

Observer

Natural Hazards

NATURAL
HAZARDS
CENTER



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DISASTER COMMUNICATION

by Jeannette Sutton

LEARNING FROM DISASTER?

by Scott Gabriel Knowles

CAPITALISM AND CLIMATE CHANGE

*by Benjamin Wiggins and
Matthew Schneider-Mayerson*



NEPAL

Rubble and Tragedy

THE MISSION OF THE NATURAL HAZARDS CENTER is to advance and communicate knowledge on hazards mitigation and disaster preparedness, response, and recovery. Using an all-hazards and interdisciplinary framework, the Center fosters information sharing and integration of activities among researchers, practitioners, and policy makers from around the world; supports and conducts research; and provides educational opportunities for the next generation of hazards scholars and professionals. The Natural Hazards Center is funded through a National Science Foundation grant and supplemented by contributions from a consortium of federal agencies and nonprofit organizations dedicated to reducing vulnerability to disasters.

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On the Cover

A Mother and Child Next to Their Tent in Ratna Park. © IOM/Matthew Graydon

Ratna Park in Kathmandu is one of the many tent cities housing the hundreds of thousands left homeless by two major earthquakes that struck in the space of two-and-a-half weeks. The quakes reduced thousands of homes across the capital to rubble.

Residents of these makeshift encampments worked hard to build the best shelters they could—a hodgepodge of tents, teepees, and poles draped with plastic sheeting and tarps. The conditions inside the tents vary. A few families were able to rescue mattresses, bedding, and cookware, while other families have no belongings at all. They expected to live in tents for a few days, but days have turned into weeks and living conditions have quickly deteriorated. The sanitation situation in these tent cities is particularly worrisome and—with the looming monsoon season—is expected to get worse.

WELCOME TO THE MAY ISSUE of the *Observer*. This month we focus on the tragic events that have unfolded in Nepal and the surrounding Himalayan states. On April 25, thousands died in a mammoth earthquake. A little over a fortnight later, the region got hit hard again when a second earthquake left 65 dead and nearly 2,000 people injured. The total death toll on May 24 stood at 8,653 and is expected to rise even further as recovery operations continue.

Two of our contributors were in the region when the first earthquake struck. Chandra Prakash Kala, a faculty member at the Indian Institute of Forest Management, was 680 miles away in Bhopal, India, when he felt the tremors. Earthquake hazard researcher Anne Sanquini was in the Nepalese capital when the disaster struck. Kala and Sanquini were both literally and figuratively shaken by the event. Kala—who himself grew up in a small Himalayan town and has dedicated his career to researching the ecology of the mountain range—kept a detailed log about the earthquake and its aftermath. Sanquini, although in the midst of chaos, was able to document the devastation around her through word and image. Her account and photographs are harrowing and underline the sheer terror people felt when the earth started to shake.

As news trickled in, it became clear that Nepal was not prepared for a disaster of this caliber. Worsened road conditions, landslides, and rubble from buildings destroyed by the earthquake made it nearly impossible to reach the already isolated mountain villages with relief supplies. Aside from these geographical and infrastructural issues, other—manmade—issues also impeded the distribution of aid. After the first earthquake, Nepalese authorities obstructed international disaster response efforts by insisting a long list of rules and regulations must be followed, including custom inspections and import taxes. As a result of these bureaucratic bottlenecks, supplies to the survivors piled up at the airport and other border crossings.

Eventually the government relaxed custom requirements somewhat and lifted import taxes on items such as tarpaulin and tents, but the damage was already done and the inadequate disaster response severely delayed emergency relief. Now, with the monsoon season just around the corner, the small window to reach isolated villagers near

the epicenter of the earthquake is closing fast.

The pending monsoon rains in Central Nepal—typically beginning around mid-June and lasting through mid-September—is likely to cause not only more landslides and widespread flooding, but is also expected to trigger a full-blown public health crisis. Much of the existing water and sanitation infrastructure was severely damaged by the earthquake. In the make-shift encampments that have mushroomed in and around Kathmandu, emergency toilets are overflowing and people are using open space to relieve themselves. Heavy rains could wash human waste into drinking water sources and the potential for an outbreak of waterborne diseases like cholera (which is endemic to Nepal) is very high.

Public health isn't the only concern—a food crisis is also looming. Without adequate shelter for themselves and their harvest displaced farmers cannot return to their land to harvest potatoes and rice and plant wheat ahead of the monsoon. The potential consequences for the country's food security are severe. This is a daunting forecast for people who are already running out of food.

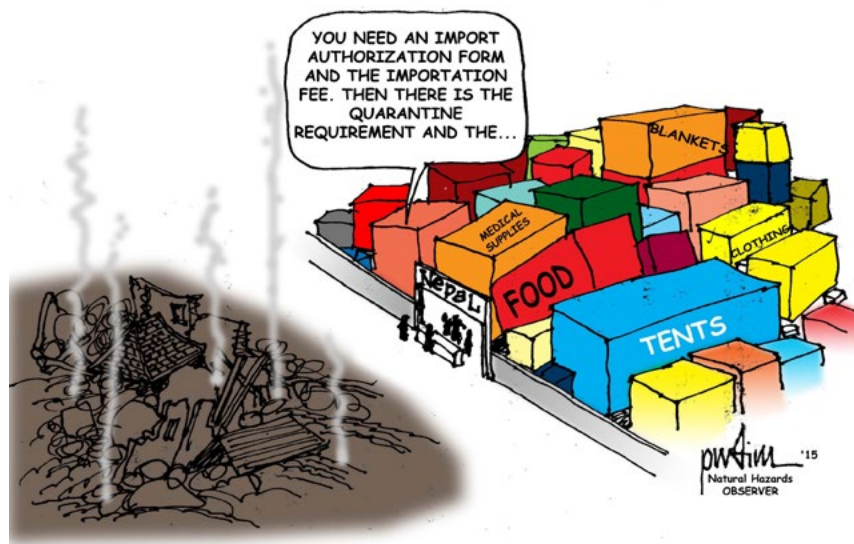
The Nepalese government has projected that the country needs more than 215,000 tons of food in the next three months and at least a million tents to feed and shelter earthquake victims. Pre-monsoon rains are already hampering relief efforts and it seems like the race against the clock will be lost. Nepal has to brace itself for yet another disaster.

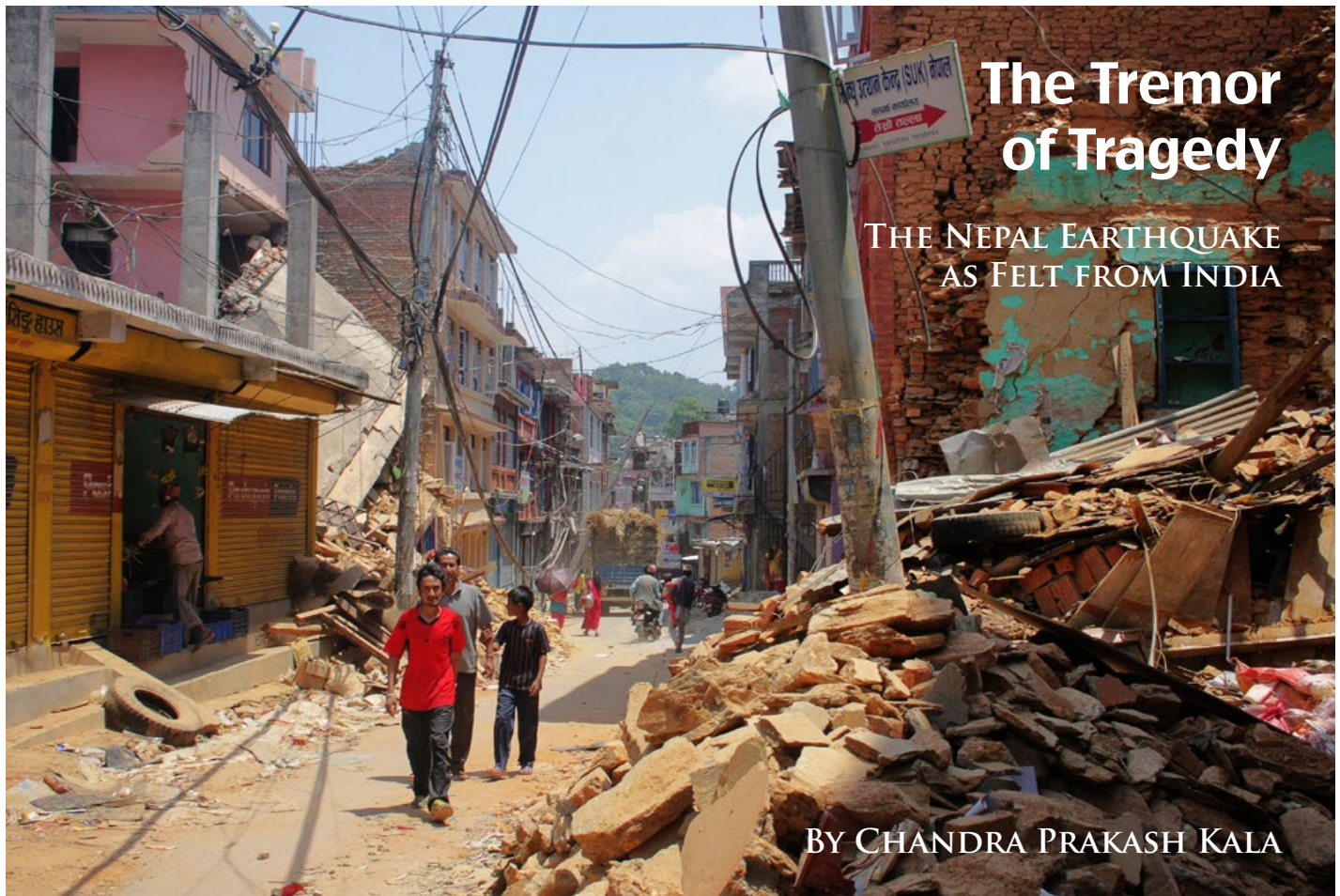
Aside from Kala and Sanquini's vivid accounts of the developments in Nepal, this issue has articles that examine a capitalistic approach to climate change awareness, look at the lack of communication among disaster communicators, and outline seven trends that might help disaster learning.

If there is anything we can learn from Nepal's earthquake tragedy is that there is a desperate need to improve disaster communication and responses to disaster relief, recovery, and rehabilitation—and for mitigating future catastrophes.

Enjoy your *Observer*.

Elke Weesjes,
Editor, elke.weesjes@colorado.edu





The Tremor of Tragedy

THE NEPAL EARTHQUAKE AS FELT FROM INDIA

BY CHANDRA PRAKASH KALA

Rubble-strewn streets of Chautara, Sindhupalchok. © IOM

Chandra Prakash Kala is a faculty member in the Ecosystem and Environment Management Division at the Indian Institute of Forest Management in Bhopal, India. He was born and raised in a Himalayan village in the Indian State of Uttarakhand, situated near the border of Nepal. He has more than 20 years of research experience in Himalayan ecology and ecosystem management and has taught risk assessment and disaster management. In this feature, he shares a personal and professional account of the events that have occurred in Nepal since April 25.

APRIL 25

AFTER A LATE BREAKFAST on Saturday, while browsing the *Times of India*, I suddenly felt my chair shaking. I was sitting on a swivel chair in my home in Bhopal, and it was difficult to guess whether I was shaking the chair or if it was shaking all on its own. I sat completely still for a good few seconds, but the chair continued to shudder. The rattling of a half-opened wooden flap of the cabinet suddenly caught my attention. I gazed around and was stunned to notice that many objects in the room, including the TV and the fan were shaking. Once my mind had caught up to the fact that this might actually be an earthquake, my family and I rushed outside.

It was about a quarter to twelve and the outside temper-

ature was unbearably hot, as it usually is in April. I took shelter in the shadow of the Indian Jujube grove just opposite of my house. I looked around. There was no meddling and no movement and I assumed the tremor had stopped. I went back inside the house and switched on the TV to find out what had just happened. Breaking news about the earthquake was running on every channel.

I quickly learned that the epicenter of the 7.8 magnitude earthquake was in the village of Barpak in the Gorkha district, about 50 miles (80 km) northwest of Nepal's capital city of Kathmandu—about 680 miles (1100 km) away from Bhopal. Around 12:20 p.m.—while watching *Times Now*, an English news channel in India—I felt another tremor that lasted for about 20 seconds. This second 6.6 magnitude tremor was one of the 25 aftershocks that took place in the very first day, affecting Nepal and surrounding Himalayan states.

Alarmed about what happened, I spent the rest of the day glued to the TV, watching news updates. News reports showed the damage in Kathmandu. The famous Dharahara—a nine-story tower built in 1832—had collapsed. The plazas and areas opposite the old royal palaces in Nepal also suffered severe damage. Historical temples including Krishna, Shiva Parvati, Kasthamandap, and Panchtale had been destroyed. People were trapped in the rubble, roads were destroyed, connectivity was jeopardized, and elec-



Bakhtapur Durbar Square (here seen pre-quake) in Kathmandu suffered severe damage @ Eric Janssen

tricity had been lost.

The tremor also triggered avalanches in the upper reaches of the Himalayas— a particularly vulnerable area¹—affecting hundreds of climbers on the world’s highest mountain summit, the Everest.

Within a few hours after the earthquake, India’s Prime Minister, Narendra Modi, chaired a high-level meeting to review the situation in Nepal and India. The Indian Government immediately took a leadership role in helping the disaster area and launched Operation Maitir, a massive relief operation in Nepal. Military transport aircrafts were used to rush National Disaster Response (NDRF) rescue teams, sniffer dogs, and relief materials—including food, medicine, and rescue tools—to the affected areas. The first planes landed six hours after the earthquake had struck.

The immediate, proactive actions that India took to help a neighboring country in urgent need made me realize that humanity is the most powerful tool we have in earthquake response. It doesn’t recognize administrative and political boundaries. My heart went out to everyone in Nepal and the actions of the government reflected that sentiment.

The NDRF rescue efforts in Kathmandu continued through the night, although the total darkness—the electricity was down in the affected regions—complicated the search for survivors. At 9 p.m., nine hours after the first tremor, the death toll in India and Nepal was already 1,457, including 19 Mount Everest climbers. Tourists and pilgrims were stranded in airports and hospitals were overflowing with injured people. Survivors—afraid of aftershocks—set up makeshift shelters outside of their

¹ The Himalayan mountain range, being structurally unstable and young, is still geologically active, fragile, and vulnerable to both natural and man-made processes (Kala, 1998, 2014). Here seismicity mainly results from the continental collision of the India and Eurasia plates, which are converging at a relative rate of 40-50 mm/yr. Under-thrusting of India northward beneath Eurasia generates frequent earthquakes which makes this area one of the most seismically hazardous regions on the Earth (USGS, 2015).



Specialist helicopters to reach remote areas in earthquake-hit Nepal @ DFID

homes, or what was left of them.

APRIL 26

The next day it became clear that the earthquake had turned large parts of Kathmandu into a heap of rubble. The historical sites especially suffered significant damage. About 80 percent of the temples in Kathmandu were destroyed. By the evening, the death toll had risen to 2,200 in Nepal, 62 in India and 18 in Tibet, in addition to the 19 mountaineers who had died on Mount Everest. The reports on casualties and property damage in rural areas were meager or non-existent because roads, which were already inadequate, were inaccessible due to rubble and landslides, and there was no information going in or coming out of these areas. The only way to reach the region northeast of Kathmandu, the epicenter of the earthquake, was by air. Choppers were able to drop food, but they were unable to land and move the injured people out due to extremely treacherous terrain.

India intensified the rescue operations and deployed 35 buses and 19 aircraft (including six civilian planes) to Nepal. On April 26 alone, the Indian Air Force rescued 1,040 people. In addition to the rescue and medical teams, India also sent a number of damage assessment teams.

Around 8 p.m., sudden heavy rainfall in Kathmandu forced rescue workers to cease their efforts. Rescue operations didn’t resume until the following day. *The Times of India* reported that about 24,000 men, women, and children were staying in 1,200 tents (Soondas 2015). There was a general shortage of food, drinking water, and medicine, caused in part by the Nepalese government’s inadequate response and inefficient bureaucratic methods that delayed the distribution of emergency supplies. It was clear that the country was not prepared for a disaster of this scale. A large amount of international aid, including food and medicine, was held back at the airport in Kathmandu because of the rigid custom rules and regulations of local authorities (BBC News 2015). I felt frustrated when I heard



Sniffer dog Darcy is looking for survivors under the rubble @ DFID

about this situation, since valuable time was being lost and the fate of victims buried alive under the rubble was jeopardized. People in my immediate surroundings shared this frustration about Nepal's inadequate response and time wasting practices. I took it to heart since I have many friends in Nepal and I was worried about their wellbeing. Fortunately they were able to get in touch with me via the Internet and knowing they were safe was a relief.

APRIL 27

During the first two days after the quake, the Indian Air Force was able to evacuate about 5,400 people, including 2,500 Indians who were brought back to India. At the same time, Nepalese citizens who were working in India were desperate to get back into their country. Many of these people—concerned about their families back home—got stuck on the roads into Kathmandu due to blockages and landslides. On Mount Everest, about 1,000 people were stranded because of avalanches and were airlifted out of the area.

APRIL 28

As the official death toll from the earthquake surpassed 5,000, international aid agencies and foreign governments began to intensify the much-needed financial assistance and supplies to Nepal. Rescue operations in Kathmandu continued, although bad weather—this time hail—again impeded the efforts. Electricity got restored in some parts of the city, but prices of goods and services began to skyrocket and many people decided to leave Kathmandu. Others stayed and began to vocalize their frustration with the Nepalese government. They complained about the government's slow and inadequate disaster response and its inability to provide enough food and clean water for the survivors. I really sympathized with these people since I was well aware of the fact that delays in relief response can cause major public health disasters.



Tent city in Chuatara @ IOM

APRIL 29

Four days after the earthquake, people slowly started to resume their lives. Shops opened in Kathmandu and people began to move back into their homes. Authorities assured the public that electricity would be restored to the entire city. The earthquake remained front page news and reports of fatalities and devastation in other regions began to trickle in. For example in the Sindhupalchowk district—situated about 43 miles (70 km) from Kathmandu—1,820 people died, 80 percent of the houses were destroyed, and more than 3,000 people were still missing. A total of eight million Nepalese were affected by the earthquake, according to a UN report. Of those, 1.4 million were in immediate need of food assistance (UN News Centre 2015).

MAY 4

Nepalese government reports released on May 4 stated that 7,365 people died and 14,355 were injured as a result of the earthquake (OCHA 2015). In total, Nepal and the surrounding Himalayan states, experienced more than 140 aftershocks after the initial earthquake on April 25. The United Nations Office for the Coordination of Humanitarian Affairs and the Office of the Resident and Humanitarian Coordinator in Nepal reported that the earthquake destroyed 191,058 homes and damaged another 175,162 (OCHA 2015). Apart from food, water, medicine, and other necessary items, the United States donated \$10 million through the U.S. Agency for International Development (USAID), the United Kingdom donated \$7.6 million, China \$3.3 million, and the United Nations released \$15 million from its central emergency response fund (Regan 2015). So far, \$68 million has been provided in the form of contributions, commitments and humanitarian pledges (OCHA,2015). I can only hope that more organizations will raise money to support the earthquake victims. Unfortunately, many countries are overextended. There is only a limited amount of money available for humanitarian relief



The Pashupatinath Temple was left untouched @ Eric Janssen



Four days after the quake, shops opened in Kathmandu @ Eric Janssen

in the world, and an endless supply of crises.

MAY 12

A little more than two weeks after the first quake, while sitting in front of my computer in my office, I felt a distinct shudder around 12:35 p.m. Within couple of minutes my mobile phone buzzed. It was my wife, asking if I had felt the tremor. It was only then that I realized it was yet another aftershock.

When I got home from work, I once again watched TV to find out what had happened. I couldn't believe that, just as most of the rescue operations were completed and signs of ordinary life were returning to the disaster-stricken area, another high intensity tremor had shaken the same region. The epicenter of this 7.3 magnitude aftershock was about 80 km (50 miles) east of Kathmandu, close to the Tibetan border.

This aftershock sent further waves of panic and despair across the region and caused another 66 deaths and 1,988 injuries. With the fresh casualties, the total death toll since the April 25 quake has now crossed 8,400 and is expected to rise even further.

THE AFTERMATH

The earthquake, which clearly exposed Nepal's lack of disaster preparedness, may have caught the country off guard, but for geologists and seismologists it didn't come as a surprise considering the country's proximity to fault lines. And the resulting devastation didn't come as a surprise either, because Kathmandu is filled with poor construction built on soft sediment. It is common knowledge that construction should be built on bedrock rather than soft sediment, buildings should be secured together to prevent them from being knocked over, and they should be reinforced with steel (Subedi et al. 2013; Arya et al. 2014). If adequate building and planning codes had been enforced, many people could have survived the quake.

Compared to other disasters, earthquakes are one of the most destructive because they are so sudden and unpredictable and usually affect very large areas. I still remember the earthquake of October 20, 1991, which impacted the State of Uttarakhand where I grew up. Large swathes of the Uttarkashi district were destroyed by this tremor, although certain traditionally built structures weren't damaged. It conveyed an important lesson to planners, policy makers, and development agencies about how to design and build earthquake resistant constructions. In India, besides the very high damage risk zone in the Western and

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Central Himalayas, there are many other regions and cities—including New Delhi—that fall in the high damage risk zone. To avoid tragedies like the one in Nepal, it is very important that structural developments in these zones follow the strict norms for earthquake resistant structures. Personally, I think that a large-scale campaign in Himalayan states could raise awareness about earthquake resistance. Making your home or other buildings safer doesn't have to cost very much and straightforward adjustments could prevent so much pain and suffering.

The minutes in which I could not decisively determine if I was feeling a tremor or not changed the lives of millions of people and created a tremendous amount of unrepairable damage. I can only hope that Nepal and surrounding

states learn from this disaster, rethink its present course of unscrupulous development in the fragile Himalayan ecosystem, and introduce much stricter building codes.

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T. Joseph Scanlon 1933-2015

THE NATURAL HAZARDS CENTER joins the rest of the hazards community in mourning the loss of T. Joseph (Joe) Scanlon, Professor Emeritus at Carleton University's School of Journalism and director of its Emergency Communications Research Unit. Scanlon died of complications of a heart attack on May 2 in Kingston Ontario, where he was attending the Carleton Spring Conference. He was 82.

A frequent contributor to the *Observer* and fixture in the hazards community, Scanlon combined two different worlds—journalism and disaster studies.

Scanlon graduated from Carleton's journalism school in the 1950s and began his career as a staff member with the *Toronto Daily Star*. He became the paper's Washington correspondent in the early 1960s, covering the first years of the Kennedy administration and the civil rights movement. He also worked in television as a field producer and editor with the Canadian Broadcasting Corporation.

In 1965, Scanlon joined his alma mater as an assistant professor and was appointed director of the School of Journalism the following year. It was around this time that he became involved in disaster research and was able to apply his experience as a reporter and journalist to this field. His research and writing—an exciting mix of investigative practices, sociological theories, data analysis, and interviews—breathed new life into the field.

Scanlon published extensively on emergency incidents throughout his lengthy career. He focused mainly on events in his home country of Canada, but also examined disasters in Australia and France. He was particularly interested in media coverage of disasters, gender and evacuations, emergency management, and community involvement in disaster preparedness and response. A sought-after speaker, he continued to lecture on these topics at conferences around the world until his death.

Scanlon received the Charles Fritz Award from the International Research Committee for his lifetime contribution to Sociology of Disaster in 2002.

Winning the prestigious award far from marked the culmination of Scanlon's career as a writer and researcher. Recently, he was working on a large-scale research project that focused on the problems surrounding mass death. The project included a study of the overseas response in handling of the dead after the 2004 Indian Ocean Tsunami, a study of Canadian disaster mass death incidents, and a study of how pandemic death was handled in three Ontario communities. In addition he served as a consultant on a National Science Foundation project that looked at supply chains resulting from the response to Hurricane Katrina.

Scanlon is survived by his longtime partner Kathleen Quinn, and his children, David, Lucy, Leslie, Meaghan, and Amy. A memorial fund has been established in Scanlon's name at Carleton University. To donate, please visit carleton.ca/giving and follow the links..



Sanquini (right) at work in Nepal @ Anne Sanquini

EARTHQUAKE HAZARD RESEARCHER Anne Sanquini arrived in Nepal on Tuesday April 21, four days before the 7.8 magnitude earthquake that left the country devastated. She was there to share her research results with those who had helped with her dissertation project for the past three years.

The project was a 20-minute intervention film intended to encourage Nepalese communities to retrofit or rebuild local public school buildings to be life-safe in a major earthquake. The film features local Nepalese role models who have already strengthened their schools, and is based on the theory of communicating actionable risk and social cognitive theory. Through a community-randomized trial she found that employing cost-effective mass media featuring community members who have already taken the desired actions may accelerate adoption of risk reduction by others who are similar to them.

Sanquini was eager to share these findings with—among others—her team of interviewers, the people who had appeared in the film, the National Society for Earthquake Technology, and the Nepal Department of Education.

“I’d heard that many people go to developing countries and do research but then never share the results,” she said. “I was determined not to be one of those people.”

Sanquini stayed in a small four-story hotel in Lalitpur in the Kathmandu Valley. She was with her team of interviewers, in a small conference room at the top of the hotel when she felt the first tremor.

“Since I live in California, my initial reaction to the tremors simply was ‘oh, that’s an earthquake,’” Sanquini said. “But the shaking did not stop and went into a deep rolling motion. That’s when I realized that this was likely the earthquake that had been forecasted as overdue for so long, and I was terrified.”

Aware that a stairwell can be one of the most dangerous places you can be in during an earthquake, Sanquini and her team decided not to run downstairs but instead got under the table in the conference room. Together they hung onto the table legs and each other while the shaking became greater.

“I thought that we would probably die,” she said. “How-

“I thought we would probably die”

The Nepal Earthquake as Felt From Nepal

A Photo Essay by Anne Sanquini

ever, since I was with my team and I felt responsible for them, I became focused on them and the fear passed.”

The shaking lasted for just over a minute and when it subsided Sanquini and her team went down the stairs and fled the hotel into the open space. Once there, she realized how surreal the situation was. She found herself surrounded by about 50 other hotel guests. Some were crying and—when the big aftershocks came—many began to scream and huddle together.

She learned that guests had run out of the shaking building, while others, trying to avoid the appearing cracks, crawled out on hands and knees. Hardly anyone had taken cover. From talking to them, she found out that being trapped—rather than injury or death—was their biggest fear.

That night, Sanquini stayed with the family of her field assistant.

“We reached the extended family home near dark,” she said. “I was completely exhausted and in a safe place. But it was hard to sleep as with every significant aftershock, people would stand up and scream ‘again it comes’ and run out of the building.”

Sanquini returned back to the United States three days after the earthquake. The event has left a huge impression on her and will inform her work.

“I can see that the intervention film that I created in order to motivate risk reduction action, can be even more powerful post-event,” she said. “We have to remember that the country and the people are essentially the same as they were before the earthquake. This means that there is great risk that they could rebuild the damaged buildings using the same poor designs, materials, and methods as before the earthquake.”

Sanquini recently received word, confirmed with photos, that all the buildings at all the five of the role model schools that were featured in her intervention film, survived the earthquake.

“This is awesome, and will contribute powerfully to belief that retrofitting or building structures to be earthquake resistant works,” Sanquini said. “Perceived effectiveness of the action is given a big boost.”



Over 8,000 school buildings were damaged in the earthquake. Here, a young man stares at school desks crushed by soft story collapse. As bricks fall out of unreinforced infill walls, seismic load is concentrated to that floor, causing collapse. @ Anne Sanquini



In the midst of chaos and aftershocks, there were bits of perfect normalcy. All the shops were closed, but this food vendor was making momo, a Nepalese dumpling. @ Anne Sanquini



Yamaha motorcycle crushed by brick debris. @ Anne Sanquini



Large cracks have formed in the old, unreinforced masonry building on the left while the newer buildings on the right appear have no visible damage. @ Anne Sanquini



Sanquini (pink scarf), her team, and hotel guests cleared debris from the street outside their hotel. @ Anne Sanquini



Scene from the tarmac of KTM airport, where a member of the Israeli search and rescue team discusses a location on a Himalaya trekking map with a Nepali army soldier. @ Anne Sanquini



Members of the rescue team arriving from Japan walk past cargo jets from China and the U.S. Air Force. @ Anne Sanquini



Local craftspeople sell their wares in the plaza at Kathmandu's Durbar square. Photo taken in 2013 shows Basantapur tower and royal palace before the earthquake.
@ Anne Sanquini



A Nepali soldier stands guard while a man gazes at the severe damage to Basantapur tower and royal palace at Kathmandu's Durbar Square, a UNESCO world heritage site.
@ Anne Sanquini



Unreinforced masonry building in foreground collapsed to a pile of bricks while the building in the background is perfectly fine.
@ Anne Sanquini



Collapsed unreinforced masonry brick firehouse. @ Anne Sanquini



View to the north of Dharahara tower, photo taken in 2013. Note Himalayas.
@ Anne Sanquini



Dharahara tower as it was in 1833, then as it was rebuilt in 1936 after the 1934 earthquake, and then today, after the 2015 earthquake. @ Anne Sanquini



Dharahara tower before the 2015 earthquake. @ Anne Sanquini



Photographer

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at which Nepalese communities intend to retrofit or rebuild their local public school buildings to be life-safe in the event of a major earthquake. She has been in the Kathmandu Valley five times over the past three years, and was there with her team during the great earthquake of April 25, 2015.

Disaster Communication

A Call for Interdisciplinary Awareness and Coordinated Research

By Jeannette Sutton

The following piece by Jeannette Sutton is drawn from the results of Disaster Communication: Redesigned, a workshop held in 2014 by the University of Kentucky College of Communication and Information. This interdisciplinary workshop brought together 30 leading scholars and practitioners from six-hazards specific fields to discuss the historical roots of disaster, risk, and crisis communication and envision future research agendas. Presenters drew from their academic disciplines—communication, sociology, public health, psychology, geography, and engineering—to discuss research being conducted in their field. The goal was to facilitate cross-disciplinary conversations and to identify new paths for integrated research.

WE SEEM TO HAVE a problem communicating about communication research. This is the age old issue of academic siloes, where researchers pigeonhole their efforts in a particular branch of theory and method, publish in discipline-approved journals, and develop a deep understanding of their focused context—all to the detriment of moving research forward. This creates an absence of cross-disciplinary dialogue about communication-focused disaster research that limits our knowledge and ability to apply results to practice.

There are no obvious distinctions between the three study areas—disaster, risk, and crisis communication—in a practical sense. After all, the primary topic lies at the intersection of disaster and crisis communication, both of which are focused on unexpected events that disrupt communities, organizations, systems, and processes, and require quick decision making in highly ambiguous conditions.

I provide the following comparisons to clarify the distinctions between these three areas of research. Risk, and risk communication, are founded upon the work of cognitive psychology and includes research on perceptions and decision-making. In the past several decades of practice, risk communication has moved through multiple phases (Leiss 1996), shifting from a model of top-down, linear, expert communication to a more interactive communication process where risk managers and risk bearers engage in mutual meaning construction.

Theories of risk are the foundation of disaster communication study, particularly in the areas of preparedness and warnings. Here, scholars motivated by practitioner-oriented concerns, focus largely on strategies that prepare for events (stockpiling supplies, creating a go-kit, retrofitting a building, or developing a communication plan,



for example) and strategies that focus on taking protective action during events (to shelter in place, evacuate, or take other recommended protective actions). Determining individual perceptions about various threats, risks, and probabilities was instrumental in developing motivational messages and other strategies.

In contrast, crisis communication developed from organizational communication and sensemaking research and is consistently found in public relations research and management scholarship. Like disaster communication research, it also draws from theories of risk, but focuses less on the collection of ephemeral data and more on post-crisis case studies. These investigations center on organizational communication, product recalls, food safety, and public health crises.

Social science researchers from all above-mentioned fields have established models for how the public receives warnings, interprets information, and makes decisions about taking protective action. However, as new technologies are adopted for disaster communication, it will become more and more important for disciplinary-focused scholars to be aware of how they can better inform each other's research. Without such cross-disciplinary awareness, it is likely that those conducting communication-oriented research will continue to conduct studies that are strongly empiricist and devoid of new theoretical output. Furthermore, they are likely to produce piecemeal studies that generate incremental knowledge or replicate results. Perhaps most importantly, they will not meet the strongly expressed needs of emergency managers and crisis communicators for research designs that yield practical and applied insights and address their most pressing questions.

One of the primary concerns raised by academics and practitioners during the Disaster Communication: Redesign workshop focused on the need for evidence-based strategies to effectively use social media as a messaging channel and a source of information to facilitate situational awareness. Decision makers, emergency managers, and public safety communicators struggle with increased public adoption and the use of Twitter and other social networks. Without insight into how these channels do—or do not—facilitate protective action taking, it is difficult for emergency and public safety officials to identify and integrate effective uses of these relatively recent communication technologies.

Practitioners at the workshop clearly identified a need for new data collection methods and a strong desire for tools that would help to automate the analysis of content, sentiment, and network structures, while simultaneously providing data visualizations, eliminating spam, and verifying trusted content. Many strides are being made in this area that stem from the groundbreaking work in crisis informatics (see Palen et al. 2007) and rigorous scholarship that is expanding our knowledge in areas such as information seeking and channel preferences (Liu & Austin 2011), differences among various populations online (Spence, Lachlan, & Griffin 2007), features of short messages relayed via online social networks that affect their retrans-

mission under conditions of threat (Sutton et al. 2014), and volunteered geographical information for situational awareness (see Meier 2011).

Each of these studies offer contributions from different fields of research—computing and information science, public relations, crisis communications, sociology, and geography—demonstrating the necessity of interdisciplinary awareness in this growing field. Future work must continue to move beyond descriptive studies and pure content analyses to test long standing theoretical models applied to a new source of data. It must also take into account the growing collection of scholarship being developed in allied fields.

Disaster communication strategies don't need to be redesigned, as the workshop title implied. Instead, there is a need for greater awareness of the theoretical and methodological contributions being made in each field. We then need to draw on and translate those empirical findings into best practices, communication strategies, and messaging templates for practitioners. In that way, we will not only address the most pressing questions about communicating in disaster, but we will also design and build solutions that draw from the full range of knowledge available.

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*International Atomic Energy Agency fact-finding team leader Mike Weightman examines Reactor Unit 3 at the Fukushima Daiichi Nuclear Power Plant on 27 May 2011 to assess tsunami damage and study nuclear safety lessons that could be learned from the accident.
@ IAEA Imagebank Greg Webb/IAEA*

Learning from Disaster?

NEW DIRECTIONS IN DISASTER INVESTIGATIONS

By Scott Gabriel Knowles

WHEN A DISASTER OCCURS it immediately unleashes a wave of inquiry—generally described as a process of “learning from disaster.” But, what is actually being learned? Are the lessons of disaster fundamental? Do they have the force to shift longstanding patterns of capital investment, land use, human settlement, or governance? Or, are the lessons mostly operational, fine-tuning disaster response plans and reminding homeowners to update their policies?

Considering how quickly post-disaster reconstruction begins, it’s reasonable to ask whether or not anything important is ever learned from disasters. This is especially true in the case of high-risk technological systems, where

the inability to fix and restart a system threatens public trust in technology—and in the experts who govern it. Indeed, “learning lessons” fits into an ongoing process of risk normalization in a knowledge-hungry, technocratic and techno-scientific time. If experts don’t learn something, then a valuable commodity—information from the wreckage and about the wreckage—has been lost.

The authoritative realm for post-disaster learning is the formal disaster inquiry or investigation. Major disaster events often initiate multiple disaster investigations, sometimes ranging widely in scale and scope. Disaster investigations provide the venues through which chronology, causality, and blame are allocated. The earthquake-



Ground Zero, New York City, N.Y. (Sept. 17, 2001) -- An aerial view shows only a small portion of the scene where the World Trade Center collapsed following the Sept. 11 terrorist attack. Surrounding buildings were heavily damaged by the debris and massive force of the falling twin towers. @ U.S. Navy photo by Chief Photographer's Mate Eric J. Tilford.

resistant building codes, the levees, the back-up generators—none can be restored to normalcy or profitability without the formal study and closure that investigation provides.¹ In such investigative moments we find an open-mindedness to change that is not usually present among the public and policymakers. In such moments, the mood is right for paradigm-shifting learning.

Recent large-scale events like the World Trade Center collapse and the Fukushima triple disaster have presented experts with the data and the public attention necessary to expand their investigations beyond narrowly technical limits. Moreover, these events have occurred against the backdrop of emerging historical trends that appear to

open the way for broader and more impactful post-disaster learning. This essay briefly outlines seven of these trends. Each points to further research and strategic action that could be undertaken by the disaster research community. These trends can present useful disruptions in the usual patterns of ineffective disaster learning.

1. A CRISIS OF ASSESSING REGULATORY EFFECTIVENESS AMID THE TREND TOWARDS DEREGULATION

One of the major global economic trends of the past two decades has been the aggressive deregulation of public

utilities, such as transportation and energy. Deregulation is part of a package of neoliberal tools that has created a path for global investment in industries previously owned and/or tightly regulated by government. Cost-cutting being the nature of competition, deregulated energy companies have frequently shown success in driving utility prices down and opened up markets where none existed previously. Deregulation has also been lauded as a means to trim government waste and prevent corruption. Analysts disagree sharply, though, about the overall impacts of deregulation on safety. Recent disaster investigations have thus become forums for articulating opinions for and against deregulation, especially in regards to safety.

With faith waning in traditional models of state regulation, policymakers are left scrambling to suggest reforms that can neutralize public safety concerns while continuing trends towards global investment, privatization, and shrinking the regulatory state. This can be observed in Japan, which is one of the few industrialized nations yet to fully deregulate its nuclear power sector. Criticism of the relationship between the energy industry and Japanese regulatory bodies emerged as the central narrative of its government's extensive disaster investigation into the Fukushima Daichi Nuclear Disaster by the Fukushima Nuclear Accident Independent Investigation Commission (NAIIC). The NAIIC report closely details the Japanese Nuclear and Industrial Safety Agency and Nuclear Safety Commission's failure to police the country's largest electricity provider, Tokyo Electric Power Company (TEPCO).² It is unclear if the NAIIC report will prove influential in Japanese energy deregulation. NAIIC's aggressive critiques, however, did spark administrative reform and the creation of a new agency, the Japan Nuclear Regulatory Authority, which has greater independence from industry than preceding agencies.

The regulation-deregulation debate in the United States made its way into the World Trade Center collapse investigations, albeit from a different perspective. In the United States there is no centralized regulation of building codes and building safety—such regulation occurs at the state and local level, guided by a consensus system involving private and non-profit groups that represent fire safety, construction, and engineering. In the midst of the World Trade Center investigation, this absence of regulation was a matter of intense discussion and critique, with one outcome being additional funding for the National Institute of Standards and Technology (NIST) to conduct research into building safety. No matter how such regulatory debates play out, their increasingly frequent occurrence creates a moment for safety advocates to make their voices heard in ways impossible under normal conditions.³

2. THE "DISCOVERY" OF VULNERABLE POPULATIONS

Disasters do not affect populations equally and disaster losses (human and material) often reflect underlying social stratifications. Almost invariably, marginalized groups live in more risk-prone geographies and have fewer re-

sources with which to confront loss—less money, credit, professional networks, and access to political power. Disaster researchers are aware of this and have built these findings into a vulnerability paradigm that is useful in understanding how individual experience of disasters can be radically different across a society, even ones as rich as the United States or Japan.

The Fukushima investigations were largely concerned with evacuee hardships, especially those evacuated from hospitals. The mental health implications of evacuation were also taken into account. The specter of radiation exposures—especially for children—and a possible Tokyo evacuation put a fine point on the potential human catastrophe of evacuating the world's largest city. Disproportionate risks borne by nuclear workers were central to investigations and the critique of investigations from Japan and other countries.

Likewise, the World Trade Center collapse investigations looked closely at the situation of emergency personnel (fire and police) as they responded to the disaster. Additional investigations chronicled failures by public health and occupational safety authorities to ensure proper egress from the Twin Towers and to safeguard the health of relief workers and lower Manhattan residents. The concern for vulnerable populations in recent disaster investigations points to the need for disaster policies that specifically address disaster mitigation for socioeconomically vulnerable communities, as well as for professional communities (like first responders) who become emergently vulnerable as they perform their duties. This would mark a strong departure from the more technocratic outcomes of previous disaster investigations.⁴

3. THE STRUGGLE TO DEFINE APPROPRIATE AND AUTHORITATIVE INVESTIGATIVE BODIES

Disasters large enough to merit large-scale investigations are often examined by many different kinds of organizations. Those that fall under government oversight are generally deemed authoritative in terms of assessing blame and launching policy reforms. In countries with multi-layered governments and dispersed regulatory functions, however, authoritative bodies within a government framework can be difficult to ascertain, so multiple investigations are common. Outside of government, relevant professional and scientific organizations might also conduct investigations to add to the knowledge base and to protect technical and ethical reputations. News organizations, too, conduct in-depth investigations with an eye towards impartiality and willingness to criticize government and the private sector equally. Internal investigations by insurance companies and companies that might be party to litigation also take place but the results aren't often readily available to the public. Overall, the struggle to define the dominant investigator is in itself a key feature of the disaster investigation enterprise. In Japan, at least four major investigations into the Daichi disaster have been launched, while in the United States three investigations followed the collapse of the World Trade Center—and scores of smaller

investigations into each disaster have arisen, as well.

This confusion and debate over forensic authority allows dissenting voices into the conversation. In the case of Daichii, for example, the lack of a single authoritative investigative entity was the impetus for significant post-disaster studies not only from Japanese officials, but also from journalists and organizations such as the Union of Concerned Scientists and Greenpeace.

4. THE WIDESPREAD USE OF INTERNET AND SOCIAL MEDIA AS TOOLS OF CITIZEN DISSENT

The availability of information made possible by the Internet and social media has caused a break in the traditions of the disaster investigation. First, it allows the authority of experts to be contested and has moved investigative bodies to release more documentary evidence than they would have previously. Both the Fukushima and World Trade Center investigations released unprecedented quantities of documents, including staff reports, technical reports, images, and interviews and both also posted their hearings online.

In addition, victim support and advocacy groups form more rapidly than they could have before the availability of low-cost Internet and social media—often with a near instantaneous and international reach. These networks were critical to the political influence wielded by the families of World Trade Center victims—and were partially responsible for forwarding disaster investigations when government leaders were slow to do so.

Internet technologies, such as blogs, wikis, and Twitter, also make it possible for disaster victims and emergency personnel to post information as the disaster is unfolding. In this way, they create communities of expertise that parallel official expert bodies. The information they collect and share can also be used by disaster investigators in more formal investigations. Given the unsettled legal status of such evidence and questions of ownership and control of digital communications, this is clearly an area of study that is fascinating and in flux⁵ but making an impact, no less.

5. THE RISE OF SUSTAINABILITY AS AN ORGANIZING PRINCIPLE FOR TECHNOLOGICAL CHANGE

A major trend in both the Fukushima and World Trade Center investigations was the tendency to critique previous technological artifacts as unsustainable. The question of whether or not super tall skyscrapers or nuclear power plants are necessary or desirable technologies has been common in the light of these recent disasters. The general post-disaster trend leans toward deepening commitments to a given regime of socio-technical power. For example, engineering experts specializing in disasters now tend to criticize the lack of sustainability—both in terms of environmental impact and cost—in past infrastructure. Recommendations often champion making a commitment to better, more sustainable designs and correcting past fail-

ures. Similarly, regulators are looking for ways to enhance regulatory protocols.

In some cases, unsustainable technology (particularly that which has been repeatedly proven dangerous) is called on to be abolished altogether. The most remarkable outcome of the Fukushima investigations was a vibrant debate in Japan about whether to continue using nuclear power. Other countries also used the Fukushima disaster to launch similar debates—with substantial results. Germany, for instance, has committed to nuclear abolition in the name of sustainability and safety.

6. THE STRUGGLE OVER RISK MODELING APPLICABILITY TO RISK REGULATION

One of the questions that are intrinsic to the Fukushima and World Trade Center investigations is whether the risk models correspond to reality. In complex technological systems, it is impossible to model risks through direct experience, so regular risk assessments are mandated. These assessments are complex and must turn uncertainties into testing protocols and measurable quantities. Investigators were critical of the risk modeling done by TEPCO in Japan and by the structural engineers who designed and built the Twin Towers.

A gap between reality and estimated exposure to risk is condoned by regulatory agencies that lack the resources or power to demand more patient, creative, and realistic research. A good example of this is “organized ignorance.” The term was coined by Scott Frickel in an analysis of fears that a “toxic gumbo” would swamp New Orleans following Hurricane Katrina. The Environmental Protection Agency (EPA) and Louisiana Department of Environmental Quality dutifully tested and declared the “gumbo” not as harmful as people had thought. Frickel took issue with that conclusion, calling it organized ignorance—a condition in which the complexities of technological and natu-



ral systems confound the jumble of organizations charged with protecting public safety.⁶

The organized ignorance concept helps us understand why almost immediately after the events of September 11, 2001 the EPA ruled air and water quality in lower Manhattan acceptable to reopen Wall Street and let residents return home. It was later found that EPA officials had made ad hoc standards for the toxins released by the towers collapse. The opportunity to carefully design test protocols and evaluate public health concerns was overridden by political pressure to get lower Manhattan back to normal. One can readily see the value of the organized ignorance concept to disaster historians as they work back through historical cases of environmental disasters and the frequently unsuccessful attempts of expert institutions to monitor and mitigate them.

7. THE STRUGGLE OVER DEFINING THE DOMINANT DISASTER IN MULTI-CAUSAL DISASTERS

The Fukushima Daiichi accident was initiated by flooding that followed a tsunami, which was caused by an earthquake. The Twin Towers collapsed due to the failure of egress and fire control systems in fires caused by planes that crashed into the buildings during a terrorist attack. Similar to the difficulties of determining authoritative investigative bodies, multi-causal disasters raise complex cause-and-effect scenarios that can confuse experts.

A truly comprehensive investigation seems almost impossible in light of the information and expertise needed to untangle such disasters. The result in the cases of both Fukushima and the World Trade Center was investigators choosing one issue as the dominant cause of the disaster—terrorism, or reactor failure—and leaving the other elements out of the analysis. Reducing complexity in this way has serious implications, considering the interlinked nature of environments and technological risks. Conflicting investigations are also likely to form when experts choose to focus on a different causal element—such as terrorism (rather than fire) in the case of the World Trade Center. The ability of contradictory investigations to muster public attention and shift the debate has been a major trend visible in disaster investigations since September 11.

CONCLUSION

The rhetoric of lessons learned from disaster is a powerful one, but it can also be deceptive. Writing in the aftermath of Fukushima, sociologist Charles Perrow suggested provocatively that “it is important to ask whether some industrial systems have such huge catastrophic potential that they should not be allowed to exist.”⁷ Ultimately, this existential question should be on the table if post-disaster learning is to be anything more than technocratic problem solving. The seven trends presented in this essay merely open the discussion of the possibilities inherent when losses are on the rise and factors such as climate change ensure more frequent disasters. As disaster investigations are reshaped to address the broader concerns of regulatory de-

bate, social vulnerability, social media, and more, disaster researchers have an opening to promote their knowledge in the service of sustainable and effective disaster mitigation.

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Knowles’ work has appeared in academic venues such as *Technology and Culture*, *Isis*, *History and Technology*, *Annals of Science*, the *Journal of American History*, and the *Journal of the American Planning Association*; and he has also written for the *New York Times*, *The Hill*, *U.S. News and World Report*, and the *Philadelphia Inquirer*, among others.

CAN CAPITALISTS PROTECT THE NATION FROM CAPITALISM?

Assessing Risky Business's American Climate Prospectus

By Benjamin Wiggins and Matthew Schneider-Mayerson

@ Hypnotica Studios Infinite

CAPITALISM AND CLIMATE CHANGE are fundamentally linked. The fossil fuel-driven industrial revolution led significant changes to the earth's climate—changes that continue in tandem with the global expansion of the free market. The connection between the two is so strong that a number of scholars have recently proposed calling the period from the industrial revolution to the present, not the "Anthropocene" but the "Capitalocene" (e.g. Moore 2014). With a growing chorus of scholars contending that capitalism is in large part responsible for climate change (e.g. Boggs 2012, Klein 2014) and, since its competitive structure is anathema to the global collaboration needed to slow the crisis, it's difficult to imagine that industry will provide an appropriate response.

The Risky Business project, however, is built on that approach. Created by three of America's most prominent business leaders—Farallon Capital founder Tom Steyer, media mogul Michael Bloomberg, and former Goldman Sachs CEO Henry Paulson—Risky Business is a novel attempt to slow climate change by persuading business leaders that climate change is a pressing problem for America's economy.

At the core of Risky Business is *The American Climate Prospectus*, a national report that projects the dire economic effects climate change is likely to create in the United States. Its focus on a single nation and a single economy is intended to frame this issue as tangible and urgent for the nation's top senior executives. The Risky Business reports

are optimistic in that they indicate there is a potential for capitalists to quell the monster capitalism created—if each corporation manages its own specific climate risks.

Taking a measured stance on the solutions to climate change, Risky Business proclaims, "The Risky Business Project does not dictate the solutions to climate change, rather, we document the risks and leave it to decision-makers in the business and policy communities to determine their own tolerance for, and specific reactions to, those risks" (Risky Business 2015, our emphasis).

In short, *The American Climate Prospectus* suggests that climate change is a real and looming risk, but one that's manageable, as long as business leaders individually dedicate resources to mitigating its effects. Considering the project's high-profile backers and novel focus, Risky Business prompts the question: Can capitalists protect the planet from capitalism?

AN AMERICAN STERN REVIEW

In 2006, the British government commissioned a report on the economic impacts of climate change. Led by Nicholas Stern, the head of UK Government Economic Service and former chief economist of the World Bank, the *Stern Review on the Economics of Climate Change* was unparalleled in its singular focus on the economic consequences of anthropogenic climate change. Although it received some attention from the global business community, few business lead-

ers changed their practices in consideration of the report's calculations for the worldwide economic costs of unchecked fossil fuel emissions.¹ Published as a one-and-done project, within a few years the *Stern Review* faded from public climate discussions.

One person the *Stern Review* did make a lasting impression, however, was Kate Gordon, the senior vice president of Tom Steyer's Next Generation, a non-profit dedicated to raising awareness about the impact of climate change on American families. When Steyer retired in 2012 from Farallon, he was looking for a way to refocus public discussions about climate change, especially among his influential peers in the one percent. Gordon presented him with an intriguing idea—create an American version of the *Stern Review*.

Steyer mapped out a plan to create a new, more impactful *Stern Review*. His first order of business was to assemble a bipartisan team. He recruited Paulsen, a Republican, and Bloomberg, an Independent, to co-chair the initiative. Together they tasked the Rhodium group, an economic research firm that specializes in analyzing disruptive global trends, with the analysis of the economic risk of climate change in the United States. Rhodium, in partnership with Risk Management Solutions, a catastrophe-modeling company, assembled a research team co-lead by climate scientist Robert Kopp of Rutgers University and economist Solomon Hsiang of the University of California, Berkeley. The analysis was overseen by a Risk Committee whose members span a broad range of the American political and business spectrum (Risky Business, 2015).

THE AMERICAN CLIMATE PROSPECTUS

The American Climate Prospectus: Economic Risks in the United States (Kopp and Hsiang 2014) is the cornerstone document of Risky Business. Its research draws on data from the Coupled Model Intercomparison Project Phase 5, a suite of 35 global climate models that is also used by the Intergovernmental Panel on Climate Change and in the U.S. National Climate Assessment. Modeling methods come from Risk Management Solutions' proprietary tools. In form and content, the *Prospectus* is similar to many of its predecessors—it's a document with copious charts and figures and dozens of pages of citations. It comes to similar conclusions and its projections are fairly bleak. But there are a number of aspects that make it noteworthy.

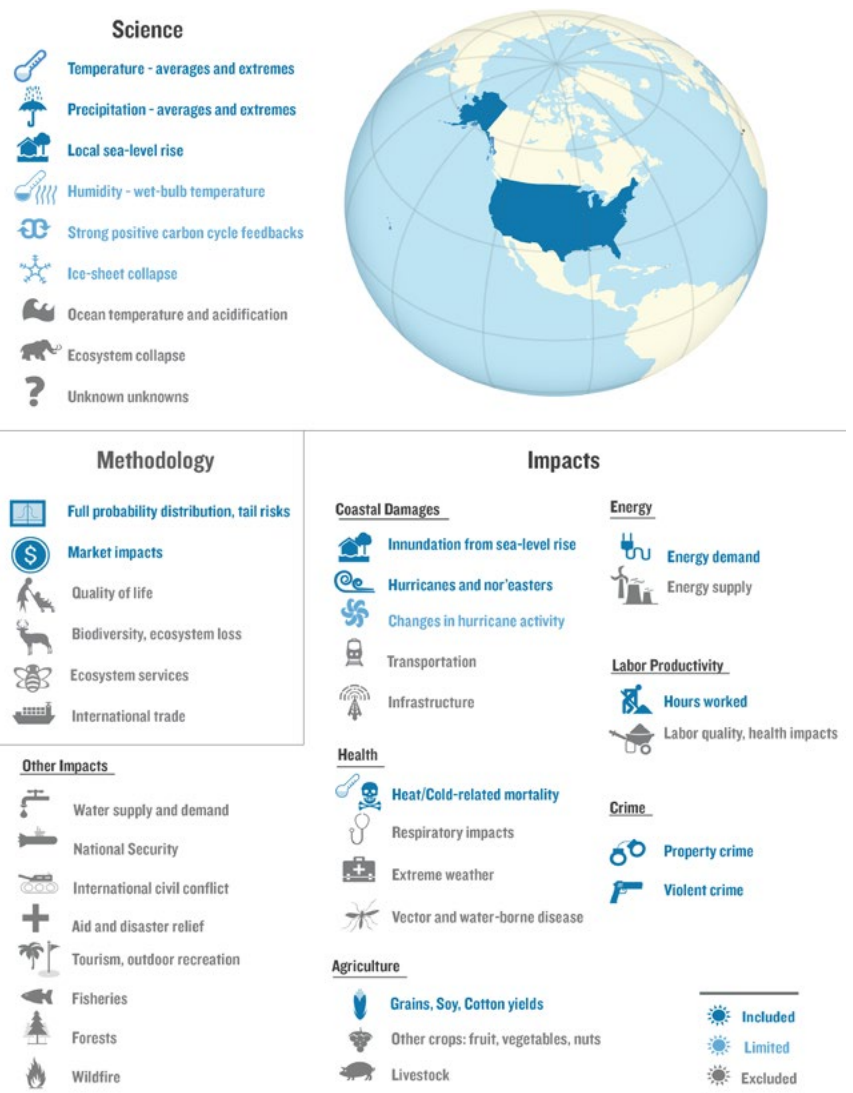


Fig 1 @ American Climate Prospectus

Although *Prospectus* authors recognize the global nature of climate change, they focus on the effects in the United States. That doesn't mean the report perspective is merely national, though. The authors note that the impacts of climate change are and will continue to be regionally distinct within the United States. Iowa will see a massive decline in grain yield, and Florida and Louisiana will be hit hardest by sea-level rise. Alternatively, Maine and Minnesota might actually see some benefits as cold weather-related mortality trends downward. These regional boons, however, will hardly offset the extreme rise in heat-related mortality in much of the Southern and Western United States.

The *Prospectus* not only narrows its scope to the United States but also to the American economy. The authors describe the far-reaching effects of climate change and identify over 25 possible impacts (Figure 1), but their statistical analysis covers only the economic impacts of sea-level rise, storms, heat- and cold-related mortality, crop yields, energy demand, labor hours, and property and violent crime. To assess the extent of these impacts, the research team factors in data on temperature, precipitation, sea level, humidity, carbon-cycle feedback, and ice-sheet collapse, and presents readers with probability distributions including tail risks (Figure 2). Rather than offering impossibly precise predictions or presenting only the likeliest outcomes, these probabil-

Spatial Empirical Adaptive Global-to-Local Assessment System (SEAGLAS)

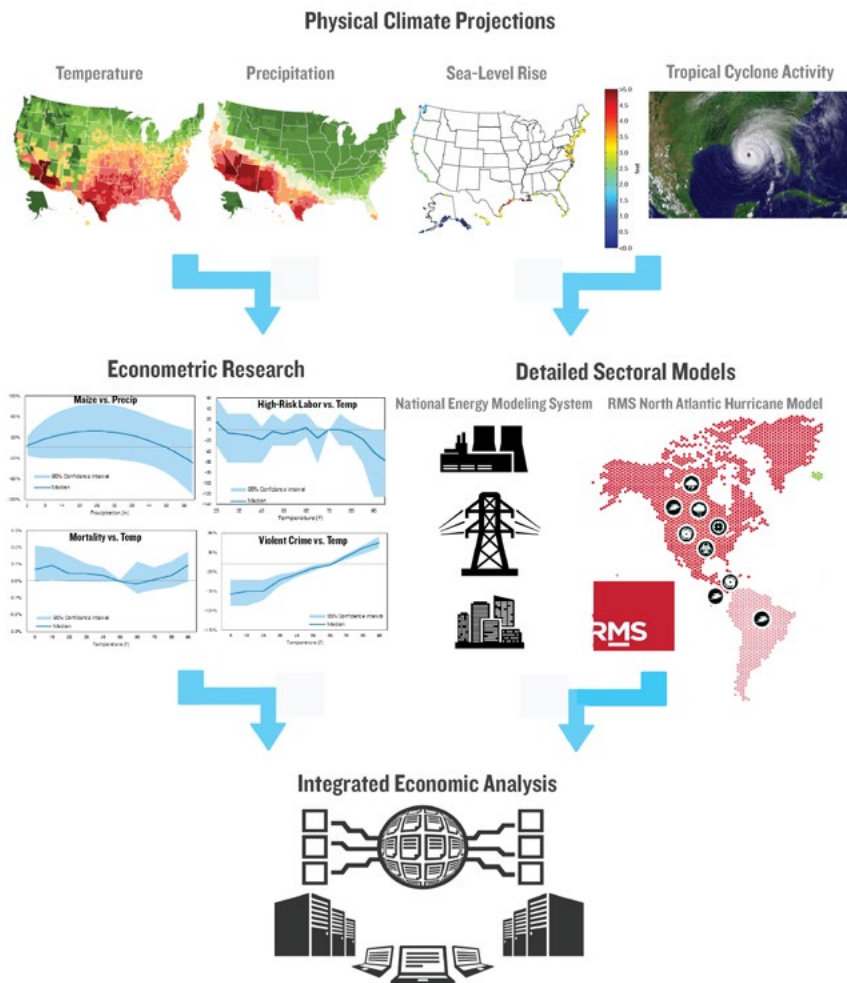


Fig. 2 @ American Climate Prospectus

ity distributions lay out projections along three Representative Concentration Pathways (RCP). The *Prospectus* tracks four RCPs: one that represents business as usual, where atmospheric carbon concentration reaches a Venus-like 940 parts per million (ppm) by 2100 (we’re currently just over 400 ppm), two intermediate risk-mitigation strategies (550-750 ppm), and one very unlikely extreme risk-mitigation strategy that would require an immediate and rapid energy transition (450 ppm).

Beyond the now-standard presentations of differential potential pathways, the *Prospectus* attempts to make looming changes in climate and life relatable. The scope of the report, for example, is put into perspective by framing it, roughly, as the lifespan of a girl born on the day of the report’s release. Elsewhere, it represents this timescale graphically (Figure 3), showing the severe heat the just-born generation will face late in life. In presenting an economic analysis alongside the human impacts, the *Prospectus* endeavors to demonstrate to business leaders that climate change is not just a problem for distant, unborn generations, but also a concern for their own sons and daughters.

The author’s narrow focus on American economic concerns creates a report that communicates the disastrous effects of climate change but stops short of supporting the international consensus about effective methods to slowing global warming (i.e. a carbon tax). This is inten-

tional. Just as Steyer worked to de-politicize Risky Business with a hand-selected group of respected leaders, the report those chairs called for shows similar signs of strict control. The *Prospectus* states that global warming will undoubtedly result in severe losses for the American economy and have deleterious effects on quality of life in the United States, yet it does not single out the industries most responsible for climate change and resists prescribing even the most basic steps toward curbing it.

WHAT IS TO BE DONE?

Risky Business does indicate that fossil fuel consumption is partially responsible for climate change, although it doesn’t call for solutions such as a reduction in emissions, increased regulation of the energy industry, or public subsidies for renewable energy. While this strategy is likely to sit well with the business leaders that the report targets, it is ethically problematic (to say the least) given the unequal distribution of economic losses from climate change around the world. The World Bank estimates that 75-80 percent of economic losses from climate change—and, presumably human suffering and fatalities—will be suffered by nations in the global South (World Bank 2010), who bear little responsibility for the problem. Those present and future victims are almost entirely absent from the *Prospectus*.

To appeal to America’s business leaders, Risky Business entirely ignores policy recommendations and places its faith in using the market to mitigate risk. Indeed, it goes as far as to advocate for a loosely regulated economy, claiming that “the economy runs most smoothly when government sets a consistent policy and a regulatory framework within which business has the freedom to operate” (Risky Business 2015). While the intention of organizers and authors might be admirable (in as much as they hope to inspire the business community to voluntarily mitigate and adapt to climate change), the report could just as easily be read as a guide to climate profiteering—which is already well underway (Funk 2014). For example, the section on crime observes that “weather, and in particular temperature, affects the incidence of most types of violent and nonviolent crime in American cities and rural areas alike,” and predicts the need to expand law enforcement. The language and tone of the report don’t warn against the gradual breakdown of the social order—which many authors (e.g.,

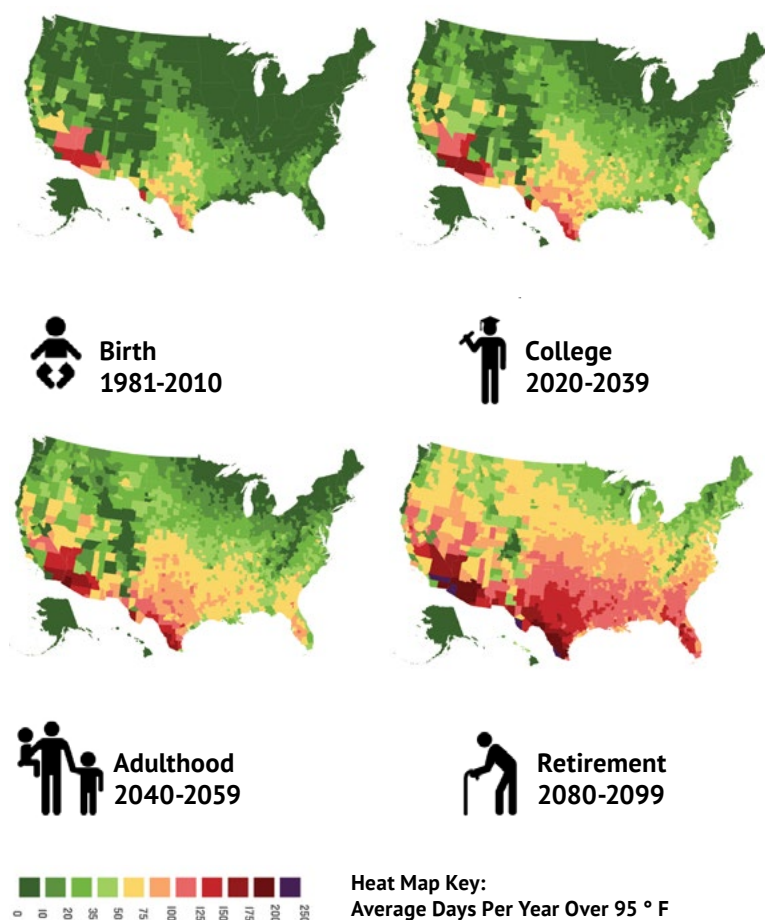


Fig. 3: Average Days over 95 ° F: Projections over a Lifetime
Maps @ American Climate Prospectus

Parenti 2011) have already shown are occurring in other parts of the world—so much as point to the potential of investing in private law enforcement.

The problem is that the concerns of the American business community, as the *Prospectus* portrays them, are spatially and temporally limited in ways that do not encourage appreciation for or appropriate responses to climate change. First, there is space—the report’s projections are limited to the United States, but the atmosphere, oceans, and biosphere do not respect or acknowledge national borders. This is important because changes beyond U.S. borders will affect Americans in increasingly predictable ways—for example, many scholars expect upwards of 200 million climate migrants worldwide by 2050 unless greenhouse emissions decrease sharply in the next decade. Second, there is time—the accelerating time scales of neoliberal capitalism condition investors and industries to think in shorter terms, such as quarterly corporate reports and hourly updates on market performance. These are antithetical to the long-term thinking required to limit or manage the anthropogenic influence on the biosphere. In the *Prospectus*, for example, a “long-term investor” is someone who has a “20-year time horizon,” which is less than one-fourth of report scope (Kopp and Hsiang 2014). Meanwhile, the “slow violence” (Nixon 2011) of the biophysical processes and human (and nonhuman) suffering of climate change will continue for decades, and in some cases for centuries. These dramas will not be easily quantified

for economic or policy documents or sensationalized in newsreels or web clips.

BEYOND THE HORIZON OF CAPITALISM

Made for business leaders by business leaders, there’s a possibility that peer-to-peer credibility of Risky Business will change the hearts and minds of a few CEOs. Its impact will also likely be wider than the *Stern Review*, since it’s constructed for the digital age (with an array of sharable, interactive content). Risky Business should have a more sustained influence too, since plans are in place to expand on the *Prospectus* with eight regional reports—the Midwest (Gordon et al. 2015) and California (Rodgers et al. 2015) have already been released—and to then iterate each. Its regional focus is an effective strategy for localizing a planetary problem. Indeed, in his recent speaking engagements, Paulson has pulled local county data from the Risky Business projections to highlight the specific risks his audiences will face in the near and long term.

While Risky Business presents climate change in a way that gets to the heart of business leaders’ economic concerns, it’s hard to conceive of how the *Prospectus* might achieve its apparent goals. Despite its intimate understanding of the economic and psychological motivations of American business leaders, Risky Business is too enveloped in free-market thinking to see the contradictions that preclude CEOs, corporations, and markets from making the kinds of changes necessary to dramatically slow climate change. Even if the most prominent firms worked to mitigate climate-related risks, it might not significantly slow global warming, but simply protect their investments during the unpredictable future. Since corporations are beholden to shareholders to keep businesses profitable, since internal and external incentive structures are based on quarterly and annual results, and since what mitigates risk in one sector might actually produce more risk in another, any approach that relies on corporations to individually and voluntarily mitigate climate change holds little promise. Without coordinated, holistic political and policy response at the national and international levels, climate change will continue unabated and Risky Business will accomplish little more than guiding companies to fortify their holdings and bottom lines on the way down. The basic assumptions of Risky Business’s perspective—that their focus should be limited to one nation, and that only private responses or limited free market interventions are even worth mentioning—highlight the rigidity of the contemporary American political imagination, an ideological poverty whose material consequences may prove (according to the *Prospectus* itself) catastrophic for hundreds of millions—if not billions—of human beings in the decades and centuries to come.

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ENDNOTES

1 Among the dire projections of the *Stern Review*, perhaps the most dramatic was an annual GDP loss of 5-to-20 percent if governments and businesses fail to take significant action to prevent climate change.



Authors

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Benjamin holds B.A.s in Cultural Studies and Sociology and received his Ph.D. in American Studies from the University of Minnesota in 2013. His teaching and research focus on the history of the concept of risk, actuarial science and insurance, and race and racism. Currently, Benjamin is preparing a manuscript entitled, *Managing Risk, Managing Race: The Racialized Actuarial Science in the United States, 1881-1948*, which investigates how insurers and the United States government relied on the supposed neutrality of actuarial science to justify racially discriminatory risk management policies.



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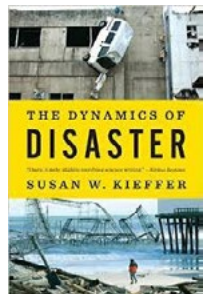
Call for Submissions

The *Observer* invites readers to submit items of interest for publication in upcoming issues. The *Observer* is undergoing a makeover and many more exciting changes are in the pipeline. Throughout this process we would love to hear from you. All comments and suggestions are welcome.

Our mission is to close the gap between scientists, policy makers, and practitioners by providing coverage of disaster issues, recent disaster management and education programs, hazards research, political and policy developments, resources and Web sites, upcoming conferences, and recent publications. We are looking for papers and field reports that help narrow the aforementioned divide. In addition we are looking for book reviews that contribute to the debates and discussions in the field of disaster research.

The deadline for the next issue of the *Observer* is June 20, 2015.

Items of interest can be sent to
Elke Weesjes
elke.weesjes@colorado.edu (email).



Dynamics of Disasters
 Susan Kieffer, 2013
 ISBN: 978-0393349917
 315 p., \$25.95
 W.W. Norton & Co. New York

By Dean Walton

In *Dynamics of Disasters*, Susan Kieffer, a planetary geologist, covers many of the geologic processes that create natural hazards. She gives this topic a fresh and interesting perspective by comparing and contrasting noted activity on other planets and their moons. Some of these geological processes result in events that are many times larger than similar events on Earth. For example, she analyzes a landslide on Mars that is five to ten times larger than any known terrestrial landslide.

However, without humans visiting or living on Mars this slide would not be characterized as a catastrophic event. Still, these events are related to similar processes on earth that do result in disasters. Analysis of these extra-terrestrial processes help scientists understand and rule out some theories regarding Earth events. This is true for dynamic processes that are related to atmospheric interactions with materials. For example, one theory of why landslides travel farther than initially predicted is that a pneumatic cushion of air is created underneath the slide as it moves, much like a puck moving on an air-hockey table. Comparing how far slides travel on Mars, with its greatly reduced atmosphere, can help validate or invalidate this theory. The evidence leans towards the latter.

Kieffer does a good job of covering a litany of past disaster events of almost every documented type and does so in a way that is informative and keeps the reader's interest. She also makes many connections to past disaster events as they occurred chronologically in her life and to ones she has personally experienced, such as the 1971 San Fernando Valley, California, earthquake. Kieffer typically presents an analysis of the geological or physical processes that created the hazard and led to each disaster. The author covers earthquakes, landslides, volcanic eruptions, tsunamis, rogue waves, hurricanes, tornadoes, floods and what she designates as "stealthy disasters" such as droughts. She also keeps the material she covers current and describes recent events, such as the Tōhoku earthquake and tsunami, in the book. In the last chapter of the book Kieffer discusses how society can better prepare to respond to and mitigate disasters. Finally, she provides copious notes that refer the reader to associated research materials.

The strength of the book is its coverage of many types of hazards and Kieffer's explanations of the processes that cause them. A particularly enjoyable section describes the "dusty gas model" of sound waves associated with volcanic eruptions and how hypersonic shock waves can occur at lower than expected velocities as the waves move

through ash clouds. Many authors who write books on the same subject seem to either ignore these processes, are unaware of them, or don't know how to adequately explain them and therefore omit them from their books. Kieffer also does a great job of describing the temporal and spatial rarity of specific hazards.

For all its positive illuminations the book falls short in some areas. For instance, the author doesn't fully define the concept of natural hazards. Kieffer connects geological processes directly to disasters without explaining how these processes first create natural hazards that in turn can lead to disasters. In fact, the term hazard only occurs a few times in the book. Also, given the broad and encompassing title of the book, Kieffer could have covered meteorite impacts and wildfires better. Both are mentioned in a total of three sentences. Further, it would have been more effective if the images in the book had been bigger, and had the author added descriptive content to photographs, such as arrows pointing out areas in question.



Island on Fire
 Alexandra Witze and Jeff Kanipe, 2014
 ISBN: 978-1781250044
 224 p., \$26.95
 W.W. Norton & Co. New York

By Dean Walton

Island on Fire is a compelling narration on the history of Iceland's larger volcanic eruptions over the last 250 years. The major theme of the book is the eruption of the volcano Laki in 1783-84. The authors also weave into the story vivid descriptions of other eruptions, their impact on the islanders and on greater Europe, and more contemporary research.

The Laki eruption lasted eight months, during which it gushed 9.3 cubic miles (15 cubic kilometers) of basalt lava. However, it was the gas and ash emissions that caused most of the disaster. The volcano released approximately 120 million tons of sulphur dioxide and eight million tons of fluorine gas high into the atmosphere creating smog that was present as far east as Syria. The gas emissions killed more than 9,000 Icelanders, and 60 percent of the island's livestock. The smog and ash were considered to be responsible for extreme weather conditions across Europe, including severe storms, a summer heat wave, and an exceedingly cold winter.

The book, which is divided into nine chapters, starts with an eruption in Heimay, Iceland, in 1973. This event is followed by a description of the Laki eruption and the story and life of Jón Steingrímsson (1728-1791), a preacher and Iceland's early volcanologist. Steingrímsson is remembered for giving what is now known as the Fire Sermon at his church in the face of advancing lava, which stopped at its front door, and for his detailed notes about the erup-

tion. The authors compare and contrast numerous other significant global volcanic eruptions, including Tambora, Pinatubo, and Eyjafjallajökull—noted for its impact on air travel—as well as other historically significant eruptions, such as Mount Vesuvius.

Island on Fire's only downfall is its low-resolution photographs, which are grainy and do not compliment the text. Fortunately, the quality of the story line makes up for this minor problem. The book is a fascinating read and will provide anyone interested in the history of volcanic eruptions with wonderful insights and colorful examples.

¹Thordarson T, and Self S. (2003). Atmospheric and environmental effects of the 1783-1784 Laki eruptions: A review and reassessment. *Journal of Geophysical Research: Atmospheres*.



National Security and Human Health Implications of Climate Change

Harindra Joseph Fernando, Z.B., Klaić; J.L., McDulley, (ed.) 2012
ISBN: 978-94-007-2429-7 (hardcover)
369 p., \$219,00
Springer

By Romeo Lavarias

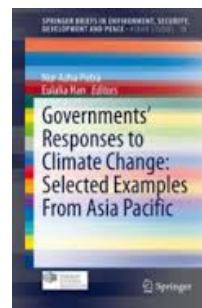
How do climate change, human health, and national security interplay to affect our quality of life? Contributors attempt to answer the question in *National Security and Human Health Implications of Climate Change*. This edited volume brings together 32 papers presented at the NATO Advanced Research Workshop held in Dubrovnik, Croatia in 2011. Based on scientific research into the possible causes and impacts of climate change and its impact on certain countries' environments and populations, these papers span many fields, including natural, political, and social sciences, as well as engineering, military intervention, epidemiology, and healthcare.

The contributors present their findings in great scientific detail. In fact, so much detail that the volume may be difficult for the general public to grasp. Another shortfall is that while the work does establish scientific proof of the negative impact of climate change on our quality of life, it does not offer specific remedies. Still, the book is unique in the genre of national security. It advances the notion that the shortage of resources leads to a diminished quality of life and encourages terrorism that threatens national security. The volume suggests that one way to combat terrorism is to address the negative impacts of climate change through "interdisciplinary, multi-scale and collaborative approaches...in handling critical trans-boundary issues of climate change" (page xiv).

Though it is highly technical, the book successfully illustrates how climate change can affect humans on a global scale through food, energy and water shortages, as well as armed conflicts. The authors convey how certain countries

will be confronted with the difficult dilemma of helping other countries in their region more than their own citizens. The writers conclude that those affected by climate change will aggressively search for more resources. This search, authors suggest, would lead to mass migration and cause tension between these refugees and the indigenous population of a country. They also suggest that "through social reforms, out-of-the-box thinking, and the use of state-of-the art technology, it is possible to assess and fight off many negative impacts of climate change" (page xii).

The book would be relevant in the national security/homeland security discussion because it examines a potential root cause of threats to national security. It exposes vulnerability as a possible opening to danger in domestic/foreign regions. The overall discussion of each chapter's topic role in climate change gives the reader a unique perspective on the ramifications of ignoring what climate change is actually doing to our environment. While we can credit Al Gore and his *Inconvenient Truth* with a widespread introduction of global warming into international environmental discussions, Ferando and Klaić, along with their fellow scientists, have provided valuable evidence that substantiates how climate change affects not only on the environment, but also our future security.



Government Responses to Climate Change: Selected Examples From Asia Pacific

Nur Azha Putra and Eulalia Han, (ed.) 2014.
ISBN: 978-981-4451-11-6
131 p., \$54.99
Springer

By Nicole Gerber

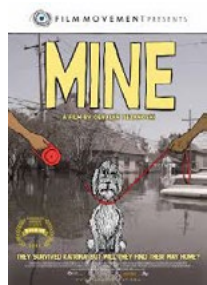
This edited volume brings together a selection of papers presented at a 2011 conference titled Policy Responses to Climate Change and Energy Security Post-Cancun: Implications for the Asia-Pacific Region's Energy Security, which was hosted by the Energy Studies Institute at the National University of Singapore. Divided into six different chapters, the book reviews how China, India, Indonesia, and Singapore address climate change in the realm of local and international governmental policies, energy resources, economics, social conditions, and the growing influence of the citizens.

The Asia-Pacific region is experiencing growth due to increases in product manufacturing. This growth comes with rising demand for fossil fuel-based energy. The collection highlights regional struggles to balance the economic needs with a more green and sustainable energy model. The volume also looks at each of these countries individually and assesses their respective governments' efforts to address climate change and conform to global

energy policies and regulations.

Each chapter provides historical context along with discussion of international committees, state policies, energy and economic issues, and environmental impacts of climate policies. Countries are trying to lessen the impact of climate change by taking steps such as identifying alternative fuel sources and promoting energy conservation. The final chapter describes how engaging citizens and non-government organizations can influence policies, which is important for adopting and implementing state and global changes. Developed countries already have an economic advantage; poorer developing countries are most vulnerable to the physical and economic impacts of a changing climate. The volume highlights the need for global cooperation and citizen empowerment.

This book is useful for policy-makers, researchers and scholars in presenting energy and climate issues being faced by states in a globalized economy. It provides a persuasive comparative analysis of how Asia-Pacific governments are working to change policies and business practices in an effort to benefit current and future climate conditions.



Mine

Directed by GERALYN PEZANOSKI
2009, 1 hr. 20 min.

By Courtney Richard

Winner of South by Southwest's Audience Award, the documentary *Mine* tracks the stories of rescue animals, their original owners, and their adoptive families following Hurricane Katrina.

It raises important questions about pet ownership and how we regard pets as both family members and property.

During the evacuation of New Orleans, many who had intended to return in a few days left their pets behind. Others took their pets with them, only to find out that animals were barred from shelters. Consequently, thousands of pets were left to fend for themselves. Moved by these animals' plight, impromptu animal-rescue teams from all over the country sprang into action and descended upon New Orleans. For six weeks director GERALYN PEZANOSKI followed these teams and documented their search for stranded pets.

The lucky pets who survived the flood and escaped starvation were brought to makeshift and state-run shelters that quickly filled up. As a result, 15,000 animals were shipped to 500 shelters across the United States and Canada.

After about six weeks, New Orleans began to allow residents to reenter their disaster-torn neighborhoods. But by then, if they had survived, their pets had been placed in foster homes. *Mine* documents the original owners' struggle to get their pets back. It follows volunteers working around the clock to assist these pet owners in their quest to find their beloved animals. Locating people's pets is only

the first step. The second step—convincing the adoptive pet parents to return their new furry friends to their original owners—was much more difficult, and the ensuing custody battles were heartrending.

The documentary underlines the fact that many people involved in these custody battles—animal rescue workers, new owners, and their lawyers—were under the impression that the original owners of these pets had chosen to leave their pets behind. Director Pezanoski paints a very different picture and showcases that most owners were forced to separate from their pets. Gloria Richardson, an elderly woman, for example, was forcibly evacuated from her home after she insisted she didn't want to be separated from her black Labrador retriever, Murphy. After a year of searching, she was able to locate Murphy in California. His new owners, after much deliberation, made the decision to return Murphy to his home in Louisiana where he stayed until Richardson passed away in 2008. In her will, she asked that Murphy return to the couple who had adopted him.

The people who rescued Jessie Pullins' dog, J.J., weren't as understanding. Pullins found the rescue center where his dog was taken, but they refused to give him information about the dog's new owners. After three years of searching and with the help of a pro bono lawyer, Pullins finally found his dog. His adoptive guardians agreed to return him. A month later they changed their minds and cut off all contact and disappeared with J.J.

"Not a day goes by that I don't think about him and how good my life would be if he was in it, you know," a visibly distraught Pullins explained to the director. "No one ever thought I would come forward, first of all, and then when I did come forward, no one ever thought I would be able to provide for J.J. [...] I think if people really knew how much I cared about J.J., really really cared, I wouldn't have to go through this." The DVD's extra material reveals that Pullins was eventually reunited with his dog, almost four years after Katrina.

In an attempt to prevent situations like these from happening again, Congress in 2006 passed the Pets Evacuation and Transportation Standards (PETS) Act. PETS requires states to accommodate pets in their disaster evacuation plans.





The Great Invisible

Directed by Margaret Brown
2014, 1 hr. 32 min.

By Elke Weesjes

The Great Invisible is a documentary that investigates the Deepwater Horizon explosion in the Gulf of Mexico and its aftermath, and highlights the experiences of a diverse group of vic-

tims. Among them are the men who were working on the rig on that fateful day April, 20, 2010 and fishermen and oyster shuckers who have suffered some of the catastrophe's environmental and economic consequences.

A brief but clear overview of the explosion that killed 11 men and spewed 210 million gallons of oil into the Gulf of Mexico is followed by a visit to Bayou La Batre, an Alabama fishing town where the shrimp, crab, and oyster populations have been depleted. Here, director Margaret Brown, a native Alabamian, follows Roosevelt Harris, a charismatic volunteer at the local food pantry.

"The oil spill killed the oysters, now people can't oyster and that hurts," Harris explains to the camera. "Katrina just wiped their houses away and blew in about 27 feet of water. The oil spill really put a damper on everything."

Harris collects and hands out food to his struggling neighbors, who all depend on the dwindling population of seafood. He also hands out leaflets and urges Bayou La Batre's residents to talk to the oil spills claimant attorney. His efforts are in vain; no one shows up to any of the meetings planned in the local church. A visibly disappointed Harris thinks residents are too scared and skeptical to talk to the attorney.

Two months after the explosion, British Petroleum announced the creation of a \$20 billion disaster victim fund to compensate persons directly affected by the oil spill, the largest in U.S. history. But for many people this promise of economic relief never materialized. Some didn't trust the multinational corporation and took no further action. Others were not able to provide the requisite documentation to qualify for reparations.

Brown interviews a diverse group of people, including two men who were on the rig that night but miraculously survived. They struggle with PTSD, depression, and guilt. They feel guilty because they survived, but also because they worked for BP and helped the company cut corners to save time and money. She also speaks to a grieving but angry father whose son did not survive the explosion. He is determined to hold BP responsible for the safety failures that resulted from the corner-cutting culture of the company.

These intimate portraits of victims are juxtaposed with scenes featuring four cigar-smoking, whisky-drinking, shellfish-eating oil traders and executives. The conversation they have is eye-opening and unexpected. For instance, as they discuss what they call consumers' sense of entitlement when it comes to cheap energy, one oil trader says "we should "tax the living hell out of gasoline" in or-

der to curb America's fossil-fuel addiction.

Through this conversation the director delves deeper, beyond the safety measures that BP disregarded. Brown explores the roots of the problem, including America's own dependence on oil and its government's inability to take appropriate action to ensure safety on offshore oil rigs and prevent any future blowouts.



Natural Hazards Library

THE LIBRARY IS an extensive collection of resources that focuses on the social dimensions of natural hazards and disasters.

The collection provides a wide spectrum of information for both researchers and practitioners. Regardless of discipline, it provides practical, applied, and academic support to those in need of disaster knowledge.

What's happening in the Library:

- Thanks to funding from the University of Colorado's Institute of Behavioral Science, the library has moved part of its collection to cyberspace and is working to make full-text copies of titles available through the new HazDoc repository. The project is expected to be completed sometime in 2016.
- We encourage all researchers and authors to join the Open Access movement! While we work out copyright and digital ownership issues for proprietary material, submitting a prepublication copy of your work for inclusion into HazDoc will allow it to be freely shared with others in the hazards and disaster community. For more information contact Wanda Headley at 303.492.5787; wanda.headley@colorado.edu.
- HazCat is a fully functioning online public access catalog that allows users to more easily find and access full-text titles. HazCat will be making its public debut in the Fall of 2014.

May 31 to June 5, 2015, Atlanta, Georgia
The Association of State Floodplain Managers Annual Conference

The Association of State Floodplain Managers
Cost and Registration: \$780 before April 16, open until filled

This conference will focus on effective mitigation that aims to reduce human and financial consequences before the next disaster strikes. Topics include understanding local risks, training social media for response and recovery, real time flood forecasting, coastal community resilience, green infrastructure, cost effectiveness of mitigation, levee challenges, and communicating real time and future risk.

June 8-11, 2015, Toronto, Canada
25th Annual World Conference on Disaster Management

Diversified Communications Canada
Cost and Registration: \$350 while available, open until filled

This conference will focus on the updated practices of disaster management professionals in order to improve mitigation planning and response efforts. Topics include critical infrastructure assessments for local authorities, effective risk communication in times of crisis, building public confidence in emergency management, planning for catastrophic response, managing rumors in conflict zones, integrating climate change and disaster management, and mitigating failures in telecommunications.

June 8-10, 2015, Bonn, Germany
Resilient Cities 2015

Local Governments for Sustainability
Cost and Registration: \$985 before April 15, open until filled

This conference will focus on adaptation challenges in urban environments. Topics include assessing risk and vulnerability, collecting data for adaptation planning, planning and policy strategies, linking adaptation and mitigation action, framing resilience in an accessible way, ecosystem-based adaptation, preventing climate-related public health risk, building the capacity of local government practitioners, and financing resilience planning and development.

June 09-14, 2015, Chania, Crete, Greece
International Summit on Hurricanes and Climate Change

Aegean Conferences
Cost and Registration: \$1,516 (includes hotel), open until filled

This conference will focus on the correlation between recent increase in hurricane intensity and climate change. Topics include trends and cycles of hurricanes, hurricanes as a response to climate, climate processes associated with tropical cyclone activity, thermodynamic theory of hurri-

cane intensity, and the future of hurricanes.

June 15-18, 2015, Indianapolis, Indiana
National Hydrologic Warning Council Training Conference

National Hydrologic Warning Council
Cost and Registration: \$750, open until filled

This conference aims to assist water resource managers and emergency management officials in protecting lives and property. Topics include upgrading flood warning systems, using water velocity data for flood warning systems, integrating twitter into a flood warning platform, retrofitting early warning systems for the next generation, modeling flash floods in small and medium catchments, improving flood-frequency analyses, and ensuring operational readiness.

July 7-9, 2015, New Forest, United Kingdom
International Conference on Coastal Cities

Wessex Institute
Cost and Registration: \$1,107, open until filled

This conference will focus on the presentation and discussion of issues related to the integrated management and sustainable development of coastal cities. Topics include urban planning and design, coastal flooding, eco-architecture, water resources management, water pollution, landslides, and coastal risk assessment.

July 7-10, 2015, Paris, France
Our Common Future Under Climate Change

UNESCO
Cost and Registration: \$641, Deadline: June 8

This conference will focus on the broader context of climate change and will discuss the associated mitigation and adaptation issues. Topics include coping with climate disasters, monitoring climate change, quantitative approaches to future impacts, social and human dimensions of vulnerability, integrating adaptation and mitigation at the landscape scale, and aligning climate change actions and sustainable development goals.

July 21-24, 2015, Victoria, British Columbia
Canadian Conference on Earthquake Engineering

Canadian Association for Earthquake Engineering
Cost and Registration: \$691, open until filled

This conference will focus on the risks that British Columbia faces as one of the most earthquake prone regions in the world. Topics include, shallow crustal events, the Queen Charlotte transform fault, seismic screening and vulnerability assessment of structures, risk and disaster management for societal impacts, mitigating tsunami hazards, and geotechnical hazards.

Below are descriptions of some recently awarded contracts and grants related to hazards and disasters. Please see <http://www.nsf.gov/awardsearch/> for more information.

Fostering Advances in Water Resource Protection and Crisis Communications, Lessons Learned from Recent Disasters

Award Number: 1523448. Principal Investigator: Jennifer Weidhaas. Co-Principal Investigator: William Alexander. Organization: West Virginia University Research Corporation, NSF Organization. CBET Start Date: 02/01/2015. Award Amount: \$49,948.00.

Human-Centered Situational Awareness Platform for Disaster Response and Recovery

Award Number: 1461963. Principal Investigator: Cyrus Shahabi. Co-Principal Investigator: Seon Kim. Organization: University of Southern California. NSF Organization: CNS. Start Date: 04/01/2015. Award Amount: \$299,976.00.

Disaster Preparation and Response via Big Data Analysis and Robust Networking

Award Number: 1461886. Principal Investigator: Guoliang Xue. Co-Principal Investigator: Huan Liu. Organization: Arizona State University. NSF Organization: CNS. Start Date: 04/01/2015. Award Amount: \$300,000.00.

Understanding Inequalities in Response to Disaster Recovery

Award Number: 1518862. Principal Investigator: Patricia Richards. Co-Principal Investigator: Ashleigh McKinzie. Organization: University of Georgia Research Foundation Inc. NSF Organization: SES. Start Date: 04/15/2015. Award Amount: \$12,000.00.

Dynamic Evolution of Smart-Phone Based Emergency Communications Network

Award Number: 1461932; Principal Investigator: Krishna Kant; Co-Principal Investigator: Jie Wu, Slobodan Vucevic; Organization: Temple University; NSF Organization: CNS Start Date: 05/01/2015; Award Amount: \$299,999.00.

Community Organization After Major Disasters

Award Number: 1519206. Principal Investigator: Sharmila Rudrappa. Co-Principal Investigator: Vivian Shaw. Organization: University of Texas at Austin. NSF Organization: SES Start Date: 05/01/2015. Award Amount: \$11,975.00.

Multi-scale Modeling of Public Perceptions of Heat Wave Risk

Award Number: 1459903. Principal Investigator: Peter Howe. Organization: Utah State University. NSF Organization: SES. Start Date: 05/01/2015. Award Amount: \$47,572.00.

Assessing and Quantifying Resilience of Commercial Sectors to Natural Hazards

Award Number: 1515064. Principal Investigator: Megan Boston. Organization: Boston Megan. NSF Organization: IIA. Start Date: 06/01/2015. Award Amount: \$5,070.00.

Advanced Hybrid Simulation for Storm Surge Loads

Award Number: 1463024. Principal Investigator: Narutoshi Nakata. Co-Principal Investigator: Weiming Wu. Organization: Clarkson University. NSF Organization: CMMI Start Date: 06/01/2015. Award Amount: \$276,466.00.

Understanding Organizational Anticipation and Response to Disaster Risks

Award Number: 1519280. Principal Investigator: Peter Bearman. Co-Principal Investigator: Ryan Hagen. Organization: Columbia University. NSF Organization: SES Start Date: 07/01/2015. Award Amount: \$11,472.00.

Experimental, Numerical, and Case Studies of Landslide Mobility

Award Number: 1453103. Principal Investigator: Tong Qiu. Organization: Pennsylvania State University. NSF Organization: CMMI Start Date: 07/01/2015. Award Amount: \$500,000.00.

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Mary Fran Myers

ONE WOMAN INSPIRES LOTS OF WINNERS

As Co-Director of the Natural Hazards Center, Mary Fran Myers inspired and supported many researchers to do excellent work on gender issues and reducing disaster losses. Although Myers passed away in 2004, two prizes established in her name continue to support those who shared Myers vision: The Mary Fran Myers Scholarship and the Mary Fran Myers Award. This year, three winners have been named in her honor.

THE MARY FRAN MYERS SCHOLARSHIP

The Mary Fran Myers Scholarship selection committee chose two recipients to receive the 2015 Scholarship, which recognizes outstanding individuals who share Myers' passion for disaster loss reduction nationally and internationally. The Scholarship provides financial support to recipients who otherwise would be unable to attend and participate in the Annual Hazards Research and Applications Workshop to further their research or community work and careers.



Kylah Forbes-Genade is a senior lecturer in disaster relief management at Stenden University in South Africa. She is currently finalizing her PhD, which focuses on vulnerable adolescent girls in South Africa, Zambia, Zimbabwe,

Lesotho and Malawi at North West University in South Africa.

Forbes-Genade came to South Africa as the recipient of the Provention Consortium Research and Action Grants to implement the Girls in Risk Reduction Leadership (GIRRL) Project. Growing support for the GIRRL Project, led to her being invited to serve as a researcher and the head of Community Development and Outreach program at the African Centre for Disaster Studies. The opportunity to research and work in Southern Africa was a catalyst for her work with women and children in the context of developing countries and her focus on understanding the conditions that contribute to vulnerability, as well as to empowerment.



Kate Brady is the National Recovery Coordinator for Australian Red Cross Emergency Services,

where she is responsible for coordinating the development of all recovery services and activities undertaken around the country. In this role, Brady also works with the New Zealand Red Cross to support the Canterbury Earthquake recovery efforts. Before she took her position with the national team, Brady headed the Red Cross Victorian Bushfire Recovery team, which was developed to support community recovery following the 2009 Victorian bushfires.

Brady is currently undertaking a PhD at the University of Melbourne, which examines what things help most during recovery from emergency from the perspectives of those affected. In 2010, Kate was awarded a Churchill Fellowship to look at long-term psychosocial recovery programs in the United States, United Kingdom, and China.

THE MARY FRAN MYERS AWARD

The Mary Fran Myers Award was established in 2002 to recognize disaster professionals who continue Myers' goal of promoting research on gender issues, disasters, emergency management, and higher education. The Gender and Disaster Network have named Akiko Dōmoto as the 2015 Mary Fran Myers Award winner.



Akiko Dōmoto is the president and coordinator of the Japan Women's Network for Disaster Risk Reduction. She is particularly committed to issues of environment, disasters, and women prisoners with attention to human rights, gender equality, and diversity.

Dōmoto began her career as journalist, traveling extensively while making documentaries about human rights and equality, with a special emphasis on Tibet. Following that, Dōmoto was elected as a member of the Parliament Upper House of Japan in the 1990's. As a Parliamentarian, she was instrumental in getting the prime minister's support to establish the Gender Equality Law in Japan in 1999. She was elected the first female governor of Chiba Prefecture in Japan in 2001, and served until 2009.

Release of Draft Community Resilience Planning Guide for Public Comment

The National Institute of Standards and Technology (NIST) has released the complete draft of its *Community Resilience Planning Guide for Buildings and Infrastructure Systems* on April 27, 2015, during a public workshop at Texas Southern University, in Houston.

Issued for public review, the draft *Guide* is a comprehensive, yet customizable tool that communities can use as they plan and implement measures designed to help them withstand extreme weather and other hazards and to recover efficiently in their aftermath. The tool was developed by NIST researchers and outside experts in areas ranging from buildings to utilities and from earthquake engineering to sociology, with stakeholder input gathered at the four previous regional meetings and directly from individuals to the NIST Community Resilience Group.

The draft *Community Resilience Planning Guide* can be downloaded from http://www.nist.gov/el/building_materials/resilience/guide.cfm for a 60-day public review (until June 27). More information about the Guide and next steps to improve community resilience also is available on the site.

Call for Applications Liu Huixian Earthquake Engineering Scholarship

Applications are now being accepted for the Liu Huixian Earthquake Engineering Scholarship, which encourages earthquake engineering students to pursue academic careers. Scholarships of \$1,500 will be awarded to students pursuing an advanced degree in earthquake engineering or a related field. U.S. students will be given the option of a 10-day visit to the China Earthquake Administration in lieu of a monetary award.

Deadline: June 30, 2015

For more information on requirements and application guidelines, visit the <https://www.eeri.org/wp-content/uploads/Liu-Huixian-Scholarship-Award-Description-and-Guidelines2015.pdf>

Wanted Technical Librarian

The Natural Hazards Center is seeking a versatile, well-rounded technical librarian with solid cataloguing skills and the ability to develop and maintain a complex information architecture. The successful candidate will drive the migration of records to DSpace cataloging system,

develop and maintain library, customer, and Web site information systems, and create coded data management interfaces.

See the posting on the CUJobs Web site (<https://www.jobsatcu.com/postings/97110>) and upload a letter of application, resume, statement of salary, proof of degree, and three professional references. Only candidates selected for an interview will be contacted. Review of materials will begin immediately and continue until the position is filled.

Call for Papers Crossing Borders: Governing Environmental Disasters in a Global Urban Age in Asia

The organizers of the multidisciplinary conference Crossing Borders: Governing Environmental Disasters in a Global Urban Age in Asia (5-6 November, 2015, Singapore) invite submission of papers from beginning and established scholars, policymakers, planners and development practitioners. The purpose of this conference is to examine the ways in which environmental disasters with compounding effects are being governed as they traverse sovereign territories in rapidly urbanizing societies in Asia and the Pacific.

Applicants are encouraged to consider empirical case studies and theories within comparative Asian contexts to draw lessons that can be learned from Asia for disaster governance regimes across national jurisdictions in other urbanizing world regions.

Deadline June 30 2015.

Please visit: http://www.ari.nus.edu.sg/events_categorydetails.asp?categoryid=6&eventid=1642 for more information.

Call for Chapters The New Environmental Crisis: Hazard, Disaster, and the Challenges Ahead.

The Disaster Research Center of the University of Delaware is accepting abstract submissions of chapters for publication in an upcoming book to be titled *The New Environmental Crisis: Hazard, Disaster, and the Challenges Ahead*. Interdisciplinary abstract submissions should be 500-700 words and focus on assessing present knowledge in the hazards field that is useful to policy makers.

Deadline July 1, 2015

For more information on suggested topics and submission guidelines, visit: <http://drc.udel.edu/50th-chapters/>



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Build the Center Endowment—Leave a charitable legacy for future generations.

Help the Gilbert F. White Endowed Graduate Research Fellowship in Hazards Mitigation—Ensure that mitigation remains a central concern of academic scholarship.

Boost the Mary Fran Myers Scholarship Fund—Enable representatives from all sectors of the hazards community to attend the Center's Annual Workshop.

To find out more about these and other opportunities for giving, visit:

www.colorado.edu/hazards/about/contribute.html

Or call (303) 492-2149 to discuss making a gift.

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