

Q&A: Extreme weather is necessitating a shift in humanitarian action

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Developing countries like the Philippines are the most vulnerable to climate change. Credit: Int'l Federation of Red Cross

Andrew Kruczkiewicz has spent much of his career trying to get ahead of the weather. As a meteorologist and senior staff researcher at the

Columbia Climate School, Kruczkiewicz's current research focuses on extreme weather events and the application of climate and weather data and forecasting to reduce disaster risk and facilitate humanitarian action.

Kruczkiewicz, who also has over 10 years of experience working with humanitarian agencies like the Red Cross, says it's essential for such agencies to start using the forecast data that institutions like the Climate School provide. "Why can't we get ahead of disasters?" he asks. How can the humanitarian sector "anticipate and prepare" for disaster, as opposed to merely responding to it?

In the following Q&A, Kruczkiewicz discusses his work with the Red Cross Red Crescent Climate Center, why we need a new generation of climate science translators, and what humanitarian action might look like in a post 1.5C° world.

In January, the United States experienced extreme weather—blizzards, torrential rain, snow and high winds from coast to coast. Is there a connection here to climate change?

With these [extreme weather events](#), other climate experts and I ask questions such as, to what extent can we detect these types of extremes in the historical record? And to what extent are we detecting the frequency of these events, at this level of extremeness more in recent years? But the real question we need to be asking is, what's the connection to increasing impacts on people? What are the socioeconomic impacts?

[The question of how much of this extreme weather is related to [climate change](#)] is challenging, and to some extent, it's not appropriate to make deterministic findings right when the event is happening. If we really

want to get the answer, it takes a few weeks to really unpack the extent to which an event is linked to climate change.

How much can people, especially vulnerable populations, prepare for these extreme weather events?

In many places, there are standard operating procedures. And often, actions written in the standard operating procedures are designed to support a certain band of the population. Like sending out an alert [regarding extreme weather] to everybody on their phones. But people who don't have smartphones won't get the alert. But let's say most people have smartphones, and the alert tells you to go to the store and stock up on some food. What if you don't have a car? Or it might say to pump the heat up a little bit more. But what about people who can't afford to do that because they haven't paid their bills?

Many times, the problem is not whether the standard operating procedures or the recommendations exist; the issue is, can the most vulnerable populations take the recommended actions in a sufficient amount of time? We need to think about this more than we do.

For almost 10 years, you've worked with the Red Cross Red Crescent Climate Center, whose mission is to reduce the impacts of climate change and extreme weather events on vulnerable people. What does this work actually look like on the ground?

I have a variety of roles. One of them is translating complex climate science into useful formats for humanitarian applications. There's accountability and trust that comes along with that.

The second role is integration. For example, integrating the appropriate types of climate and weather information at the right time for operational activities and for humanitarian action. Sometimes it's quasi-real time, where there'll be a tropical cyclone approaching Madagascar and the Red Cross needs a second opinion. Sometimes it's more about developing a flood risk management strategy or early warning systems.

I also provide technical backstopping—offering technical support and expertise. If the hazard of interest to the humanitarian sector is heat wave, for example, they might bring in a few scientists just to make sure they're using the right data sets or make sure they're interpreting them appropriately, or make sure that the uncertainty is captured by the policymakers.

And sometimes there's a need to work in country with the Red Cross Red Crescent national societies, or national societies like the American Red Cross or the Kenya Red Cross. Sometimes they need someone to support the design of a flood risk management program, or a new resilience program, or an early warning system. Sometimes I broker the relationship with the national weather service of a country and the Red Cross. I facilitate dialogue and while I'm going to have influence in the decision no matter what I do, I try to remove myself as much as possible from the final decisions so the decision maker is empowered to make them.

Can you give me an example of your work in a specific country and what impacts it had?

I was in Mongolia twice. And my role was on the technical backstopping side, but also to help with data integration within standard operating procedures for a dzud early warning system.

A dzud is a severe cold snap preceded by a hot and dry summer, which affects pasture and which in turn can jeopardize livestock. While Mongolia is always cold, every few years, they have a severe cold snap in the winter and the livestock die.

My job in the Mongolia case was not to tell them when to take action or to make decisions about which actions to take. It was to help design the triggers so that when a threshold [of risk] is reached down the road, the standard operating procedures will already be in place.

Are you involved in creating the standard operating procedures?

Yes, that's one of my tasks at the Red Cross. What goes into the standard operating procedures? What forecasts should we use? What does extreme cold mean in a place that's already pretty cold? In Mongolia, the question you had to ask the herdsman was, if we told you that in three months, we're going to have one of these extreme winters, what could you actually do to protect your livestock?

The result was that a dzud risk map created by the National Agency for Meteorology and Environmental Monitoring triggered a forecast-based financing program, which provided the herds people with cash grants and animal care kits. My job was basically to determine, if they want cash transfers, how long does it take to get the cash transfer through?

Sometimes a small change can make a big difference. For example, when we were working in Ecuador, we realized that three-day lead time forecasts for floods were not going to be useful. We were thinking we should clean out the drainage system, but then we realized that takes five days. What's the value of a three-day forecast when you need five days to do something? The value is zero.

These examples [Mongolia and Ecuador] represent a big shift in the humanitarian sector's thinking about preparing and anticipating disasters. It is changing, but more work needs to be done.

Former NASA scientist James Hansen has said, 'The 1.5°C global warming ceiling has been passed for all practical purposes.' How does humanitarian action need to change as we enter a 1.5°C and post-1.5°C world?

Humanitarian action is a broad term, and essentially refers to anything we're doing to protect and save lives, prevent and alleviate human suffering, and protect the basic needs of the community. But there hasn't been enough focus on what a post-1.5°C world looks like in terms of humanitarian impacts. There are certain levels of warming where we will see new types of impacts. And those new types of impacts will be disproportionately felt by the most underserved communities, the most deprioritized communities.

In the next few months, we'll be planning a workshop to both better identify what the priorities are and understand the socioeconomic risks from a science perspective. It's going to essentially be about what needs to be done in the next couple of years so we have a better sense of what humanitarian action will evolve into.

Would you say that humanitarian action today—versus what it needs to be in the post-1.5°C world—is still very reactive and not predictive enough?

I think that's fair to say, but I think things are changing. In the past 10

years, there's been a big push for getting ahead [of disasters] and using forecasts, but we need to do more. And we need to focus on the most underserved. We need more scientists engaged in these translation and integration processes when it comes to global climate policy and humanitarian decision-making, because the more complex the situations get, the more you need someone who's a translator versus just a communicator.

Why is the role of climate science translator increasingly important?

Many users of climate data tasked to make decisions on behalf of humanitarian or development organizations don't have the necessary skills to understand the opportunities and constraints provided by the climate data. This is why we need thousands of climate science translators (CSTs)—a new generation of CSTs that specialize in the brokering, translating, and tailoring of climate science data for decision-makers.

For example, one of the key skills is being able to identify misinformation and disinformation. We need translators that are trusted enough to vet the data. If there are five flood maps emailed to the Red Cross from different sources, how do you know which ones are valid?

Some of the other skills needed to be a climate translator include knowledge of early warning systems and climate data and their limitations; an understanding of the standard operating procedures of humanitarian end users; the ability to describe the links between climate impacts, livelihood implications, political conflict and socioeconomic effects; an understanding of both the uncertainty and accuracy of climate and weather forecasts; and an ability to create trust between the relevant entities.

Is the Columbia Climate School well positioned to deal with the growing challenges to the humanitarian sector?

At Columbia, we have a lot of the elements we need when we're talking about making these shifts in the humanitarian sector. For example, the Climate and Society Program at Columbia has been designed to provide space for a multidisciplinary graduate-level experience for facilitating connections between climate science and decision-making. We should be acting more as leaders in this area [training climate science translators]. It's so important.

Also, our network within Columbia, within New York, and within the region allows us to look at the different layers of these complex questions. If we want to ensure that the impacts on people are decreasing over time—that is the future of climate science. There are few if any other academic institutions that really allow and facilitate that, so we need to do more. We need to enhance that type of work, figure out ways to acknowledge it and ways for it to grow. And then hopefully other universities will pick up on it as well.

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