

Observer

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An invited comment by
Christopher J. Revere



Children and disasters

Breaking the cycle of neglect

CHILDREN ARE NOT SIMPLY “LITTLE ADULTS.” Although their physical, emotional, and psychological needs in disasters differ substantially from the rest of the population, these unique requirements are often misunderstood—or, worse, not even considered—when it comes to disaster planning and management.

There are 75 million children in the United States under the age of 18—25 percent of the population. Accommodations that must be made for them in disasters were graphically illustrated during the 2005 hurricanes Katrina and Rita, when 5,000 children became separated from their families (Chung and Shannon 2007). Worried relatives made more than 34,000 calls to a special hotline set up by the National Center for Missing and Exploited Children. It took six months for the last child to be reunited with her family. It does not take a great leap of imagination to empathize with the emotional turmoil both the children and their families undergo in such circumstances.

But this is only one of the unique problems posed in protecting children's welfare in disasters. Their health care needs are different from adults. They shouldn't miss school. Juvenile justice, mental health, housing, and other emer-

gency services must be tailored to children's requirements.

The bipartisan National Commission on Children and Disasters was established by Congress and then-President George W. Bush in 2007. Its goal is to break the cycle of benign neglect (no one thinks emergency planners and personnel deliberately neglect children). The commission identified gaps in preparedness, response, and recovery for all hazards and emergencies that may affect children across the nation the every day, at scales substantially smaller than the Hurricane Katrina disaster. Once identified, the commission made recommendations to fix them.

This past October, the commission delivered its 2010 Report to the President and Congress (<http://www.ahrq.gov/prep/nccd>) report containing over 100 recommended actions. Although the commission is a federal advisory body, (Please see “Children,” page fifteen)

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Parsing the puzzles of climate, economics and tropical diseases

By Dan Whipple

Tropical diseases are showing up in new places. What does it mean?

SO, CAN WE SAY THAT MALARIA IS MOVING UPSLOPE, possibly as a result of climate change?

"That's a bit too simple," answers Madeleine Thomson, senior research scientist at the International Research

Institute for Climate and Society at Earth Institute at Columbia University. "It's the sort of thing people have said, so you'll be in with a host of other people. You're not going to stand out as having said something ridiculous. But it's a bit too simple."

The question of whether climate change is resulting in new geographic incursions of tropical diseases is a pressing one for the health community. It has important strategy implications for how and where these diseases are attacked. Malaria, for instance, seems to be occurring in areas where it either didn't exist or from which it had been eliminated.

Other diseases besides malaria are changing their borders. An estimated five percent of the population of Key West, Florida, was exposed to dengue fever in 2009, according to the U.S. Centers for Disease Control and Prevention and the Florida Department of Health. Donald Shepard, health policy professor at Brandeis University, says "many factors have likely contributed to the dengue resurgence. Global warming is among them."

There were three cases of dengue fever acquired in the United States in 2009. From 1946 to 1980, no locally acquired cases of were reported. There hasn't been an outbreak in

Florida since 1934. A mosquito-borne illness, dengue causes 50 million to 100 million infections worldwide each year, and 25,000 deaths.

Columbia's Thomson and colleagues have recalculated daily temperatures from the malaria-prone Kericho region of Kenya. Past studies of the region have shown no warming in the area because of the way the data was interpreted. But the Thomson group's careful recalibration of the data shows a warming trend of about 0.2 degrees Celsius over the last 30 years, consistent with temperature increases elsewhere around the globe (www.malariajournal.com/content/10/1/12). They conclude, "Climate should therefore not be dismissed as a potential driver of observed increases in malaria seen in the region during recent decades, however its relative importance compared to other factors needs further elaboration."

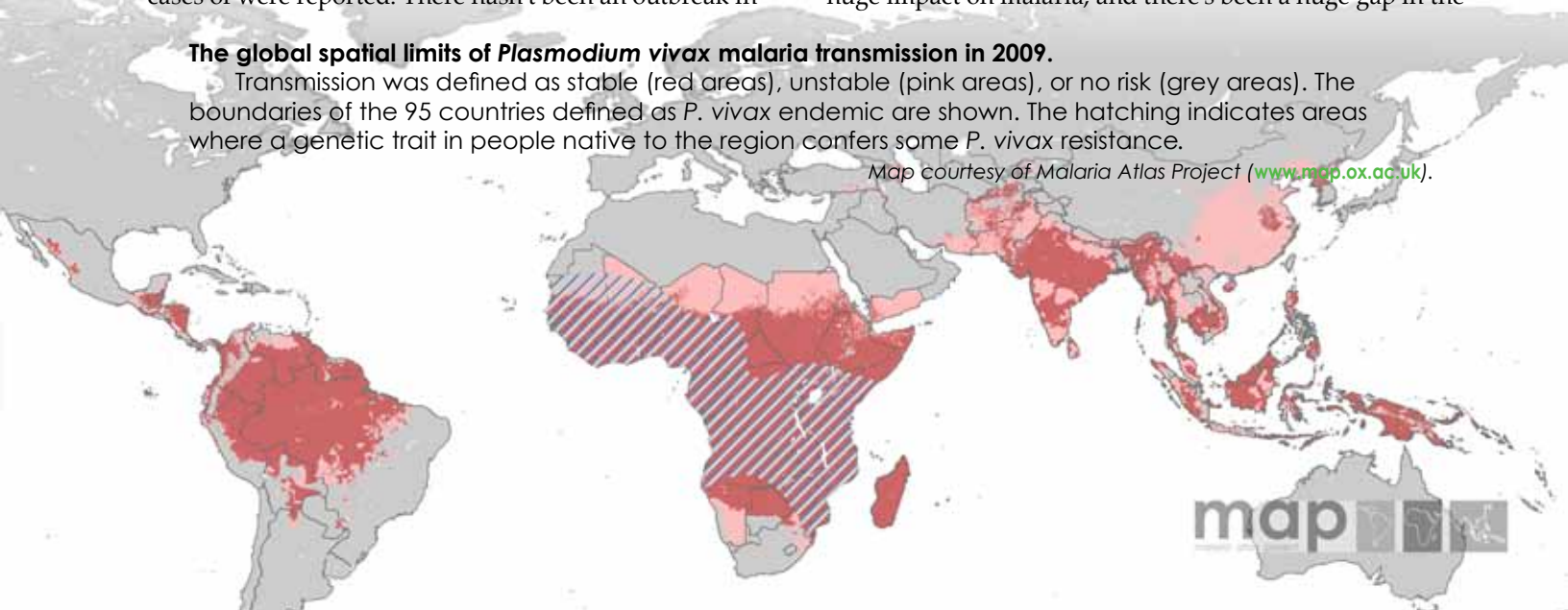
The malaria increases in the region have been misinterpreted in the past because of a body of literature that has concluded Kericho isn't warming. "I think it's done a lot of harm by these earlier papers in regard to climate change," Thomson says, "because at the end of the day when you look at it the data that people have been using doesn't make a lot of sense anyway."

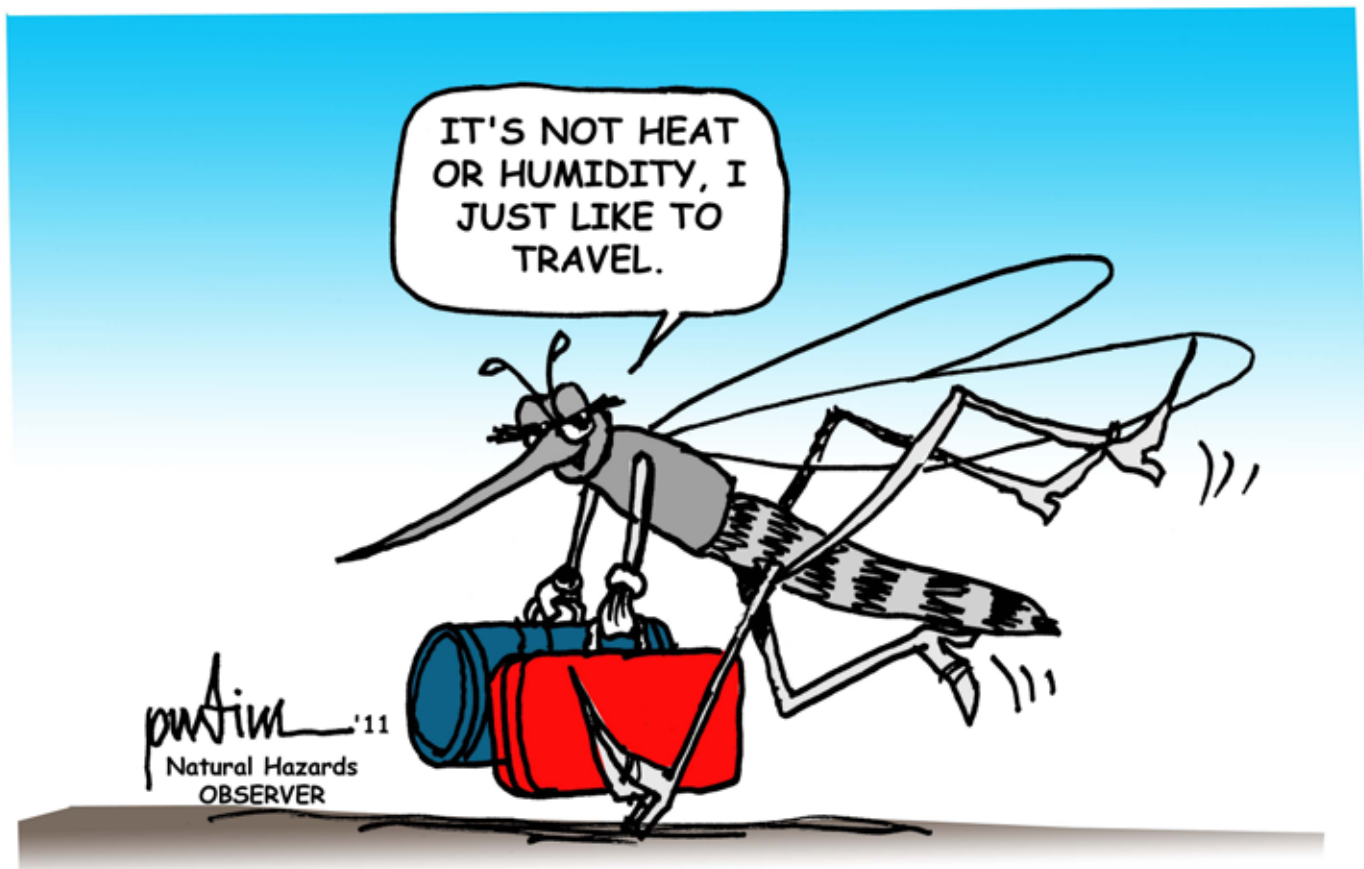
The trouble is that while climate change and its associated impacts—changing rainfall patterns and so on—have an impact on the spread of malaria, other factors are probably just as important. Temperature can't be looked at in isolation. The socioeconomic situation is important, for instance. As with most problems, the poor, the very young, and the elderly are most likely to suffer the most from malaria. "We know that socioeconomic development has a huge impact on malaria, and there's been a huge gap in the

The global spatial limits of *Plasmodium vivax* malaria transmission in 2009.

Transmission was defined as stable (red areas), unstable (pink areas), or no risk (grey areas). The boundaries of the 95 countries defined as *P. vivax* endemic are shown. The hatching indicates areas where a genetic trait in people native to the region confers some *P. vivax* resistance.

Map courtesy of Malaria Atlas Project (www.map.ox.ac.uk).





types of studies that need to be done,” Thomson says.

“Any simple thinking about it—‘Oh, it’s getting warmer, the disease is going to spread’—but the diseases were in the cooler latitudes before, we had malaria in Britain, we had malaria in the U.S. We’ve pushed it back. I think the real question that needs to be answered is not so much how climate drives malaria, or pushes it into the cooler latitudes, but rather how climate drives intervention choices. In the cooler latitudes, it’s easier to control, so what you’re really doing is creating a control intervention slope,” she says.

Thomson says that her work shows the need for a holistic approach to malaria intervention. “People are intervening massively against malaria across Africa,” she says. This work may help to target resources effectively.

“When you have a shift in the climate, your possibility to intervene is very different because in a marginal area, you’re only having to control malaria so that you get it below a tipping point. That’s relatively easy,” she says.

“And once you’re trying to control malaria in a high transmission zone, you have to control an enormous amount of malaria to actually get rid of it. In parts of Kenya, you’re getting maybe 100 infected bites a night. So even with 99 percent of control, then you’ve still got plenty of malaria around to keep everybody sick.”

The recently released *World Malaria Report* (www.who.int/malaria/world_malaria_report_2010/en/index.html) highlights the remarkable progress made in the fight against this global killer. “It is estimated that the number of cases of malaria rose from 233 million in 2000 to 244 million in 2005 but decreased to 225 million in 2009,” the report says. “The number of deaths due to malaria is estimated to have decreased from 985,000 in 2000 to 781,000 in 2009. Decreases in malaria burden have been observed in all WHO

[World Health Organization] regions, with the largest proportional decreases noted in the European Region, followed by the Region of Americas. The largest absolute decreases in deaths were observed in Africa.”

The main weapon in the global battle against malaria is the increased use of insecticide-treated mosquito nets (ITNs), which have been shown to be effective. “By the end of 2010, approximately 289 million ITNs will have been delivered to sub-Saharan Africa, enough to cover 76 percent of the 765 million persons at risk of malaria. It is estimated that 42 percent of households in Africa owned at least one ITN in mid-2010, and that 35 percent of children slept under a ITN. The percentage of children using ITNs is still below the ... target of 80 percent partly because up to the end of 2009, ITN ownership remained low in some of the largest African countries. Low rates of use reported in some surveys are primarily due to a lack of sufficient nets to cover all household members; household survey results suggest that most (80%) of the available ITNs are used.”

But the lifespan of a treated net is only three years, so the ones that have been distributed must be replaced soon.

A group of scientists led by the University of Oxford’s Carlos Guerra also published a paper in the August 2010 *PLoS Neglected Tropical Diseases* that maps the population at risk worldwide of malarial infection from *Plasmodium vivax*, one of two mosquito-borne parasites that cause malaria. They found that 2.85 billion people live in the “malaria belt” and are at risk of infection, most of them in Central and Southeast Asia (www.plosntds.org/article/info%3Adoi%2F10.1371%2Fjournal.pntd.0000774). The study concludes that *P. vivax* poses a greater health threat than has been previously believed. *P. falciparum* is most often associated with malaria’s mortality and morbidity.

They Said It ...

Williams: "Do you consider the Homeland Security budget sacred?"

Boehner: "No! ... There is no part of this government that should be sacred."

—House Majority Leader John Boehner (R-Ohio) to NBC News anchor Brian Williams in a televised interview.

"Climate change is Fidel Castro's latest pet project in which poor, socialist countries are the victims and rich, capitalist countries are entirely to blame. Climate change provides Fidel the perfect opportunity to play statesman with little risk to his brother's credibility at home ... Some element of the GOC [government of Cuba] may see climate change as a legitimate concern, but the view from the top is that of a political propaganda goldmine." — January 7, 2010, diplomatic cable from the U.S. Interests Section Havana, released by **WikiLeaks**.

"The story of drought and famine is almost becoming a cliché in Kenya." —Damaris Mateche, environmental security analyst at the Institute for Security Studies in Nairobi, quoted by **IRIN**.

"The high number of weather-related natural catastrophes and record temperatures both globally and in different regions of the world provide further indications of advancing climate change." —*Munich Re*, quoted by the **Associated Press**.

"We are not aware of any death that is snow-related, so as tough as it has been since this snow event began, we have not lost a life that we are aware of as a result of one

of the most significant snow events we have ever had." —Atlanta, Georgia, Mayor Kasim Reed on the early January storm that paralyzed the city, quoted by **CNN**.

"If you think it's bad now — when we've had about 0.7 degrees Celsius of warming — wait until we've had 3 or 4. There's absolutely no reason to think it will not continue getting worse and worse and worse." —Jay Gullege, senior scientist for the Pew Center on Global Climate Change, on the record-breaking weather events of the past year, quoted by **CBS News**.

"On the surface of it, the children seem very happy at school — learning, playing with their friends, interacting with their teachers, but one particular mother told me that her children weren't actually doing so well. Her youngest daughter, who was about five, didn't sleep well at night. They didn't like to be separated from her for too long, and she, as a parent, didn't like to be separated from her children." —Tania McBride, UNICEF communication specialist, about the progress in Haiti a year after the earthquake, in a UNICEF podcast.

"I am firmly committed to instituting a strong and prominent scientific integrity policy at NOAA. As a federal science agency, we have a responsibility — no, we have an obligation to conduct science in a way that makes us exemplary contributors to scientific knowledge, the scientific community, and the common good." —National Oceanic and Atmospheric Administration Administrator Jane Lubchenko, speaking to the Union of Concerned Scientists.

Apply now for the Mary Fran Myers Scholarship

THE MARY FRAN MYERS SCHOLARSHIP COMMITTEE IS NOW ACCEPTING APPLICATIONS. Recipients will receive financial support allowing them to attend the 2011 Natural Hazards Research and Applications Workshop in Broomfield, Colorado, July 9-12. Recipients may also stay through July 13 to attend either the International Research Committee on Disasters or the Natural Hazard Mitigation Association add-on events for researchers and practitioners, respectively. Scholarships can cover part or all of transportation, meals, and registration costs.

The Mary Fran Myers Scholarship is awarded annually to at least one potential Workshop participant. Recipients are recognized at the Workshop and may be asked to serve as panelists, where they can highlight their research or practical experiences with hazards and disasters.

As the longtime co-director of the Natural Hazards Center, Myers recognized that many of the people and organizations that could benefit from and contribute to the Workshop—including local practitioners, students, and international professionals—were among those least likely to afford it. The scholarship was established in 2003 to fulfill Myers' request that qualified and talented individuals receive support to attend.

Hazards practitioners, students, and researchers with a strong commitment to disaster management and mitigation and who reside outside North America or the Caribbean are eligible to enter. Eligibility is based on current place of residence, not citizenship. Applicants from North America and the Caribbean will be eligible for the scholarship in 2012. Previous attendees of the Natural Hazards Workshop are not eligible for the 2011 Mary Fran Myers Scholarship. Preference is given to those who can demonstrate financial need.

For more information on past scholarship winners and how to apply, visit the Mary Fran Myers Scholarship page (www.colorado.edu/hazards/awards/myers-scholarship.html) at the Natural Hazards Center Web site. Applications must be received by March 28.

A tie is like kissing your feverish sister

2010 ties for warmest year on record

TWO DIFFERENT RESEARCH groups have reached the same conclusion—2010 is tied for the warmest year globally in the meteorological record. The National Oceanic and Atmospheric Administration says that 2010 tied with 2005 as the warmest since 1880 based on global averages.

Using a data set consisting of mostly land and ocean surface-based temperature records, NOAA's National Climatic Data Center found global temperatures were .62 degrees Celsius (1.12 degrees Fahrenheit) over twentieth century averages. This ties 2010 with 2005 as the warmest year in the record books, NOAA says.

Using a different data set, University of Alabama-Huntsville scientists found that 2010 "finished in a photo

finish with 1998 for the warmest year in the 32-year satellite temperature record." UAH scientists use data from advanced microwave sounding units on NOAA and NASA satellites. The time frame is shorter because the satellites have only been deployed since 1978.

Until 2005, the UAH satellite record provided one of the few scientifically based supports for skeptical arguments that global warming was not occurring. The satellite record appeared to show temperatures in the lower atmosphere were rising more slowly than climate computer models predicted, at least in relation to data on heating of the surface. However, adjustments in the interpretation of the data have brought this record more in line with surface temperature increases, as well as the model predictions on which warnings about climate change are based.

The differences in the average global temperatures in both data sets were so small that they were statistically insignificant, putting 2010 in a tie with either 1998 or 2005, depending on which data set you prefer.

Higher latitudes are warming faster than temperate or tropical ones. "The globe continues to warm unevenly, with warming increasing as you go north: The Arctic Ocean has warmed an average of 1.66 degrees Celsius (about 2.99 degrees Fahrenheit) in the past 32 years. By comparison, the Antarctic continent has cooled about 0.29 degrees Celsius (more than half a degree Fahrenheit) during the same time," according to UAH.

"In the contiguous United States," NOAA says, "2010 was the 14th consecutive year with an annual temperature above the long-term average. Since 1895, the temperature across the nation has increased at an average rate of approximately 0.12 degrees F [.06 degrees C] per decade."



Hazards we hadn't worried about before

THE INVISIBLE REMAINS OF CIGARETTE SMOKE deposited on carpets, clothing, furniture, and so on could pose indoor air pollution threats, according to new research published in the journal *Environmental Science and Technology*.

Nicotine can react with the ozone in indoor air, the report says. Exposure can occur to babies crawling on the carpet, people napping on the sofa, or people eating food tainted by third-hand smoke, according to the study.

"Given the toxicity of some of the identified products and that small particles may contribute to adverse health effects, the present study indicates that exposure to third-hand smoke may pose additional health risks," author Yael Dubrowski of Technion-Israel Institute of Technology wrote.

The report says that prenatal, infant, and childhood exposure to passive smoke has been associated with a number of behavioral, cognitive, and respiratory problems. The scientific consensus is that tobacco smoke in the environment results in non-cancerous respiratory effects in children.



The verdict is in

Deepwater Horizon spill was preventable, report says

Little communication on safety concerns

THE OIL SPILL AND EXPLOSION of the Deepwater Horizon well could have been prevented, according to the final report by the National Commission on the BP Deepwater Horizon Oil Spill (www.oilspillcommission.gov/final-report).

"The immediate causes of the Macondo well blowout can be traced to a series of identifiable mistakes made by BP, Halliburton, and Transocean that reveal such systematic failures in risk management that they place in doubt the safety culture of the entire industry," wrote the report authors in the foreword to *Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling*.

The details of the industry's safety culture failures are chilling. "BP has caused a number of disastrous or potentially disastrous workplace incidents that suggest its approach to managing safety has been on individual worker occupational safety but not on process safety," the report says. "These incidents and subsequent analyses indicate that the company does not have consistent and reliable risk-management processes—and thus has been unable to meet its professed commitment to safety. BP's safety lapses have been chronic."

Specifically, the report cites BP refinery accidents in the United Kingdom, drilling accidents in the North Sea, and refinery accidents in the United States.

Essentially, BP did not encourage open communication on reporting safety concerns, the report says. This problem emerged not only on the Deepwater Horizon rig, but also in a refinery accident at its Texas City plant. The report states that on the Deepwater Horizon, "Some 46 percent of crew members surveyed felt that some of the workforce feared reprisals for reporting unsafe situations, and 15 percent felt that there were not always enough people available to carry out work safely. Some Transocean crews complained that the safety manual was 'unstructured,' 'hard to navigate,' and 'not written with the end user in mind' and that there is 'poor distinction between what is required and how this should be achieved.'"

Transocean's crews "don't always know what they don't know. [F]ront line crews are potentially working with a mindset that they believe they are fully aware of all the hazards when it's highly likely that they are not," according to the final survey report,

The report also faults contractor Halliburton for several issues, including using cement "that had repeatedly failed Halliburton's own laboratory tests. And then, despite those test results, Halliburton managers onshore let its crew and those of Transocean and BP on the Deepwater Horizon continue with the cement job apparently without first ensuring good stability results."



The report calls for more regulatory oversight of the new and perilous deepwater drilling industry. This adventure into the "frontiers of experience involve risks for which neither industry nor the government has been adequately prepared, but for which they can and must be prepared in the future." Government regulation on its own is not enough, however. The oil industry will have to improve its own safety culture through self-policing.

The oil spill commission report echoes the findings of an earlier technical review of the accident by a National Academy of Science committee (www.nap.edu/catalog/13047.html). The NAS committee released interim findings in mid-November 2010, in which it said that several interrelated decisions, beginning with a temporary abandonment of the well and missed indications of the hazard, led to the accident.

Both reports found that there were complex failure modes resulting in the oil spill. The oil spill commission report notes, "Complex systems almost always fail in complex ways."

Off base on the baseline

It's hard to recover wildlife populations damaged after an oil spill if you don't know their status prior to the disaster. But that's what scientists are being asked to do in the Gulf of Mexico.

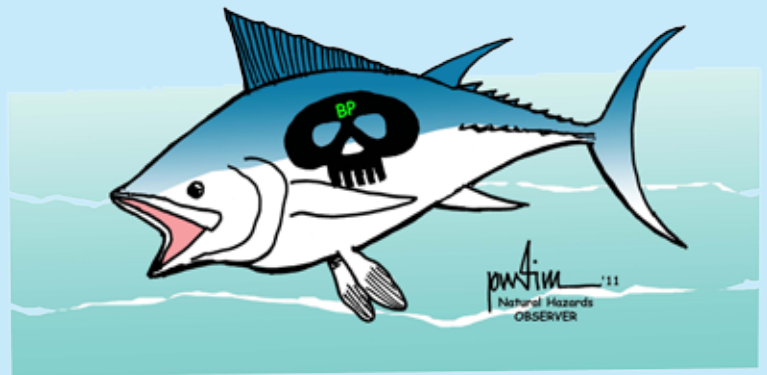
A paper in the journal *Science* urges better research to obtain the data that's critical to re-establishing healthy wildlife populations in the wake of disasters. The paper by Karen Bjorndal of the University of Florida and colleagues says, "Tens of millions of dollars from BP intended to restore wildlife populations and ecosystems have already been disbursed, and hundreds of millions more are at risk of being distributed without a clear strategic plan to ensure that projects improve our understanding of population dynamics and the impacts of proposed management actions."

The paper, which appeared in the February 3, 2011 issue, gave the example of potential impacts on bluefin tuna in the Gulf. "The spill could have af-

ected 20 percent of the 2010 bluefin larvae. But the impact of that loss is difficult to assess because bluefin migration paths, reproductive habits, and early life history are inadequately resolved.”

The authors urge several steps for collecting better information about wildlife populations in advance of a spill. These include assessing cumulative effects, understanding links among populations with genetic tools and prioritizing investments.

In a dueling conclusion with large potential economic consequences, Kenneth Feinberg, the administrator of the compensation fund for Gulf spill victims, says that while “prediction is not an exact science,” the Gulf of Mexico should recover from the environmental damage by the end of 2012, although the hardest hit oyster beds could take much longer. *The New York Times* (www.nytimes.com/2011/02/02/us/02spill.html?_r=1&hp) said the report “is certain to be controversial among those who believe the damage will be longer-lasting and therefore should result in higher payouts for the spill’s victims.”



Most Himalayan glaciers retreating

Another complex system failing in complex ways

MOST GLACIERS in the Himalayas are retreating in the face of climate change, but a significant percentage are stable or expanding, according to a paper in the January 23, 2011, issue of *Nature Geoscience*.

The Himalayan glacier system’s health has been a source of controversy since the Intergovernmental Panel on Climate Change Fourth Assessment Report erroneously said that Himalayan glaciers would disappear by 2035—a considerable error, since the actual date was at least 2350 or later. This was “a great embarrassment,” said Brent Holben of the Goddard Space Flight Center. (*Natural Hazards Observer*, March 2010).

“It takes a long time to melt the big glaciers,” Holben added.

About 65 percent of the monsoon-influenced glaciers in the Himalayas are retreating, say University of Potsdam’s Dirk Sherler and coauthors in *Nature Geoscience*. The rest are either stable or actually gaining in volume. The scientists looked especially at the way debris cover on the glaciers affect their rate of retreat.

Overall, Himalayan glaciers—like those in most of the rest of the world—are retreating.

“Widespread debris cover on many Himalayan glaciers reduces their retreat rates, which are therefore unsuitable as indicators of recent climate change,” the authors wrote. “Nevertheless, glaciers with extensive stagnant reaches indicate negative mass balances, and have the potential to build up hazardous moraine-dammed lakes.”

This one of the few papers to look at the effect of debris is cover on glacial retreat, an issue “of substantial importance for the evolution of discharge and water resources.”

The glaciers at the “third pole,” as it’s sometimes called, are the source of Asia’s largest rivers, with about 2.4 billion people living in their drainage basins.

RIP:

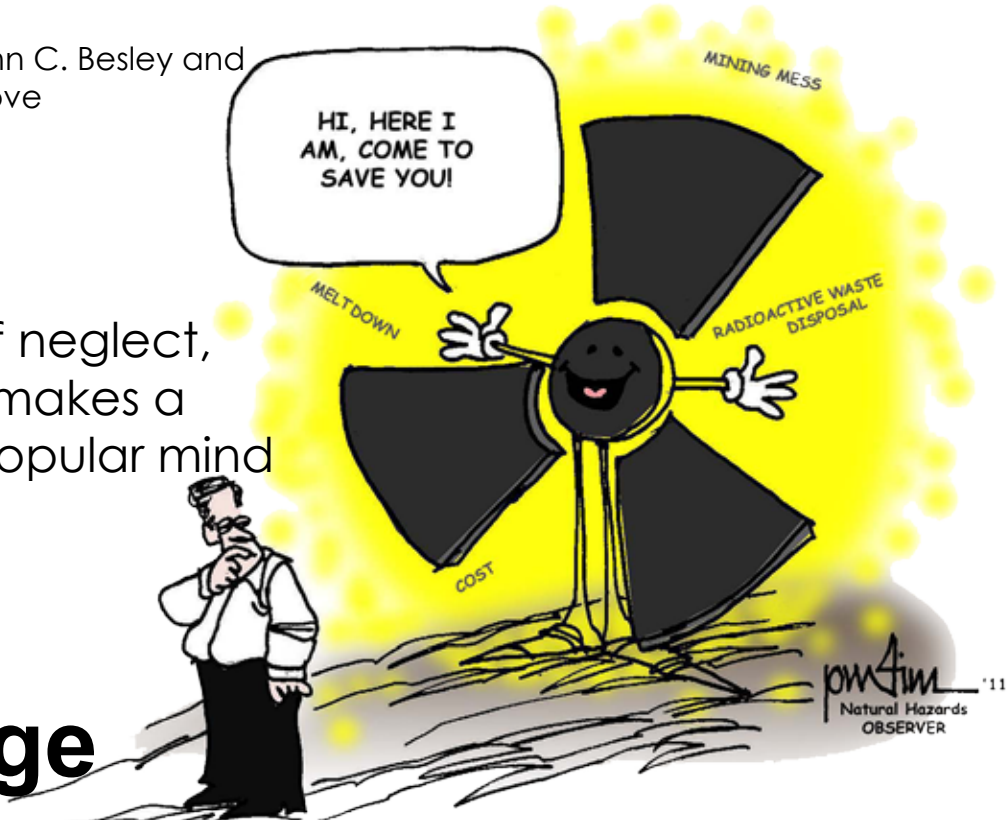
DHS abandons the color-coded terror warning system.



An invited comment by John C. Besley and
Geah Pressgrove

After decades of neglect,
nuclear power makes a
comeback in the popular mind

The revenge of the nukes



THE PUBLIC DEBATE ABOUT THE EXPANSION of nuclear energy has re-emerged in recent years alongside concern about energy dependence and climate change. The proposed construction of new nuclear power reactors in nearly 20 eastern states has fueled public, private, and governmental discussion.

New research in the United States and abroad is trying to understand public opinion about nuclear energy, finding some limited evidence of increased support. As with other technologies, feelings about key decision makers rather than knowledge appear to drive people's views about nuclear energy.

A 2008 analysis of polls published by Toby Bolsen and Fay Lomax Cook in *Public Opinion Quarterly* showed that support for the construction of new nuclear plants eroded from about 58 percent of Americans in 1977 down to a low point of 22 percent in 1987. Support climbed slightly to 31 percent by 1991 in that series of polls. But other polling data reviewed by Bolsen and Lomax showed support for new plants declining from 40 percent in 1991 to 34 percent in 2005.

More recent data from the Pew Research Center for People and the Press, however, suggests that support for nuclear power has since increased from about 39 percent in 2005 to as high as 52 percent by February 2010. Three other surveys in 2010, however, pegged support between 45 percent and 47 percent with nearly 10 percent saying they were unsure (Pew 2010). Sample sizes for almost all of these surveys were more than 1,000, meaning they had a sampling margin of error of at least +/- 3 percent (19 times out of 20). The POQ and Pew data are, however, largely descriptive in nature.

Our own April 2010 national survey (n=552),* and a 2008 survey in South Carolina (n = 594),** aimed to under-

stand the dynamics underlying views about nuclear energy and investigate how citizens view individual actors in the nuclear debate. As with Pew's recent research, our results indicate that opinions on construction of new facilities and expansion of existing nuclear power use are almost equally divided. This work also suggests that views about the subject are driven largely by views about the actors involved. Surveys of this size have a sampling margin of error of about +/- 4 percent (19 times out of 20).

Sixty percent favorable

OUR 2010 NATIONAL SURVEY SUGGESTS 60 percent of Americans favor expanding nuclear power production. This was somewhat more support than found by Pew in its most recent poll (we had fewer "don't know" responses). However, respondents were not positive about all aspects of the technology. They were evenly split on the degree to which they were satisfied with current risk management policies. Fifty-six percent of respondents viewed the health and environmental benefits of nuclear technology as outweighing the risks. Risk and benefit perceptions were measured using a battery of four questions. The survey in South Carolina, which included five counties in the area of a proposed nuclear energy plant expansion, found that 70 percent were in favor of new nuclear construction.

To further understand the negative public opinion of nuclear technology, we also investigated views about decision makers in the 2010 national survey. Negative reaction to federal government decision makers was the strongest at 60 percent, with major companies only slightly behind at 55 percent. Universities on the other hand scored negatively with only 35 percent of study participants. A combination of 10 questions was used to measure views about each actor. These included questions about anticipated respect, rude-

ness, disclosure of potential risks, truthfulness concerning potential risks, willingness and responsiveness to public input, and fairness related to benefits and risks to affected groups. Together, we term these variables “fairness” based on extensive literature from social psychology.

In South Carolina, about 62 percent of respondents said they thought government decision makers had “some respect” for citizens’ views and 65 percent said such decision makers were at least “somewhat trustworthy.” In comparison, about 83 percent of South Carolina respondents said they thought decision makers were at least “somewhat competent” (competence and views about other types of decision makers were not asked about in the national survey).

Rating the decision makers

A KEY PHENOMENON common across risk communication research is that assessments of how people feel about decision makers seem to drive views about the acceptability of potential risks such as those accompanying nuclear power. For example three-fifths of the 60 percent of respondents who believe government to be fair also support nuclear expansion. In contrast, within the 40 percent of respondents who are against nuclear energy expansion, only two-fifths feel positive about the government.

Views about private sector and university actors show similar patterns. Multivariate analyses with controls for a range of demographic and other attitudes also show that how people feel about government decision makers, as well as the other actors involved, predicts whether they support nuclear expansion and whether they support the legitimacy of government decision making in this area. Views about government are, in fact, better predictors of support of nuclear energy than any other measure, including self-reported nuclear knowledge and attention to nuclear debates. These analyses are still being developed for publication.

The earlier South Carolina survey offers the ability to hone in on this relationship even more. It allows for a more finely differentiated assessment of government fairness. In that survey, only citizens’ belief that they would receive a fair share of the risk and benefits predicted support for nuclear energy expansion. However, questions about the degree to which they felt they could have a voice in decision

making and questions about the degree to which government has respect for citizens predict willingness to see an outcome with which they disagree as legitimate (Besley 2010). The practical aspects of these findings indicate that it is possible nuclear power is becoming more acceptable to Americans.

However, decision makers who want to promote such developments will need to work to ensure that they are seen to provide citizens with a voice, treating those citizens with courtesy and respect. It may not be possible to convince everyone to support nuclear power expansion, but the South Carolina survey research in particular shows that many people can accept an outcome with which they disagree if they feel the decision was made fairly. It therefore seems important for nuclear decision makers to devote real attention to fostering substantive community dialogue.

In contrast, those opposed to expansion of nuclear power may succeed by attacking the integrity of decision makers and the process, rather than the technology itself.

John C. Besley is an assistant professor and Geah Pressgrove is a doctoral student in the School of Journalism and Mass Communications at the University of South Carolina.

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*The 2010 survey used six-point “bipolar scales” for each question. Respondents indicated how they felt by choosing between two opposing statements. The descriptive results presented here collapsed the three negative and three positive responses together. Multivariate analyses described later used the full measures. The survey was conducted by Knowledge Networks, a probability-based online polling group (www.knowledgenetworks.com). The panel completion rate was 56 percent.

**The 2008 South Carolina survey used four-point responses for each question. The descriptive results presented collapsed the two negative and the two positive responses together. Multivariate analyses described later used the full measures. The survey was conducted by a telephone survey center at the University of South Carolina using a purchased sampling frame. The completion rate for the survey was 41.0 percent. The cooperation rate was 45.3 percent.



Climate a growing concern in American diplomacy

By Dan Whipple

What do Pope Benedict XVI, Fidel Castro, the Dalai Lama, and French President Nicolas Sarkozy have in common?

They are all urging the United States to take strong action on climate change in the world arena, according to the cables released in the WikiLeaks info-dump (213.251.145.96/cablegate.html). Of the roughly 2,500 cables (out of an estimated 251,000) that had been released when this analysis was done, only about 35 dealt with climate change or closely related issues. But those few paint a picture of a gradually more active American diplomatic effort on the climate front. They also show many countries in the world concerned about the issue and eager for the United States to take the lead on it.

The cables also appear to demonstrate a fairly coherent, strong interest in using diplomacy to try to deal with climate issues. Only four cables dealing with the issue from the eight years of the Bush presidency have been released so far—the earliest from 2004. Despite the tepid interest in climate change solutions displayed by that administration domestically, even then diplomats were trying to accommodate other nations.

In a cable briefing to President George Bush prior to a 2004 visit to Canada, then-Ambassador Paul Cellucci wrote, “While political approaches to the climate change issue have differed between the U.S. and Canada, practical cooperation has been close. In 2002, we signed agreements on Renewable Energy and Climate Science, and formed a bilateral Working Group on Climate Change. Few

Canadians understand just how much we do on climate change, reducing U.S. efforts only to Kyoto.” The 1997 Kyoto climate accord, which went into force in 2005, is a treaty attempting to set global carbon dioxide emissions limits. The United States is the only major emitter in the world not to ratify it.

Climate a top Sarkozy priority

PRIOR TO A 2007 BUSH VISIT TO FRANCE, diplomats there wrote, “[French President Nicolas] Sarkozy signaled during his election victory speech that climate change was his top priority, and he called on the U.S. to ‘take the lead’ in the fight against global warming. Sarkozy has stopped short of calling on the U.S. to join Kyoto, but he publicly advocates the idea of a carbon tax on imports from non-Kyoto signatories as a means of defending Europe’s CO₂ emissions trading system. The President should express our interest in enhancing collaboration on climate change with France, with a view to greater cooperation on a positive science and technology agenda.”

Since Barack Obama’s inauguration, activity on climate diplomacy has increased noticeably, at least as evidenced by the leaked cables. This impression could be simply a statistical artifact because so many more cables are available from this period. But the discussions of climate change policies in those cables are much longer and more detailed. In more recent communications—the latest cables are from February 2010—entire cables are taken up with climate policy concerns, rather than single paragraphs, as was true in the Bush and early Obama eras. The impression is of a growing concern about climate since at least 2004





on the part of foreign governments and an increased urgency in communicating that concern to Washington.

The most forceful urging for the United States to address the issue comes from European governments, especially Germany and France. Both Sarkozy and German Chancellor Angela Merkel made

climate action an important part of their domestic priorities.

But Europe did not march in lockstep on this issue. Denmark's Prime Minister Lars Løkke Rasmussen pulled his head back into his shell a bit after the Copenhagen meeting on climate change, which was widely perceived as less than a rousing success. While the outcome of the meeting was not "directly destabilizing to the Rasmussen Government, the PM appears chastened by his experience and unlikely to risk further high-stakes appearances on the international stage," says a February 5, 2010, cable on the issue.

Optimism about U.S. leadership

AS THE CABLES BECOME MORE RECENT, there is increased optimism that the United States will pass legislation to address climate change. While the main congressional initiatives have languished, the policies of the governments discussed in these cables seem predicated on something eventually happening. Several cables give assurances that the Obama administration is committed to fighting climate change.

But even the most forward U.S. policies are seen as inadequate by some in Europe. For instance, a November 3, 2009, cable briefing Secretary of State Hillary Clinton prior to her visit to France said, "The French remain divided on how to respond to the Obama Administration's approaches to climate change. Most of the interested public and many in the government believe that interim 2020 reduction targets, and the level of greenhouse gas emissions and concentrations at that time, will determine success or failure in slowing global warming. For them, the EU's [European Union] target of 20 to 30 percent reductions below 1990 is the sole measure of an acceptable policy.

"Even sophisticated observers are skeptical that long-term reduction goals legislated in the United States can be counted on as more than aspirations, especially if radical cuts are not imposed up front. We have reiterated that U.S. laws are reliably enforced by the federal government and by U.S. courts, using the Clean Air Act as our example. Ministry of Foreign Affairs officials agree that legislation moving through Congress and the administration's proposals would establish a system comparable to the EU's measures. These officials regard Environment Minister Jean-Louis Borloo's public criticisms of Waxman-Markey as 'insufficient on the medium term goal' as distracting attention from the need for China and India to reduce their rates of growth in GHG emissions."

Waxman-Markey has been the chief congressional legislative vehicle for U.S. greenhouse gas reduction. It

Can you be arrested for reading this story?

The release of the *WikiLeaks* diplomatic cables has instigated a conundrum in the world of classified documents. *Secrecy News* (www.fas.org/blog/secrecy/) reported in early January that the government is insisting that the cables—which had varying levels of secrecy assigned to them—remain classified regardless of their broad availability.

Despite this legal and security limbo, the documents have been widely published. The government "directed federal employees and contractors not to access or read the records outside of a classified network," *Secrecy News* reported in December. This prompted one official to complain, "So, my grandmother would be allowed to access the cables, but not me."

There have been reports that Julian Assange, the head of the *WikiLeaks* site, might be charged under the U.S. Espionage Act of 1917, which could result in jail time of up to 30 years. But nothing has come of it—so far—and the Justice Department has not moved forward with any prosecution.

"Do not visit the *WikiLeaks* site," the Office of Senate Security told Senate employees and contractors in a memo circulated to Senate offices in late January. But then on January 26, Rep. Ron Paul, R-Tex., read a portion of one classified cable into the *Congressional Record*.

Further confusing matters, on February 3 the *Secrecy News* reported, "Americans who have accessed the *WikiLeaks* website may have violated the Espionage Act, under an extreme interpretation of the law advanced by Air Force officials last week." But then on February 7, this guidance was withdrawn.

The legal issues remain unresolved.

would institute a cap-and-trade mechanism for GHG emission credits to try to reduce U.S. Greenhouse gas emissions by 80 percent by 2050. The bill passed the House of Representatives on June 26, 2009, but was not voted on in the Senate. Its chances in the current Congress seem dim.

Outside of the European green axis, though, there is some surprising interest in dealing forcefully with climate change.

The Dalai Lama weighs in

PERHAPS MOST POIGNANT IS THE APPEAL of the Dalai Lama during an introductory meeting in New Delhi with U.S. Ambassador to India Timothy Roemer on August 8, 2009. Roemer wrote in an August 10 cable about the meeting, "The Dalai Lama suggested the U.S. engage China on climate change in Tibet, recognizing that Tibetans could wait five to ten years for a political solution. The Ambassador assured the Dalai Lama that climate change was a priority for President Obama and the U.S. was prepared to work with China and India ... The Dalai Lama

argued that the political agenda should be sidelined for five to ten years and the international community should shift its focus to climate change on the Tibetan plateau. Melting glaciers, deforestation, and increasingly polluted water from mining projects were problems that ‘cannot wait.’”

This emphasis on climate change as a policy priority in Tibet is particularly surprising since only a few months prior to this interview with Roemer, the Dalai Lama said that the Chinese Communist Party had turned Tibet into a “hell on Earth” (www.nytimes.com/2009/03/11/world/asia/11tibet.html?_r=1).

An analysis at the end of the cable reads, “The Dalai Lama’s message to the ambassador may signal a broader shift in strategy to reframe the Tibet issue as an environmental concern. When Ambassador Roemer discussed the importance of climate change issues and mentioned bilateral projects between the U.S. and India, the Dalai Lama said that there were ‘three poles’ in danger of melting: the north pole, the south pole, and the glaciers at the pole of Tibet.”

There is a twofold surprise in the cables covering the Middle East. From one perspective, the surprise is that there aren’t more of them. The Middle East is the source of much oil—and hence ultimately of much carbon emissions. But on the evidence of the cables, U.S. diplomats have done little to engage Middle Eastern nations on the post-petroleum future.

In the midst of this desert of silence, Saudi Arabia is clearly concerned about climate. A February 12, 2010, cable says, “Saudi Arabia is officially still studying the issue of whether to associate with the Copenhagen Accord on Climate Change. Behind the scenes, we understand serious discussions are taking place about which road will best serve the Kingdom’s long term interests.

“On one hand, Saudi Arabia’s lead climate change negotiator has criticized the Copenhagen process in private and in public, arguing that the UNFCCC process is the only acceptable legal framework. On the other hand, Saudi officials are very eager to obtain investment credits for Carbon Capture and Storage and other technology transfer projects that will only become available once an agreement has been reached. Saudi officials express concern about the impact a transition to a low-carbon energy mix will have on the country’s revenue stream at a time when it faces enormous financing needs to transform its economy to create jobs for its young, growing population. It also fears imposed economic costs associated with ‘demonizing’ oil.

“Part of the explanation for this schizophrenic position is that the Saudi Government has not yet thought through all the implications of a climate change agreement, in part because it may not fully understand the various demand scenarios. There appears to be a growing sense within the SAG [Saudi Arabia government] that it may be in danger of becoming isolated on climate change, which may prompt a re-examination of



its position. Saudi officials have suggested that they need to find a way to climb down gracefully from the country’s tough negotiating position. More sustained engagement in coordination with other governments, particularly if pitched as an effort to develop partnership, may help them do so.”



China: the reluctant dragon

ANOTHER MAJOR PLAYER in climate change—China—shows up infrequently in the cables as well. There are three cables concerning climate from Beijing. They are not encouraging for those who want to see China further curb its emissions. A June 12, 2009, summary report of a United Kingdom-China economic dialog notes that China insisted on couching everything climate related in vague language.

Then, in a “remarkably candid” meeting between Chinese Vice Minister Liu He of the Central Leading Group on Financial and Economic Affairs and U.S. Undersecretary of State Robert Hormats, Liu did not respond to a suggestion by Hormats that an upcoming visit from President Obama presented an opportunity to reach some agreement on climate change. Liu only “agreed on the need to maintain dialogue on major strategic issues for the medium and long terms, observing that ‘we need each other’ but at the same time distrust each other in many ways.”

The embassy cables also noted that Pope Benedict XVI was using his position as leader of the Catholic Church to urge “leaders to care for the world’s hungry and protect the environment.” The Vatican’s position on climate is linked to the church’s opposition to birth control and population measures. “In the Vatican’s view,” says a November 19, 2009, cable, “unsustainable lifestyles in developed countries—and not population growth worldwide—is to blame for global warming. Vatican officials claim that the planet has the capacity to feed and sustain its expanding population, provided resources are properly distributed and waste controlled.

“Until recently, Vatican officials often noted that the countries that released most of the greenhouse gases were not the world’s most populous. As China and India industrialize and release more greenhouse gases, however, the Vatican may find it more difficult to blame climate change on lifestyles only. Even as this happens, however, the Vatican will continue to oppose aggressive population control measures to fight hunger or global warming,” the cable says.

Fidel Castro’s ‘pet project’

Former Cuban President Fidel Castro took an unexpected interest in climate change and environmental issues in his retirement, but U.S. diplomats put this down to just more of Fidel’s grandstanding and anti-America antics. In a January 7, 2010, cable, a State Department analyst says, “Castro has mentioned or focused on the Copenhagen Conference and the role of the United States in nearly every one of his ‘Reflection’ articles since September 2009.



Previously, Fidel had only sporadically written on climate change, although he has been obsessed with President Obama since the 2008 elections.”

It’s probable that there are some in the Cuban government who care about climate change as a global environmental issue, the cable says, but Fidel isn’t among them:

“Climate change is Fidel Castro’s latest pet project in which poor, socialist countries are the victims and rich, capitalist countries are entirely to blame. Climate change provides Fidel the perfect opportunity to play statesman with little

risk to his brother’s credibility at home ... Some element of the GOC [government of Cuba] may see climate change as a legitimate concern, but the view from the top is that of a political propaganda gold mine.”

Neither the Bush nor Obama State Departments have tried very hard to advance climate change as a major international issue. The overall impression is of a diplomacy that reacts to international concerns, but is looking over its shoulder at domestic politics, uncertain about the outcome of the debates at home. While not at the top of the international agenda as counted up in these released cables—Iran, Iraq, and Afghanistan hold those places—the issue does appear to have gained momentum at the State Department since about mid-2009. Discussions in the cables about the issue have taken up more space and reflect a more sophisticated interest in the issue than those that came out before then.

Disaster mitigation on the ground in the developing world



By Dan Whipple

cyclical flooding in April and August, at times followed by crippling droughts. Three rivers flow into the area, the largest being the Nyando and Awach. There are seven villages of 550 households with a total of 2,700 people.

“Conventional disaster risk reduction activities have failed to address the specific needs there,” says Benard Obong’o, Great Lakes University Kisumu professor and native to the area. “Resources don’t reach people on the ground. Local communities are the most important actors in disasters. They’re the ones directly affected. They can carry out the warning tasks if told.”

DISASTERS AREN’T NEW TO AFRICA. The continent suffers from many, especially cycles of flood, drought, and famine.

The skills to deal effectively with Africa’s hazards are emerging from grass roots. There is a sophisticated understanding among African planners and academics that climate change is at work to altering risks communities face.

Africa is on the receiving end of climate change. Although it produces only about four percent of global carbon dioxide emissions, disruption is being felt on the continent.

Disaster risk reduction experts from Africa provided lessons in adaptation strategy at the International Conference on Community Based Disaster Risk Reduction and Climate Change Adaptation in Kisumu, Kenya, in December 2010. These lessons were based in principles recognized by hazards professionals across the globe—local communities are the most important actors in disasters, community resilience matters, communication is important.

Kenya’s Kano Plains near Lake Victoria are subject to

Indigenous knowledge

PEOPLE APPLY WHAT’S COME TO BE CALLED “indigenous knowledge” in their reactions to disasters. “Seventy-five percent of the people know about the appropriate adaptation strategy,” Obong’o says.

Twitter and Facebook have not yet made inroads into African flood hazard communication, however. “The channels of communication during floods: 61 percent by shouting,” he says, “31 percent by radio, 6 percent by phone, 2 percent by newspapers.”

People also know the important issues that put them at risk. Forty-seven percent of the population in the East Kano area knew that deforestation was exposing them to flood risk, and a roughly equal amount agreed that forest cover is too low. But only 2 percent are planting trees. “They need capacity building,” Obong’o says.

“We must make people rich, reduce their vulnerability,” said Laban Ogallo, director of the Nairobi-based IGAD Climate Predictions and Applications Centre. “Why is the West

able to deal with them? Capacity. They have the means to deal with them. How do we build a program for rural communities?

"Africa continues to witness an increasing amount of both natural and man-made disasters, including floods, droughts, and improper disposal of chemical products. With increasing global warming, the frequency and intensity of disasters are set to escalate. Local communities bear the brunt of these disasters because they lack the capacity to mitigate."

'We are thirsty all the time'

A REPRESENTATIVE FROM THE NOMADIC PASTORALISTS of northeastern Kenya spoke at the Kisumu meeting about how the way of life that was itself an adaptation to drought conditions was being further eroded by climate change. Ninety-two percent of the people in the region are pastoralists, 90 percent are illiterate. When there's no rain, people move their livestock. While most groups formerly had to move only four or five kilometers to get water. Now they have to go more than 15.

"That is a very big problem," he says, "a very big challenge. We are thirsty all the time."

About 50 kilometers from Kisumu, the East Kano plains have "intractable, alluvial soils which have very poor drainage, together with overpopulation problems and years of drought and periodic flooding," wrote R. Millman in a 1969 article in the *East African Geographical Review*. The area has a different problem from the parched Northeast. It receives periodic floods, then is struck by drought in the interludes.

The people in East Kano are overwhelmingly Luo—the same tribe from which U.S. President Barack Obama's father comes. Obama's grandmother still lives not far from there. The area has been neglected by the government for a long time. There were 320,000 people farming in the area according to the 1999 census. In 2003, 170,000 of them were affected by floods. It also has Kenya's highest rate of malaria.

"In the Lake Victoria basin there has been a major flood annually or twice annually since 1982, suggesting that the flood situation is worsening," wrote four University of Nairobi professors in 1993. Flooding since then has kept pace with this assessment, neatly corresponding to the rising temperatures on the charts in the recent reports of the Intergovernmental Panel on Climate Change.

"Current climate variability is believed to be having a significant influence on the frequency and magnitude of climatic related disasters like floods and droughts. Climatic related disasters constitute over 70 percent of all disasters in Kenya," wrote Brian Otiende in 2009 in a Kano region study. The Kano plains are broad, flat, sweeping picturesquely from the higher lands to the east into a wide bay of Lake Victoria on the west. They are so broad, in fact, it is hard to believe enough water can be generated to flood them.

"Don't be fooled," said a Kenya Red Cross staffer who attended the Kisumu DRR conference, "My people were working in water up to their waists here."

Bernard Obong'o and the district chief—the main local administrative official—have organized the villages in the area to work together to try to deal with the twin scourges of flood and drought. They've formed an action committee consisting of local men and women in about equal proportion. They've undertaken two initiatives. First, they are stabilizing the riverbanks by planting trees and sisal to control



Plants stabilizing the soil along a river in the East Kano floodplain, Kenya.

erosion. Overtopping of the banks can occur at fairly low discharges in some sections of the rivers, most frequently in last 8 to 12 kilometers from Lake Victoria.

The other major effort has been to dig water pans to capture floodwaters for use later in the season when the rains are gone. These are dug by hand by the local people. It's a little surprising that no NGOs are in evidence because the commitment by the local people is clearly there.

The people who are affected by these disasters—whether they are climate related or not—are very poor. It is difficult for them to take any steps that do not include a short-term payoff. When a group from the Kisumu conference toured the East Kano region projects, one of the community board members noted that even though the men of the villages volunteered to dig the water pans, they still had to be fed, and there was sometimes no money for that. The visitors passed the hat, collecting 4,000 Kenya shillings (about \$50). It is hard to do disaster and climate mitigation "for future generations" when there is little food or water for the current generations.

The effects of climate change are being felt in this personal way across East Africa. Samuel Marigi, assistant director of the Kenya Meteorological Department, says, "Climate change is one of the most serious threats to sustainable development. There will be increased water stress and access to food will be compromised across Africa. All weather stations in Kenya are recording increases in temperatures over time. Malaria, which never used to be experienced in cool highland areas is now being experienced there." Rift Valley fever, which affects livestock and humans and is closely related to rainfall levels, is also making a comeback.

"The right to a clean and secure environment is a human and constitutional right," says Alice Kaudia, of Kenya's Ministry of Environment and Natural Resources. "We are conceptualizing disaster risk reduction and climate change. We need to have an explanatory framework that guides us, to think from the ocean beds to the glacier tops. As a result of climate change, you can live in an environment where you are surrounded by water, but you can't use it ... Climate change mitigation, which support disaster risk reduction, is the most effective approach to adapting to climate change in Africa."

Children ...

(Continued from page one)

disaster management is a responsibility shared nationally, with states and with local governments. So the recommendations are intended for adoption at all levels of government, including nongovernmental partners.

What follows are the findings and recommendations the commission made on selected areas of study. Additional findings and recommendations can be found at www.childrenanddisasters.acf.hhs.gov.

Evacuation and Transportation

THE EVACUATION OF CHILDREN IN A DISASTER is not simply a matter of putting them on the bus. It is a complex logistical task usually done under sharp time constraints and difficult circumstances. Advance planning is critical. On any given weekday, more than 67 million children are away from their parents while attending school, or at child care (Save the Children 2010).

The longer a child is separated from parents and loved ones, the more he or she is at risk for physical injuries, abuse, abduction, and emotional trauma (Brandenburg et al. 2007). The commission recommended all child-serving environments have evacuation and transportation plans, including protocols for communicating with parents to reunify them with their children.

In order to facilitate the reunification of children and parents, evacuee tracking systems utilized by all levels of government should collect appropriate data on unaccompanied minors. A 2006 White House report called on the U.S. departments of Homeland Security and Transportation to evaluate state and local evacuation plans. The report singled out unaccompanied minors as one group that must be addressed in those plans.

States have the option of using the National Mass Evacuation Tracking System (NMETS) as a tracking tool. NMETS is a paper- and computer-based system usually used to track pets and equipment during disasters, but it can be adapted to keep track of unaccompanied children. Software and training is provided to the states free of charge, although equipment and maintenance costs are state responsibilities.

In response to suggestions from the commission, the Federal Emergency Management Agency improved NMETS' ability to track children by adding an "unaccompanied minor" check box and additional information fields to the paper and computer versions of NMETS. When this box is checked on the electronic version, a message appears in red text indicating that the unaccompanied minor should be escorted to the proper authorities in compliance with state

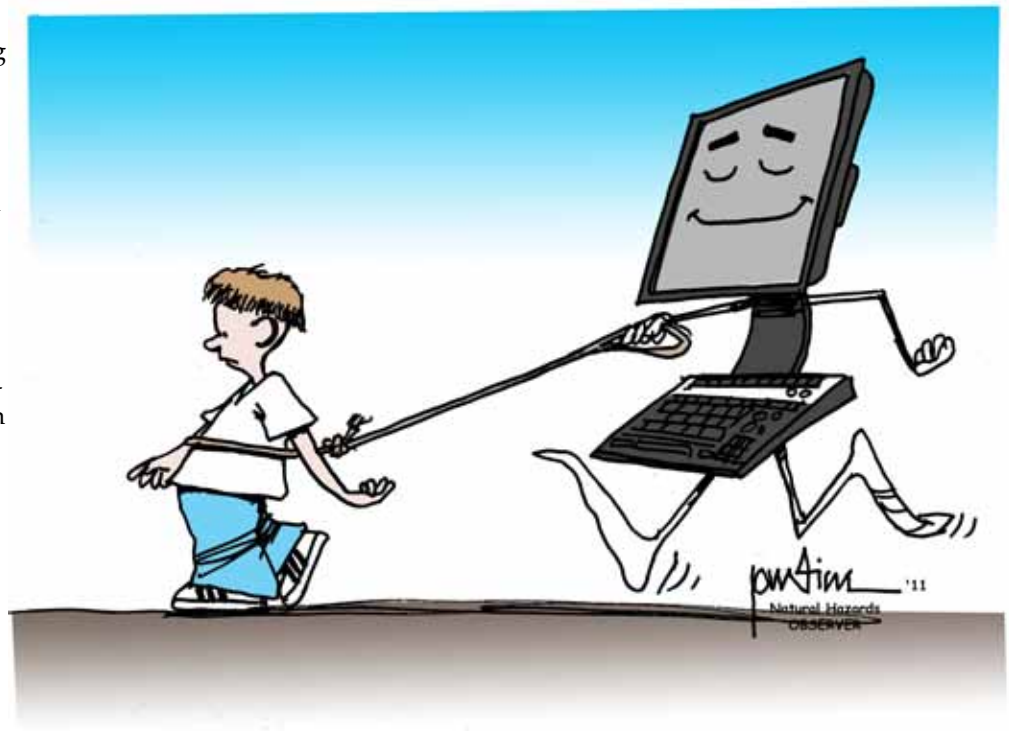
evacuation procedures. Also added to NMETS were fields allowing input of information to describe an unaccompanied minor (e.g., eye color, hair color, and other features) and indicate the name of the agency or individual who has taken the minor under care.

Even more challenging and resource intensive are the evacuation and transportation needs of children with disabilities or chronic health issues. A 2007 Government Accountability Office report on school preparedness found that many districts did not have specific provisions for special-needs students in their emergency management plans (GAO 2007). Plans that did have procedures for special needs students varied considerably in the extent to which they ensured the students' safety. In 2009, one Texas high school received scrutiny after a bomb threat evacuation when eight special-needs students were kept inside the school while 1,850 other students were evacuated (Scott 2009).

While some jurisdictions rely on school buses for mass evacuation, the commission learned that most of these buses might not be adequate to transport children with disabilities. The commission and FEMA's Office of Disability Integration and Coordination brought together disabilities leadership from several federal agencies to develop a cohesive national strategy for evacuation and transportation of disabled or chronically ill children. The strategy emphasized state and local multi-agency planning, especially child care facilities, schools, hospitals, and emergency management and law enforcement agencies. The commission is also working with the U.S. Department of Health and Human Services and children's hospitals to test pediatric patient transport capabilities during the 2011 National Level Exercise, which will simulate a catastrophic earthquake in the central United States.

Mass Care Sheltering

CHILDREN AND FAMILIES MUST BE ASSURED A SAFE and secure mass care shelter environment. The commission





In this field of emergency preparedness, the needs of children are not well understood. While the Strategic National Stockpile maintains the medical countermeasures for adults for high-threat agents, comparable pediatric indications and countermeasures are largely unavailable or have not been approved by the Food and Drug Administration.



worked with FEMA, the American Red Cross and other partners to develop *Standards and Indicators for Disaster Shelter Care for Children*. This document provides guidelines on essential services and planning elements needed for children's safety and well-being in a disaster shelter. These include pediatric medical and mental health services, a designated family area with easy access to bathrooms, safe spaces for children to play, and a supportive environment for women who breast feed. This guidance was distributed to Red Cross chapters and adopted by the National Voluntary Organizations Active in Disasters Mass Care Committee in 2009.

As a result of this effort, disaster shelters opened during the September 2009 floods in Georgia demonstrated an increased awareness of the need to have child-appropriate supplies and expertise on hand. The standards and indicators were also utilized in Red Cross shelters in the spring 2010 flooding in Nashville, Tennessee.

The commission, with help from federal and nonprofit groups, developed a list of age-appropriate shelter supplies for infants and toddlers. The document provides guidance to shelter managers and staff on essential shelter supplies like formula, diapers, and baby food. FEMA incorporated the shelter supply list into preparedness grants guidance and other internal planning documents. The federal government will reimburse the cost of the supplies. FEMA also identified the best methods for federal responders to rapidly distribute these items to an affected area. Following the devastating 2010 earthquake in Haiti, FEMA used the document as a guide to procuring supplies for evacuees waiting to depart Port-Au-Prince Airport.

Child Physical Health and Trauma

THE FACT THAT CHILDREN ARE NOT JUST "LITTLE ADULTS" is especially brought home to emergency planners in the health arena. Emergency medical care for children requires specific training and core competencies. With the fragility of their bodies and physiological systems, children are at least equally, if not more, vulnerable than adults.

However, national standards for pediatric disaster education and training do not exist. Consequently, disaster medical care for children varies in content and quality across the country. At the commission's recommendation, the National Center for Disaster Medicine and Public Health adopted the need to identify and integrate national disaster health core competencies in pediatrics and obstetrics. It will host a workshop in March 2011 to begin development as a strategic objective.

Children are also more vulnerable than adults to higher levels of exposure following chemical and biological incidents. Children inhale more air and consume more water on a per-weight basis than adults. Although these considerations should warrant greater attention to children during emergencies, the quantity of pediatric medical countermea-

asures in the Strategic National Stockpile is very limited.

The SNS is a national repository of antibiotics, chemical antidotes, antitoxins, life-support medications, and other emergency medical supplies. "Medical countermeasures" simply means providing an adequate supply of medications to deal with whatever the medical threat in a disaster happens to be—ciprofloxacin for a deliberate anthrax attack, for instance, or flu vaccines for an outbreak.

In this field of emergency preparedness, the needs of children are not well understood. While the Strategic National Stockpile maintains the medical countermeasures for adults for high-threat agents, comparable pediatric indications and countermeasures are largely unavailable or have not been approved by the Food and Drug Administration. This is true despite the fact that according to an American Academy of Pediatrics poll, 92 percent of Americans think the same medical treatments should be available for children as are available for adults in the event of a terrorist attack (AAP 2010).

The *Public Health Emergency Medical Countermeasures Enterprise Review*, released in August 2010, recognizes the need to enhance the development and regulatory review of medical countermeasures for vulnerable populations, including children and pregnant women (DHHS 2010). While the review does not detail the significant gaps in our nation's countermeasures portfolio for children, several of the review's recommendations provide promising opportunities to address this challenge through new mechanisms and investments. For example, a regulatory initiative for the FDA should be pediatric labeling and formulations for existing medications in the stockpile. In addition, the pre-event positioning of countermeasures should not be limited to the home or workplace, but should also consider the environments where children are most likely to be during a chemical, biological, or nuclear event during a weekday, such as at school or child care.

The Institute of Medicine convened a committee in January 2011 on pre-event positioning strategies for dispensing medical countermeasures for the public. The committee will conduct public meetings to gather input from a broad range of experts, including those with pediatric expertise.

Schools

IN 2007, A MIDDAY TORNADO DESTROYED A HIGH SCHOOL IN Alabama, killing eight students. In any part of the country an earthquake, fire, chemical spill, or nuclear event could put children's lives at risk. Many states lack laws or regulations requiring schools to have multi-hazard disaster plans.

According to the GAO, in 2007 about 62 percent of school officials from surveyed school districts reported challenges to implementing emergency management programs, including insufficient equipment, training, and staff with emergency planning expertise (GAO 2007). During the National Commission on Children and Disasters' Janu-

ary 2010 field visit to Iowa, the state's school officials said they aren't required by state law to collaborate on a disaster plan with emergency management officials. This results in differing levels of coordination in each county and school district.

School governance is dictated within states and local jurisdictions. In an effort to marshal federal resources to improve school preparedness, the commission recommended that FEMA and the U.S. Department of Education partner more closely to provide funding, training and technical assistance to state and local education agencies, and encourage collaborative planning, training, and exercises with emergency management officials.

The commission also urged the Department of Homeland Security to actively encourage states to improve school preparedness under the Homeland Security Grant Program, which provides billions of disaster preparedness dollars annually to states. The commission and DHS created a supplemental guidance document with recommendations for allocation of these grant funds to benefit children. The supplement recommends that states use the funding to improve the preparedness of schools and support integration of schools into state and local disaster planning, training, and exercises (DHS 2009).

Child Care

OVER 12 MILLION CHILDREN UNDER THE AGE OF SIX attend child care each week, which makes emergency planning crucial to ensuring a secure environment for children during and after disasters (NACCRRRA 2009). However, according to a 2010 report by Save the Children, only 14 states have laws or regulations requiring licensed child-care providers to develop written disaster plans for addressing general evacuation processes, reunification efforts, and accommodation of children with disabilities or other special needs (Save the Children 2010).

Although the federal government does not have the authority to require states or providers to have child-care disaster plans, the Administration for Children and Families Office of Child Care is working with FEMA to develop guidance encouraging states to develop statewide child-care disaster plans. In addition, Save the Children and National Association of Child Care Resource and Referral Agencies have joined together to create detailed disaster preparedness standards for child-care providers. Not only will this resource to guide child care providers on adequate planning, but it will also recommend disaster preparedness licensing standards for states.

The commission determined that child care is essential to facilitate the economic and social recovery of communities. During its Iowa field visit the commission found that, where child care was not available, children were often kept at home, sometimes playing in debris or other unsafe conditions. Furthermore, if a community does not have access to quality child care after a disaster, parents may be unable to work, placing further economic stress on the family and community. Following large events, child-care services may recover slowly or may not be restored to full capacity. For example, although Hurricane Katrina occurred in 2005, as of December 2009 only 65 percent of child-care centers in the greater New Orleans area had reopened, according to a statement by Sen. Mary Landrieu, D-La., at a Senate subcommittee hearing.

The longer a child is separated from parents and loved ones, the more he or she is at risk for physical injuries, abuse, abduction, and emotional trauma.



In response to the commission's concerns, FEMA revised its public assistance policy to permit reimbursement of state and local governments for providing emergency child care services during the emergency sheltering period in the immediate aftermath of a disaster. FEMA is working with several other agencies to ensure a clear and consistent message about FEMA's emergency child-care reimbursement policy.

FEMA also clarified that child care is an "essential service of a governmental nature," meaning that nonprofit child-care providers may be eligible for assistance to repair damaged facilities if they do not qualify for Small Business Administration disaster loans or if the SBA approves a loan for less than the amount required to repair the damage.

Conclusion

OUR NATION'S 75 MILLION CHILDREN are 25 percent of the population and among the most vulnerable during and after disasters. Yet, at the federal, state, and local level, programs, policies, and practices for planning and managing disasters are designed primarily to help able-bodied adults. This paradigm stands in opposition to our professed values of children as the center of family and community.

The National Commission on Children and Disasters calls for children to become a more urgent priority in disaster planning and management across the country. While the challenges of dealing with children in disasters will not be dealt with overnight, there is growing awareness of their unique needs and evidence of progress toward closing the gaps. But the care of children before, during, and after disasters is a shared national responsibility. More emphasis must be placed on trust and collaboration between federal and nonfederal partners, including the private sector and nongovernmental organizations. Bridges of trust and collaboration must be built between emergency management and child-serving communities, such as schools, child-care providers, and the child welfare, juvenile justice and court systems.

In its 2010 *Report to the President and Congress*, the commission recommends the development of a National Strategy for Children and Disasters. This strategy would involve federal, state, territorial, tribal, and local levels of government; private sector industry; non-governmental agencies; faith-based partners; academia; communities; families; and individuals. It would encourage all parties to engage one another around a cohesive set of national goals and priorities to remedy the years of benign neglect of children.

The commission recognizes the challenges currently

facing all levels of government and their nongovernmental partners. In these difficult fiscal times, however, sufficient attention and resources must be dedicated to safeguarding our nation's 75 million children before, during, and after disaster.

Christopher J. Revere is executive director of the National Commission on Children and Disasters. He can be contacted at christopher.revere@acf.hhs.gov.

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Resources

Below are brief descriptions of some of the resources on hazards and disasters that have recently come to the attention of the Natural Hazards Center. Web links are provided for items that are available free online. Other materials can be purchased through the publisher or local and online booksellers.

All of the material listed here is available at the Natural Hazards Center Library. For more information contact librarian Wanda Headley at wanda.headley@colorado.edu

OIL SPILL

Assessing the Effects of the Gulf of Mexico Oil Spill on Human Health: A Summary of the June 2010 Workshop. By Margaret A. McCoy and Judith A. Salerno. 2010. ISBN: 978-0-309-15781-0. 200 pp. \$29.70 (softcover) or free download. National Academies Press. www.nap.edu/catalog/12949.html.

As advertised by the title, this NAS report is a summary of a workshop on methods for assessing the long-term human health impacts of the recent Deepwater Horizon explosion and oil spill. The report discusses the components needed for such a surveillance system, examines the kind of health problems that might develop, looks at exposures of the population, discusses communication and many other aspects of this complex problem.

The NAS is concerned not just with the physical impacts, but also the psychological effects, which can be as

severe and long-lasting as physical issues (*Natural Hazards Observer*, November 2010). The recommendations also attempt to deal with the uncertainty surrounding the effects of the spill—which may last considerably longer than the spill itself.

ALL HAZARDS

Season and Hazards Calendar. By the World Food Program. 2011. 89 pp. Free download. Request from HQ.Situation.Room@wfp.org.

This is an ambitious project. It covers the usual timetable of hazards and disasters in 79 countries where the World Food Program operates. When's the flood and landslide risk in Afghanistan? February through September. When do they plant their rice and maize there? May and June.

When's the frost period in Bolivia? May and June.

(They have frosts in Bolivia?)

The calendar “combines the most authoritative information on major seasonal hazards like floods, droughts, cyclones and the prevalence of pests such as locusts, alongside crop growing cycles and lean seasons.” It is colorful, thorough and easy to use, a wonderful example of combining sound, simple design with lots of information.

Building Back Better: Delivering People-Centred Housing Reconstruction at Scale. Michal Lyons, Theo Schilderman, and Camillo Boano, eds. 2010. ISBN: 978-1-85339-701-1. 388 pp. \$34.95 (hardcover). Practical Action Publishing. Free download at practicalaction.org/access-to-services/building-back-better-book.

After a disaster, people often need housing. This book is dedicated to the proposition that survivors should get not just a house, but the house they want.

Calling for “people-centered” reconstruction, the editors urge participatory processes in reconstruction after a disaster. “People-centred, participatory reconstruction has become a realistic—and in some cases real—policy option,” the editors write.

The book examines especially the efforts in the wake of disasters that took place in Sri Lanka, Pakistan, Indonesia, and India. But these efforts are compared and contrasted with reconstruction in some earlier cases set in Colombia, Peru, India, and Turkey.

The book’s chapters were written by practitioners and academics, providing the kind of cross-fertilization of ideas and experience necessary to succeed at such a complex endeavor as providing housing to people who have lost theirs.

Building Community Disaster Resilience Through Private-Public Collaboration. By the National Research Council Committee on Private-Public Sector Collaboration to Enhance Community Disaster Resilience. 2010. ISBN: 978-0-309-16263-0. 131 pp. \$29.70 (softcover). National Academies Press. Free download at www.nap.edu.

Community assets are held both publicly and privately. Those assets must be called upon for the resilience communities show in the face of disasters. An interplay between public and private actors is essential in the United States to build strong communities both before and after catastrophes.

Building Community Disaster Resilience takes a broad view of the meaning of resilience as “the continued ability of a person, group, or system to function during and after any sort of stress,” including a disaster. A community, meanwhile, has to include all the parties, public and private, who have a “common domain of interest.”

This NRC report suggests that a series of research and demonstration projects be run around the country as “living laboratories, providing opportunities for both researchers and practitioners ... with the explicit goal of documenting effectiveness, costs, and benefits” of various approaches to resilience.

The understanding of what factors make a community resilient to disaster is still in its infancy. NRC is proposing a research program to harness what Secretary of Homeland Security Janet Napolitano called the “indomitable spirit and capability of the American people” to prepare for and recover from disasters.

The Economics of Natural Disasters: Concepts and Methods. By Stephane Hallegatte and Valentin Przuluski. 2010. 31 pp. World Bank Policy Research Working Paper 5507. Free download at econ.worldbank.org.

Numbers are essential to disaster response. And few numbers get more attention than “How much did it cost?” Early reports of economic damage are often based on different methods of calculation, depending on the purpose the estimator has in mind for the result—a purpose that is rarely made explicit.

This World Bank paper defines what’s meant by a disaster’s economic cost. “It does so by first explaining why the direct economic cost, that is, the value of what has been damaged or destroyed by the disaster, is not a sufficient indicator of disaster seriousness and why estimating indirect losses is crucial to assess the consequences on welfare ... The paper describes the main indirect consequences of a disaster and the following reconstruction phase, and discusses the economic mechanisms at play,” the authors say.

The paper examines the calculation of direct losses, “non-market direct losses,” and indirect losses from hazards. It concludes that the “cost” figures for a disaster are impossible to define because “the relevant cost depends largely on the purpose of the assessment ... Any disaster cost assessment should start by stating clearly the purpose of the assessment and the cost definition used.” A “cost” is different, in other words, if it’s the cost to insurers, or to rebuilders or to providers of international aid. The authors also say more research is needed to calculate the real indirect costs of disasters.

HURRICANES

In the Wake of Hurricane Katrina: New Paradigms and Social Visions. Clyde Woods, editor. 2010. ISBN: 978-0-8018-9561-6. 432 pp. \$30 (hardcover). Baltimore: Johns Hopkins University Press. www.press.jhu.edu.

Katrina we will have always with us. Just about every book on this subject starts with a nod to wind speed, hurricane category, and death toll. Then they move on to the slice of Katrina’s massive profile that they want to examine.

This book examines a large slice: How did our government come to “callously abandon and repeatedly abuse hundreds of thousands of its citizens in the middle of a disaster?”

Clyde Woods argues in his opening essay for three principal lessons from the Katrina experience. He writes, “One principle (sic) lesson taught is that our engagement with the [Gulf Coast] region, its people, and their social visions are unavoidable. Another lesson is that we have a responsibility for the displaced that cannot be escaped. A third lesson is that the people of the region have already prepared the ground for a new and more equitable future for the nation as a whole.”

The first two claims seem true enough, but the third one is a lot to lay on the shoulders of a single hurricane, even a big one like Katrina. And some of the essays in the volume don’t seem to support this last assertion. Anna Hartnell, in her essay on the revival of tourism in New Orleans, says that “both before and after Katrina, the sense of total immersion offered by these forms of tourism is almost totally illusory.” The workers in the French Quarter, she notes, leave this fantasy land of edgy bad boys after work for their homes on the wrong side of town.

"After Katrina," she writes, "tourists can experience 'firsthand' the storm-devastated neighborhoods while being almost entirely insulated from the human beings still suffering the ongoing economic and racial fallout from the hurricane's aftermath." This doesn't seem to presage a "more equitable future for the nation as a whole."

Still, Woods is to be commended for not shying away from the controversial aspects of the book's thesis. Katrina exposed a raw nerve in race relations. The last essay argues the immediate aftermath of Katrina showed a "moral center" not often seen in the United States, where assistance was dispensed without regard to race or class. "Now is the time to advocate for a Gulf Coast region reconstruction plan with transcendent humanitarian, social, political, and economic aims that move beyond rebuilding the region to the way it was before Hurricane Katrina, and instead, to a place in sync with a national vision of what can be."

RISK

The Ethics of Technological Risk. Lotte Asveld and Sabine Roeser, eds. 2009. ISBN: 978-1-84407-638-3. 320 pp. \$100.35 (hardcover). London: Earthscan. www.earthscan.co.uk.

"What are morally legitimate considerations in judging the acceptability of risks?" the editors ask in the introduction to this thought-provoking volume on the ethics of risk.

Technologies bring both advantages and disadvantages to the world. But "risk and uncertainty have so far been blind spots in moral philosophy."

The exploration of the philosophical questions surrounding risk is a fairly new issue. Sabine Roeser asks if emotional reactions should be considered in the moral acceptability of a hazard? This would affect the risk assessment of nuclear power, for instance, which inspires a great deal of fear, but so far has presented relatively little objective hazard.

This book doesn't deal with it, but it would be interesting to apply these principles to emerging debate on the geoengineering of climate. Two of the authors would place much of the ethical burden on the engineers who produce and guide the technology. Anke van Gorp and Armin Grunwald "argue that engineers have specific responsibilities to assure that the regulative frameworks are sufficiently adequate and that the different interests of relevant actors are incorporated."

A corollary of this approach—or perhaps better called an extension of it—is argued by Michael Baram in the final essay on risk governance. Baram says that the current methods of dealing with risk governance lack a moral compass, and that organizations, governments, and individuals have to develop their own ethical approach to risk, applying it to the question of how safe we want to be.

Contracts and Grants

Below are descriptions of some recently awarded contracts and grants related to hazards and disasters.

An interactive "human sensor web" for improved model predictions of the dispersion of the Deepwater Horizon Gulf oil spill. National Science Foundation grant #1061621. www.nsf.gov/awardsearch/showAward.do?AwardNumber=1061621. One year. \$136,060. Principal investigator Milton Halem, University of Maryland, Baltimore County, halem@umbc.edu.

This project, proposing research activities related to Gnome model predictions of the Gulf oil spill, will develop an instrument that acquires servers to collect, extract, locate, and process Gulf oil spill data from the existing social media sources such as Flickr, You Tube, and Twitter, and integrating them into a cloud. The project provides instantaneous spatial distributions and temporal frequencies of oil slicks, tar balls, and distressed and dead animals along the complete coastline of Gulf border states. The instrument is used to perform data assimilation using the Gnome oil spill forecast model as a first guess and the social media data as boundary conditions. The project will present the forecast oil slick dispersion products on the very large LCD tiled wall for broadcast to thousands of viewers. System delivery is expected within 15 days. The "human sensor web" data is likely to lead to more accurate operational oil dispersion forecasts for dissemination to decision makers through the data assimilation.

The resilient rural America: Drivers of speedy and high quality recovery following a disaster. National Science Foundation grants #1045624 and #1045616. www.nsf.gov/awardsearch/showAward.do?AwardNumber=1045624.

www.nsf.gov/awardsearch/showAward.do?AwardNumber=1045624.

Two years. Two grants: \$280,905 to principal investigator Nazife Ganapati, Florida International University, ganapat@fiu.edu; and \$78,948 to Robert Olshansky, University of Illinois at Urbana-Champaign, robo@uiuc.edu.

Despite a growing literature on disaster resilience, our understanding of what makes rural areas resilient remains limited. Existing literature mainly focuses on urban areas and characterizes rural areas as more vulnerable than urban areas without recognizing the possibility of rural resilience. Furthermore, there is a lack of robust and consistent indicators focusing both on the vulnerability and resilience of rural areas. This study advances scientific research on disaster resilience in rural areas. The specific aims are to: (1) develop an innovative, multi-faceted, place-based vulnerability and resilience index with an exclusive focus on rural areas (called the Rural Vulnerability and Resilience Index); (2) identify the consequences of vulnerability and resilience in terms of disaster recovery (in the context of the 1993 Midwest floods, 1996 Southern Plains drought, and the 2005 Hurricane Katrina); and (3) develop policy options for rural areas on enhancing disaster resilience.

Tornado Alley. National Science Foundation grant #1010884. www.nsf.gov/awardsearch/showAward.do?AwardNumber=1010884. One year. \$990,497. Principal investigator Paul Novros, Giant Screen Films, PNovros@graphicfilms.com.

Tornado Alley is a large-format 2D/3D film and com-

prehensive outreach program exploring the science behind severe weather events. The project focuses on cutting-edge developments in the fields of meteorology and earth science, demonstrating weather monitoring technologies. The project spotlights the current research of the VORTEX 2—the most ambitious effort ever to understand the origins, structure, and evolution of tornadoes. The principle target audiences are science museum audiences, with additional special attention to under-served, rural Midwestern communities, which will be served by digital 3D screenings.

From data to knowledge: The Quake-Catcher Network. National Science Foundation grants #1027802, #1027790, and #1027807. www.nsf.gov/awardsearch/showAward.do?AwardNumber=1027802. Three years. Three grants. \$759,025 to principal investigator Jesse Lawrence, Stanford University, jfl77@stanford.edu; \$100,848 to principal investigator Thomas Heaton, California Institute of Technology, heaton@caltech.edu; and \$88,018 to principal investigator Michela Taufer, University of Delaware, taufer@acm.org.

The Quake-Catcher Network is a transformative approach to earthquake detection, science, and outreach. Leveraging an innovative set of cyber-enabled seismic observations, this approach will create a very dense, low-cost seismic network to explore earthquake fault rupture in real time, establish ground response to seismic wave passage, and quantify the shaking effects on critical structures.

Increasing the number of QCN sensors from 1,000 to more than 30,000 worldwide and developing efficient schemes to ingest, process, and distribute terabytes of data will allow us to: (1) explore fault mechanics (including directionality, slip distribution, and rupture velocity) at unprecedented resolutions; (2) study ground motions to assess seismic hazard and building response; and (3) analyze data in real time for earthquake early warning and rapid response. This proposal will result in network with 6,000 new sensors and tens of thousands of noa -cost sensors commonly built internally on laptops and other devices. Additionally, QCN will provide the cyberinfrastructure to process and analyze the large new seismic data sets in near-real time and to foster collaboration between thousands of researchers and interested participants around the world.

Hydrologic transformation and human resilience to climate change in the Peruvian Andes. National Science Foundation grants #1010550, #1010384, and #1010381. www.nsf.gov/awardsearch/showAward.do?AwardNumber=1010381. Three years. Three grants: \$311,453 to principal investigator Kenneth Young, University of Texas at Austin, kryoung@austin.utexas.edu; \$332,069 to principal investigator Bryan Mark, Ohio State University, mark.9@osu.edu; and \$295,667 to principal investigator Jeffrey Bury, University of California-Santa Cruz, jbury@ucsc.edu.

Climate change and accelerating glacier recession is affecting the water cycle and the future of water resources in the Peruvian Andes. In the Cordillera Blanca, the most glacierized mountain range in the tropics, the natural and social systems of the region are very dependent on glacial water resources and it is considered to be one of the most vulnerable to glacier-related water stress in the world. This interdisciplinary and collaborative research project will evaluate the new system of freshwater governance that is emerging in the Andes and how glacial dynamics are trans-

forming melt water rates as they rapidly recede. The research will generate new insights into the coupled natural and human consequences of glacial recession in the tropical highlands by examining the combined effects of glacier recession on downstream watersheds, the resilience of livelihood systems and the ways in which economic change and shifting water governance are factors in this hydrologic, ecological, and social transformation.

Novel emergency communication system for mines. National Science Foundation grant #104682. www.nsf.gov/awardsearch/showAward.do?AwardNumber=1046812. Six months. \$150,000. Principal investigator Robert O'Handley, Ferro Solutions, bob@ferrosi.com.

This Small Business Innovation Research Phase I project takes a new approach to detecting time-dependent fields for communication in cases where radio frequency signals are strongly attenuated, such as in mines, caves, tunnels, and dense building environments. It is known that lower-frequency electromagnetic waves or magnetic near fields are able to penetrate absorbing media to greater distances than higher frequency fields. A variety of communication means are used in mines. Some rely on wireless networks, others depend on electrical continuity of conductors which can be compromised in a disaster. Others depend on very large high-power loop antennas operating at low frequency. However, loop receive antennas produce smaller voltages in lower-frequency fields unless the product of the number of turns, N , and area, A , of the loop is correspondingly increased. Recent evidence suggests that engineered magneto-electric can be more sensitive than loop antennas at lower frequencies. This project aims to optimize ME devices as well as their associated electronic and software systems as receivers for low-frequency communications in mine emergencies.

San Bruno, California, September 9, 2010, gas pipeline explosion and fire. National Science Foundation grant #1103823. www.nsf.gov/awardsearch/showAward.do?AwardNumber=1103823. One year. Two grants: \$30,000 to principal investigator Rachel Davidson, University of Delaware, rdavidso@udel.edu and \$14,937 to principal investigator James Kendra, University of North Texas, jmkendra@unt.edu.

This grant provides funding to study the San Bruno explosion and fire. On September 9, 2010, in San Bruno, California, a suburb of San Francisco, a 30-inch steel natural gas pipeline exploded in flames, igniting a fire that ultimately killed seven residents and damaged or destroyed dozens of houses. An interdisciplinary field team will provide a holistic account of the event across the engineering and social sciences by gathering data on pre-event building, topography, and weather conditions; the rate and modes of fire spread and suppression; and elements of multi-organizational coordination and decision making. The aims of the project are to: (1) improve understanding of how urban fires spread and are suppressed; (2) support development and validation of next-generation urban fire simulation models; and (3) advance theories of resilience.

The research team anticipates a number of broader impacts. These include the development and dissemination of improved fire-spread models for conflagrations in resi-

dential neighborhoods. Ground-level decision making and coordination approaches will be bolstered by findings on the multi-organizational coordination of the event.

Coordinated deployment of seismic instruments to record aftershocks of the September 2010 New Zealand earthquake. National Science Foundation grant #1102767. www.nsf.gov/awardsearch/showAward.do?AwardNumber=1102767. One year. \$30,953. Principal investigator Clifford Thurber, University of Wisconsin-Madison, thurber@geology.wisc.edu.

The September 4, 2010, Darfield, New Zealand, earthquake is the most damaging earthquake to strike New Zealand since 1931. Although no lives were lost, damage was extensive, and economic losses are expected to total over NZ \$2 billion. The earthquake is also scientifically interesting and in many ways surprising. It occurred on a previously unmapped fault in an area that was presumed to have lower risks than other areas. The complex source-time function indicates that two or more subevents were involved. One of the most surprising aspects is the predominantly strike-slip character of the event along a nearly east-west fault. South Island tectonics are dominated by the Alpine Fault system and nearby, mostly northeast-southwest striking strike slip faults, such as the Hope Fault. The data from this project will provide a unique opportunity to study a fault that is very likely quite young and immature, and thus fundamentally different in character from mature faults such as the San Andreas Fault in California or the Anatolian Fault in Turkey.

Heavy precipitation over Western North America: Synoptic/mesoscale forcing and decadal trends. National Science Foundation grant #1041879. www.nsf.gov/award-search/showAward.do?AwardNumber=1041879. One year. \$151,412. Principal investigator Clifford Mass, University of Washington, cliff@atmos.washington.edu.

Flooding and slope failures due to heavy precipitation are the most serious weather-related threats for the West Coast of North America. Between 1980 and 2008, four flood disasters in California, Oregon, and Washington caused losses of more than \$11 billion. Flooding and slope failures associated with heavy precipitation have produced a majority of presidential disaster declarations in Oregon and Washington, and nearly a quarter of such declarations in California.

The specific objectives of this project include: (1) determining the climatology of heavy precipitation events for the region from Northern California to the Canadian border, as well as their temporal and spatial characteristics; (2) identifying the associated large-scale and regional conditions; (3) determining the characteristics of the incoming flow; (4) evaluating the realism of high-resolution forecasts of heavy West Coast precipitation and determining which model produces the most accurate simulations; (5) determining the atmospheric evolutions associated with these events; (6) establishing the historical trends of heavy precipitation events over the past 60 years; and (7) determining the future trends of heavy precipitation over the region for the next century by using high-resolution regional simulations forced by global climate models.

Conferences and Training

March 21-25, 2011

Community Recovery From Disaster Symposium
Public Entity Risk Institute
Online

Cost: Free.

This free online symposium makes easy for practitioners and public officials to access the latest research on the economic, social, and institutional aspects of disaster recovery. Participants will learn how disasters affect the community and what can be done to prepare.

www.riskinstitute.org/peri/component/option,com_deeppockets/task,catsContShow/cat,86/id,1090/Itemid,84/

April 3-8, 2011

European Geosciences Union General Assembly
European Geosciences Union
Vienna, Austria

Cost: \$474

Although focused primarily on issues and research from earth, planetary, and space sciences, this assembly will host a hazard-related program group, including sessions on hydrological extremes, societal impacts, flash flood modeling, weather-related risks and agribusiness.

meetings.copernicus.org/egu2011/

April 8-10, 2011

Disaster Response Challenge
British Red Cross
London, England

Cost: \$80

This two-day hypothetical disaster will provide firsthand exposure to the issues and decisions experienced by Red Cross units when responding to a major incident. Each team will act as an independent emergency response unit and develop their own disaster response plan as the scenario unfolds in real time. Specific modules dealing with logistics, communications, first aid evacuation, and security will be included.

www.redcross.org.uk/Get-involved/Events/Challenge-and-social-events/Adrenaline/Disaster-response-challenge

April 10-12, 2011

Partnering with the Media
Emergency Media and Public Affairs
Canberra, Australia

Cost: \$1,155

Building relationships with the media is an important, if unloved, component of disaster response. This conference focuses on communicating with the

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Copies of the *Observer* and the Natural Hazard Center's electronic newsletter, *DR—Disaster Research News You Can Use*, can be downloaded free from the Center's Web site:

www.colorado.edu/hazards/

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public during emergencies. It will emphasize the importance of using good media relationships to better inform community decision making before and during the event. Conference activities will include small group discussion with members of the media, collaboration opportunities, and a role-playing session.

www.emergencymedia.org.au/site/conferences_2011.htm

April 15-17, 2011

Wildland Fire Litigation Conference

Ken Roye

San Diego, California

Cost: \$595

Litigants in wildland fires have to be thorough in their preparation, and a conference that caters to them has to be thorough in its approach to the issue. This conference addresses legal implications of wildland fires, including fire fighting cost recovery, fire and the Federal Tort Claims Act, non-intentional arson, and fire forensics. Power line fires, geospatial technology, and case studies from Australia and Southern California will also be discussed.

wildlandfirelitigation.com/index.html

April 18-22, 2011

2011 National Hurricane Conference

American Red Cross, National Hurricane Center, Federal Emergency Management Agency and others

Atlanta, Georgia

Cost and Registration: \$350

Hurricane preparedness on the U.S. coasts and tropical Pacific islands is an increasingly hot topic in the light of recent damage and the potential of an increased threat from climate change. The National Hurricane Conference provides emergency planners and managers the opportunity to learn from past landfalls, gathering information from other state-of-the-art programs.

www.hurricanemeeting.com/index.asp

April 26-27, 2011

Partners in Emergency Preparedness

Washington State University

Tacoma, Washington

Cost: \$400

This conference will discuss earthquake research, contingency planning, school preparedness, public health preparedness, and public information. Session topics include business continuity, pediatric disaster response plans, incident command for community organizations, and the National Commission on Children and Disasters' recommendations.

conferences.wsu.edu/emergencyprep

April 26-27, 2011

Emergency Action Planning for Dam Safety

Association of Dam Safety Officials

Denver, Colorado

Cost: \$250

This seminar will cover a number of considerations in dam emergency planning. Topics include creating and testing emergency action plans, developing inundation maps, and incident command basics. Several tabletop exercises will be offered.

www.damsafety.org/conferences/?p=2c64e9da-f8ea-4af7-bb3c-0351c0108865

May 1-5, 2011

Integrated Medical, Public Health, Preparedness and Response Training Summit

U.S. Department of Health and Human Services

Grapevine, Texas

Cost: \$450

An integrated pool of public health and medical responders is needed to serve communities in disasters. This conference will focus on building relationships between public health organizations and response workers, determining all-hazards approaches to public health, and increasing public health preparedness. Topics include standard of care during crises, using home care and hospice to increase surge capacity, mass fatality planning, and evacuating at-risk individuals.

www.integratedtrainingsummit.org



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

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

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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.

Staff

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 Nnenia Campbell.....Research Assistant
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 Deborah Thomas.....University of Colorado at Denver

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