

48TH ANNUAL

NATURAL HAZARDS RESEARCH AND APPLICATIONS WORKSHOP

ETHICAL ACTION

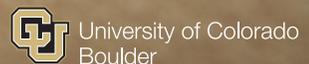
FOR DISASTER RISK REDUCTION

ETHICS



July 9-12, 2023

Omni Interlocken Hotel
Broomfield, Colorado



**48TH ANNUAL
NATURAL HAZARDS RESEARCH AND APPLICATIONS WORKSHOP**

ETHICAL ACTION

FOR DISASTER RISK REDUCTION

NATURAL HAZARDS WORKSHOP

JULY 9 - 12, 2023

RESEARCHERS MEETING

JULY 12 - 13, 2023

PRACTITIONERS MEETING

JULY 13, 2023

Omni Interlocken Hotel
Broomfield, Colorado



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UNIVERSITY OF COLORADO BOULDER LAND ACKNOWLEDGMENT

The University of Colorado Boulder, Colorado's flagship university, honors and recognizes the many contributions of Indigenous peoples in our state. CU Boulder acknowledges that it is located on the traditional territories and ancestral homelands of the Cheyenne, Arapaho, Ute, and many other Native American nations. Their forced removal from these territories has caused devastating and lasting impacts. While the University of Colorado Boulder can never undo or rectify the devastation wrought on Indigenous peoples, we commit to improving and enhancing engagement with Indigenous peoples and issues locally and globally.

We will do this by:

- Recognizing and amplifying the voices of Indigenous CU Boulder students, staff, and faculty and their work.
- Educating, conducting research, supporting student success, and integrating Indigenous knowledge.
- Consulting, engaging, and working collaboratively with tribal nations to enhance our ability to provide access and culturally sensitive support and to recruit, retain, and graduate Native American students in a climate that is inclusive and respectful.

The CU Boulder Land Acknowledgment and supplemental information is available via the following website: colorado.edu/cnais/resources/land-acknowledgment.

BEYOND LAND ACKNOWLEDGMENT

The Center for Native American and Indigenous Studies (CNAIS) at the University of Colorado Boulder believes that a meaningful land acknowledgment statement should include information about how you plan to address historical wrongs and inequities.

For instance, if you are a non-Indigenous person, you might consider acknowledging the benefits you have received in exchange for the unjust ways that lands were occupied and acquired with commitments of time, money, or service to organizations that serve Indigenous peoples in your area. CNAIS suggests that these contributions be significant, such as giving one percent of your annual salary or dedicating a little more than 1.5 hours of service per week (the equivalent of one percent of a 40-hour work week).

For more information about crafting a personal land acknowledgment and other considerations for action, visit the CNAIS website at: colorado.edu/cnais/.



WORKSHOP THEME

ETHICAL ACTION FOR DISASTER RISK REDUCTION

“The relationship between science and ethics is complicated, thorny, and often misunderstood. Yet, there is great power and importance in connecting these two practices. If we are to rise to the challenges of the 21st century, we will need both in equal measure.”

—Michael Paul Nelson, “Ground Rules for Ethical Ecology,” *American Scientist*

Over the decades, *disaster science* has given us the vital data needed to systematically assess hazard risk, the impacts of extreme events, and much more. When coupled with *disaster ethics*, we can clarify the moral principles that guide action in light of all the knowledge that has been accumulated. At this year’s Workshop, we will contemplate the deep interconnections between facts and values as we work to express our ethical obligations to the people and communities we study and serve.

Much of our time, attention, and resources in the hazards and disaster field have been dedicated to improving research and its applications. As a result, we have an extraordinary amount of potentially life-saving information at our fingertips. Available data allows us to visualize vulnerabilities in our social, built, and natural environments and more accurately characterize which people and places are most at risk to floods, fires, and myriad other threats. But as Kathleen Dean Moore and Michael Paul Nelson convincingly argue in *Moral Ground*, “No amount of factual information will tell us what we ought to do. For that, we need moral convictions—ideas about what it is to act rightly in the world, what it is to be good or just, and the determination to do what is right. Facts and moral convictions together can help us understand what we ought to do—something neither alone can do.”

Studies show that people of color, people living in poverty, older adults, children, and other socially marginalized groups repeatedly suffer disproportionate harm in disasters. A sharply focused ethical lens can help us decide what to do with this information—whether that entails advancing stronger preparedness efforts or working to change the systems that render these groups vulnerable in the first place. Centering ethics in our conversations concerning research and applications encourages us to explicitly articulate *what* and *who* we value and how our actions, in turn, honor those values. Of course, such conversations often reveal the underlying truth that not everyone shares the same principles and priorities. This diversity of perspective underscores why it is so important to clarify our ethical stances in response to the data we have about disaster loss.



Achieving such personal and professional clarity can strengthen the ways that we communicate with decision makers and diverse groups in the broader public. Social science research on risk communication and messaging has shown that inundating people with statistics and doomsday scenarios rarely elicits desired behavioral changes. But when we couple facts with expression of a moral imperative, we can inspire individual and collective action. Members of our community often do this implicitly, and sometimes explicitly, when working to reduce the damage and suffering caused by disasters.

At this year's Workshop, we will work together to apply an ethical action framework to explore questions such as:

- What ethical obligations do we hold toward those whom we study and serve, as well as to ourselves as members of the hazards and disaster workforce?
- Where have we reached scientific consensus, and is there a related ethical consensus about what we should *do* in response to available disaster-related information?
- What additional research and actions are needed to ensure that stated resource commitments reach disadvantaged communities?
- How do our moral commitments shape our responses to interlocking emergencies concerning the environment, economic inequality, homelessness, migration, and other stressors?
- How can we use both scientific knowledge and moral wisdom to explain our work to those best positioned to create systemic change?
- What do we most value—culturally, spiritually, economically—that may be forever lost if we fail to collectively act to reduce social vulnerability and mitigate hazard risk?

So much has happened in our world and in people's lives since we last met in person in 2019. Through the ongoing pandemic and a seemingly unending stream of disasters, the members of this community have continued doing transformative work that is worth sharing. This is why the Natural Hazards Center team is so eager to welcome you back to Colorado for this year's Workshop. As always, we look forward to listening to and learning from each of you.

Please take care of yourself and others,

Lori Peek, Director
Natural Hazards Center



GUIDE TO THE PROGRAM

Our goals in creating this program for the 48th Annual Natural Hazards Research and Applications Workshop are to help you get where you want to go and to encourage interaction among Workshop participants who might not otherwise connect.

The Workshop website (hazards.colorado.edu/workshop/2023) complements this print program with the latest updates and individual web pages containing background information on the moderators and presenters, poster abstracts, research and practice highlights, and much more. Scan the QR code below to be taken directly to the website.



There are two ways to view the schedule of events in this program. There is a color-coded foldout program just inside the front cover and there is a detailed Workshop program containing session descriptions under the Sessions and Events tab.

WIRELESS INTERNET

Wireless Internet is available in all the Workshop meeting areas in the hotel. Login information to access the Internet is listed below and will be displayed on social media screens in the Interlocken Foyer.

Network Name: Natural Hazards Workshop

Password: 2023Workshop





PROGRAM STRUCTURE

OUR HISTORY AND PHILOSOPHY

Gilbert F. White—the founding director of the Natural Hazards Center—and a small team of staff and students convened the first Workshop in 1975 at his ranch in Sunshine Canyon outside of Boulder. He wrote then that “Workshops provide a ready opportunity to exchange detailed information and to argue the merits of various perspectives, but they need to be attended by professionals from the full range of disciplines and by policymakers from the various levels of government.”

Since that first meeting, the Workshop has been designed to encourage maximum interaction among diverse participants. The goal is to enhance the transfer of knowledge across the different disciplines and sectors of the hazards and disaster community. The structure of the Workshop is meant to spark conversation and recognizes that every participant has important information and experiences to share.

THE PROGRAM

The Workshop agenda provides a forum for the exchange of ideas and vigorous debate on issues critical to the hazards and disaster community.

Facilitating connections is a major goal of the Workshop. Long lunches, breaks, and social events, such as the Tuesday evening barbecue, provide ample opportunities to network and get to know other attendees.

Sessions start and end on time—really! Please be in your seat at the time sessions begin.

WELCOME AND SELF-INTRODUCTIONS

On Monday morning, Natural Hazards Center Director Lori Peek will open the 48th Annual Workshop and moderate self-introductions. This is the time when every participant in the room gives their name and affiliation. Yes, you read that correctly—every participant! This is a long-standing Workshop tradition that originates in our goal to have Workshop participants connect with one another.

KEYNOTE ADDRESS

Immediately after the self-introductions, environmental philosophy and ethics professor Michael Paul Nelson will deliver the keynote address. His talk, “Ethics at the End of the World,” will provide the larger context for the Workshop and will focus on how we can work together to identify ethical prescriptions for action given the mounting challenges faced by humanity.



PLENARY SESSIONS

Plenary sessions on Monday, Tuesday, and Wednesday mornings will focus on ethical considerations in a variety of contexts—from mitigation to resilience to emergency management to the disaster workforce. Plenary speakers will share the ways they have been thinking deeply about our moral obligations and how to act on them, measure results, and advance equity in today's pressing disaster environment.

CONCURRENT SESSIONS

Monday and Tuesday afternoons will feature a variety of 90-minute concurrent sessions organized around this year's Workshop theme and in response to recent developments in the hazards and disaster field. Moderators in each session will engage the panelists on recent disaster events and ongoing research, practice, and policy applications. Panelists will have about 10 minutes each to respond and provoke further conversation.

Approximately 30 minutes of each concurrent session will be reserved for open discussion between the audience and the panelists. PowerPoint is not used in the Monday and Tuesday concurrent sessions, as the goal is to maximize dialogue and interaction.

NEW RESEARCH, POLICY, AND PRACTICE SESSIONS

On Wednesday morning, panelists will participate in a series of 60-minute sessions designed to share information on recently completed or ongoing research, programs, projects, and initiatives.

POSTER SESSIONS

We will host two waves of poster sessions. The first round of presenters will be available to discuss their posters on Sunday evening and the second round will present on Monday evening. Posters will be available to view throughout the Workshop on video displays located in the Interlocken and Centennial Foyers. They will also be available to view or download in a PDF format on the Natural Hazards Center website.

NETWORKING ROUNDTABLES

Networking roundtables provide an opportunity for Workshop attendees to have informal conversations on distinct topics of importance in the field. These sessions, which take place on Sunday afternoon and Tuesday morning, are guided by conveners but largely driven by the interests, experiences, and curiosity of the attendees.

LISTENING SESSIONS

Sunday afternoon listening sessions provide an overview of federal policy updates or ongoing research efforts. Facilitators will use all remaining time to gather feedback from attendees.



These sessions invite participants to have a voice in shaping policies, tools, and other outcomes.

TRAINING SESSIONS

Training Sessions focus on creating awareness about specific topics and increasing professional skills. Two 90-minute training sessions will be held on Monday afternoon.

WRAP-UP AND A CALL TO ACTION

As is tradition, the Natural Hazards Center director will close the Workshop on Wednesday with a summary of the highlights of the event and a discussion of opportunities for the future.

GETTING THE MOST OUT OF YOUR WORKSHOP

The information below is intended to help you navigate the Workshop.

GETTING HELP

If you need assistance or have questions during the Workshop, please do not hesitate to ask any member of the Natural Hazards Center team or one of the Workshop volunteers. Staff and volunteers can be identified by ribbons on their name badges. You can also get help at the registration desk in the Atrium on the main floor of the Omni Interlocken Hotel. Questions or concerns about your hotel room should be directed to the hotel staff.

FIRST-TIMERS' ORIENTATION

There is an orientation for first-time attendees on Sunday at 6:00 p.m. in Centennial E. If this is your first time at the Workshop, or if you have not attended in a while, we recommend this session.

STUDENT ORIENTATION

All undergraduate and graduate students are invited to attend this orientation and discussion, which will be held on Sunday at 6:00 p.m. in Centennial F. The session will focus on research opportunities, professional development, and networking. If you are a student and a first-timer, please plan to attend this orientation, rather than the First-Timers' Orientation.

CAREER KICKSTARTER

Those who are hiring and those who are seeking jobs will have a chance to connect during the Career Kickstarter event in the Ponderosa room from 10:00 to 10:30 a.m. on Monday. This informal gathering immediately follows the Monday morning opening Workshop session, so come ready with those resumes and business cards. There will be coffee available in the Ponderosa room, so please make your way over as soon as the keynote ends!



MEALS

Tickets for lunches at the outdoor pavilion and the Tuesday evening barbecue at the University of Colorado Boulder Stadium Club should have been purchased when you registered for the Workshop. If you do not have a ticket and would still like to join, please see the staff at the registration desk in the Atrium of the hotel to see if there are any tickets still available for purchase.

If you purchased meals in advance, your name badge will have stickers indicating which events you will attend. Badges will be checked by registration staff when entering the outdoor pavilion or CU Boulder Stadium Club, so please make sure you have those available.

The cash bar and appetizers on Sunday evening, hosted reception on Monday evening, morning coffee, and afternoon breaks are open to all participants. Please scan the QR code below for additional meal and dining options near the Omni Hotel.



PARTICIPANT LIST

A list of participants and their contact information is included under the last tab in this program. We compiled this list of Workshop attendees to ensure that you can find and follow up with people that you meet here. Please be courteous and refrain from sending product or service solicitations to participants.

FOR THE MOST RECENT PROGRAM UPDATES, VISIT:
[HAZARDS.COLORADO.EDU/WORKSHOP/2023](https://hazards.colorado.edu/workshop/2023)



AN INCLUSIVE WORKSHOP, AN INCLUSIVE COMMUNITY

The Natural Hazards Center is a part of the University of Colorado Boulder, which is an institution committed to providing an inclusive environment where all individuals can achieve their academic and professional aspirations free from discrimination, harassment, and/or related retaliation based on race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation, or political philosophy. We ask that all Workshop attendees be respectful and supportive of one another. Should an issue arise that violates these ideals, please report it to staff members at the registration desk so appropriate action can be taken. All staff members will have ribbons on their badges.

COVID-19 SAFETY PROTOCOLS

We are excited to return to an in-person Natural Hazards Workshop and to co-host the associated add-on meetings here in Broomfield, Colorado. Please know that while we are thrilled to be together again, our top priority is to keep all members of our community safe and respect those concerned about COVID-19 or other infections.

In recognition of our commitment, we strongly encourage you to take the following precautions for the health and safety of all participants:

- Take a COVID-19 test before traveling to the Workshop.
- Do not attend any sessions or events if you are COVID-19 positive or otherwise feeling ill.
- Consider wearing a mask in all public areas, maintain a reasonable distance from others whenever possible, and frequently sanitize your hands.

We have included a complimentary Natural Hazards Center mask in your welcome bag and additional masks can be picked up at the registration table as needed. Hand sanitizer is available in each meeting room.

We ask all participants to please follow all University of Colorado Boulder, Boulder County, and Centers for Disease Control and Prevention public health policies related to COVID-19 as guidance is subject to change at any time. We have links to each of the policies on our website.





CONTINUING EDUCATION CREDITS

The Natural Hazards Workshop is pleased to offer pre-approved education credits for Certified Floodplain Managers (CFM), Certified or Associate Emergency Managers (CEM/AEM), and Certified Planners. Continuing education can be used for certification renewal by all three organizations. Those aspiring to attain their CEM or AEM status can also use the contact hours to count towards their initial qualification.

Certified Floodplain Manager Education Credits

Workshop attendance will count as 12 pre-approved continuing education credits under the Association of State Floodplain Managers Certified Floodplain Manager Program.

Certified or Associate Emergency Manager Contact Hours

Workshop attendance will count as 17 contact hours toward the Certified or Associate Emergency Manager contact hours under the International Association of Emergency Managers Certification Program.

American Planning Association Certification Maintenance Credits

Workshop attendance will count toward 3 credit hours for Certification Maintenance for the American Institute of Certified Planners.

How to Receive Continuing Education Credit

When signing in at registration in the Atrium of the Omni Interlocken Hotel, please inform the staff that you would like to document your attendance for continuing education credit. Please specify for what organization you wish to gain credit. Attendance certificates will be sent out via email within two weeks following the Workshop.

For questions about continuing education credits at the Workshop, please contact the Natural Hazards Center at:

hazards.workshop@colorado.edu.





FREQUENTLY ASKED QUESTIONS

WHO REGISTERS FOR THE WORKSHOP?

The Workshop attracts federal, state, local, tribal, and territorial mitigation and emergency management and planning professionals; representatives of nonprofit, private sector, and humanitarian organizations; hazards and disaster researchers; and others dedicated to alleviating the impacts of disasters. About 90 percent of our participants are from U.S. states, territories, and North American tribal nations, while the remaining 10 percent join us from many other countries.

WHY IS THE WORKSHOP LIMITED TO 650 PEOPLE?

The Workshop size is limited by the capacity of the venue where we currently hold our meeting. In addition, we try to keep the Workshop size at about 650 people so that opportunities for interaction are maximized. At the present size, we attract a wonderful mix of people from different backgrounds and disciplines to share experiences, while offering a level of communication that leads to enduring relationships among participants.

WHY DO PARTICIPANTS STAND UP TO INTRODUCE THEMSELVES ON THE FIRST DAY OF THE WORKSHOP?

This tradition dates to the first Workshop in 1975. It sets the tone for the rest of the week. From the very first major session, participants have the chance to put faces and voices to names. This opening session also is a great time to make mental note of those who you'd like to chat with during breaks, at lunch, or at the barbecue.

WHY ARE THERE NO POWERPOINT PRESENTATIONS IN THE CONCURRENT SESSIONS ON MONDAY AND TUESDAY AFTERNOONS?

The format of these panels is designed to encourage interaction between the panelists and the audience. We have long found that presenters best engage participants when they are actually speaking to them, rather than reading to them from slides. With that in mind, we understand that people's learning styles vary and we encourage panelists to engage with materials in variety of mediums for maximum audience participation.



HOW CAN I FIND PHOTOS AND BIOS FOR THE PANELISTS AND OTHERS WHO ARE INVOLVED WITH THE WORKSHOP?

Information for speakers and presenters who shared a bio and/or photo is linked from individual session pages in the online program and at: hazards.colorado.edu/workshop/2023/speakers.



WHY ARE PROFESSIONAL TITLES FOR PEOPLE NOT PROVIDED IN THE PROGRAM?

The variety and depth of experience embodied at the Workshop is immense. We refrain from using titles in the program because they don't always reflect the amount or type of information that a person has to share. The best way to find out about someone's experience is to introduce yourself and to start a conversation!

HOW ARE SESSIONS AND SPEAKERS CHOSEN FOR THE PROGRAM?

The 2023 Workshop is organized around the theme of *Ethical Action for Disaster Risk Reduction*. That thematic statement drove the call for contributions. In January, we asked members of the hazards and disaster community to contemplate interconnections between what we know and what we value and to consider what our ethical obligations are to people and communities at risk.

We received an abundance of submissions. The Natural Hazards Center team took those submissions, read them multiple times, and then organized them into the Workshop program. Sessions were designed to ensure a wide range of topics would be addressed, and that a diverse array of voices would be represented in both topical and thematic sessions. People were invited to participate based on their submissions and other activities throughout the year. Each year we work to integrate new people into the program so that participants hear fresh perspectives and outlooks. We also strive to provide content that helps keep participants up to date on new research projects, practical interventions, and policy changes.



WHY IS THE WORKSHOP NOT HELD IN BOULDER?

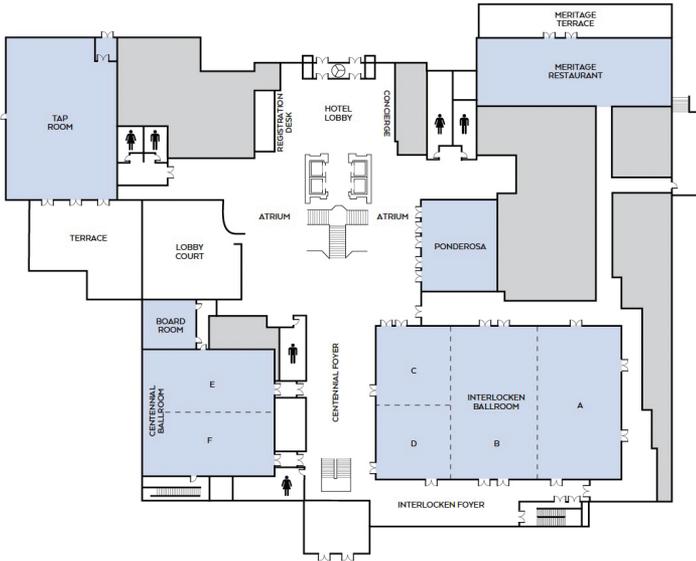
While we'd love to host the Workshop in the beautiful city where the Natural Hazards Center is based, our registration needs have outpaced the space that is available to accommodate a group of our size. While Boulder and the university are working on growing their meeting venues, we'll remain in Broomfield where we can offer relatively affordable rooms and registration rates. We are looking forward to our Tuesday evening barbecue on the University of Colorado Boulder campus. There, Workshop participants can get a closer glimpse of the campus, the stunning Flatirons, and the surrounding protected open space.





OMNI INTERLOCKEN HOTEL

LOBBY LEVEL



GARDEN LEVEL





NATURAL HAZARDS CENTER

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Lead Editor and Science
Communicator



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KATIE MURPHY
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Account Specialist



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EMMA HINES
Research Affiliate



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Research Affiliate



NATURAL HAZARDS CENTER

DIRECTORS EMERITUS



GILBERT F. WHITE (1911-2006)
Founder and Director
1976-1984 and 1992-1994



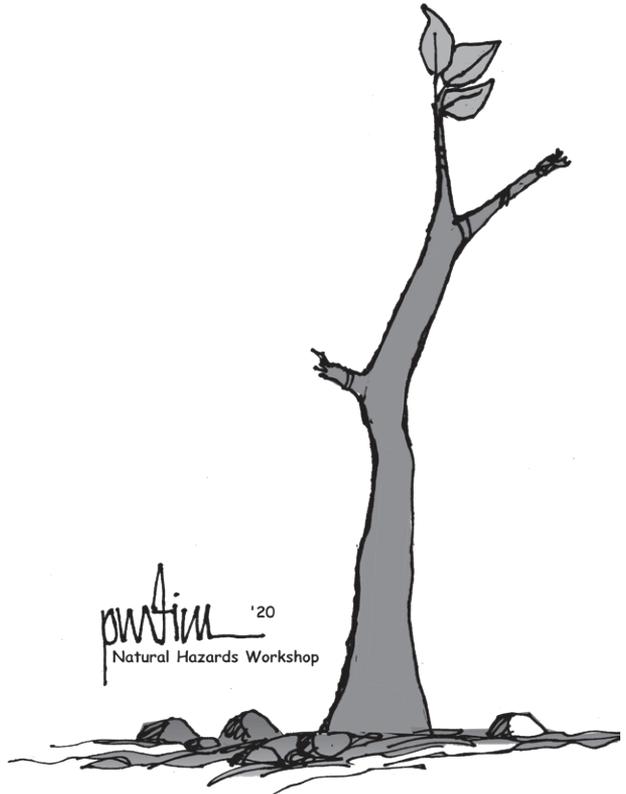
WILLIAM TRAVIS
Director
1984-1992



DENNIS MILETI (1945-2021)
Director
1994-2003



KATHLEEN TIERNEY
Director
2003-2016





Pauline '06
Natural Hazards OBSERVER



OUR VISION AND MISSION

VISION

At the Natural Hazards Center, we envision a just and equitable world where knowledge is applied to ensure that humans live in harmony with nature.

MISSION

We are the National Science Foundation-supported information clearinghouse for the societal dimensions of hazards and disasters. We are dedicated to reducing disaster harm by:

1. **Translating and sharing** hazards and disaster research and information;
2. **Building connections** between researchers, nonprofit and private sector professionals, the media, policymakers, and federal, state, local, tribal, and territorial officials;
3. **Advancing social science and interdisciplinary knowledge**, with a special emphasis on socially marginalized populations; and
4. **Training and mentoring** a diverse next generation of hazards and disaster professionals.

Every day, we work to empower a culture where all people are educated and inspired to take positive action to mitigate hazards losses and to build stronger communities.

A BRIEF HISTORY

The Natural Hazards Research and Applications Information Center was founded in 1976, in response to the publication of the landmark *Assessment of Natural Hazards Research in the United States* (White and Haas, 1975). Among the recommendations included in what would come to be known as the First Assessment was that a national information clearinghouse be created to compile and share information as well as to connect academic hazards and disaster research, emergency management, and policy communities. Shortly after the First Assessment was published, Gilbert White, who was the primary author of the work, led the charge to do just that. He and his wife Anne—along with a small group of committed staff and students—began what is today's Natural Hazards Center at the University of Colorado Boulder.



The Center has been led by five directors over the years, who have involved teams of professional staff, research associates, graduate students, and undergraduate students who contribute to the vision and mission of the center. While the projects that the Center has initiated and the publications that we have produced have evolved, our focus on reducing the harm and suffering from disasters by applying new knowledge has remained constant.

21ST CENTURY PURPOSE

The Natural Hazards Center remains committed to creating a center of gravity for the hazards and disaster community. We care deeply about facilitating scientific- and practice-oriented connections because we recognize that we are all living at risk, we are all interconnected, and we all have a role to play in effectively responding to 21st century social and environmental challenges. Everything we do at the Center is informed by a justice and equity approach, and our core values are focused around our commitment to human dignity, collective well-being, scientific understanding, sustainable hazards mitigation, and environmental stewardship.



PUBLICATIONS PROGRAM

The Natural Hazards Center currently produces several publications that are available free and online including: *DR—Disaster Research News You Can Use*, *Research Counts*, *Research to Practice Publications*, and *Research Award Reports* on many topics, including quick response research, mitigation, public health, and extreme weather. In addition, researchers at the Natural Hazards Center produce books, journal articles, book chapters, and other scholarly publications in collaboration with our partners. Interested readers can sign up for publication alerts at: hazards.colorado.edu/signup.

RESEARCH AWARD PROGRAMS

For nearly 40 years, the Center has administered the **Quick Response Research Award Program** with the support of the National Science Foundation (NSF) and other federal partners. This program provides awards to enable eligible researchers to rapidly collect perishable data in the aftermath of extreme events and to document disaster before memories fade and physical evidence is erased.



In 2019, with the support of the Federal Emergency Management Agency, the Center launched a new award program called **Mitigation Matters**. This program advances mitigation research in communities exposed to natural hazards while enabling a diverse cadre of mitigation researchers.

In 2020, the Center added two more research programs—the **Public Health Disaster Research Award Program**, supported by the Centers for Disease Control and Prevention, and the **Weather Ready Research Award Program**, supported by the National Oceanic and Atmospheric Administration. As with our other programs, these awards support focused, interdisciplinary research to improve preparedness and increase resilience to disasters.

RESOURCES

The Center regularly shares information on jobs, new hazards-related grants, upcoming conferences, and webinars and trainings. The Center has compiled lists of hazards and disaster related scholarly journals, books and academic book series, podcasts, and documentaries. The Center also maintains a **Global Hazards and Disaster Research Centers List and Map**, which shows the location of more than 370 academic hazards and disaster research centers, laboratories, and institutes worldwide.

WEBINAR SERIES

The **Making Mitigation Work** webinar series—produced in partnership with the Federal Emergency Management Agency—features one-hour webinars highlighting progress in mitigation policy, practice, and research. Participants can receive continuing education credits for participating in these informative sessions.

TRAINING AND MENTORING ACTIVITIES

The Center administers the long-standing Disaster Grads listserv, where we share opportunities with students and emerging scholars and practitioners. In addition, we support efforts aimed at training and mentoring a diverse next generation of hazards and disaster researchers and practitioners. These include partnerships with the Bill Anderson Fund, the NSF Research Experience for Undergraduates Program, and the NSF Enabling Fellows Project.



CONVERGE

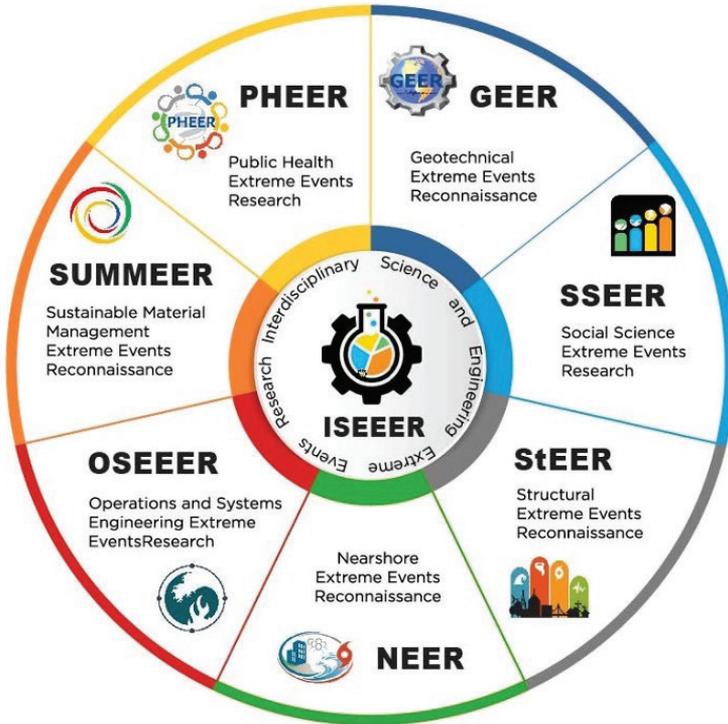
The National Science Foundation-supported CONVERGE facility was established in 2018 as the first social science-led component of the Natural Hazards Engineering Research Infrastructure (NHERI) for the nation. CONVERGE, which is headquartered at the Natural Hazards Center, brings together networks of hazards and disaster researchers across disciplinary boundaries to advance research that is problem-focused and solutions-based.

CONVERGE supports research that is conceptually integrative by: (a) identifying researchers; (b) educating and training researchers; (c) setting a community-driven convergence research agenda; (d) connecting researchers and coordinating functionally and demographically diverse research teams; and (e) supporting and funding convergence research, data collection, data sharing, and solutions implementation.





CONVERGE serves as the leadership hub for eight Extreme Events Reconnaissance and Research (EER) networks focused on geotechnical engineering, social sciences, structural engineering, nearshore research, operations and systems engineering, sustainable materials management, public health, and interdisciplinary research. This EER ecosystem connects and coordinates disciplinary communities and encourages interdisciplinary data collection and information sharing.



CONVERGE also offers free online resources including a series of interactive training modules. These web-based trainings cover a range of foundational and advanced topics in hazards and disaster research. The modules take an all-hazards approach and draw on case examples from natural hazards, technological disasters, public health emergencies, and willful human-caused disasters. Each module takes between 30 and 60 minutes to complete. At the end of the module, users can take a 10-question quiz worth one contact hour of emergency management training through a partnership with the International Association of Emergency Managers (IAEM) certification program. More information on CONVERGE is available at:

converge.colorado.edu.



SUBSCRIBE NOW

Scan the QR codes below to subscribe to Natural Hazards Center and CONVERGE publications, activities, and updates.



Natural Hazards Center



CONVERGE

WORKSHOP SURVEY

We hope you will share your feedback so we can continue to improve the Workshop!

Please follow this link or scan the QR code below to complete a short survey:

hazards.colorado.edu/workshop/2023

workshop-survey.





SAVE THE DATES!

49TH ANNUAL NATURAL HAZARDS WORKSHOP

Sunday, July 14 to Wednesday, July 17, 2024

RESEARCHERS MEETING

Wednesday, July 17 to Thursday, July 18, 2024

PRACTITIONERS MEETING

Thursday, July 18, 2024

OMNI INTERLOCKEN HOTEL || BROOMFIELD, COLORADO

50TH ANNUAL NATURAL HAZARDS WORKSHOP

Sunday, July 13 to Wednesday, July 16, 2025

RESEARCHERS MEETING

Wednesday, July 16 to Thursday, July 17, 2025

PRACTITIONERS MEETING

Thursday, July 17, 2025

OMNI INTERLOCKEN HOTEL || BROOMFIELD, COLORADO





9.
F. W. J. '92
Natural Hazards



SESSIONS AND EVENTS

SUNDAY, JULY 9

REGISTRATION

10:00 a.m. to 7:00 p.m. MDT

Location: Atrium

NETWORKING ROUNDTABLE: DISASTERS, HOMELESSNESS, AND HOUSING PRECARITY

2:00 p.m. to 3:15 p.m. MDT

Location: Centennial E

Those interested in improving the disaster outcomes of people vulnerable to homelessness should join this networking roundtable. Conveners will lead discussions with the goal of hearing from researchers, practitioners, and local partners whose work focuses on housing precarity and disasters. Those with lived experiences of homelessness, researchers, service providers, and others who care about this topic are invited to share their thoughts on ethical research and practice.

Conveners:

Suzanne Frew, The Frew Group

June Gin, U.S. Department of Veterans Affairs

Amber Khan, University of Washington

Matthew Van, University of Delaware

Jamie Vickery, University of Washington

NETWORKING ROUNDTABLE: FEDERAL-ACADEMIC PARTNERSHIPS

2:00 to 3:15 p.m. MDT

Location: Centennial F

This session will explore the benefits of federal-academic collaborations. Representatives from federal agencies, as well as researchers and practitioners looking to partner, are invited to attend and share their experiences of collaborations across organizational lines. Attendees will also have the opportunity to discuss how their work could inform federal efforts and support research that enhances equitable disaster outcomes.

Conveners:

Divya Chandrasekhar, University of Utah

Daniel Green, Federal Emergency Management Agency

Sally Ziolkowski, Federal Emergency Management Agency



SESSIONS AND EVENTS: SUNDAY, JULY 9

NETWORKING ROUNDTABLE: PARTNERSHIPS TO ENGAGE MARGINALIZED COMMUNITIES

2:00 to 3:15 p.m. MDT

Location: Ponderosa

Join this roundtable if you're interested in learning more about cultivating relationships with diverse groups before and after disaster. The conveners bring a wealth of experience in creating effective collaborations that center the human experience and provide resources to vulnerable and marginalized groups based on listening, planning, and responding creatively. Participants are invited to share their own strategies for just and equitable engagement, as well.

Conveners:

Ophera Davis, Independent Researcher

Cee Cee Molineaux-Burrows, Innovative Emergency Management

Heather Schulte, Heather Schulte Studio

NETWORKING ROUNDTABLE: GRANT WRITING AND COMMUNITY BUILDING

2:00 to 3:15 p.m. MDT

Location: Interlocken C

Please join this session if you are interested in learning how to write grants to support your innovative ideas. This session will be led by Betty Lai, author of *The Grant Writing Guide* (Princeton University Press, 2022), a step-by-step guide for scholars seeking to write more fundable grants. Attendees will discuss grant writing challenges and strategies for those at different career stages. Participants will complete networking exercises that help build community while developing grant writing skills. Up to 50 attendees will be chosen to receive complimentary copies of the book, courtesy of the Natural Hazards Center.

Conveners:

Kyle Breen, Dalhousie University

Betty Lai, Boston College

Haorui Wu, Dalhousie University

————— BREAK —————

3:15 to 3:45 p.m. MDT



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LISTENING SESSION: INDIGENOUS COMMUNITIES OF PRACTICE AND TRIBAL ENGAGEMENT

3:45 to 5:00 p.m. MDT

Location: Centennial E

Please join this listening session if you are interested in learning more about efforts to strengthen intercultural collaborations and tribal engagement strategies. Participants will be invited to share their collaborative experiences and lessons for tribal engagement in the context of government agencies, academic partnerships, and other interactions. Discussions will also focus on advancing Indigenous-led communities of practice in public health disaster research, the earth sciences, and emergency management.

Facilitators:

Lauren Dent, U.S. Geological Survey

Shelby Ross, University of Colorado Boulder

Melissa Villarreal, Natural Hazards Center

LISTENING SESSION: BUILDING RESILIENT INFRASTRUCTURE AND COMMUNITIES

3:45 to 5:00 p.m. MDT

Location: Centennial F

The Federal Emergency Management Agency Building Resilient Infrastructure and Communities (BRIC) grant program is designed to support state and local governments, tribes, and territories increase their capacity to improve natural hazard resilience, including underserved communities vulnerable to the impacts of climate change. Following the success of the 2019 Stakeholder Engagement efforts, the BRIC program is launching a 2023 Stakeholder Engagement to again gather feedback about the program. The facilitators will solicit feedback from participants through an interactive listening session on their experience with developing projects and grant applications.

Facilitators:

William Arwood, Federal Emergency Management Agency

H. Camille Crain, Federal Emergency Management Agency

LISTENING SESSION: FEDERAL GUIDANCE FOR OPEN SCIENCE AND DATA

3:45 to 5:00 p.m. MDT

Location: Ponderosa

Recent White House policy guidance requires that federally funded research publications



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and data must be made immediately free and publicly accessible. In response, the National Oceanic and Atmospheric Administration and the Natural Hazards Center co-hosted the *Open Data and Reuse in Social Science Weather Research Workshop* in April 2023. The workshop explored the new policy, advances in the social science instrument and data publication infrastructure, training and mentoring for data publication, and publishing and reuse challenges—as well as solutions to overcome those challenges—and recommendations for next steps. This listening session will highlight workshop findings and recommendations and invite the broader hazard and disaster community to share thoughts and feedback on how to make hazards and disaster data and publications open and accessible.

Facilitators:

Lauren Clay, University of Maryland, Baltimore County
Gina Eosco, National Oceanic and Atmospheric Administration
Maria Esteva, University of Texas at Austin
Robert O'Connor, National Science Foundation

LISTENING SESSION: COMMUNITY DEVELOPMENT BLOCK GRANT RECOVERY FUNDS

3:45 to 5:00 p.m. MDT
Location: Interlocken C

Community Development Block Grant Disaster Recovery (CDBG-DR) funds, administered by the U.S. Department of Housing and Urban Development (HUD), deliver disaster recovery funding in presidentially declared disasters. To date, HUD has allocated more than \$99.2 billion in funds that support long-term recovery, restoration of infrastructure and housing, economic revitalization, and mitigation. HUD recently began requiring grantees to include mitigation in every component of their rebuilding efforts. This session will cover changes to the CDBG-DR program and will engage the audience around topics such as how to get recovery funds to disaster survivors more quickly; how to better address the needs of affordable housing for vulnerable populations; and what research projects might be most useful to improve the effectiveness of disaster recovery programs. It will also highlight studies currently underway that examine CDBG-DR outcomes, including effectiveness for renters, impacts on rental markets, and potential to support community resilience to wildfires.

Facilitators:

Jennifer Carpenter, U.S. Department of Housing and Urban Development
William Lloyd, U.S. Department of Housing and Urban Development
Jagruhi Rekhi, U.S. Department of Housing and Urban Development
Elizabeth Rudd, U.S. Department of Housing and Urban Development



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LISTENING SESSION: COMMUNITY DISASTER RESILIENCE ZONES AND THE NATIONAL RISK INDEX

3:45 to 5:00 p.m. MDT

Location: Interlocken D

The recently established Community Disaster Resilience Zone Act requires the Federal Emergency Management Agency (FEMA) to designate community disaster resilience zones at the census tract level using a risk-based methodology that considers social vulnerability and other factors. FEMA also has the ability to provide these resilience zones with Building Resilience Infrastructure and Communities grants, technical assistance for resilience or mitigation projects, and certification that proposed projects reduce risks to communities. FEMA recently published a notice in the *Federal Register* seeking comment on how to apply the new legislation that will designate areas where the most vulnerable communities are at greatest risk to natural hazards. This listening session will provide an opportunity for participants to ask questions and provide input related about the Community Disaster Resilience Zone Act, the zone designation process, FEMA assistance to communities with zones, as well as potential broader uses of zones to prioritize resilience investments.

Facilitators:

Stephen Carruth, Federal Emergency Management Agency

Pamela Williams, Federal Emergency Management Agency

Casey Zuzak, Federal Emergency Management Agency

BREAK

5:00 to 5:30 p.m. MDT

POSTER SESSION AND WELCOME RECEPTION

5:30 to 7:00 p.m. MDT

Location: Interlocken and Centennial Foyers and Interlocken B/C

Please join us for this welcome event! There will be posters for viewing, appetizers for eating, and drinks for purchase. Due to the large number of submissions this year, we are offering two distinct poster sessions. Please join us on Sunday night to hear from the first round of presenters before they remove their posters for the Monday night session!



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FIRST-TIMER'S ORIENTATION

6:00 to 7:00 p.m. MDT

Location: Centennial E

Are you new to the Workshop this year? If so, please attend this orientation to learn how the event is organized and to receive suggestions for getting the most out of your time here. This is also a great opportunity to network with fellow first-timers and ask any questions you may have.

Conveners:

Sara McBride, U.S. Geological Survey

H. Tristan Wu, University of North Texas

STUDENT ORIENTATION

6:00 to 7:00 p.m. MDT

Location: Centennial F

All students are encouraged to attend this orientation and take advantage of the opportunity to network and learn how to get the most out of your Natural Hazards Workshop. Discussion will focus on research opportunities, publication outlets, and professional development. If you are a student and a first-timer, please plan to attend this session, rather than the First-Timers' Orientation. As a bonus, there will be free books for the taking! All Workshop participants are welcome to drop by at 6:00 p.m. to share handouts or other materials specifically for students.

Conveners:

Nnenia Campbell, Natural Hazards Center

Louise Comfort, University of Pittsburgh

TAKING MEASURE: HOW DISASTER RECONNAISSANCE HAS EVOLVED OVER FIFTY YEARS

2023 Earthquake Engineering Research Institute Distinguished Lecture

7:00 to 8:30 p.m. MDT

Location: Interlocken A

Please join this special Sunday evening session, which is hosted in partnership with the Earthquake Engineering Research Institute (EERI). Judith Mitrani-Reiser will deliver the 2023 EERI Distinguished Lecture, followed by an audience Q&A.



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Lecture Description:

Extreme events, such as earthquakes, tornadoes, and fires, test buildings and infrastructure in ways and on a scale that cannot be easily replicated in a laboratory. Therefore, actual disasters and failure events provide important opportunities for scientists and engineers to study these events, and improve the safety of buildings, their occupants, and emergency responders. This lecture will provide an overview of the disaster research conducted at the National Institute of Standards and Technology, which is informed by strategic plans developed by national disaster statutory programs: Disaster and Failure Studies Program, National Earthquake Hazard Reduction Program, and National Windstorm Impact Reduction Program. The lecture will highlight how the meteorology of disasters has evolved since the EERI Learning from Earthquakes (LFE) Program was established fifty years ago by the National Science Foundation. The lecture will also provide an overview of how the advancement of tools and technology in seismic reconnaissance missions have enabled scientists and engineers to better quantify the physical and social impacts of earthquakes on communities. The lecture will commemorate the multidisciplinary approach to learning from disasters, directly borne out of the LFE Program.



2023 EERI Distinguished Lecturer:

Judith Mitrani-Reiser is a senior research scientist in the Structural Systems Division at the National Institute of Standards and Technology (NIST). Mitrani-Reiser is co-leader of the National Construction Safety Team (NCST) technical investigation of the collapse of the Champlain

Towers South in Surfside, Florida, and leads the mortality project of the NCST investigation of the Hurricane Maria impact on Puerto Rico. Her responsibilities at NIST also extend to managing and providing oversight to other disaster statutory programs—the National Windstorm Impact Reduction Program and the National Earthquake Hazard Reduction Program—focused on interagency coordination to reduce losses in the United States from disasters and failures. Mitrani-Reiser served as vice president of the Earthquake Engineering Research Institute, serves on the executive committee of the U.S. Collaborative Reporting for Safer Structures, co-founded the American Society of Civil Engineers Multi-Hazard Risk Mitigation Committee, and was elected to the Academy of Distinguished Alumni of the University of California, Berkeley Civil and Environmental Engineering Department. She earned her bachelor's from the University of Florida, her master's from the University of California, Berkeley, and her PhD from the California Institute of Technology.

————— END OF DAY —————



SESSIONS AND EVENTS: MONDAY, JULY 10

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REGISTRATION

7:00 a.m. to 5:30 p.m. MDT

Location: Atrium

COFFEE

7:15 to 8:00 a.m. MDT

WELCOME AND SELF-INTRODUCTIONS

8:00 to 9:15 a.m. MDT

Location: Interlocken A/B

This session officially opens the 48th Annual Natural Hazards Workshop. This is the time when every participant says their name and affiliation. Yes, you read that correctly! This is a Workshop tradition that originates in our mission to facilitate connections. Please join us for this session so that you can wave hello to old friends and colleagues and meet new ones.

Facilitator:

Lori Peek, Natural Hazards Center

KEYNOTE ADDRESS—ETHICS AT THE END OF THE WORLD

9:15 to 10:00 a.m. MDT

Location: Interlocken A/B

We face some of the greatest challenges in the history of humanity. Climate change and its anticipated and unanticipated impacts, massive biodiversity loss, unprecedented levels of economic inequality, and attendant social upheaval present staggering obstacles to human flourishing—obstacles our current systems and governance structures seem ill-equipped to adequately address. These coming challenges also provide tremendous opportunities for thoughtfully re-envisioning our moral commitments and relationships with one another and the natural environment. To harness our collective wisdom, however, we need novel ways of thinking and acting that may fall outside of those of the dominant Western worldview. This is pressing, not only because the problems we face are so enormous, but also because there is no reason to believe that our current modes of operating—modes that are embedded within systems that created our challenges in the first place—will allow us to adequately address the biggest issues of our time.



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This keynote address will argue that our current and coming challenges require the full power and force of the human imagination. That imagination is captured within the totality of our academic disciplines—sciences, arts, humanities, engineering, health and medicine, and more—as well as in our professional practices from emergency management to humanitarian relief and far beyond. At present, empirical research produced by many different disciplines has provided a way to understand many of the facts of the working world. But facts alone cannot lead to prescriptions for action. As this address will highlight, ethics asks us “What ought we to do?” Arriving at “oughts” requires not only accurate information and robust data, but also clear and well-reasoned articulations of values. Workshop participants will have the opportunity to learn how we can work together to rigorously identify those ethical prescriptions, while also honoring the fact that many people have different values that guide their research and applications.



MICHAEL PAUL NELSON

Professor of Environmental Philosophy and Ethics, Oregon State University

Michael Paul Nelson is a professor of environmental philosophy and ethics at Oregon State University. From 2012 to 2022, he held the Ruth H. Spaniol Chair of Renewable Resources and served as the lead principal investigator for the H.J. Andrews Experimental Forest Long-Term Ecological Research Program—the first non-scientist to hold such a position. He serves as the philosopher in residence of the Isle Royale Wolf-Moose Project, the longest continuous study of a predator-prey system in the world, and a senior fellow with the Spring Creek Project for Ideas, Nature, and the Written Word. Though trained as a philosopher and ethicist, Nelson has proudly become almost completely “undisciplined” in his teaching and scholarly work. He collaborates with scholars from all fields of inquiry—ecologists, social scientists, artists, writers, and beyond. He teaches courses with titles like *Critical and Creative Thinking* and *Environmental Ethics and Imagination*. Nelson is the author of a couple of hundred articles and essays on a wide variety of topics in and around environmental ethics, and is the co-editor or co-author of four books, most notably *Moral Ground: Ethical Action for a Planet in Peril* with the writer and philosopher Kathleen Dean Moore.

Learn more about Nelson by scanning the QR code or visiting: michaelpnelson.com.





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BREAK

10:00 to 10:30 a.m. MDT

(Also in this time slot: Career Kickstarter in Ponderosa)

CAREER KICKSTARTER

10:00 to 10:30 a.m. MDT

Location: Ponderosa

We invite those seeking jobs and those with jobs to share to use the morning break to make connections during this semi-structured meet-up. There will be coffee available in the Ponderosa Room, so please make your way over as soon as the morning keynote ends!

This year's Career Kickstarter will be organized so that those who want to share job opportunities will be given the opportunity to highlight open or forthcoming opportunities. Those who are looking for new employment opportunities can then ask questions and are encouraged to bring resumes and business cards to keep the job conversations going throughout the Workshop.

In addition to this networking session, a resource table will be available for the duration of the Workshop for participants to leave flyers and other materials that might be of use to job seekers or employers. Please bring plenty of copies to share.

Facilitators:

Lindsay Davis, U.S. Geological Survey

Jocelyn West, Natural Hazards Center



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PLENARY—MAKING THE (MORAL) CASE FOR MITIGATION

10:30 a.m. to 12:00 p.m. MDT

Location: Interlocken A/B

Natural hazard mitigation saves. Rigorous cost-benefit analyses and influential reports have shown that mitigation makes sound *economic* sense. But equitable risk reduction efforts also make *moral* sense for society. Mitigation is about more than preserving the monetary worth of investments. Mitigation activities, at their core, also involve expressions of what and who we value and how we protect current and future generations. Panelists in this opening plenary session will make the case that mitigating hazards represents an ethical imperative, as they also address how science can inform decisions for the people and places most exposed to hazard risk.



Moderator:

Risa Palm
Georgia State University



Panelist:

David Applegate
U.S. Geological Survey



Panelist:

Patty Hernandez
Headwaters Economics



Panelist:

Lauren Alexander Augustine
The National Academies



Panelist:

Eric Letvin
Federal Emergency
Management Agency

LUNCH

12:00 to 1:30 p.m. MDT - Outdoor Pavilion



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MITIGATION MERIT: DETERMINING THE VALUE, EQUITY, AND FEASIBILITY OF PLANS AND PROJECTS

1:30 to 3:00 p.m. MDT

Location: Centennial E

Mitigation efforts have made communities safer from disasters, but there is still much to do and learn. Plans and projects can create enviable resilience, but they also sometimes miss entire neighborhoods, groups of people, and looming threats. This panel will explore ways to assess mitigation in built and social environments that fully recognize the scope of the hazards faced. Panelists will discuss improving building design and construction, centering marginalized groups in adaptation, learning the true value of mitigation for communities, and identifying how to plan when you have no governance at all.

Moderator:

Michelle Meyer, Texas A&M University

Panelists:

Daniel Bass, Federal Emergency Management Agency

Stephen Decatur, City and County of Denver

Danielle Rivera, University of California, Berkeley

Kathleen Smith, Federal Emergency Management Agency

THE SOCIAL DIMENSIONS OF INFRASTRUCTURE AND BUILDING CODES

1:30 to 3:00 p.m. MDT

Location: Centennial F

How a society builds its infrastructure can signal what and who it finds valuable, how it envisions its future, and its ability to invest in that vision. Many U.S. communities and the federal government are now committed to building robust infrastructure that not only protects people, but also that avoids and corrects systemic injustices. This session will explore the social roots of vulnerability in the built environment and what can be done to create more just infrastructure. Panelists will describe ways to help marginalized communities find the resources to invest and plan, how to holistically evaluate structural recovery after disaster, and the importance of incorporating equity in building code adoption. The discussion will also focus on how the language we use to speak about these issues can play a role in creating change.



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Moderator:

Yolanda Lin, University of New Mexico

Panelists:

Shane Crawford, Federal Emergency Management Agency

Katherine Johnson, National Institute of Standards and Technology

Lisa Platt, University of Florida

Elaina Sutley, University of Kansas

Jay Wilson, Clackamas County Disaster Management

CENTERING THE NEEDS OF INCARCERATED PEOPLE IN DISASTER RISK REDUCTION

1:30 to 3:00 p.m. MDT

Location: Ponderosa

The experiences and needs of incarcerated people in disasters are often overlooked and ignored. This has led to enduring harm for incarcerated people, those who work in prisons and carceral facilities, and their families and communities. There are significant opportunities to better understand what incarceration means for disaster risk—including how hazards impact the physical and social design of prison infrastructure. Formerly incarcerated participants and researchers will discuss how centering the experiences of incarcerated people can lead to better understanding the root causes of disasters and how to address them.

Moderator:

Carlee Purdum, Texas A&M University

Panelists:

Benika Dixon, Texas A&M University

Maggie Luna, Texas Center for Justice and Equity

Marci Marie Simmons, Lioness: Justice Impacted Women's Alliance

Jennifer Toon, Lioness: Justice Impacted Women's Alliance



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MODERN WILDFIRE: MANAGING RISK AND IMPACTS IN A NEW ERA

1:30 to 3:00 p.m. MDT

Location: Interlocken B

Putting water on flames is only one part of quelling the wildfire problem. In an age of more frequent and severe wildfires, communities and organizations must work to mitigate risk and manage impacts of fire before, during, and after events. This session will look at the challenges of planning for fires—especially in an era of rapid growth in the wildland-urban interface—and new resources to help communities adapt. Panelists will discuss cost management, equity issues, secondary impacts of fire, resource allocation, and advances in fire weather prediction.

Moderator:

Michael Byrne, Deloitte

Panelists:

Cynthia Braddock, Boulder County, Colorado

Scott Dehnisch, U.S. Agency for International Development

Angela Gladwell, Federal Emergency Management Agency

Daniel Niefeld, National Oceanic and Atmospheric Administration

Andrea Snyder, City of Louisville

TRAINING SESSION: MAKING THE MORAL CASE—ETHICS AND ARGUMENT ANALYSIS

1:30 to 3:00 p.m. MDT

Location: Interlocken A

Please join this training session if you are interested in learning more about how you can apply an ethical framework in your research and practice. Our keynote speaker will lead participants through a process where they can learn how to apply a rigorous framework for making an evidence-informed ethical case. In addition, we will learn more about placing ethical arguments in historical and cultural context through a guided discussion around new ways of seeing and doing value-based work.

Faciliator:

Michael Paul Nelson, Oregon State University



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BREAK

3:00 to 3:30 p.m. MDT

THE PREPAREDNESS DILEMMA: DEVELOPING RESILIENCE DESPITE CHALLENGES

3:30 to 5:00 p.m. MDT

Location: Centennial E

Building cultures of preparedness is key to reducing social vulnerability, economic losses, and the suffering caused by disaster. Preparedness is a core training activity in schools, hospitals, businesses, and across emergency management organizations. But aging infrastructure, lack of investments, and repeated disasters can impede resilience despite these planning efforts. The panelists in this session will discuss the benefits of disaster preparedness and how communities can use pre-disaster data to inform plans, policies, and interventions. Panelists will also describe challenges that prevent moving from preparedness activities to community resilience and opportunities for engaging more diverse groups in the planning process.

Moderator:

Mark Lindberg, Margaret A. Cargill Philanthropies

Panelists:

Natalie Grant, U.S. Department of Health and Human Services

Kristina Kintziger, University of Nebraska Medical Center

Romeo Lavarias, City of Miramar Fire-Rescue Department

Catherine Welker, Federal Emergency Management Agency

SHARED-USE FACILITIES AND NETWORKS TO IMPROVE COMMUNITY RESILIENCE

3:30 to 5:00 p.m. MDT

Location: Centennial F

The effects that natural hazards have on civil infrastructure have long been of concern to the research and practice community. In response, the National Science Foundation has made major investments in the distributed, multi-user Natural Hazard Engineering Research Infrastructure (NHERI) for the nation. The facilities, which are headquartered



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at universities across the United States, provide the natural hazard engineering and social science community with state-of-the-art laboratories, a computational modeling and simulation center, cyberinfrastructure, reconnaissance equipment, and training and research network support. Panelists in this session will discuss how to access the facilities and their many resources. Participants will also learn more about the NHERI Science Plan and the impact the facilities have had in mitigating natural hazards and promoting community resilience by advancing science and building partnerships for risk reduction.

Moderator:

Julio Ramirez, Purdue University

Panelists:

Tim Cockerill, University of Texas at Austin

Nicole Errett, University of Washington

Kristin Taylor, Wayne State University

DISASTER DISPLACEMENT, MIGRATION, AND RELOCATION

3:30 to 5:00 p.m. MDT

Location: Ponderosa

As natural hazard impacts become more severe, many people have been forced to relocate temporarily or permanently from their homes. In some instances, entire communities are grappling with buyout and relocation decisions, while in others, specific structures are deemed too dangerous to inhabit, leaving communities with abandoned and blighted structures. These situations are becoming more urgent, while relocation assistance and policy support remain limited. This session will explore the experiences of disaster migrants, the communities that receive them, possibilities for relocation, and how to preemptively address this growing phenomenon.

Moderator:

Shefali Juneja Lakhina, Wonder Labs

Panelists:

Adrienne Dodd, University of California, Berkeley

Ivis García, Texas A&M University

Alex Greer, State University of New York at Albany

Fernando Rivera, University of Central Florida



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REFOCUSING FLOOD RISK MANAGEMENT: COMMUNITY-CENTERED MITIGATION AND RECOVERY

3:30 to 5:00 p.m. MDT

Location: Spruce

Much is changing in the way floods are managed. From mitigation to recovery, governments are recognizing that past efforts often prioritized property over people and that those least resilient to flood impacts are also the least likely to receive aid. Panelists in this session will discuss research that has revealed inequities in flood aid distribution. They will also describe how the Justice40 initiative has empowered federal agencies to do things differently by developing innovative models for more equitably serving communities at risk to flooding.

Moderator:

John Cooper, Texas A&M University

Panelists:

Chad Berginnis, Association of State Floodplain Managers

James Elliott, Rice University

Andrew Rumbach, Urban Institute

Elissa Yeates, U.S. Army Corps of Engineers

TRAINING SESSION: TRAUMA-INFORMED CARE FOR SURVIVORS AND EMERGENCY RESPONDERS

3:30 to 5:00 p.m. MDT

Location: Interlocken A

This interactive training will focus on six principles of trauma-informed care from a public health perspective. Audience members will learn how to use this approach to help disaster survivors, communities, and frontline workers in an effort to reduce re-traumatization and increase disaster workforce resiliency. Attendees will examine ethical perspectives, culturally informed ways to tailor care to specific communities, and factors that can impact stress, burnout, and resilience after disaster. In addition, this training will explore how trauma manifests on an organizational level. Resources to assist in implementing trauma-informed care in programs and across organizations will be provided.



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Facilitators:

Christy da Rosa, Trauma Informed Oregon
Mary Leinhos, Centers for Disease Control and Prevention
Cristy Morales Munoz, United Way of the Columbia-Willamette
Katie Pugh, Centers for Disease Control and Prevention

BREAK

5:00 to 5:10 p.m. MDT

AWARDS CEREMONY

5:10 to 5:30 p.m. MDT

Location: Centennial E

Please join us for a festive celebration of the winners of the Mary Fran Myers Scholarship, the Disability and Disasters Award, and the Hazards and Disaster Student Paper Competition. The Natural Hazards Center will honor the current recipients of the awards, as well as recognize award winners from our virtual Workshop years. The award selection committee chairs will briefly describe each award and introduce the recipients.

After the Natural Hazards Center awards are announced, the International Sociological Association Research Committee on Disasters (RC-39) will name the 2023 recipients of the Charles E. Fritz Award for Career Achievements in the Social Science Disaster Area and the E.L. Quarantelli Award for Social Science Disaster Theory.

We hope that all Workshop participants will take a moment to meet and congratulate the award recipients during this special session and throughout the duration of the Workshop.

Mary Fran Myers Scholarship

Co-Chairs:

Betty Lai, Boston College
Oluponmile Olonilua, Texas Southern University

2023 Winners:

Marysel Pagán Santana, Migrant Clinicians Network
Amber Shumpert, Alaska Department of Transportation



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2021 Winner:

Denboy Kudejira, Memorial University of Newfoundland

2020 Winners:

Kristen Cowan, University of North Carolina at Chapel Hill

Pegah Farshadmanesh, University of Illinois Urbana-Champaign

Chelsea LeNoble, University of Central Florida

Disability and Disasters Award ➤ _____**Chair:**

Candace Evans, Natural Hazards Center

2023 Winner:

Alina Engelman, California State University, East Bay

2021 Winner:

Kimberly Mills, Positive Behavioral Supports Corporation

Student Paper Competition ➤ _____**Co-Chairs:**

Jessica Austin, Natural Hazards Center

Heather Champeau, Natural Hazards Center

2023 Undergraduate Winner:

Nyla Howell, University of Maryland, Baltimore County

The Impact of Corporeal Markers on Natural Hazard Preparedness During Hurricane Katrina

2023 Graduate Winner:

Nahuel Arenas Garcia, University of Birmingham

Slow Action as a Moral Wrong: The Abolition of Slavery and the Fight Against Climate Change

**Charles E. Fritz Award for Career Achievements in the
Social Science Disaster Area** ➤ _____**Co-Chairs:**

Shigeo Tatsuki, Doshisha University

Kathleen Tierney, Natural Hazards Center



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2023 Winner:

Susan Cutter, University of South Carolina

E.L. Quarantelli Award for Social Science

Disaster Theory ➤ _____

Co-Chairs:

Michael Lindell, University of Washington

Walter Peacock, Texas A&M University

2023 Winner:

Ray Burby, University of North Carolina at Chapel Hill

POSTER SESSION AND HOSTED RECEPTION

5:30 to 7:00 p.m. MDT

Location: Interlocken and Centennial Foyers and Interlocken B/C

Please join us for the second and final round of poster presentations. Nonalcoholic beverages and complimentary beer, wine, hazard-themed cocktails, and tasty appetizers will be served.

BILL ANDERSON FUND IMPACT AND INTEREST RECEPTION

7:00 to 8:30 p.m. MDT

Location: Lobby Court

Please join this event to learn more about the history and mission of the Bill Anderson Fund, which is celebrating nine years of dedication to training and mentoring students. Attendees will meet the next generation of leaders from historically underrepresented groups and learn how they are transforming the field with their research and practice. Drop in, chat with the fellows and board members, and learn about ways to get involved.

Light refreshments will be served.

_____ END OF DAY _____



SESSIONS AND EVENTS: TUESDAY, JULY 11

TUESDAY, JULY 11

COFFEE

7:00 to 8:30 a.m. MDT

NETWORKING ROUNDTABLE: UNDERSTANDING INTERSECTING INEQUALITIES

7:15 to 8:15 a.m. MDT

Location: Centennial E

This networking roundtable builds on the legacy of the Gender and Disaster Roundtable, which was established in 1997 and hosted for 25 years at the Natural Hazards Workshop. This year, the session will expand to tackle gender inequality as well as other forms of social inequity that mark people's lives before, during, and after disaster. Attendees will discuss how gender, race, social class, sexual orientation, age, family structure, and other social factors affect disaster preparation, response, and recovery.

Conveners:

Jasmine McAdams, University of California, Berkeley
Kristina Peterson, Lowlander Center

NETWORKING ROUNDTABLE: PARTNERING WITH PRACTITIONERS

7:15 to 8:15 a.m. MDT

Location: Centennial F

Hazards researchers and emergency management practitioners often work together across organizational boundaries. Join this networking roundtable to learn how such collaborations are formed and sustained and, ultimately, how they can lead to better outcomes for communities working to mitigate hazards, prepare for disaster, and recover from their impacts.

Conveners:

Thomas Hughes, Pennsylvania Emergency Management Agency
Alessandra Jerolleman, Jacksonville State University



SESSIONS AND EVENTS: TUESDAY, JULY 11

NETWORKING ROUNDTABLE: PLANNING FOR ANIMALS IN DISASTER

7:15 to 8:15 a.m. MDT

Location: Ponderosa

Considerations regarding pets and animals in disaster are increasingly gaining attention from scholars, practitioners, and the public. Join this networking roundtable if you are interested in exploring topics such as the ethical management of animals in disasters, trauma among veterinary first responders, and human-animal welfare and social justice.

Conveners:

Sarah DeYoung, University of Delaware

Haorui Wu, Dalhousie University

REGISTRATION

7:30 a.m. to 5:00 p.m. MDT

Location: Atrium

BREAK

8:15 to 8:30 a.m. MDT



SESSIONS AND EVENTS: TUESDAY, JULY 11

PLENARY: MEASURE WHAT MATTERS—SOCIAL VULNERABILITY, EQUITY, AND PLANNING FOR RESILIENCE

8:30 to 10:00 a.m. MDT

Location: Interlocken A/B

In this plenary session, local and state government program managers will share how they have integrated and measured social vulnerability and equity in resilience and recovery planning. Panelists will draw on case studies highlighting how potentially abstract concepts have been operationalized in rural economic resilience planning. Examples include a community grid resiliency grant program, a state fee-based disaster mitigation grant program, and efforts following the 2021 Marshall Fire. The panel will also highlight tools and approaches for helping communities equitably plan for climate impacts before they happen. This session will ultimately consider what we measure, why it matters, and how we move beyond simple metrics to those that truly engage and support people who are disproportionately impacted by disaster.



Moderator:

Hussam Mahmoud
Colorado State University



Panelist:

Katie Arrington
Boulder County, Colorado



Panelist:

Julia Masters
State of Colorado



Panelist:

Marguerite Harden
Colorado Department of
Local Affairs



Panelist:

Anne Miller
Colorado Department of
Local Affairs

BREAK

10:00 to 10:30 a.m. MDT



SESSIONS AND EVENTS: TUESDAY, JULY 11

PLENARY: STATE OF EMERGENCY—RESOURCE COMMITMENTS AND COMPASSION IN AN AGE OF EXTREMES

10:30 a.m. to 12:00 p.m. MDT

Location: Interlocken A/B

Emergency managers are grappling with how to prepare for a seemingly unending and rapidly expanding list of threats: climate catastrophe, global pandemic, cyberattack, and mass shootings, to name only a few. In addition, a spate of interlocking issues—from housing affordability and homelessness, drug addiction, lack of available mental health care, and migrant resettlement—have generated local emergency declarations and have raised questions about how the emergency management apparatus operates in an age of environmental extremes and extreme inequality. This plenary panel will feature emergency managers from some of our nation's largest cities who are working to effectively respond to compounding social and environmental disasters. Speakers will draw on their experiences to illustrate how ethical commitments influence compassionate emergency planning and response.



Moderator

Patrick Roberts
RAND Corporation



Panelist:

Mary Ellen Carroll
City of San Francisco



Panelist:

Matthew Mueller
Denver Office of Emergency
Management



Panelist:

Dominick Mireles
City of Philadelphia



Panelist:

Carol Parks
City of Los Angeles
Local Affairs

LUNCH

12:00 to 1:30 p.m. MDT - Outdoor Pavilion



SESSIONS AND EVENTS: TUESDAY, JULY 11

SHIFTING PERSPECTIVES IN INCLUSIVE RISK COMMUNICATION

1:30 to 3:00 p.m. MDT
Location: Centennial E

Clear communication is critical at every stage of disaster, but messaging must be tailored to the audience it is intended to reach. Yet still too often, risk information is written from the perspective of those managing disasters and therefore can be highly technical and confusing to end users. These challenges are often amplified when messages are meant to reach large and diverse populations. Panelists in this session will recommend strategies to make communication more inclusive, easy to understand, and accessible for all people.

Moderator:

Nick Shufro, Federal Emergency Management Agency

Panelists:

Laura Hall, Regional Disaster Preparedness Organization
Emma Hudson-Doyle, Massey University
Keri Lubell, Centers for Disease Control and Prevention
Joseph Trujillo-Falcón, National Oceanic and Atmospheric Administration
Julie Wright, University of Waterloo

INTERNATIONAL COLLABORATIONS FOR DISASTER RISK REDUCTION

1:30 to 3:00 p.m. MDT
Location: Centennial F

Countries around the world are striving to reduce disaster risk within their borders, but this work cannot be done alone. Strategies to reduce risk often require cross-border collaboration and opportunities to learn from one another's success stories. This session will highlight the history and future of these efforts in Japan, South and Central America, the Caribbean, and New Zealand. Panelists will discuss the impacts of past disasters on current practice and policies, the role of national attitudes in disaster outcomes, existing research and collaboration gaps, and best practices for implementing disaster risk reduction activities and education.

Moderator:

Christine Gibb, University of Ottawa



SESSIONS AND EVENTS: TUESDAY, JULY 11

Panelists:

Barry Levitt, Florida International University
Shigeo Tatsuki, Doshisha University
Lauren Vinnell, Massey University

MEETING THE GOALS OF JUSTICE40: WHAT ARE WE LEARNING?

1:30 to 3:00 p.m. MDT

Location: Ponderosa

Justice40 is a nationwide commitment to addressing inequity by ensuring that at least 40 percent of federal investments in climate change, sustainable housing, wastewater infrastructure, and similar efforts are dedicated to historically underserved and marginalized communities. This presidential directive has far-reaching implications for those working in hazard mitigation as meeting the goals of Justice40 will require long-term strategic effort, community participation, and strong accountability and performance assessment. Panelists in this session will discuss topics such as how federal agencies are responding to the policy guidance, how it has changed approaches to resource allocation, what academic research needs to be conducted, and how the key tenets of Justice40 are (or are not) being institutionalized.

Moderator:

Derrick Hiebert, Deloitte

Panelists:

Michael Craig, U.S. Department of Housing and Urban Development
Thomas Hughes, Pennsylvania Emergency Management Agency
Kate Judson, Federal Emergency Management Agency
Kathleen Tierney, University of Colorado Boulder

DISASTERS, INSTITUTIONAL REVIEW BOARDS, AND ETHICAL DATA COLLECTION

1:30 to 3:00 p.m. MDT

Location: Interlocken A

Recent government and academic efforts have addressed the need for—and the challenges with—gaining rapid Institutional Review Board approval for the collection of perishable data. Although some models exist, their uptake in disaster research is limited due to the interdisciplinary nature of disaster research teams, the need to balance data collection with the rights of survivors, and the lack of available templates and tools across organizations. Panelists in this session will grapple with these issues and discuss potential solutions for advancing ethical approaches to disaster research.



SESSIONS AND EVENTS: TUESDAY, JULY 11

Moderator:

Jennifer Horney, University of Delaware

Panelists:

Sara Hamideh, Stony Brook University

Emily Hogan, City of Louisville

Aubrey Miller, National Institute of Environmental Health Sciences

Matthew Wynia, University of Colorado Anschutz Medical Campus

CLIMATE ADAPTATION AND RESILIENCE: TOOLS FOR EQUITABLE PLANNING

1:30 to 3:00 p.m. MDT

Location: Interlocken B

The directive to ensure that disaster management efforts are equitable has everyone from federal agencies to rural communities brainstorming on how their adaptation and resilience planning can better meet the needs of all residents. This session will showcase a variety of practical tools, frameworks, guides, and evaluation resources that can help practitioners assure their efforts are equitable and just. It will also spotlight how researchers are assessing the impact of these new and ongoing initiatives.

Moderator:

Brittany Kiessling, U.S. Environmental Protection Agency

Panelists:

Karen Bailey, University of Colorado Boulder

Jenny Burmester, Federal Emergency Management Agency

Alina Engelman, California State University, East Bay

Patrick Howell, Institute for Building Technology and Safety

Siyu Yu, Texas A&M University

BREAK

3:00 to 3:30 p.m. MDT



SESSIONS AND EVENTS: TUESDAY, JULY 11

RANGES OF RECOVERY: HOW TO ACHIEVE EQUITABLE OUTCOMES WITH FINITE RESOURCES

3:30 to 5:00 p.m. MDT

Location: Centennial E

Research has consistently revealed disparities in disaster impacts among marginalized populations. In response, in the United States, Canada, and other countries, those who work to support communities after disasters are increasingly considering issues of equity, barriers to recovery, and systemic injustices when allocating recovery resources. Even with these shifts in priorities, however, major questions remain. For example, should aid agencies distribute resources more broadly to reach as many people as possible, or should communities most at risk receive a disproportionate share of mitigation dollars? Panelists will explore this and other ethical dilemmas related to implementing equity measures during recovery. Audience members will also be invited to share examples of advancing equity processes and measurable outcomes.

Moderator:

Christopher Emrich, University of Central Florida

Panelists:

Maria Dillard, National Institute of Standards and Technology

Sean Dugdale, Federal Emergency Management Agency

Courtney Hoover, U.S. Department of the Interior

Paul Kovacs, Institute for Catastrophic Loss Reduction

Carlos Martín, Harvard University

ETHICAL AND CULTURALLY INFORMED RECOVERY: THE CHALLENGES OF BUREAUCRACY

3:30 to 5:00 p.m. MDT

Location: Centennial F

Professionals who work with public agencies and private organizations involved in disaster recovery have articulated ethical aspirations to help survivors and empower community resilience. However, the decisions made about temporary housing, the allocation of resources, and other recovery elements are not always equitable or in the best interest of those harmed by disaster. This session will identify how and why bureaucratic structures pose challenges to ethical, culturally informed recovery. Panelists will discuss how



SESSIONS AND EVENTS: TUESDAY, JULY 11

organizational histories, structures, and cultures contribute to assumptions made about disaster survivors. They will also offer creative, actionable ways to equitably support the diverse needs of people living at risk.

Moderator:

Julie Maldonado, Livelihoods Knowledge Exchange Network

Panelists:

Laura Olson, Jacksonville State University

Elizabeth Marino, Oregon State University-Cascades

Keely Maxwell, U.S. Environmental Protection Agency

Joseph Trainor, University of Delaware

Melissa Villarreal, Natural Hazards Center

DECOLONIZING DISASTERS: CENTERING LOCAL POWER FOR RESILIENCE

3:30 to 5:00 p.m. MDT

Location: Ponderosa

Disaster assistance has a long history of paternalism and prioritizing Western technical solutions to build resilience. Yet, it has been noted that local actors have the best understanding of the needs and priorities of their own communities and how to meet them, particularly during times of crisis. Shifting this power imbalance will require a frank discussion among aid agencies, researchers, and community leaders. This session will explore ethical approaches to international and domestic disaster management that center the efforts, priorities, expertise, and capabilities of local partners and responders.

Moderator:

Robin Soler, Centers for Disease Control and Prevention

Panelists:

Santina Contreras, University of Southern California

Susanna Hoffman, International Union of Anthropological and Ethnological Sciences

Lorna Jaramillo-Nieves, University of Puerto Rico Río Piedras

Laura Myers, The University of Alabama

Richard Robertson, University of the West Indies



SESSIONS AND EVENTS: TUESDAY, JULY 11

FRIEND OR FOE? TECHNOLOGY, HURRICANES, AND MARGINALIZED COMMUNITIES

3:30 to 5:00 p.m. MDT

Location: Interlocken A

Technology can elevate hurricane response and recovery, helping emergency personnel target evacuation messaging, locate people who need rescue or supplies, and connect survivors with resources after the event. But for some people—especially those who cannot afford technology or cannot access it due to language or location barriers—official reliance on these advances can limit resilience. This session will explore how we can capitalize on the promise of technology while ensuring that marginalized groups aren't further excluded during hurricanes and other natural hazards.

Moderator:

Andrea Schumacher, National Center for Atmospheric Research

Panelists:

Francis Bouchard, Marsh McLennan

Matthew Marchetti, CrowdSource Rescue

Jason Rivera, City University of New York

Xilei Zhao, University of Florida

DATA DEMOCRATIZATION: FILLING NEEDS AND FUELING ADOPTION

3:30 p.m. to 5:00 p.m. MDT

Location: Interlocken B

We live in a world where technologies and data collection processes are rapidly changing, but at times we need to slow down and determine how these shifts are aligned with scientific and community-based needs and concerns. Similarly, it is not always clear how or whether desired end users are engaged in developing new data collection systems and processes. This session will discuss methods and collaborations that can facilitate inclusive data advances, access, and adoption.

Moderator:

Susan Cutter, University of South Carolina

Panelists:

Oronde Drakes, U.S. Geological Survey

Karl Kim, University of Hawaii at Manoa



SESSIONS AND EVENTS: TUESDAY, JULY 11

Nicolas LaLone, Rochester Institute of Technology
Alicia Tyson, Colorado State University
Erin Urquhart, National Aeronautics and Space Administration

BARBECUE

5:30 to 9:00 p.m. MDT

Location: CU Boulder Byron R. White Stadium Club

We hope you will join the annual barbecue, where we will gather to enjoy food, beverages, and an amazing view from the east side of Folsom Field at the Byron R. White Stadium Club at the University of Colorado Boulder. This venue overlooks Folsom Field and the Flatirons.

University of Colorado buses will pick up participants going to the barbecue promptly at 5:30 p.m. in front of both the Renaissance and Omni hotels. After the barbecue, buses will leave at staggered intervals as needed. The last bus will leave the University of Colorado Boulder for the Renaissance and Omni hotels by 9:00 p.m.





SESSIONS AND EVENTS: WEDNESDAY, JULY 12

WEDNESDAY, JULY 12

BILL ANDERSON FUND DISASTER DASH 5K FUN RUN/WALK

6:00 to 7:45 a.m. MDT

Location: Omni Hotel Lobby

Registration: \$45 per Runner

We hope you'll join us for the **Ninth Annual Bill Anderson Fund Disaster Dash**. It doesn't matter if you want to contribute to a good cause or just stretch your legs, this fun run will help you do both.



The Disaster Dash 5K is an easy jog (or walk, if you prefer). Proceeds from the run support the Bill Anderson Fund mission to expand the number of professionals from historically underrepresented groups in the fields of hazards and disaster research and practice.

Even if you don't want to participate in the race, you can still sponsor runners or donate directly on the Disaster Dash website. Scan the QR code above to or visit: wizathon.com/baf-disaster-dash/.

COFFEE

8:00 to 8:30 a.m. MDT

REGISTRATION

8:00 a.m. to 5:00 p.m. MDT

Location: Atrium

A CITY-COUNTY PARTNERSHIP TO UNDERSTAND AND REDUCE HEAT RISKS

8:30 to 9:30 a.m. MDT

Location: Centennial E

The 2021 Heat Dome drew international attention to increased heat risks across the American West and led to 69 deaths in Multnomah County, Oregon alone. The urgent need to address emerging heat risks prompted a unique partnership between the City of Portland, Multnomah County, Home Forward, and affordable housing residents—united by a desire to understand and prepare for hotter summers and prioritize residents who



SESSIONS AND EVENTS: WEDNESDAY, JULY 12

face the greatest risks. The group installed heat sensors in affordable apartment buildings, monitored indoor temperatures all summer, and then incorporated resident feedback to understand the data and recommend next steps. Panelists will discuss the broader goals of this collaborative initiative and the follow-on study design and surprising results.

Moderator:

Jonna Papaefthimiou, Portland Bureau of Emergency Management

Presenters:

Carolina Gomez, Home Forward

Dana Hellman, CAPA Strategies

Shalynn Robinette, Home Forward

TURBOGRANTS: NEW OPTIONS FOR LEARNING ABOUT HAZARD MITIGATION GRANTS

8:30 to 9:30 a.m. MDT

Location: Centennial F

Communities leverage federal grants to advance natural hazard mitigation goals. Yet, some communities have limited personnel, time, or expertise to apply for the numerous grants available. Research has shown that those who are able to apply for and are awarded hazard mitigation grants do not always represent the communities most at risk. Historically marginalized and underserved communities with limited resources are often the least able to receive these funds, which can contribute to cycles of loss and vulnerability. This session will highlight a new tool—TurboGrants—which is designed to help encourage more equitable access to hazard mitigation funding.

Moderator:

Curtis Brown, Institute for Diversity and Inclusion in Emergency Management

Presenters:

Bryan Koon, Innovative Emergency Management

Russ Strickland, Maryland Department of Emergency Management

Pamela Williams, Federal Emergency Management Agency

Jiqiu “JQ” Yuan, National Institute of Building Sciences



SESSIONS AND EVENTS: WEDNESDAY, JULY 12

THE ROLE OF BLACK COMMUNITIES AND ORGANIZATIONS IN CLIMATE AND DISASTER RESILIENCE

8:30 to 9:30 a.m. MDT

Location: Ponderosa

The Black Resilience Network (BRN) is a coalition of Black practitioners, businesses, municipalities, and community organizations. Launched with the collaboration of the Federal Emergency Management Agency at the White House in February 2023, the group facilitates climate and disaster resilience partnerships among federal agencies, philanthropic organizations, businesses, and nonprofit organizations. This session will reframe the role of Black communities and organizations in advancing climate and disaster resilience and discuss BRN's understanding of resilience. It will also showcase BRN's research-driven priorities, including specific ways to collaborate with Black municipalities, community-based organizations, and businesses.

Presenter:

Atyia Martin, Next Leadership Development

ADDRESSING COASTAL HAZARDS, EQUITY, ECONOMIC PROSPERITY, AND RESILIENCE (CHEER) HUB

8:30 to 9:30 a.m. MDT

Location: Interlocken A

The recently formed Coastal Hazards, Equity, Economic Prosperity, and Resilience—or CHEER—Hub explores the tensions and tradeoffs between community goals for managing coastal hazard risk and achieving equity and economic prosperity. Launched in 2022 with funding from the National Science Foundation, CHEER Hub involves researchers from 11 universities and many disciplines. This innovative initiative relies on meaningful academic engagement with grassroots community organizations, emergency management practitioners, and other national research centers. It also enriches disaster education in the natural, engineering, and social sciences by bringing diversity, equity, and engagement to the forefront. This session will highlight how the CHEER Hub team is working across disciplinary and organizational boundaries to achieve research goals and broader societal impacts.

Moderator:

Tricia Wachtendorf, University of Delaware



SESSIONS AND EVENTS: WEDNESDAY, JULY 12

Presenters:

Sarah DeYoung, University of Delaware
Shangjia Dong, Texas A&M University
Jamie Kruse, East Carolina University
David Prevatt, University of Florida

HAZARDS AND DISASTER RESEARCH BY NEW PROFESSIONALS

8:30 to 9:30 a.m. MDT
Location: Interlocken B

This session features new research by students and recent graduates in the hazards and disaster field. Please join to learn more about cutting-edge work by new professionals!

Moderator:

Jacqueline Meszaros, National Science Foundation

Presenters:

Natasha Fox, Oregon State University

Participatory Resilience for Oregon Coastal Hazards: A Grounded Study in Queer Community Adaptation

Laura Landau, Rutgers University

We Keep Us Safe: Mutual Aid Responses to COVID-19 in New York City

Salvesila Tamima, University of Delaware

Adjustments to the COVID-19 Pandemic: An Analysis of Texas Natural and Cultural Heritage Sites' Operations

Chandler Wilkins, Texas A&M University

Understanding the Natural Hazard Risk of Communities with Public Housing Developments in Houston, Texas

BREAK

9:30 to 9:45 a.m. MDT

INCLUSIVE ENGAGEMENT: INSIGHTS FROM THE DIVERSIFYING HAYWIRED COMMUNICATION PROJECT

9:45 to 10:45 a.m. MDT
Location: Centennial E

Disaster scenarios provide insights into how hazards may impact communities while highlighting opportunities to enhance preparation and resilience. This information does not always reach those most at risk, however. The Diversifying HayWired Communication



SESSIONS AND EVENTS: WEDNESDAY, JULY 12

project brought together members of the Bill Anderson Fund, the U.S. Geological Survey, and the Natural Hazards Center to develop innovative approaches to connect with marginalized communities that would likely experience disproportionate impacts from a large earthquake in the San Francisco Bay Area. This session will focus on lessons learned regarding the use of inclusive engagement strategies to communicate hazard risks and support disaster planning.

Moderator:

Anne Wein, U.S. Geological Survey

Presenters:

Nnenia Campbell, Natural Hazards Center

Suzanne Frew, The Frew Group

Judanne Lennox-Morrison, Texas A&M University

Jean-Claude Ndong, Florida Atlantic University

CULTURALLY RELEVANT DISASTER MENTAL HEALTH INTERVENTIONS ALONG THE U.S. GULF COAST

9:45 to 10:45 a.m. MDT

Location: Centennial F

Trauma and other disaster mental health outcomes have been well-studied, especially in the short-term aftermath of disaster. However, there is limited knowledge on the effectiveness of evidence-based interventions for those living in marginalized communities. There is a pressing need for culturally adapted disaster mental health interventions along the Gulf Coast, which frequently experience hurricanes and other disasters. Panelists will discuss projects that use implementation science to deploy culturally adapted, evidence-based interventions for at-risk groups, including African American communities in Baton Rouge, young Vietnamese Americans in New Orleans and Houston, Black pregnant women in East Baton Rouge Parish, and Hispanic/Latino neighborhoods in Houston.

Moderator:

Robert Gasior, The National Academies

Presenters:

Emily Harville, Tulane University

Dongying Li, Texas A&M University

Jennifer Scott, Louisiana State University



SESSIONS AND EVENTS: WEDNESDAY, JULY 12

THE FUTURE OF ALERTS AND WARNINGS: RESEARCH, INNOVATION, AND INCLUSION

9:45 to 10:45 a.m. MDT

Location: Ponderosa

Rapid technological change has led to the continued evolution of life-saving alerts and warnings globally. In the United States, Wireless Emergency Alerts (WEAs) have emerged as a key part of the communication infrastructure for emergency preparedness and response. Risk communicators, however, have experienced technical and messaging challenges when using WEAs. In this session, panelists will discuss the challenges of delivering effective warning messages, present new technology designed to reduce delays in issuing warnings, and discuss remaining gaps in diversity, equity, and inclusion when it comes to message creation and distribution.

Moderator:

Michele Wood, California State University, Fullerton

Presenters:

Steve Staeger, 9News Denver

Jeannette Sutton, State University of New York at Albany

Wade Witmer, Federal Emergency Management Agency

TACKLING CHALLENGES AND MAKING PROGRESS ON THE SENDAI FRAMEWORK FOR DISASTER RISK REDUCTION

9:45 to 10:45 a.m. MDT

Location: Interlocken A

This session will identify themes from the midterm review of the Sendai Framework for Disaster Risk Reduction that are being addressed through collaboration between Japanese and U.S. researchers. Panelists will discuss how to tackle challenges and share results from projects completed through the Strategic International Collaboration Research Program—conducted by the Japan Science and Technology Agency (JST) in collaboration with the National Science Foundation (NSF)—and the US-Japan Workshop on Needs, Priorities, and Partnerships to Advance Human-Centered Data for Resilience, organized by the University of Notre Dame. There will be time for open discussion and an announcement of an upcoming NSF-JST joint call for projects due in August 2023.



SESSIONS AND EVENTS: WEDNESDAY, JULY 12

Moderator:

Yuichi Ono, Tohoku University

Presenters:

Gabor Holtzer, University of Notre Dame

Tamiyo Kondo, Kobe University

Jacqueline Meszaros, National Science Foundation

Kaoru Toyofuku, Japan Science and Technology Agency

BILL ANDERSON FUND LIGHTNING TALKS

9:45 to 10:45 a.m. MDT

Location: Interlocken B

This session will feature a series of short presentations showcasing the work being done in the hazards field by Bill Anderson Fund fellows from a variety of disciplinary backgrounds. Each presenter will have 20 slides and seven minutes to share the story of their work.

Moderator:

Cassandra Jean, University of Washington

Presenters:

Yajaira Ayala, University of Delaware

Reframing Reality: A Demographic Profile of Black Women in Lake Charles, Louisiana

Natalie Coleman, Texas A&M University

Integrating Equity Standards in Infrastructure Management and Restoration

Maggie León-Corwin, The University of Oklahoma

Surviving Winter Storm Uri: Lessons Learned from Disruptions to Utility Services in North Texas

Joshua McDuffie, Vanderbilt University

Adapting Disaster Risk Education for Community Resilience at All Levels

Kesley Richardson, West Chester University

Quality Check: How Good is Your Emergency Management Program?

BREAK

10:45 to 11:15 a.m. MDT



SESSIONS AND EVENTS: WEDNESDAY, JULY 12

PLENARY: ETHICAL OBLIGATIONS TO CURRENT AND FUTURE GENERATIONS OF THE NATURAL HAZARDS WORKFORCE

11:15 to 12:30 p.m. MDT

Location: Interlocken A/B

As communities experience an unprecedented number of extreme disasters, we have an ethical obligation to prepare current and future generations of researchers and practitioners for the work that lies ahead. As this closing plenary will showcase, these challenging times provide opportunities to lead by example and offer hands-on experience to students and members of the natural hazards workforce. Join this session to learn more about ethical codes and mentoring programs designed to prepare hazards professionals while also providing technical assistance in socially marginalized and at-risk communities across states, tribal regions, and the U.S. territories.



Moderator:

Kristin Ludwig,
White House Office of
Science and Technology
Policy



Panelist:

Norma Anderson
The Bill Anderson Fund



Panelist:

Ronald Anderson,
National Institute of Building
Sciences



Panelist:

Shirley Feldmann-Jensen,
California State University,
Long Beach



Panelist:

Gavin Smith, North Carolina
State University



SESSIONS AND EVENTS: WEDNESDAY, JULY 12

WRAP-UP AND CALL TO ACTION

12:30 to 12:45 p.m. MDT

Location: Interlocken A/B

As is tradition, during this closing session the Natural Hazards Center director will offer a summary of the highlights of the event and a discussion of opportunities for the Future.

Speaker:

Lori Peek, Natural Hazards Center

ADJOURN

12:45 p.m. MDT

LUNCH

12:45 to 2:00 p.m. MDT - Outdoor Pavilion

RESEARCHERS MEETING BEGINS

Wednesday, July 12, 2:00 p.m. MDT to Thursday, July 13, 5:30 p.m. MDT

Scan the QR code to see the full schedule or visit: hazards.colorado.edu/workshop/2023/researchers-meeting/schedule.



PRACTITIONERS MEETING BEGINS

Thursday, July 13, 8:30 a.m. to 4:30 p.m. MDT

Scan the QR code to see the full schedule or visit: hazards.colorado.edu/workshop/2023/practitioners-meeting/schedule.





POSTER ABSTRACTS

You can make the most of the Sunday and Monday night poster sessions by reading abstracts and even viewing posters in advance! Visit hazards.colorado.edu/posters-2023 or scan the QR code below to access abstracts of all the posters on our website. This is also where you will find PDFs of posters to view and download, even after the Workshop has concluded.



RESEARCH AND PRACTICE HIGHLIGHTS

Research and Practice Highlights are all about shining a bright light on new projects, programs, initiatives, policies, and noteworthy publications. These brief descriptions of recent and ongoing projects will help you make connections and maximize networking potential. Scan the QR code below to read about what other attendees are working on.





RECOGNITION

The Natural Hazards Center team is so pleased to welcome attendees to Colorado for the 48th Annual Natural Hazards Research and Applications Workshop. Thank you for the time, effort, and resources you have expended to join the diverse group of professionals who attend this meeting. It is our honor to convene the Workshop and we recognize that it is your active participation that helps make the meeting meaningful in so many ways. We offer much gratitude to each of you.

SPECIAL THANKS

NATURAL HAZARDS CENTER ADVISORY COMMITTEE

William Anderson

Transportation Research Board of the National Academies of Sciences, Engineering, and Medicine

David Applegate

U.S. Geological Survey

Lauren Alexander Augustine

Gulf Research Program of the National Academies of Sciences, Engineering, and Medicine

Jason Averill

National Institute of Standards and Technology

Chad Berginnis

Association of State Floodplain Managers

Michael Cohen

Renaissance Re

Aram Dobalian

U.S. Department of Veterans Affairs

Christopher Emrich

University of Central Florida

Gina Eosco

National Oceanic and Atmospheric Administration

Angela Gladwell

Federal Emergency Management Agency



Thomas Hughes

National Hazard Mitigation Association

Michael Newman

Insurance Institute for Business & Home Safety

Russ Paulsen

UsAgainstAlzheimer's

Roger Pulwarty

National Oceanic and Atmospheric Administration

Nick Shufro

Federal Emergency Management Agency





WORKSHOP VOLUNTEERS

The Natural Hazards Center invited students to apply to volunteer at the Natural Hazards Workshop. The volunteers who were selected to assist at this year's Workshop are listed below. These student volunteers attend sessions and provide support to panelists and moderators throughout the event. Participants are welcome to reach out to them for assistance while at the Workshop, and we gratefully acknowledge their service.



HAIDER WASEEM ANWAR
Texas A&M University



REBECCA ENTRESS
University of Central Florida



WOKEYA YESMIN FARHA
Florida International University



AMBER KHAN
University of Washington



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Special thanks to the 2023 Volunteer Coordinators,
Musabber Ali Chisty and **Melissa Villarreal**.



ADDITIONAL SUPPORTERS

In planning this year's Workshop and add-on meetings, the Natural Hazards Center team has benefitted tremendously from the generosity and assistance of many people and organizations. We would like to extend additional thanks to:

- All those who submitted ideas for panels and presentations during the planning stage for the Workshop. The program is made possible due to your contributions.
- The Centers for Disease Control and Prevention (CDC), which supported the production, printing, and distribution of the *Research Counts* Special Collection on Mass Sheltering and Disasters for participants. The Natural Hazards Center thanks those who authored pieces for the special collection, and acknowledges the invaluable contributions of Robin Soler, Tracy Thomas, and their colleagues at the CDC.
- Alece Birnbach of the Graphic Recording Studio who will offer live recordings at this year's Workshop.
- Chip Van Zandt of Van Zandt Visual for capturing images of the people and activities at this year's Workshop.
- Amy Graves and the team at the Office of Institutional Equity and Compliance at the University of Colorado Boulder for their support with sign language interpretation.
- Kristina Peterson of the Lowlander Center, who organized a collection of beautiful jewelry for sale at the Workshop. Members of women's cooperatives are compensated for the purchase of their product, and all additional proceeds go to the Bill Anderson Fund, the Mary Fran Myers Scholarship Fund, and the Gilbert F. White Endowed Graduate Research Fellowship.
- Julie Maldonado of the Livelihoods Knowledge Exchange Network, who sent books to the Natural Hazards Center to be distributed to students.
- Frannie Edwards, recently retired from San Jose State University, who mailed her entire collection of "vintage" Natural Hazards Workshop and California Earthquake Preparedness Month t-shirts to be distributed at this year's Workshop.
- Sara Hamideh of Stony Brook University and Sabine Loos of the University of Michigan, who once again spearheaded the planning for the Researchers Meeting.
- Thomas Hughes, president of the National Hazard Mitigation Association, and Ed Hecker, director of operations, who led the planning for the 2023 Practitioners Meeting.
- The Institute of Behavioral Science at the University of Colorado Boulder, which provides an institutional home for the Natural Hazards Center and an incredibly supportive environment.
- Rob Pudim—who has contributed to the Natural Hazards Center since its founding in 1976—for the use of his illustrations.



AWARDS

MARY FRAN MYERS SCHOLARSHIP WINNERS

The Mary Fran Myers Scholarship recognizes outstanding individuals who share Myers' commitment to disaster research and practice and have the potential to make a lasting contribution to reducing disaster vulnerability. At least one scholarship recipient each year receives financial support to attend the Annual Natural Hazards Workshop. Scholarships cover part or all of transportation, meals, and Workshop registration costs. Recipients are recognized at the Workshop and are asked to present a poster or serve as a panelist, where they can highlight their research or practical experiences with hazards and disasters.

Myers recognized that many of the people and organizations that could benefit from and contribute to the Workshop—including local practitioners, students, and international professionals—were among those least likely to afford it. The scholarship was established in 2003 to fulfill Myers' request that qualified and talented individuals receive support to attend, ensuring that representatives of all ages, professions, and communities be represented at the Workshop.

Myers served as co-director of the Center for 16 years until her death in 2004. Reducing disaster loss was her life's work. During her tenure, she helped to bring about fundamental changes in hazards perspectives and instituted farsighted and sustainable ways of dealing with extreme environmental events. In addition, she provided leadership, guidance, grace, and laughter and established a standard of excellence admired and emulated by her colleagues. She was an innovator, a mentor, and a creative spirit who touched many lives. Her legacy has had a lasting impact on the global hazards community.

2023 WINNERS



MARYSEL PAGÁN SANTANA

Marysel Pagán Santana is the director of environmental and occupational health for the Migrant Clinicians Network (MCN). She is also the senior program manager of the Caribbean Office, where she leads and coordinates MCN climate projects. In this role, Pagán Santana provides technical assistance, training, and tool development that help community health centers and residents address disaster issues and target health outcomes.

Pagán Santana is the principal investigator on various projects that explore disasters in Puerto Rican agricultural communities and foster the MCN network of organizations working on climate and health initiatives in Puerto Rico and the U.S. Virgin Islands. She has extensive experience training high-risk and vulnerable worker populations and conducting community-based projects.



Pagán Santana has more than seven years of private-sector experience as an industrial hygienist. Previous work areas include developing and implementing occupational and environmental health training, emergency preparedness, and business continuity planning programs. Pagán-Santana has a master's degree and a doctorate from University of Puerto Rico Medical Sciences Campus in industrial hygiene and public health, respectively. Her PhD emphasized environmental health. She was the 2021 recipient of the American Public Health Association Lorin Kerr Award, which recognized her dedication to worker health and safety.



AMBER SHUMPERT

Amber Shumpert is currently working on a PhD in business administration with a specialization in homeland security policy and leadership. Her focus is the linkages between disasters, climate change, and homeland security, with the goal of elevating the political importance of these topics. Shumpert is the community liaison for an Environmental Protection Agency-funded research project with the University of Alaska that will monitor wildfire smoke and its impact on Alaska's socially vulnerable populations. Data from the project will bolster her efforts to change how wildfires are managed in Alaska and seek federal grants to provide air purifiers to members of Indigenous populations, older adults, and low-income families.

Shumpert currently holds a bachelor's in emergency and disaster management and a Master of Business Administration with a concentration in homeland security resource allocation. Her dedication to emergency management is drawn from her time serving in the U.S. Army as an explosive ordnance disposal technician (bomb squad) and campy 90s disaster movies. She is currently the regional safety officer for the Alaska Department of Transportation and Public Facilities (DOT&PF) where she focuses on occupational safety and hazards, as well as serving as the DOT&PF liaison to the local department of emergency management.

The 2023 Mary Fran Myers Scholarship selection committee included **Betty Lai and Ponnile Olonilua (co-chairs), Ray Chang, and Lisa Jackson.**

The Mary Fran Myers Scholarship is made possible by generous contributions from numerous individual donors as well as recurring support from:

- The Association of State Floodplain Managers
- The authors and editors of the first and second editions of *Social Vulnerability to Disasters*
- The author of *Disasters by Design: A Reassessment of Natural Hazards in the United States*
- The author of *Hazards Analysis: Reducing the Impact of Disasters*

To learn more about the Mary Fran Myers Scholarship, visit: hazards.colorado.edu/awards/myers-scholarship.



DISABILITY AND DISASTERS AWARD WINNER

The Disability and Disasters Award supports people with disabilities working in disasters, as well as those who care for, study, or advocate on behalf of those with disabilities. Award funds allow the recipient to attend the Workshop and the Researchers or Practitioners Meetings that follow.

People with disabilities have been identified as among the most vulnerable to disasters; however, research has shown that they also have tremendous capacity. This award was established through the generous contribution of an anonymous donor in order to recognize those who advance and support efforts in the area of disability and disasters.

2023 WINNER



ALINA ENGELMAN

Alina Engelman is an associate professor of public health at California State University, East Bay. Her scholarly work focuses on health disparities for the deaf and disabled, including emergency preparedness and response and global disability justice in climate disasters. Other work explores the emergency preparedness and response role of community-based organizations serving older adults and people with disabilities in Puerto Rico. Engelman received her doctorate from the University of California, Berkeley; her Master of Public Health in global health from Yale University; and her bachelor's at Brown University.

We would like to extend thanks to the 2023 Disability and Disasters Award chair **Candace Evans** and committee member **Heather Champeau**.

To learn more about the Disability and Disasters Award, visit: hazards.colorado.edu/awards/disability-and-disasters-award.

STUDENT PAPER COMPETITION WINNERS

The Natural Hazards Center created the Annual Hazards and Disasters Student Paper Competition for undergraduate and graduate students in 2004 as a way to recognize and promote the next generation of hazards and disaster researchers.

Papers are judged on originality, writing quality, and knowledge of the topic. The undergraduate winner and graduate winner each receive a stipend, publication of their papers on the Natural Hazards Center website, and free registration to the Workshop and Researchers Meeting.



2023 UNDERGRADUATE WINNER



NYLA HOWELL

Nyla Howell is a senior at the University of Maryland, Baltimore County (UMBC). As a UMBC Ronald E. McNair Scholar, she is pursuing a Bachelor of Arts degree in Geography and Sociology. Nyla has interned at her county's Office of Emergency Management and the Federal Emergency Management's (FEMA) Individual and Community Preparedness Division and served as a co-chair of FEMA's National Youth Preparedness Council from 2017-2019. Through these experiences, Howell developed a deeper interest in hazard preparedness, social vulnerability, and community resilience. During her undergraduate studies, she has had the opportunity to engage in business climate resilience research in New Jersey at Rutgers University and disaster health research in the Baltimore-Washington region at UMBC. Currently, she is a 2023 summer scholar for the NSF Coastal Hazards, Equity, Economic Prosperity & Resilience (CHEER) Hub led by the University of Delaware and East Carolina University. Howell hopes to pursue a Ph.D. focusing on hazard studies and work with historically underserved communities to promote equitable hazard preparedness and community resilience programs. Outside school, she enjoys reading books, hanging out with friends, and serving on her church's production team.

Paper Title: *The Impact of Corporeal Markers on Natural Hazard Preparedness During Hurricane Katrina*

2023 GRADUATE WINNER



NAHUEL ARENAS GARCIA

Nahuel Arenas is the deputy chief of the regional office for the Americas and the Caribbean of the United Nations Office for Disaster Risk Reduction (UNDRR) since 2017. For more than 20 years, Arenas has been leading humanitarian assistance interventions, disaster risk reduction (DRR) programming and development cooperation in Latin America, the Caribbean, Africa, and the Asia Pacific. Before joining UNDRR, Arenas occupied the position of Director for Humanitarian Programs and Policy for OXFAM USA. He has worked for the Japan International Cooperation Agency, Action Against Hunger, consulted for UN-Habitat leading learning processes around DRR and contributed to capacity building programs. He has a background in public policy and international politics. He is a Ph.D. candidate at the Centre for Global Ethics of the University of Birmingham.

Paper Title: *Slow Action as a Moral Wrong: The Abolition of Slavery and the Fight Against Climate Change*

We would like to extend thanks to the 2023 Student Paper Competition co-chairs **Heather Champeau** and **Jessica Austin**. To learn more about the Student Paper Competition, visit: <https://hazards.colorado.edu/awards/paper-competition>.



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