenge Symposium, Wellington, New Zealand, September 4
- Universität Hamburg, for workshop on 're-defining the boundaries of science and journalism in the debate on climate change', June 21-23
- Lens of Climate Change invited speaker, CU Boulder, June 9
- Universidad Valencia, TV Morfosis invited presentation/ interview, June 3
- Navigating Climate Change: Communication and Cultural Politics in the 21st Century at Colorado Renewable Energy Society, May 25
- Conference on World Affairs moderator 'climate refugees: the human cost of climate change', CU Boulder, April 12
- Invited participant, CoAdapTree: Healthy trees for future climates Genome BC Research Oversight Panel, Vancouver, B.C., April 10
- Presentation in session on 'Geographies and counter-politics of humor amid adversity' session at the Association of American Geographers, 7 April, Boston, MA

Lisa Dilling

- Water security and adaptive capacity for climate: Learning lessons from drought decision making in U.S. urban contexts. Invited presentation, American Geophysical Union, New Orleans, LA, December 11
- Learning from decision making on droughts, floods and others hazards: Lessons for climate adaptation and new directions for research. ENVS Colloquium, University of Colorado Boulder, November 29
- Learning Lessons from managing drought: Adaptation in an interconnected, uncertain world. Invited presentation, University of Utah, October 3
- Urban water systems: Drought response lessons for climate change adaptation. Invited presentation, London Climate Change Partnership. July 25
- Urban water systems: Drought response lessons for climate change adaptation. Invited presentation, London School of Economics. July 24
- The dynamics of vulnerability: What droughts and flooding can teach us about adapting to climate change. University of Oxford, June 13

- A Participatory Process to Improve the Relevance and Impact of Decision Support Research: MOEAs on the Front Range of Colorado. World Environmental and Water Resources Congress, Sacramento, CA. May 25 (with Smith, R, Kasprzyk J.R., Basdekas, L., Kaatz, L.)

- Digging deeper into climate adaptation: What the management of drought in U.S. cities can teach us about the dynamics of vulnerability and adapting to climate change. Invited presentation, University of Leeds. May 10

- Drivers of adaptation at the local level: How do differences in worldviews and risk tolerance matter? Invited presentation, University of Exeter. March 23

- Managing Carbon on Federal Lands: Opportunities and Challenges in Southwestern Colorado, 2017 Forest Vegetation Simulator e-Conference, hosted by Forest Management Service Center, Ft. Collins CO, Feb 28 - March 2 (with Kelsey, K., Fernandez, D., Huang Y., Milford J., Neff J.)

- Surprise and the dynamics of vulnerability: What drought and flooding in urban areas can teach us about climate adaptation. Invited presentation, King's Climate Group, King's College London, February 25

- Drought, Growth, and Climate Adaptation: A Case Study of Water Management in Las Vegas. American Meteorological Society Annual Meeting, Seattle, WA, January 26-27 (with Lincoln, S., Ray, A., and Daly, M.)

Bruce Goldstein

- Communicative Planning within the Fire Adapted Community Learning Network: Solving the Paradox of Two System Traps. With Lee Frankel-Goldwater. Association of Collegiate Schools of Planning Annual Conference, Denver CO, October 12-15

- Transformative learning. Keynote Presentation at the Facing the Future 2017 Workshop: Collaborative Power For Societal Transformation In a Rapidly Changing World. University of Dundee, Scotland. August 28-29

- Regenerating Soil, Regenerating the Soul: Theorizing the Role of the "Interior" in Farmers' Transitions to Regenerative Agriculture. With Hanna Gosnell. Resilience 2017: Resilience Frontiers for Global Sustainability. Stockholm, Sweden. August 20-23

- Organizer/Facilitator of the 3 Horizons Futuring Dialogic Process. Facing the Future 2017 Workshop at the University of Dundee, Scotland, August 28-29, as well as the Resilience 2017 Conference, Stockholm, Sweden, August 20-23

- Transformative Learning Networks. Webinar Presentation for Environmental Defense Fund, Learning Networks in Theory and Practice. June 18

Steve Vanderheiden

- Justice, Democracy, and Water Allocation: A Tale of Two Basins," presented at the Earth Systems Governance annual meeting, Lund University, Sweden, October 9-11

- Invited talk, Carbon Sinks, Territorial Rights, and Climate Justice, University of Reading political theory colloquium (organized by Catriona MacKinnon), June 9

- Equity and Sustainability in Water Allocation, presented at WPSA annual meeting, Vancouver BC, Canada, April 12-14

Selected Faculty Affiliate Presentations

Amanda Carrico

- Pathways and Barriers to Climate Change Adaptation among Smallholding Farmers, Colorado School of Mines, Van Tuyl Lecture Series, Goldon, CO

- Carrico, A.R., Donato, K., Piya, B. Cyclone impacts on migration in coastal Bangladesh. Population Association of America, Chicago, IL.

David Ciplet

- Sustainable energy for all? Tensions between sustainability and justice, Colorado State University, 21st Century Energy Transition Symposium, October

- Green jobs with justice, The Future is Here Speaker Series: Strategies to Address our Changing Workforce Needs, Galvinize, Boulder

- A just transition for Boulder's climate and energy future, Boulder Energy Challenge, October (with Manuela Sifuentes)

- Mapping tensions in movements for a just and sustainable transition, Colorado State University Environmental Justice in the Anthropocene Symposium, April (with Jill Harrison)

- Session Organizer of Critical Environmental Sociologies of the Just Transition, XIX ISA World Conference of Sociology, Toronto, Canada (with Damian White and Timmons Roberts)

- Means of the marginalized: The Global Alliance of Waste Pickers and strategies of resistance to neoliberal governance, American Sociological Association Annual Conference, Regular Session in Transnational Sociology, Engaging the Transnational: State, Social Movement, and Migrants, Montreal, Canada, August

- Subverting the status quo? Climate debt, vulnerability and counter-hegemonic frame integration in United Nations climate politics – a framework for analysis, American Sociological Association Annual Meeting, Political Economy of the World System Section, Montreal, Canada, August

Beth Osnes

- Keynote Speaker on Performance for Young Women's Empowered Voices for the Texas Educational Theatre Association Higher Education Section, 2017 Academic Symposium in Galveston, TX, January 27

- Presentation of Vocal Empowerment Program at the NGO side event for the Commission on the Status of Women, United Nations, New York City, March 20

- Presented workshop session Young Women Empowering Their Voices for Change for Association for Theatre in Higher Education (ATHE), Las Vegas, August 4

- Presented Youth Shine in Performance for Youth Engagement for the Colorado Climate Retreat, University of Colorado, Boulder, September 8

- Presented original performance Shine, a musical for youth-engagement in resilience planning with Chicago youth at Cultivating Ensembles in STEM Education and Research Conference, Goodman Theatre, Chicago, September 16

- Invited to present on my research and creative work for the Women in Solar Energy Forum at the American Solar Energy Society national conference, Denver, CO, October 11

- Invited to present on my research and creative work for the "Art and Climate Change" panel at the Behavior, Energy, and Climate Change Conference, Sacramento, CA, October 18

Phaedra Pezzullo

- Environmental Communication and Western Conceptions of Public Spheres, Environmental Risk Communication and the Public, and Environmental Justice and the Climate Justice Movement. Three lectures at Fudan University. Shanghai, China. October 13, 14, & 15

- Social Media Choices for Polar Researchers; Scientists Writing Opinions: Promises and Perils. Science Communication Training (with Max Boykoff and Susan Sullivan) for US National Committee of the Association of Polar Early Career Scientists (USAPECS). Presented: Sponsored by NASA and NSF. University of Colorado Boulder. August 14

- Fostering Justice as Energy Democracy, Energy Democracy: Creating a Research Agenda Symposium. Funded by the National Science Foundation (NSF), the National Communication Association (NCA), BoulderTalks, and The University of Utah College of Humanities. University of Utah, Salt Lake City, July 12

- Statement Celebrating Boulder's Climate Leadership and Asking Colorado Governor to Pledge to Paris Climate Agreement." Public address. Boulder #Act on Climate Celebration & Call to Action. Sponsored by Climate Culture Collaborative - C3 Boulder and 350 Boulder County. Boulder, CO. June 10

- Quitting is a Privilege, MoreThanScientists interview Pezzullo. (2:05). Inside the Greenhouse. Published: June 4

- Planning for Boulder's Just Transition, Panel, 21st Century Energy Transition Symposium. Colorado State University, Fort Collins, Colorado, April 25

- Rhetoric of Social Movements: Lessons from Toxic Tourism, Skype Talk. University of Illinois Urbana-Champaign, April 18

- Lessons from Environmental Communication, Symposium speaker, STORM WARNING / Artists on Climate Change and the Environment, Vicki Myhren Gallery, University of Denver, April 9

- The Status of Expertise During an Unjust Transition, Science, Expertise, & Environmental Injustice Panel (with Giovanna DiChiro & Amanda Grannas). Waterhouse Family Institute, Villanova University, April 7. The Just Transition Conference: Communicating Power in an Age of Climactic Change. Also, co-organized speakers, including an EJ tour. http://wfi2017.vucommdept.com

- Defining a Just Transition: Transforming Harms to Hope, Temple University, April 5

- Uses and Practices of Community Dialogue in Geosciences and Environmental Sciences, (Co-lecturers and Co-facilitators: Leah Sprain, and Susan Sullivan)

- CIRES Engaged Scientist Series. Video: http://cires.colorado.edu/outreach/projects/engaged-scientist-series January 19

Students, Postdocs, Visitors

- Abigal Ahlert, What Models and Satellites Tell Us (and Don't Tell Us) About Arctic Sea Ice Melt Season Length. 2017 Fall American Geophysical Union Meeting, New Orleans, La, December 12

- Marilyn Averill helped to plan and participated in the Clean Tax Cut Oil and Gas Charrette. Co-sponsored by the One Step In Foundation and the Getches-Wilkinson Center, University of Colorado Law School. Boulder, March 9-10

- Marilyn Averill participated on a panel on "Oil and Gas Best Practices" at American Renewable Energy Day (AREDAY). American Renewable Energy Institute, Aspen, June

- Marilyn Averill participated on panel on "How can the Paris Committee on Capacity-Building contribute to implementing NDCs?" at Capacity Building Day. Bonn, November

- Marilyn Averill helped to organize and participated in

side event panel on the role of universities in capacity building, United Nations Framework Convention on Climate Change Conference of the Parties 23, Bonn, November

- Matthew Druckenmiller, Developing Science Policy Capacity at the State Government Level: Planning a Science and Technology Policy Fellowship Program for Colorado and Beyond. 2017 Fall American Geophysical Union Meeting, New Orleans, La, December 13

CSTPR 15th Anniversary

CSTPR celebrated its 15th anniversary September 28 with a keynote address by Brian Deese, Former Climate and Energy Advisor to US President Obama. Photo Gallery: http://sciencepolicy.colorado.edu/news/15anniversary

CSTPR Open House

On October 27, 2017, CSTPR held an Open House for alumni and friends, in partnership with the CU Alumni Association's 2017 Homecoming Weekend.

Events Cosponsored by CSTPR

- Stand Up for Climate Change: An Experiment With Creative Climate Comedy, March 17

MEDIA REFERENCES

Center personnel and alumni were quoted, cited, interviewed or referred to numerous times in numerous media including New York Times, Washington Post, Guardian, Colorado Arts and Sciences Magazine, 9News, NPR, and KGNU radio. A complete list with links to articles is located at http://sciencepolicy.colorado.edu/news/in-the-news.html.

SERVICE ACTIVITIES 2017 - CORE FACULTY

Max Boykoff

- 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
- 2017-2021: Research Oversight Committee (ROC) for the societal research aspects Genome Canada research project (Title: CoAdapTree: Healthy trees for future climates).
- 2017: Committee Chair, Climate Change Communication Award, International Association for Media and Communication Research (IAMCR)
- 2017-present: Faculty Leadership Institute, cohort 5, University of Colorado Boulder
- 2017-present: Research and Innovation Office (RIO) steering/advisory group, University of Colorado Boulder
- 2010-present: University of Colorado co-organizer of UN observer credentialing (with Prof Jim White and Marilyn Averill)
- 2017-present: Advisory Board, Albert Barlett Center for Science Communication, University of Colorado
- 2016-present: Advisory role, Center for Sports Governance, University of Colorado
- 2015-present: Boulder Faculty Assembly (BFA) Intercollegiate Athletics Committee
- 2017-present: Boulder Faculty Climate Science & Education Committee (BFCSEC)

Phaedra Pezzullo at Fudan University in Shanghai, China in 2017. Photo: Phaedra Pezzullo.

- 2017: search committee for Office of Outreach and Engagement, Program Manager hire
- 2010-present: hosting of visiting scholars: Anna Kukkonen, University of Helsinki (2017-2018), Dr. Leslie Dodson, Worcester Polytechnic Institute (2017); Dr. Justin Farrell, Yale University (2016-2017); Julia Schubert, Forum Internationale Wissenschaft, Bonn Germany (2017); Dr. Suzanne Tegen, National Renewable Energy Laboratories (2016-2017)
- 2012-2017: University of Colorado Forum on Science, Ethics and Policy (FOSEP) Faculty Advisor
- 2015-2017: BFA Coalition for Intercollegiate Athletics (COIA) representative
- 2017-present: Environmental Studies program Introductory Series 1000/1001 Committee
- 2016-present: Environmental Studies program Graduate Committee
- 2016-present: Environmental Studies program Executive Committee
- 2015-present: Boulder Faculty Assembly (BFA) Environmental Studies program representative
- 2016-2017: Environmental Studies natural resources governance tenure-track faculty search committee, Chair
- 2017: Primary Unit Evaluation Committee (PUEC) chair for Assistant Professor Peter Newton review
- 2017: search committee for CIRES Outreach and Engagement Director hire
- 2017-present: co-editor (with Ami-Nacu Schmidt and Jennifer Katzung) of Ogmius Newsletter for CSTPR
- 2017: search committee for Center for Science and Technology Policy Research Office Manager
- 2017: CIRES Graduate Student Fellowship review committee, Chair
- 2016-present: CSTPR Rad Byerly application review committee
- 2016-present: CSTPR AAAS Catalyzing Advocacy in Science and Engineering application review committee
- 2016-2017: CSTPR Science Technology and Policy Certificate program interim Director
- 2016-present: CIRES Center for Science and Technology Policy Research Director
- 2009-present: CIRES Center for Science and Technology Policy Research Executive Committee
- 2016-present: E-town Editorial Advisory Board
- 2016-present: Advisory Board member: Colorado Ocean Coalition/Inland Ocean Coalition
- 2016-present: Advisory role, Climate Change Comedy Project (Emily Coren [PI])
- 2014-2017: Boulder Valley School District, Talented and Gifted District Advisory Committee

Lisa Dilling

- 2017-present: Advisory Board, Research Applications Lab., National Center for Atmospheric Research
- 2017-present: Domain Editor, Vulnerability and Adaptation, WIRES Climate Change
- 2016-present: Editorial Board, Bulletin of the American Meteorological Society (BAMS)
- 2016-present: Aspen Global Change Institute Advisory Board, Aspen CO USA
- 2011-present: Advisory Board, Advancing Knowledge Systems to Inform Climate Adaptation Decisions (ICAD), European Research Council project based at University of Leeds, UK
- 2011-present: Advisory Board, Decision Center for a Desert City, Arizona State University, Tempe AZ
- 2008-present: CIRES Fellow

Bruce Goldstein

- Program in Environmental Design, Mentoring Committee (Chair) (2017), Graduate Committee (2013-2017)
- Program in Environmental Studies, Curriculum Committee, MENV (2017-18), Search Committee for policy position (2016-17), Specialization Coordinator, Sustainability Planning and Management (2016-17)
- Scientific Committee, Transformation 2017 conference, Dundee Scotland, 2016-17
- Founder and Director, Netweaver's Network

Steve Vanderheiden

- Environmental Politics book series Editor, Routledge (2010-present)
- Peer reviewer, Working Group III, Intergovernmental Panel on Climate Change
- (IPCC) fifth assessment report
- Senior Research Fellow, Earth Systems Governance Project (2010-present)
- Associate Editor, Ethics, Policy and Environment (2009-present)

- Core referee, Environmental Ethics (2009-present)
- Editorial Board member, Environmental Politics (2012-present)
- Book manuscript referee: Oxford University Press, The MIT Press, Yale University Press, Palgrave Macmillan, Routledge, Edward Elgar, Rowman-Littlefield, Cambridge University Press

SELECTED SERVICE ACTIVITIES 2017 - FACULTY AFFILIATES

Amanda Carrico

- 2017-present: Invited Member, Committee on Grand Challenges and Opportunities in Environmental Engineering and Science for the 21st Century, National Academies of Science, Engineering, and Medicine
- 2015-present: Associate Deputy Editor, Climatic Change

David Ciplet

- 2016-present: Co-founder and Co-Executive Director for the Just Transition Collaborative at CU Boulder. Provide research, coordination, outreach, community engagement, and support to the City of Boulder and Boulder County to implement social justice objectives as part of the Climate Action Plan
- 2016-2017: Environment and Technology Section of the American Sociological Association, member of the Nominations Committee to select the Chair, Council Members and Student Representative, fall
- 2015-present: Member of the Environmental Studies Program Environmental Justice Curriculum Committee and Graduate Certificate Program, Codevelop Graduate Certificate in Environmental Justice; coordinate environmental justice program needs, University of Colorado Boulder

Beth Osnes

- 2009-present: Faculty Advisor for the CU student group, Performers Without Borders, lead regular trips with CU students to do outreach and education on clean energy through theatre in Guatemala and on the Navajo Nation
- 2012-present: Co-founder (with Rebecca Safran of Evolutionary Biology and Max Boykoff of Environmental Studies) of Inside the Greenhouse, an endowed initiative at CU for creative climate communication, in conjunction with the classes we all teach on climate communication. We also present high-profile climate communicators on the CU campus at events we produce.

Phaedra Pezzullo

- 2016-2017: Director of Planning and founding member, Just Transition Collaborative
- 2017-present: Affiliate Faculty, International Collective on Environment, Culture & Politics, ICE CaPs
- 2016-2017: City of Boulder Planning Department, unpaid consultant on Climate Action Plan community engagement and public participation

Lisa Dilling giving a talk "Urban water systems: Drought response lessons for climate change adaptation" at the London School of Economics on July 24, 2017. Photo: George Adamson.

GRANT ACTIVITY

Project Title	Source	Amount	Period of Grant
Connecting Science to the General Public More Effectively through the Arts (Boykoff, collaborator/advisor)	National Science Foundation	--	2017-2018
Leadership Education for Advancement and Promotion (LEAP) Growth Grant (Boykoff, PI)	University of Colorado	$6,000	2017-2018
Think tanks, denialism and climate change in Europe (THINKCLIMA) (Boykoff, collaborator)	Spanish National Government	Travel Funds	2016-2019
Equipment for Inside the Greenhouse (Boykoff, PI with Beth Osnes and Rebecca Saffran)	Environmental Studies Program student course fees, University of Colorado	$4,487	2017-2018
Science and Technology Policy Fellowship Program for Colorado State Policymaking (Boykoff, co-PI with Matthew Druckenmiller)	California Council on Science and Technology, in partnership with the Gordon and Betty Moore Foundation and the Simons Foundation	$30,000	2016-2018
Lens on Climate Change (Boykoff, advisor)	National Science Foundation	--	2015-2017
Building the Public-facing Media and Climate Change Observatory (MeCCO) (Boykoff, PI)	University of Colorado Outreach and Engagement	$11,995	2017
Collaborative Research: Prices, Peers, and Perceptions: Field Experiments on Technology Adoption in the Context of Improved Cookstoves (Dickinson, PI)	National Science Foundation	$456,282 (CU portion)	2015-2018
Advancing the Use of Drought Early Warning Systems in the Upper Colorado River Basin (Dilling, co-PI)	National Oceanic and Atmospheric Administration	$286,000	2016-2018
Bringing Innovative Data Science Down to Earth (Dilling, PI)	University of Colorado Grand Challenge Seed Grant	$76,000	2016-2017
Western Water Assessment: Building Climate Resilience by Design (Dilling, PI)	National Oceanic and Atmospheric Administration	$4.5 million	2015-2020
Creating and Studying a National Network of Centers of STEM Education: Developing Foundational Infrastructure for Educational Transformation (Goldstein, co-PI)	National Science Foundation	$224,956 (Goldstein portion)	2015-2020

2017 GRANTS AND AWARDS - SELECTED FACULTY AFFILIATES

Amanda Carrico

2017 – 2022 National Science Foundation, co-PI, $1.5 M
Socioecological System Dynamics Related to Livelihood, Human Migration, and Landscape Evolution

2015 – 2017 Pepsico, PI, $150,000
Maximizing Recycling on a University Campus

2013 – 2017 National Science Foundation, PI, $497,949
Rebound vs. Gateway Effects of Pro-Environmental Behavior (NSF-SES 1325660)

2012 – 2017 National Science Foundation, co-PI, $3.7M ($518k to CU)
Drought and Agricultural Adaptations: An Investigation of Vulnerabilities and Responses to Water Stress Among Paddy Farmers in Sri Lanka (NSF-EAR-1204685)

David Ciplet

2017 Online course development grant, The Office of the Vice Provost for Summer Session, Globalization and the Environment course, $5,000

2017 Principal Investigator, CU Office of Outreach and Engagement, Community Impact Grant, A Just Energy and Climate Transition for Boulder, $6,000

2017 Principal Investigator, Boulder Solar Energy Challenge, City of Boulder, The Just Transition Collaborative: Toward an Equitable Energy Transition for the City of Boulder, $20,000

2017 Principal Investigator, Community engagement for a just energy and climate transition, City of Boulder grant, $5,000

2017 Principal Investigator, Partners for Places, Urban Sustainability Director's Network,$50,000

Peter Newton

2017 – 2018 University of Colorado Boulder Center for Science and Technology Policy Research seed funding program, 'Emerging responses to genetically modified crops in Boulder County' (US $6,000. Co-PI)

2017 – 2018 University of Colorado Boulder Innovative Seed Grant, 'Reducing deforestation and improving livelihoods through innovative subnational governance: learning lessons from the state of Acre, Brazil' (US $43,848. PI)

2017 Dr Scholl Foundation, 'Sustainable socio-environmental systems graduate fellowships' (US $30,000. PI)

2017 – 2018 National Geographic, 'Forest fragments, biodiversity conservation, and the persistence of community resource management institutions in the African Albertine Rift' (US $23,900.Co-PI)

2016 – 2017 University of Colorado Boulder Outreach and Community Engagement Interdisciplinary Group Award, '"Dig In! to local food" community literacy project' (US $24,000. Co-PI)

2015 – 2017 CGIAR research program on Climate Change, Agriculture and Food Security (CCAFS) and International Fund for Agricultural Development (IFAD), 'Shared knowledge and lessons for smallholder climate adaptation: learning from integrated agricultural systems in Brazil and Mozambique' (US $500,000. Co-PI)

Beth Osnes

2016 – 2017 Outreach grant, CU Boulder, $24,000 for Young Women's Vocal Empowerment

Phaedra Pezzullo

2017 – 2019 Philanthropiece Foundation Partners for Places grant, $50,000.
For Just Transition Collaborative to partner with the City of Boulder on outreach. Co-PIs: Prof. David Ciplet, Manuela Sifuentes, Michelle Gabrieloff-Parrish, and Prof. Phaedra C. Pezzullo. (Awarded July 2017.)

2016 – 2017 "Dig In! to Local Food" Community Literacy Project. With Veronica House and Peter Newton. Outreach and Community Engagement Interdisciplinary Group Award,University of Colorado Boulder. $24,000

CENTER FOR 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