

## Cases for Teaching Responsible Communication of Science

### Extreme weather, extreme communication? Issues brief

Note: Unless marked with brackets, the perspectives, arguments and opinions stated in this issue brief are those expressed in interviews with participants in the drafting of the climate statement. The arguments in brackets are supplied by the case authors, either on their own initiative or by drawing on publicly available commentary on climate communication.

#### 1. Who should be invited to sign the statement? Who has authority to speak publicly on this issue?

A. *Anyone* who is on the faculty of a college or university in the state should be invited to sign.

- There are scholars associated with the institute organizing the letter who are not scientists but whose work deals with climate change. They are very informed about climate change and how it impacts their subject—in English, history, or whatever. The academy is still the academy; if people in the humanities really understand the statement, and agree with it, they should be able to sign.
- It is absolutely crucial that people who are not scientists and engineers, but who are involved in relevant research on the environment, be included in the discussion. So much of meeting the challenge of climate change is about relationships—about human beings and other forms of life. While the social sciences and humanities examine relationships, the natural sciences and engineering do not train students in the exploration of the complexity of human relationships. So the humanities and social sciences are an absolutely crucial piece of our state's response to climate change.
- Having a large range of signers may allow some readers to make connections that they wouldn't otherwise. If they see someone that's living in their community, maybe they will connect. Readers may be more likely to find someone they trust if the signers are diverse.
- A large number of signers will have more impact, which is very important. Also, faculty won't want to sign if there are only a few names there already. More signers will lead to even more signers.

B. Any *science* faculty member in in the state should be invited to sign.

- Anyone who understands the scientific method is able to assess the scientific content of the statement and is qualified to sign. Physical scientists are interested in natural processes. Even if you're studying some rare salamander or something, you can tell that somebody else has followed the rigorous principles of science, of inquiry, of hypothesis testing, and that they've come to this conclusion. You respect the process and you can tell: "wow, this is good science at work." But if your day-to-day work doesn't involve hypothesis testing, you aren't qualified.

C. Only faculty in *climate science or climate-impacted* fields should be invited to sign.

- Since the statement is being presented as having a scientific basis motivating its publication, you want to have the signers be people who have credentials of some sort in the field. Having even a couple of signers without credentials weakens the whole

argument. This statement presents the view of climate science; it is undermined when non-climate-scientists sign it.

- It doesn't really matter how many people sign the statement, because the facts are the facts. Counting the number of names—the idea that consensus lends weight to scientific fact is completely foreign to anyone who does science work. So the argument that more is better is really odd.
- “Anti-mainstream” climate organizations [i.e., skeptics] always claim to have lots of signatures. But those lists may have two Nobel winning physicists and then 60,000 others with no expertise whatsoever. It is ridiculous. So we shouldn't make the same mistake.
- [Having non-climate-scientists sign opens the statement up to obvious criticisms from partisan adversaries. In the actual case, the Heartland Institute did criticize the Statement for including English professors; see the Outcome materials.]

What choice was made in the drafting of the climate statement? Between (A) and (B). The letter specifically referred to “science faculty and research staff,” and most signers were scientists. But some non-scientists affiliated with the organizers of the statement were invited and signed as well.

## 2. What is the purpose of the statement?

A. The purpose is to *inform or educate* the public about climate change: "for citizens of our state to learn that climate change is real and having an impact."

- Scientists are responsible for educating the public on crucial issues. Scientists educate the public on campus (students), but how do we keep citizens throughout the state up to date on the most recent science? We have to reach out to lifelong learners and disseminate findings to the wider public. It's our teaching mission.
- We as scientists are irresponsible to our profession if we sit on this and don't tell the general public. The public has invested in us by supporting our research, and we have an obligation to report back about what we found.
- [Note: communication researchers tend not to favor this purpose, since it implies the faulty “deficit model” of science communication, where the scientist's main job is just to pour knowledge into the public's empty heads. Current research supports instead a “public engagement model,” which encourages scientists to open ongoing dialogues with publics and to recognize that failures to take political action are not only due to ignorance. See E below.]

B. The purpose is to help people *become aware of the larger context* of climate change for the immediate event of the drought—"for citizens of our state to understand the implications of climate change for their lives."

- It's a teachable moment. People are seeing things with their own eyes and that makes them wonder what's going on. We can help them understand that the drought is not a random event. Like other extreme weather events, it is in line with what we expect in the future, and it should be viewed in that context. The drought exposes the vulnerability of society to extremes, so it's an opportunity for impressing on people the need to become educated on these issues. We're in this moment, so we need to keep aware of the broader context: how things are changing around us, and based on that how policies need to change to adapt. We need to capitalize on people's being impacted by the drought, in

order to get their attention and put the drought into a larger context. We can't let an enormous drought go by without creating this kind of context!

C. The purpose is to *promote policy and action*: "for citizens of our state to take action to limit greenhouse gas emissions and to adapt to the impacts of a changing climate."

- We need to keep the issue of our changing climate in front of the public, and take the lead in trying to do something statewide. The ultimate goal is to move the political discussion forward.

D. The purpose is to *open conversations* between scientists and members of the press, public, and policy communities—"for citizens and scientists of our state to start a conversation about climate change, its impacts, and what we need to do.

- The goal is to embed ourselves as resources in the community to work with the community as questions arise. We wanted to build a broad base of conversation.
- By having a long list of signers statewide, we hoped that people would get a sense of who they could contact in their own community to talk more about the topic. We aimed to put a science face in every community. That way people would understand that climate change is not just a concern of faceless scientists out there in DC somewhere who may have political ties or researchers in the ivory tower at the big state universities. Instead, scientists are people that you already know—they are people who you can engage in conversation.
- Even conversations with severe skeptics can be valuable. I know I won't convince them, but I still engage them in conversation. I ask them questions about how they view things. I try to learn about their way of thinking and try to find out where our paths diverge. I always want to get more information about how they are thinking, so I can better understand them and better engage with them.
- [This is the goal endorsed by communication research; see by contrast A, above.]

What choice was made in the drafting of the climate statement? The Statement itself said something like (D): "We feel that it is important for citizens of Iowa to understand its [climate change's] implications." Leading drafters had a strong commitment to (E), which was to a small extent carried out in the dissemination of the Statement, and remains a goal in activities since.

3. What should the statement say about the relationship of climate change to *this* extreme weather event? Should the statement include uncertainties, limitations, and disclaimers?

A. The statement should make a strong statement linking this extreme weather event to climate change—it "can be attributed in part to human-induced climate change."

- [Climate scientist Kevin Trenberth has argued that because the climate has changed so significantly, "all weather events are affected by climate change."]
- There's so much worse that can happen from climate change, that we are wrong if we don't say anything or if we say something so wishy-washy that it just adds to the complexity of the issue. We need to contribute to immediate policy changes.
- [Saying that an extreme weather event is "consistent with" climate change—as the other options propose—is meaningless. Virtually *any* weather event is "consistent with" climate change.]

B. The statement should not attribute the extreme weather event to climate change, but it doesn't need to include a specific disclaimer. Silence is enough—the drought "is consistent with an observed warmer climate."

- [In general, it is very challenging to develop evidence linking any specific weather event to climate change, and there is currently no such evidence in the case of the extreme drought of 2012.]
- Whenever you write, you should know your audience, or else you will lose them. Mealy-mouthed scientist things like uncertainties would kill a statement like this, addressed to the general public. The audience is pretty darn unsophisticated; in this kind of forum you want to be direct and state things as you see them. So in a public statement, it's more important to be concise than to explain everything to the utmost. If you make a whole bunch of caveats, the people reading it will feel like these are all weasel words—that's how the public sees scientific caution. It all has to do with emphasis. The emphasis in a public statement is simplicity, directness, and just getting the message across.
- We should not say anything incorrect in the statement, like attributing the drought to climate change unless we have strong evidence. But if we're clear in that statement, then we don't need to follow up with an extra disclaimer, even if it is also true. We need to think about making our statement in such a way that if we're challenged, we have a good answer. But until we're challenged, we can leave the caveats out.
- Scientists aren't responsible if the press misconstrues statements that we make.

C. The statement should include an explicit disclaimer—the drought "is consistent with an observed warmer climate, although science cannot say with certainty that the drought was caused directly by human activities."

- Even in a public statement we still have to maintain our discipline. Where we can explain the evidence and help people make a distinction between things that scientists can and can't say, we should do so. If we do anything else, we lose a lot of scientific credibility. Of course we shouldn't be shooting ourselves in the foot by pretending that we don't have knowledge when in fact we do have knowledge. But it's important that we not overstate the level of that knowledge, either.
- We don't want people falsely claiming that we are saying that this drought was induced by climate change. It's key in statements of this kind to avoid giving the other side talking points and to prevent the press from taking things out of context. You have to write in order to avoid having them lift stuff out easily. You have to make your intended meaning so clear that it can't be taken to mean something else. A carefully worded disclaimer will prevent misconstrual; it bulletproofs the statement.
- Adding the disclaimer doesn't weaken the statement. It doesn't create a false sense of uncertainty. In the statement, it's clear that scientists are not debating whether climate change is happening or not. We've made up our minds: that point shines through even when you have the caveat that *this particular event* is not itself due to climate change.
- Including the disclaimer won't confuse people. People can deal with those sorts of conflicting messages; they do so all the time. For example, in drug commercials the warnings about heart attacks are accompanied by images of people walking through fields of wildflowers. People don't have any problems understanding that.

What choice was made in the drafting of the climate statement? (A); a disclaimer was included.

4. What would make a public statement by scientists on climate change inappropriately political?—what if any action step should be included?

A. Calls for action of any type are inappropriate; the best scientists can do is to continue to support the policy process with sound information: "re-establish the Midwest Climate Change Impacts committee, to assess future impacts of climate change in the State of Midwest and analyze the costs and benefits of various legislative solutions."

- I'm very traditional in terms of not wanting to advocate. I want to say, "here's what we know, here's what we're trying to figure out, these are the solutions that are out there." Scientists get into trouble when we wade into areas where we're not expert, like public policy. We should stick to talking about what we know.
- Science and scientists should "inform" policy decisions, as the IPCC says. But scientists are not policy-makers or decision-makers. Thus, they should report their results and infer what they mean, but they leave the final decisions up to citizens and governments.
- I try to stay very short of showing personal opinions or advocating for something, especially on hot button issues. When you read a letter to the editor, you can tell which side the writer is on. If we want to retain our credibility as objective investigators, scientists shouldn't be like that.
- Most scientists aren't ready to go out and do lobbying and other policy work, trying to get laws passed on renewables and so on. Their work is science, teaching, research; there are other people to do the other things.

B. Non-specific calls for action which appeal to commonly accepted values are appropriate; calls for specific actions are not appropriate: "lead innovation in reducing greenhouse gas emissions, improve resilience in agriculture and communities, and move towards greater energy efficiency and increased use of renewable energy."

- If after laying out the facts you don't say something about what to do, people are frustrated. So as scientists we can't give completely neutered advice. We need to show the "so what?" at the end. Any scientific knowledge should have some kind of actionable statement or people won't understand why the scientists are telling it to them. They'll think: "OK, you've just lectured me, what's the take home point? This is a nice statement you scientists wrote in your ivory tower!"
- A statement is appropriate if it is vague—if it is broad. Nothing in it should be partisan, controversial, cutting-edge, specific. It is fine to talk about things like energy efficiency and jobs, which are generally well accepted. There are no real political ramifications. There is no suggestion that we scientists know the best way to address the issue. Mostly it just says that we (society) have got to do something because of what we (scientists) know is going on.

C. Calls for specific, controversial actions—policy advocacy—is appropriate: "impose a carbon tax of \$15 per ton of CO<sub>2</sub>."

- The urgency of the situation requires action and scientists need to advocate for it in a strong way. We need to be making policies and decisions about energy and transition as quickly as possible away from fossil fuels.

- It is appropriate for people who have greater knowledge to persuade people on policies that stand at the nexus of science, politics and human relations. Early scientists who understood polio and smallpox, for example, persuaded people to take vaccines.
- Calls for action on climate change can be rigorous and held to the same scientific standard as the rest of the statement. They draw on a body of literature—not climate science, but in economics, policy studies and so on. If you draw from these kinds of books and respect good science, advocacy is legitimate.
- We're citizens too, we're part of the community. So we can advocate, provided that we don't claim to be the authoritative scientist.
- We as human beings exist in politicized societies; politics is part of being human. Scientific research is not outside of forces like the human desire for power and control, conflicts over control, conflicts over the nature of leadership and shared decision-making. All these are fundamental to being human, all are political, and they don't evaporate in the lab.

What choice was made in the drafting of the climate statement? (B): A call for action, but on largely noncontroversial policies like increased emphasis on renewable energy.