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A New System for Disaster Research

Connecting researchers, building networks, and training newcomers to the field can disrupt cycles of disaster loss.

Lori Peek

In October 2006, I traveled to New Orleans for a research project focused on Hurricane Katrina's impact on children. While there, my friend and colleague who had lost her apartment in the storm, Rachel E. Luft, offered to give me a tour of her FEMA trailer and the park where it sat alongside hundreds of other such units. She could have showed me the entirety of her cramped living quarters in just a few minutes. As I breathed in the pungent smell of formaldehyde and felt a sense of claustrophobia kicking in, I was keenly aware that I would soon board an airplane and return to the comfort of my home in high and dry Colorado. Meanwhile, Luft, who like me was an assistant professor of sociology at the time, was facing similar scholarly demands. The difference was that she was doing all her work from a toxic trailer in a waterlogged and weary city.

There were other differences, too. I had chosen to become a disaster researcher. When I began my first research project soon after 9/11, every decision I made felt like navigating an ethical and methodological minefield during the rapidly unfolding aftermath of the deadliest terrorist attack in U.S. history. My research on the backlash against Muslim Americans began less than three weeks after the attacks, amid a rash of hate crimes. I feared for the

women in my study and was personally anxious as an outsider to their faith community, witnessing and at times intervening as a bystander in hostile situations. Beginning to research disasters is never easy. Nevertheless, I had received extensive training and mentoring as a doctoral student at the Natural Hazards Center, one of the nation's oldest academic centers dedicated to hazards and disaster research. When I had questions or felt unsure, I had many people I could turn to for guidance.

now focused on the disaster. To understand them, she needed to understand the dynamics of disaster. Luft had little time to review the decades of available disaster research literature, very few professional connections in the hazards or disaster field, and no additional time or capacity to seek out funding to support her work. She did, however, have a fresh perspective and novel insights from the disaster zone to bring to bear.

As we stood talking in the middle of that tiny trailer, I began to wonder

Reducing the suffering caused by disasters requires connection to one another and systemic change. That is why I decided to work with others to create a new system for doing disaster research.

By contrast, the disaster came to Luft. She had no background or training in the study of disasters, but when 80 percent of New Orleans was inundated, she was thrust into the field and compelled to rapidly shift research gears. All the social movement groups that she had been studying before Katrina were

how we could more efficiently transmit the longstanding lessons of disaster research to a newcomer to the field like Luft. I also considered, in turn, whether the field was inclusive and flexible enough to ensure that someone of her talent could be supported and integrated into established institutions. If we

QUICK TAKE

Disaster risk is increasing, and there has also been a rise in the number of disaster researchers. They need ways to learn about the field, find one another, and collaborate.

Researchers have learned the same post-disaster lessons repeatedly. This replication is important, but also has done little to address root causes of cycles of vulnerability.

Resilience is heightened when people are well connected in community. Disaster research is no exception, and the CONVERGE facility is dedicated to cultivating this social infrastructure.



Steve Pece/www.peceofmind.com

People converge after disaster, and researchers are no exception. Here, engineers from the StEER (Structural Extreme Events Reconnaissance) Network assess damage from Hurricane Dorian. StEER is a component of CONVERGE, an organization the author launched in 2018. In the past, researchers from different disciplines studying the same event had no system to coordinate data collection. CONVERGE is building the infrastructure for such cross-disciplinary coordination. When structural engineers see something relevant to social scientists, for example, they can now quickly find and contact experts who can help.

could do these things more effectively, I reasoned, then we could focus on advancing the science and sharing the implications of our research more widely.

On average, a disaster occurs somewhere in the world every day, and disaster risk is increasing. Concurrently, there has been a rise in the number of researchers studying disaster, as well as the number of researchers, like Luft, who suddenly find themselves affected by one. That means there is an ever-more pressing need to onboard people into the field while helping them find

one another and avoid common mistakes. This training is especially crucial in a field focused on the harsh impacts of disaster, which are typically concentrated among socially marginalized populations.

Most of my research involves interviewing people to understand how they experience loss and recovery. The lessons I've learned from disaster survivors and fellow researchers planted the seeds for developing in 2018 a facility at the University of Colorado Boulder's Natural Hazards

Center called CONVERGE, which is dedicated to identifying, training, and supporting disaster researchers.

One of the earliest lessons I learned as a novice disaster researcher was that reducing the harm and suffering caused by disasters requires connection to one another and systemic change. That is why I decided to dedicate my time to working with others to create a new system for doing disaster research. If we were going to slow the rising tide of disaster losses, we needed to establish a more robust *social infrastructure*—organizations, networks, and taken-for-granted systems that shape the way knowledge is shared and exchanged—to support convergence research in the hazards and disaster field. When engineers elevate homes in flood-prone areas, their work is highly visible. The social infrastructure that we needed to



Marvin Nauman/FEMA photo

When Hurricane Katrina hit New Orleans in 2005, researchers were among those who lost their homes. Here, the late Herbert Jolly, at the time a professor of mathematics at the Southern University at New Orleans, unpacks his bag in his trailer provided by the U.S. Federal Emergency Management Agency (FEMA). Often, researchers affected by disasters find themselves studying disasters for the first time, under duress, and with extra setbacks that can exclude them from quickly responding to funding opportunities. CONVERGE works to onboard researchers new to disaster research and provides ways for researchers to find and collaborate with local experts affected by an event.

build would be mostly invisible, but would nonetheless help bind the members of our field more tightly together around a common purpose.

Today, Luft is an established and successful tenured professor at Seattle University. No longer an outsider to

searchers overcome the same obstacles she experienced years ago after Katrina.

Disasters thrive and compound where disconnects are entrenched. CONVERGE is a collaborative effort to bring together our field and connect the research community.

Repeating the same disaster lesson over and over again without the context for all that has come before has done little to help move the policy needle to address existing inequalities.

the field, she now works at the border where social movements and disasters meet. And she is one of many researchers who have joined in CONVERGE's efforts. When the COVID-19 pandemic began, she formed and led a CONVERGE working group for researchers documenting social movement activity in response to several ongoing crises. She has also helped early-career re-

Launching CONVERGE

Hurricanes Irma and Maria tore through Puerto Rico and the U.S. Virgin Islands in September 2017. The storms occurred in a different time and affected different places than Katrina, but the sociological patterns were virtually identical. Yet again, people in nursing homes, people with chronic medical conditions, people of color,

children, older adults, and the working poor suffered the worst effects. It is heartbreaking to watch these impacts unfold time and again. It is maddening for those of us who study these events to know that these impacts are coming and then see them happen repeatedly.

Studying disasters requires an unusual, multidisciplinary skill set. Yet gathering this distinct knowledge base has often happened haphazardly or incompletely in response to a disastrous event, which means that we tend to learn the same lessons across disasters. Replication of results is powerful, but it has also slowed progress in finding solutions for the root vulnerabilities and mounting risks that mark our society. For example, numerous case studies have found that people experiencing poverty are more likely to die or be injured in a disaster. Each of these studies has contributed essential knowledge that helps illuminate health disparities among low-income groups. But repeating the same post-disaster lesson over and over again without the context for all that has come before has done little to help move the policy needle to address existing inequalities.

What we need is many people with a set of common core competencies studying disasters from many different angles. We also need a stable community to provide intellectual leadership and continuity across events. Consider, for example, that of the 250 members of the Social Science Extreme Events Research (SSEER) Network who have reported studying Hurricane Katrina—a deeply unequal tragedy—139 (55.6 percent) identify as core researchers who are highly committed and spend a substantial amount of time dedicated to hazards- or disaster-specific research. The remaining 111 members (44.4 percent) who researched Katrina classify themselves as periodic, situational, or early-career researchers who are outside the core field and therefore may not have the same access to networks and training.

Just months prior to the onset of the devastating 2017 Atlantic hurricane season, I had been appointed director of the Natural Hazards Center—returning full circle to the facility that launched my academic career. I had also recently joined a team of faculty members at several universities across the United States in a commitment to mentor and support students of color

in STEM programs contributing to hazards and disaster research. Our project, Minority SURGE (Scholars from Underrepresented Groups in Engineering and the social sciences) Capacity in Disasters, involved training master's and doctoral students before taking them into the field for boots-on-the-ground research experiences.

As we began developing a curriculum for SURGE students, I was transported back to that moment in Luft's trailer. More than a decade and numerous damaging disasters later, we still did not have a system in place to identify and train hazards and disaster researchers and to connect them to one another. Not only did this latest generation of researchers need to have access to the rapidly accumulating store of empirical findings, they also needed to be prepared for the ways that disaster research can be emotionally challenging and ethically fraught.

Disasters—which occur at the intersection of natural, built, and human environments—serve as a forcing function, pulling in researchers from the sciences, engineering, arts and humanities, and public health. So, I knew the field was primed for developing exactly the kind of connective tissue our body of knowledge needed. But disasters also leave precious little time to identify affected researchers and to form teams that are truly interdisciplinary in the breadth and depth of their integration. That gap is where the social infrastructure that CONVERGE has established comes in.

One of the first steps in building CONVERGE involved putting social scientists who study hazards and disasters on a map. (See figure on the following page.) That way we could geographically locate researchers, highlight their skills and expertise, and help connect them to one another and to multidisciplinary teams of engineers and others relevant experts. In the event of a disaster, this map would also allow us to more quickly and easily communicate with and support locally affected researchers. (See “Scientists in the Wake of the Hurricanes,” March–April 2018.)

A next step has entailed developing a series of free online training modules focused on recurring issues in the field, such as those related to receiving institutional approval to conduct disaster research, navigating ethical dilemmas, conducting culturally com-



Courtesy of Alice Fothergill

In May 2011, the author (right) helps and talks with “Noah” (a pseudonym used in her book with Alice Fothergill, *Children of Katrina*). Noah was born after Hurricane Katrina and was raised in Dallas, where his parents were displaced after the storm. Peek and Fothergill spent nearly a decade studying the recovery trajectories of children from New Orleans. These experiences were formative in the author's work to disrupt cycles of disaster loss through the formation in 2018 of the CONVERGE facility.

petent research, and identifying the public health implications of the work. The available modules, which each take about 60 minutes to complete online, synthesize published and gray literature on specific topics of interest in the hazards and disaster field.

In the past when a disaster would happen, teams of engineers, social scientists, physical scientists, and other researchers would all collect data,

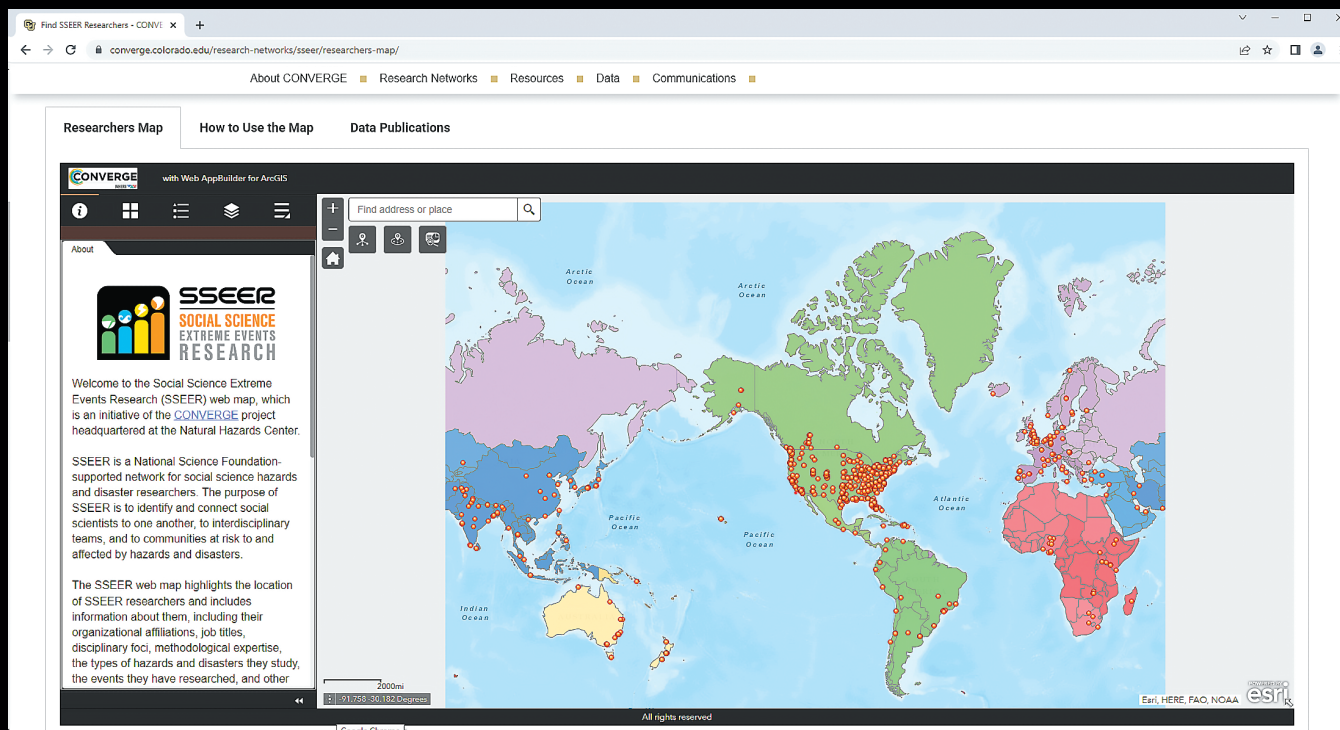
geotechnical engineers, social scientists, nearshore scientists, and so on.

A large but difficult-to-estimate number of scientists and engineers end up in the field after a big disaster. This leadership team matters because we can now rapidly communicate and coordinate with one another. The reconnaissance teams share important early observations as well. For example, after Hurricane Dorian hit the Bahamas and

Disaster researchers from multiple disciplines can lessen the burden on affected communities when we coordinate data collection.

but they would do so mostly in isolation. We had no way to systemically communicate with each other. CONVERGE is now home to the first Leadership Corps for Extreme Events Research, which brings together leaders from groups of structural engineers,

the Atlantic coast of North America in 2019, some engineers learned that undocumented people had been in the worst housing and were disproportionately displaced. They passed this information on to our social science network. By sharing information for-



One of the first steps during CONVERGE's formation was to create a map of hazards and disaster researchers through the Social Science Extreme Events Research (SSEER) Network. In the event of a disaster, this interactive map

allows users to quickly find locals with relevant expertise who can offer crucial information about what's unfolding on the ground. (converge.colorado.edu/research-networks/sseer/researchers-map)

mally through our leadership structure and online forums, we hope to do more ethical reconnaissance by coordinating data collection and lessening the burden on affected communities. We can also do more interdisciplinary research. That is why it is important that

ognition that many times those who are working under the strain of disaster recovery have less capacity to seek out funding sources. For example, we have run multiple special funding calls that support work in the inhabited U.S. territories. These regions have been

management officials, and other professionals on the fundamentals of hazards and disaster research. In 2021, after the Marshall Fire swept through Boulder, Colorado, a young engineer, preparing for her first field research experience, took the CONVERGE training modules. In her words, they were "the most helpful thing" that readied her for the work that was to come. Our evaluation data show that these modules increase user knowledge, skills, and attitudes on the topics we address in the series. For example, our most popular module, "Social Vulnerability and Disasters," was completed by 1,089 users between July 2019 and September 2021. On a five-point scale, those users reported a mean increase of 2.83 points in self-rated knowledge, 3.10 points in self-rated skills, and 1.51 points in self-rated attitudes. These increases were especially significant for students and members of historically underrepresented groups in STEM fields. As one master's student recently wrote, the training modules "provide a strong foundation" and helped her to prepare for the "overwhelming and sensitive issues in disaster research that are often

Often, those working under the strain of disaster recovery have less capacity to seek out resources. CONVERGE's funding programs prioritize disaster-affected researchers and promote local partnerships.

we train and work together. Our science is stronger and more ethical when we collaborate in this way.

CONVERGE also offers funding to researchers through the Natural Hazards Center. These award programs prioritize disaster-affected researchers and promote local partnerships, in rec-

disproportionately affected by disaster, yet researchers there have received less dedicated funding to advance their efforts. We are trying to change that.

A Race against the Clock

To date, we have trained more than 5,000 students, academics, emergency

not discussed.” Although it is too soon to see a shift in the culture of the hazards and disaster workforce, these early results and feedback are promising in terms of the overall goal of transmitting existing knowledge to new generations of researchers.

In addition to democratizing access to hazards information and training emerging professionals, CONVERGE has established a foundation for doing convergence research. Promoting interdisciplinarity is key to this effort. So is cultivating a strong orientation toward working together to address the most vexing social and environmental challenges of our time.

The needs for CONVERGE’s work were especially apparent during the COVID-19 pandemic. Following its onset, we convened and connected more than 1,000 researchers across five continents who joined one of CONVERGE’s COVID-19 working groups.

Each group worked to identify problems and find solutions to emergent issues related to the deadly disease. In the past, there was no systematic way for researchers to find one another and establish these types of collaborative research programs before disasters, let alone in the immediate aftermath. These networks are now connected under the CONVERGE Leadership Corps umbrella, and each has access to available training, mentoring, and funding resources to facilitate the collection of perishable data. Moving forward, we want to make sure these tools and networks, which remain heavily U.S. based, are replicated and updated to make a difference in other places.

As we continue to build out this social infrastructure, we are in a race against the clock. The social harm and economic losses caused by climate-fueled disasters are on the rise. I’ve learned that the place where I can

make a difference is helping early-career disaster researchers access the resources they need to ground them in the field and accelerate their integration into networks for coordination and collaboration. I am convinced that if we each look for ways to bridge the disconnects around us, we can reduce disaster losses and change our collective destiny.

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Courtesy of SURGE 2018/surgedisasters.com

On a research trip to the U.S. Virgin Islands after Hurricanes Maria and Irma in 2017, graduate students in the Minority SURGE [Scholars from Underrepresented Groups in Engineering and the social sciences] Capacity in Disasters program brainstorm with team leader DeeDee Bennett Gayle (left) of the State University of New York at Albany during a visit to the University of the Virgin Islands campus. This program, which helped inspire the formation of CONVERGE, trains graduate students of color from universities across the United States in fields relevant to hazards and disaster research. Not only do early-career researchers have much to contribute, they also need to learn about the breadth of insights in this field’s literature and be prepared for the ethical and emotional challenges of this kind of work.

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