

The American Meteorological Society's Summer 2014 Policy Colloquium

Part II: Science Policy Communication and Applications

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1. Introduction

On 1-10 June 2014 I had the honor of participating in the American Meteorological Society's (AMS) 2014 Summer Policy Colloquium in Washington D.C. This was the 14th annual colloquium, a program that brings together 35 to 50 professionals in federal and state governments, academia (faculty and graduate students) and the private sector with atmospheric, ocean, environmental and climate science backgrounds. Colloquium participants are trained how to best use our scientific expertise to affect policy making and the budget process, by influencing politicians and funding organizations to create policy that would improve society's resilience and response to atmospheric, oceanic, environmental and climate challenges. This paper highlights discussions on the challenges of science policy communications, and some applications and related exercises conducted during the colloquium. The discussions provided in this paper and the companion Part 1 paper that focuses on policy fundamentals ([Stuart 2015](#)) are intended to provide a summary of this very interesting and unique experience. More information about the AMS Summer Policy Colloquium

can be found at:
<http://www2.ametsoc.org/ams/index.cfm/policy/summer-policy-colloquium/>

2. Science Policy Communications – Reaching the Audience

Speakers:

- Bill Douthitt - Senior Photographer for Science Magazine
- Katherine Rowan - Director of the Science Communication Graduate Program for the Department of Communications at George Mason University

Many basic, common sense concepts in optimizing our ability to communicate science to many audiences were presented. There was a focus on what the audience understands, keeping the message simple but making it resonate with the audience by tying the subject to their emotions. It is also important to recognize that controversial statements can be spread across social media and other forms of media easily to other types of audiences.

Six types of audiences and their composition were identified based on research ([Rowan et al. 2013](#)): alarmed

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(13%), concerned (26%), cautious (29%), disengaged (6%), doubtful (15%) and dismissive (10%). The extremes (alarmed and dismissive) are the most emotional and are most difficult to change their perspectives. The study also asserts that people of all audience types just want risk management, not unsolicited advice on how to run their lives. When communicating risk, we need to earn confidence of our audience, which takes time. Respecting audience perspectives and communicating through stories are particularly important. There was a strong emphasis on story-telling as one of the most effective ways to communicate any type of information including scientific information. For example, an effective method for communicating a concept as a short story is to use the “and...but...therefore” method. After an introduction, use the word “and”, build to a climax in one or two sentences, then use “but” to address the issue that needs resolving and describe it in a sentence or two, then offer the solution after the “therefore”. Movie storylines are often developed this way and people have an easier time retaining information presented this way.

There have been some recent examples of well-known and well-respected scientists using inflammatory language related to climate change. This often makes it difficult for the rest of the scientific community to communicate climate change information. We as scientists have to make our impacts at the local level with the understanding that the small battles win the war. Eventually the correct message will dominate over the extreme voices in our profession.

3. Communicating Policy

Speakers:

- Jeffrey Mervis - Science Correspondent for Science Magazine
- Joe Romm - Senior Fellow for the Center for American Progress and Science Advisor for the Showtime Series *Years of Living Dangerously*
- Thomas Champoux - Director of Communications for the AMS

The role of journalists in communicating science policy was an interesting discussion. We were urged to use caution and be aware that journalists can have an agenda when seeking out experts on their topic of interest. We have every right to ask journalists what questions they will be asking so we can prepare answers to our satisfaction. Most journalists have no problem providing questions in advance. During an interview, we should try to determine if the reporter has a bias, or has already made up their mind on the issue regardless of any information you provide.

Many science correspondents for newspapers and other media sources have been eliminated because of downsizing resulting from a transition to web based journalism. This has increased the likelihood that we will be speaking to someone with limited scientific background; therefore we have to communicate accordingly, speaking in very simple terms. Graphics are most important as they often convey a message better and more quickly than words. Rhymes are often remembered as well and have great influence on some people’s perceptions such as when Johnny Cochran, O.J. Simpson’s lawyer said “If it doesn’t fit, you must acquit”. Be careful not to use negative words or phrases. For example, when Richard Nixon said, “I’m not

a crook”, the word crook was associated with him even though he was denying it. We should avoid stating something is wrong, choosing instead to phrase a response with “a better way to think about this is...” because people respond better to positively worded responses. We also need to build trust with our audience and avoid uncertainties and hedging since it is perceived as untrustworthy.

The new Director of Communications for the AMS, Thomas Champoux, echoed all the sentiments from the presentations, panel discussions and exercises throughout the day. He emphasized that the AMS has to promote what value the Weather and Climate Enterprise provides to the world. We also need to have more of a web and social media presence, transitioning AMS journals to more web based periodicals. Finally, we have to maximize our use of broadcasters as the experts to communicate science to the general public.

4. Perspectives on Executive Leadership

Speakers:

- Scott Livezey - Deputy Oceanographer and Navigator for the Navy, Task Force for Climate Change for the Navy, Deputy for NOAA Space TENCAP and Maritime Domain Awareness (MDA)
- Roger Wakimoto – National Science Foundation (NSF) Assistant Director for Geosciences Directorate
- Paulette Blanchard - Graduate Student in the Department of Geography and Environmental Sustainability at the College of Atmospheric and Geological Sciences at the University of Oklahoma at Norman and

member of the Absentee Shawnee Tribe

- Shawn Anchor (pre-recorded video) – Motivational Speaker and CEO of GoodThink Inc.
- David Verardo - Head of the Atmosphere Section of the Division of Atmospheric and Geospace Sciences, NSF

Many leadership characteristics that were presented at the colloquium are taught in many other leadership courses. Some notable characteristics of leaders are service above self, learning from and assisting mentors and mentees, humility, consistency between words and actions, being genuine and a good listener, helping others develop ideas and giving them credit for accomplishments and, having a sense of humor. We also must be careful about what we say and do because in this day and age of social media, much of what we say and do can be misinterpreted.

Leaders are also organized and honest, admitting mistakes when necessary. Leadership is earned, not forced, and leaders care more about their fellow employees more than trying to impress their superiors. People are more devoted to leaders that they know are taking personal interest in them, but we need to avoid broad, obligatory non-specific feedback. We must be generous with compliments but be specific about what we appreciate as it proves we are paying attention to what they are doing, which encourages loyalty.

Paulette Blanchard, a graduate student from the University of Oklahoma and an emerging leader of Native American people, was a member of our colloquium class. She presented a YouTube video that she helped create on the topic of how climate change is affecting Native American People. The video is titled *Listening for the Rain* and is a collection of interviews with many scientists

who are members different Native American Tribes, describing how droughts and other effects of climate change are changing their ways of life.

Native people are very aware of changes in their natural environments and there is a fundamental mistrust between native people and non-native people, including scientists. So the fact that so many native people agreed to be a part of the video is remarkable and took many years of building trust and relationships to get them to comment on how the changing climate is affecting their lives. Paulette was one of many leaders who helped build the trust and helped with the creation of the video.

Native people have noticed major changes in rainfall patterns and river flows. Telling stories is a major means of communication that are passed down through many generations. Past climate patterns can be evaluated through these stories from the many past generations. Recent generations have had to change some of their crops and develop new ways to get water for themselves, their crops and livestock. They are also working with scientists to determine ways to increase crop yields in smaller areas. Native People especially need to work together since they have often been neglected regarding climate change mitigation efforts, as well as other societal problems.

After Paulette's presentation, another video by Shawn Anchor was shown to emphasize characteristics of successful people, specifically happiness and optimism. Shawn is a motivational speaker and CEO for Goodthink Incorporated, who has researched the topic of success, and has statistics to support his assertions on how happiness leads to success. He is realistic about how media and society largely promote negativity and mediocrity. However, by focusing on positive thoughts and interpreting situations in a positive

manner, we can reprogram our brain function. It has been scientifically proven that positive thinking and happiness aids the brain in the production of chemicals and hormones that promotes creativity and effective thinking. As we improve our positive thinking it will get easier with time and we can filter out all the negativity and mediocrity in our lives.

Some final discussion on effective leadership included the topic of promoting progress through change and stressed the importance of lifelong learning, communication, teamwork, diversity, trust, credibility, integrity and mentoring. It was emphasized that progress and change should only be undertaken after careful study and consideration, because some changes do not necessarily result in improvements to existing paradigms. Additionally, feedback to team members should be genuine with specific examples of their accomplishments to prove you are truly appreciative of their contributions. Effective leadership requires real listening to maximize your ability to address problems and issues from colleagues. Ultimately, there are always people observing what you are doing, so we must act with genuine integrity, consistency and passion, empowering others and making sure not to be just a job description.

5. Legislative Exercise

Moderator:

- Paul Higgins - Director of the AMS Policy Program

A legislation exercise provided an opportunity to practice leadership and communication skills. We were split into 9 groups of 4 people with each group representing a specific senator, each with strong interest in carbon taxes and environmental issues due to connections to industries or mining interests, strong

involvement with environmental groups and voter demographics. The senators we represented were from Louisiana, West Virginia, North Dakota, Delaware, Alaska, Ohio, Washington, Vermont and Arizona. There were 4 Democrats, 4 Republicans and one independent.

We were tasked at creating amendments and revising an existing bill, H.R. 2380, The Raise Wages, Cut Carbon Act of 2009. This bill proposes taxes on carbon, includes offsets to reward industries that cut carbon emissions below certain thresholds, and direct some of the revenue generated into social security. After considerable research by all of our groups into the legislation histories and the political philosophies of each senator, we crafted amendments (additional proposed changes to the law) and revisions to the existing proposed legislation, in the hopes for eventual passage of the entire bill.

Many of the groups met multiple times to negotiate deals to see how much of our proposed changes they would accept in an effort not only to get what we wanted for our state, but also so the legislation would pass. We all figured it was more important to pass some legislation even if it didn't contain everything each state wanted because any progress in addressing carbon emissions was better than nothing. We had some spirited debates and some humorous interludes through the negotiations as Dr. Paul Higgins of the AMS mediated the entire exercise. Important issues such as jobs, supporting retired people, maintaining agricultural interests and green space and developing alternative energy sources were discussed.

After hard work and persuasive, emotional language used by all, we voted on all amendments, some of which passed and others didn't. We then voted on the modified bill and it passed by a 5 to 4 vote. The bill had many compromises in it and

included weaker carbon emissions regulations but still represented at least some progress in addressing pollution, jobs, social security, alternative energy sources, a cleaner environment and climate change. We concluded that the bill we produced and passed might not pass in real Congress because there were so many compromises, and would be perceived as not enough progress by some and too much by others. Still, it was an exercise that really highlighted the political process and how people with different perspectives and goals are either motivated or not motivated to debate, negotiate and compromise.

6. Case Study on Water Resource Management

Panelists:

- Deb Larson-Salvatore - Ocean and Coastal Resources Manager for the Institute for Water Resources at the USACE
- David Green - Ecological Forecasting, Energy and Coastal Hazards Lead for NOAA
- Robert Mason - Hydrologist for the USGS

A case study exercise was conducted with the group being tasked to consider a number of issues and propose possible solutions to improve water resource management. A panel of experts, took notes, guided us and commented on our proposals, discussion and debate.

Everyone agreed that the entire Weather and Climate Enterprise needs to work together with policy makers to address the many issues related to water resource management. Water is important for survival of all living things and is a nonpartisan issue as everyone can agree on the need for water. However, water resource problems tend to be long term

where budgets and policies are shaped more in the short term, year by year. Problems are typically very complex, with some issues spanning multiple political boundaries with different vulnerabilities and interests, such as dams affecting water availability downstream across different states. If we don't address water resource management, significant segments of the public at large will ultimately experience water shortages which may result in rapid rises in the cost of water access. In a worst case scenario, people could resort to violence in desperation for water.

The public at large can become more informed and involved in solving problems and this can be accomplished through education from trusted people in communities including media and clergy. Solutions can come from a variety of sources including policy, government assistance and private sector/market forces. The more people pressuring policy makers and businesses in solving problems, the faster solutions can be tested and implemented. Ultimately, we must develop metrics to track how changes are improving or degrading the current system. We must also hold responsible parties accountable for any delays in implementing changes and for any degradation to the system.

7. Disaster Mitigation and Response – Risk, Vulnerability and Resilience

Speakers:

- Josh Sawislak - Senior Advisor for Infrastructure and Resilience at the U.S. Department of Housing and Urban Development
- Trevor Rikken - Vice President of Disaster Operations and Logistics for the American Red Cross

- Dr. Rick Knabb - Director of the National Hurricane Center (NHC)

The next topics of discussion were risk, resilience and vulnerability of people to the effects of a changing climate. There is some evidence that climate change is not a priority for a significant segment of the general public due to the long-term nature to the problem. Our way of life has not changed enough to convince many people of an increasing probability for extreme impacts from weather events.

We as scientists need to communicate information in terms people understand and motivate them to seek out the information as they will not retain information that is forced upon them. We must also frame solutions in terms they care about such as affects to their livelihoods. It is often possible to frame problems and solutions in terms of contests and winning, which appeal to many people. By being creative and working with people over a long period of time, we can determine how to motivate them to be a part of solutions such as moving out of a flood plain. As an aside, there are an increasing number of studies suggesting that people respond to hazardous weather information based on their Meyers-Briggs personality classification, something that could prove valuable in future efforts to educate and communicate to people.

The National Flood Insurance Plan continues to evolve and provide solutions to those who live in flood plains. Insurance rates are periodically adjusted, forcing people to make decisions on whether to stay in their current residences or seek alternative living arrangements. Federal, local and state governments frequently try to provide subsidies for people to relocate out of flood plains but it is ultimately up to the individuals to move. Insurance companies are increasingly investing in reinsurance,

basically insurance for insurance that allows companies to calculate risk and frequently adjust exposure to risk to maximize profit for the insurance company while being as fair as possible with adjustments to rates of customers based on changing risk with time.

An interesting perspective on responding to extreme weather events was provided by the Red Cross based on experiences during past events. As society continues to change and become more vulnerable to weather-related disasters, education efforts, planning and preparedness actions must start well before the beginning of the event. Determining where to provide the most relief efforts can be difficult due to the long lead times necessary to make decisions on where the greatest impacts will be. However, with the increasing presence of social media in today's society, communication between people in threatened and affected communities can be monitored to determine where the greatest impacts are occurring so the Red Cross can mobilize more focused relief efforts in a more efficient and cost effective manner.

The specific threat from tropical systems was also addressed. Trust and integrity are a significant part of communicating effectively to the public masses. It was also emphasized that with the increasing number of ways people receive weather information including social media, we must communicate information as concisely as possible, focusing on the hazards, not necessarily on complex meteorological concepts. We also need to address and correct persistent myths that have no scientific basis such as the use of tape to prevent broken windows during storms, using wind strength as a basis for evacuating, and strengthening home structures being cost prohibitive.

There is an increasing emphasis on specifically addressing individual hazards associated with tropical systems, such as

storm surge, winds, tornadoes and inland flooding. Research is being conducted on how to categorize threats of each hazard, similar to how hurricanes are categorized. There is currently an organized effort from NHC to produce enhanced graphics, inundation maps and warning information for the specific hazard of storm surge. The NHC has found that storm surge forecasts can be too general, which is why they are moving toward graphical information describing specific impacts at the community level. Similarly, the NHC is working on educational campaigns and enhanced warning information regarding inland flooding.

8. Summer Policy Colloquium Experiences and Career Paths in Science and Policy

Speakers:

- Matthew Stepp - Executive Director for the Information Technology Innovation Foundation for Clean Energy Innovation
- Matthew Carr - Managing Director in the Industrial and Environmental Section of the Biotech Industry Organization
- Jason Samenow - Weather Editor and Chief Meteorologist for the Capital Weather Gang for the Washington Post
- Alisha Tribble - Senior Advisor to the Secretary of the U.S. Department of Energy

The final session of the colloquium was devoted to four speakers who have used their experiences at past colloquia in creative and high profile ways to influence policy. They now represent think tanks, online communities and assist presidential cabinet members.

Matthew Stepp is the Executive Director for the Information Technology Innovation Foundation for Clean Energy Innovation, a think tank that lobbies politicians on weather and climate related issues. They are funded by corporations and philanthropists who share their views on various climate and energy policy issues. Research collaborations with academic institutions help define their positions on a multitude of issues. However, their ability to define metrics of success in their lobbying efforts is difficult because sometimes only parts of legislation are passed and it can take many years for legislation or parts of legislation to pass.

Matthew Carr is Managing Director in the Industrial and Environmental Section of the Biotech Industry Organization, another think tank and lobbying organization. This organization focuses on agricultural influences on alternative energy and fuel sources, especially biofuels. Corn is currently the primary biofuel being used in today's society, being converted to ethanol, but Matthew lobbies for policy to support research into other biofuels that may be more useful than corn.

Ironically, biofuels are transported using combinations of fuels, including ethanol, which contribute to the climate footprint from fossil fuels and other combustibles. This can have implications on taxes and fees of transporting goods across political borders, depending on what pollution and transportation regulations exist in different locations. Ultimately, issues and policies related to emissions regulations, fees and taxes for transporting goods could be determined in courts, which could take a considerably long time.

Jason Samenow is the Weather Editor and Chief Meteorologist for the Capital Weather Gang for the Washington Post. He started with just a weather blog, providing increasingly enhanced forecasting and

weather analysis services. The services expanded and linked off the Washington Post web site as a staff of well-established meteorologists and freelance meteorologists were hired. The Capital Weather Gang blog has recently become the permanent weather information source for the Washington Post.

The strong online presence in the Washington D.C. area has allowed the Capital Weather Gang blog to research experimental forecasting and communication techniques such as confidence or predictability for weather events. Their team also frequently analyzes past weather events to help the online community understand what happened and why. They also write editorials on weather and climate related issues that reach a broad spectrum of users, including politicians and lobbyists, that can influence weather and climate related policy.

Alisha Tribble is the Senior Advisor to the Secretary of the U.S. Department of Energy. She provides scientific information in an increasing number of political venues as her reputation for communicating scientific information in a concise and understandable manner expands. Politicians including presidential cabinet members to the president himself require periodic briefings and they rely upon scientists that are always available and can communicate effectively.

Alisha emphasized that as scientists we should be a life-long learner, never turn down an opportunity, always be personable and professional because you don't know when you are being evaluated, and build quality experience by developing solutions to problems. Building upon those skills will increase your exposure to decision makers, make you more marketable and expand your opportunities to make a difference in policy making.

9. Conclusion

This very condensed summary represents only the formal sessions of the colloquium related to Science Policy Communication and Applications and does not include the numerous insightful offline discussions during social time throughout the 10 days in Washington D.C. The colloquium organizers and my classmates shared many heartfelt and uninhibited dialogues about not just weather, climate and policy but many life issues and it greatly enhanced our entire experience. We closed the colloquium with a ceremony of receiving certificates of completion and a complimentary copy of the AMS periodical *Living on the Real World*, written by Colloquium organizer Dr. Bill Hooke. This experience was truly one of the highlights of my career and I am now better equipped and more motivated than ever to make a difference in the world.

Acknowledgements

The AMS Summer Policy Colloquium has been conducted since 2001 and has consistently provided a solid foundation of knowledge of how we scientists can best influence science policy to benefit society. Each annual class is unique and the total experience is very much shaped by the perspectives and interaction with your fellow colleagues. I am honored and privileged to have been a part of the class of 2014, with colleagues that were very enthusiastic and encouraging, exchanging all our perspectives on all issues discussed freely and respecting our differences.

I would like to thank Dr. Bill Hooke, Dr. Paul Higgins, Caitlyn Buzzas, Dr. Shali Mohleji, Dr. Peter Cowan and the American Geophysical Union (AGU) for organizing a truly enjoyable colloquium with such a diverse spectrum of speakers, fora and methods for learning about policy

fundamentals, budgets, science policy, communication and leadership. Thanks to Ray O'Keefe, the Meteorologist in Charge of NWS Albany, NY for informing me of this opportunity, encouraging me to apply and sending my statement of interest to NWS eastern region director Dr. Jason Tuell for consideration to attend. I would like to also thank Dr. Jason Tuell for choosing my statement of interest to forward to Dr. Edward Johnson at National Weather Service headquarters for consideration to attend and chose me among a select few to represent the National Weather Service at the colloquium. Finally, I would like to thank John Sokich at National Weather Service Headquarters and Caitlyn Buzzas of the American Meteorological Society for their assistance with various aspects of my travel and lodging arrangements.

For Further Reading

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