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Max Boykoff giving an introduction at CSTPR's 15th Anniversary on September 28, 2017.

The 15th Anniversary of CSTPR: Science and Technology Policy Research in a Unique Space

by Alison Gilchrist, CSTPR Science 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 (<http://sciencepolicy.colorado.edu/news/15anniversary>) 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."

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OGMIUS EXCHANGE



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

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.

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 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."

FACULTY AFFILIATE FORUM

Pointing to the Thawing Arctic, Scientists Spend a Week in Washington, DC to Connect Science to Policy

by Matthew Druckenmiller



The CSTPR blog, *Prometheus* (<http://ciresblogs.colorado.edu/prometheus>), was revived in 2016 to regularly feature content from CSTPR core faculty, research associates, postdocs, visitors, students and affiliates to serve as a resource for science and technology decision makers. This new dynamism reflects the new energies and pursuits taking place in and around CSTPR. Below we feature one of the recent *Prometheus* blog posts.

The Arctic is warming twice as fast as the rest of the world, with implications spanning all defining characteristics: sea ice, land ice, permafrost, and cold-adapted communities and ecosystems. The observed changes in the Arctic are resounding, the resulting connections to the globe are increasingly clear, and the science community has a clear role to play in supporting action.

The Arctic has experienced the 11 lowest observed summer sea ice extents, all within the last 11 years. At the end of summer, Arctic sea ice today is a mere 60% of the area it covered just 40 years ago, and less than 40% of the volume. A new ocean is emerging, transforming fisheries, ecosystems, and transportation corridors. Governments, industries, and conservationists are struggling to keep pace, scrambling for the best and latest science and observations. There is also growing evidence that diminishing Arctic sea ice leads to a weaker, meandering jet stream over North America, which in turn can be linked to unusually persistent weather patterns and unfamiliar storm tracks, such as those observed during hurricanes Sandy and Harvey. These storms brought remarkable devastation to the Northeast U.S. and Houston, Texas, respectively, while sparking policymakers' and the public's attention toward the potential drivers of such events.

But there are also the hidden and slow creeping effects of amplified warming in the Arctic. Carbon trapped in northern permafrost (the remains of un-decomposed organic matter from thousands of years ago) equates to 1500 petagrams of carbon, equivalent to approximately twice the carbon currently in the atmosphere. As permafrost—persistently

frozen ground—thaws, we may expect 1 petagram of additional carbon released annually to the atmosphere (~1/10 of global fossil fuel emissions). This is a critical positive feedback of the global climate system, and perhaps the best example of the now common refrain from the science community: “What happens in the Arctic doesn’t stay in the Arctic”.

This equally holds true for the observed rapid melt of the Greenland ice sheet. Greenland melt today contributes a third of the annual increases in sea level, now at 3.5 mm/year. This doesn’t sound like much, but could account for a 6.5-foot increase in some locations (for example, the U.S. Gulf Coast) by 2100. Such cumulative amounts over decades represent a stark deciding factor for the future of coastal cities and settlements (currently 10% of the global population lives along the coast, and is increasing). However, even today, a few mm of sea level rise adds considerably to the storm surge produced by storms that form over a warming ocean.

The destruction and trauma delivered by the 50 inches of rain that fell over Houston during Harvey, or the tremendous loss of life experienced during Katrina 12 years ago, raises critical questions for elected officials, city planners, engineers, coastal residents, and tax payers. When do we choose to rebuild versus relocate? How do we protect and build resilience within our most vulnerable communities? Such questions are grappled with by many, yet perhaps nowhere with such urgency as in the coastal communities of Arctic Alaska. Increasing damage from fall storms (due in part to decreasing sea ice that acts to buffer wind-driven waves), eroding coastlines, and inadequate coastline infrastructure have made relocation an urgent priority for villages along Arctic Alaska’s coastline. It’s more than just a challenge for scientists, engineers, and economists; it’s an issue of climate justice and human rights, where Indigenous leaders and village residents alike must lead. How can we expect these vulnerable villages along shrinking shorelines to benefit from federal disaster policy, which has developed to assist single

FACULTY AFFILIATE FORUM



*A resident of Utqia ġvik, the northernmost village in Alaska, observes open water beyond the coastal sea ice during spring.
Photo: Matthew Druckenmiller.*

households rebuild following one-off flooding events, and does little to aid cohesive communities in revamping and repositioning their infrastructure and self-determination around critical food, cultural, and spiritual resources that have sustained their peoples for thousands of years?

Bringing the natural and social sciences into the fold as a resource to address these challenges requires an engaged and interdisciplinary science community that has two-way communication channels with Arctic communities, stakeholders, environmental journalists, and policymakers. The goal is daunting, yet relatively simple in concept: bring the best available science to bear, be available, know your audience, know your limitations, and be willing to engage in discussions across all levels of sophistication. While some members of Congress need to be made aware of simple facts, such as that real people (Americans!) live in the Arctic, others possess a deep appreciation for the dramatic changes taking place and the need for comprehensive approaches to protect infrastructure, safeguard communities, and sustain healthy economies. For a scientist to be a resource, she or he must be able to listen and learn, as much as provide concise, technical, and relevant scientific information.

This is the approach of the Study of Environmental Arctic Change (SEARCH), which recently spent a week in Washington, D.C. to connect Arctic science to policy. SEARCH is a collaborative program of researchers, funding agencies, and other stakeholders that facilitates synthesis of Arctic science and communicates the current understanding to help society respond to a rapidly changing Arctic. SEARCH currently focuses on how shrinking land ice, diminishing sea ice, and degrading permafrost impact Arctic and global systems.

During September 25-29, SEARCH scientists began their week in D.C. with a two-day workshop (<http://metcalfinstitute.org/training/arcticresearchers-workshop>) led by the Metcalf

Institute for Marine and Environmental Reporting. Dr. Sunshine Menezes (Metcalf Institute Exec. Director) and her team led more than 30 participating scientists through lessons focused on pitching stories to the news media, best practices for engaging policymakers and agency staff, and crafting compelling presentations for varied audiences. Much of the time was directly devoted toward preparing for presentations and discussions that took place later throughout the week. SEARCH scientists briefed the Senate Arctic and Ocean Caucuses on the Hill (Sep 26), convened a panel of Arctic researchers at AAAS Headquarters to discuss the “Global Implications of a Thawing Arctic” with journalists (Sep 27, <https://www.facebook.com/ArcticChange/videos/353317338412791>), held individual meetings with several Congress members from coastal states to discuss sea level rise (Sep 28), and participated in a panel at the Woodrow Wilson Center on “Arctic Environmental Futures: Nexus of Science, Policy, and Operations” (Sep 29, <https://www.wilsoncenter.org/event/arctic-environmental-futures-nexus-science-policy-and-operations>).

These events led to individual discussions with specific policymakers, journalists, national security officials, and other Arctic-focused audiences, as well as provided SEARCH an opportunity to highlight a number of new 1-2 page science briefs addressing stakeholder questions about Arctic environmental change. These are available at Arctic Answers (<https://www.arcus.org/search-program/arctic-answers>), which provides short and up-to-date summaries of the current state of knowledge surrounding diverse topics at the interface of Arctic science and policy.

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FACULTY AFFILIATE FORUM

Environmental Communication and the Public Sphere in Shanghai

by Phaedra C. Pezzullo



In October, I traveled to Fudan University in Shanghai, China, to co-teach a course in environmental communication. The invitation was extended, in part, because I coauthored a textbook with three-time Sierra Club President and Emeritus Professor Robert Cox, *Environmental Communication and the Public Sphere* (fifth edition forthcoming, <https://us.sagepub.com/en-us/nam/environmental-communication-and-the-public-sphere/book252670>). I gave three lectures: Western conceptions of the public sphere; Science and risk communication; and Environmental and climate justice movements.

When we address communication and social change, context matters. In the US, democratic rights related to environmental policy are under attack: the right to know has diminished as the current administration has removed data from government websites (for example, the removal of climate data and civil rights information, <http://people.com/politics/trump-white-house-website-lgbt-climate-change-civil-rights-pages>) and there appears to be an endless list of rolled back environmental protections (for example, these 23 regulations removed in the first 100 days, <https://www.nytimes.com/interactive/2017/05/02/climate/environmental-rules-reversed-trump-100-days.html>). Despite the devastating impacts of neoliberal US policy, most of us hold on to democracy as an ideal driving our engagement in networked public spheres, which shape government decision-making about public goods. Yet, democracy isn't the only system of governance for environmental action.

Like the US, there is no lack of Chinese ecological and human rights challenges. In terms of an energy transition, however, China is exceeding the US in most ways without appealing to democratic ideals. China's solar boom is perhaps most astonishing (<http://www.bbc.com/news/business-40341833>), installing "more than 34 gigawatts of solar capacity in 2016 – more than double the figure for the US and nearly half of the total added capacity worldwide that year." China, therefore, employs 2.5 million people in the solar sector alone, compared to 260,000 in the US (with the current administration's focus

on bringing back coal jobs). Presumably in response to US President Trump, Chinese Premier Li Keqiang stated this year:

"Climate change is a global consensus. It was not invented by China (<https://www.pri.org/stories/2017-06-16/why-chinas-embrace-renewable-energy-matters-and-more-complicated-you-think>). We recognize that this is a global consensus and agreement, and as a big developing nation, we should shoulder our dual international responsibility, that is to join hands with all other countries to cope with this challenge, and realize green, sustainable, low-carbon development."

When I asked students what modes of communication they found to be most successful for publicizing pollution concerns, they offered answers we might hear anywhere: making time lapse videos, sharing compelling images, and connecting stories to people personally. While they appreciated learning about US environmental advocates' use of projection bombing and time lapse images of coral reefs or glaciers, I valued learning about the cutting-edge features of the tallest green building in the world (based in Shanghai) and ancient concepts such as "jingwei ziran," signifying a reverence for nature. They appeared reassured that I affirmed the global commitment to climate action, despite the lack of US leadership these days.

At COP21 in Paris, my faith in international negotiations for a peaceful solution to climate chaos was rekindled. Although we face uncertainties in the US today and no nation is perfect, cross-cultural opportunities such as this one reaffirm my hope that global environmental progress is possible. I look forward to returning to China in June to speak about the Green Public Sphere and Environmental Communication at the Second Biennial Conference on Communication, Media, and Governance in the Age of Globalization; feel welcome to apply to the CFP (<https://www.natcom.org/calendar/call-participants-communication-media-and-governance-age-globalization>).

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VISITOR HIGHLIGHT

Bienvenido León Talks About Communicating Science Online: Are You Not Infotained? by Alison Gilchrist, CSTPR Science Writing Intern



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.

This summer, through the Faculty in Residence Summer Teaching Program (FIRST) in the Office of Continuing Education (<http://www.colorado.edu/summer/courses/first-classes>), 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 (<http://sciencepolicy.colorado.edu/news/webinars>) and to take part in the Lens on Climate Change summer film festival (<http://cires.colorado.edu/outreach/LOCC>) held in the Atlas Institute on campus.

Bienvenido León watches scientific online videos with an objective, critical eye. Many of us click through to a video about climate change because the penguin in the thumbnail image is totally adorable, and return to Facebook five minutes later without thinking about what compelled us to watch the video all the way through. León, in contrast, thinks about why you stayed to watch.

León is a visiting professor from the University of Navarra, in Spain, where he studies audio-visual science and environment communication. In particular, he's interested in how climate change is being addressed with online videos. He is currently teaching a class at the CIRES Center for Science and Technology Policy Research (CSTPR) called "How to Effectively Represent Climate Change in a 21st Century Multi-Media World."

León described pluses and minuses about the rise of online videos on climate change. On one hand, he admires the innovation of organizations that are using the internet to reach (and teach) new viewers.

"Traditional players, the so-called 'legacy media', are doing the same thing that they did on TV," said León. "They're trying to adapt, but they are still very into what they used to do. New

players such as BuzzFeed or Vice News are doing something very different to attract young people."

But on the other hand, León recognizes that the trend is towards short and light "infotainment," not always a good medium for relaying all of the background and facts of a complicated scientific topic.

"These videos are a reflection of the society we have," he said. "We need to be entertained all the time."

León pointed out the changes that this need has prompted in the world of journalism.

"Traditionally a journalist was supposed to be an outside point of view," he said. But lately, journalists have become part of the action. They stand in the middle of protests, waving signs like the rest of the crowd. They narrate with a blatantly subjective point of view, tell stories, tell jokes. This is an important departure from traditional journalism, and leads to the question: is this kind of journalism useful?

"We know infotainment is important," said León. "But how do we know this is effective in terms of, first of all, information retention—do people retain the information better? Or in terms of making people receive the seriousness of climate change?"

León, for his part, is conducting a study on this topic with other researchers from the University of Otago in New Zealand and the Gulf University of Science and Technology in Kuwait. Their website, sciencefilms.org, leads to a survey you can take after you watch a video about climate change. The survey is designed to help the investigators assess how effective the video was.

León's ultimate goal is to understand what format and techniques in online videos can help us understand climate change better. Hopefully, researchers and communicators all over the world will be able to use the findings of this work to improve our effectiveness in communicating the seriousness of climate change.

CENTER 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 (<http://cires.colorado.edu/news/2017-lancet-countdown-health-and-climate-change-released>) was modified from Lancet Communications.

CENTER NEWS

CSTPR 2018 Seed Fund Winners for Common Themes Development

Over the past few years (2016-2017), CSTPR has developed four common themes (http://sciencepolicy.colorado.edu/research_areas) and priority areas for research, education and service. These are (1) Science and Technology Policy, (2) Innovations in Governance and Sustainability, (3) Drivers of Risk Management Decisions, and (4) Communication and Societal Change.

CSTPR put a call out for proposals that solicit funding and that will further develop our four themes in the upcoming 2018 calendar year. The winning proposals will support CSTPR-related efforts as they provide initial support for further development of the projects. These will then help carry out our CSTPR mission and vision: http://sciencepolicy.colorado.edu/about_us.

2018 Seed Fund Winners



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

2018 Radford Byerly, Jr. Award in Science and Technology Policy

The Center for Science and Technology Policy Research (CSTPR) within the Cooperative Institute for Research in Environmental Sciences (CIRES) at CU-Boulder is offering a \$1500 award to an eligible CU-Boulder student.

Background

This award is named in honor of Rad Byerly, who earned a

B.A. and M.A. in physics at Williams College, and a Ph.D. in physics at Rice University. After several years in laboratory research as a postdoctoral fellow at the Joint Institute for Laboratory Astrophysics (JILA), at CU-Boulder, Rad moved to Washington, D.C., for a long career in science policy. He served more than twenty years as staff on the Science Committee of the U.S. House of Representatives, ultimately as staff director to Chairman George E. Brown (D-CA) who believed, as did Rad, that government-funded scientific research had a duty to serve society and its citizens as well as to expand knowledge of the natural world. In the late 1980s Rad also directed the Center for Space and Geosciences Policy at CU-Boulder, and at the end of his career, delighted in mentoring and working with graduate students at CSTPR/CIRES as they grappled with problems of science, politics, and public policy.



Rad Byerly, Jr.

Award Eligibility

Applicants must be full-time, CU-Boulder campus, degree-seeking graduate students in good standing in any academic department.

Award Criteria

- A commitment to making a significant contribution to science and technology policy through a career in academia; state, local, or federal government service; the private sector; voluntary organizations; journalism and the media; or some other form of public service that advances the role of science and technology in service to society.
- Demonstrated potential for such contributions through publications, community outreach and organization, or paid and/or voluntary employment either on or off campus.
- High academic achievement.

Application Process

Applicants shall submit a two-page statement describing how they meet the criteria for the award; an unofficial academic transcript; CV; and one letter of recommendation by midnight December 4, 2017 to ami.nacu-schmidt@colorado.edu. The award will be distributed January 2018.

The award recipient is expected to make one presentation in CSTPR's noontime seminar series on a topic of his/her choice and write one article for the CSTPR blog, Prometheus (<http://ciresblogs.colorado.edu/prometheus>) in Fall 2018.

Applicants will be notified by December 15, 2017

CENTER NEWS



Red Cross Red Crescent Climate Centre Internship Program

Improving Environmental Communication and Adaptation Decision-Making in the Humanitarian Sector

Application Deadline: February 1, 2018

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:

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

This internship program will place 1-2 PhD and/or Master's degree students in an IFRC regional field office, a National Society branch office, or with a partner organization for a period of approximately 3 months.

The RCRCCC supervisors will liaise with specific IFRC field offices to identify potential projects and placements. Once projects are identified, RCRCCC supervisors will work with CU Boulder Director Max Boykoff, CU Boulder Graduate

Coordinator Katie Chambers and the student to design a scope of work. Projects can encompass, but are not limited to, topics such as the use of scientific information in decision making, communication of probability and uncertainty, perceptions of risk, and characterizing vulnerability and adaptive capacity. Placements in the field will address specific needs identified by IFRC field staff related to challenges of science communication and adaptation decision-making.

Participants will be required to write six blog posts from the field during this placement, give some presentations (e.g. in ENVS, in the CSTPR brownbag series) upon return, and complete a report at the conclusion of their internship detailing their experience and research outcomes.

\$5,000 funding in total will be provided to offset expenses (in-country housing, food, airfare and in-country transportation). Expenses can vary widely depending on the location and nature of the placement. Interns will work with CU-affiliated travel agents to arrange round-trip airfare to their field site. Due to this \$5,000 limit, applicants are encouraged to seek additional funds from alternate sources, as expenses can exceed this budgeted amount.

Application Details for Summer 2018

Criteria: Successful candidates will have a demonstrated interest in the Southern and/or East African regions, as well as demonstrated interest in one or both topic areas (environmental communication and adaptation decision-making), as evidenced by any of these elements: courses completed/underway, past work, volunteer and/or research experience, MS/PhD thesis direction.

Successful candidates must be self-starters and capable of adapting to independent working conditions. Students must have the consent of their graduate advisor to participate. A detailed terms of reference tailored to each intern will be developed by the RCRCCC based upon their needs and the intern's skills in the months leading up to placement in the field.

For more information or to apply see: <http://sciencepolicy.colorado.edu/students/redcross/apply.html>

CENTER NEWS

CSTPR Welcomes New Affiliates and Students



Cassandra Brooks (CSTPR Faculty Affiliate) is an Assistant Professor in Environmental Studies at the University of Colorado Boulder. She draws on a diversity of disciplines including marine science, environmental policy, and science communication to study and seek solutions to pressing environmental problems. Prior to joining CU Boulder, she completed a PhD at Stanford University, studying international ocean policy. Her research helped drive the adoption of the world's largest marine protected area in the Ross Sea, Antarctica – one of healthiest and most productive marine ecosystems left on Earth.



Amanda Carrico (CSTPR Faculty Affiliate) is an Assistant Professor in Environmental Studies at the University of Colorado Boulder. Her work draws on the fields of psychology (her home discipline), sociology, demography, and economics to examine human-environment interactions. Amanda's work falls into two primary research areas. The first is to understand the factors that motivate pro-environmental behavior among individuals and households, and how these insights can be used to improve environmental programs and policy. The second examines adaptive responses to environmental change among households and communities engaged in agricultural livelihoods.



Patrick Chandler (CSTPR Graduate Student) is a graduate student in the Environmental Studies Program at University of Colorado Boulder. He 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.



Matthew Druckenmiller (CSTPR Visiting Researcher) is a Research Scientist at the University of Colorado Boulder's National Snow and Ice Data Center 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.



Justin Farrell (CSTPR Faculty Affiliate) 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.



Anna Kukkonen 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.



Peter Newton (CSTPR Faculty Affiliate) is an Assistant Professor in the Environmental Studies program at the University of Colorado Boulder, and an instructor for the MENV program. He is an interdisciplinary scientist who is interested in understanding how governance interventions affect synergies and trade-offs between environmental, economic, and social outcomes in socio-environmental systems. He works principally in agricultural and tropical forest landscapes, mainly in Brazil but also with partners in Indonesia, Mozambique, Nepal, and elsewhere. Much of his work focuses on sustainable food systems, land-use change, and rural livelihoods.



Olivia Pearman (CSTPR Graduate Student) 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.



Phaedra Pezzullo (CSTPR Faculty Affiliate) is an Associate Professor in Media, Communication & Information at University of Colorado Boulder. Her research focuses on the mobilization of resistance to toxic pollution, the communication of resilience in what she calls "the late age of fossil fuels," and the advocacy of environmental and social justice. With interdisciplinary training in the humanities and the sciences, she engages ethnographic participant observation fieldwork, qualitative interviews, popular texts across media, news archives, government documents and contemporary critical theoretical perspectives.

CENTER TALKS & EVENTS

The fall 2017 noontime seminar series is coming to a close. All past talks are available via webcast at <http://sciencepolicy.colorado.edu/news/webinars>.

August 3, 2017 *New Coordinates for Environmental Documentary*

by Bienvenido León, School of Communication, University of Navarra (Spain), FIRST Scholar, CU Boulder



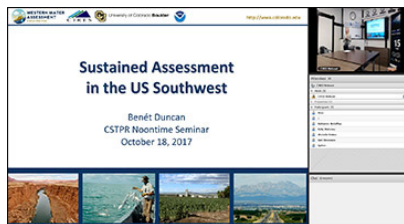
September 13, 2017 *Forests, Finance and Conservation: A Turn in US Climate Policy*

by Lauren Gifford, Geography, CU Boulder
Winner of the 2017 Radford Byerly Award



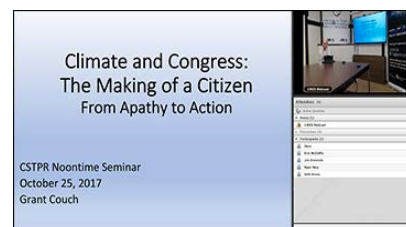
October 18, 2017 *Sustained Assessment in the US Southwest*

by Benét Duncan, Western Water Assessment



October 25, 2017 *Climate & Congress: The Making of a Citizen*

by 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*

by Andrew Rumbach and Esther Sullivan, University of Colorado Denver



UPCOMING TALK:

November 29, 2017 at 12:00 PM 1333 Grandview Avenue, Boulder 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

CSTPR OPEN HOUSE

This year we are celebrating CSTPR's 15th anniversary and the 50th anniversary of the Cooperative Institute for Research in Environmental Sciences our campus home at CU Boulder. As a part of our ongoing work, we held an 'Open House' for alumni and friends of CSTPR on October 27, in partnership with the CU Alumni Association's 2017 Homecoming Weekend.

If you were not able to join us and you would like an opportunity to financially support CSTPR as we move forward, please visit our donations page: <http://sciencepolicy.colorado.edu/donate>. CSTPR is seeking support for a variety of projects that offer students an opportunity to bring together their scholarly interests with practical experience on the ground, such as our Red Cross Red Crescent Climate Center internship opportunity and our ongoing Media and Climate Change Observatory. Your support helps us seed new projects at the interface of science, technology and society and provide unique opportunities to future generations of students. These opportunities shape career pathways in fundamental ways.

In late September we celebrated our 15th anniversary (<http://sciencepolicy.colorado.edu/news/15anniversary>) by way of a keynote lecture by former US President Barack Obama's Climate and Energy Advisor Brian Deese. It was a wonderful gathering in the historic Old Main Chapel, and we assembled a slide show celebrating our fifteen years that can be found here: <http://sciencepolicy.colorado.edu/news/15anniversary/slideshow.html>.



MEDIA AND CLIMATE CHANGE OBSERVATORY MONTHLY SUMMARY

The Media and Climate Change Observatory (MeCCO) (http://sciencepolicy.colorado.edu/media_coverage) analyzes traditional/legacy media representations of climate change. MeCCO team endeavors to comprehensively aggregate, monitor, appraise and critically examine media coverage that influence the spectrum of possibility for effective responses to ongoing climate challenges. The MeCCO team monitors coverage monthly in fifty selected sources globally, and eight country profiles (Australia, Canada, India, Japan, New Zealand, Spain, UK, US).

Issue 10, October 2017 Summary

October media attention to climate change and global warming was down just slightly (7%) throughout the world from the previous month of September 2017. This decrease was felt regionally in Africa, Asia, Europe and North America, while counts held steady in the Middle East and as they increased slightly in Oceania and South America. Compared to counts from fifty-two sources across twenty-eight countries in seven regions around the world in October 2016 (a year ago), the global numbers were up about 7%. However, coverage in the month was 37% below the average number of stories appearing each month in 2017 (approximately 3631 stories per month from January - October 2017). Scaling down from the global to monitoring in eight countries, coverage was also up from the previous month of September 2017 in Australia (20%), Spain (2%) and New Zealand (27%). Coverage was down in Canada (-19%), Germany (-9%), India (-7%), the United Kingdom (UK) (-21%), and the United States (US) (-18%).

Figure 1 shows these ebbs and flows in media coverage - organized into seven geographical regions around the world - from January 2004 through October 2017.

With our expansion of monitoring into Spanish-language and German-language coverage in recent years, Figure 2 shows word frequency data from three representative



Figure 2. Word clouds showing frequency of words invoked in media coverage of climate change or global warming in the Spanish-language press (left) and German-language press (right) in October 2017.

Spanish-language sources (on left): *El País* (Spain), *La Nación* (Argentina) and *El Nacional* (Venezuela). These are words (four letters or more) in articles containing the terms 'calentamiento global' or 'cambio climático'. Word frequency data from two representative German-language sources (on right) are *TAZ - Die Tageszeitung* and *Süddeutsche Zeitung* (both from Germany). These are words (four letters or more) in articles containing the terms 'klimawandel' or 'globale erwärmung'.

Figure 3 shows word frequency data in the United States (top left), Canada (top right), Australia (bottom left) and India (bottom right) in October 2017. The five representative US sources are *The Washington Post*, *The Wall Street Journal*, *The New York Times*, *USA Today*, and the *Los Angeles Times*. The three representative Canadian sources are *The Globe & Mail*, *The National Post* and the **Toronto Star**. The five representative Australian sources are *The Age*, *The Australian*, *The Courier Mail*, *The Daily Telegraph & Sunday Telegraph* and *The Sydney Morning Herald*. The four representative Indian sources are *The Hindu*, *The Times of India*, *Hindustan Times* and *The Indian Express*.

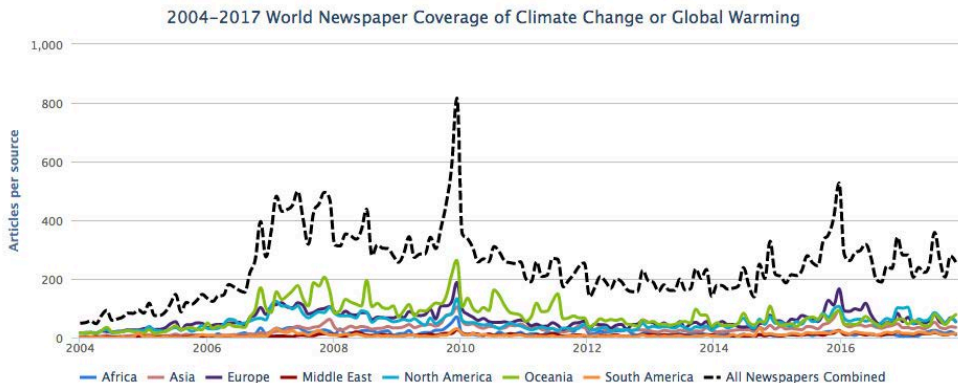


Figure 1. Media coverage of climate change or global warming in fifty-two sources across twenty-eight countries in seven different regions around the world, from January 2004 through October 2017.

As Figure 3 (top left) shows, in the US, media attention continued to focus on movements relating to the Donald J. Trump Administration (in)actions. While this was also the case in previous months of 2017 around the world (see Figure 2 in the February 2017 for an example of Trump coverage in Australia, New Zealand and the UK), the ‘Trump Dump’ - where media attention that would have focused on other climate-related events and issues instead was placed on Trump-related actions (leaving many other

MEDIA AND CLIMATE CHANGE OBSERVATORY

MONTHLY SUMMARY

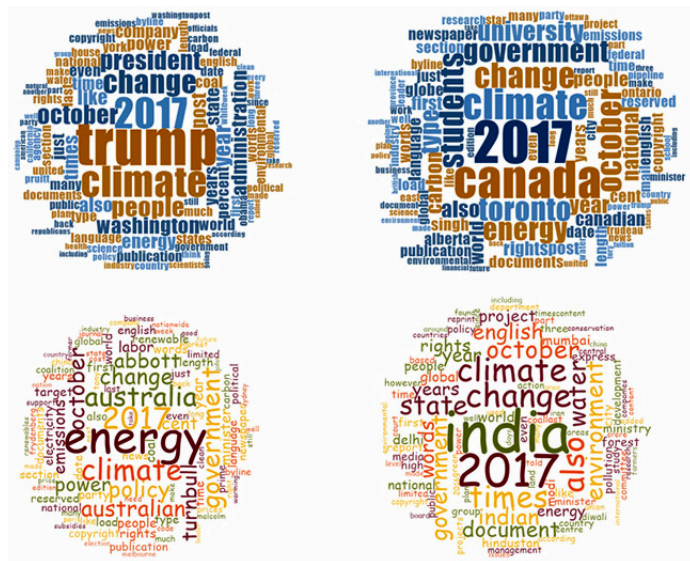


Figure 3. Word clouds showing frequency of words (4 letters or more) invoked in media coverage of climate change or global warming in the United States (top left), Canada (top right), Australia (bottom left) and India (bottom right) in October.

stories untold) - appears to be limited to the US media-scape in October 2017. In US news articles related to climate change or global warming, Trump was invoked 2399 times through the 274 stories this month (a remarkable ratio of nearly 9 times per article on average) in *The Washington Post*, *The Wall Street Journal*, *The New York Times*, *USA Today*, and the *Los Angeles Times*. However, in contrast in the UK press, Trump was mentioned in the *Daily Mail & Mail on Sunday*, *Guardian & The Observer*, *The Sun*, the *Daily Telegraph & Sunday Telegraph*, the *Daily Mirror & Sunday Mirror*, *The Scotsman & Scotland on Sunday*, and *The Times & The Sunday Times* 535 times in 498 October articles.

These stories lead into wider considerations of attention paid to political content of coverage during the month. In this arena, Lisa Friedman and Brad Plumer from *The New York Times* reported in mid-October on US EPA Administrator Scott Pruitt's initiation of the federal rollback of the Clean Power Plan, despite the lack of a replacement measure to propose in its place. Timothy Puko from *The Wall Street Journal* reported on power plants nonetheless staying the course for emissions reductions plan due to technological capabilities, consumer demand and cheap natural gas driving demand. While reports of morale being lifted in some coal companies and the coal community, widespread opposition like that reported by Oliver Milman in *The Guardian* effectively characterized the outdated effort like something akin to saving the eight-track tape in the age of digital music production (a major difference being that this EPA rollback cuts to the heart of carbon-based industry and society

as well as to one of the greatest environmental challenges of the 21st century). And as politics met economics in October, Nathan Bomey in *USA Today* reported how two big US auto companies - General Motors and Ford - announced plans to introduce over thirty models combined in the next five to six years while news reports at the end of the month discussed the US Bureau of Labor Statistics new data that US solar installation and wind technician jobs are the fastest growing, with plans to double by 2026. These business trends and innovations were discussed as catalysts for policy measures to potentially follow.

In October, coverage relating to ecological and meteorological issues grabbed a great deal of attention. Stories like a piece in *The Times* (UK) on floods and landslides killing at least 68 people in Vietnam after a tropical depression hit the central and northern regions of the country in early October were followed by stories like an article by Jacques Leslie in the *Los Angeles Times* about the devastating northern California wildfires and their record-breaking human toll as well as widespread property damage, and a piece by Dino Grandoni in *The Washington Post* linking these wildfires to economic costs to the US Federal government.

Across the globe in October, there were a range of stories that pervaded the cultural arena. Polls in October pointed consistently to willingness to support and take action on climate change around the world. For example, Seth Borenstein and Emily Swanson - in an article then run in a number of national sources - reported on a poll from the *Associated Press-NORC Center for Public Affairs Research* and the *Energy Policy Institute* at the University of Chicago that more than half of US Americans want state and local governments to step up and act on climate change in the absence of US Federal action. And amid many scientific studies on climate change and interconnected issues in October, Amina Khan from the *Los Angeles Times* covered a new study in *Science Advances* linking strains in the marine foodweb, ocean warming, El Niño Southern Oscillation and a changing climate.

Heading into the United Nations climate change negotiations (COP23) in Bonn, Germany on November 6-17, preceded by a much-anticipated US Global Change Research Program Report released by thirteen US agencies in early November (with findings at odds with the stance of the Trump Administration), November will be a fascinating month for news on climate change or global warming. We will also see if the 'Trump Dump' influence continues to wane in the months to come.

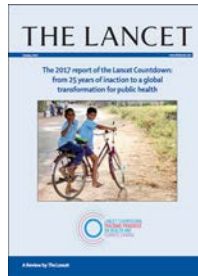
- report prepared by Max Boykoff, Jennifer Katzung and Ami Nacu-Schmidt

CENTER PUBLICATIONS

Below is a sample of recent publications by CSTPR faculty (Center personnel highlighted):

Watts, N., M. Amann, S. Ayeb-Karlsson, K. Belesova, T. Bouley, **M. Boykoff**, et al. (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.

Summary: The Lancet Countdown tracks progress on health and climate change and provides an independent assessment of the health effects of climate change, the implementation of the Paris Agreement,¹ and the health implications of these actions. It follows on from the work of the 2015 Lancet Commission on Health and Climate Change,² which concluded that anthropogenic climate change threatens to undermine the past 50 years of gains in public health, and conversely, that a comprehensive response to climate change could be “the greatest global health opportunity of the 21st century”. The Lancet Countdown is a collaboration between 24 academic institutions and intergovernmental organizations based in every continent and with representation from a wide range of disciplines. Read more: http://sciencepolicy.colorado.edu/admin/publication_files/2017.08.pdf.



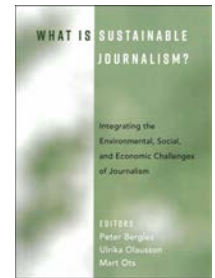
Wibeck, V., A. Hansson, J. Anshelm, S. Asayama, **L. Dilling**, P. M. Feetham, R. Hauser, A. Ishii, and M. Sugiyama (2017). Making Sense of Climate Engineering: A Focus Group Study of Lay Publics in Four Countries. Climatic Change 1-14, doi: 10.1007/s10584-017-2067-0.

Abstract: This study explores sense-making about climate engineering among lay focus group participants in Japan, New Zealand, the USA and Sweden. In total, 23 qualitative focus group interviews of 136 participants were conducted. The analyses considered sense-making strategies and heuristics among the focus group participants and identified commonalities and variations in the data, exploring participants' initial and spontaneous reactions to climate engineering and to several recurrent arguments that feature in scientific and public debate (e.g. climate emergency). We found that, despite this study's wide geographical scope, heterogeneous focus group compositions, and the use of different moderators, common themes emerged. Participants made sense of climate engineering in similar ways, for example, through context-dependent analogies and metaphorical descriptions. With few exceptions, participants largely expressed negative views of large-scale deliberate intervention in climate systems as a means to address anthropogenic global warming. Read more: http://sciencepolicy.colorado.edu/admin/publication_files/2017.07.pdf.



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, Peter Lang.

This edited volume, which elaborates on the idea and concept of sustainable journalism, is the result of a perceived lack of integral research approaches to journalism and sustainable development. Thirty years ago, in 1987, the Brundtland Report pointed out economic growth, social equality and environmental protection as the three main pillars of a sustainable development. These pillars are intertwined, interdependent, and need to be reconciled. However, usually, scholars interested in the business crisis of the media industry tend to leave the social and environmental dimensions of journalism aside, and vice versa. What Is Sustainable Journalism? is the first book that discusses and examines the economic, social and environmental challenges of professional journalism simultaneously. This unique book and fresh contribution to the discussion of the future of journalism assembles international expertise in all three fields, arguing for the necessity of integral research perspectives and for sustainable journalism as the key to long-term survival of professional journalism. The book is relevant for scholars and master's students in media economy, media and communication, and environmental communication. Read more: http://sciencepolicy.colorado.edu/admin/publication_files/2017.06.pdf.



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. Environmental Modelling & Software 95 432-446, doi: 10.1016/j.envsoft.2017.05.004.

Abstract: This paper proposes the Participatory Framework for Assessment and Improvement of Tools (ParFAIT) as a way to address low uptake of Water Resources Systems Optimization (WRSO) tools. ParFAIT is a transdisciplinary process conducted in five stages, two of which are participatory modeling (PM) exercises. Herein we describe the framework, introduce our candidate tool- Multiobjective Evolutionary Algorithm (MOEA)-assisted optimization, and present the results of our first PM workshop. The PM workshop, designed to solicit input on a tool testbed, was held in February 2015 with representatives from six Front Range, Colorado, water utilities. Our results include an expanded characterization of the decision making landscape, feedback on water utility decisions and performance goals commonly employed in WRSO studies, and new questions that warrant future investigation by researchers. Read more: http://sciencepolicy.colorado.edu/admin/publication_files/2017.09.pdf.



JOB OPPORTUNITY



Assistant Professor Position Environmental Economist at University of Colorado Boulder

The Cooperative Institute for Research in Environmental Sciences (CIRES) at the University of Colorado Boulder seeks applications for a tenure-track assistant professor position with a research and teaching emphasis in the field of environmental economics. Applicants should show a record of research including quantitative analyses or modeling of relevance to the environment, such as ecosystem services, climate, natural disasters, coupled human and natural systems, decision sciences, science and technology policy, or sustainability of environmental resources. The successful candidate will have commitments to undergraduate and graduate instruction as a faculty member within an appropriate academic department, and will conduct research through CIRES as a Fellow of CIRES.

Minimum requirements include a PhD in a field of study such as those listed above. Applicants should submit a CV, a statement of research and teaching interests, sample research papers, and names and contact information for 3 professional references. Application materials will be accepted electronically here (posting number 11693): <https://www.cu.edu/cu-careers>. Application review will begin 1 December, and we will continue to accept applications until the position is filled.

The University of Colorado is an Equal Opportunity Employer committed to building a diverse workforce. We encourage applications from women, racial and ethnic minorities, individuals with disabilities and veterans. Alternative formats of this ad can be provided upon request for individuals with disabilities by contacting the ADA Coordinator at: adacoordinator@colorado.edu.

MULTIMEDIA HIGHLIGHT

More Than Scientists Campaign Quitting is a privilege by Phaedra Pezzullo

We have a lot of admiration for Phaedra's approach: "I think quitting is a privilege. If you listen to the people most impacted by environmental disasters and climate disasters, they don't have the privilege to quit, they have to keep working. I find a lot of hope in the people who get up every day and try to make a difference, because what is our alternative?" Because really, what *is* the alternative?



In this Inside the Greenhouse project, Fall semester 'Climate and Film' (ATLS 3519/EBIO 4460) students and Spring semester 'Creative Climate Communication' (ENVS3173/THTR4173) students, along with the More than Scientists campaign, create and produce a short video based on an interview of a climate scientist in the local Boulder area, depicting human/personal dimensions of their work.

These scientists work at NCAR, NOAA, CIRES, INSTAAR, WWA, NSIDC, LASP and various other units at CU-Boulder.

Video [2:05]: <http://www.insidethegreenhouse.org/media/more-scientists-interview-phaedra-pezzullo-department-communication>

To view more videos from the More Than Scientists Campaign see: <http://www.insidethegreenhouse.org/project/inside-greenhouse-more-scientists-collaboration>

CIRES Visiting Fellows Program

CIRES sponsors a prestigious Visiting Fellows program, inviting scientists to join the thriving community of researchers in Boulder, Colorado. CIRES Visiting Fellowships are intended to stimulate interdisciplinary research across the institute through engagement with CIRES researchers on campus and in Boulder's NOAA Laboratories. Sponsored by CIRES Fellows, Visiting Fellows work with CIRES researchers on a wide range of environmental science topics. The CIRES Visiting Fellows Program has attracted more than 325 scientists from around the world over the past 50 years; many have gone on to lasting careers in CIRES and NOAA. We encourage applications from members of groups under-represented in the environmental sciences and related disciplines.



Two-year Visiting Fellowships are available for postdoctoral researchers (\$62,000 per year), and terms of up to 12 months (living expenses) for senior scientists on leave or sabbatical.

Applicants should contact possible CIRES Fellow collaborators (<http://cires.colorado.edu/council-of-fellows>) well in advance of submitting an application. Successful proposals are typically designed in collaboration with your potential host at CIRES. Without the support of a current CIRES Fellow, your application is unlikely to succeed.

The 2018 competition opened October 23, 2017 and the application deadline is January 9, 2018. For more information or to apply see: <http://cires.colorado.edu/about/institutional-programs/visiting-fellows-program>.

ABOUT US

Ogmios is the newsletter of the Center for Science and Technology Policy Research. The Center is within the Cooperative Institute for Research in Environmental Sciences (CIRES) at the University of Colorado Boulder. The mission of CIRES, which was established in 1967, is to act as a national resource for multidisciplinary research and education in the environmental sciences. CIRES is jointly sponsored by the University of Colorado-Boulder and the National Oceanic and Atmospheric Administration.

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