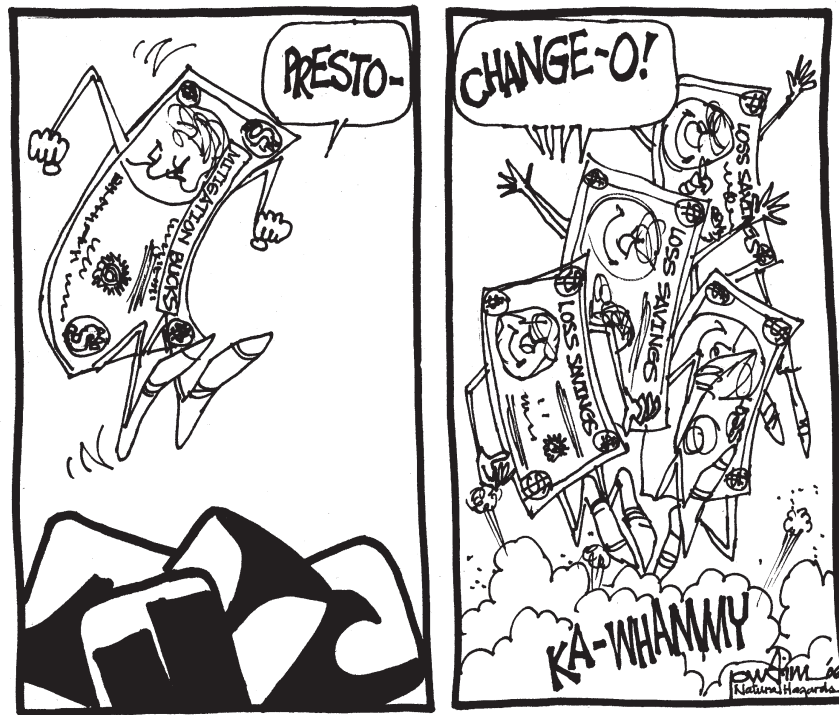


NATURAL HAZARDS Observer

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Mitigation Generates Savings of Four to One and Enhances Community Resilience



MMC Releases Study on Savings from Mitigation

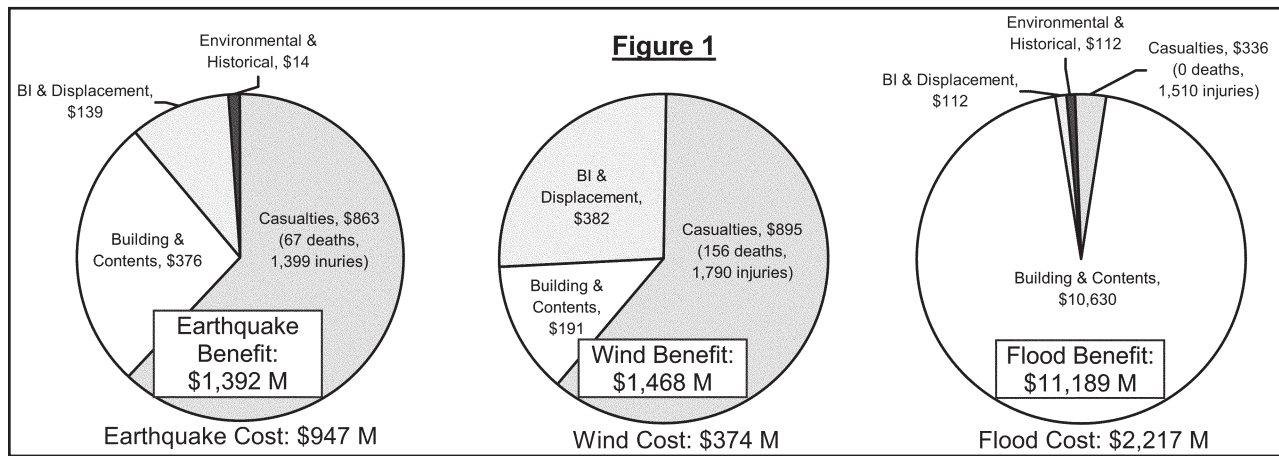
— an invited comment

In December, the Multihazard Mitigation Council (MMC) of the National Institute of Building Sciences released to the Federal Emergency Management Agency (FEMA) *Natural Hazard Mitigation Saves: An Independent Study to Assess the Future Savings from Mitigation Activities*, the culmination of a three-year, congressionally mandated independent study. The MMC Board of Direction and oversight committee, a team of more than 30 researchers from academic institutions and private-sector organizations across the United States assembled by the Applied Technology Council, and many others contributed to the study, which represents the most comprehensive quantitative analysis of hazard mitigation activities to date.

The research findings provide independent evidence to support what nearly every member of the hazards community knows anecdotally—generally, FEMA mitigation

grants are highly cost-effective. On average, across all grants, regions, and hazards studied, each dollar spent on mitigation saves society an average of \$4 in avoided future losses. Results also indicate that, based on the eight communities studied in depth, FEMA mitigation grants, including those associated with Project Impact, play a significant role in a community's mitigation history and often lead to additional loss reduction activities.

The study, which examined 10 years of FEMA mitigation grants (1993-2003), consisted of a statistical analysis and community analyses. The statistical analysis estimated the future savings from expenditures using a statistically representative national sample of FEMA-funded mitigation grants. The community analyses assessed the future savings from mitigation activities through quantitative and qualitative research in eight communities where FEMA-funded



mitigation activities were conducted, including five Project Impact communities.

Statistical Analysis

The statistical analysis of individual grants focused on FEMA-funded mitigation activities in three broad hazard categories: flood (coastal and riverine), wind (hurricane, tornado, typhoon, and severe storms), and earthquake. The MMC chose these hazards because of both the number of FEMA grants and the size of FEMA expenditures dedicated to their mitigation.

The analysis distinguished between project and process mitigation activities. Project mitigation activities are akin to investments in physical capital and are frequently referred to as brick-and-mortar projects because they result in tangible physical change to the built or natural environment. Quantitative benefit-cost assessments are more easily conducted for grants funding these types of activity. Typical project mitigation activities funded by FEMA included drainage enhancement, acquisition and relocation of at-risk structures, structural and nonstructural improvements, life-line improvements, and land improvement projects.

Process mitigation activities lead to policies, practices, and projects that reduce risk and are much like investments in human, social, or institutional capital. Outcomes of these activities, particularly over the short term, tend to be difficult to predict and quantify. Examples of process mitigation activities include vulnerability assessments, community priorities and action plans, education campaigns for decision makers and constituents, and development of codes and regulations. These activities stimulate the commitments needed to instigate and sustain mitigation over the long term and play a large role in building community resilience.

The research team obtained project cost data directly from FEMA's National Emergency Management Information System database. They applied, and developed where necessary, state-of-the-art methods grounded in benefit-cost analysis to measure the benefits from mitigation. HAZUS-MH (FEMA's software program for estimating potential losses from disaster) was used to estimate earthquake casualties as well as direct property damage and direct business interruption losses from earthquake and hurricane wind. Supplemental methods were used to assess direct property losses from floods and tornadoes; casualty losses from hurricanes, tornadoes, and floods; business interruption

losses for utilities; environmental and historic preservation benefits; and process mitigation activities.

Using an innovative sampling strategy, the research team estimated mean benefits as losses avoided for each activity type and hazard (process and project mitigation activities for flood, wind, and earthquake hazards). The ratio of estimated benefits to costs produced the benefit-cost ratio that was then applied to each category in the population of FEMA grants from which the sample was taken. The sample estimates were then scaled up to the population of FEMA grants for wind, flood, and earthquake mitigation issued between 1993 and 2003.

The study estimated that societal benefits from FEMA mitigation grants during the period studied had a discounted present value of \$14 billion compared to the \$3.5 billion value of the resources employed for an overall benefit-cost ratio of 4:1. Sensitivity analyses showed that these results are robust to the assumptions made and to uncertainties of parameters and models.

Figure 1 provides a graphical representation of the avoided losses compared to program costs for each hazard. It shows the contribution to total savings from avoided losses to buildings and contents, business interruption (BI) and household displacement, the economic equivalent value of environmental and historical losses, and casualties. (Casualties are measured both in terms of the number of avoided future deaths and injuries as well as the dollar amount the federal government would deem a reasonable expense for life-safety measures with similar effectiveness).

Community Analyses

The community analyses component of the study featured in-depth examinations of eight communities to assess the influence of FEMA-funded mitigation activities in a holistic context. The study included all FEMA mitigation grants received by the communities since the grant programs began. It also explored how additional mitigation activities percolated throughout the communities in the form of synergistic activities, which accrued benefits ultimately attributable to FEMA grants.

The researchers selected communities with diverse characteristics to obtain a variability of contexts in which to observe mitigation outcomes. Researchers ensured that the eight communities were diverse in size, the kinds of hazards present, the number and type of grants received, and

geographic distribution. Each community had received at least \$500,000 in funds from as many as 15 FEMA grants. The communities were Freeport, New York; Hayward, California; Horry County, South Carolina; Jamestown, North Dakota; Jefferson County, Alabama; Multnomah County, Oregon; City of Orange, California; and Tuscola County, Michigan.

The community studies were designed to identify the impact of FEMA-funded mitigation activities in situations where multiple FEMA and non-FEMA funded projects and processes may have coexisted and interacted. Data on mitigation activities were collected and reviewed, key people were interviewed by telephone, field visits were conducted to gather more data and to followup with those interviewed, and extensive postvisit analyses were undertaken.

During the community studies, the researchers noted activities and effects that reduced risks (or increased benefits of risk-reduction activities) that were not funded by FEMA. Qualitative analysis of these activities found that mitigation efforts funded by FEMA often led to additional, nonfederal mitigation efforts. Termed synergistic activities, they were divided into three categories:

- Spin-off activities—activities that resulted from FEMA hazard mitigation grant support
- Collateral activities—activities that did not result from FEMA hazard mitigation grant support
- Spillover effects—effects that enhanced the value of community assets because of FEMA hazard mitigation grant support

Five of the eight communities had spin-off activities, three had collateral activities, and three had spillover effects.

In the communities studied, FEMA mitigation grants were a significant part of the community's mitigation history. The researchers found that the FEMA-funded mitigation activities brought about the most nonfederally funded mitigation benefits if the grant was of the sort that helped to institutionalize mitigation. Interviewees reported that the grants were important in reducing community risks, preventing future damages, and increasing a community's capability to reduce losses from natural hazards. Most interviewees believed that the grants permitted their communities to attain mitigation goals that might not otherwise have been reached and that the mitigation benefits of the activities funded by the grants went beyond what could actually be measured quantitatively (e.g., increased community awareness, esprit de corps, and peace of mind).

Savings from Mitigation

The detailed analysis of communities provides evidence to support the statistical analysis finding of positive net benefits from hazard mitigation. And, it goes even further to show that important additional benefits exist within communities across individual mitigation programs that are not reflected in the calculation of grant-level net benefits.

The overall study's main findings can be stated simply:

- The net benefits of FEMA's hazard mitigation program to society as a whole are positive with an average overall benefit-cost ratio of 4:1.

- The average benefit-cost ratio for all FEMA flood-related grants is 5:1.
- The average benefit-cost ratio for all FEMA wind-related grants is 3.9:1.
- The average benefit-cost ratio for all FEMA earthquake-related grants is 1.5:1.
- Synergistic activities occur in communities that have institutionalized their hazard mitigation programs.

In addition to the analytical results discussed above, the MMC report includes three basic recommendations derived from the study:

- Mitigation is sufficiently cost-effective to warrant federal funding on an ongoing basis both before disasters and during postdisaster recovery. The nation will always be vulnerable to natural hazards; therefore, it is only prudent to invest in mitigation. In this context, mitigation should be considered in the broadest possible sense to encompass projects and processes that relate to enforcing strong building codes and land use and zoning measures as well as developing comprehensive plans that limit disaster-caused damage and promote reduced losses.
- Mitigation is most effective when carried out on a comprehensive, communitywide, and long-term basis. Single grants or activities can help, but carrying out a slate of coordinated mitigation activities over time is the best way to ensure that communities will be physically, socially, and economically resilient to future hazard impacts.
- Continuing analysis of the effectiveness of mitigation activities is essential for building resilient communities. The need to integrate social science research into traditional hazard mitigation evaluation is strongly encouraged, especially when benefits are difficult to isolate and measure as in the case of process activities. The study highlighted the need for more systematic data collection and assessment of various mitigation approaches to ensure that hard-won lessons are incorporated into disaster public policy. In this context, postdisaster field observations are important, and statistically based postdisaster data collection is needed for use in validating mitigation measures that are either costly, numerous, of uncertain efficacy, or that may produce high benefit-cost ratios.

Philip T. Ganderton, University of New Mexico
Linda Bourque, University of California, Los Angeles
Nicole Dash, University of North Texas
Ron Eguchi, ImageCat, Inc.
David Godschalk, University of North Carolina at Chapel Hill
Claret Heider, National Institute of Building Sciences
Elliott Mittler, Consultant
Keith Porter, Consultant
Adam Rose, Pennsylvania State University
L. Thomas Tobin, Tobin and Associates
Craig Taylor, Natural Hazards Management, Inc.

The two-volume study report is available for free download at <http://www.nibs.org/MMC/mmchome.html>.

Mary Fran Myers Award: Nominees Sought

The Gender and Disaster Network and the Natural Hazards Center invite nominations of individuals working in the hazards field who should be recognized for efforts to advance women's careers in emergency management and the academy and for promoting gendered disaster research. Established in 2002, the Mary Fran Myers Award recognizes that vulnerability to disasters and mass emergencies is influenced by social, cultural, and economic structures that marginalize women and girls. The award was so named to recognize Myers' sustained efforts to launch a worldwide network among disaster professionals for advancing women's careers and for promoting research on gender issues, disasters, emergency management, and higher education.

The intent of this award is to recognize people whose program-related activities, advocacy efforts, or research has had a lasting, positive impact on reducing hazards vulnerability for women and girls. The award committee is especially interested in soliciting nominations from outside the United States. People whose work adds to the body of knowledge on gender and disasters, is significant for the theory and/or practice of gender and disasters, or has furthered opportunities for women to succeed in the hazards field are eligible to receive the award.

To nominate someone:

- Submit the full name and contact information (mailing address, e-mail, telephone, fax) of both nominee and nominator,
- Provide a maximum five-hundred word description of specific examples of how the nominee's work fits the award criteria mentioned above,
- Provide a resume/curriculum vitae of the nominee that reflects his/her commitment to gendered research and the promotion of women's involvement in the field,
- Provide a personal statement from the nominee indicating willingness to be considered, and
- Provide no more than one letter of support, not to exceed one page, from another person or organization that supports the nomination.

Direct questions and submit materials (e-mail attachments only) by May 15, 2006, to *Madhavi Malalgoda Ariyabandu* at mariyabandu@yahoo.com. This announcement is also online at <http://www.colorado.edu/hazards/mfmaward/>.

National PERISHIP Awards

The Natural Hazards Center and the Public Entity Risk Institute (PERI), in partnership with the National Science Foundation and Swiss Reinsurance Company (Swiss Re), will be awarding PhD dissertation fellowships to support research on any aspect of natural and human-made hazards, risks, and disasters. The goal of the program is to foster the development of the next generation of interdisciplinary hazards scholars who can offer wide-ranging contributions to the body of knowledge in hazards research. As a relatively small subset of many different disciplines, the inter-

disciplinary hazards field relies to an unusual extent on an influx of young scholars committed simultaneously to their own disciplines and to the more practical, applied aspects of the field. This combination can be difficult to achieve in today's traditional academic climate, and thus this program helps solidify student interest in and commitment to hazards via financial support.

Applications for this second round of PERISHIP Awards are due September 1, 2006. Complete program information, including deadlines, eligibility, and application requirements, is available at <http://www.cudenver.edu/periship/>. Specific questions can be directed to *Audre Hoffman*, PERI, 11350 Random Hills Road, #210, Fairfax, VA 22030; (703) 352-1846; e-mail: periship@riskinstitute.org.

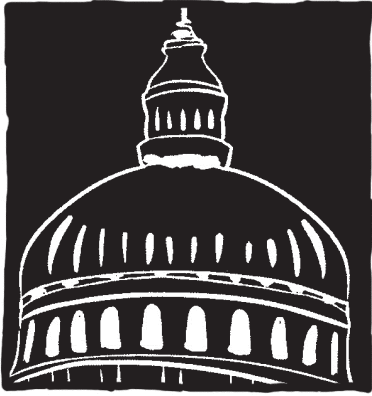
New Quick Response Reports from the Natural Hazards Center

The following Quick Response reports are now available from the Natural Hazards Center. They can be accessed online at <http://www.colorado.edu/hazards/qr/qrrepts.html>.

QR179 *Examination of the American Red Cross and FEMA following Hurricanes Charley and Ivan*, by Robert M. Schwartz. 2005. This research looked at the performance of the American Red Cross and the Federal Emergency Management Agency (FEMA) after Hurricanes Charley and Ivan in two Florida counties. Local officials cited communications issues as a major challenge and emphasized the importance of mitigation planning and an all-hazards approach. Citizens preferred face-to-face contact with FEMA personnel, were frustrated by policies and procedures they were unfamiliar with, and found disaster resource centers useful. Findings also highlight policy misunderstandings between national and local Red Cross representatives.

QR180 *Hurricane Katrina: GIS Response for a Major Metropolitan Area*, by Andrew Curtis, Jacqueline W. Mills, Jason K. Blackburn, and John C. Pine. 2005. This report is based on the observations of a research team that helped craft an organizational response to Louisiana's request for geographic information systems (GIS) in support of the Hurricane Katrina emergency response efforts. Findings show that preplanning to accumulate base data, develop standards for organizing and sharing data, designate hardware and software, and direct the early use of volunteers saves money, personnel, and time, contributing to a more effective GIS disaster response.

QR181 *The Selendang Ayu Oil Spill: A Study of the Renewable Resource Community of Unalaska/Dutch Harbor*, by Liesel Ritchie and Duane Gill. 2005. These researchers examined community responses in Unalaska/Dutch Harbor, Alaska, to the *Selendang Ayu* shipwreck and oil spill in 2004. They found little to no evidence suggesting long-term negative social impacts from the incident and found some positive outcomes in the increased appreciation for the community's ties to the natural environment and the heightened awareness of risks associated with the high volume of international shipping traffic in the region as well as other environmental risks.



WASHINGTON UPDATE

National Plan for Tsunami Risk Reduction

In December, the White House released its national tsunami risk reduction plan, *Tsunami Risk Reduction for the United States: A Framework for Action*. Authored by a working group of the president's National Science and Technology Council in partnership with scientists and policy makers at local, state, and federal levels, it recognizes critical worldwide interdependencies, especially for Earth observations, and notes the opportunities for nations to work together to reduce vulnerabilities.

The National Tsunami Hazard Mitigation Program (NTHMP), a partnership of federal agencies and coastal states, will execute the plan by facilitating the following:

- Develop standardized and coordinated tsunami hazard and risk assessments for all U.S. coastal regions
- Enhance tsunami forecast and warning capabilities along the nation's coastlines
- Ensure interoperability between the U.S. national system and other regional tsunami warning systems
- Provide technical expertise and assistance to facilitate development of international warning systems
- Promote development of model mitigation measures and encourage communities to adopt construction, critical

facilities protection, and land use planning practices to reduce the impact of future tsunamis

- Increase outreach to all communities at risk to raise awareness, improve preparedness, and encourage the development of tsunami response plans
- Conduct an annual review of tsunami research and develop a strategic plan for U.S. tsunami research

The framework is available for download at <http://sdr.gov/>. For more information about the NTHMP, visit <http://www.pmel.noaa.gov/tsunami-hazard/>.

Predisaster Mitigation Grant Program Lives On

With the passage of Public Law 109-139 in late December, the Robert T. Stafford Disaster Relief and Emergency Assistance Act was amended to reauthorize the Predisaster Mitigation program (PDM) through fiscal year 2008. The PDM program provides funds to state and local governments for hazard mitigation planning and the implementation of predisaster mitigation projects to reduce overall risks to the population and structures while also reducing reliance on funding from actual disaster declarations. Congress has appropriated \$50 million for competitive grants, technical assistance, and program support for the PDM program in fiscal year 2006.

The new law also amended the Disaster Mitigation Act of 2000 (DMA2K) to extend through September 30, 2007, the deadline for a study estimating the reduction in federal disaster assistance that has resulted and is likely to result from the DMA2K. The law, the Predisaster Mitigation Program Reauthorization Act of 2005, is available in any federal repository library and on the Library of Congress Web site at <http://thomas.loc.gov/>. Learn more about the PDM program at <http://www.fema.gov/fima/pdm.shtm>.

DHS Wants Kids to Get Ready!

The U.S. Department of Homeland Security (DHS) and the Advertising Council have launched "Ready Kids" to help parents and teachers educate children about emergencies. A new Web site features games and puzzles as well as age-appropriate, step-by-step instructions on what families can do to better prepare for emergencies and the role kids can play in that effort. In-school materials developed by Scholastic Inc. offer lessons that meet national standards for language arts, social studies, and geography while providing teachers and parents with a vehicle to ex-



plain important emergency preparedness information to children.

To ensure that program information is presented in a way that is understandable and appropriate for kids, DHS consulted with a number of organizations experienced in education and children's health, including the American Psychological Association, American Red Cross, National Association of Elementary School Principals, National Association of School Psychologists, National Parent Teacher Association, National Center for Child Traumatic Stress, U.S. Department of Education, and U.S. Department of Health and Human Services.

"Ready Kids" is the newest addition to the "Ready" campaign, a national public service advertising campaign designed to educate and empower Americans to prepare for and respond to emergencies. Find out more about the program and meet Rex, the mountain lion mascot, and his family at <http://www.ready.gov/kids/>.

New Directorate for Preparedness Takes Shape at DHS

Armed with \$4 billion appropriated by Congress for fiscal year 2006, the new U.S. Department of Homeland Security (DHS) Directorate for Preparedness is beginning to take shape. In December, the U.S. Senate confirmed George W. Foresman as undersecretary for preparedness, and in January, the president appointed Tracy A. Henke as executive director of the Office of Grants and Training (formerly the Office of State and Local Government Coordination and Preparedness). In addition to the Office of Grants and Training, the directorate consists of infrastructure protection, cyber and telecommunications, the chief medical officer, the U.S. Fire Administration, and the Office of National Capital Region Coordination.

Foresman has more than 20 years of emergency preparedness experience at various levels of government. Most recently, he served as an assistant to the governor of Virginia for commonwealth preparedness and was responsible for the state's emergency and disaster preparedness activities, including coordination with the private sector.

Henke is a former deputy associate attorney general at the U.S. Department of Justice (DOJ). She also served as acting assistant attorney general and principal deputy assistant attorney general at the DOJ Office of Justice Programs, where she was responsible for managing a \$4 billion portfolio of grant and research programs, including the Office for Domestic Preparedness (prior to its transfer to DHS).

Find out more about the new directorate at http://www.dhs.gov/dhspublic/interapp/editorial/editorial_0794.xml.

Federal Agencies' Performance Ratings Online

ExpectMore.gov is a new Web site developed by the U.S. Office of Management and Budget and federal agencies that reports on federal program performance. Launched in February, the site features information about every federal program assessed to date: its purpose, how it performs, and what it is doing to perform better. Answers to the Program Assessment Rating Tool (PART) determine a program's overall performance rating and are the basis

for a program improvement plan. The PART was developed to assess and improve program performance so that the federal government can achieve better results. A PART review helps identify a program's strengths and weaknesses to inform funding and management decisions aimed at making the program more effective. The PART therefore looks at all factors that affect and reflect program performance, including program purpose and design; performance measurement, evaluations, and strategic planning; program management; and program results. Access the assessments at <http://www.expectmore.gov/>.

Hurricane Protection and Damage Reduction: What Went Wrong in New Orleans

Comprehensive analysis to determine exactly what happened in the New Orleans hurricane and flood protection system during Hurricane Katrina is the mission of the Interagency Performance Evaluation Task Force (IPET). Established by the chief of the U.S. Army Corps of Engineers, the IPET is made up of some of the nation's leading engineers and scientists from government, academia, and private industry.

While the IPET's primary focus is investigating the levees and floodwalls that overtopped or breached in order to provide answers for use in future New Orleans protection project designs, the task force is also providing preliminary observations from its own team members and from other engineering organizations for possible use in the rapid-paced repairs of Hurricane Katrina damage. These observations are being provided to the Corps' Task Force Guardian, which is managing the repair of damaged levees and floodwalls, for possible inclusion in repair designs.

The IPET's final report will be completed June 1, 2006. Various interim reports will be released and posted on the IPET Web site at <https://ipet.wes.army.mil/> as they become available. Already available is the 219-page *Performance Evaluation Plan and Interim Status, Report 1 of a Series: Performance Evaluation of the New Orleans and Southeast Louisiana Hurricane Protection System*. IPET reports will be reviewed by an American Society of Civil



Engineers (ASCE) External Review Panel. Additionally, the National Academies has assembled a multidisciplinary, independent panel of acknowledged experts to review and synthesize the IPET and ASCE efforts. The National Academies panel will report its findings in the summer of 2006. All of these reports will be released to the public.

New Homeland Security Center of Excellence

Johns Hopkins University has been selected by the U.S. Department of Homeland Security (DHS) to lead the fifth Homeland Security Center of Excellence in the study of how the nation can best prepare for and respond to potential large-scale incidents and disasters. DHS anticipates providing Johns Hopkins and its partners with a total of \$15 million over the next three years.

Formally titled the Center for the Study of High Consequence Event Preparedness and Response, the new center will study deterrence, prevention, preparedness, and response, including issues such as risk assessment, decision making, infrastructure integrity, surge capacity, and sensor networks. In particular, it will study interactions of networks and the need to use models and simulations.

The Johns Hopkins Office of Critical Event Preparedness and Response will serve as the seat of the consortium. Major partners are the Florida State Universities Consortium on Homeland Security (Florida A&M, University of South Florida, Florida State University, Florida Atlantic University, and University of Central Florida), University of Alabama (Birmingham), Morgan State University, University of Buffalo, the American Red Cross, the Brookings Institute, and the Chemical, Biological, and Radiological Technology Alliance.

To find out more about the Homeland Security Centers of Excellence program and the other centers, read the press release at <http://www.dhs.gov/dhspublic/display?content=4957> or visit <http://www.dhs.gov/centersofexcellence/>.

Notice on Cost Share Adjustments for Disasters

Pursuant to a final rule issued in 1999, the Federal Emergency Management Agency (FEMA) annually adjusts the statewide per capita threshold used to recommend an increase of the federal cost share from 75 percent to not more than 90 percent of the eligible cost of permanent work under section 406 and emergency work under section 403 and section 407 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act). The adjustment to the threshold is based on the Consumer Price Index for All Urban Consumers published annually by the U.S. Department of Labor. For disasters declared between January 1 and December 31, 2006, the qualifying threshold is \$114 of state population. This means that if a disaster is so extraordinary that actual federal obligations under the Stafford Act, excluding FEMA administrative costs, meet or exceed \$114 per capita, FEMA may recommend a 90 percent federal/10 percent state cost-share arrangement, as opposed to the normal 75 percent/25 percent requirement.

The complete text of the notice is in the January 30, 2006, *Federal Register* (Vol. 71, No. 19, pp. 4930-4931),

which can be found in any federal repository library or online at <http://www.access.gpo.gov/>. For more information, contact Magda Ruiz, Recovery Division, FEMA, 500 C Street SW, Washington, DC 20472; (202) 646-2705.

DHS Performance-Related Reports

The following reports are available for download from the U.S. Department of Homeland Security.

Performance and Accountability Report. 2005. 464 pp. http://www.dhs.gov/interweb/assetlibrary/CFO_PerformanceAccountabilityReport_2005.pdf.

Major Management Challenges Facing the Department of Homeland Security (Excerpts from the FY 2005 DHS Performance and Accountability Report). Office of Audits. 2005. 26 pp. http://www.dhs.gov/interweb/assetlibrary/OIG_G_06-14_Dec05.pdf.

Fiscal Year 2006 Annual Performance Plan. 2005. 68 pp. http://www.dhs.gov/interweb/assetlibrary/OIG_APP_FY_06.pdf.

A Review of the Top Officials 3 Exercise. Office of Inspections and Special Reviews. 2005. 83 pp. http://www.dhs.gov/interweb/assetlibrary/OIG_06-07_Nov05.pdf.

More Tax Relief for Gulf Coast

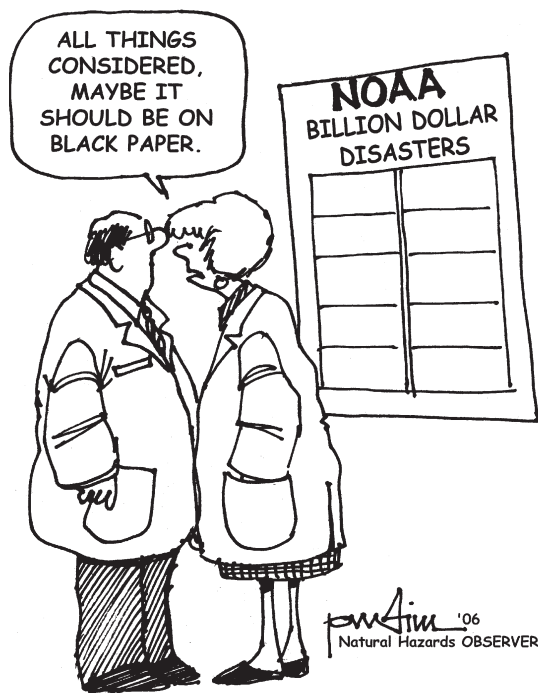
In late December, the Gulf Opportunity Zone Act of 2005 became law (Public Law 109-135), amending the Internal Revenue Code to establish a program of tax benefits for businesses and individuals affected by Hurricanes Katrina, Rita, and Wilma. The law created the Gulf Opportunity Zone (GO Zone), which consists of the counties and parishes in Louisiana, Mississippi, and Alabama designated as warranting federal assistance in the wake of Hurricane Katrina, and provides tax incentives to help revitalize and rebuild communities within the zone. The \$7.8 billion package also established GO Zones for areas affected by Hurricanes Rita and Wilma and extends provisions made in the Katrina Emergency Tax Relief Act of 2005 (Public Law 109-73) to victims of these disasters as well. The law is available in any federal repository library and on the Library of Congress Web site at <http://thomas.loc.gov/>.

More NIMS Resources from the NIC

The Federal Emergency Management Agency's National Incident Management System (NIMS) Integration Center (NIC) has released three new NIMS-related resources. *Integrating NIMS into State EOPs and SOPs* and *Integrating NIMS into Local/Tribal EOPs and SOPs* outline ways state and local incident managers can modify emergency operations plans and standard operating procedures to align with NIMS concepts and terminology. *Training Guidelines for ICS Instructors, January 2006* provides direction on training needed by Incident Command System (ICS) instructors and for agencies that offer ICS training programs. These documents and additional information about NIMS are available online at <http://www.fema.gov/nims/>. For more information, contact the NIC at NIMS-Integration-Center@dhs.gov or (202) 646-3850.

U.S. Billion-Dollar Weather and Climate Disasters

The National Oceanic and Atmospheric Administration National Climatic Data Center has updated its list tracking U.S. billion-dollar weather and climate disasters from 1980 to the present. Five events made the list in 2005: Hurricanes Katrina, Wilma, Rita, and Dennis and the Midwest drought. Hurricane Katrina was responsible for about 1,300 deaths and a preliminary estimate of more than \$100 billion in damage. Combined, preliminary figures show that the other three hurricanes claimed 166 lives with more than \$20 billion in damage. The drought in the Midwest destroyed more than \$1 billion in corn and soybean crops throughout Arkansas, Illinois, Indiana, Missouri, Ohio, and Wisconsin. The list is available at <http://www.ncdc.noaa.gov/oa/reports/billionz.html> along with graphics and links to more extensive reports about each event.



USGS National Earthquake Center Goes 24/7

The U.S. Geological Survey (USGS) National Earthquake Center is strengthening its operations with round-the-clock, on-site personnel and a new seismic event processing system that identifies, locates, and measures earthquakes, cutting in half the time required to report earthquake information. The system will become fully operational in March 2006. Other software and hardware enhancements are also being implemented, including Prompt Assessment of Global Earthquakes for Response (PAGER), which is designed to predict damage from major earthquakes worldwide based on estimates of people and property exposed to potentially damaging levels of ground motion. The system is being developed as a tool for emergency relief organizations such as the U.S. Agency for International Development. Additionally, in January, the USGS debuted a new Web site and notification service at <http://earthquake.usgs.gov/>. The site's earthquake center section has information

on the latest earthquakes, past earthquakes, and earthquake lists and statistics.

NOAA Unveils New Rating Systems

The National Oceanic and Atmospheric Administration recently announced two new storm ratings systems, one for tornadoes and the other for Northeast snowstorms:

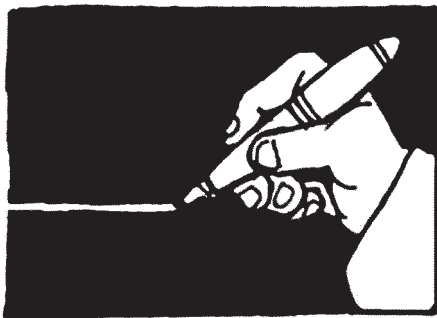
- The Enhanced Fujita (EF) Scale refines and improves the original Fujita Scale in rating tornadoes. The EF Scale will continue to rate storms on a scale from zero to five, but ranges in wind speed will be more accurate. The new scale incorporates more damage indicators and degrees of damage than the original scale, allowing more detailed analysis and better correlation between damage and wind speed. Implementation is expected by February 2007. Find out more at <http://www.spc.noaa.gov/efscale/>.
- Designed to categorize major snowstorms in the Northeast, the Northeast Snowfall Impact Scale (NESIS), quickly calculates the impact of a powerful snowstorm soon after it strikes and gives it a rank, similar to methods used to categorize tornadoes. Under the auspices of the National Climatic Data Center, NESIS will rank the severity of a snowstorm based on snowfall amount and the population of the affected areas. With NESIS, scientists can quickly assess a storm's impact today, compare it to storms past, and assign it one of five categories: notable, significant, major, crippling, or extreme. Visit the NESIS Web page at <http://www.ncdc.noaa.gov/oa/climate/research/snow-nesis/>.

Terrorism Risk Insurance Extended

A matter of days before it was set to expire, the Terrorism Risk Insurance Act of 2002 (Public Law 107-297) was modified and extended by the Terrorism Risk Insurance Extension Act of 2005 (Public Law 109-144). The original law established a temporary Terrorism Risk Insurance Program of shared public and private compensation for insured commercial property and casualty losses resulting from an act of terrorism. Extended through December 31, 2007, the law has been modified to expand the private sector role and reduce the federal share of compensation. Among the modifications are an increase in the activation level from \$5 million to \$50 million in 2006 and \$100 million in 2007, increased deductibles, and the exclusion of additional types of coverage.

The full text of the law is available in any federal repository library and on the Library of Congress Web site at <http://thomas.loc.gov/>. For complete information on the program, including the Interim Guidance Concerning the Terrorism Risk Insurance Extension Act of 2005 (*Federal Register*, January 5, 2006, Vol. 71, No. 3, pp. 648-651), visit <http://www.treasury.gov/trip/>.





ON THE LINE

Urban Risk Reduction's Role in Sustainable Development

When asked how sustainability applies to urban risk reduction, Alejandro Linayo, who teaches in a graduate disaster reduction degree program in Venezuela, said that the question needs to be reversed. In Linayo's view, it is more appropriate to ask how urban risk reduction applies to sustainability. With sustainable development being an end state that benefits society, urban risk reduction becomes a set of actions that supports sustainability. This article adopts Linayo's construct and explores urban risk reduction's potential contribution to our present understanding of sustainability. It argues that risk reduction can be an effective tool to help sustain cities and to aid positive future development. Some evidence supporting this argument will be provided here in brief case examples.

To be effective, risk reduction should be viewed holistically (by public, private, and civil society sectors) and integrated into public and private practices at all spatial and organizational levels. This is in keeping with the notion of incorporating sustainability and public risk management into comprehensive emergency management to broaden its impact and its applications to social betterment.¹

There is ongoing discussion around the globally accepted definition of sustainability: development that meets the needs of the present without compromising the ability of future generations to meet their own needs.² However, an emerging consensus by European Union scholars posits that sustainable urban development has four components: ecological integrity (the ability to maintain various levels of ecological balance), equity (encompassing social and economic concerns), public participation (in the decision making process and in establishing social preference for means of improvement), and futurity (the capacity to sustain desired levels of urban development at given resource use rates over time).³ This second model is appropriate to use here as it focuses on the city as well as the role that populations play in sustainability practices.

In practical terms, sustainability actions occur as both formal and informal processes. Formal processes reflect institutional adoption through laws, programs, and operations, and the informal processes reflect social practice in everyday lives. An example of a formal process is EDU-PLAN hemisférico, an Organization of American States-supported hemispheric plan of action for the reduction of vulnerability to natural hazards in the education sector. The plan is divided into three areas: physical infrastructure, citizen participation, and academic aspects. Successful plan

implementation means educational buildings are adequate and safe, citizens are educated and trained, and students of all ages are empowered with the knowledge to make their homes and communities safer places to live.

Sustainable development can be most beneficial in countries where large populations of urban poor are subject to high levels of vulnerability. Thus, this article has greater applicability to countries with large urban poor populations. Nevertheless, the reader should find some parallels and benefits for all countries. Using Alan Lavell's dual risk construct, we begin to understand that the poor face high levels of "everyday" risk (getting enough food, drinking water, transport to work) as well as hazards risk.⁴ To provide the poor with sustainable urban development benefits, both types of risks must be addressed. Improving public health and providing low-polluting transport, for example, will improve the capacity of the poor to cope with everyday risk and to better confront hazards risk. This leads to a policy position that addresses the sustainable development equity component: the most productive way for urban risk reduction to contribute to sustainability is to address present identified risks through structural and nonstructural actions while lessening vulnerability to future hazards events through other appropriate means.

Case Examples

To show the importance of participation, here are examples of risk reduction and sustainable development in practice.

In the Aguán River Valley in Honduras, communities use self-administered early warning systems to monitor river flooding. They have chosen to rely on community network building, focusing on strong horizontal relations (internal to the community) with secondary linkages to national weather information services. Responsibilities are clear and enforced by tradition and custom. River gauges are monitored by teams trained by local emergency management councils and when the water rises, signals are sent to an appointed villager who rings a bell to alert residents of the need to evacuate or take protective actions. This collective protection practice is appropriate and sustainable and requires the local populace to adequately understand risk and its consequences.

The community of José Cecilio del Valle in San Salvador, El Salvador, an irregular settlement (occupation of nontitled land) of working poor families, is on the edge of a

deep ravine and is subject to earthquakes, floods, and landslides. Since they are near the city's employment center, the people do not wish to move: a common attitude in poor countries. Collectively, the community chose to engage in risk reduction. Youth brigades are used on new construction, hazard mitigation drainage works are integrated into lot building construction, technical capacity is increased via strong ties with an international nongovernmental organization, and families in extreme risk areas in the ravine are relocated to reconstituted sites on the ridge. The residents became part of the process rather than simply taking part in a process designed by others. These actions contribute to ecology integrity, equity, and safety. José Cecilio del Valle is more sustainable now as a result of these efforts.

The town of Ocotal in Nicaragua was hit hard by Hurricane Mitch in 1998. Its response was to rebuild lost housing in an area already identified in the town plan as less risk-prone. The new houses were constructed of adobe block made in a city-owned factory. The use of renewable building materials and local labor contributed to the community sustainability effort. A key success factor was the relationship that existed prior to the hurricane between the municipality and decentralized international cooperation organizations. Communication and trust had been built that supported a sustainable recovery process. The Ocotal experience is an example of renewable resource use, equity, institutional guidance for sustainable recovery, and sustainable development based on local control.

Marikina, a city near Manila in the Philippines, has adopted a sustainability approach in its Safety Plan, which is designed to make the city more secure for economic development through urban risk reduction. As the local culture does not like the word disaster, the word safety is used as a symbolic and functionally inclusive term that civil society understands and supports. In the Safety Plan, risk reduction is an objective for all municipal departments, which serves the overall objective of sustainable development in this area of high seismic and flood risks. The plan was assembled through an intensive process of citizen involvement that built awareness of risk reduction and support for the restriction of growth of irregular settlements in high-risk locations. The Marikina case supports the United Nations' position that disaster risk management is not an independent discipline. It is multisectorial in nature, requiring support from all sectors of society.

The City of Berkeley, California, is an example of what Paul Farmer, executive director of the American Planning Association, calls "making self-interest a common interest." Berkeley has become more sustainable by investing in retrofitting urban facilities as well as private residences. The majority of the public buildings that would be needed in a disaster have been upgraded along with 65 percent of the city's individual residences. The city is flexible and creative in waiving fees, providing subsidies to those in need, and adjusting administrative procedures to promote citizen involvement and participation by low-income households. Of course, this is an expensive process, but it represents long-term support and involvement of the electorate and local government agencies in reducing risk and making the city more sustainable. As in José Cecilio del Valle, the citi-

zens of Berkeley became part of the process, not mere participants, and this has proved to be a positive experience.

Lessons Learned

Keeping people out of harm's way is a difficult task. Urban risk reduction can play a part by adopting flexible practices and supporting the four components of sustainability: ecological integrity, equity, public participation, and futurity. Taking action to help the poor lower their everyday risk is the best form of "self-interest becoming common interest." The case examples show that it is not always laws or governments that encourage adoption of risk reduction practices. A certain level of engagement between sectors that are able and willing to take action is needed. If replicated at scales from the neighborhood to the regional, this engagement of commonly held beliefs joined by adequate resources will yield many societal benefits. Engagement becomes the thread that ties diverse stakeholders together, each accepting responsibility to use and share resources in some aspect of sustainable urban development.

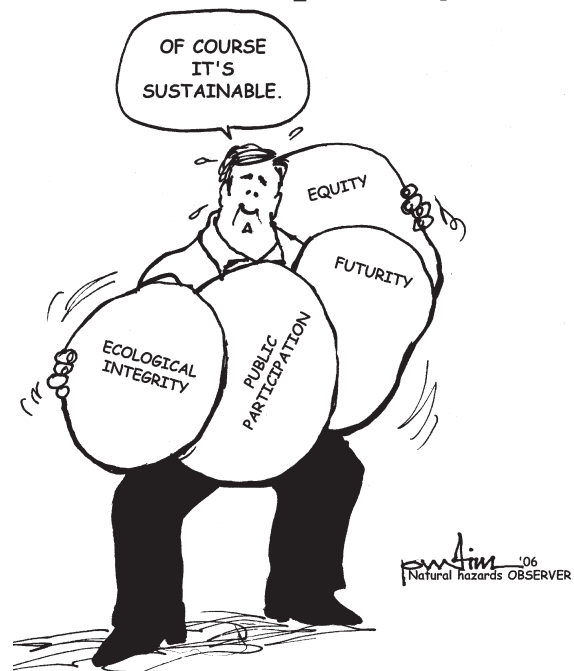
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¹Britton, N.R. 1998. Safeguarding New Zealand's future: Emergency management's role in shaping the nation. <http://unpan1.un.org/intradoc/groups/public/documents/APCITY/UNPAN019477.pdf>.

²Mileti, D.S. 1999. *Disasters by design*. Washington, DC: John Henry Press.

³Curwell, A., M. Deakin, M. Symes, eds. 2005. *Sustainable urban development: Volume 1: The framework and protocols for environmental assessment*. London: Routledge.

⁴Lavell, A. 2003. Sustainable development and risk reduction in the Lower Lempa Valley, El Salvador: Experiences with local participation. http://www.desenredando.org/public/articulos/2003/sdrrllv-sa/sdrrllv-sa_abr-24-2003.pdf.



Free Online Training Courses Offered by PERI

Delivering effective training on an array of risk management subjects has always been a goal of the Public Entity Risk Institute (PERI). But, reaching all the relevant leaders and employees at thousands of small organizations is nearly impossible to accomplish using traditional methods of training delivery.

Now, PERI is rolling out the first of its new collection of e-training courses, which features a range of risk management topics that can be accessed on the PERI Web site. Recognizing the need to expand opportunities for critical training to a broader audience, PERI developed this online initiative to afford greater access to organizations with limited resources. These risk management courses will initially be offered at no charge. PERI plans to offer both free and reasonably-priced online courses in the future.

New training courses will be added throughout 2006 on topics such as risk management for small business, levee vulnerability, and terrorism prevention. For more information about the e-training initiative, contact *Claire Reiss* at creiss@riskinstitute.org or (703) 352-1846. Access the courses at <http://www.riskinstitute.org/test.php?pid=page&tid=88>.

Final Report of the 9/11 Public Discourse Project

In early December, the 9/11 Public Discourse Project, the nonprofit successor organization to the 9/11 Commission, released its final report assessing the status of the 41 recommendations made by the commission in July 2004 to make the United States safer and more secure. In *Final Report on 9/11 Commission Recommendations*, the project participants issued final grades for progress made in the areas of homeland security and emergency preparedness and response (see the *Observer*, November 2005, p. 19), reforming the institutions of government, and foreign policy, public diplomacy, and nonproliferation. Littered with Cs, Ds, and Fs (some of which could be improved upon if pending legislation is passed), the report makes it clear that there is still much to be done. A prepared statement released with the report indicated that the purpose of the report was not to praise or to criticize, but to be constructive.

The culmination of the assessment marked the end of the project, and on December 31, the 9/11 Public Discourse Project ceased operations. The final report is available at <http://www.9-11pdp.org/> along with the three initial reports, a one-page summary of the grades, and more information about the project.

Drought Meeting Announcement and Call for Posters

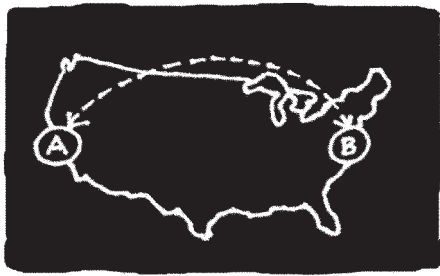
This September, the Geological Society of America and partners, including the Natural Hazards Center, will be convening a participatory conference in Boulder, Colorado, titled *Managing Drought and Water Scarcity in Vulnerable Environments: Creating a Roadmap for Change in the U.S.* The conference goals are to create a forum for improving planning and management of drought and water scarcity in the United States and to stimulate national debate through publication of a science- and policy-based discussion document. The focus of the meeting will be on identifying successful strategies and developing a decisive action plan.

Poster presentations on case studies, innovative research, and outreach efforts are invited on the following topics:

- Hydrologic aspects of drought (past, present, and future)
- Biologic aspects of drought, including quantitative ecosystem impacts
- Economic aspects of drought (historical, contemporary, future)
- Risk-based approaches to drought, including probabilistic risk assessment
- Qualitative and quantitative measures of confidence in drought analyses
- Public policy approaches for managing and mitigating drought impacts
- Facilitating collaboration of multiple stakeholders
- Impact of global climate change on drought management and water scarcity
- Enhanced drought prediction, monitoring, and impact assessment

The conference dates are September 18-20, 2006. Abstracts may be submitted between April 1 and June 26, 2006. For more information, visit <http://www.geosociety.org/meetings/06drought/>.





CONFERENCES AND TRAINING

Below are the most recent conference announcements received by the Natural Hazards Center. A comprehensive list of hazards/disaster meetings is available at <http://www.colorado.edu/hazards/conf.html>.

Looking Back to Go Forward: Creating Interdisciplinary Ties in Disaster Recovery. Sponsors: New York Disaster Interfaith Services, Disaster Psychiatry Outreach. **New York, New York: March 16, 2006.** The focus of this event will be on practical aspects of collaboration among disaster spiritual care and mental health providers with an emphasis on shared experiences and the development of concrete, real-world resources. Among the activities will be small group discussions arranged by geographical area to foster relationship-building and resource identification and a large group review of lessons learned. To learn more, contact *Grant Brenner, Disaster Psychiatry Outreach; (212) 721-9235* or *Maggie Jarry, New York Disaster Interfaith Services; (212) 669-6105; <http://www.nydis.org/resources/headlines/01-23-06.php>.*

DRJ's Spring World 2006. Organizer: *Disaster Recovery Journal (DRJ)*. **Orlando, Florida: March 26-29, 2006.** This event will feature sessions, workshops, exercises, networking opportunities, and an exhibit hall on the subjects of disaster recovery, contingency planning, and business continuity. To learn more, contact *Bob Arnold; e-mail: bob@drj.com; <http://www.drj.com/conferences/orl2006/>.*

ASPA 2006: The Sky's the Limit—Idealism and Innovation in Public Service. Organizer: American Society for Public Administration (ASPA). **Denver, Colorado: March 31-April 4, 2006.** At this annual conference, over one hundred opportunities will be available for training, networking, exchanging ideas, and building partnerships, including training sessions on ethics, leadership, civic engagement in the aftermath of Hurricane Katrina, and the National Incident Management System and panel discussions on homeland security, transportation, the environment, and privatization. Attendees will include federal, state, and local government officials and employees; professors; practitioners; and students. To learn more, contact *Patricia Yearwood, 1301 Pennsylvania Avenue NW, Suite 840, Washington, DC 20004; (202) 585-4309; e-mail: pyearwood@aspanet.org; http://www.aspanet.org/scriptcontent/index_aspaconference.cfm.*

Grouping for Solutions: Increasing Organizational Reliability by Bringing Academicians and Practitioners

Together. Presenter: The Coalition for High Reliability Organizations. **Ontario, California: April 2-4, 2006.** This workshop will focus on high reliability organizations, bringing together experts in high reliability from the U.S. Navy, the fire service, medicine, law enforcement, and academic management programs to discuss current research and knowledge. Its target attendee comes from positions in administration, operations, command, and management of high-risk systems. To learn more, e-mail *admin@highreliability.org; <http://www.highreliability.org/>.*

GIPSC 2006: Geospatial Integration for Public Safety. Sponsors: National Emergency Number Association, Urban and Regional Information Systems Association (URISA). **Nashville, Tennessee: April 10-12, 2006.** Designed for 911 professionals, geographic information systems professionals, addressing coordinators, and incident management and emergency response specialists, this forum will address the challenges and opportunities of mapping and addressing in the areas of public safety and emergency management. To learn more, visit *http://www.urisa.org/Street_Smart_Conference/gipsc.htm.*

Southwest Homeland Security Conference: Securing the Southwest—Together. Sponsors: State of Arizona, U.S. Department of Homeland Security. **Phoenix, Arizona: April 18-19, 2006.** This conference will bring colleagues together to develop interstate collaboration, strengthen trust and relationships between all homeland security partners, and foster homeland security leadership. The focus areas of the conference will be border security (interstate and international), terrorism prevention, catastrophic preparedness, public education/outreach, and Native American homeland security. To learn more, call *(866) 512-3968* or e-mail *shsc@iem.com; <http://www.swhomelandsecurity.com/>.*

2006 MRC National Leadership Conference. Sponsor: Medical Reserve Corps (MRC). **Dallas, Texas: April 18-21, 2006.** All MRC communities are invited to participate in this development conference, which will feature knowledge sharing among federal government and nongovernmental organizations, emergency response and public health experts, and MRCs. To learn more, e-mail *mrcontact@osophs.dhhs.gov; <http://www.medicalreservecorps.gov/page.cfm?pageID=1508>.*

UCL Johnston-Lavis Conference 2006: Managing Volcanic Crises: Effective Integration of Science, Policy, and Practice. Organizers: Benfield Hazard Research Centre, University College London (UCL), University of Sussex. **London, England: April 20-21, 2006.** This conference will address practical strategies for managing volcanic crises. It invites volcanologists to discuss what they can do, decision makers to declare what they need, and both communities to identify methods of combining the two for improved response to volcanic emergencies. To learn more, e-mail jlavis-meeting@ucl.ac.uk or contact *Andrew Bell, Benfield Hazard Research Centre, Department of Earth Sciences, University College London, Gower Street, London WC1E 6BT, UK; <http://www.spidernetwork.org/ucl.htm>.*

International Workshop on Standardization for Emergency Preparedness. Sponsors: American National Standards Institute (ANSI) and New York University International Center for Enterprise Preparedness (INTERCEP). **Florence, Italy: April 24-26, 2006.** The purpose of this meeting is to reach an international workshop agreement for emergency preparedness and operational continuity that will be published by the International Standards Organization (ISO). It is anticipated that the agreement will evolve into an ISO standard. Organizations involved with emergency preparedness and operational continuity are encouraged to attend. To learn more, contact *Bill Raisch, INTERCEP; (212) 998-2000; e-mail: intercep@nyu.edu or Matt Deane, ANSI; (212) 642-4992; e-mail: mdeane@ansi.org; <http://www.ansi.org/iwa/>.*

GovSec, U.S. Law, and Ready! 2006. Washington, DC: April 25-27, 2006. This conference, which is three events in one, brings together federal government security professionals; federal, state, and local law enforcement officials; as well as emergency first responders to unite the homeland security community and to help coordinate incident planning and management efforts. It will include trainings and workshops, concurrent sessions, technology showcases, and networking opportunities. To learn more, contact *GovSec U.S. Law, and Ready! 313 South Patrick Street, Alexandria, VA 22314; (800) 687-7469; e-mail: govsec@ntpshow.com; <http://www.readyusainfo.com/>.*

9th Wildland Fire Safety Summit. Organizer: International Association of Wildland Fire (IAWF). **Pasadena, California: April 25-27, 2006.** Participants in this summit will include firefighters, prescribed burners, land managers, fire chiefs, agency administrators, fire researchers, and public officials. Presentations will cover liability and legal implications; fire weather; making firefighters safer; safety in the wildland-urban interface; policy, practices, and procedures; case studies and lessons learned; and international wildland fire safety. To learn more, contact *Dick Mangan; (406) 543-0013; e-mail: blackbull@bigsky.net; <http://www.iawfonline.org/summit/overview.shtml>.*

Executive Forum on Disaster Preparedness and Business Continuity. Atlanta, Georgia: April 26-28, 2006. "Build

Robust Disaster Avoidance Strategies to Serve Employees, Customers, Stakeholders, and Community" is the theme of this forum, which is designed to bring the business community and key government agencies together to collaborate and discuss ways to prepare for unpredictable events to ensure business survival and continuance. To learn more, contact *Active Communications International, 205 North Michigan Avenue, 39th Floor, Chicago, IL 60601; (312) 780-0700; <http://www.acius.net/>.*

2006 Great Lakes Homeland Security Training Conference and Expo. Host: Michigan State Police Emergency Management Division. **Grand Rapids, Michigan: May 2-4, 2006.** This conference will bring together over 1,500 public officials, education representatives, and emergency responders from various disciplines looking for the tools needed to detect, prevent, and protect their communities from terrorist attacks. To learn more, contact *Colleen Mohr; (517) 336-6464; e-mail: mohrc@michigan.gov or Wendy Galbreath; (517) 322-6515; e-mail: galbreathw@michigan.gov; http://www.michigan.gov/msp/0,1607,7-123-1593_3507-118227--,00.html.*

Managing Evacuation: Ripple Effects of Terrorism and Natural Disasters. Host: American Public University System. **Shepherdstown, West Virginia: May 3-4, 2006.** This event, which will include sessions, exercises, and networking opportunities, is designed to initiate a dialog between local officials, scholars, and practitioners in the fields of disaster management, homeland security, criminal justice, and emergency management about the impact that evacuations would have on the small towns and counties near large cities. To learn more, contact *Bob Jaffin, American Public University System, 111 West Congress Street, Charles Town, WV 25414; (304) 724-3723; e-mail: bjaffin@apus.edu; <http://www.apus.edu/terrorism-evacuation/>.*

2006 National Flood Conference. Host: Federal Emergency Management Agency National Flood Insurance Program. **Philadelphia, Pennsylvania: May 7-10, 2006.** This conference is intended for anyone involved in the National Flood Insurance Program. To learn more, contact *Catherine King, 2006 National Flood Conference, 7700 Hubble Drive, Lanham, MD 20706; (301) 918-1439; e-mail: CatherineR.King@associates.dhs.gov; <http://bsa.nfipstat.com/>.*

14th Annual Voluntary Organizations Active in Disasters (VOAD) Conference. **Raleigh, North Carolina: May 9-12, 2006.** This conference includes national VOAD committee meetings as well as workshops and opportunities to exchange ideas on disaster response. To learn more, visit <http://www.nvoad.org/annualconf1.php>.

Restoration 2006: Community and Economic Recovery after a Disaster. Sponsors: International City/County Management Association (ICMA), National League of Cities, National Association of Counties. **New Orleans, Louisiana: May 16-17, 2006.** This conference is designed to empower government officials, nonprofit and community rep-

representatives, and the business community with useful information, strategies, and connections to aid in long-term and sustainable community and economic redevelopment after a disaster. To learn more, e-mail restoration2006@icma.org; <http://www.restoration2006.org/>.

American Institute of Hydrology Annual Meeting and International Conference: Challenges in Coastal Hydrology and Water Quality. Baton Rouge, Louisiana: May 21-24, 2006. This international forum for the dissemination and exchange of information in coastal hydrology, hydraulics, and water quality aims to stimulate interdisciplinary research, education, management, and policy making from physical, biogeochemical, and socioeconomic perspectives related to complex environmental systems in coastal regions. To learn more, contact the *American Institute of Hydrology*, 300 Village Green Circle, Suite 201, Smyrna, GA 30080; (770) 384-1634; e-mail: aihydro@aol.com; <http://www.aihydro.org/conference.htm>.

World Environmental and Water Resources Congress. Host: Environmental Water and Resources Institute of the American Society of Civil Engineers (ASCE). **Omaha, Nebraska: May 21-25, 2006.** Topics at this congress will include river and wetlands restoration, dam removal, hydraulic structures, education and research, and sustainable development in water, stormwater, and wastewater, among others. To learn more, contact E. James Dailey III, *ASCE*, 1801 Alexander Bell Drive, Reston, VA 20191; (703) 295-6033; e-mail: jdailey@asce.org; <http://www.asce.org/conferences/ewri2006/>.

Risk Communication Challenge: Proven Strategies for Effective Risk Communication. Presenter: Harvard School of Public Health. **Boston, Massachusetts: May 22-24, 2006.** This program uses a combination of lectures, discussion, case studies, and exercises to ensure participants understand the key concepts of risk communication and acquire practical experience in how to apply them. Topics will include risk perception theory, mental modeling, crisis communication, and media preparation. To learn more, contact the *Harvard School of Public Health, Center for Continuing Professional Education, CCPE Department A*, 677 Huntington Avenue, Boston, MA 02115; (617) 384-8692; e-mail: contedu@hsph.harvard.edu; <http://www.hsph.harvard.edu/ccpe/programs/RCC.shtml>.

NFPA World Safety Conference & Exposition. Organizer: National Fire Protection Association (NFPA). **Orlando, Florida: June 4-8, 2006.** This meeting for fire and life-safety professionals will offer preconference seminars, education sessions, networking opportunities, and an exposition featuring products used in fire protection, security, and life safety for the built environment. To learn more, contact *ROC Exhibitions*, 1963 University Lane, Lisle, IL 60532; (630) 271-8210; e-mail: info@rocxhibitions.com; <http://www.nfpa.org/wsce/>.

Geo-Environment and Landscape Evolution 2006: Second International Conference on Evolution, Monitoring, Simulation, Management, and Remediation of the Geological Environment and Landscape. Organizer: Wessex Institute of Technology. **Rhodes, Greece: June 6-8, 2006.** This conference will examine the role of geosciences in environmental management and provide a forum for discussion of these opportunities and problems among researchers, engineers, planners, decision makers, consultants, and other professionals interested in the contribution of geosciences and geoinformation to environmental management, land preservation, remediation, and sustainable development. To learn more, contact *Rachel Green*, *Wessex Institute of Technology, Ashurst Lodge, Ashurst, Southampton SO40 7AA, UK*; +44 (0) 238 029 3223; e-mail: rgreen@wessex.ac.uk; <http://www.wessex.ac.uk/conferences/2006/geoenv06/>.

Debris Flow 2006: First International Conference on Monitoring, Simulation, Prevention, and Remediation of Dense and Debris Flows. Organizer: Wessex Institute of Technology. **Rhodes, Greece: June 7-9, 2006.** This meeting will study the mechanical principles, rheological properties, and phenomenological aspects of debris flows. Particular attention will be given to modeling techniques and case studies. The conference will also address debris flow disaster mitigation using structural and nonstructural measures. To learn more, contact *Katie Banham*, *Wessex Institute of Technology, Ashurst Lodge, Ashurst, Southampton SO40 7AA, UK*; +44 (0) 238 029 3223; e-mail: kbaham@wessex.ac.uk; <http://www.wessex.ac.uk/conferences/2006/debris06/>.

2006 International Symposium on Technology and Society (ISTAS '06). Sponsor: Institute of Electrical and Electronics Engineers Society on Social Implications of Technology. **New York, New York: June 8-10, 2006.** With a theme of "Disaster Preparedness and Recovery," this symposium will discuss social, economic, and ethical issues of technology and disaster preparedness and recovery; social implications of usability; environmental, health, safety, and peace-related implications of technology; and social, economic, and ethical issues involving energy, information, and telecommunications technologies. To learn more, contact *Roberta Brody*; (718) 997-3766; e-mail: Roberta.Brody@QC.cuny.edu; http://ieeessit.org//conferences_sub.asp?Level2ItemID=12&Level3ItemID=10.

PRIMA 2006. Sponsor: Public Risk Management Association (PRIMA). **Las Vegas, Nevada: June 11-14, 2006.** The purpose of this conference is to educate and train public entity risk management practitioners at the state and local levels to develop effective risk management programs and to increase risk management professionalism in the public sector. To learn more, visit <http://www.primacentral.org/meetings/meetings.php>.

Risk Analysis 2006: Fifth International Conference on Computer Simulation in Risk Analysis and Hazard Mit-

igation. Organizer: Wessex Institute of Technology. **Malta: June 19-21, 2006.** This event will address all aspects of risk analysis and hazard mitigation, from assessment to mitigation. Engineers and managers involved in developing simulated risk analysis and researchers in academia and industry concerned with these problems are encouraged to attend. To learn more, contact *Zoey Bluff*, *Wessex Institute of Technology, Ashurst Lodge, Ashurst, Southampton SO40 7AA, UK; +44 (0) 238 029 3223; e-mail: zbluff@wessex.ac.uk; http://www.wessex.ac.uk/conferences/2006/risk06/.*

Fourth NEES Annual Meeting. Organizer: Network for Earthquake Engineering Simulation (NEES). **Washington, DC: June 21-23, 2006.** This meeting will bring together members of the extended NEES community to share ideas and information about activities underway in the research, education, and information technology segments of the network. Topics will include collaboration with U.S. research organizations, international collaboration, transfer of research results to practitioners, and outreach to attract groups traditionally underrepresented in earthquake engineering. To learn more, contact the *NEES Consortium, 400 F Street, Davis, CA 95616; (530) 757-6337; e-mail: info@nees.org; http://www.nees.org/4am/.*

AOGS 2006: Asia Oceanic Geosciences Society (AOGS) 3rd Annual Meeting. **Suntec, Singapore: July 10-14, 2006.** The mission of the AOGS is to promote geophysical science for the benefit of humanity in Asia and Oceania. This conference will bring together geoscientists from all around the world to present their works and ideas. To learn more, contact *AOGS, Secretariat Office, Meeting Matters International, 73 Tras Street, #04-01, Singapore 079012; +65 6221 2310; e-mail: info@asiaoceania-conference.org; http://www.asiaoceania-conference.org/.*

CoastGIS '06: The 7th International Symposium on GIS and Computer Cartography for Coastal Zone Management. Sponsors: International Cartographic Association Commission on Marine Cartography, International Geographical Union Commission on Coastal Systems. **Wollongong and Sydney, Australia: July 12-16, 2006.** Organized for scientists and practitioners interested in the research and application of geographic information systems (GIS) to coastal science, management, and policy, this symposium will explore related scientific challenges and policy and management opportunities of further GIS developments and some of the issues and problems that can benefit from the application of GIS. To learn more, contact *Ron Furness, International Cartographic Association; e-mail: rfurness@ozemail.com.au; http://www.coastgis.org/.*

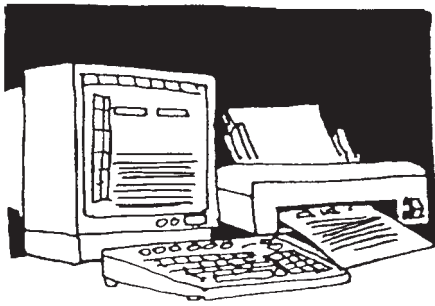
Fourteenth Regional Training Course on Community-Based Disaster Risk Management. Organizer: Asian Disaster Preparedness Center. **Bangkok, Thailand: July 17-28, 2006.** This training course is an opportunity for students to acquire tools and knowledge on how to design and implement programs for reducing disaster risks and vulnerability and about building community capacity to promote a culture of safety. Through exercises and simu-

lations, participants will practice risk assessment and risk management planning. To learn more, contact the *Training Resource Group, Asian Disaster Preparedness Center, Asian Institute of Technology, PO Box 4 Klong Luang, Pathumthani 12120, Thailand; (66 2) 516 5900-10 x328; e-mail: tedadpc@adpc.net; http://www.adpc.net/training/brochure/CBDRM-14.pdf.*

Americas' Fire and Security Expo. Organizers: National Fire Protection Association (NFPA), *NFPA Journal Latinoamericano.* **Miami Beach, Florida: July 18-20, 2006.** This conference for anyone involved with fire protection systems and equipment, special hazards, chemical and hazardous material storage and handling, building fire protection, life safety, electrical installations, or security products will include sessions and workshops presented by leading professionals in fire and security as well as opportunities for global information exchange and networking. To learn more, contact *ROC Exhibitions, 1963 University Lane, Lisle, IL 60532; (630) 271-8210; e-mail: info@rocexhibitions.com; http://www.americasfireandsecurity.com/.*

NACCHO Annual 2006 Conference. Host: National Association of City and County Health Officials (NACCHO). **San Antonio, Texas: July 26-28, 2006.** The theme of this conference is "The Local Health Department Story: Know It. Live It. Share It." Sessions in four tracks will cover communicating the value and contributions of local public health practice, the local health department's role in preparing for and responding to natural disasters and other public health threats, defining and promoting local public health, and highlighting innovative core local health department programs or strategies. To learn more, contact *NACCHO, 1100 17th Street NW, 2nd Floor, Washington, DC 20036; (202) 783-5550; e-mail: info@naccho.org; http://www.naccho.org/conferences/NACCHOannual06/.*

International Disaster Reduction Conference (IDRC) Davos 2006. Organizers: Global Alliance for Disaster Reduction; Global Disaster Information Network; United Nations Education, Scientific, and Cultural Organization; United Nations International Strategy for Disaster Reduction. **Davos, Switzerland: August 26-September 1, 2006.** A global gathering of leading experts from science, government, business, civil society, international organizations, nongovernmental organizations, and risk management organizations, this event will address different kinds of risks with an integrated and participatory approach. The program will include topical plenary sessions and panel debates; scientific and policy-oriented thematic sessions; special regional sessions; side events organized by different international and national organizations; and special recognition of pioneers in risk reduction. To learn more, contact *IDRC Davos 2006, Flüelastrasse 11, CH-7260 Davos, Switzerland; +41 (0)81 417 02 25; e-mail: davos2006@slf.ch; http://www.davos2006.ch/.*



INTERNET PAGES

Below are new or updated Internet resources that Natural Hazards Center staff members have found to be informative and useful. Other valuable resources can be found throughout this newsletter. For a more complete list, visit <http://www.colorado.edu/hazards/resources/sites.html>.

All Hazards

<http://www.unisdr.org/eng/media-room/statistics/2005-disaster-in-numbers.pdf>

The United Nations International Strategy for Disaster Reduction and the Belgian Université Catholique de Louvain's Center for Research on the Epidemiology of Disasters released these disaster figures for 2005. In comparison to 2004, there was an 18 percent increase in the number of disasters and an increase in the number of people affected, but a significant drop in the number of deaths.

http://www.redcross.org/services/prepare/0,1082,0_239_,00.html

This American Red Cross Web Portal titled "Get Prepared" encourages preparation at home, at school, at work, and in the community and offers preparedness tips for a variety of disasters.

<http://www.excelgov.org/UserFiles/File/America%20Get%20Prepared%20report.pdf>

The Aftershock of Katrina and Rita: Public Not Moved to Prepare, the results of a poll conducted for the Council for Excellence in Government and the American Red Cross before and during Hurricane Katrina and then replicated two months later, shows that 38 percent of Americans were not motivated at all by Hurricanes Katrina and Rita to prepare for an emergency.

<http://www.nyu.edu/ccpr/katrina-effect.pdf>

The Katrina Effect on American Preparedness, by New York University's Center for Catastrophe Preparedness and Response, compares data collected in two surveys, one prior to Hurricane Katrina and one following. It identifies a significant drop in public confidence in government's ability to handle disasters after Katrina and highlights the growth of a perceived preparedness divide between rich and poor.

http://www.opencrs.com/rpts/RL33174_20051205.pdf

FEMA's Community Disaster Loan Program, a Congressional Research Service report, examines the Community Disaster Loan Program, which assists local governments that experience revenue losses and/or increased municipal operating expenses due to a presidentially declared major disaster.

<http://www.nsf.gov/news/newsletter/>

NSF Current, a new e-newsletter from the National Science Foundation (NSF), highlights research and education projects supported by the foundation. It is available for free online and through e-mail subscription.

<http://www.protectingamerica.org/>

The mission of ProtectingAmerica.org is "to raise awareness, educate the public and policy makers, and offer solutions that will better prepare and protect America from major catastrophe in a sensible, cost-effective fashion." The Web site features information on understanding risks, preparedness and mitigation, legislation, and more.

http://www.opencrs.com/rpts/RS22334_20051128.pdf

The Congressional Research Service's **Federal Hurricane Recovery Coordinator: Appointment and Oversight Issues** explores the potential conflict of the executive order directing the secretary of homeland security to establish a federal Gulf Coast recovery and rebuilding efforts coordinator with the constitutional role of Congress in appointment and oversight.

<http://www.readycampus.org/>

Ready Campus is a partnership among Pennsylvania's colleges, universities, and communities designed to strengthen preparation for and response to regional or national emergencies by using campus facilities, training campus volunteers, and providing college students with service learning opportunities. Among the resources is the 124-page **Ready Campus Manual**.

<http://www.globalfundforwomen.org/downloads/disaster-report.pdf>

In *Caught in the Storm: The Impact of Natural Disasters on Women*, the Global Fund for Women shares learnings from direct grant making to women's rights groups during and after emergency situations, highlighting how women are disproportionately affected by disasters.

<http://www.nado.org/legaffair/hssurvey.pdf>

The National Association of Development Organizations prepared the report *Regional Approaches to Homeland Security Planning and Preparedness*, which examines the various regional initiatives, models, and strategies being used by state and local officials to improve preparedness, prevention, and response capacity for disasters.

http://www.ntoctralks.com/web_casts_archive.php

An archived recording of the National Transportation Operations Coalition's November 30 webcast "Emergency Operations: Evacuations" is available here.

http://www.nod.org/EPIResources/interactive_map.html

This tool developed by the National Organization on Disability provides an interactive directory of regional, state, and local disability-related emergency management resources. The Interactive Map of Disability and Preparedness Resources is a work-in-progress, and as new resources are developed and discovered, they will be included.

http://www.disabilityworld.org/12-01_06/disasterneeds.shtml

Disability World, a bimonthly webzine on international disability news, hosts this summary of recent resources regarding the inclusion of people with disabilities in planning for and responding to emergencies and disasters.

<http://webapps.cityofchicago.org/ChicagoAlertWeb/>

This Internet-based emergency planning campaign from the Chicago, Illinois, Office of Emergency Management and Communications stresses personal preparedness. The site guides visitors through the necessary steps to be prepared for any emergency event, including creating basic family plans and assembling supplies.

<http://www.ecu.edu/hazards/>

The Center for Natural Hazards Research at East Carolina University focuses on hurricane, tornado, flooding, and erosion hazards as they affect eastern North Carolina and the United States. The Web site contains information on the center's research projects as well as related links and resources.

Hurricanes

<http://www.nap.edu/catalog/11528.html>

The March 8, 2005, workshop of the National Academies' Disasters Roundtable titled Lessons Learned between Hurricanes: From Hugo to Charley, Frances, Ivan, and Jeanne explored the extent that strategies for countering the challenges presented by hurricanes have changed since Hurricane Hugo in 1989 and is summarized in this report.

<http://www.pbs.org/wgbh/pages/frontline/storm/>

<http://www.pbs.org/wgbh/nova/orleans/>

PBS programming explored Hurricane Katrina with *Frontline*'s "The Storm," which examined what can be learned from the failures in preparedness, leadership, and communication, and *NOVA*'s "Storm that Drowned a City," which focused on the science of the hurricane and what made New Orleans so vulnerable. Both programs can be viewed online.

<http://www.bringneworleansback.org/>

http://www.fromthelaketotheriver.org/files/final_report_11.29.pdf

http://www.uli.org/Content/NavigationMenu/ProgramsServices/AdvisoryServices/KatrinaPanel/ULI_Draft_New_Orleans%20Report.pdf

The mission of the Bring New Orleans Back Commission is to work with the city's mayor to create a master plan that rebuilds New Orleans culturally, socially, economically, and uniquely for every citizen. This Web site contains information pertinent to the initiative, including final reports and presentations. Related reports include the From the Lake to the River Foundation's *Report to Mayor Nagin's Bring New Orleans Back Commission: An Alternative Vision for Rebuilding, Re-development, and Reconstruction* and the Urban Land Institute's *A Strategy for Rebuilding New Orleans, Louisiana*.

http://www.brookings.edu/metro/pubs/200512_KatrinaIndex.pdf

The Metropolitan Policy Program of the Brookings Institute compiled this index of economic and social indicators that measure the impact of rebuilding efforts in Orleans Parish, the New Orleans metropolitan area, Louisiana, and Mississippi. The data will be updated monthly through December 2006.

<http://www.planning.org/katrina/pdf/rebuildingreport.pdf>

This report from the American Planning Association, *Charting the Course for Rebuilding a Great American City*, provides short- and long-term recommendations for improving New Orleans' planning functions to expedite rebuilding.

<http://www.hurricanekatrina.med.harvard.edu/>

Over the next two years, the Harvard Medical School will regularly interview a representative sample of 2,000 people who were affected by Hurricane Katrina. Digitally recorded oral histories and summaries of quarterly reports will be posted on this Hurricane Katrina Community Advisory Board Web site as they become available.

<http://www.nap.edu/catalog/11484.html>

This report from the National Research Council's Committee on Water System Security examines the opportunities for water security research in the wake of Hurricane Katrina.

http://www.opencrs.com/rpts/RL33188_20051213.pdf

This Congressional Research Service report, *Protecting New Orleans: From Hurricane Barriers to Floodwalls*, documents the design of the Lake Pontchartrain project with specific reference to how and by whom design decisions were made.

Earthquakes

<http://www.risepak.com/>

This Web site, Relief Information System for Earthquakes—Pakistan, was created by researchers and policy makers in the United States and Pakistan to track damage and relief information for villages impacted by the October earthquake.

http://www.alnap.org/lessons_earthquake.htm

In response to the South Asian Earthquake of 2005, the Active Learning Network for Accountability and Performance in Humanitarian Action and the ProVention Consortium released *Learning from Previous Earthquakes* and *Learning from Previous Recovery Operations* to brief operational decision makers and relief/recovery program managers about recovery policies and strategies.

<http://www.adpc.net/UDRM/brochure/PakEQReport.pdf>

Report on Post Earthquake Rapid Assessment Northern Pakistan—8 October 2005 from Habitat for Humanity and the Asian Disaster Preparedness Center, presents the findings of fieldwork conducted in Pakistan following the earthquake. Researchers analyzed factors contributing to high losses, casualties, and damages to property; possible risk reduction measures to be included in recovery programs; and approaches to implementing reconstruction and rehabilitation programs.

<http://earthquake05.un.org.pk/>

The Humanitarian Information Centre for Pakistan is managed by the United Nations Office for the Coordination of Humanitarian Affairs. Its Web site features situation and assessment reports, coordination and logistical information, photos and maps, and technical advice to help organizations more effectively manage data and information in earthquake relief efforts.

<http://www.gsp.gov.pk/>

The Web site of the Geological Survey of Pakistan includes information and resources on geology and seismic risk in Pakistan as well as updates on the earthquake disaster of October 8, 2005.

<http://www.sscnet.ucla.edu/issr/da/earthquake/erthqkstudies2.index.htm>

This site provides survey data collected as part of research at the University of California, Los Angeles, on earthquake-related behavior. Data sets, questionnaires, an earthquake bibliography, and links to other resources are available.

Tsunamis

<http://www.seismic.ca.gov/pub/CSSC%2005-03%20Tsunami%20Findings.pdf>

The Tsunami Threat to California: Findings and Recommendations on Tsunami Hazards and Risks is the result of an evaluation of tsunami readiness in California by the State of California Seismic Safety Commission's Tsunami Safety Committee.

http://www.tsunamispecialenvoy.org/pdf/OSE_anniversary.pdf

This report from the United Nations' Office of the Secretary-General Special Envoy for Tsunami Recovery, *Tsunami Recovery: Taking Stock after 12 Months*, documents the status of the recovery efforts one year later.

<http://www.unicef.org/emerg/disasterinasia/24615.html>

This Web site provides a one-year update of the efforts of the United Nations Children's Fund (UNICEF) in areas affected by the 2004 Indian Ocean tsunami. The report *Building Back Better: A 12-Month Update on UNICEF's Work to Rebuild*

Children's Lives and Restore Hope since the Tsunami and *Children and the Tsunami, A Year On: A Draft UNICEF Summary of What Worked* are also available for download.

http://www.savethechildren.org/publications/tsunami_lowres.pdf?stationpub=i_hpb2_s47

Through the Eyes of Children: Rebuilding Lives after the Tsunami is a one-year progress report from Save the Children that reports on the organization's emergency response and its strategies for the next four years to help rebuild the lives of children affected by the 2004 Indian Ocean tsunami.

http://www.oxfamamerica.org/newsandpublications/publications/briefing_papers/briefing_note.2005-12-14.7726023050

A Place to Stay, a Place to Live: The Oxfam Shelter Report documents the challenges and successes of Oxfam's shelter work in the first year of the organization's 2004 Indian Ocean tsunami response in India, Indonesia, and Sri Lanka.

<http://www.d-trac.org/>

In the aftermath of the 2004 Indian Ocean tsunami, the Disaster Tracking Recovery Assistance Center of Thailand developed this Web site, which provides details on the status of and progress made in tsunami relief activities in Thailand.

Climate Change

http://dels.nas.edu/basc/climate-change_final.pdf

Understanding and Responding to Climate Change is a new booklet from the National Academies that highlights important themes and recommendations from related National Academies' reports produced to advise agencies working on understanding changing climate, documenting its impacts, and developing effective response strategies.

<http://www.rggi.org/>

The Regional Greenhouse Gas Initiative is a cooperative effort by Northeastern and Mid-Atlantic states to reduce carbon dioxide emissions—a greenhouse gas that causes global warming. On December 20, governors from seven states signed a memorandum of understanding agreeing to implement the first mandatory U.S. cap-and-trade program for carbon dioxide.

Health

<http://www.nga.org/Files/pdf/FULLYPUBLICHEALTH.pdf>

The National Governors Association Center for Best Practices produced this issue brief titled "State Strategies for Fully Integrating Public Health into Homeland Security."

<http://www.nga.org/Files/pdf/05LEGALISSUES.pdf>

This National Governors Association Center for Best Practices issue brief, "Legal Issues in Mutual Aid Agreements for Public Health Practice," explores strategies for sharing out-of-state resources in nonemergency situations.

<http://www.rand.org/health/projects/php/>

This Web site was recently launched by the RAND Corporation to support state and local public health emergency preparedness activities. It includes a searchable database of public health emergency preparedness exercises that have been evaluated by a team of RAND researchers.

<http://www.cdc.gov/mmwr/PDF/wk/mm5502.pdf>

The January 20, 2006, issue of the Centers for Disease Control and Prevention's *Morbidity and Mortality Weekly Report* focuses on public health activities in Louisiana one to two months after Hurricane Katrina, during which time local authorities reopened portions of New Orleans and the predisaster population began to return. Reports describe a range of public health disaster-response activities, including morbidity surveillance, shelter-based surveillance, community health and needs assessment, environmental assessment, and infectious-disease case investigation.

http://www.sccredcross.org/index.php?pr=Disaster_Mental_Health

This Web page from the Santa Cruz County, California, chapter of the American Red Cross features links to various resources for assessing and protecting the mental health of disaster volunteers, including the *Disaster Mental Health/Critical Incident Annotated Bibliography of Web Resources*.

<http://www.connectlive.com/events/samhsa/>

The archived webcast of "Peer Support: Disaster Preparation for People with Psychiatric Disabilities" is available here for free online viewing. The webcast is sponsored by the U.S. Department of Health and Human Services Substance Abuse and Mental Health Services Administration Center for Mental Health Services.



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 <http://www.colorado.edu/hazards/resources/grants/>.

Community Risk Management of Hurricane and Tsunami Surge Hazards. Funding Institution: National Science Foundation, \$750,000, three years. Principal Investigators: *Michael Lindell (Carla Prater), Texas A&M, Department of Landscape Architecture and Urban Planning, 3137 TAMU, College Station, TX 77843-3137; (979) 862-3969; e-mail: mlindell@tamu.edu* and *Harry Yeh (Cherri Pancake), Oregon State University, Department of Civil, Construction, and Environmental Engineering, 220 Owen Hall, Corvallis, OR 97331; (541) 737-8057; e-mail: harry@enr.orst.edu.*

Developing tools for assessing coastal communities' best options for protecting themselves from hurricane and tsunami surge hazards is this project's goal. The investigators will create comprehensive and integrated models of surge impacts, warning transmission, and evacuation behavior to help emergency managers decide which neighborhoods can safely evacuate from a risk area, which must seek shelter in safe havens, and when these actions must be initiated. Their quantitative prediction capabilities will assist coastal jurisdictions in their surge hazard mitigation planning and emergency preparedness programs. The investigators will also develop the functionality and usability of these models to make them more suitable for use by emergency managers, land use planners, and transportation planners for jurisdictions along the Atlantic, Gulf, and Pacific coasts.

Data in Disaster: Sociotechnical Change in Response Agency and Public Communications. Funding Institution: National Science Foundation, one year. Principal Investigator: *Leysia Palen, University of Colorado at Boulder, Department of Computer Sciences, 430 UCB, Boulder, CO 80309-0430; (303) 492-3902; e-mail: palen@cs.colorado.edu.*

This Faculty Early Career Development (CAREER) project will conduct interdisciplinary, sociotechnical research and education that address the current and potential uses of information technology in disaster contexts. The research will examine how data generation and sharing activities by response agencies and the public place new demands on information dissemination processes between these two entities. The research design includes field studies of citizen-generated textual, visual, and digital communications and of the incident intelligence and public information officer functions in natural hazards events such as wildfires

and hurricanes. Results will be in the form of ethnographically-informed models of interaction, data-generation, and data-sharing activity that will be put in organizational and institutional context to formulate recommendations for innovators, emergency response practitioners, and policy makers engaged in emergency response reform.

Organizational Design Issues in Emergency Management. Funding Organization: National Science Foundation, \$98,000, two years. Principal Investigators: *William Wallace, Rensselaer Polytechnic Institute, Decision Sciences and Engineering Systems, CII 4011 4th Floor, 110 8th Street, Troy, NY 12180; (518) 276-6854; e-mail: wallaw@rpi.edu* and *Bryan Jones (Peter May), University of Washington, Department of Political Science, 101 Gowen Hall, Box 353530, Seattle, WA 98195-3530; (206) 543-6493; e-mail: bdjones@u.washington.edu.*

This study of organizational constraints on federal disaster activities of the Federal Emergency Management Agency (FEMA) and the U.S. Coast Guard will consist of data collection about perceptions of organizational performance in response to Hurricane Katrina, analysis of rule-making and budgetary changes as they affected organizational outputs, and initial development of a dynamic model of organizational processes. The organizational process model will focus on the dynamics of agency adoption of new missions where agency information processing capacity is serial rather than parallel.

The "New" New Orleans: Evaluating Preferences for Rebuilding Plans after Hurricane Katrina. Funding Institution: National Science Foundation, \$172,600, two years. Principal Investigator(s): *Jamie Kruse (Okmyung Bin), Craig Landry, Harold Stone, and Kenneth Wilson), East Carolina University, Department of Economics, Brewster A-438, Tenth Street, Greenville, NC 27858; (252) 328-4165; e-mail: krusej@mail.ecu.edu.*

The near total destruction of infrastructure in some parts of New Orleans after Hurricane Katrina has left policy makers in a quandary. New Orleans has considerable economic and cultural value; however, the city's location and the legacy of engineering interventions have created a city so vulnerable that catastrophe was inevitable. Any redevelopment of the current location must contend with present and future vulnerabilities. To evaluate planning op-

tions for the city's restoration, it is necessary to consider the contributions of three planning disciplines: environmental planning, urban planning, and housing planning. This project will investigate public attitudes to different options for the future New Orleans, eliciting local and national valuation of the historic and cultural attributes that make the city unique and valuation of mitigation that can harden the city against future hurricanes and tropical storms.

Assessing the Public Health Impacts of Hurricane Katrina. Funding Institution: National Science Foundation, \$92,500, one year. Principal Investigator(s): *Kimberley Shoaf (Hope Seligson and Laura Steinberg), University of California, Los Angeles, Center for Public Health and Disasters, 1145 Gayley Avenue, Suite 304, Los Angeles, CA 90024; (310) 794-0864; e-mail: kshoaf@ucla.edu.*

Public health concerns from Katrina, especially the potential for infectious disease, are significant. Surveillance conducted in the shelters in Houston, Texas, after the storm indicated a high number of individuals with respiratory and diarrheal disease. This study will examine the correlation between health outcomes for people in the affected areas and hazardous conditions to which they may have been exposed, including structural damage, which presents a potential for physical injuries; exposure to environmental contaminants in the water and air, including toxic substances and infectious agents; length of time exposed to the elements prior to evacuation; time with limited access to food and/or water; and length of time without access to medical care, including access to necessary medications.

Characterization of the Supply Chains in the Aftermath of an Extreme Event: The Gulf Coast Experience. Funding Institution: National Science Foundation, \$90,500, one year. Principal Investigator(s): *José Holguin-Veras (Satish Ukkusuri, Tricia Wachtendorf), Rensselaer Polytechnic Institute, Civil and Environmental Engineering, JEC 4049 4th Floor, 110 8th Street, Troy, NY 12180; (518) 276-6221; e-mail: jhv@rpi.edu.*

This project is concerned with the formal and informal logistic systems supporting the recovery and the flows of supplies to areas affected by Hurricane Katrina. It will identify the basic features of the supply chains delivering resources to the Gulf Coast, gather data about the actual flows of critical and noncritical supplies, and document lessons learned, both positive and negative. This research will provide future researchers with a clear picture of the supply chains in place at the site of an extreme event, which will enable the development of much needed decision support systems.

Effects of Hurricane Katrina on Evacuation Intent: A Panel Study. Funding Institution: National Science Foundation, \$97,700, one year. Principal Investigator: *Hugh Gladwin, Florida International University, Institute for Public Opinion Research, Biscayne Bay Campus, HM246, 3000 NE 151st Street, North Miami, FL 33181; (305) 919-4718; e-mail: gladwin@fiu.edu.*

In this panel study, householders in Florida, Alabama, Mississippi, and Louisiana interviewed after Hurricane

Ivan will be reinterviewed about hurricane knowledge, attitudes, behavior, and future intent. The purpose is to assess the effects of different types or levels of experience with the 2005 hurricanes on attitudes and behavior, particularly those related to evacuation. Objectives include 1) documenting the extent to which each household experienced and responded to Hurricanes Katrina/Rita; 2) determining how these households assessed their level of risk; 3) analyzing decision processes related to preparing and/or evacuating; 4) identifying factors that promoted and constrained evacuation decisions; 5) comparing hurricane-related knowledge and attitudes before and after the 2005 hurricanes; 6) analyzing the relationship between the nature of 2005 experiences and any revealed changes in attitudes; and 7) developing recommendations for policy makers and responders to improve hurricane response.

Social Measures of the Katrina Aftermath. Funding Institution: National Science Foundation, \$136,000, nine months. Principal Investigators: *David Banks, Duke University, Institute of Statistics and Decision Sciences, Box 90251 ISDS, Durham, NC 27708-0251; (919) 684-3743; e-mail: banks@stat.duke.edu, John Lefante, Tulane University, Department of Biostatistics, 1440 Canal Street, Suite 2013, New Orleans, LA 70112; (504) 988-7874; e-mail: jlefantelj@yahoo.com, and Edd Hauser, University of North Carolina at Charlotte, Regional Center for Homeland Security and Major Disaster Management, 9201 University City Boulevard, 1029 Colvard South, Charlotte, NC 28223; (704) 687-3997; e-mail: ehauser@email.uncc.edu.*

This study will survey households in New Orleans to better understand the social factors and resources that impacted evacuation and survival during and after Hurricane Katrina. The first part of the analysis will summarize survey data and show how different survival experiences are associated with age, pet ownership, income, and so forth to help identify which aspects played dominant roles at different phases of the emergency. The second part of the analysis will fit a social network model to the data, extending previous work on mathematical models for the kinds of help people need and who they get it from. Ultimately, this research will provide guidance and insight for future disaster relief efforts and highlight the interactions between people and agencies that were most/least effective at various stages of the response.

Understanding Critical Infrastructure in Crisis: Impacts, Linkages, and Resiliency in Hurricane Katrina. Funding Institution: National Science Foundation, \$97,500, two years. Principal Investigator(s): *David Simpson (Terence Weigel and Thomas Rockaway), University of Louisville, School of Urban and Public Affairs, 426 West Bloom Street, Louisville, KY 40208; (502) 852-8019; e-mail: dave.simpson@louisville.edu.*

Focusing on the Hurricane Katrina experience, this project will model the relationships of critical infrastructure in a community and the cascading effects of loss of key system components as a result of a disaster. The results will have implications for hazard mitigation planning and research with respect to natural and technologically-in-

duced disasters as well as direct implications for homeland security efforts. In both cases, a clearer understanding of the vulnerability and potential resiliency of a community's infrastructure will provide insight into the best allocation of resources to improve capacity and preparedness.

Katrina and Rita: The Impact of Exogenous Shocks on Risk Assessment. Funding Institution: National Science Foundation, \$117,100, one year. Principal Investigator(s): *Carol Silva (Kishore Gawande, Domonic Bearfield, and Gina Yanitell Reinhardt), Texas A&M University, George Bush School of Government and Public Service, 4220 TAMU, College Station, TX 77843-4220; (979) 845-1673; e-mail: clsilva@tamu.edu.*

The objective of this project is to explore the economic, cultural, and institutional dimensions of an individual's risk assessment. Investigators will seek answers to the following questions: How do people update their risk assessments after a catastrophic exogenous shock, such as Hurricane Katrina or Rita? What values or characteristics beyond risk assessment influence the formation of preferences? How does one's perception of government competence, combined with various types of government incentives, influence decision making under uncertainty?

The Parallel Strengths and Weaknesses of the Civil Society and the State: The Example of Katrina Survivors. Funding Institution: National Science Foundation, \$98,700, one year. Principal Investigator(s): *Ronald Angel (Laura Lein, Loretta Pyles, Calvin Streeter, and Elizabeth Pomeroy), University of Texas at Austin, Department of Sociology, College of Liberal Arts, 1 University Station A1700, Austin, TX 78712; (512) 467-9371; e-mail: rangel@mail.utexas.edu.*

This research project will investigate the ways in which the actions of governmental and nongovernmental agencies and organizations affect the ability of disaster victims to recover psychologically, economically, and socially while dealing with grief and loss and adapting to new situations. The response to Hurricane Katrina signaled that local human service organizations, while extremely valuable, are unable to address the full range of needs of disaster victims, and that federal and state governments must provide basic coordination, as well as large-scale resources. By examining the failures and successes of governmental and nongovernmental organizations in response to the human crisis, the research will provide practical insights into the most effective division of roles between different levels of government and civil society.

Adversity and Resilience: Understanding the Effects of Hurricane Katrina on Vulnerable Populations. Funding Institution: National Science Foundation, \$20,000, one year. Principal Investigator(s): *Jean Rhodes (Mary Waters), University of Massachusetts Boston, Department of Psychology, 100 Morrissey Boulevard, Boston, MA 02125; (617) 287-6368; e-mail: Jean.Rhodes@umb.edu.*

The goal of this study is to examine how a group of low-income parents from New Orleans have coped with the effects of Hurricane Katrina. The researchers will study

how the prehurricane resources and capacities of individuals—defined to include their mental and physical health, social networks, and economic resources—affect their ability to successfully adjust to a major life trauma. The researchers will also examine the determinants of successful social and economic adjustment, including the reestablishment of social networks and resumption of employment and educational activities.

A Randomized Experiment on the Causal Effect of Recipients' Race and Social Circumstances on the Provision of Disaster Relief to Katrina Victims. Funding Organization: National Science Foundation, \$100,400, two years. Principal Investigators: *Christina Fong (Robyn Dawes), Carnegie Mellon University, Department of Social and Decision Sciences, 208 Porter Hall, Pittsburgh, PA 15213; (412) 268-8168; e-mail: fong2@andrew.cmu.edu and Erzo Luttmer, Harvard University, Kennedy School of Government, 79 John F. Kennedy Street, Cambridge, MA 02138; (617) 496-0118; e-mail: erzo_luttmer@harvard.edu.*

This project will study determinants of the nation's generosity toward Hurricane Katrina victims. While media reports have been rife with allegations that the nation would have responded more strongly if these victims had not come to a large extent from minority groups and economically disadvantaged backgrounds, there is no scientific evidence to rebut or support these allegations. More generally, does the public's generosity towards Katrina victims depend on the needs, behaviors, and characteristics of these victims? This study seeks to answer these questions.

Racialized Explanations: Consequences for Intergroup and Intragroup Processes. Funding Organization: National Science Foundation, \$46,200, one year. Principal Investigators: *Collette Eccleston, Syracuse University, Department of Psychology, 430 Huntington Hall, Syracuse, NY 13244; (315) 443-2749; e-mail: cpeccles@syr.edu and Cheryl Kaiser, Michigan State University, Department of Psychology, 247 Psychology Building, East Lansing, MI; 48824-1116; (517) 432-8391; e-mail: kaiserc6@msu.edu.*

In the weeks following Hurricane Katrina, Americans increasingly asked why the rescue efforts were so slow. There were many explanations offered for the slow official response, but only one that suggested that racism was the culprit. This research examines the intergroup and intragroup consequences of racialized explanations, hypothesizing that racialized explanations increase racial awareness and the extent to which individuals identify with specific racial groups; that increases in racial awareness and identification lead whites to decrease their willingness to empathize with and help the predominantly black hurricane survivors (whereas increases in racial awareness and identification lead blacks to be more willing to empathize with and help black hurricane survivors); and that effectively increasing individuals' empathetic feelings towards victims can result in less divisive intergroup attitudes and an increased willingness to help survivors regardless of their race.

Social Networks and Displacement after Hurricane Katrina. Funding Institution: National Science Foundation,

\$162,300, one year. Principal Investigator(s): *John Beggs (Susan Dumais, Wesley Shrum, Valerie Haines, and Jeanne Hurlbert), Louisiana State University, Sociology Department, 126 Stubbs Hall, Baton Rouge, LA 70803; (225) 578-1119; e-mail: jbeggs@lsu.edu.*

This study will focus on victims of Hurricane Katrina who lived in the New Orleans area prior to the storm but were displaced to Baton Rouge, Louisiana, in its wake. Interviews with victims will focus on the role that social networks played in their immediate responses to the storm (including evacuation and sheltering decisions), their ability to activate network ties to garner both social support and instrumental resources in response and recovery, and their decisions regarding returning to New Orleans.

Aging Families in the Aftermath of Hurricane Katrina. Funding Institution: National Science Foundation, \$108,900, one year. Principal Investigator(s): *Tammy Henderson (Karen Roberto and Yoshinori Kamo), Virginia Polytechnic Institute and State University, Department of Human Development, 401-B Wallace Hall, Blacksburg, VA 24061; (540) 231-2701; e-mail: thender@vt.edu.*

This study will examine the functioning of aging families after a natural disaster. Investigators believe that personal resources (e.g., education, income, health, perceptions of self) and ongoing family and other informal

relationships coalesce into explanations of overall family functioning. Findings will advance theory and understanding of aging families' functional capacities after a major natural disaster, especially for underrepresented groups.

Emotional Responses to Hurricane Katrina: Nature-Nurture Influences. Funding Institution: National Science Foundation, \$140,400, one year. Principal Investigator(s): *Benjamin Hankin (Kate Flory and Gustavo Turecki), University of South Carolina, Department of Psychology, Barnwell College, Room 514, Columbia, SC; (803) 777-5756; e-mail: hankin@sc.edu.*

Many individuals who lived through Hurricane Katrina experienced extreme levels of negative emotions (e.g., sadness, anger, anxiety) in the short term, and some of these individuals will continue to experience these emotions in the long term as well. However, not everyone affected will experience the same initial levels and course of emotions over time, and not everyone will cope with the disaster in the same way. This study will examine both psychological/behavioral resiliencies (e.g., sense of control, social support, coping, hope, personality) and molecular genetics influences (i.e., neurotransmitter systems, such as serotonin, that are known to influence emotions) that may affect the unfolding of emotional responses after experiencing the stress from Hurricane Katrina and its aftermath.

USC Funds Katrina Rapid Response Research

To augment the understanding of coastal resiliency and its human dimensions, the Office of Research and Health Sciences at the University of South Carolina (USC) awarded the following grants, totaling nearly \$400,000, to USC faculty for rapid response research on the social and environmental impacts of Hurricane Katrina. For more information, contact *USC Research and Health Sciences; (803) 777-5458; e-mail: vpresearch@gwm.sc.edu; http://www.sc.edu/research/.*

Data on Levee Breaches and Closure Procedures, Hanif Chaudhry

Predicted vs. Observed Social Vulnerability of Coastal Residents: Hurricane Katrina Impacts in Mississippi and Alabama, Susan Cutter

Disparities in Evacuation Response: Identifying the Factors Affecting Minorities' Response to Evacuation Requests, Keith Elder

Hurricane Katrina Impacts and Responses in a Pristine Coastal Salt Marsh Estuary, Madilyn Fletcher

West-Nile Virus Risk in Louisiana in the Wake of Hurricane Katrina, Ivo Foppa

Effects of Hurricane Katrina on Southern Mississippi Coastal Forests and Projected Posthurricane Responses: A Multiscale Evaluation, John Kupfer

Latinos in the Aftermath of Hurricane Katrina: An Examination of Resiliency and Incorporation, Elaine Lacy

Protecting Our Most Vulnerable Citizens: Lessons Learned from Katrina to Improve Readiness in Nursing Homes, Sarah Laditka

Spatially Distributed Wetness Resulting from Flooding following Hurricane Katrina: The Time to Dry Down, Venkataraman Lakshmi

The Nonprofit Online Response to Katrina: An Initial Assessment, John McNutt

The Role of the African American Church in Promoting Postcatastrophe Resilience, Patricia Motes

Untreated Urban Effluent Effects on Phytoplankton Community Structure and Function in Lake Pontchartrain, Louisiana, James Pinckney

Communication Patterns and Knowledge Gaps among Evacuees in Baton Rouge Before and After Hurricane Katrina, Susanna Priest

Assessing Regional Impacts at the Population-Genetic Level in Estuarine Animals Impacted by Hurricane Katrina, Joseph Quattro

Health, History, and Healing among a Displaced People: Short-Term and Long-Term Impacts in the Wake of Hurricane Katrina, David Simmons

An Assessment of the Law Enforcement Response to Hurricane Katrina, Michael Smith

Understanding and Predicting Resiliency of Barrier Islands: The Extreme Case Condition for South Carolina Beaches, George Voulgaris

Evaluation of the Natural Recovery and Attenuation Potential of Near Surface Soils Contaminated by Volatile Organics and Heavy Metals during Flooding and Prolonged Inundation Using Soil Air Methodology, Douglas Wyatt



RECENT PUBLICATIONS

Below are brief descriptions of some recent publications on hazards and disasters received by the Natural Hazards Center. Many of these publications are available through local and online booksellers, but information on how to obtain copies directly is also provided.

All Hazards

Women's Participation in Disaster Relief and Recovery. Ayse Yonder. SEEDS No. 22. ISSN 073-6833. 2005. 42 pp. Available free online from the Population Council, One Dag Hammarskjold Plaza, New York, NY 10017; (212) 339-0500; e-mail: seeds@popcouncil.org; <http://www.popcouncil.org/pdfs/seeds/Seeds22.pdf>.

This publication features detailed case studies from three earthquake-stricken areas in India and Turkey that exemplify how low-income women who have lost everything can form groups and become active participants in the relief and recovery process. It discusses how women became involved in housing, created businesses, mobilized funds, and provided crucial community services. It also examines the roles that nongovernmental organizations and government policy and procedures play in facilitating (or impeding) women's involvement.

Risk and Society. David Denney. ISBN 0-7619-4740-X. 2005. 232 pp. \$35.95. Available from Sage Publications, 2455 Teller Road, Thousand Oaks, CA 91320; (805) 499-9774, (800) 818-7243; <http://www.sagepublications.com/>.

This book is an exploration of risk in society today. The author examines the social construction of risk by considering a range of social theories, addressing the literature, and providing an authoritative guide to the key issues raised. In order to help make sense of what is emerging from the risk-related literature, the book has two principal aims: to critically examine the social construction of risk from a number of theoretical positions and to relate ideas about the nature of risk to aspects of daily life.

Natural Hazards. Edward Bryant. 2nd Edition. ISBN 0-521-53743-6. 2005. 328 pp. \$36.99. Available from Cambridge University Press, 100 Brook Hill Drive, West Nyack, NY 10994; (845) 353-7500; e-mail: orders@cup.org; <http://www.cambridge.org/>.

This updated edition of *Natural Hazards* offers a comprehensive, interdisciplinary analysis of a multitude of natural hazards. The author describes and explains how hazards occur, examines prediction methods, considers recent and historical hazard events, and explores the social impact of such disasters.

Reducing Risk of Disaster in Our Communities. Paul Venton and Bob Hansford. Roots 9. ISBN 1-904364-59-4. 2006. 80 pp. Available free online from Tearfund, 100 Church Road, Teddington TW11 8QE, UK; +44 (0)20 8977 9144; e-mail: roots@tearfund.org; <http://tilz.tearfund.org/webdocs/Tilz/Roots/English/Disaster/Disaster%20risk%20reduction%20-%20full.pdf>.

Ninth in a series of publications written to help Christian development organizations in their work, this book looks at a methodology called Participatory Assessment of Disaster Risk (PADR) and its usefulness in reducing disaster risk at the community level. The process involves assessment of hazards, vulnerabilities, and capacities and results in action planning. Section topics include Christian perspectives on disaster, disaster theory, an introduction to PADR, the six steps of PADR, and improving effectiveness.

School Safety and Security: Lessons in Danger. ISBN 92-64-01739-9. 2005. 172 pp. \$44.00. Available from the Organisation for Economic Co-operation and Development (OECD) Distribution Center, Extenza-Turpin, 56 Industrial Park Drive, Pembroke, MA 02359; (800)

456-6323; e-mail: ocdna@extenza-turpin.com; <http://www.oecdbookshop.org/>.

The result of a joint OECD-U.S. Department of Education collaboration, this publication provides insight into how school safety and security, particularly in emergency situations, are addressed in over 14 countries. Addressing such issues as risk assessment, crisis planning and management, infrastructure approaches, collaborative approaches, and education and training for emergency management, it describes the roles of architects, project managers, ministry officials, psychologists, teachers, security consultants, police officers, academics, and many others in helping to implement solutions.

Homeland Security Law and Policy. William C. Nicholson. ISBN 0-398-07583-2. 2005. 410 pp. \$61.95. Available from Charles C. Thomas, Publisher, LTD., 2600 South First Street, Springfield, IL 62704; (800) 258-8980; <http://www.ccthomas.com/>.

The goal of this book is to present a broad range of legal and policy issues that face the United States as it grapples with the reality of terrorism. It discusses relationships abroad, the mission of U.S. federal, state, and local governments, and the best way to provide for common defense. The material is presented in eight sections: Homeland Security and Emergency Management, Local and Regional Perspectives, Partnering for Homeland Security, Civil Rights Issues, Challenges for Transportation, Weapons of Mass Destruction, Foreign Policy Aspects of Homeland Security, and Future Challenges for Homeland Security. Illustrations and photographs are included to further the understanding of the subject matter.

The following recent issues of the *CQ Researcher* may be of interest to *Observer* readers. Single copies are available from CQ Press, Customer Service and Order Department WEB2, 1255 22nd Street NW, Suite 400, Washington, DC 20037; (202) 729-1900, (866) 427-7737; e-mail: customerservice@cqpress.com; <http://www.cqpress.com/>.

"Disaster Preparedness: Is the U.S. Ready for Another Major Disaster?" Pamela M. Prah and Tom Colin. Vol. 15, No. 41, November 18, 2005. 24 pp. \$10.00.

"Climate Change: Is Tougher Action Needed to Slow Rising Temperatures?" Marcia Clemmitt. Vol. 16, No. 4, January 27, 2006. 24 pp. \$10.00.

"Rebuilding New Orleans: Should Flood-Prone Areas Be Redeveloped?" Peter Katel. Vol. 16, No. 5, February 3, 2006. 24 pp. \$10.00.

Edwards Disaster Recovery Directory, 2006. 15th Edition. ISBN 0-9759662-2-7. 2005. 400 pp. \$149.00. Available from Edwards Information, PO Box 1600, Brookline, MA 02446; (617) 264-2300, (800) 990-9936; e-mail: info@edwardsinformation.com; <http://www.edwardsinformation.com/>.

This business-to-business directory is designed to help businesses and organizations plan for and cope with disaster by providing information for recovery services throughout the United States and Canada. Available in both hardcopy and on CD-ROM, the directory contains thousands of vendor listings organized into more than 400 categories, such as data recovery, drying and dehumidification, smoke odor counteracting services, trauma counselors, salvage, emergency rentals, storm damage restoration, and disaster planning software.

It's a Disaster! ...and What Are You Going to Do About It? Bill and Janet Liebsch. 4th Edition. ISBN 1-93013119-4. 2005. 268 pp. \$19.95. Available from Fedhealth, 7739 East Broadway Boulevard, #416, Tucson, AZ 85710; (520) 290-0929, (888) 999-4325; <http://www.fedhealth.net/>.

This disaster preparedness and prevention and basic first-aid manual helps families and businesses be aware and prepared for most types of emergencies. It includes information and checklists readers can use to prepare themselves and their families for disaster; covers natural and human-made disasters with brief overviews and steps on what to do before, during, and after each scenario; and provides first-aid tips that are how-to guides to be used in an emergency.

Hurricanes

On Risk and Disaster: Lessons from Hurricane Katrina. Ronald J. Daniels, Donald F. Kettl, and Howard Kunreuther, editors. ISBN 0-8122-1959-7. 2006. 304 pp. \$27.50. Available from the University of Pennsylvania Press, Hopkins Fulfillment Services, PO Box 50370, Hampden Station, Baltimore, MD 21211-4370; (800) 537-5487; e-mail: hfcustserv@press.jhu.edu; <http://www.upenn.edu/pennpress/>.

Hurricane Katrina not only devastated a large area of the nation's Gulf Coast, it also raised fundamental questions about ways the United States can, and should, deal with the inevitable problems of economic risk and social responsibility. This publication gathers leading experts to examine lessons from Hurricane Katrina about better assessing, perceiving, and managing risks from future disasters. The 20 contributors address questions of public and private roles in assessing, managing, and dealing with risk in American society and suggest strategies for moving ahead in rebuilding the Gulf Coast.

Category 5: The Story of Camille, Lessons Unlearned from America's Most Violent Hurricane. Ernest Zebrowski and Judith A. Howard. ISBN 0-472-11525-1. 2005. 304 pp. \$27.95. Available from the University of Michigan Press, c/o Chicago Distribution Center, 11030 South Langley Avenue, Chicago, IL 60628; (773) 702-7000, (800) 621-2736; e-mail: custserv@press.umich.edu; <http://www.press.umich.edu/>.

In 1969, three regions of the rural South were devastated by Hurricane Camille. The storm's nearly 200 mile per hour winds and 28-foot storm surge swept away thousands of homes and businesses in Louisiana and Mississippi. Twenty-four oceangoing ships sank or were beached; six offshore drilling platforms collapsed; 198 people drowned. Two days later, Camille dumped nearly three feet of rain in 24 hours onto one rural Virginia county. Mountainsides were washed away; brooks became raging torrents; homes and whole communities were destroyed. Through accounts of victims and survivors, this book tells the tale of how America's rural underclass coped with immense adversity and inconceivable tragedy and illustrates the disproportionate impact of natural disasters on the nation's poorest communities.

Hurricane Katrina: Analysis of the Impact on the Insurance Industry. 2005. 35 pp. Available free online from Towers Perrin; http://www.towersperrin.com/tillinghast/publications/reports/Hurricane_Katrina/katrina.pdf.

This white paper is a contribution to the discussion of the financial impact of Hurricane Katrina on insurers, as well as the deeper implications for the industry. The authors estimated that as of September 30, 2005, the insured losses from Katrina were between \$40 and \$55 billion (excluding losses insured under the National Flood Insurance Program). The analysis includes line-of-business loss estimates; how losses will be split among insurers, reinsurers, and capital markets; a look at hurricane frequency and severity; risk management implications; and some public policy issues.

Floods and Streamflow

Reducing Damage from Localized Flooding: A Guide for Communities. FEMA 511. 2005. 180 pp. Free. Available from the Federal Emergency Management Agency Distribution Center, PO Box 2013, Jessup, MD 20794; (800) 480-2520; <http://www.fema.gov/hazards/floods/flood-damage-toc.shtml>.

This guide is intended to help local officials in cities, towns, villages, and counties in the United States understand what they can do to reduce the damage, disruption, and public and private costs that result from the shallow, localized flooding which all too often escapes

the attention received by larger floods or those that are clearly mapped and subject to floodplain development regulations. Specifically, the guide outlines the types of actions that can be taken, explains why they are important and what their potential benefits are, and provides resources for more information and assistance.

Assessing the National Streamflow Information Program. ISBN 0-309-09210-8. 2004. 176 pp. \$35.00. Available from the National Academies Press, 500 Fifth Street NW, Lockbox 285, Washington, DC 20055; (202) 334-3313, (888) 624-8373; <http://www.nap.edu/>.

This assessment examines the goals of the U.S. Geological Survey's (USGS) National Streamflow Information Program (NSIP) to ensure that they are being reasonably and efficiently met. It evaluates streamgauge network design, node (gaging station) design, and information delivery to consumers and addresses the tools to optimize the network design to maximize its efficiency. The report also examines how streamflow information is used by consumers to ensure that the needs of the public and water managers are being met. In general, the report is supportive of the design and content of the NSIP.

Earthquakes and Landslides

Improved Seismic Monitoring—Improved Decision-Making: Assessing the Value of Reduced Uncertainty. ISBN 0-309-09695-2. 2006. 196 pp. \$45.00. Available from the National Academies Press, 500 Fifth Street NW, Lockbox 285, Washington, DC 20055; (202) 334-3313, (888) 624-8373; <http://www.nap.edu/>.

This report describes and assesses the varied economic benefits potentially derived from modernizing and expanding seismic monitoring activities in the United States. These benefits include more effective loss-avoidance regulations and strategies, improved understanding of earthquake processes, better engineering design, more effective hazard mitigation strategies, and improved emergency response and recovery. The economic principles that must be applied to determine potential benefits are reviewed and the report concludes that although there is insufficient information available at present to fully quantify all the potential benefits, the annual dollar costs for improved seismic monitoring are in the tens of millions and the potential annual dollar benefits are in the hundreds of millions.

Assessing and Managing Earthquake Risk: Geo-Scientific and Engineering Knowledge for Earthquake Risk Mitigation; Developments, Tools, Techniques. Carlos Sousa Oliveira, Antoni Roca, and Xavier Goula, editors. ISBN 1-4020-3524-1. 2006. 543 pp. \$169.00. Available from Springer New York, 233 Spring Street, New York, NY 10013; (212) 460-1500; e-mail: service-ny@springer-sbm.com; <http://www.springer.com/>.

This book points out the need for a multidisciplinary approach in the field of risk assessment and management. Written by a team of specialists from different disciplines, it provides an overview of the problems, approaches, and common practices directly related to earthquake risk mitigation and, in particular, to the preparation of earthquake emergency plans. Each topic is illustrated with examples of actual applications.

Earthquake Dynamics of Structures: A Primer. Anil K. Chopra. 2nd Edition. ISBN 1-932884-07-6. 2005. 141 pp. \$45.00. Available from the Earthquake Engineering Research Institute, 499 14th Street, Suite 320, Oakland, CA 94612; (510) 451-0905; e-mail: eeri@eeri.org; http://www.eeri.org/cds_publications/catalog/.

This monograph is an updated and expanded edition of the author's 1981 primer, *Dynamics of Structures*. It provides the non-specialist in structural dynamics with the basic concepts and knowledge needed to understand the response of structures to earthquake excitation. It presents structural dynamics concepts and analysis procedures in elastic and inelastic response of structures that in one form or another are utilized in design codes and seismic evaluations guidelines.

Pakistan 2005 Earthquake: Early Recovery Framework with Preliminary Costs of Proposed Interventions. ISBN 969-8736-01-8. 2005. 71 pp. Published by the United Nations System in Pakistan and the Government of the Islamic Republic of Pakistan. Available free online at <http://www1.earthquake05.un.org.pk/uploaddocuments/601main-small.pdf>.

Early recovery is about shifting the focus from saving lives to restoring livelihoods. This framework was formulated shortly after the South Asia earthquake of 2005 to inform and support the national strategy for reconstruction and rehabilitation with assistance from the

United Nations system as well as selected nongovernmental organizations and other international partners in Pakistan. It was designed to guide recovery interventions that augment ongoing humanitarian assistance operations, support spontaneous recovery efforts of the affected population, prepare the ground for sustainable long-term reconstruction, and reduce future disaster risks.

The Kashmir Earthquake of October 8, 2005: A Quick Look Report. Ahmad Jan Durrani, Amr Salah Elnashai, Youssef M.A. Hashash, Sung Jig Kim, and Arif Masud. MAE Center Report No. 05-04. 2005. 51 pp. Available free online from the Mid-America Earthquake Center, 1241 Newmark Civil Engineering Lab, University of Illinois at Urbana-Champaign, 205 North Mathews Avenue, Urbana, IL 61801; (217) 244-6302; <http://mae.cce.uiuc.edu/Publications/cdseries/Cd%20series%20files/05-04/Report05-04.pdf>.

In the wake of the earthquake in Pakistan in October, the Mid-America Earthquake Center and Rice University, with assistance from the Higher Education Commission of Pakistan and several other organizations, dispatched an earthquake field reconnaissance team to assess the damage, collect data, and derive lessons. The main objectives were to gain first-hand experience of the impact of the earthquake and lessons to be learned pertinent to consequence-based earthquake risk management and explore and identify avenues of collaboration for long-term earthquake preparedness, encompassing research, education, and design code development. This report describes the team's experiences and data collected, provides a brief background on the seismotectonic setting of the region, offers preliminary observations on damage to the built infrastructure, reviews socioeconomic consequences of the earthquake, and outlines early thoughts on reconstruction priorities and long-term disaster planning.

Landslides: Risk Analysis and Sustainable Disaster Management. Kyoji Sassa, Hiroshi Fukuoka, Fawu Wang, and Gonghui Wang, editors. ISBN 3-540-28664-0. 2005. 386 pp. \$209.00. Available from Springer New York, 233 Spring Street, New York, NY 10013; (212) 460-1500; e-mail: service-ny@springer-sbm.com; <http://www.springer.com/>.

Based on contributions to the first General Assembly of the International Consortium on Landslides (ICL), this reference and status report emphasizes the mechanisms of different types of landslides, landslide risk analysis, and sustainable disaster management. It consists of three parts: research results of the International Programme on Landslides, contributions on landslide risk analysis, and articles on sustainable disaster management. Also, the history of ICL activities is recounted to create a comprehensive overview of international activity on landslides. The contributions reflect a wide range of topics and concerns, including field studies, identification of objects of cultural heritage at landslide risk, as well as landslide countermeasures.

Tsunamis

The East-West Center has published the following publications related to the 2004 Indian Ocean tsunami. They are available from the East-West Center, 1601 East West Road, Honolulu, HI 96848; (808) 944-7111; <http://www.eastwestcenter.org/>.

After the Tsunami: Human Rights of Vulnerable Populations. ISBN 0-9760677-1-4. 2005. 110 pp. Free. Published in conjunction with the Human Rights Center at the University of California, Berkeley, this report is based on interviews with tsunami survivors, government officials, human rights activists, and aid workers in India, Indonesia, Sri Lanka, the Maldives, and Thailand. It concludes that survivors continue to suffer from inequities in aid distribution and substandard shelter and documents numerous violations of human rights following the tsunami. The study recommends that governments in tsunami-affected countries should commission an independent investigation of reports of inequities in aid distribution; increase accountability and transparency of aid providers; and develop mechanisms that will enable tsunami survivors to participate in reconstruction planning and implementation.

Hope for Renewal: Photographs from Indonesia after the Tsunami. Marco Garcia, photographer. ISBN 978-0-86638-202-1. 2005. 52 pp. \$19.95. This book of photographs was published as a tribute to those who died during the Indian Ocean tsunami and to the survivors of the disaster. It features color images from Aceh Province in Indonesia and chronicles important stages in the aftermath of the disaster, from rescue and recovery to the rebuilding of communi-

ties that continues today. Also included is a first-hand account of surviving the tsunami by a resident of Banda Aceh.

Voices of Hope: Adolescents and the Tsunami. ISBN 92-806-3909-9. 2005. 40 pp. \$10.00. Available free online from the United Nations Children's Fund (UNICEF), Adolescent Development and Participation Unit, 3 UN Plaza, New York, NY 10017; e-mail: vkaranan@unicef.org; http://www.unicef.org/publications/index_28137.html.

Adolescents and young people have repeatedly proven that they can provide innovative solutions in complex humanitarian crises. Soon after the December 2004 tsunami, they mobilized, helping to distribute aid, assisting with cleanup and rebuilding, and caring for those younger than themselves. Yet, their enthusiasm, creativity, and energy are not fully utilized in rehabilitation and development efforts. This publication highlights the helpful, analytical, and compassionate comments they made on UNICEF's Voices of Youth Web site and states that it is time to listen to these young people and engage them as key partners.

Wildfire

Quadrennial Fire and Fuel Review Report. 2005. 59 pp. Available free online from the Wildland Fire Lessons Learned Center, c/o NAFRI, 3265 East Universal Way, Tucson, AZ 85706; http://www.myfirecommunity.net/documents/QFFR_Final_Report_071905.pdf.

This report represents a first time effort to produce a unified fire management strategic vision for the five federal natural resource management agencies under the U.S. Department of the Interior and the U.S. Department of Agriculture. It emphasizes key mission strategies and core capabilities that must be established to proceed into the future with a common vision and a new collaborative process. This inter- and intra-agency process will ensure continuous programmatic renewal and a focal point for establishing investment priorities.

Scorched Earth: How the Fires of Yellowstone Changed America. Rocky Barker. ISBN 1-55963-735-8. 2005. 288 pp. \$24.95. Available from Island Press, University of Chicago Distribution Center, 11030 South Langley Avenue, Chicago, IL 60628; (800) 621-2736; e-mail: custserv@press.uchicago.edu; <http://www.islandpress.org/>.

In 1988, forest fires raged in Yellowstone National Park, destroying more than one-million acres and amplifying a longstanding conflict over fire management. Should the fires be suppressed immediately or should some be allowed to run their natural course? When should firefighters be sent to battle the flames and at what cost? With descriptions of the famous fires that have raged in Yellowstone, the heroes who have tried to protect the park, and the strategies that evolved as a result, this book lays a foundation for examining current fire and environmental policies in America and the world.

Climate Change and Drought

International Climate Efforts: Beyond 2012. Report of the Climate Dialogue at Pocantico. 2005. 36 pp. Free. Available from the Pew Center on Global Climate Change, 2101 Wilson Boulevard, Suite 550, Arlington, VA 22201; (703) 516-4146; http://www.pewclimate.org/global-warming-in-depth/all_reports/climate_dialogue_at_pocantico/.

Over the past year, senior policy makers and stakeholders from 15 countries came together for a series of discussions about advancing the international climate effort beyond 2012. This statement of outcome distills the dialog into a set of ideas, options, and approaches that the group as a whole believes worthy of consideration by the broader policy community. Part I lays out the case for immediate and sustained action to address climate change. Part II presents a set of broad objectives agreed to by the group at the outset of the dialog to frame the ensuing discussion. Part III describes a set of possible approaches to future multilateral action and ways they might be linked.

Radiative Forcing of Climate Change: Expanding the Concept and Addressing Uncertainties. ISBN 0-309-09506-9. 2005. 224 pp. \$37.00. Available from the National Academies Press, 500 Fifth Street NW, Lockbox 285, Washington, DC 20055; (202) 334-3313, (888) 624-8373; <http://www.nap.edu/>.

Changes in climate are driven by disturbances of the Earth's energy balance. These climate drivers or "forcings" include variations in greenhouse gases, aerosols, land use, and the amount of energy the Earth receives from the Sun. Increasing evidence points to a large

human impact on global climate over the past century. This report reviews current knowledge of climate forcings and recommends critical research needed to improve understanding. Whereas emphasis to date has been on how these climate forcings affect global mean temperature, the report finds that regional variation and climate impacts other than temperature deserve increased attention.

Drought Management and Planning for Water Resources. Joaquín Andreu Alvarez, Giuseppe Rossi, Federico Vagliasindi, and Alicia Vela, editors. ISBN 1-56670-672-6. 2005. 264 pp. \$109.95. Available from CRC Press, 6000 Broken Sound Parkway NW, Suite 300, Boca Raton, FL 33487; (561) 994-0555, (800) 272-7737; e-mail: orders@crcpress.com; <http://www.crcpress.com/>.

While droughts predominate in arid regions, their frequency and severity in more temperate regions with more abundant rainfall have been on the rise. This book provides a collection of planning and management tools for minimizing the negative impacts of droughts. It covers water conservation and reuse, conjunctive use and use of marginal resources, desalination, deep groundwater extraction, optimization modeling, and decision support systems. Additionally, it examines the feasibility of a drought watch alert system and the legal and administrative framework required.

Health

Ready or Not? Protecting the Public's Health from Disease, Disasters, and Bioterrorism 2005. Shelley A. Hearne, Laura M. Segal, Michael J. Earls, Chrissie Juliano, and Tim Stephens. 2005. 84 pp. Available free online from the Trust for America's Health (TFAH), 1707 H Street NW, 7th Floor, Washington, DC 20006; (202) 223-9870; e-mail: info@tfah.org; <http://healthyamericans.org/reports/bioterror05/>.

TFAH's third annual study of preparedness for major health emergencies finds that both federal and state efforts must be accelerated to adequately protect the American people. In the report, the federal government received a D+ for post-9/11 public health emergency preparedness, and over half of the states garnered a score of 5 or less out of 10 possible points for key indicators of health emergency preparedness. TFAH's "Let's Get Real" agenda for accelerated preparedness includes detailed recommendations focusing on leadership, accountability, working with the public, and improving basic response capabilities.

Public Health Incident Command System (PHICS): A Guide for the Management of Emergencies or Other Unusual Incidents within Public Health Agencies. Volumes I and II. Kristine Qureshi, Kristine M. Gebbie, and Eric N. Gebbie. 2005. 134 pp. Available free online from the Center for Public Health Preparedness, University at Albany School of Public Health, One University Place, Rensselaer, NY 12144-3456; (518) 486-7921; e-mail: cphp@uamail.albany.edu; <http://www.ualbanycphp.org/pinata/phics/default.cfm>.

Public health is essential to the emergency response capability of any community, and as such it must have the ability to cooperate and collaborate with other responding agencies during emergencies. To best do so, it is important that public health agencies structure their emergency response plans according to the frameworks of the National Incident Management System and the Incident Command System (ICS). This guide provides an overview of how the standardized ICS system is applied within the context of public health. Appendices in Volume II feature job action sheets, forms, an emergency plan outline, and a resource directory.

GAO Reports

The Government Accountability Office (GAO) reports provide background information and insight into key issues and concerns of the U.S. Congress. The office frequently publishes studies regarding hazards and disaster policy. Some recent GAO reports and testimonies that might interest *Observer* readers are listed below. Summaries and full text are available on the Web at <http://www.gao.gov/>. Printed copies are also available. The first copy is free. Additional copies are \$2.00 each. To order, contact the GAO, 441 G Street NW, Room LM, Washington, DC 20548; (202) 512-6000; TDD: (202) 512-2537; <http://www.gao.gov/cgi-bin/ordtab.pl>.

Hurricanes Katrina and Rita: Provision of Charitable Assistance. 2005. GAO-06-297T. 16 pp.

Hurricane Protection: Statutory and Regulatory Framework for Levee Maintenance and Emergency Response for the Lake Pontchartrain Project. 2005. GAO-06-322T. 27 pp.

Federal Emergency Management Agency: Challenges for the National Flood Insurance Program. 2006 GAO-06-335T. 23 pp.

Statement by Comptroller General David M. Walker on GAO's Preliminary Observations Regarding Preparedness and Response to Hurricanes Katrina and Rita. 2006. GAO-06-365R. 9 pp.

Homeland Security: DHS Needs to Improve Ethics-Related Management Controls for the Science and Technology Directorate. 2005. GAO-06-206. 29 pp.

Risk Management: Further Refinements Needed to Assess Risks and Prioritize Protective Measures at Ports and Other Critical Infrastructure. 2005. GAO-06-91. 130 pp.

Updated Holistic Disaster Recovery Available from PERI

The Natural Hazards Center has revised the 2001 handbook *Holistic Disaster Recovery: Ideas for Building Local Sustainability after a Natural Disaster*. The new version contains updated resources, including a more specific focus on the Hurricane Katrina recovery, and new examples of recovery success stories. The document's text was streamlined to make it easier to use and more practical for those managing recovery decisions and activities on the ground.

With funding from the Public Entity Risk Institute (PERI), the Center originally created the handbook to communicate the idea that for effective, long-term disaster recovery, communities must incorporate as many principles of sustainability—environmental quality, economic vitality, quality of life, social equity, citizen participation, and disaster resiliency—into their recovery processes as possible. The handbook is intended for local government officials and staff, state planners, activists, emergency management professionals, disaster recovery experts, mitigation specialists, and others who help communities recover from disaster.

The 2006 version of *Holistic Disaster Recovery* (140 pp., \$35.00) is currently only available from PERI, 11350 Random Hills Road, Fairfax, VA 22030; (703) 352-1846; e-mail: ahoffman@riskinstitute.org; <http://www.riskinstitute.org/>.

New Graduate Research Assistant Joins Center

Adam Morenberg, a graduate student in the Department of Sociology, is the latest graduate research assistant to join the Natural Hazards Center. Before joining the Center, Adam received a master's degree in sociology from the University of South Florida and a bachelor's degree in sociology and English from Miami University of Ohio. In addition to his work at the Center, Adam specializes in social psychology, ethnographic research methods, and sociocultural studies of gender, sexuality, health, and illness.

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 hazard 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. Please send information of potential interest to the Natural Hazards Center or the readers of this newsletter to the address below. The deadline for the next *Observer* is *March 22, 2006*.

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Copies of the *Observer* and the Natural Hazard Center's electronic newsletter, *Disaster Research*, are also available on the Center's Web site:

<http://www.colorado.edu/hazards/>

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