

Planning for Post-Disaster Rebuilding: An Update from New Orleans

— an invited comment

Eighteen months after Hurricane Katrina's devastating landfall, most headlines in the local newspapers are still related to Katrina's impact and the region's attempt to recover. Infrastructure remains in shambles; basic services that are essential to a high quality of life are still spotty; and pre-Katrina problems with the economy, public education, and crime all seem to have been exacerbated by the storm.

The Unified New Orleans Plan (UNOP), initiated in September 2006 and now awaiting approval from the city government, attempts to provide a recovery roadmap for

residents, businesses, investors, and all branches of government. At the plan's core is a suite of recovery projects totaling \$14 billion that illuminates the gaps, to date, in both the public and private funds allocated toward New Orleans' recovery. The projects encompass nearly every urban system that must be jump-started following Katrina's devastating blow—from repairs to public facilities, infrastructure, and transportation; to rebuilding neighborhoods and housing in a more sustainable fashion. The plan also provides a strategic recovery framework with priorities and phasing—to be finalized by the city govern-

ment as funding is secured and implementation is initiated—that can help guide future investment decisions.

UNOP is the latest in a series of planning efforts that have proceeded sporadically during the 18 months since Katrina struck. In the storm's immediate aftermath, there was a widespread recognition that ambitious, long-range planning was necessary to address both the post-disaster recovery needs and the myriad, seemingly-intractable problems that had plagued New Orleans prior to the storm. Mayor Ray Nagin responded by convening an ad-hoc commission, called the Bring New Orleans Back (BNOB) Commission, that devised a series of high-level, subject-specific plans in January of 2006 to address a full spectrum of recovery and community improvement issues. By far, the most controversial of these was the Urban Planning Committee report, which endorsed the idea of shrinking the city's footprint and replacing certain low-lying neighborhoods with green space. The report also recommended that more detailed, neighborhood-based planning be conducted to evaluate the long-term viability of heavily-damaged neighborhoods. This next phase of the BNOB process did not materialize, as funding and political support for the controversial document faltered, but the concept of neighborhood-based planning endured.

In the spring of 2006, the New Orleans City Council stepped into the post-BNOB planning void and funded a neighborhood-based effort, called the New Orleans Neighborhoods Rebuilding Plan, which proceeded through the end of the summer. This process focused on the immediate needs of slightly more than half of the city's officially-recognized 73 neighborhoods – known as the “wet neighborhoods.” Essential to the plan's recommendations was an assumption that 100-year flood protection would be provided expeditiously to the entire city, and future flood risk would be reduced to a more acceptable level. In contrast to the BNOB plans, the New Orleans Neighborhoods Rebuilding Plan contained few recommendations for hazard mitigation and flood risk management and focused instead on restoring the neighborhood housing, infrastructure, and quality of life lost in Katrina.

By early summer 2006, it became clear that these and other previous planning efforts lacked either the political support or the comprehensiveness of other parish recovery plans that were being submitted to the Louisiana Recovery Authority, most of which had been prepared through the FEMA-led Emergency Support Function 14 (ESF-14) long-term recovery planning processes. (FEMA did conduct an ESF-14 planning process in Orleans parish from September 2005 until August 2006, but the resulting document has not been a major part of the city's planning debates.)

BNOB had produced a high-level (albeit controversial) framework for rebuilding, and the Neighborhoods Rebuilding Plan provided a more detailed set of recovery plans for a portion of the city's neighborhoods. In addition, many neighborhoods were continuing to organize and undertake planning efforts of their own, with the assistance of universities and consultants from around the country.

Finally, in late August 2006, New Orleans' mayor, City Council and City Planning Commission (CPC), and the Louisiana Recovery Authority signed a memorandum of understanding to support the development of the Unified New Orleans Plan. Funding for UNOP came mainly from the philanthropic community, largely through grants from the Rockefeller Foundation, the Greater New Orleans Foundation, and the Bush-Clinton Katrina Fund.

Highlights of the UNOP Process

New Orleans' CPC staff helped design the five-month UNOP process, using its Neighborhood (Recovery) Planning Guide (adopted by the CPC in June 2006) as a partial guide.

From the start, the process took a two-tiered approach to planning. A citywide planning team had two key charges: assessing the more systemic, citywide recovery needs, such as infrastructure recovery, and unifying the previous and ongoing planning efforts into one comprehensive Citywide Strategic Recovery and Rebuilding Plan. Another group of planning consultants worked at the “district level,” constructing District Recovery Plans for each of the city's 13 planning districts (administrative areas delineated by the CPC during the 1980s). Consultants were selected through a national “request for qualifications” process overseen by a panel of national planning experts. Citizens and neighborhood groups also had input into the selection of the district planning consultant teams.

Both the citywide and district teams followed a similar three-phase structure: (1) conducting a comprehensive recovery assessment; (2) developing and selecting recovery scenario preferences; and (3) constructing the recovery plans and prioritized list of recovery projects. The UNOP process also had an extensive communications component, including the project Web site (www.unifiedneworleansplan.org), newsletters, media relations, neighborhood meetings, and other innovative communication strategies to address the unique conditions of the project.

District planners held four rounds of meetings in each planning district of the city during four designated weekends. AmericaSpeaks, a nationally renowned non-profit focused on engaging citizens in public decision making, joined forces with UNOP to design and conduct three “community congresses” that brought together 300 to 2,500 New Orleanians (both locally and those still displaced by the storm) to provide input into the citywide planning process. Community congresses II and III were conducted as simulcast meetings in New Orleans, Houston, Dallas, and Atlanta, with many others linked via the internet at libraries and other meeting sites across the country.

In these congresses, residents from a variety of neighborhoods shared their views on what was best for the city “as a whole” and voted on priorities for flood protection, neighborhood stabilization, housing, infrastructure, public facilities, and public services. Throughout the process, the planning teams maintained a top-down and bottom-up interaction that, coupled with the broad citizen input,

helped establish the recovery scenario preferences and principles for the plans.

Risk-based Approach to Recovery Planning

The UNOP plans are developed around a strategic recovery framework that works to balance citizens' preferences with two key risks that could undermine the city's future and any recovery investments: the pace of repopulation and the risk of future flooding. As of January 2007, only half of the city's pre-Katrina population had returned, but forcibly shrinking the footprint to respond to a smaller population was not a politically palatable option. The plan proposes that the phasing of infrastructure and public facilities investment reflect post-Katrina population shifts. Through public investment decisions and direct financial assistance to residents and businesses, the plan seeks to "incentivize" the recovery of repopulating areas and the "clustering" of residents who reside in areas slow to repopulate.

Following Katrina, the U.S. Army Corps of Engineers (the Corps) set about repairing and enhancing storm-damaged levees and floodwalls; additional upgrades are scheduled for completion by the end of 2007. The U.S. Congress also directed the Corps to develop a project report for providing a category 5 level of protection for coastal Louisiana that includes a full range of flood control, coastal restoration, and hurricane protection measures. The report is scheduled for release later this year.

Throughout the UNOP process, district and citywide planners worked together to communicate the uncertainties in future protection plans and schedules, as well as the future risks of flooding in different parts of the city. At both the district meetings and the community congresses, citizens strongly endorsed having a more comprehensive flood risk management system that combines enhanced levee/floodwall protection with coastal wetlands restoration and that also provides the resources for citizens to better protect themselves through more effective building practices. The citywide plan advocates for securing permanent funding to upgrade the external flood control system of levees, floodwalls, and a restored coast, and it also proposes some key voluntary incentives for rebuilding that give residents more options to protect themselves. A proposed neighborhood stabilization program will encourage residents of areas where less than a quarter of the population has returned (also the areas that experienced the most acute flooding) to rebuild in clusters at higher elevations, which will help ensure vibrant neighborhoods and more efficient infrastructure costs in the context of a smaller overall population. The plan also calls for substantial incentives to encourage homeowners to either elevate their structures or reconstruct slab-on-grade structures to (at a minimum) the latest FEMA advisory base flood elevations released in April 2006. Funding for these programs still needs to be secured as part of implementation, and the plan recommends that the state's hazard mitigation and Community Development Block Grant (CDBG) funds be considered as potential sources.

Next Steps and Approval Process

As of mid-March 2007, New Orleans' CPC has held four public hearings on the draft citywide plan, and UNOP consultants are now responding to the comments received and will submit a final draft to the CPC for a decision in April. Under New Orleans' Home Rule Charter, the CPC is charged with preparing and recommending post-disaster reconstruction plans to the City Council. If the citywide plan is approved, the city can then submit it to the state and federal governments and any other investors it chooses to pursue. Citizens are also calling for updates to the city's Master Plan and Comprehensive Zoning Ordinance so that both documents better reflect the planning principles and policies, programs, and projects proposed in both the citywide and district plans.

Leadership for the recovery has also now been transferred to the city's newly-designated Office of Recovery Management. In December 2006, Mayor Nagin appointed Dr. Ed Blakely as the city's new Executive Director for Recovery Management to coordinate and direct recovery efforts. Blakely has now staffed the Office of Recovery Management and has already started developing action plans that are based, in part, on the UNOP plans. He has also begun laying the groundwork to form a parish-wide recovery council—one of the principal implementation actions called for in the citywide plan. To help coordinate and facilitate the recovery effort, this council will include representatives from all key city departments and other parish agencies with major recovery and rebuilding responsibilities.

It is important that UNOP not be viewed as an end point. Rather, it is a critical milestone along the long road to recovery, and in the case of the recovery underway in New Orleans, most of the journey lies ahead. ⚡

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Resources

1. Boston, B., and V. Herr. 2006. Category 5: Louisiana Coastal Protection and Restoration (LACPR) Workshop Transcripts. For U.S. Army Corps of Engineers, New Orleans District. By Group Solutions, Inc., Alpharetta, GA.
2. City of New Orleans, Home Rule Charter, Sections 5-402 and 6-104. www.nocitycouncil.com/cityCodes.asp.
3. Horne, J., and B. Nee. 2006. "An Overview of Post-Katrina Planning in New Orleans." Unpublished manuscript. www.nolaplans.com.
4. Unified New Orleans Plan, "Draft Citywide Strategic Recovery and Rebuilding Plan, January 29, 2007." www.unifiedneworleansplan.org.

Role Abandonment in Disaster: Should We Leave This Myth Behind?

The New Orleans Police Department was reportedly unable to account for 240 officers of its 1,450-member police force during Hurricane Katrina and the aftermath. Fifty-one officers were fired for “abandoning their posts,” and almost as many resigned from the force following the disaster. How do we in the disaster management community make sense of role abandonment?

Role abandonment has been discussed in the disaster literature since the 1950s. Several early studies confirmed that emergency workers suffered psychological strain due to the conflicting demands of their professional duties and their desire to take care of their families. However, these studies also reported that role conflict and strain did not lead emergency workers to abandon their professional responsibilities. In 1976 Dynes and Quarantelli studied over 100 disasters and interviewed more than 2,500 organizational officials and found that role conflict was not a serious problem that created a significant loss of manpower. With the exception of Hurricane Katrina and the New Orleans Police Department, there have been no documented reports of widespread role abandonment during disasters in the United States. Nevertheless, belief in this myth by the public and even government officials continues and has been reinforced through popular culture and erroneous reporting by the mass media.

Despite the fact that role abandonment has historically not occurred, some social scientists have argued that the emergency management community should remain alert to the possibility that it might occur. According to Dynes (1986), the nature of a disaster might affect role conflict and thus role abandonment, suggesting that it could be exacerbated in slow onset or diffuse disasters where ambiguity is a key feature. He also observed that the lack of emergency planning could create more role conflict for emergency workers.

Some analysts have hypothesized that new types of emergencies might lead to greater role abandonment. Anti-nuclear power advocates raised this issue when seeking to stop the licensing of nuclear power plants.

Other analysts have argued that a distinction needs to be drawn between the responses of emergency workers and those of other workers with little or no training who were pressed into the performance of emergency functions.

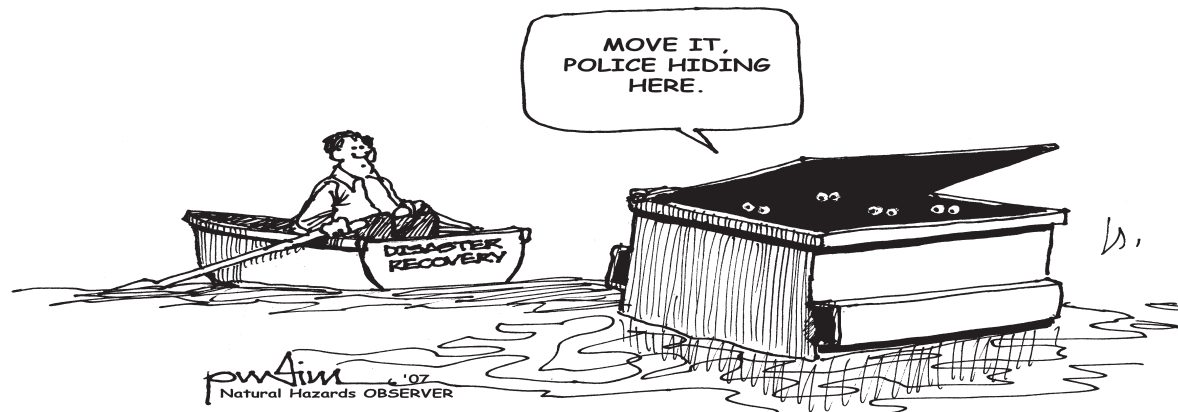
The New Orleans Anomaly

In their study of disaster myths and Hurricane Katrina, Tierney et al. (2006) revealed the “distorted images disseminated by the media and public officials” that served to justify calls for sending in the military. These images of lawlessness and the breakdown of civil authority reinforced the role abandonment myth. But the images focused on the performance of the New Orleans Police Department and ignored the larger context of the disaster. If role abandonment was a problem for the police, why wasn't it a problem for other first responders in New Orleans? And why did the role abandonment problem not extend to other hurricane-affected areas? What, if any, extenuating circumstances might explain some of the absences? These were not questions that the media were asking.

Certainly the failure of 17% of the New Orleans police force to report for duty during the Katrina emergency exacerbated the problems of public order, but it hardly constituted “widespread” role abandonment. Much of the absenteeism was, in fact, a function of transportation problems when many parts of the city were inaccessible after hurricane landfall and the subsequent levee failure. Perry and Lindell (2007) noted that the institutional communications failure and breakdowns within the local incident command system exacerbated staffing problems.

Practice Considerations

Belief in the myth of role abandonment has serious implications for disaster preparedness and response. For example, widespread belief in this myth by the general public and organizational actors can create subtle, yet



powerful, messages that emergency management systems cannot be relied on to perform effectively, that prior planning is useless in the face of such unreliability, and that the aftermath of disaster will be a Hobbesian world of “each against all.”

For many emergency response organizations, the opposite of role abandonment is often true. Disaster and emergency workers, particularly in leadership positions, often ignore personal needs and family concerns and work long hours with infrequent breaks. Within the disaster community, this behavior is typical and often expected. Encouraging family preparedness for emergency workers has become a routine strategy used to complement organizational preparedness, and “on-call” availability is ingrained in emergency response organizational culture and training.

Increasing emphasis on continuity of operations planning (COOP) for government, particularly since the tragedy of 9/11, is helping to ensure that government departments and agencies can perform essential functions and rapidly resume operations following a disaster. As part of the COOP planning process, clearly defining lines of succession and delegations of authority helps reduce ambiguity and uncertainty and thereby lessen role strain and the potential for conflict.


Future Needs

Role abandonment has not been a problem during disasters in the United States. Although role conflict makes for good drama in feature films or made-for-TV movies, the reality is that advance planning and family preparedness has characteristically minimized potential problems for emergency workers.

Nevertheless, given the increasing attention to catastrophic disaster potential and unfamiliar disaster agents related to terrorism or public health emergencies, it may be time to institute a systematic review of role conflict, strain, and abandonment in this new light. Bearing in mind that the last serious attention given to the subject of role conflict and role abandonment in disaster occurred over 30 years ago, important generational differences or workforce issues may now be in play. For example, how has increased privatization affected the delivery of emergency services? How have changes in residency requirements for governmental workers affected contingency planning for disaster? (Many cities and counties no longer require emergency workers to live in the employing jurisdiction.) Will workers employed by private contractors exhibit the same commitment as workers in the public sector? Could there be generational differences among emergency workers that make role conflict or strain more problematic for one generation than for another? For example, Zemke et al. (2000) noted that today's age-diverse workplace has the potential for significant problems with respect to the clash of generational values, work ethics, and styles. How does this context affect emergency response organizations?

Recent studies have documented that the disaster agent may be an important factor in role conflict and role

abandonment. Balicer et al. (2005) surveyed local public health workers and found that nearly half the respondents stated they would not report to duty during an influenza pandemic, with a greater likelihood of reporting for clinical workers than technical and support staff. Qureshi et al. (2005) polled 6,428 workers from 47 health care facilities in the New York City metropolitan region about their “ability” and “willingness” to report to work during various catastrophic events. Health care workers said they were most willing to report to work during mass casualty incidents (86%) and environmental disasters (84%), and were least willing to report during a SARS outbreak (48%), radiological event (57%), or smallpox epidemic (61%). Fear and concern for family and self and personal health problems were the most frequently cited barriers to “willingness.” These findings certainly have implications for planning and preparedness efforts.

As with any effective disaster management strategy, the goal is to anticipate problems and design strategies to support emergency personnel in the execution of their duties. The continued pursuit of knowledge about workforce performance in emergency situations, including improved understanding of role strain and conflict, is always timely and appropriate in the face of larger disasters and emerging threats. But this planning needs to be based on solid empirical research and not a myth. 

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References

1. Foster, M. 2005. “New Orleans police fire 51 for desertion.” *Associated Press*, October 31.
2. Balicer, R., S.B. Omer, D.J. Barnett, and G.F. Everly, Jr. 2006. Local public health workers’ perceptions toward responding to an influenza pandemic. *BMC Public Health*. www.biomed-central.com/1471-2458/6/99.
3. Dynes, R., and E.L. Quarantelli. 1976. “The Family and Community Context of Individual Reactions to Disaster.” In *Emergency and Disaster Management: A Mental Health Sourcebook*, H. Parad, H.L.P. Resnick, and L.G. Parad (eds.), 231-245. Bowie, MD: The Charles Press Publishers, Inc.
4. Dynes, R. 1986. “The Concept of Role in Disaster.” In *Sociology of Disaster: Contributions of Sociology to Disaster Research*, R. Dynes and C. Pelanda (eds.). Milan, Italy: Franco Angeli.
5. Perry, R.W. 1991. “Managing Response Operations.” In *Emergency Management: Principles and Practice for Local Government*, T. Drabek and G. Hoetmer (eds.). Washington, DC: ICMA.
6. Perry, R.W. and M.K. Lindell. 2007. *Emergency Planning*. Hoboken, NJ: John Wiley & Sons, Inc.
7. Qureshi, K., et al. 2005. Health care workers’ ability and willingness to report to duty during catastrophic disasters. *Journal of Urban Health* 82 (3): 378-88.
8. Tierney, K., C. Bevc, and E. Kuligowski. 2006. Metaphors matter: Disaster myths, media frames, and their consequences in Hurricane Katrina. *The ANNALS of the American Academy of Political and Social Science* 604 (1): 57-81.
9. Zemke, R., C. Raines, and B. Filipczak. 2000. *Generations at Work*. New York, NY: American Management Association.

New Quick Response Reports from the Natural Hazards Center

With funds from the National Science Foundation, the Natural Hazards Center offers social scientists small grants to travel to the site of a disaster soon after it occurs to gather valuable information concerning immediate impact and response. Grant recipients are then required to submit reports of their findings, which the Center posts online. Two new Quick Response reports are now available at www.colorado.edu/hazards/qr/qrrepts.html.

QR189 The Emergency Management Response to Hurricane Katrina: As Told by the First Responders—A Case Study of What Went Wrong and Recommendations for the Future, by Henry W. Fischer, Kathryn Gregoire, John Scala, Lynn Letukas, Joseph Mellon, Scott Romine, and Danielle Turner. 2006. This research team interviewed scores of first responders involved in the recovery of Hurricane Katrina. They concluded that the inadequate response to the storm shows that lessons from previous disasters remain unlearned. In this report, the researchers also catalog many conditions that, according to the emergency management professionals, stymied the response (e.g., a fear of getting hurt, the influx of untrained volunteers, a lack of planning for pets, and poor intergovernmental coordination). To deal with these recurring problems, the researchers propose the adoption of a uniform disaster scale, which would prepare practitioners to successfully mitigate the challenges most likely to be faced based on the disaster category encountered.

QR190 Community Impacts of Hurricane Ivan: A Case Study of Orange Beach, Alabama, by J. Steven Picou and Cecelia M. Formichella. 2006. This research documents the economic, social, and psychosocial impacts of Hurricane Ivan on the community of Orange Beach, Alabama. The team found that eight months after the hurricane's landfall, residents of Orange Beach still exhibited a high level of psychosocial distress, and social problems within the community were still significant. The social impacts witnessed include, among others, the feelings that the community would "never be the same," a loss of trust in others, and increased family conflict.



ASFPM Goes to College

The Association of State Floodplain Managers (ASFPM) is creating an "Academic Discussion Group" to promote the academic preparation of future floodplain managers. The discussion group would be composed of ASFPM members who presently teach floodplain management courses at the university level, as well as other individuals who teach complementary university-level courses and/or would like to promote course offerings at that level.

The group, as envisioned, would provide opportunities for participants to exchange course syllabi, discuss course content, share research needs, discuss policy and management approaches, and provide general academic support to one another and to the academic community at large. Membership would not be restricted to ASFPM members. In fact, the organizers believe the group will be enriched if other interested individuals are included.

The association is currently trying to identify those interested in participating or assisting in the work of this discussion group, as well as those who are already teaching floodplain management-related courses at the college or university level. Anyone who can assist in this endeavor should visit the ASFPM Web site at www.floods.org and click on "Floodplain Academic Discussion Group" to provide suggestions. For more information, contact George Riedel, Deputy Executive Director, ASFPM, (608) 274-0123, george@floods.org.

Call for Papers

The *Natural Hazards Review* is currently seeking manuscripts for publication in upcoming issues. The journal publishes original, peer-reviewed papers on all aspects of natural hazards loss reduction. Articles containing detailed case studies are complemented by those reporting original research findings to describe both practical projects and the latest cutting-edge knowledge on significant hazards issues.

Manuscript submissions, editorial inquiries, comments, or suggestions may be sent to the American Society of Civil Engineers, Journals Production Department, 1801 Alexander Bell Drive, Reston, VA 20191. Additional information, including complete manuscript preparation instructions, is available online at <http://scitation.aip.org/nho/>.





Washington Update

U.S. Tsunami Warning and Education Act Passed

On December 20, 2006, President Bush signed into law H.R. 1674, the "Tsunami Warning and Education Act," designed to strengthen tsunami detection, forecasting, warning, and mitigation in the United States and abroad. The Act authorizes the National Oceanic and Atmospheric Administration (NOAA), through the National Weather Service (NWS), to operate a tsunami detection, forecasting, and warning program for the Pacific and Arctic Ocean regions, as well as for the Atlantic Ocean, Caribbean Sea, and Gulf of Mexico region.

It also directs the NOAA Administrator to maintain or establish a Pacific Tsunami Warning Center in Hawaii, a West Coast and Alaska Tsunami Warning Center in Alaska, and additional centers to be determined by the NWS. The centers' responsibilities will include data monitoring, earthquake evaluation, and data dissemination to researchers. Over five years, \$135 million will be allocated to increasing the number of deep-ocean buoys used to detect potentially devastating waves. The proposed Deep-Ocean Assessment and Reporting of Tsunami (DART) buoy system will have a final array of approximately 24 buoys in the Pacific Ocean, Atlantic Ocean, and Caribbean Sea by 2012.

The Act also provides for increased emphasis on tsunami education and outreach programs, a key recommendation of expert witnesses who testified at a January 26, 2005, Science Committee hearing. The witnesses urged a greater focus on educating the public on how to respond in the event that a tsunami warning is issued. For links to the full text of H.R. 1674, see <http://thomas.loc.gov>.

Federal Research Plan Focuses on the Future of Hurricane Forecasting

At the 61st Interdepartmental Hurricane Conference, held in New Orleans in early March 2007, federal agencies involved in hurricane research released a report on the future of hurricane forecasting capabilities titled *Interagency Strategic Research Plan for Tropical Cyclones: The Way Ahead*. The plan, compiled by the Office of the Federal Coordinator for Meteorological Services and Supporting Research, identifies areas within the field of hurricane-related sciences that need research and focuses on transferring this research into operations.

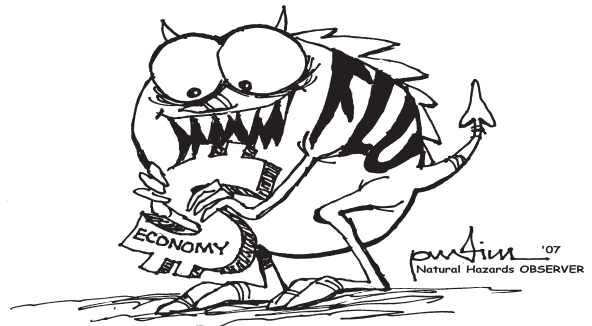
The strategic research plan presents a comprehensive strategy that was developed over the past two years by the staff at the Office of the Federal Coordinator for Meteorology (OFCM) and the Joint Action Group for Tropical Cyclone Research. The plan's authors began by reviewing the tropical cyclone research and development community and then examined the current capabilities and limitation of the nation's tropical cyclone forecast and warning system. They summarized the operational needs

of the tropical cyclone forecast and warning centers and planned capabilities to meet the needs. With these needs in mind, the strategic research plan identifies tropical cyclone research priorities and presents a comprehensive roadmap of activities to further improve the effectiveness of the nation's tropical cyclone forecast and warning service during the next decade and beyond.

The plan makes recommendations for improved tropical cyclone reconnaissance, surveillance, and observation through manned and unmanned vehicles, space-based platforms, remote sensing, and other forms. In addition to identifying research needed in the atmospheric and oceanic sciences, the strategic research plan also includes areas of research that are needed in social sciences to include the warning process, decision making, behavioral response, and social impacts.

An OFCM-sponsored working group with representation from all applicable agencies will be formed to begin implementing the recommendations, including identification of funding strategies.

The full report can be found online at www.ofcm.gov/p36-isrtc/fcm-p36.htm.



Flu Pandemic Could Spark U.S. Recession

A new study by the Trust for America's Health, a nonpartisan, nonprofit organization, estimates that a pandemic in the United States would cause 87.5 million people to miss work for three weeks, which could cause the U.S. gross domestic product to drop by more than 5.5%, resulting in economic losses totaling \$683 billion. The report, titled *Pandemic Flu and the Potential for U.S. Economic Recession*, states that a severe flu outbreak would make at least 30% of the population sick (90 million people) and would kill at least 2.25 million people. The study looked at potential impacts on each state and projected that the average state would experience a 5.5% decline in its economy. The Trust for America's Health based its conclusions on studies by the Congressional Budget Office, the Australian National University/Lowry Institute,

and BMO Nesbitt Burns, an investment firm. The organizations considered variables such as the severity of the flu strain, lost labor productivity, and the epidemic's impact on health care and the demand for products and services. To view the full report, visit <http://healthyamericans.org/reports/flu recession/>.



U.S. Army Corps of Engineers Reveals Locations of Problematic Levees

In February, after completing its notification of levee owners, the U.S. Army Corps of Engineers released the locations of levee units nationwide with unacceptable maintenance inspection ratings. An unacceptable maintenance rating means a levee has one or more deficient conditions that could prevent the project from functioning as designed. Examples of maintenance deficiencies include animal burrows, erosion, tree growth, movement of floodwalls, or faulty culvert conditions.

The Corps inspects some 2,000 levee units annually, including projects built and maintained by the Corps, projects built by the Corps and transferred to a local owner to operate and maintain, and non-federal projects built by a local community. The latter two categories, if properly maintained and operated by the owner, are eligible for federal rehabilitation assistance. After conducting the inspections and entering the data, local Corps district offices review the results with the local levee owner responsible for operations and maintenance, ensuring that the levee owner understands the deficiencies and the consequences if not corrected.

“Our ultimate goals are reduced risk and increased public safety through an informed public empowered to take responsibility for its safety,” said Maj. Gen. Don T. Riley, Director of Civil Works. “We are working closely with federal, state, and local partners to inform the public so they understand the risks associated with living and working behind levees. This is best accomplished at the

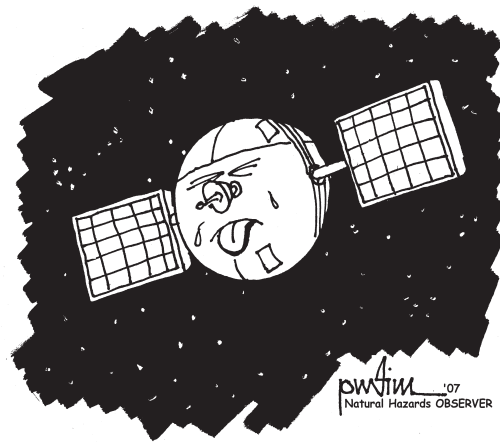
local level where levee activity most directly impacts the public.”

The national levee inventory database is dynamic and is updated regularly; therefore, it is subject to change as new inspections take place and levee owners address deficiencies.

To view the complete list of levee units, see www.hq.usace.army.mil/cepa/releases/leveelist.pdf. For more details about the National Levee Safety Program, see the fact sheet at www.hq.usace.army.mil/cepa/releases/levee safetyfactsheet.pdf.

New Senate Subcommittee on Disaster Recovery

Senate Homeland Security and Governmental Affairs Committee Chairman Joe Lieberman (ID-Connecticut) announced the formation of two subcommittees that will focus on U.S. emergency preparedness and disaster planning. The Disaster Recovery Subcommittee, chaired by Senator Mary Landrieu (D-Louisiana), will look into issues related to the government's work helping communities recover from disasters, particularly Hurricanes Katrina and Rita. The State, Local, and Private Sector Preparedness and Integration Subcommittee, chaired by Senator Mark Pryor (D-Arkansas), will oversee Department of Homeland Security efforts relating to state and local fusion centers, state and local law enforcement grants, and integration of private sector efforts to prepare for and respond to emergencies.



Aging NASA Satellite Could Threaten Hurricane Forecasting Accuracy

A NASA satellite that plays a key role in hurricane forecasting could be in the final phases of its life. The Quick Scatterometer (QuikSCAT) was one of several NASA satellites that provided important details about Hurricane Katrina's storm structure and strength throughout her life cycle, which aided forecasters and emergency managers. The shear power of storms like Katrina makes it difficult to obtain accurate wind and

rainfall measurements, but scatterometers like the Sea-Winds instrument onboard the QuikSCAT satellite help overcome this problem. By sending energy through the atmosphere to the ocean surface and measuring the reflection or scattering effect, meteorologists can determine a storm's wind speed and direction. While other radar-based satellites can measure wind speed, only the scatterometer can measure the wind vector, or the speed and direction together.

Data derived from ocean scatterometers are vital to studies of air-sea interaction and ocean circulation and their effects on weather patterns and global climate. The data are also useful in studying unusual weather phenomena, such as El Niño, that play a role in regulating global climate.

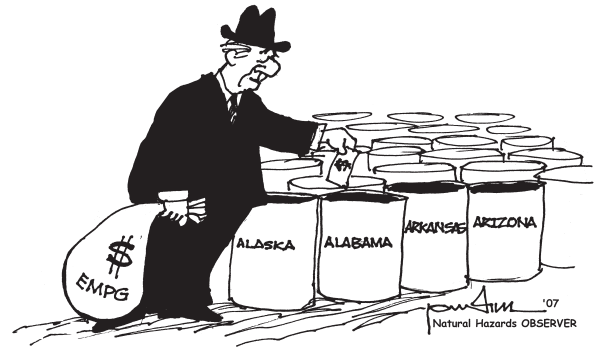
Computer modeling of global atmospheric dynamics for the purpose of weather forecasting has become an increasingly important tool to meteorologists. Scatterometer data, with wide swath coverage, have been shown to significantly improve the forecast accuracy of these models. Combining scatterometer data of ocean surface wind speed and direction with measurements from other scientific instruments enables scientists to better understand the mechanisms of global climate change and weather patterns.

QuikSCAT was designed to last five years and is now in its seventh year of operation, with no immediate plans to replace it. If the satellite fails, hurricane forecasting accuracy could suffer, and the loss in accuracy could translate into larger areas being placed under hurricane warnings.

EPA Has Authority to Regulate Auto Emissions

On April 2, 2007, the U.S. Supreme Court issued a landmark ruling that the U.S. Environmental Protection Agency (EPA) has the authority to regulate greenhouse gases in automobile emissions. In addition, the court ruled that the EPA cannot dodge its responsibility to regulate these emissions unless it provides a scientific basis for the assertion that greenhouse gases do not contribute to climate change. The 5-4 decision was a strong message to the Bush administration, which has stated that the Clean Air Act does not grant the EPA the right to regulate carbon dioxide and other heat-trapping emissions. Among the many court cases awaiting the Supreme Court's decision is one related to the agency's refusal to regulate carbon dioxide emissions from power plants, which is now pending in federal appeals court.

According to the U.S. Department of Energy, the United States produces 22% of the planet's human-made carbon dioxide emissions. In a report released earlier this year (see March 2007 *Observer*), the Intergovernmental Panel on Climate Change (IPCC) concluded that "most of the observed increase in globally averaged temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations." Although the ruling does not force the EPA to impose new regulations on auto emissions, it will likely face further legal actions if it fails to do so.



DHS Awards \$194 Million to States for Emergency Management

The U.S. Department of Homeland Security (DHS) has released \$194 million to help states and local governments prepare and implement emergency management activities through the Emergency Management Performance Grant (EMPG) program. Emergency managers have been awarded more than \$750 million since fiscal year 2004 through the program.

State emergency management agencies use EMPG funds to enhance their emergency management capabilities in a range of areas that include planning, equipping, and training; conducting exercises; and providing for all-hazards emergency management operations. In addition, EMPG funds are used to pay for personnel who write plans, conduct training and exercise programs, maintain emergency response programs, and educate the public on disaster readiness. For more information on the fiscal year 2007 EMPG, including a list of grant allocations by state, please visit www.dhs.gov.

DHS Provides \$34.6 Million for First Responder Equipment and Training Programs

The U.S. Department of Homeland Security (DHS) awarded \$34.6 million to first responders across the nation to fund equipment and training programs as part of the fiscal year 2006 Commercial Equipment Direct Assistance Program (CEDAP). CEDAP offers equipment in the following categories: personal protective equipment; thermal imaging, night vision, and video surveillance tools; chemical and biological detection tools; information technology and risk management tools; and interoperable communications equipment. The program also focuses on smaller communities and metropolitan areas not eligible for the Urban Areas Security Initiative grant program. Awardees are required to receive training on their awarded equipment either on-site or at a CEDAP training conference. For more information on CEDAP and other DHS grant programs visit www.dhs.gov.



Drought in Changing Environments: Creating a Roadmap, Vehicles, and Drivers

Drought is among the most damaging and least understood of all natural hazards. It is a normal part of climate, yet it is perceived as infrequent and random. Although some droughts last a single season and affect only small areas, the paleoclimate record shows that droughts have sometimes continued for decades and have impacted millions of square kilometers. In an average year during the past century, approximately 14% of the United States has been affected by severe or extreme drought, although as much as 65% was affected during the Dust Bowl (1931 to 1935). In recent years, up to 35% of some U.S. regions have experienced drought conditions.

Droughts have caused thousands of deaths and hundreds of billions of dollars in damage. The 1988 U.S. drought cost an estimated \$40 billion, with losses related to water resources, agriculture, health, transportation, utilities, and the environment. In 1991-1992, parts of Africa suffered the worst dry-spell of the twentieth century when drought covered a region of 6.7 million square kilometers and affected 24 million people. So memorable were the impacts of major drought events in regions such as the U.S. Great Plains and the Nordeste in Brazil that they are embedded in literature and cultural memory.

Drought risk management is an important component of disaster reduction programs and public water resources policy. Yet, rather than emphasizing drought preparedness and mitigation, most countries currently manage drought through reactive, crisis-driven approaches. Although recent drought-related disasters have contributed to a sense of urgency, drought has not received commensurate attention within the natural hazards research community.

Economic Impacts of Drought

In 1995, FEMA estimated that U.S. droughts resulted in losses of \$6-8 billion each year. Although FEMA does not provide drought relief, this figure alone was approximately equal to the total average emergency relief FEMA dispensed. In the decade that followed, drought-related losses were certainly higher, although reliable loss estimates are difficult to determine. For example, agricultural losses amounted to an estimated \$4 billion a year over the last 10 years, and wildfire suppression costs have surpassed \$1 billion for each of the last four years, but it is unclear how much of these costs are directly attributable to drought. Confounding economic estimates of drought impacts is the interplay between losses and gains in different sectors aggregated over large areas. Little or no official loss estimates exist for the energy, recreation/tour-

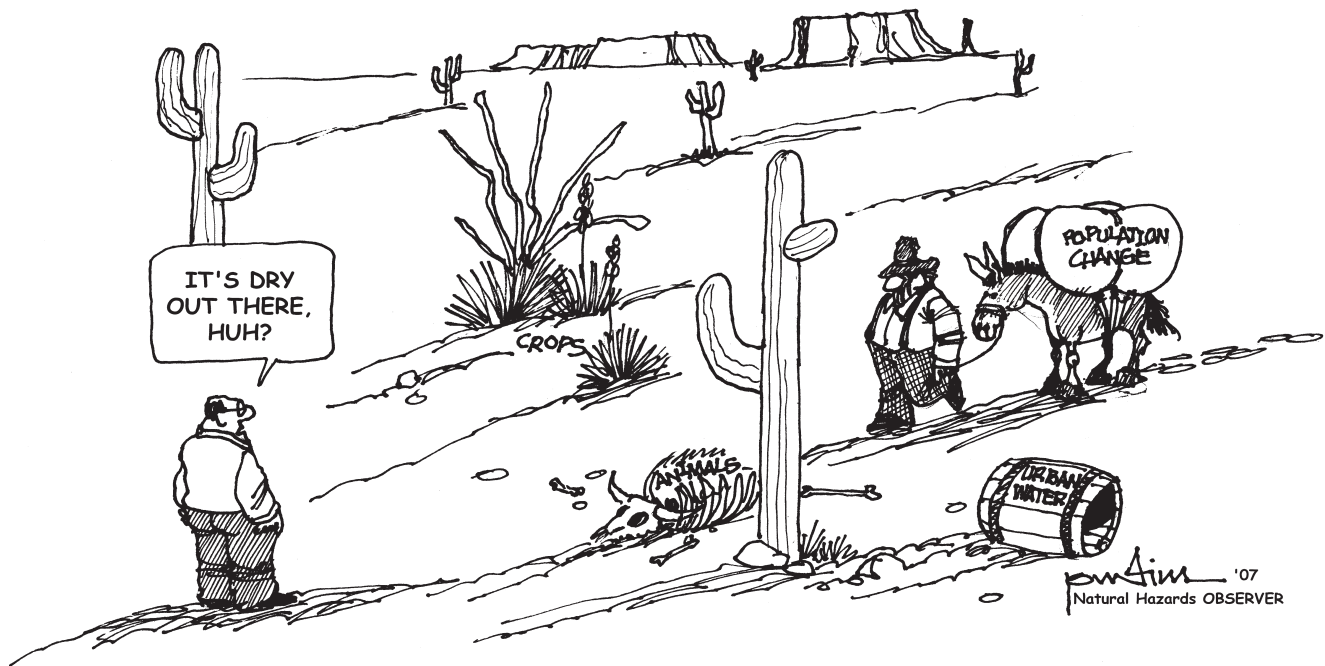
ism, timber, or environmental sectors, although recent drought impacts within these sectors are demonstrably large.

Given that a drought occurs when water supply is insufficient to meet water demand, drought impacts are evaluated relative to the demand from environmental, economic, agricultural, and cultural uses. Therefore, the impacts of past droughts have been difficult to estimate. This problem results from the nature of drought, which is a phenomenon with slow onset and demise that does not create readily-identified and discrete short-term structural impacts. Drought may be the only natural hazard in which the secondary impacts can be greater than the more identifiable primary impacts, such as crop damage. Impacts continue to be felt long past the event itself as secondary effects cascade through economies, ecosystems, and livelihoods.

Environmental Change and Drought: The Colorado River Example

The Colorado River supplies much of the water needs of 7 U.S. states, 2 Mexican states, and 34 Native American tribes, which together constitute a present population of 25 million and a projected population of 38 million by the year 2020. Historically, droughts affected settlements and migration of the Puebloan peoples (previously referred to as the Anasazi). The drought of 1861-1864 played a major role in the introduction of the prior appropriation system for allocating water rights in the western United States, and westward expansion and drought spurred the development of hundreds of reservoirs and irrigation projects. Under Franklin D. Roosevelt's New Deal government, record droughts in the 1930s led to mitigation policies that involved land-use controls, conservation practices, and more reservoirs, furthering the structural approach to drought response.

The allocation of Colorado River water to states was based on flows during 1905 to 1925—the wettest period in over 400 years. Since 1995, 30% of the western United States has experienced severe drought. In the Colorado River Basin, flows from 2000 to 2004 averaged 9.9 million acre-feet (maf) per year, lower than the driest period during the Dust Bowl years when flows averaged 11.4 maf. In 2005, the combination of low antecedent soil moisture and the warmest January-July period on record (increasing snow sublimation and evaporation) resulted in flows that were 25% below average. At the same time, the southwestern United States is experiencing very rapid growth with attendant social, economic, and environmen-



tal demands on water resources. Lake Mead and Lake Powell, the two major reservoirs on the Colorado River, are currently 54% and 49% full, respectively. As a result of the ongoing drought and water resources extraction, it is estimated that 15 to 20 years of average Colorado River annual flows are required to refill those reservoirs.

By 2050, the average moisture conditions in the southwestern United States could rival the worst conditions observed during the 1953-1956 and the 1999-2004 droughts. These changes will occur as a consequence of increased temperatures, even if precipitation levels remain fairly constant. All model scenarios indicate that within 20 years, Colorado River flows at Lees Ferry will be insufficient to meet current consumptive water resource demands, and Colorado River Compact requirements may not be fulfilled 25-40% of the time.

Empirical evidence and experience show that critical conditions already exist. Climate variability and change, together with increasing development pressures, will result in drought impacts that are beyond our institutional experience and will significantly exacerbate conflicts among water users.

Creating a Roadmap for Drought Risk Management: Lessons Learned and Not Learned

Developing strategies for effective drought management is critical for sustainable development and for economic and environmental well-being. To begin to address this need, an international workshop titled “Managing Drought and Water Scarcity in Vulnerable

Environments—Creating a Roadmap for Change in the United States” was held in 2006. The meeting was sponsored by the Geological Society of America (GSA) in partnership with 20 other scientific organizations. A prime objective of the meeting was to solicit ideas for the forthcoming report titled *Managing Drought in the United States: A Roadmap for Science and Public Policy*, available in June 2007 from the GSA. Meeting participants stressed the urgency of the following measures:

- Improving fundamental understanding of drought, including potential changes in drought frequency, severity, and duration.
- Improving understanding of changes in societal vulnerability to drought resulting from population growth, urbanization, land use changes, and other factors.
- Improving drought risk management through enhancements in technology, data, and communication.
- Developing national drought policies that reduce societal vulnerability to drought through monitoring, risk assessment, planning, and interagency coordination.
- Creating a new ‘National Water Culture’ that would engender the development of sustainable water management practices to meet societal water needs.

Effectively communicating scientific findings and engaging the public in environmental decision making and in local water resources policy were emphasized as key goals throughout the conference. Local organizations, such as cooperative extensions and citizens’ groups, were identified as effective venues for direct communication

of water resources science with decision makers and the public.

But communication between researchers and practitioners, while necessary, is not sufficient. Current crisis-driven drought management approaches create significant impediments to proactive planning, as well as institutional and behavioral barriers to change. The challenge of creating a collaborative framework and implementing adaptive strategies, at scales ranging from local communities to watersheds to hydrologic basins spanning multiple states, requires a broad range of science policy responses.

To support the Roadmap, a more risk-based management approach to drought planning at the national and regional levels is urgently needed. In this context, an effective risk management approach would include a timely and user-oriented early warning system and a focal point for dialogue between leadership and those affected. The National Integrated Drought Information System (NIDIS) is a major step in this direction.


The Dusty Road Ahead: Driving the NIDIS Vehicle

Experience shows that effecting change in risk management is most readily accomplished when three conditions are met: (1) a focusing event (climatic, legal, or social) occurs and creates widespread public awareness; (2) leadership and the public are engaged; and (3) a basis for integrating monitoring, research, and management is established. The drought that began in 1999 has served as a significant focusing event for the states and communities of the western United States. After the severe drought of 2002, it was clear that a better process was needed to integrate federal, state, and local risk assessment and early warning needs for drought impact mitigation. Those needs were articulated in the Western Governors Association Report titled *Creating a Drought Early Warning System for the 21st Century: The National Integrated Drought Information System*. The National Integrated Drought Information System Act of 2006, signed by President Bush in December 2006, builds on longstanding efforts among agencies and institutions that had been historically focused on drought risk assessment and response.

NIDIS creates an interagency and interstate coordination program led by the National Oceanic and Atmospheric Administration to: (1) improve public awareness of drought and attendant impacts; (2) improve the capacity of counties and watershed organizations to reduce drought risks proactively; and (3) provide guidance on filling information gaps including those for monitoring, forecasting, and impact assessments. NIDIS is being implemented by a collaboration of federal, state, academic, and local representatives. New tools for analysis and decision making include a Web-based portal to the Drought Monitor and other drought-relevant data streams that will also aid development of region-specific, user-defined event response thresholds.

Partnering with local communities on drought risk management and involving them in all stages of drought impact mitigation is vital and resource-intensive. Over the

next two to five years, NIDIS will focus on coordinating at-present disparate federal, state, and local drought early warning and planning, scaling up from county to watershed in pilot regions. As part of this effort, NIDIS will serve as an integrated knowledge center and clearinghouse by identifying, collecting, and disseminating existing innovations among all involved administrative units, including those at the national, regional, watershed, state, county, and private sector levels. NIDIS will also provide an early warning information system for drought in the context of longer-term risks in the twenty-first century.

The road to effective drought risk management in the context of social and environmental changes will be long and dusty and will offer few rest stops. With the Roadmap to help frame knowledge, perception, and policy decisions, and with the NIDIS as an interactive vehicle to guide federal, state, and local drivers, we can progress towards more efficient and equitable management of our increasingly scarce water resources. 

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Geological Society of America

References

1. Andreadis, K. M., and D. P. Lettenmaier. 2006. Trends in 20th century drought over the continental United States. *Geophysical Research Letters* 33, L10403, doi:10.1029/2006GL025711.
2. Christensen, N.S., A.W. Wood, N. Voisin, D.P. Lettenmaier, and R.N. Palmer. 2004. The effects of climate change on the hydrology and water resources of the Colorado River Basin. *Climatic Change* 62: 337-363.
3. Diodato, D.M., D.A. Wilhite, and D.I. Nelson. 2007. Managing drought in the United States: A roadmap for science and public policy. *EOS* 88 (9).
4. Pulwarty, R. 2003. Climate and water in the West: Science, information and decision-making. *Water Resources* (update) 124: 4-12.
5. Riebsame, W., S. Changnon, and T. Karl. 1991. Drought and Natural Resources Management in United States. Boulder, CO: Westview Press.
6. Western Governors Association. 2006. *Creating a Drought Early Warning System for the 21st Century: The National Integrated Drought Information System*. Denver: Western Governors Association.
7. Wilhite, D., M. Sivakumar, and D. Wood. 2000. Proceedings of an Expert Group Meeting held September 5-7, 2000, Lisbon, Portugal. World Meteorological Organization Report.
8. Wilhite, D., and R. Pulwarty. 2005. Drought, crises and water management. In *Drought and Water Crises: Science, Technology and Management*, D. Wilhite (ed), 289-298. Taylor and Francis Press.

2006 PERISHIP Fellows Announced

The Natural Hazards Center, the Public Entity Risk Institute (PERI), and Swiss Re are pleased to announce the 2006 PERISHip Fellows in Hazards, Risk, and Disasters. The PERISHip program was designed to foster the advancement of knowledge in the interdisciplinary field of hazards, which relies on a continuous influx of young scholars committed simultaneously to their own disciplines and to the more practical, applied aspects of the field. The program recognizes this unusual combination and encourages pursuit of these interests by providing financial support that enables scholarly work that will ultimately serve to advance knowledge in the hazards field.

A rigorous review process resulted in eight recipients across six disciplines and eight universities. The 2006 PERISHip Fellows, along with their disciplines, affiliations, and dissertation titles, follow.

Jong-Wha Bai

Civil Engineering, Texas A&M University
Seismic Fragility Analysis and Loss Estimation for Concrete Structures

Kapil Khandelwal

Structural Engineering, University of Michigan
Progressive Collapse Mitigation in Steel Structures

Anuradha Mukherji

Architecture, University of California, Berkeley
Negotiating Housing Recovery in Post-Earthquake Urban Kutch, India

JiYoung Park

Economics, University of Southern California
Development of Demand and Supply-Driven Multiregional I/O Models: The National Interstate Economic Model (NIEMO)

Scott Somers

Public Administration, Arizona State University
Building Resilience Potential: Toward a New Paradigm in Disaster Planning

Anna Versluis

Geography, Clark University
We All Live Downstream: Flood Hazard and Land Change in Southeast Haiti

Sarah Vogel

Sociomedical Sciences, Columbia University
Uncertainty and Risk in the Plastics Age: A History of the Science and Politics of Bisphenol A

Tamara Wall

Geography, University of Montana
Residents' Perceptions of Place and Wildfire Hazards and Risks in Southwestern Montana



Major Gift to Mary Fran Myers Scholarship Fund

As noted in the previous edition of the *Observer* (March 2007), the Public Entity Risk Institute (PERI) has agreed to match up to \$10,000 in contributions made to the Mary Fran Myers Scholarship Fund before July 1, 2007, and the Natural Hazards Center has asked all members of the hazards community to consider contributing to the Fund. In response to this request, a major contribution was made in memory of Harold Enarson, which will help increase international participation in the Annual Hazards Workshop in Boulder, Colorado, and will facilitate the attendance of the annual Mary Fran Myers Gender and Disasters Award recipient. As a husband and the father of three daughters, Harold Enarson was committed to women's education. He was also a strong proponent of international education and had great faith in the potential of actively engaged scholars to help build a safer world. It was during Enarson's tenure as president of the Ohio State University that the institution increased its enrollment of women and minorities and also supported the first Disaster Research Center, now based at the University of Delaware.

To help meet the goal of raising \$10,000 prior to July 1, please send your check made payable to the Mary Fran Myers Scholarship Fund to the Natural Hazards Center, University of Colorado, 482 UCB, Boulder, CO 80309-0482, USA.

Contracts and Grants

Below are descriptions of recently awarded contracts and grants related to hazards and disasters. An inventory of awards from 1995 to the present is available at www.colorado.edu/hazards/resources/grants/.

A Gulf States Collaborative to Develop a Strategic Plan for a Gulf States Advanced Technology Education Center for Coastal Resources. Funding Organization: National Science Foundation, \$70,000. Principal Investigator: JoDale Ales, Baton Rouge Community College, (225) 219-0450, alesj@mybrcc.edu.

This project is for development of an Advanced Technology Education (ATE) regional center that will educate technicians and improve the prospects of economic development associated with coastal wetlands, estuarine, and marine environments of the Gulf States. The Gulf States—Louisiana, Texas, Mississippi, Alabama, and Florida—are geographically, socially, and economically linked and have similar job needs for environmental and engineering technicians. Skilled technicians are needed for preserving and restoring coastal and wetland ecosystems; building levees and other containment structures; building structures for offshore energy production and transport; rebuilding and repairing storm damaged infrastructure; facilitating shipping, logistics, and commerce at ports; cleaning up oil spills; implementing the designs of city planners; hurricane response; and dredging.

Inferred and Experienced Intergroup Emotions as Predictors of Helping of Victim Groups: Helping When We—Not They—Need it Most. Funding Organization: National Science Foundation, \$17,915. Principal Investigator: Amy Cuddy, Northwestern University, Kellogg School of Management, (847) 491-3003, a-cuddy@kellogg.northwestern.edu.

The proposed research will explore how people's perceptions of the emotional suffering of Hurricane Katrina victims—many of whom are members of stigmatized groups—influence their intentions to help or not to help. A growing body of evidence suggests that intergroup biases strongly influence people's inferences about the emotional states of others. People are less likely to attribute higher order "human" emotions—like grief or mourning—to members of stigmatized groups. However, research has not yet addressed how biased inferences about others' emotional suffering might influence how people respond to those others. The proposed studies examine the hypothesis that "dehumanization" of Hurricane Katrina victims will decrease people's intentions to help Hurricane Katrina victims in general. Participants from student and non-student samples will read short newspaper articles about the victims of Hurricane Katrina in which social category information, such as race, age, and socio-economic status, is varied. Investigators will measure the effects of these social category manipulations on participants' inferences about victims' emotional states, participants' experienced emotions, and participants' helping behaviors toward Hurricane Katrina victims (via

real opportunities to contribute money and time to aid organizations). The results of the proposed experiments will contribute to an understanding of how the inferred emotional suffering of victim groups affects how people respond to those victims, and more broadly, how emotions can influence potentially discriminatory behaviors.

Inter-organizational Decision Making and Organization Design for Improved ICT Coordination in Disaster Relief. Funding Organization: National Science Foundation, three years, \$650,000. Principal Investigator: Carleen Maitland, Pennsylvania State University, (814) 865-1372, cmaitland@ist.psu.edu.

Highly complex decision making involving multiple organizations that have both shared and private interests poses many challenges in the critical area of disaster relief. It is difficult to understand how the structure, distribution of decision rights, and governance of a multi-organization coordination body influences decision-making processes and outcomes. Also, systematic assessment of the effects of improved decision making for related activities, such as the provision of goods in a supply chain, presents a significant challenge. This research will address these problems in the context of decision making for information and communication technology (ICT) coordination in humanitarian relief, an area which, as exemplified by the communication failures in the relief effort for Hurricane Katrina, requires significant attention.

Participating in this study are the International Working Group for Emergency Capacity Building (IWG ECB), consisting of representatives from the largest international humanitarian relief agencies, including CARE, Oxfam, and Save the Children; and HumaniNet, consisting of primarily smaller agencies. Data will be gathered using qualitative methods and will be used to modify an agent-based architecture to perform sensitivity analyses of the effects of these designs on decision making, generating recommendations for improved designs. Subsequently, the outputs of the simulation will be used in analytic models to predict the effects of decision making improvements on disaster relief supply chain performance.

The Recovery Divide: Sociospatial Disparities in Disaster Recovery from Hurricane Katrina along Mississippi's Gulf Coast. Funding Organization: National Science Foundation, three years, \$719,000. Principal Investigator: Susan Cutter, University of South Carolina, Department of Geography, (803) 777-1590, scutter@gwm.sc.edu.

This project looks at Hurricane Katrina and its impact on Mississippi's Gulf Coast to understand the factors that influence the rate of recovery in the region, but more importantly, the potential inequalities in the process. The

research combines baseline geographic data on the social, built environment, and hazard vulnerability of the region; a historical narrative on past conditions that influence the current (pre-Katrina) settlement history; a statistical analysis of historical rates of settlement and demographic change in the region; and forecasts for the future trajectory of settlement and demographic change as well as its geographic footprint. Lastly, the project documents the recovery processes itself and the role of inequalities in shaping it through interviews with key individuals in selected case study communities. In this way, the research not only furthers understanding of the pace of recovery and its geographic extent, but also the role of inequalities in the recovery process and those antecedent conditions that could give rise to a "recovery divide."

Social and Environmental Vulnerability to Disasters. Funding Organization: National Science Foundation, three years, \$664,000. Principal Investigator: Gilbert Burnham, Johns Hopkins University, School of Public Health, (410) 955-3928, gburnham@jhsph.edu.

The growing awareness of the impact of natural disasters on human communities has also raised awareness of the need for better measurements and models of vulnerability to disasters and for improved management of information that guides the humanitarian response. A collaboration to develop an integrated approach to disaster assessment will enhance the understanding of vulnerability and provide information for decision making in the post-disaster context. The principal partners in this collaboration are the Center for Refugee and Disaster Response at the Johns Hopkins School of Public Health (CRDR/JHU), and the Center for International Earth Science Information Network (CIESIN) at Columbia University.

This collaboration is a multidisciplinary approach to vulnerability and disaster assessment that brings together the fields of physical science, demography, public health, and informatics. The research will develop the means by which spatial dependencies and interactions between population and environmental variables can be described and studied using GIS models, available socio-demographic information, and data from field surveys of disaster-affected areas with the dual objectives of assessing the risk of populations to natural disasters, and providing information on affected populations to decision makers in the post-disaster relief and rehabilitation environment.

Southern California Earthquake Center. Funding Organization: National Science Foundation, five years, \$2,637,000. Principal Investigator: Thomas Jordan, University of Southern California, (213) 740-7762, tjordan@usc.edu.

This grant renews the funding of the Southern California Earthquake Center (SCEC) for an additional five-year period. The basic science goal of the SCEC is to understand the physics of the Southern California fault system and encode this understanding in a system-level model that can predict salient aspects of earthquake behavior. Southern California's network of several hundred active faults forms a superb natural laboratory for the study of earthquake physics. Its seismic, geodetic, and geologic data are among the best in the world. Moreover, Southern California contains 23 million people, so that high seismic hazard translates to nearly one-half of the national earthquake risk. The Center's tripartite mission statement emphasizes the connections between information gathering, knowledge formulation through physics-based modeling, and public communication of hazard and risk. Created in 1991, SCEC has since expanded to 54 institutions involving over 560 scientists.

Help Us Help the Hazards Community

For over 30 years, the library at the Natural Hazards Center has been a valued resource not only for scholars and practitioners who are studying hazards and disasters, but also for anyone interested in increasing their knowledge and understanding of catastrophic events. To continue providing the hazards community with quality disaster-related social science literature, we are asking you to help us build on our unique collection by donating items from Amazon.com. Simply go to www.amazon.com/gp/registry/2YJ6WG88FIGL1 to view the list and select any items you would like to purchase and donate to the library. Amazon.com will handle the rest.

All contributions will be made available to the community through the HazLit database. We sincerely thank you for helping us help you!





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. Direct Web links are provided for items that are available free online. Other materials can be purchased through the publisher and/or local and online booksellers.

Publications, Reports, and More

All-Hazards

Americans at Risk: Why We Are Not Prepared for Mega-disasters and What We Can Do Now. Irwin Redlener. 2006. ISBN 0-307-26526-9. 304 pp. \$24.00 (hardcover). Alfred A. Knopf/Random House, (212) 782-9000, www.randomhouse.com.

One of the leading experts on disaster preparedness offers a compelling narrative about America's inability to properly plan for large-scale disasters. Five years after 9/11 and one year after Hurricane Katrina, it is painfully clear that the government's emergency response capacity is plagued by incompetence and a paralyzing bureaucracy.

Redlener, founder and director of the National Center for Disaster Preparedness, brings his years of experience with disasters and health care crises, national and international, to an incisive analysis of why America's approach to disaster readiness has left the nation vulnerable and virtually unable to respond effectively to catastrophic events. He describes five natural and human-induced disaster scenarios as a way to imagine what citizens might face, what the current systems would and would not prepare them for, and what would constitute optimal planning in each situation. To see what could be learned from others, he points out some of the more effective ways that countries in Europe, Asia, and the Middle East have dealt with various disasters.

Redlener concludes with a nine-point proposal for how America can be better prepared and what citizens themselves can do. One of Redlener's most compelling discussions is related to the serious problem of a disengaged and uninformed citizenry — one of the biggest obstacles to assuring optimal readiness for any major crisis.

CenterWorks: The Center for Excellence in Disaster Management and Humanitarian Assistance Quarterly. Free online. Four issues per year. www.coe-dmha.org/centerworks.htm. For a printed version, contact the COE at pr@coe-dmha.org or (808) 433-7035.

This new quarterly newsletter reports on activities and events of the Center for Excellence in Disaster Management and Humanitarian Assistance (COE). The inaugural issue (Winter 2007) focuses on work underway by specific units within the COE and features articles on pandemics, peace operations, and the Pacific Disaster Management Information Network. It also includes a list of upcoming training courses and conferences.

Child Rights Perspective in Response to Natural Disasters in South Asia: A Retrospective Study. 2006. 101 pp. Free online. Save the Children Sweden. www.crin.org/docs/.

The Asian tsunami of December 2004 and the South Asian earthquake in October 2005 were strong reminders of how vulnerable Asia is to natural disasters. Although disasters affect both adults and children, children are most vulnerable, yet they are often not heard. This study focused on various disasters that have struck South Asian countries at different times and included interviews with children and adults affected by these disaster events, focus group discussions with children and community members, and analyses of case studies to provide evidence of the situation and interventions. The findings revealed that rescue and response actions are most often addressed from the perspective of adults. In addition, there is often a lack of child participation in situation assessment and decision making.

Natural Hazards and Disasters. Donald Hyndman and David Hyndman. 2006. ISBN 0-495-11210-0. 482 pp. \$99.95 (paper). Thomson-Brooks/Cole, (800) 354-9706, www.thomsonedu.com/earthscience.

Written by a son-father geologist team, this college-level textbook emphasizes earth and atmospheric hazards that appear suddenly or rapidly without significant warning. The text further discusses ways to prevent or mitigate the damage caused by natural hazards, providing students with the latest scientific research related to these topics. "Case in Point" boxes generate discussion of individual cases to natural hazard processes and principles. Readers will find a balanced coverage of North American natural hazards, including earthquakes, hurricanes, floods, and volcanic eruptions. The book includes color photos, diagrams, an appendix of minerals and rocks related to natural hazards, and a glossary of hazards-related earth science terms. This new updated edition also features a new chapter that covers the devastating 2005 hurricane season and provides an in-depth look at the causes and effects of Hurricane Katrina.

NFPA 1600: Standard on Disaster/Emergency Management and Business Continuity Programs. 2007. 46 pp. Free online. National Fire Protection Association (NFPA). www.nfpa.org/assets/files/PDF/CodesStandards/1600-2007.pdf. Print copies can be ordered at www.nfpa.org/catalog/.

The 2007 edition of the NFPA's Standard on Disaster/Emergency Management and Business Continuity Programs is now available on NFPA's Web site. The standard

establishes a common set of criteria that sets a foundation for disaster management, emergency management, and business continuity programs using a total program approach. This latest edition of NFPA 1600 incorporates changes to the 2004 edition and expands the conceptual framework of the earlier version. Aspects of mitigation, preparedness, response, and recovery have been updated, and prevention has been added as a fifth and distinct concept.

Climate Change

A Climate of Injustice: Global Inequality, North-South Politics, and Climate Policy. J. Timmons Roberts and Bradley C. Parks. 2007. ISBN 0-262-68161-7. 384 pp. \$26.00. The MIT Press, (800) 405-1619, www.mitpress.mit.edu.

There is an ongoing global debate over who should address climate change. Poor nations fear limits on their efforts to grow economically and meet the needs of their own people, while powerful industrial nations refuse to curtail their own excesses unless developing countries make similar sacrifices. Roberts and Parks analyze the role that inequality between rich and poor nations plays in the negotiation of global climate agreements.

The authors argue that global inequality dampens cooperative efforts by reinforcing the “structuralist” worldviews and causal beliefs of many poor nations, eroding conditions of generalized trust and promoting particularistic notions of “fair” solutions. Until we recognize that reaching a North-South global climate pact requires addressing larger issues of inequality and striking a global bargain on environment and development, Roberts and Parks assert, the current policy gridlock will remain unresolved.

Climate Change, Insurability of Large-scale Disasters and the Emerging Liability Challenge. Howard C. Kunreuther and Erwann O. Michel-Kerjan. 45 pp. Free online. National Bureau of Economic Research, <http://papers.nber.org/papers/w12821.pdf>.

This paper focuses on the interaction between uncertainty and insurability in the context of risks associated with climate change. In particular, it examines the impact of development in hazard-prone areas and of global warming on the potential for catastrophic losses in the future. The paper also discusses the implications for insurance risk capital, the capacity of the insurance industry to handle large-scale events, liability issues associated with global climate change, and possible implications for insurers. The paper concludes by suggesting ways that insurers can help mitigate future damages from global climate change by providing premium reductions and rate credits to companies that invest in risk-reducing measures.

The Economics of Climate Change: The Stern Review. Nicholas Stern. 2007. ISBN 0-521-70080-9. 712 pp. \$50.00. Cambridge University Press, (212) 924-3900, www.cambridge.org.

There is now clear scientific evidence that emissions from economic activity, particularly the burning

of fossil fuels for energy, are causing changes to the Earth’s climate. A sound understanding of the economics of climate change is needed to underpin an effective global response to this challenge. The Stern Review is an independent, rigorous, and comprehensive analysis of the economic aspects of this crucial issue conducted by one of the world’s top economists: Sir Nicholas Stern, head of the UK Government Economic Service and former Chief Economist of the World Bank. While some oppose taking action to reduce the impacts of climate change based on the economic costs of these actions, this book asks the question, “What will doing nothing cost us?” Stern considers the science of climate change; the impact of climate change on growth and development in both rich and poor countries; the economics of cutting emissions and stabilizing greenhouse gases in the atmosphere; policy responses for mitigation, such as carbon pricing and technological innovation; and the challenges of achieving sustained international collective action.

Getting Ahead of the Curve: Corporate Strategies that Address Climate Change. Andrew J. Hoffman. 2006. 128 pp. Free online. Pew Center on Climate Change, (703) 516-4146, www.pewclimate.org.

This report is a compilation of the experience and best practices of large corporations that have developed and implemented strategies to address climate change. Based on a 31-company survey, 6 in-depth case studies, a review of the literature, and experience gained by the Pew Center in working with companies in its Business Environmental Leadership Council (BELC), the report describes the development and implementation of climate-related strategies. Although it is primarily a “how to” manual for other companies interested in developing similar strategies, it will also be of value to investors and analysts in evaluating the effectiveness of company strategies for managing climate risk and capturing climate-related competitive advantage. Finally, it offers policymakers insight into corporate views on greenhouse gas (GHG) regulation, government assistance for technology advancement, and other policy issues. Although the report focuses primarily on U.S.-based multinationals, it considers the global context of climate change and related market transformation.

Earthquakes and Tsunamis

Richter’s Scale: Measure of an Earthquake, Measure of a Man. Susan Elizabeth Hough. 2007. ISBN 0-691-12807-3. 336 pp. \$27.95. Princeton University Press, (800) 777-4726, <http://press.princeton.edu>.

By developing the scale that bears his name, Charles Richter not only invented the concept of magnitude as a measure of earthquake size, he also turned his name into a household word. This behind-the-scenes look at Richter, the man, is an artful interweaving of the stories of Richter’s life with the history of earthquake exploration and seismology.

Drawing on papers written by Richter and dozens of interviews with his family and colleagues, Hough sets

Richter's life story in the context of his family and relationships, his academic career, and the history of seismology.

SB1953 and the Challenge of Hospital Seismic Safety in California. Charles Meade and Jonathan Kulick. 2007. 62 pp. Free online. California Healthcare Foundation, (510) 238-1040, www.chcf.org/documents/hospitals/SB1953Report.pdf.

In this report, the RAND Corporation updates its previous analysis of the costs, construction activities, and policy issues stimulated by SB1953, California's hospital seismic safety legislation. Inspired by large increases in the costs for hospital construction and by rapidly approaching deadlines to comply with seismic safety goals, the report employs new data and analysis on hospital infrastructure and construction costs, hospital decision making for large construction projects, historical and current records of hospital construction in California, and quantitative seismic hazard information for California hospitals.

Seismic Safety: Will California's Hospitals Be Ready for the Next Big Quake? 2007. 5 pp. Free online. California Healthcare Foundation, (510) 238-1040, www.chcf.org/documents/hospitals/SB1953IssueBrief.pdf.

This issue brief looks at the progress California hospitals have made toward complying with SB1953; the significant challenges they face in achieving compliance; and the difficult policy choices that must be weighed to reach California's seismic safety goals. The issue brief is based on the California Healthcare Foundation-funded RAND report titled *SB1953 and the Challenge of Hospital Seismic Safety in California* (see above listing).

TsunamiTeacher. 267 pp. Free online. United Nations Educational, Scientific and Cultural Organization (UNESCO). www.tsunamiwave.info.

To help support training related to the communication of tsunami risk to the public, the Intergovernmental Oceanographic Commission (IOC) of UNESCO has developed the TsunamiTeacher Information and Resource Toolkit. The Toolkit brings new and existing information on tsunamis into a single reliable and verified global resource that is widely accessible to individuals, groups, and governments around the world. TsunamiTeacher aims to build awareness and increase the capacity to respond and mitigate the impact of tsunamis through the sharing of knowledge, research, and best practices. Training modules target the media, educational systems, and the public and private sectors, with topics including hazard and risk assessment; operational warning and dissemination systems; tsunami emergency response, alerting, and preparedness; environmental engineering mitigation and policy; and education and outreach. TsunamiTeacher is supported both as an online resource that will be continually reviewed, updated, and added to by experts, and as an offline set of DVDs that will run on PC and Macintosh platforms. The base language is English, with translations presently planned for Bahasa Indonesia, Bangladesh Bangla, French, Spanish, and Thai.

Floods

Flood Hazards & Health: Responding to Present and Future Risks. Edited by Roger Few and Franziska Matthies. 2006. ISBN 1-84407-215-0. 240 pp. £55.00 (hardcover). Earthscan, +44 (0) 20 7387 8558 (UK), www.earthscan.co.uk.

This book combines an analysis of the human health impacts of flooding with analysis of individual and societal response to those risks. Written and edited by leading researchers and practitioners in the field of flood hazards and human health, the volume begins by providing a detailed discussion of the global health impacts of floods and the nature of human response to health risks posed by flooding. Next, drawing on case study material from Europe, Africa, Asia, and North America, the book presents new research on flood impacts related to mental health, infectious diseases, and the responses of health systems. The conclusion includes a discussion of priorities for policy, practice, and research, and emphasizes the need to integrate action on health with the broader agenda of long-term risk reduction.

Homeland Security

The Economic Impacts of Terrorist Attacks. Harry W. Richardson, Peter Gordon, and James E. Moore II. 2005. ISBN 1-84542-301-1. 384 pp. £29.95. Edward Elgar Publishing, +44 (0)1242 226934 (UK), www.e-elgar.com.

Focusing on the economics of terrorism in the post-9/11 world, this book brings together original research based on the collaborative efforts of leading economists and planners. The expert contributors use a variety of methodological approaches and apply them to various types of terrorist attacks, such as on airports, highways, seaports, and infrastructure, and they also draw analogies between human-induced and natural disasters. While much of the research on future terrorist attacks on the United States has focused on costs associated with human lives and psychological impacts, this book addresses the economic costs of protection and the potential economic damage caused by terrorist attacks.

Hurricanes and Coastal Hazards

Assessing the Impact of Hurricane Katrina on Persons with Disabilities. Glen W. White, Michael H. Fox, Catherine Rooney, and Anthony Cahill. 2007. 61 pp. Free online. National Institute on Disability and Rehabilitation Research, (785) 864-4095, www.rtcil.org.

This report summarizes research that represents the most recent in-depth effort to understand how persons with disabilities prepared for, reacted to, and recovered from the devastating impact of Hurricane Katrina in the most affected portions of the Gulf Coast. In addition, the study sought to understand the roles and relationships that Centers for Independent Living (CILs) played in all phases of the disaster, with a special emphasis on their relationship to the emergency management system. The report includes the findings, which revealed three significant gaps in areas affecting persons with disabilities, and recommendations based on these findings.

Path of Destruction: The Devastation of New Orleans and the Coming Age of Superstorms. John McQuaid and Mark Schleifstein. 2006. ISBN 0-316-01642-X. 362 pp. \$25.99 (hardcover). Little, Brown and Company, (800) 759-0190, www.hachettebookgroupusa.com.

In this book, Pulitzer Prize-winning authors John McQuaid and Mark Schleifstein give a comprehensive account of why and how Hurricane Katrina happened. However, the book isn't just about the hurricane, those who survived and those who didn't; it is an account of the dreadful inadequacies that existed prior to 2005, an indictment of the Washington officials who failed to act, and a scientific investigation into why these huge storms are coming now. Drawing on historical records, geology, and climatology, the authors reveal how changes in the atmosphere, along with the choices made by people and politicians, have created conditions that are ripe for storms like Hurricane Katrina.

Government Accountability Office Reports

The following Government Accountability Office (GAO) reports are available free online at www.gao.gov. Printed copies are also available (first copy is free, additional copies are \$2.00 each). To order, contact the GAO: (202) 512-6000, TDD (202) 512-2537; www.gao.gov/cgi-bin/ordtab.pl.

Homeland Security: Progress Has Been Made to Address the Vulnerabilities Exposed by 9/11, but Continued Federal Action is Needed to Further Mitigate Security Risks. January 2007. GAO-07-375. 114 pp.

Disaster Assistance: Better Planning Needed for Housing Victims of Catastrophic Disasters. February 2007. GAO-07-88. 91 pp.

Small Business Administration: Additional Steps Needed to Enhance Agency Preparedness for Future Disasters. February 2007. GAO-07-114. 46 pp.

Maritime Security: Public Safety Consequences of a Terrorist Attack on a Tanker Carrying Liquefied Natural Gas Need Clarification. February 2007. GAO-07-316. 46 pp.

Disaster Preparedness: Better Planning Would Improve OSHA's Efforts to Protect Workers' Safety and Health and Disasters. March 2007. GAO-07-193. 78 pp.

Emergency Preparedness: Current Emergency Alert System Has Limitations, and Development of a New Integrated System Will Be Challenging. March 2007. GAO-07-411. 46 pp.

Port Risk Management: Additional Federal Guidance Would Aid Ports in Disaster Planning and Recovery. March 2007. GAO-07-412. 57 pp.

Critical Infrastructure: Challenges Remain in Protecting Key Sectors. March 2007. GAO-07-626T. 30 pp.

Web Sites of Interest

Institute for Business & Home Safety, Summary of State Land Use Planning Laws

www.ibhs.org/publications/view.asp?id=302

The Institute for Business & Home Safety's annual update of state land-use planning laws and their requirements for addressing natural hazards is now available online. This document was researched and written through a contract by IBHS with the American Planning Association (APA).

The updated Web site provides information about which states:

- Require local governments to address natural hazards in their comprehensive plans, and precisely what is expected
- Provide specific kinds of technical assistance to local governments in drafting natural hazards elements of comprehensive plans
- Require vertical or horizontal consistency, or both, in local plans
- Mandate a state plan, and which of those include a land-use element or a hazards mitigation element

Vulnerability Network & Observatory

www.vulnerabilitynet.org

This site provides an online knowledge portal to link researchers and practitioners in various sectors of the vulnerability field. The "Document Hotel" contains hundreds of searchable journal papers, reports, and briefing notes that cover a range of topics, including vulnerability, adaptation, climate change impacts, food security, water management, renewable energy, and socio-environmental modeling. The site also includes news items that highlight activities and events in the field of vulnerability and sustainable development, and users can join public forums to communicate with people engaged in similar work.

International Strategy for Disaster Reduction, Asia-Pacific

www.unisdr.org/asiapacific/

UN/ISDR has launched its Asia and Pacific Web site, which provides basic information on disaster risk reduction in the Asia and Pacific region. The Asia and Pacific Islands region represents the widest and most disaster-prone continent in the world, beyond Africa, with a regular and increased frequency of typhoons, tsunamis, floods, droughts, fires, and other natural hazards. The new Web site aims to establish an interactive relationship with regional partners throughout the Asian and Pacific region, who are invited to provide information on a regular basis.

International Association of Emergency Managers - Oceania

<http://oceania-iaem.com>

On March 14, 2007, the IAEM Board of Directors approved the creation of IAEM-Oceania as the 15th IAEM region. IAEM-Oceania spans most of the Pacific nations and currently has more than 120 members.



Conferences and Training

Below are the most recent conference announcements received by the Natural Hazards Center. A comprehensive list of hazards and disasters meetings is available at www.colorado.edu/hazards/resources/conferences.html.

GovSec, U.S. Law, and Ready! Conference and Exposition—Washington, DC: May 9-10, 2007. This conference will bring together the three key disciplines that establish, enforce, and respond to our national security interests: government security, law enforcement, and emergency management/response. Participants will network with private industry and discuss how best to protect the nation.

rclark@ntpshow.com

www.govsecinfo.com

15th World Conference on Disaster and Emergency Medicine—Amsterdam: The Netherlands: May 13-16, 2007. This congress aims to catalyze thought processes and come up with very clear products to better prepare experts, organizations, and governments for the next disaster or crisis. The central themes will be preparedness, knowledge, training, and networks. Attendees will include policy makers, researchers, clinicians, responders, planners, administrators, and other experts from around the world who have interest in the most urgent medical and humanitarian problems of the twenty-first century.

paog@vumc.nl

www.wcdem2007.org

Coastal Sediments 2007: Coastal Engineering and Science in Cascading Spatial and Temporal Scales—New Orleans, Louisiana: May 13-17, 2007. This conference will provide an international forum for exchange of information among coastal engineers, geologists, marine scientists, shallow-water oceanographers, and others interested in the physical processes of coastal sediment transport and morphology change.

copri@asce.org

www.asce.org/conferences/cs07/index.cfm

5th Annual Conference on Seismology and Earthquake Engineering—Tehran, Iran: May 14-16, 2007. In addition to covering central issues in seismology and earthquake engineering, this conference will also cover subjects related to socioeconomic and cultural issues of risk management; earthquake risk management; risk communication; public education; and preparedness, response, recovery, and reconstruction. In addition to keynote lectures and oral and poster sessions, post-conference seminars on selected topics will be presented by well-known specialists.

www.iiees.ac.ir/SEES/

Workshop on the Physics of Tsunami, Hazard Assessment Methods and Disaster Risk Management—Trieste, Italy: May 14-18, 2007. This workshop will emphasize synergies between the evaluations of flood hazards in relation to the protection of nuclear installations and the evaluation

of vulnerabilities of other critical infrastructure facilities. Different methods of hazard analysis will be assessed, as will experience related to the Indian Ocean tsunami and flooding events in nuclear facilities.

sci_info@ictp.it

www.ictp.it

Disaster Management Course—Bangkok, Thailand: May 14-June 1, 2007. The purpose of this course is to provide comprehensive disaster management knowledge and skills to enhance the capabilities of professionals working in disaster management, development, and donor agencies to effectively integrate disaster management into development programs and policies.

adpc@adpc.net

www.adpc.net/trg06/trg_home.htm

2007 World Environmental & Water Resources Congress—Tampa, Florida: May 15-19, 2007. This Congress has become an important annual opportunity for those working in water and environmental fields to convene and focus on current topics. In this era of shifting coastlines, urban sprawl, raging storms, and extreme acts by humans and nature, it is imperative that those working on the front line share insights from research and case studies in the field to generate best practices for the future. This 2007 Congress will focus on habitat restoration with a dozen technical tracks covering issues from coast to coast and around the globe.

stacey.gardiner@tggroup.com

<http://content.asce.org/conferences/ewri2007/>

American Geophysical Union (AGU) 2007 Joint Assembly—Acapulco, Mexico: May 22-25, 2007. For the first time ever, an American Geophysical Union meeting will be held in Latin America. The AGU is joining with 11 other scientific societies in Mexico, elsewhere in Latin America, and in the United States for this meeting, which will cover the same broad range of earth and space science topics as other AGU meetings.

ja-help@agu.org

www.agu.org/meetings/ja07/

River Basin Management 2007—Kos, Greece: May 23-25, 2007. The purpose of this conference is to communicate recent advances in the overall management of riverine systems, including advances in hydraulic and hydrologic modeling, environmental protection, and flood forecasting. It is designed to bring together practicing engineers, environmental managers, and academics.

zbluff@wessex.ac.uk

www.wessex.ac.uk/conferences/2007/rm07/

10th World Conference on Seismic Isolation, Energy Dissipation and Active Vibrations Control of Structures—Istanbul, Turkey: May 28-31, 2007. Seismic isolation and energy dissipation of structures are fully mature technologies for mitigating seismic damage for civil structures and equipment and have proven to be reliable and cost-effective for many structures such as bridges/viaducts, civil buildings, cultural heritage, and critical facilities. This 10th forum will be billed as a “World Conference” to correctly reflect the size and importance the event has reached after 18 years. As a country affected by many strong earthquakes, Turkey in general has to make vigorous use of the seismic isolation technology. This conference will contribute to the use of innovative anti-seismic techniques in Turkey.

www.did-tasi.org

First Session of the Global Platform for Disaster Risk Reduction—Geneva, Switzerland: June 5-7, 2007. The Global Platform for Disaster Risk Reduction is slated to become the main global forum for all parties involved in disaster risk reduction, including governments, United Nations agencies, international financial institutions, regional bodies, civil societies, the private sector, and scientific and academic communities. This first session will place particular emphasis on topical issues of concern to policy makers and specific themes related to ensuring that disaster risk reduction is a national and local priority with a strong institutional basis for implementation.

globalplatform@un.org

www.preventionweb.net/globalplatform/

2007 Universities Council on Water Resources (UCOWR/NIWR) Annual Conference: Hazards in Water Resources—Boise, Idaho: June 24-26, 2007. UCOWR is an organization of universities, non-academic institutions, and international affiliates leading in water resources education, research, and public service. The National Institutes for Water Resources (NIWR) are the 54 university-based centers that were established by the federal Water Resources Research Act. This year’s conference will focus on hazards facing water resources, including major events like tsunamis, earthquakes, hurricanes, drought, and flooding. Presentation topics will range from the damages of catastrophic events to the response plans set in place by agencies and governments.

www.ucowr.siu.edu

ENHR International Conference: Sustainable Urban Areas—Rotterdam, Netherlands: June 25-28, 2007. The European Network for Housing Research (ENHR) conference will highlight the many aspects of housing and urban issues in relation to sustainability. Sustainability is a broad concept that can be addressed from many different angles. A common arrangement is to distinguish social, economic, spatial and environmental qualities relating to sustainability, and in the conference these will all come to the fore. Plenary sessions will address current debates in housing and topics related to sustainability. Paper sessions will allow participants to present their research in the urban and housing domain. Additional themes are the sustainable city (inner city development, city transforma-

tion), the sustainable environment/region (the metropolitan landscape), and tools to facilitate housing and urban processes (GIS, cadastres, planning games).

www.enhr2007rotterdam.nl

XXIV General Assembly of the International Union of Geodesy and Geophysics—Perugia, Italy: July 2-13, 2007. This meeting will include sessions on tsunami generation and early warning systems. Part of the tsunami session will be carried out as a workshop on wave and water level data assessment and product development, with the goal of establishing standard procedures for data assessment and data archiving for event analysis.

secretary@iugg2007perugia.it

www.iugg2007perugia.it

Health Emergencies in Large Populations (HELP) Course—Honolulu, Hawaii: July 16-August 3, 2007. This three-week training course was created by the International Committee of the Red Cross with the participation of the University of Geneva and the World Health Organization to meet the public health needs of health professionals working in emergency situations. Through the facilitation of the Center of Excellence, the HELP course has been taught for eight consecutive years at the East-West Center located on the University of Hawaii Manoa Campus in Honolulu, Hawaii. Each class consists of 25 to 30 students from non-governmental organizations, government agencies, and militaries, mostly from countries in Asia and the Pacific Rim. Although the course is intended for health professionals, candidates who are professional field workers and have a sufficient understanding of health problems will also be considered.

education@coe-dmha.org

www.coe-dmha.org/course_help.htm

StormCon 07: The North American Surface Water Quality Conference and Exposition—Phoenix, Arizona: August 20-23, 2007. StormCon is the world’s largest stormwater pollution prevention conference and the leading source for NPDES Phase II training in all aspects of stormwater management for municipalities, consultants, highway and heavy construction contractors, developers, regulated industries, and special sites. Sessions at the sixth annual conference will offer more than 100 presentations on topics including structural Best Management Practices, stormwater program management, and water quality monitoring.

stevedg@forester.net

www.stormcon.com/sc.html

International Disaster Reduction Conference (IDRC 2007)—Harbin, China: August 21-25, 2007. The International Disaster Reduction Conference (IDRC 2007) is a follow-up to the IDRC 2006 Conference in Davos, Switzerland, which brought a growing consensus that to achieve risk-resilient, sustainable societies, the management of unexpected events such as natural hazards, disease, human-induced hazards, or terrorism, must take an integrated approach. IDRC Harbin 2007 will review the progress made since IDRC Davos 2006, provide a platform for in-depth, stra-

tegit discussions, and focus on understanding what is needed to implement integrated risk management. IDRC Harbin 2007 will also host an exhibition for international and national organizations and for companies with products and services for emergency and rescue operations.

www.idrc.info

International Public Works Conference—Cairns, Australia: August 26-30, 2007. This conference will bring together public works practitioners to exchange ideas about the latest in technology and management techniques being practiced in various countries. The conference program will cover a wide range of topics, including community safety, emergency and risk management, and stormwater management.

ipwea@passion8.com.au

www.passion8.com.au/IPWEA/

Floodplain Management Association Annual Conference—South Lake Tahoe, Nevada: September 4-7, 2007. This year's conference will host a series of panels that highlight challenges and solutions in integrated floodplain management. Presentations and discussions will focus on collaborative efforts that encourage regional planning, regulatory reform, funding needs and solutions, watershed-based modeling, and examples of regional efforts in California and Nevada. The conference will also offer a series of professional development workshops and the Certified Floodplain Manager (CFM) exam.

admin@floodplain.org

www.floodplain.org

Seventh Annual IIASA-DPRI Forum on Integrated Disaster Risk Management—Stresa, Italy: September 19-21, 2007. The Major Accident Hazards Bureau of the European Commission's Joint Research Centre in Ispra, Italy, will host this conference in collaboration with the Disaster Prevention Research Institute of the Kyoto University and the International Institute for Applied Systems Analysis. This year's Forum theme, "Coping with Disasters: Global Challenges for the 21st Century and Beyond," encourages participants to think beyond short-term disaster management goals to the challenges that lie ahead in an increasingly populated and urbanized world.

idrim@iiasa.ac.at

www.iiasa.ac.at/Research/RAV/conf/IDRIM07/

National Association of Flood and Stormwater Management Agencies (NAFSMA) 2007 Annual Meeting and Workshop—Newport, Rhode Island: October 1-4, 2007. NAFSMA's annual conferences provide attendees with timely information on national issues of interest to flood and stormwater program managers throughout the United States. Included among this year's topics are funding issues related to levee certification, national flood risk management policies, renewal of the Water Resources Development Act, Clean Water Infrastructure funding legislation, and National Flood Insurance Program Reform legislation.

www.nafsma.org

International City/County Management Association (ICMA) Annual Conference—Pittsburgh, Pennsylvania: October 7-10, 2007. This year's conference program will address the issues, trends, and challenges facing local government managers worldwide. Public and private sector experts will share their knowledge and interact with participants in educational sessions organized around the following themes: 360-degree leadership, civic engagement, managing health care costs, performance management, and enhancing personal skills and interests. In addition, special "career tracks" of targeted educational sessions will focus on issues of interest to small community managers and emerging leaders.

icmaconference@icma.org

<http://icma.org>

Human Dimensions of Wildland Fire—Fort Collins, Colorado: October 23-25, 2007. This conference is aimed at advancing the knowledge and practice related to the human side of managing fire-prone landscapes. Specifically, it is intended for researchers and professionals involved in the science or practice of the human dimensions of wildland fire, including suppression, fuels management and community preparedness, and post-fire recovery and rehabilitation. Presentations will focus on alternative perspectives and solutions to fire and fuel management problems faced by people who manage and are impacted by wildland fire.

paul.woodard@ualberta.ca

www.lawfonline.org/conferences.shtml

Geological Society of America (GSA) Annual Meeting: Earth Sciences for Society—Denver, Colorado: October 28-31, 2007. This annual meeting brings together scientists, educators, and policy makers from around the world to work to improve the understanding and application of science in society. This year's meeting will be tied to the themes of the International Year of Planet Earth (2008), a United Nations proclamation whose goal is to develop and advance earth sciences initiatives with the aim of helping future generations realize a safer and more prosperous world.

ncarlson@geosociety.org

www.geosociety.org/meetings/2007/

4th Annual Canadian Risk and Hazards Network Symposium—Richmond, British Columbia: November 6-8, 2007. With the theme "Practitioners and Researchers: Forging Partnerships for Disaster Resilient Communities," this year's conference is dedicated to building disaster-resilient communities based on strong partnerships. Program highlights include resilience, protecting critical infrastructure, collaborating with communities, respecting culture and tradition in recovery, psychosocial effects on communities, assessing and mitigating risks, information and communication needs, clarifying the role of governments, sharing best practices, and preparing for public health emergencies.

congress@venuewest.com

www.jibc.ca/crhnet/

American Water Resources Association (AWRA) 2007 Annual Water Resources Conference—Baltimore, Maryland: November 6-9, 2007. The 42nd annual AWRA conference will include 240 technical and poster sessions, as well as panel sessions. This year's conference will focus on highlighting the collaborative process, which is essential to future success but difficult to implement. The conference will also welcome the Interstate Council on Water Policy, which will lead a technical session on collaborative networking: what works and what doesn't.

www.awra.org/meetings/Baltimore2006/

Cities on Volcanoes 5 (COV5)—Shimabara, Japan: November 19-23, 2007. Cities on Volcanoes (COV) is now considered to be the most important forum for volcanologists, city planners, authorities, and businesses to meet and discuss the effects of volcanic eruptions on society, infrastructure, and economic development, and ways to mitigate these effects. In addition to highlighting recent volcanological research, COV5 will focus on volcanic crisis preparedness and management in densely populated areas.

convention@citiesonvolcanoes5.com

www.citiesonvolcanoes5.com

2nd International Conference on Urban Disaster Reduction (ICUDR): Large-Scale Disaster Management—Taipei, Taiwan: November 27-29, 2007. This year's conference focuses on the management of large-scale natural and man-made disasters and encourages casual and productive interactions among participants in various research fields of disaster reduction. With its multidisciplinary scope, the 2nd ICUDR offers an excellent forum for covering a wide range of topics, including mitigation, preparedness, response, and recovery for urban disasters. It will include a keynote speech, plenary session, group session, poster session, and booth exhibition.

icudr@ncdr.nat.gov.tw

www.ncdr.nat.gov.tw/2ICUDR/

Hurricane Season Predictions

One of the nation's top hurricane research teams has predicted a "very active" 2007 Atlantic hurricane season. The team, led by William Gray and based at Colorado State University (CSU), now anticipates that 17 named storms will form in the Atlantic basin between June 1 and November 30. Nine of those storms are predicted to become hurricanes, and five of those nine are expected to develop into intense or major hurricanes (Saffir/Simpson category 3-4-5) with sustained winds of 111 mph or greater.

"Based on our latest forecast, the probability of a major hurricane making landfall along the U.S. coastline is 74%, compared with the last-century average of 52%," said Phil Klotzbach of the CSU hurricane forecast team.

The team's predictions include the following:

- A 74% chance that at least one major hurricane will make landfall on the U.S. coastline in 2007
- A 50% chance that a major hurricane will make landfall on the U.S. east coast, including the Florida Peninsula
- A 49% chance that a major hurricane will make landfall on the Gulf Coast from the Florida Panhandle west to Brownsville, Texas

Although the 2006 season witnessed a total of five hurricanes and two major hurricanes, none of those made landfall along the U.S. coastline. The 2005 season, considered unusual by the CSU forecast team, witnessed 27 named storms, 15 hurricanes and 7 intense hurricanes. Gray's team said a late, unexpected El Niño contributed to the calmer hurricane season in 2006.

The team will issue updates of its 2007 Atlantic basin hurricane activity forecast on May 31, August 3, September 4, and October 2. The entire report is available at <http://hurricane.atmos.colostate.edu>.

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

www.colorado.edu/hazards/

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Support the Natural Hazards Center

The success of the Natural Hazards Center relies on the ongoing support and engagement of the entire hazards and disasters community. The Center welcomes and greatly appreciates all financial contributions. There are several ways you can help:

- 1. Support Center Operations**—Provide support for core Center activities such as the *Disaster Research* e-newsletter, annual workshop, library, and the *Natural Hazards Observer*
- 2. Build the Center Endowment**—Leave a charitable legacy for future generations
- 3. Help the Gilbert F. White Endowed Graduate Research Fellowship in Hazards Mitigation**—Ensure that mitigation remains a central concern of academic scholarship
- 4. Boost the Mary Fran Myers Scholarship Fund**—Enable representatives from all sectors of the hazards community to attend the Center’s annual workshop

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

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

Contact Greg Guibert at greg.guibert@colorado.edu or (303) 492-2149 to discuss making a gift.

A U.S.-based organization, the Natural Hazards Center is a nonprofit, tax-exempt corporation under Section 501(c)(3) of the Internal Revenue Code.

The Natural Hazards Center

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

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Send information of potential interest to the Center or to *Observer* readers to the Natural Hazards Center, University of Colorado at Boulder, 482 UCB, Boulder, CO 80309-0482; (303) 492-6818, (303) 492-2151 (fax); hazctr@colorado.edu. The deadline for the next *Observer* is **May 25, 2007**.



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