

# NATURAL HAZARDS Observer

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## Expanding the Horizons of Disaster Research

— an invited comment

How we define the world defines us. Definitions affect what we see, what we look at, what we are concerned about, what we study, and how we make policy. Disaster is one of those definitions—those images—that both informs and distorts. Ever since Noah (or perhaps Gilbert White), humankind has experienced disasters associated with floods and other natural hazards. More recently, we have associated disaster with dangerous technologies that create risk in societies. And even more recently we have discovered new disasters, such as terrorism, that have multiple agents and impact areas that cannot be identified before the event.

In light of current concerns regarding technology and terrorism, it is useful to recall the post-World War II em-

phasis on the importance of disaster for economic development. For example, Fred Cuny talked about how disaster assistance could be used as an investment in the development process. This appealing idea provided a rationale for donor government policy during much of the last half of the 20th century.

But that is the past. The peak year for development funding among all donor countries was 1992, and the subsequent decline has been due to doubts about the effectiveness of aid as well as changes in political and economic ideology. The social and economic criteria used to measure development have now been replaced by an assessment of a developing country's threat to peace and security.

However, changes in how developing countries are perceived have not altered the frequency or importance of disasters in those countries. Disasters there involve hazards agents and consequences not common in the Western world, and thus all too often are disasters that interest neither the policy nor the research communities.

Easterly (p. 197) points out that "between 1990 and 1998 poor countries accounted for 94 percent of the World's 568 major disasters and 97 percent of disaster related deaths." To this tally he adds similar numbers regarding famine, refugees, and HIV, and notes that poor countries' sensitivity to disaster creates a much larger range of growth rates for those countries than for the richest countries.

Although Cuny earlier wanted to recast the disaster paradigm from a focus on refugees to one on development, refugees remain problematic. Since 1990, some 70 million people have become international refugees and/or internally displaced. Indeed, in 15 countries more than 20% of the population is displaced (Addison, p. 393). At the same time, the World Food Program has indicated that nearly 40 million people are struggling against starvation; coincident with this hunger is HIV/AIDS, which disproportionately affects sub-Saharan Africa. The inattention to Africa is not new; except in extreme cases; these issues remain a low priority for the rest of the world.

Addison states that the last decade of the twentieth century saw the disintegration of Yugoslavia, genocide in Rwanda, and the collapse of Somalia, to name only three tragedies. At least 43 major conflicts occurred in the 1990s—the exact number depends on how we define a major conflict—with Africa accounting for 17 of these. One now needs to add to that the war in Afghanistan and the second Iraq war, both of which intended to achieve regime change.

### Implications for the Disaster Research Community

Given the type, nature, and location of these "disastrous" events, they are unlikely to generate much interest among the U.S. disaster research community—at least relative to domestic hazards. The existing research tradition is predominately Western, community-based, urban, and deals with sudden onset agents from "natural" causes. The situations above are principally African, involve displaced populations, are predominately rural, and deal with conflict or slow-onset events, and some might represent new, previously unseen, types of disaster. Indeed, it may be appropriate to designate a "permanent" state of disaster in parts of Ethiopia and northern Sudan.

Existing theories of disaster will not help us understand these events. Theories of the disaster cycle make no sense when one cannot differentiate between impact and recovery. Warning theories predicated on the mass media are irrelevant. Hence, famine and drought have never been appealing topics to most American and European researchers.

It would be overly pedantic to argue that researchers should be interested in topics and concerns previously slighted. There are disciplinary, institutional, national,

theoretical, and personal factors that determine research concerns and intellectual interests. Moreover, Joas points out the reluctance of the social sciences to deal effectively with conflict and war, and many of the situations cited are conflict-based. Joas says that, for most social scientists, "war and violent domestic conflicts necessarily appeared as the relics of a dying age that had not been illuminated by the dawn of the Enlightenment" (p. 30). He goes further to suggest that the dominant paradigms in the social sciences—democracy, free trade, industrial society, socialism, as well as development—all promised implicitly an end to collective violence. He contends however, that conflict and war are very modern, not relics of the past.

If one examines the primary literature on conceptualizing disaster, such as Quarantelli's edited volume, *What is Disaster?*, one does not find much enthusiasm for slow-onset or conflict disasters. In fact, it seems that each contributor defines disaster so that the definition will accommodate his or her research interest while remaining indifferent to other possibilities. While Quarantelli, in his summary, does not rule out slow-onset or conflict situations, no contributor enthusiastically argues their inclusion.

It is important, then, that we expand our research horizons. Otherwise, the field of disaster research will be truncated into a catalogue of responses to natural hazards. At the same time, we must confront a new tendency to consider conventional domestic disasters as potential issues of national security for which research access is denied and respondent cooperation is inhibited. This new development may mean that we have nothing more to study and may reinforce the current political tendency to substitute authority for knowledge. Indeed, the lack of research attention to disaster events that result in enormous human costs in developing countries perhaps makes our current research an example of trivial pursuits.

Russell Dynes  
Professor Emeritus  
Disaster Research Center  
University of Delaware

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The Disaster Research Center is celebrating its 40th anniversary this year. In honor of that occasion they are hosting a conference to explore how social science research has and will continue to enhance understanding of the human and social dimensions of disasters. See <http://www.udel.edu/DRC/> for information about the center.

## Comments on the 2009 Boulder Flash Flood: Closing Remarks from the 2020 Natural Hazards Workshop

In 2009 the snowpack in the mountains above Boulder, Colorado, was far above average; the ski season lasted well into April, and even in June diehard skiers were hauling their backcountry skis to the Indian Peaks snowfields. Frequent rains drenched the Front Range, and by May, the reservoir 18 miles above Boulder on Boulder Creek, was overflowing. With saturated soils and rapidly melting snow, the rainstorm that stalled 12 miles from Boulder on June 21 was all it took to produce a devastating flash flood.

The last great flood occurred in 1894 (see <http://bcn.boulder.co.us/basin/gallery/flood1894.html>) when the hills in the canyon above town had been denuded by miners and loggers, contributing to the high creek runoff. By 2009, increased housing and roads had offset the benefits of reforestation, and water again ran quickly off hillsides and roadways into the creek. Five inches of rain fell in less than five hours, and Boulder Creek, which normally runs at 300 to 600 cfs (cubic feet per second), quickly reached 12,000 cfs.

As is typical with such events, officials worried about the appropriate time to sound an alarm. The time required to warn the public of a flash flood in Boulder is longer

than the time it takes a flood to form and reach the city, and the decision to announce an imminent flood and sound a warning must be made before enough rain has fallen to be certain that a flood will occur. Boulder officials feared losing credibility by sounding an unnecessary alarm; they also feared not sounding an alarm soon enough for people to evacuate.

A flood warning was issued and 20 minutes later reports from upstream indicated that a 10-foot wall of water had formed nine miles up the canyon. Forty-five minutes later the deluge arrived at the mouth of the canyon just west of Boulder and inundated the city. The torrent that reached Boulder was not just water—it included branches, whole trees, wreckage from destroyed and damaged homes, pieces of private-access bridges, yard equipment, cars, sheds, rocks, silt, propane tanks full of gas, other debris, animals, and human bodies.

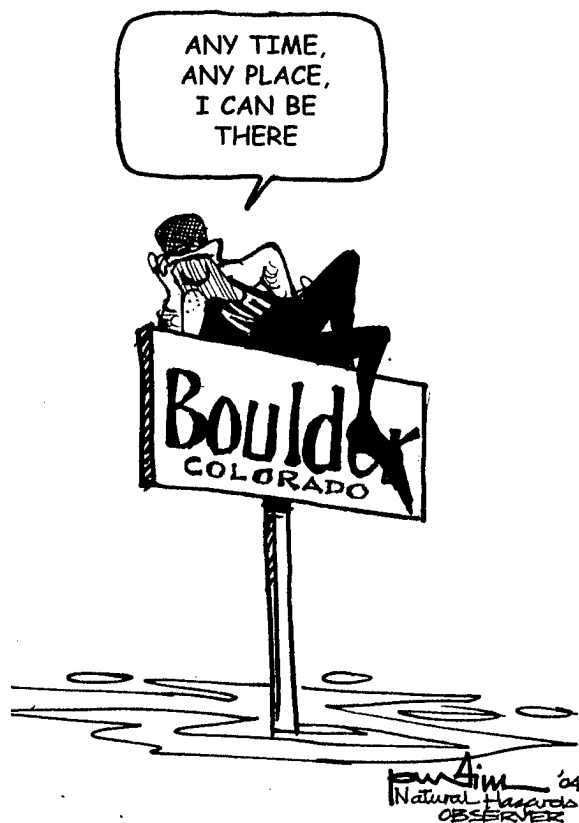
Most of the city's bridges were designed to break away on one side in a flood, but one bridge jammed and failed to do so, and far more damage occurred behind the bridge than had been predicted. Moreover, when the resultant debris dam finally gave way, a mass of concrete, asphalt, rubble, and far more water than anticipated by any flood model spread north to blanket residential areas and parts of downtown. Hundreds of parked cars throughout the city were picked up by the floodwaters and carried down streets; others were swept away in the floodway to become half-ton torpedoes.

The flood resulted in 24 deaths and hundreds of injuries. One-third of the deaths occurred when people tried to traverse flooded intersections in automobiles, not realizing that 18 inches of moving water can carry a car away. Many of the casualties were people who had gone to the banks of the creek to watch the rising waters, and several were transients who were camping under one of the creek bridges.

Direct damage was estimated to exceed \$250 million, but that did not take into account the losses that could not be quantified, such as the psychological effects on families directly affected, aesthetic damage, lost wages, and environmental degradation.

### Flood Was Not Unforeseen

By the mid-19th century, the miners and settlers around Boulder had heard stories of catastrophic flooding from the Southern Arapaho tribe, which had inhabited the region for 200 years. Floods were common during the early years of the town's development. Over the years, smaller floods reminded citizens and policy makers that the risk remained (see <http://bcn.boulder.co.us/basin/history/floodhistory1.html>), and concern increased markedly when the Big Thompson flash flood, 40 miles north of



Boulder, killed 139 people in 1976, and a flood hit nearby Fort Collins in 1997. In the 1990s, Boulder was rated as the city in Colorado where people were most likely to experience a catastrophic flood, and one prominent flood researcher, my great grandfather, actually established a research protocol for the great flood when it inevitably happened (see <http://www.colorado.edu/hazards/bcfn/>).

This history, along with remediation activities required under the National Flood Insurance Program and the regional Urban Drainage and Flood Control District, led Boulder to enact flood mitigation improvements in the latter part of the 20th century. The city and county adopted a warning system, a high-risk property purchase plan, and a nationally recognized greenways project that resulted in multipurpose riparian parkways containing heavily used bike/walkways, recreation parks throughout the city, restored stream habitat, breakaway bridges, and, most importantly, floodplain use that did not increase the exposure of property and life to floods. There were signage and education plans in place to serve citizens, tourists, and international visitors. Interestingly, however, the city's buyout policy had been successful in removing only a portion of the residences in the floodplain; when the flood hit, the city itself lost several of its own buildings.

And now we come to a confluence ourselves—in the aftermath of the 2009 flood, Boulder was faced with two distinct and opposing courses of action, each bringing with it different consequences. We know that the history of flooding in the 21st century has yet to be written and what happens in the years to come is not cast in stone. Rather, it depends on the choices made here (and in Tulsa, Greensboro, Fargo, Scituate, Santa Barbara, and a thousand other places across the nation).

### One Path

The events of 2009 led citizens and government alike to re-examine the steps already taken to mitigate floods. Although the flood was an "extraordinary event," the Boulder Creek Watershed Initiative, supported by local government leaders, built upon the momentum of the disaster response to create a more flood-resilient community through improved land-use decisions, an improved warning system, better disaster planning, and innovative hazards education.

We are living with the legacies of these decisions today. Flood resiliency has emerged as one of a larger set of community goals involving ecological, social, and economic sustainability. When the city of Boulder reviewed its pre-2009 disaster preparedness and mitigation actions, planners and citizens came to recognize that hazards issues could not be divorced from larger questions about sustainability and the city's environment. Collectively, we began to examine potential alternatives regarding a range of issues, beginning with flood and wildfire hazards.

I am happy to say that overall, we are successfully focusing on long-term solutions to complex problems. Through the long process of citizen participation, we have begun to manage our floodplain in a holistic way in accordance with the precautionary principle, which advises

that in the absence of absolute proof, a strong hypothesis that catastrophic losses are possible should be enough to encourage precautionary action. We have widened the floodplain to create catch basins for stormwater—a means to mitigate flooding—created a wildlife corridor, bird sanctuary, hiking trails, recreational areas, and community gardens. We have improved the city's warning systems by placing unobtrusive, highly reliable solar warning devices in neighborhoods, within earshot of most residents. The community has initiated an aggressive comprehensive educational program about floods, wildfires, and other local hazards for both citizens and school children. The university has also played a significant role in post-flood disaster mitigation, bringing academic researchers, government officials, and practitioners from engineering, physical and social sciences, and policy studies together to build relationships that foster comprehensive solutions to natural disaster problems.

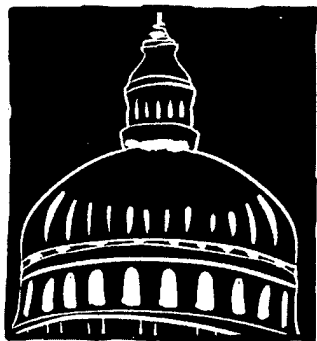
### Another Path

The people of Boulder came together following the flood of 2009 and helped one another sort through the devastation, clean up, and grieve for all that had been lost. That goodwill lasted for a few weeks during which we focused on responding to the tragedy. Unfortunately, grief and compassion were replaced with a search for someone to blame and an emphasis on quickly rebuilding what had been lost. Despite pleas to wait until floodplain management studies had been completed and maps updated, people wanted to rebuild as quickly as possible—to both erase the memory of the tragedy and resume their lives and livelihoods.

The ensuing debate was contentious and exacerbated by the fact that our recovery plan, written in 1998, was out of date. There was support for removing all structures from the floodplain, but many property owners argued that they had a right to rebuild on their land as they saw fit. Having received flood insurance payments, they were determined to use the money to re-establish their homes and businesses. Under pressure to spend federal disaster funds given to the city, and faced with a tangle of law suits, the city quickly came up with a plan that focused largely on capital rebuilding. We had no funds for an education program, and because of budget constraints and fiscal difficulties brought about by the flood recovery, a number of proposed open space tax increases failed. Unfortunately, by 2013 Boulder looked remarkably similar to Boulder 2009, with new university dormitories sited at the edge of the floodplain. Then the great flood of 2014 struck. . .

— This *Invited Scenario* comprises the fictionalized remarks of Gilbert F. White, IV, during the 2020 Natural Hazards Workshop.

The editors gratefully acknowledge the valuable information provided by Dennis Mileti in *Disasters by Design* (Washington, D.C.: Joseph Henry Press, 1999) and the web sites of the Boulder Flood Notebook (<http://www.colorado.edu/hazards/bcfn/>) and the Boulder Area Sustainability Information Network (<http://bcn.boulder.co.us/basin/>).



# WASHINGTON UPDATE

## DHS Releases Conclusions from National Exercise

In December 2003, the U.S. Department of Homeland Security (DHS) released summary conclusions from the TOPOFF 2 exercise, the largest and most comprehensive terrorism response and homeland security exercise ever conducted in the U.S. The exercise provided DHS with an assessment of national response capability and identified areas for improvement.

TOPOFF 2 was conducted May 12-16, 2003, not long after DHS was established, and involved federal, state, local, and Canadian participants in a full-scale exercise that assessed how responders, leaders, and other authorities would react to the simulated release of weapons of mass destruction (WMD) in Seattle and Chicago. The scenario involved a fictitious, foreign terrorist organization that detonated a simulated radiological dispersal device (i.e., a dirty bomb) in Seattle and released pneumonic plague in several Chicago metropolitan locations. The exercise also involved intelligence analysis, a cyber attack, and credible terrorism threats against other locations.

Specific goals of TOPOFF 2 were to:

- Identify vulnerabilities in the response system;
- Improve the nation's capacity to manage extreme events;
- Create frameworks for the operation of expert crisis and consequence management systems;
- Validate authorities, strategies, plans, policies, procedures, and protocols; and
- Establish a systematic national exercise program to support the national strategy for homeland security.

The participants in TOPOFF 2 are now working to address the issues identified in the exercise. For example, DHS is leading a federal effort to revamp, centralize, and unify a range of pre-existing federal and other incident response contingency plans—work reflected in the recent release of the Initial National Response Plan (INRP) and the development of the National Incident Management System (NIMS), which is currently in the final stages of

review by federal, state, and local partners (see the *Observer*, Vol. XXVIII, No. 3, p. 5).

In the resultant report, major conclusions and post-exercise activity are summarized for five areas: emergency public policy and decision making; emergency public information; communications, coordination, and connectivity; jurisdiction; and resource allocation.

### *Emergency Public Policy and Decision Making*

The exercise provided important lessons in federal, state, and local integration. It challenged decision makers with two critical events: elevation of the threat condition to "Red" by federal, state, and local authorities; and a request for issuance of presidential declarations to cover the attacks.

Since TOPOFF 2, DHS has continued to work with state and local partners and the private sector to improve coordination and develop standards for security measures in response to DHS advisories.

### *Emergency Public Information*

Disseminating unified messages during domestic incidents is essential to effective response, and TOPOFF 2 provided a unique opportunity to test public information strategies. Creating consistent messages was a major challenge, and the exercise spotlighted the need to improve communication with and among field-based joint information centers (JICs), manage rumors, and develop information packages earlier in the scenario.

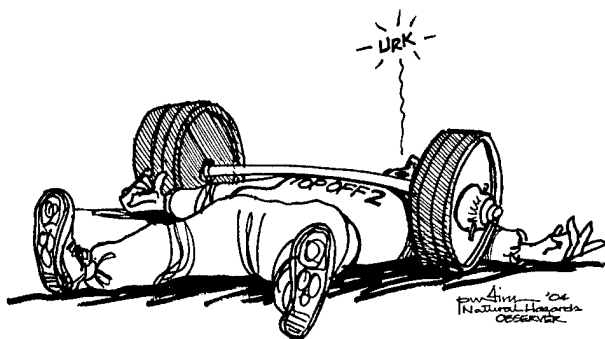
Subsequently, DHS has led a major interagency effort to create an incident communications strategy, emergency communications protocols, and improved federal, state, and local coordination. This template has been used to coordinate interagency communications during a number of recent incidents.

### *Communications, Coordination, and Connectivity*

Communication may present the greatest challenge in mass casualty incident response, especially incidents involving WMD. Coordination and the need to use consistent terminology were specifically cited as issues in TOPOFF 2. Data collection and coordination of medical information were particularly difficult for state and local authorities. However, the exercise demonstrated that hos-

pitals could be called upon across a wide area; 64 hospitals in the Chicago area participated.

To enhance communications, coordination, and connectivity, DHS and state and local authorities are working on a range of improvements. The Emergency Operations Center (EOC) and Interoperability Communications grants program administered by the Federal Emergency Management Agency (FEMA) has distributed a total of \$81 million in FY 2002-2003 to ensure that EOCs have the support and telecommunications capabilities needed for flexibility, sustainability, security, survivability, and interoperability. Projects funded by these grants encourage the acceptance of new technologies and operating methods that will promote interoperability and connectivity. The INRP, NIMS, and the final NRP will all promote enhanced coordination through standardization and unification of domestic response processes. The draft NIMS document will include standardized terminology and key terms for use by all responders at all levels.



### Jurisdiction

Jurisdictional issues that emerged during TOPOFF 2 concerned conflicts or gaps in authority, policies, and/or agreements. Participants emphasized the value of exercises for exploring and solving such issues and felt that the exercise validated the concept of designating a Principal Federal Official (PFO) from DHS, supported by a team of DHS subject experts. The PFOs in both Seattle and Chicago helped ensure integrated communications and coordinated planning among federal, state, and local authorities.

The issue of jurisdiction is further being addressed through the recent adoption of a National Exercise Program (NEP) developed by DHS's Office for Domestic Preparedness and an interagency team. The NEP will aid the development of exercises that test and refine jurisdictional issues at the federal, state, and local level and employ the new organizational guidelines of the INRP (and eventually the NRP) as the nation's single response plan.

### Resource Allocation

Decisions made during an incident must allocate limited resources optimally. TOPOFF 2 revealed several challenges in identifying and accessing resources among federal, state, and local organizations. The exercise also showed that the "one-stop shop" for tracking the status of federal assets, which had been activated or deployed during the emergency, does not really exist. The analysis

concluded that the exercise validated the importance of preplanning, specifically citing Illinois' contingency plans for the receipt and distribution of the Strategic National Stockpile.

The Department of Homeland Security Operations Center, in conjunction with FEMA's National Emergency Operations Center, tracks the deployment of federal resources across the government. To improve that process, FEMA is establishing a standardized, automated tracking system. As part of NIMS, DHS is working collaboratively with state and local governments to establish a catalog of available resources.

To read the complete analysis of TOPOFF 2, see the **Summary Report** available at [http://www.dhs.gov/interweb/assetlibrary/T2\\_Report\\_Final\\_Public.doc](http://www.dhs.gov/interweb/assetlibrary/T2_Report_Final_Public.doc).

## FEMA Announces Another \$173.5 Million in Grants to States

On December 18, 2003, FEMA announced \$173.5 million in grants to help state and local government better respond to all hazards. FEMA describes the Emergency Management Performance Grants (EMPG) program as a step toward achieving comprehensive emergency management at state and local levels that is adaptable to any terrorist attack, human-caused incident, or natural disaster. The EMPG program supports improvement in all phases of hazards management—mitigation, preparedness, response, and recovery. For more information about the Emergency Management Performance Grants program, see <http://www.fema.gov/preparedness/empg.shtm>.

## New Building Science Guidelines to Enhance Terrorism Resistance Now Available

FEMA has released four publications in its Multi-Hazard Risk Management Series to provide guidance on designing, constructing, and engineering high occupancy buildings resistant to terrorist attack. The publications are intended to make communities aware of science and technology that can be applied to protect people and critical infrastructure. The documents now available include:

- **FEMA 426, Reference Manual to Mitigate Potential Terrorist Attacks Against Buildings**
- **FEMA 427, Primer for Design of Commercial Buildings to Mitigate Terrorist Attacks**
- **FEMA 428, Primer to Design Safe School Projects in Case of Terrorist Attacks**
- **FEMA 429, Insurance, Finance, and Regulation Primer for Risk Management in Buildings**

These guidelines are intended to be used alongside **FEMA 386-7, Integrating Human-Caused Hazards into Mitigation Planning**, published in September 2002.

An outreach campaign is underway to promote use of these materials by members of the emergency management and building science professional communities. In

addition, each document will be promoted among key audiences with unique interest in this subject. The primary users for these publications are public policy officials at all levels, emergency managers, facility owners and managers, architects, and building construction professionals.

**FEMA 428** is particularly aimed at school administrators; **FEMA 429** at finance, lending, insurance, and due diligence professionals. In addition to current practitioners in these fields, FEMA is strongly encouraging use of these publications among colleges, universities, and professional organizations that educate and train future professionals.

All Multi-Hazard Risk Management Series publications are free and can be downloaded from <http://www.fema.gov/fima/rmsp.shtm>.

## NOAA/NWS Propose Policy on Provision of Weather, Water, Climate Information

The National Oceanic and Atmospheric Administration (NOAA) has proposed a new policy regarding information activities of the National Weather Service (NWS). The policy is intended to strengthen the existing partnership among government, academia, and the private sector, which provides the nation with high-quality weather, water, climate, and related environmental information.

The proposed policy responds to recommendations contained in the National Research Council's (NRC's) study, *Fair Weather: Effective Partnerships in Weather and Climate Services* (see the *Observer*, Vol. XXVII, No. 6, pp. 1-3), which identifies the need for a policy that recognizes advances in technology as well as new, relevant laws and policies. The study examined the respective roles of the government, academic, and private sectors and provided recommendations regarding their ongoing collaboration. In a key passage, the study states that

*it is counterproductive and diversionary to establish detailed and rigid boundaries for each sector outlining who can do what and with which tools. Instead, efforts should focus on improving the processes by which the public and private providers of weather services interact. [emphasis in the original]*

With this background, NOAA has proposed a policy regarding activities of the National Weather Service in the area of weather, water, climate and related environmental information services. The new policy can be found on-line at <http://www.nws.noaa.gov/fairweather/policy.php>.

NOAA is seeking comments on this proposed policy, and remarks can be submitted through May 14, 2004. Electronic submission is encouraged, and comments should be e-mailed to [fairweather@noaa.gov](mailto:fairweather@noaa.gov). Written comments should be addressed to *Fair Weather, Strategic Planning and Policy Office, NOAA National Weather Service, 1325 East-West Highway, Room 11404, Silver Spring, MD 20910-3283*; comments may also be faxed to (301) 713-1239. For further information contact *Peter Weiss*, (301) 713-0258, ext. 142; or see <http://www.nws.noaa.gov/fairweather/>.

## FEMA Offers On-Line Course to Help Build Partnerships with Tribal Governments

In January 2004, FEMA released an on-line, independent study course for those working with tribal governments to protect native people and their property against all types of hazards. The course is available to anyone who has an interest in learning more about building partnerships with tribal communities. Throughout the course, tribal representatives speak about their history, their culture, their way of life, and what those working with them need to know to develop good relationships.

Specialists at FEMA's Emergency Management Institute (EMI) developed the course, which is part of the institute's extensive independent study program. *Building Partnerships with Tribal Governments*, IS 650, includes lessons covering historical and legal perspectives, tribal culture, and challenges in delivering government programs. Those who pass the final exercise receive a certificate of completion. The course is available on-line at: <http://training.fema.gov/EMIWeb/IS/is650.asp>.

Additionally, EMI has recently issued its *2004 Catalog of Activities*, which lists all the EMI courses available in mitigation, readiness and technology, professional development, disaster operations and recovery, chemical emergency preparedness, and integrated emergency management. The catalog includes both the resident training provided at the National Emergency Training Center in Emmitsburg, Maryland, as well as the dozens of nonresident courses and independent study courses offered by EMI. For a copy, contact *EMI, 16825 South Seton Avenue, Emmitsburg, MD 21727*; (800) 238-3358, (301) 447-1000; <http://training.fema.gov/emi/web>.

## Community Block Grant Funds now Available to Build Tornado Shelters in Manufactured Home Parks

On December 3, 2003, the president signed into law the Tornado Shelters Act, which amends the Housing and Community Development Act of 1974, authorizing communities to use community development block grant funds to construct tornado-safe shelters in manufactured home parks. To be eligible, a shelter must be located in a neighborhood or park that contains at least 20 units, consists predominately of low- and moderate-income people, and is in a state where a tornado has occurred within the current or last three years. The shelter must comply with tornado-appropriate safety and construction standards, be large enough to accommodate all members of a park, and be located in a neighborhood or park that has a warning siren.

The full text of this legislation, Public Law 108-146, is available on-line from <http://thomas.loc.gov>.



## FEMA Announces New Citizen Corps Publication for Leaders of First Responder Organizations

FEMA has announced another new U.S. Fire Administration (USFA) publication specifically designed for community leaders, volunteers, and first responder organizations. The *Citizen Corps Opportunities for America's First Responders* brochure provides a sampling of activities that citizen advocates and volunteers could undertake to assist local fire, EMS, and emergency services departments. The brochure is the result of a joint effort among federal, state, local, and private fire-service personnel, including FEMA and USFA staff. Also included are brief overviews of the Citizen Corps mission, initiatives, and program components, such as Community Emergency Response Team (CERT) training (see page 15 of this *Observer*), Medical Reserve Corps, Volunteers in Police Service, and Neighborhood Watch, and basic information about Citizen Corps Councils.

The USFA's mission is to reduce life and economic losses due to fire and related emergencies through leadership, advocacy, coordination, and support. Citizen Corps is part of President Bush's USA Freedom Corps initiative that is administered by the Department of Homeland Security, Office for Domestic Preparedness. It is designed to bring awareness, public education, training, and volunteer opportunities to the local level so that communities are safer and better prepared to handle threats of all kinds, including crime, disasters, emergencies, and terrorism. The USFA brochure is a tool for understanding Citizen Corps initiatives involving America's fire and EMS departments. The brochure, publication number FA-263, can be obtained through the USFA's publications on-line catalog at <http://www.usfa.fema.gov/applications/publications/>.

## OSHA Issues National Emergency Management Plan

The Occupational Safety and Health Administration (OSHA) has issued a National Emergency Management Plan (NEMP), a directive that clarifies the agency's policies during responses to national emergencies. The NEMP outlines procedures to ensure that personnel and logistical and operational assistance are available to provide assistance and guidance regarding emergency responder and recovery worker health and safety.

The NEMP details OSHA's responsibilities during major incidents, such as those that result in a presidential declaration, the activation of the Federal Response Plan, or a request for assistance from the Department of Homeland Security. It also outlines the primary roles and functions that the agency's national and regional offices will assume while planning for and responding to a major national incident. Each region is required to develop a Regional Emergency Management Plan (REMP) that is coordinated with state plans. In addition, the new directive establishes an Emergency Preparedness Executive Steering Committee, as well as specialized response teams to address incidents involving weapons of mass destruction.

The NEMP is available from [http://www.osha.gov/OshDoc/Directive\\_pdf/HSO\\_01-00-001.pdf](http://www.osha.gov/OshDoc/Directive_pdf/HSO_01-00-001.pdf). Additional information is available from Frank Meilinger, OSHA, (202) 693-1999; <http://www.osha.gov>.

## USFA Announces "Roadmap" for Training IMTs



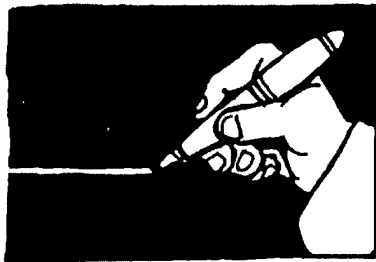
On January 15, 2004, USFA announced a training "roadmap" for any of the nation's fire and emergency services that wish to develop local and regional metropolitan Incident Management Teams (IMTs). This recommendation is in part the result of an MOU between the USFA, the International Association of Fire Chiefs, and the National Fire Protection Association Metropolitan Chiefs. The MOU, signed in 2002, was designed to promote the establishment of metropolitan area IMT teams (based on U.S. Forest Service models) and further IMT training and capability using the Integrated Emergency Management System.

The IMT training roadmap is also a response to Homeland Security Presidential Directive 5 (HSPD-5), which states:

To prevent, prepare for, respond to, and recover from terrorist attacks, major disasters, and other emergencies, the United States Government shall establish a single, comprehensive approach to domestic incident management. The objective of the United States Government is to ensure that all levels of government across the Nation have the capability to work efficiently and effectively together, using a national approach to domestic incident management.

The IMT roadmap is designed to ensure that all departments will have the necessary incident management support they need to manage unusually large, complex, or long-term emergency incidents. An all-hazards IMT consists of emergency service officers from appropriate disciplines (fire, rescue, emergency medical, hazardous material, or law enforcement services) trained to perform the functions of the command and general staff of the Incident Command System (ICS). Members of the initial responding departments often fill these functions; however, the size, scope, or duration of an emergency may become so large that an IMT is needed to support the local officers.

For further information regarding the IMT efforts visit <http://www.usfa.fema.gov>—in particular, see <http://www.usfa.fema.gov/fireservice/incident/imtroadmap.shtm>.



## ON THE LINE

### **Converging Themes: Educational Opportunities for the Hazards Manager of the 21st Century**

Recognizing that traditional approaches to emergency/hazard management would not meet current challenges of mitigating and minimizing disaster loss, emergency/hazard professional educators and emergency managers themselves began refining the role and skills of emergency/hazard professionals in the late 1980s. As this professionalization has continued, the need for expanded, formal higher education opportunities has increased. In fact, the number of community college and undergraduate and graduate university programs is growing rapidly (see page 14 of this *Observer*). These programs have largely emerged in a rather uncoordinated fashion, with little professional or academic consensus on core knowledge areas or curriculum content to transcend individual programs across this area of study.

#### **Curricula Workshop**

In order to address these and other issues surrounding higher education for hazards managers, the Natural Hazards Center and the University of Colorado at Denver, with support from the National Science Foundation and in partnership with the Federal Emergency Management Agency (FEMA) Higher Education Project, sponsored a "Designing Educational Opportunities for the Hazard Manager of the 21st Century Workshop" in 2003. The workshop was convened to begin formulation of a national model for hazard, disaster, and emergency management higher education curricula and to create a framework for educational opportunities. Workshop discussion centered on how to endow the next generation of managers with the wide range of skills needed to tackle disaster reduction.

The workshop focused on three primary goals: identify core competencies for skills and knowledge; begin to create a sample interdisciplinary curriculum; and identify possibilities for incorporating basic hazard management principles into the curricula of related disciplines. Fifty-five participants from the hazards community provided their perspectives on these topics. The participants represented a wide variety of disciplines in academia (engineer-

ing, physical, and social sciences), as well as practitioners currently working in the emergency management field.

#### **ALL Hazards, ALL Phases**

Hazard/emergency managers in the 21st century must have a body of knowledge that spans more than incident response; they must also be conversant in the mitigation and prevention of disasters. This broad knowledge and responsibility is reflected in the use of the term "hazard/emergency manager," rather than emergency manager. Often, the focus in emergency management has been solely on response capabilities. While important, a focus on response, without taking mitigation into account, will not effectively minimize loss. Finding a proper balance between these aspects is not easy and is made more difficult by the fact that many emergency management jobs still focus predominantly on response.

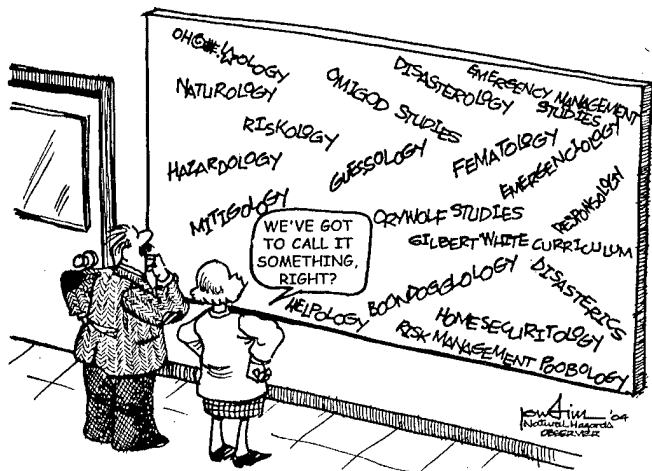
To function well in their expanded roles, managers of the future will require an understanding of a wide variety of hazards. Few will have the option of only considering a single hazard but instead will have to be broadly trained. There are several aspects of hazards/emergency management that transcend a specific hazard, such as the consideration of ethnic diversity in hazards planning. At the same time, depending on where managers are located, in-depth knowledge of specific hazards will always be necessary. In Florida, for example, a thorough understanding of hurricanes is required, while in other states different hazards may dominate.

#### **An Emerging Discipline?**

Hazards/emergency management is, without question, an interdisciplinary profession, drawing on various disciplines to tackle the challenge of disaster loss reduction. Hazards/emergency managers must therefore have a strong grounding in science, social science, and technology. From a curricula design standpoint, academicians are grappling with the question of how best to present haz-

ards/emergency management. Its explicit core requisites and traditions mean that it may be considered a discipline of study (similar to a "major"), while its highly interdisciplinary and question-oriented nature make it ideally placed as an area of study, similar to environmental or women's studies. Certainly, defining this educational process bears many similarities to the evolution of urban and regional planning over the last several decades.

Regardless, education in the hazards reduction profession will require breaking down traditional academic and professional boundaries. This is not a simple task when designing curricula (or proposing programs) and will likely result in programs with various emphases and specializations. Still, the hazards community should define core knowledge areas at the community college, undergraduate, and graduate levels so that students are exposed to the fundamentals that define the essence of hazards/emergency management.



### Challenges

With the recent growth and development of educational opportunities, there is a tremendous opportunity to define the direction of our profession. Again, programs must produce individuals who can fill expanding roles that include loss reduction, who are marketable, and who will be successful. The following issues that emerged from the workshop will require future discussion:

- Consistency of terminology;
- Specialization versus broad training;
- Meeting the needs of the profession, but at the same time creating jobs (with appropriate pay);
- The role of emergency management in relation to the current emphasis on terrorism;
- Course formalization and curriculum development within the institutional structures of universities;
- The need for good textbooks that incorporate core concepts of the field; and
- Linking accreditation with curricula.

### Future Directions

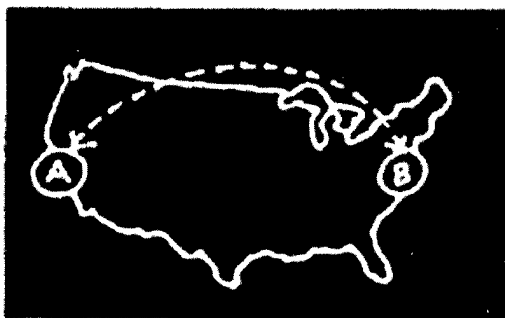
Within the next month, the outcomes of the 2003 workshop will be compiled and posted on the Hazards Center web site for comment. The resulting working document will provide initial guidance in the creation and development of educational programs. The changing nature of hazards/emergency management necessitates actively engaging in these discussions and charting a path that produces a new generation of emergency/hazards managers who explicitly choose to study this profession and area of study as a first choice. Educators in partnership with practitioners and the private sector have the opportunity to jointly shape the profession. The dialog must continue.

Deborah Thomas  
 Department of Geography  
 University of Colorado at Denver

### National PERISHIP Awards

The Natural Hazards Center, in partnership with the National Science Foundation and the Public Entity Risk Institute (PERI), has launched a dissertation fellowship program. Program participants will receive support to conduct dissertation work in 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 interdisciplinary 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 that helps solidify student interest in and commitment to hazards, via financial support, should become a significant contributor to the ongoing development of scholars in the disciplines that underlie the field of hazards, risk, and disasters.

Applications for the first round of fellows are due July 1, 2004. Complete program information, including deadlines, eligibility, and application requirements, is available at <http://www.cudenver.edu/periship> or <http://www.colorado.edu/hazards/specialprojects.html>. Specific questions can be directed to *Audre Hoffman, PERI, 11350 Random Hills Road, #210, Fairfax, VA; (703) 352-1846; e-mail: periship@riskinstitute.org.*



## CONFERENCES AND TRAINING

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

*Hands-On CAMEO Training. Sponsors: Harvard School of Public Health and the U.S. Environmental Protection Agency. Boston, Massachusetts: March 22-24, 2004.* A new, expanded, faster CAMEO (Computer-Aided Management of Emergency Operations) system is now available, and this training will offer an opportunity to gain hands-on experience in the new version. Registration information is available from the *Harvard School of Public Health, Center for Continuing Professional Education, 677 Huntington Avenue, CCPE-Department A, Boston, MA 02115; (617) 384-8692; <http://www.hsph.harvard.edu/ccpe/programs/CAMEO.shtml>.*

*4th International Symposium on Aviation Emergencies: Managing Credible Threats. Sponsor: Emergency and Disaster Management, Inc. Weehawken, New Jersey: March 29-April 1, 2004.* This symposium will focus on aviation terrorism and security, preparedness for and response to airplane accidents and emergencies, emergency medical and public health issues, and crisis and consequence management. Complete details can be obtained from *Gunnar Kuepper, c/o Emergency and Disaster Management, Inc., Airport Center, 5959 West Century Boulevard, Suite 700, Los Angeles, CA 90045; (310) 649-0700; e-mail: [symposium@edmus.info](mailto:symposium@edmus.info); [http://www.emergency-management.net/4th\\_symposium/sym\\_home.html](http://www.emergency-management.net/4th_symposium/sym_home.html).*

*Mass Fatalities Regional Incident Response Training. Sponsor: National Mass Fatalities Institute (NMFI). Atlanta, Georgia: March 29-April 2, 2004.* This is a comprehensive education and training course for mass fatalities incident response planning. The goal is to prepare community leaders, emergency planners, and responders of all disaster-related professions to effectively plan for response to and recovery from a mass fatalities incident. Training specifics are available from *NMFI, 6301 Kirkwood Boulevard SW, Cedar Rapids, IA 52404; (319) 398-7122 or (866) 623-6634; e-mail: [nmfi@kirkwood.edu](mailto:nmfi@kirkwood.edu); <http://www.nmfi.org/course.htm>.*

*Homeland First Response 2nd Annual Conference. Sponsor: Cisco Systems, Homeland First Response magazine, Oklahoma City National Memorial Institute for the Prevention of Terrorism, and the National Institute for Urban Search and Rescue. Raleigh, North Carolina: March 30-April 2, 2004.* This conference will focus on how technology can bridge the gaps among first responders, citizens, and government agencies. Conference information is available from *Lisa Ryan, KGB Media, 679 Encinitas Boulevard, Suite 211, Encinitas, CA 92024; (760) 632-8280 ext. 206; e-mail: [lryan@kgbmedia.net](mailto:lryan@kgbmedia.net); <http://www.kgbmedia.net/hfr2004/>.*

*Shlemon Conference/Earth Fissures. Sponsors: Engineering Geology Foundation and the Association of Engineering Geologists. El Paso, Texas: April 1-3, 2004.* This first annual conference will evaluate the present state of knowledge about earth fissures. For more information contact *Bill Haneberg, c/o Association of Engineering Geologists and Engineering Geology Foundation, P.O. Box 460518, Denver, CO 80246; (206) 871-9359; e-mail: [bill@haneberg.com](mailto:bill@haneberg.com); <http://www.haneberg.com/fissure/>.*

*Dam Safety and Rehabilitation. Sponsor: American Society of Civil Engineers (ASCE). Reno, Nevada: April 15-16, 2004.* The objectives of this seminar are to identify the current status of existing dams in the U.S., teach the basic fundamentals of performing a dam safety inspection and how to perform a dam safety analysis, and to identify various rehabilitation practices. For more information contact *ASCE Continuing Education, P.O. Box 79536, Baltimore, MD 21279; (703) 295-6300; e-mail: [conted@asce.org](mailto:conted@asce.org); <http://www.asce.org>.*

*XVth Global Warming International Conference and Exposition (GWXV). Sponsor: Global Warming International Center. San Francisco, California: April 20-22, 2004.* This conference includes sessions on remote sensing and global surveillance, extreme event impacts, energy and transportation, agricultural and forestry resources man-

agement, sustainable environment and health for the 21st century, biodiversity, human health in a changing climate, international law and mitigation, state and local government response to climate-related disasters, and more. For information contact *GWXV Secretariat, P.O. Box 5275, Woodridge, IL 60517; (630) 910-1561; e-mail: Abstracts@globalwarming.net; http://www.globalwarming.net.*

*Disaster Recovery Planning: Insuring Business Continuity. Sponsor: American Management Association International. New York, New York: April 21-23, 2004.* This workshop will provide participants with the knowledge and tools to develop a comprehensive program to mitigate, prepare for, respond to, and recover from both large and small disasters. Topics include step-by-step project plans, methodologies for identifying and analyzing threats, processes for identifying essential business functions, methods for developing and conducting training programs, and techniques for planning continued communication with stakeholders. Workshop details can be obtained from the *American Management Association International, 1601 Broadway, New York, NY 10019; (212) 586-8100; e-mail: customerservice@amanet.org; http://www.amanet.org/index2.htm.*

*International Workshop on Information Systems for Crisis Response and Management (ISCRAM2004). Sponsor: Tilburg University and the Belgian Nuclear Research Center. Brussels, Belgium: May 3-4, 2004.* This workshop will focus on planning for crisis response, including organizing training exercises, responding to a crisis situation, and evaluating performance during and after crises. The sponsors welcome the active participation of policy makers involved in crisis response and management at the local, regional, national, and international level. For more information, contact *Bartel Van de Waal, Department of Information Systems, Faculty of Economics, Tilburg University, P.O. Box 90153, 5000 Le Tilberg, The Netherlands; e-mail: bartel@uvt.nl; http://www.tilburguniversity.nl/faculties/few/isgram2004/.*

*Disaster-Resistant California. Sponsor: California Governor's Office of Emergency Services (OES). Sacramento, California: May 3-5, 2004.* With the goal of exploring disaster mitigation, planning, preparedness, response, and recovery, this conference is designed to bring together emergency management professionals, local and state government representatives, and private business partners to share ideas, technology, and resources for the purpose of mitigating disasters. Details about the conference are available from *Victoria LaMar-Haas, OES, P.O. Box 419023, Rancho Cordova, CA 95741; (916) 845-8531; e-mail: victoria.la.mar-haas@oes.ca.gov; http://www2.sjsu.edu/cdm/drc04/index.html.*

*Dam Safety and Rehabilitation. Sponsor: American Society of Civil Engineers (ASCE). St. Louis, Missouri: May 6-7, 2004.* See conference listed for April 15-16, 2004.

*12th Annual Pennsylvania GIS Conference. Sponsor: Penn State University. Harrisburg, Pennsylvania: May 11-12, 2004.* This year's theme is "Building Our Spatial Future,"

and the conference will focus on emerging trends in GIS technology and software applications including emergency management. For more information, contact *Brady Stroh, Penn State Harrisburg, 777 West Harrisburg Pike, Middletown, PA 17057; (717) 948-6428; e-mail: bms16@psu.edu; http://www.pagisconference.org.*

*Rocky Mountain Regional Lake and Reservoir Management Conference. Sponsors: Colorado Lake and Reservoir Management Association (CLRMA), South Dakota Lakes and Streams Association, and North American Lake Management Society. Denver, Colorado: May 12-14, 2004.* The semi-arid Rocky Mountain region has long valued fresh water, and the recent drought has made the issue more acute. Conference topics include drought and wildfires, forest thinning, water diversions, water supply security, education and outreach, and much more. Conference details and submission guidelines are available from *Sharon Campbell, CLRMA, P.O. Box 350144, Westminster, CO 80035; (970) 226-9331; e-mail: sharon\_g\_campbell@usgs.gov; http://www.nalms.org/symposia/rockymountain/index.htm.*

*National Conference on Animals in Disaster 2004. Sponsor: The Humane Society of the U.S. (HSUS). Philadelphia, Pennsylvania: May 12-15, 2004.* This conference will include seminars and workshops geared toward emergency managers and responders, animal care and control personnel, veterinary professionals, and volunteers of all levels and experience who work with animals and disasters. Topics fall into three main areas: preparedness and planning, national and veterinary issues, and response issues. For more information, contact the *Disaster Services Department at HSUS, 700 Professional Drive, Gaithersburg, MD 20879; (301) 258-3063; e-mail: ncad@hsus.org; http://www.hsus.org/ace/20292.*

*Third UCLA Conference on Public Health and Disasters. Sponsor: University of California, Los Angeles. Torrance, California: May 16-19, 2004.* This conference is specifically designed for health-related professionals, as well as individuals and organizations involved in emergency disaster preparedness and response from both the public and private sectors. Conference topics will be relevant to emergency medical services, medical and public health practitioners, researchers, and managers involved in public health issues resulting from natural and human-generated disasters. Conference details are available from the *UCLA Center for Public Health and Disasters, 1145 Gayley Avenue, Suite 304, Los Angeles, CA 90024; (310) 794-0864; e-mail: cphdr@ucla.edu; http://www.cphd.ucla.edu/conf2004.html.*

*Disaster Recovery Planning: Insuring Business Continuity. Sponsor: American Management Association International. Las Vegas, Nevada: May 17-19, 2004.* See conference listed for April 21-23, 2004.

*TIEMS 2004 Annual Conference. Sponsor: The International Emergency Management Society (TIEMS). Melbourne, Australia: May 18-21, 2004.* Registration and agenda information are available from *Norm Free,*

*TIEMS, Shire of Yarra Ranges, P.O. Box 105 Lilydale, Victoria, Australia 314; tel: 61 03 9294 6703; e-mail: registration@tiems.org; http://www.tiems.org/.*

*NFPA World Safety Conference and Exposition. Sponsor: National Fire Protection Association (NFPA). Salt Lake City, Utah: May 23-26, 2004. This conference offers a combination of educational programs on topics ranging from World Trade Center evacuation studies, wildland fire fatalities, and emergency evacuation for people with disabilities, to keynote presentations, along with a variety of pre-conference seminars. Registration information is available from NFPA, 1600 Boston Providence Highway, Box 79, Walpole, MA 02081; (508) 668-2669; e-mail: eduarda@leadsetc.com; http://www.nfpa.org/ProfessionalDev/EventsCalendar/WFCSEXpo/WFCSEXpo.asp.*

*The Challenges of Socioeconomic Research in Coastal Systems: Valuation, Analysis, and Policy Development. Sponsors: Center for Natural Resource Economics and Policy (CNREP) and the Louisiana State University Agricultural Center. Baton Rouge, Louisiana: May 27-28, 2004. This conference will focus on opportunities and challenges of socioeconomic research in coastal systems, with an emphasis on economic valuation and its use in developing coastal zone management policy. More information is available from CNREP, c/o Richard F. Kazmierczak, Jr., Department of Agricultural Economics and Agribusiness, 101 Agricultural Administration Building, Louisiana State University, Baton Rouge, LA 70803-5604; e-mail: rkazmierczak@agcenter.lsu.edu; http://www.agecon.lsu.edu/cnrep/.*

*The 1st International CLIVAR (Climate Variability and Predictability) Science Conference. Sponsor: CLIVAR. Baltimore, Maryland: June 21-25, 2004. The international CLIVAR program, under the auspices of the World Climate Research Program (WCRP), focuses on describing and understanding variability and change of the physical climate system on time scales from months to centuries and beyond. This conference will focus on CLIVAR's successes and future challenges. The latter include consideration of the broader climate research environment and how best to contribute the knowledge, products, and information brought about by CLIVAR to those who could use them in decision and policy making. Registration information and additional details may be obtained from the Conference Secretariat, UCAR/JOSS/PSO, 3300 Mitchell Lane, Room 1112, Boulder, CO 80301; (303) 497-8667; http://www.clivar2004.org/.*

*Joint Specialty Conference on Probabilistic Mechanics and Structural Reliability. Sponsors: American Society of Civil Engineers (ASCE), the Structural Engineering Institute (SEI), and the Geo-Institute. Albuquerque, New Mexico: July 26-28, 2004. Probabilistic mechanics and reliability analysis are valuable and powerful tools in many engineering disciplines. As uncertainties in design parameters and behaviors are increasingly considered in the design of engineering systems, both applied and basic research in the area of stochastic mechanics will continue to grow. This conference will bring together researchers*

and scientists from around the world, and engineers, researchers, and scientists involved in reliability of structural, mechanical, marine, aerospace, geotechnical, and environmental systems are invited to participate. Conference details are available from Steve Wojtkiewicz, Sandia National Laboratories, P.O. Box 5800, Albuquerque, NM 87185; (505) 284-5482; e-mail: sfwojtk@sandia.gov; http://www.esc.sandia.gov/PMCConfereceinfo.html.

*Gender Equality and Disaster Risk Reduction Workshop. Sponsors: U.S. Agency for International Development (USAID) Office of Foreign Disaster Assistance, the U.S. Department of Agriculture, the International Strategy for Disaster Reduction, the University of Hawaii, and members of the Gender and Disaster Network. Honolulu, Hawaii: August 10-12 2004. This will be an action-oriented meeting for women and men working for gender equity in all dimensions of disaster risk and response. This international meeting of practitioners, policy makers, planners, academics, activists, and community members will focus on practical and feasible strategies for ensuring the consideration of gender in the risk reduction agenda. Information is available from Elaine Enarson, 33174 Bergen Mountain Road, Evergreen, CO 80439; (303) 670-1834; e-mail: genderdisaster@yahoo.com; http://www.ssri.hawaii.edu/research/GDWwebsite/index.html.*

*32nd International Geological Congress. Sponsors: International Union of Geological Sciences and the member countries of the Mediterranean Consortium. Florence, Italy: August 20-28, 2004. This congress will have a special focus on geological processes as they impact natural and human-made hazards, along with an overall emphasis on the links among geological sciences and society, human rights, and sustainability. Complete information about this congress can be obtained from Chiara Manetti, Borgo Albizi, 28-50121 Firenze, Italy; tel: +39 055 2382146; e-mail: casaitalia@geo.unifi.it; http://www.32igc.org/home.htm.*

*Mitigating Volcanic Crises: Practical Solutions for the 21st Century. Sponsor: University College, London. London, England: August 31-September 2, 2004. This three-day conference will address practical strategies for responding to volcanic crises. Sessions will combine scientific, social, and management criteria to identify new methods for making short-term forecasts of eruptions and volcanic hazards, communicating the hazard to non specialists, and designing appropriate response plans, from defense measures to evacuation. Conference information is available from the Benfield Hazard Research Center, Department of Earth Sciences, UCL, 136 Gower Street (Lewis Building), London WC1E 6BT, U.K.; tel: +44 (0)20 7679 3449 http://www.benfieldhrc.org/SiteRoot/activities/events/chris\_2004.htm.*

*Flood Risk Assessments. Sponsor: Institute of Mathematics and its Applications. University of Bath, U.K.: September 7-8, 2004. Recent flooding events such as those that occurred in 2000 throughout many European countries have heightened general public awareness of the limitations of existing flood defense infrastructures. This conference*

will provide a forum for engineers, mathematicians, and statisticians to exchange views on new developments in mathematical and statistical techniques applicable for assessing flood risk. Conference details are available from Lucy Nye, *The Institute of Mathematics and its Applications*, Catherine Richards House, 16 Nelson Street, Southend-on-Sea, Essex SS1 1EF UK; tel: +44 1702 354020; <http://www.ima.org.uk/mathemaics/flood.htm>.

*Dam Safety 2004. Sponsor: Association of State Dam Safety Officials (ASDSO). Phoenix, Arizona: September 26-29, 2004.* This conference will focus on all aspects of dam safety from a wide variety of perspectives and professions. Entry form, suggested topic information, and a conference brochure are available from ASDSO, 450 Old Vine Street, 2nd Floor, Lexington, KY 40507; (859) 257-5140; e-mail: [info@damsafety.org](mailto:info@damsafety.org); <http://www.damsafety.org/>.

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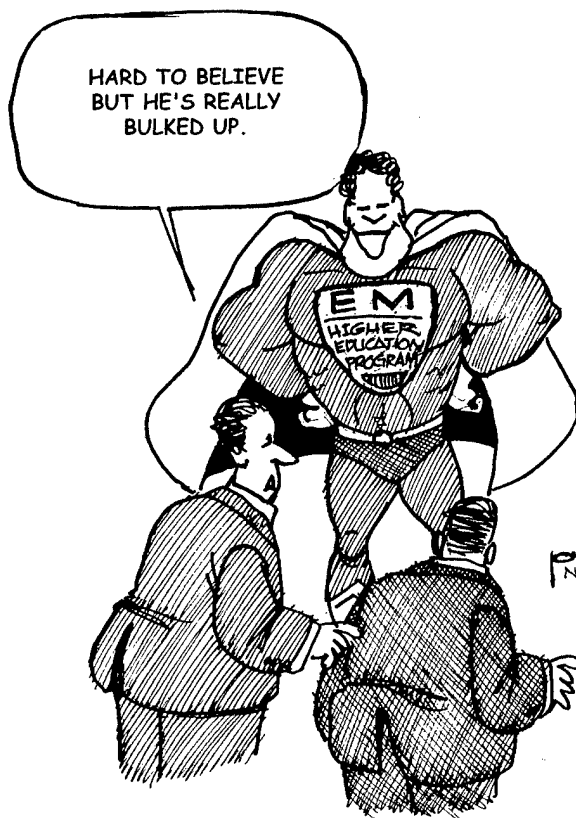
## Emergency Management Higher Education Program Grows (a lot) in 2003

One aim of FEMA is to encourage and support hazards, disaster, and emergency management education in colleges and universities across the U.S. The agency believes that future emergency managers will require a college education that includes specific training, if not a degree, in emergency management.

FEMA's Higher Education Project has actively promoted and enhanced college-based emergency management education for future emergency managers and other interested professionals—from developing courses and curricula to aiding the creation of new programs at various institutions around the U.S. Indeed, 2003 saw the highest number of new collegiate programs yet, with 31 new programs becoming operational, including one doctorate, three masters, one bachelor, eight associate, and 18 certificate, diploma, or minor programs in emergency management.

By the end of 2003 there were over 100 collegiate emergency management programs available in the U.S. In addition, at least 14 more schools began investigating or developing emergency management programs. Not surprisingly, homeland security programs similarly showed a significant increase, with 21 new programs being established.

Complete information about FEMA's Higher Education Project is available from <http://training.fema.gov/EMIWeb/edul/>; the site includes lists and descriptions of educational programs offered across the nation. The descriptions of individual schools' programs and contact information are provided in the "College List" link.

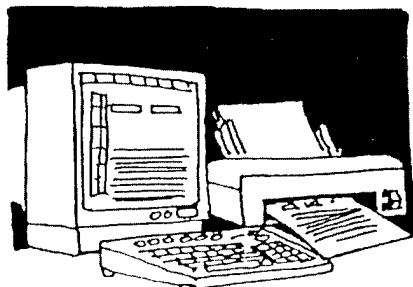


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## ASPEP Announces Second Annual Student Contest

The American Society of Professional Emergency Planners (ASPEP) has announced its second annual journal contest for students enrolled in college-level emergency management programs, either as a student or as an intern. Papers will be judged based on their unique approach to topics, new research, and/or practical use for emergency management professionals. The top three papers will be published in the 2004 *ASPEP Journal*. Papers may be case studies, descriptions of original research results, or discussions of current emergency management topics. Authors are asked to provide an e-mail address of an academic contact who can confirm the author is currently enrolled as a student or intern in an emergency management program at the college undergraduate or graduate level.

Contest submissions are due May 10, 2004, and should be 8-15 pages, including charts, graphs, or pictures. To submit a paper or inquire about contest or journal guidelines, contact the *ASPEP Journal 2004*, c/o Bruce Binder, 8770 SW Goldstone Place, Beaverton, OR 97007; e-mail: [bbinder@myexcel.com](mailto:bbinder@myexcel.com).



# INTERNET PAGES

Below are new or updated Internet resources that the Natural Hazards Center staff have found informative and useful.  
For a more complete list, see <http://www.colorado.edu/hazards/resources/sites.html>.

## All Hazards

<http://www.earthscope.org>

**EarthScope** is an initiative sponsored by the National Science Foundation to launch observatory systems to monitor the physical elements of earth (see the *Observer*, Vol. XXVIII, No. 3, p. 20; Vol. XXVI, No. 1, p. 7). **EarthScope** components include: USArray (U.S. Seismic Array), SAFOD (San Andreas Fault Observatory at Depth), PBO (Plate Boundary Observatory), and InSAR (Interferometric Synthetic Aperture Radar). The program is a partnership among the U.S. Geological Survey, the National Aeronautics and Space Administration, the Department of Energy, and many universities, seismic networks, and states.

<http://www.training.fema.gov/emiweb/is/is317.asp>

The Department of Homeland Security's Federal Emergency Management Agency (FEMA) recently unveiled this on-line, independent study course that can serve as either an introduction to those joining Community Emergency Response Teams (CERTs) or as a refresher for current volunteer team members.

<http://www.riskinstitute.org>

PERI (the Public Entity Risk Institute) is now posting FEMA case studies of state and local government disaster mitigation initiatives on its web site. The examples currently showcased examine the state of Oklahoma Safe Room Initiative; the Smith County Texas 911 communications and emergency operations center—a hardened first responder facility; the state of Kansas School Tornado Shelter Initiative; and the City of Kinston-Lenoir, North Carolina's response to repeated flooding following hurricanes Fran, Dennis, and Floyd.

<http://www.oregonshowcase.org>

The Oregon Showcase State Program—Partners for Disaster Resistance and Resilience—offers an on-line newsletter, *Partnerships in Action*, that contains articles about successful mitigation programs.

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

The web site of the United Nations International Strategy for Disaster Reduction (ISDR) has been recently revised and many new features have been added, including links to numerous publications on disaster mitigation by ISDR and others.

[http://www.fema.gov/preparedness/mutual\\_aid.shtm](http://www.fema.gov/preparedness/mutual_aid.shtm)

The National Aid and Resources Management Initiative, undertaken by FEMA, is designed to support and enhance interstate and intrastate mutual aid agreements so that emergency managers can acquire resources necessary to prepare for, respond to, and recover from any emergency. This web site describes the initiative and provides a glossary of mutual aid terms and definitions.

<http://www.adpc.net/pdr-sea/mp/echoes-nov2003.html>

The Partnership for Disaster Reduction-Southeast Asia (PDR-SEA) team of the Asian Disaster Preparedness Center (ADPC) has launched an on-line monthly newsletter, *Echoes*, that contains articles, resources, and information relevant to the community of disaster management practitioners in Southeast Asia.

<http://www.dmrg.org/news>

This web site, compiled by a Ph.D. student in political science at the University of Western Ontario, provides a listing (from a Canadian perspective) of a collection of some of the year's disaster-related headlines.

<http://www.cbsnews.com/digitaldan/disaster/disasters.shtml>

This site, maintained by Dan Dubno of CBS News, contains a very comprehensive list of hazards-related web sites.

<http://www.cdc.gov/nceh/hsb/disaster/default.htm>

This web site from the Centers for Disease Control and Prevention highlights the agency's disaster efforts, including its epidemiology program, a series of publications on extreme weather, and other disaster-related activities.

[http://www.munichre.com/default\\_e.asp](http://www.munichre.com/default_e.asp)

Munich Reinsurance (MunichRe) has issued a press release that presents an interactive overview of its analysis of natural catastrophes in 2003. The year was marked by a series of severe natural hazard events, and the number of fatalities far exceeded the long-term average. More than 50,000 people were killed worldwide, almost five times as many as in the previous year (11,000). By far, the most devastating natural catastrophes were December's Bam earthquake in Iran and the summer heat wave that crippled Europe. Each event led to over 20,000 deaths.

MunichRe's analysis indicates that economic and insured losses (over \$60 billion and \$15 billion, respectively) continued the marked increase that had become apparent in recent years. The bulk of the insured losses were due to wind-related events. The company also notes that weather extremes are becoming more and more common—strongly suggesting that climate change is indeed occurring—and that more events like the European heat wave can be anticipated in the future. Although that event was considered an almost 500-year occurrence, the company states that similar heat waves are now sufficiently likely that they may become 20-year events by the middle of the 21st century.

## Earthquakes

<http://www.data.scec.org>

The Southern California Earthquake Data Center (SCEDC), the primary archive of earthquake data for southern California, is a central resource of the Southern California Earthquake Center (SCEC). SCEDC now offers an updated and revised web site.

## Wildfires

<http://www.caopstfirefloods.net/>

FEMA has developed post-fire advisory flood hazard maps that show the current, increased flood hazard created by the California wildfires of 2002. The maps are intended to provide general information about the approximate increased flood risk for the five counties studied. They do not replace the current Flood Insurance Rate Maps (FIRMs) for determining the flood insurance premium corresponding to a particular location.

<http://pubs.usgs.gov/of/2003/ofr-03-475/>

<http://pubs.usgs.gov/of/2003/ofr-03-481/>

The U.S. Geological Survey (USGS) has posted new maps on the Internet showing basins with the greatest potential for producing mudslides as a result of the October 2003 fires in southern California. The maps show the probability for debris-flow (mudslide) activity and provide estimates of the peak discharge from drainage basins burned by the Old and Grand Prix fires near San Bernardino and the Piru, Simi, and Verdale fires near Simi Valley and Fillmore.

The maps and analysis have been provided to county flood control districts and the California Governor's Office of Emergency Services. They are intended to help decision makers, emergency responders, and county, state, and federal government agencies identify risk potential and develop mitigation strategies.

<http://www.fs.fed.us/projects/hfi/>

The U.S. Department of Agriculture has issued an interim final rule that establishes the sole process by which the public may seek administrative review and file objections to proposed hazardous fuel reduction projects authorized by the Healthy Forests Restoration Act of 2003 (see the *Observer* vol. XXVIII, No. 3, p. 5). The rule became effective in January; however, the Forest Service is accepting public comments on the rule until April 8, 2004, and details about submission are available from this site.



# 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/>.

**Understanding Post-Exposure Risk Management Decisions: How Affect and Uncertainty Modulate Risk Appraisals and Subsequent Risk Management Choices.** Funding: National Science Foundation, \$84,000, one year. Principal Investigator: *Robin S. Gregory, Decision Science Research Institute, 1201 Oak Street, Eugene, OR 97401; (503) 485-2400; e-mail: rgregory@interchange.ubc.ca.*

Research involving people's responses to risk exposure reveals two sharply contrasting reactions. The first is a heightened awareness of risk and a strong motivation to reduce future exposure. The second is a feeling of safety because an adverse but low-probability event has taken place, thereby lowering perceived risk of future exposure. Natural hazards often elicit this second response, leading to the rapid reconstruction of communities in previously affected areas and the misreading of probabilities as predictions. Destructive forest fires in the Pacific Northwest during the summer of 2003 provide an opportunity to investigate these conflicting responses, decision makers' interpretation of uncertainty, and their resulting risk-management choices. Using structured interviews and surveys, researchers will examine how information is evaluated, manipulated, and used to make risk-management decisions.

**Small Grant for Exploratory Research: An Interdisciplinary Approach to Coastal Vulnerability and Community Sustainability.** Funding: National Science Foundation, \$40,000, one year. Principal Investigators: *John C. Pine, Department of Environmental Studies, 42 Atkinson Hall, Louisiana State University, Baton Rouge, LA 70803-5705; (225) 578-1075; fax: (225) 578-4286; e-mail: jpine@lsu.edu; and Shirley B. Laska, Department of Sociology, University of New Orleans, New Orleans, LA 70148; (504) 280-1254; fax: (504) 280-6302; e-mail: slaska@uno.edu.*

This collaborative project will examine hazards issues in a small coastal community, Grand Bayou, Louisiana. This intercultural Native American (Atakapa, Houma) and Cajun community of 125 represents a natural research laboratory suited to the study of community sustainability in an area of high coastal vulnerability. The Grand Bayou community is struggling to balance the threat of natural hazards, economic development, and community sustainability. Indeed, it is on the edge of survival due to repeated natural disasters, coastal

erosion, and economic losses, as well as threats to cultural heritage and social networks. This research will use participatory action research (PAR) to observe and record community efforts; document and understand the local heritage orally and visually; and assess human, built, and natural systems. Rapid data collection is imperative because of the precariousness of this community due to natural disasters, anticipated deaths among the elders, and out-migration for economic and physical survival.

**Disaster Research in the Social Sciences: Future Challenges and Opportunities.** Funding: National Science Foundation, \$395,000, 18 months. Principal Investigator: *William A. Anderson, National Academy of Sciences, 500 Fifth Street, NW, Washington, DC 20001-2736; (202) 334-1523; fax: (202) 334-3362; e-mail: wanderson@nas.edu.*

The U.S. is vulnerable to a wide variety of natural, technological, and human-induced hazards. While local decision makers have the final responsibility for coping with the threat of disaster, federal agencies have developed science-based activities, such as the National Earthquake Hazards Reduction Program (NEHRP) that are intended to help further effective disaster reduction in at-risk communities. The National Science Foundation (NSF) has been a major supporter of social science disaster research, including research carried out as part of the NEHRP. This study will provide NSF with a detailed appraisal of the short- and long-term challenges facing the social science disaster research community and new and emerging opportunities for advancing knowledge in the field.

**Calibrating Engineering Judgment in Geotechnical Risk Analysis.** Funding: National Science Foundation, \$143,000, two years. Principal Investigator: *Gregory B. Baecher, Department of Civil Engineering, 1157 Martin Hall, University of Maryland, College Park, MD 20742-3021; (301) 405-1972; e-mail: gbaecher@eng.umd.edu.*

This research will develop improved protocols for quantifying engineering judgment in geotechnical engineering risk analysis. The protocols will be based on four trends in geotechnical engineering: subjective judgment as important to geotechnical practice; the importance of organizations using geotechnical risk analysis; current geotechnical risk analyses

that involve expert judgment; and current risk analyses case studies that are a real-life laboratory for furthering understanding of how engineering judgment is quantified, how it is validated and calibrated, and how robust the resulting risk analyses are. This work will bring multidisciplinary insight into a practical, emerging, critical area of geotechnical engineering practice.

**Mapping the 2003 Southern California Wildfire Evacuations.** Funding: National Science Foundation, \$15,000, one year. Principal Investigator: *Thomas J. Cova, Geography Department, Orson Spencer Hall, 260 South Central Campus Drive, Room 270, University of Utah, Salt Lake City, UT 84112; (801) 581-7930; e-mail: cova@geog.utah.edu.*

This project will develop a geographic database of the southern California wildfire evacuations of 2003. The primary research question is "Where and when did wildfire evacuations occur and what were their general characteristics?" The project will involve both information gathering and geographic database design. Information will be derived from photos, other imagery, eye-witness accounts, data on land use, as well as interviews of emergency managers. This project will improve understanding of the complex dynamics of wildfire evacuation and associated decision making, provide a framework for future studies of warning and evacuation, and lead to better evacuation modeling and prediction.

**Development of a Research Agenda on the Communication of Climate Change Science Across Disciplines.** Funding: National Science Foundation, \$2,500, one year. Principal Investigator: *Joseph F. DiMento, Department of Planning, Policy and Design, University of California, Irvine, CA 92697; (949) 824-5102; e-mail: jfdiment@uci.edu.*

Reports on climate change indicate there is close to a consensus among scientists that the earth is getting warmer, that people contribute to that warming, and that the effects over time are significant. Some changes are good; most appear to be undesirable. At the same time, some scientists appear unconcerned. How can we better understand the risks and potential benefits that climate change brings? This project involves the sharing of information between social and natural scientists to determine the nature of the difficulties in integrating climate change research results between the two disciplines and communicating that information to policy makers.

**US-Argentina Collaborative Research on the 1991 Explosive Eruption of Hudson Volcano, Chile.** Funding: National Science Foundation, \$6,000, one year. Principal Investigator: *Steven Carey, Graduate School of Oceanography, Horn Building, Bay Campus, University of Rhode Island, Narragansett, RI 02882; (401) 874-6209; e-mail: scarey@gso.uri.edu.*

This award will support fieldwork in southwestern Argentina by Argentinean and U.S. investigators to collect information on the 1991 eruption of Hudson Volcano in Chile. The data will be used to evaluate late-stage eruption processes in order to better understand volcanic hazards. Results will be shared with the larger science community via a web site that will highlight the history, activity, and hazards associated with this volcano.



**Creation of a Massively-Scaleable Emergency Medical Resource Information Exchange System (MEMRIES) Based on an Entity-Attribute-Value (EAV) Database.** Funding: National Science Foundation, \$100,000, six months. Principal Investigator: *Edward N. Barthell, Infinity Health Care, 1035 West Glen Oaks Lane, Suite 101, Mequon, WI 53092-3363; (414) 290-6700; e-mail: ebarthell@infinityhealthcare.com.*

This project involves the design, development, and evaluation of web-based software to organize emergency resources. The project staff will design an Entity-Attribute-Value (EAV) database that will provide a flexible, scaleable platform to support a "next generation national emergency resource system." Once commercially available, this software will provide first responders with the ability to simultaneously monitor the status of emergency resources and distribute messages and queries to emergency personnel.

**Research Education in Disaster Mental Health.** Funding: National Institute of Mental Health, five years. Principal Investigator: *Fran H. Norris, National Center for Post Traumatic Stress Disorder, VA Medical Center MS 116D, 215 North Main Street, White River Junction, VT 05009; (802) 296-5132; e-mail: fran.norris@dartmouth.edu.*

This research will improve the quality and utility of disaster mental health research to better understand victims of disasters. Investigators will create a specialized web site with information about disaster research; design and test educational materials to be used in graduate/professional seminars and postdisaster research workshops; provide consultation to individual investigators seeking specific methodological or practical advice about conducting disaster mental health research; and implement a mental health research grant program.

**Tools and Techniques for the Technological Integration of Multi-Hazard Post-Incident Assessment.** Funding: National Science Foundation, \$41,000, one year. Principal Investigator: *Debra F. Laefer, Department of Civil, Construction, and Environmental Engineering, 201D Mann Hall, North Carolina State University, Box 7908, Raleigh, NC 27695; (919) 515-7631; e-mail: dflaefer@unity.ncsu.edu.*

This project involves the development of an interactive computer system for disaster management that will be useable by communities of all sizes. The system will be demonstrated and critiqued at a workshop involving local disaster management professionals. Researchers will determine data needed to make the system fully functional across a range of human-made and natural disasters, and emergency professionals will also be surveyed regarding the appropriateness of that data. The computer system will eventually be available as a classroom tool for earthquake engineering, urban planning, risk analysis, and related disciplines.

**Discharge Criteria for Creation of Hospital Surge Capacity.** Funding: Agency for Health Care Research and Quality, two years. Principal Investigator: *Gabor D. Kelen, Johns Hopkins Department of Emergency Medicine, 600 North Wolfe Street, Marburg B-186, Baltimore, MD 21287-2080; (410) 955-8708; fax: (410) 955-0141; e-mail: gkelen@jhmi.edu.*

The ability to care for a sudden volume of patients during a significant biological or other critical event has gained new focus since 9/11. Inpatient capacity at hospitals may become severely constrained during such events, particularly

if it requires isolation of patients and closure of beds/wards normally open to general patients. There is a need to develop a simple method to pre-designate hospitalized patients suitable for early discharge should additional hospital space be required. This research will create such a system, and the final product will help hospitals manage patients for safe discharge in the event of a critical event.

**Evaluation of Bioterrorism Training For Clinicians.** Funding: Agency for Health Care Research and Quality, two years. Principal Investigator: *Gary B. Green, Johns Hopkins Department of Emergency Medicine, 600 North Wolfe Street, Marburg B-186, Baltimore, MD 21287-2080; (410) 955-8708; fax: (410) 955-0141; e-mail: ggreen@jhmi.edu.*

The events of September 11, 2001, dramatically raised national awareness concerning the need for disaster preparedness, and the anthrax attacks shortly thereafter particularly demonstrated our vulnerability to bioterrorism. Increasingly frequent naturally occurring epidemics, such as the recent outbreak of Severe Adult Respiratory Syndrome (SARS), have further demonstrated the need to improve health care system critical event preparedness. Unfortunately, the tools for rapid, inexpensive, and appropriate training do not currently exist, and, further, no accepted standard for healthcare worker training in bioterrorism and disaster response exists. This research will involve the creation of standard "best practice" material for the training of community clinicians in bioterrorism and disaster response. The information will be used to develop two distinct courses—one using traditional teaching techniques and the other using web-based technology. The researchers will compare the effectiveness and costs of the two formats and use feedback concerning both courses to create a final product for dissemination nationally.

**9/11: Persistent Mental Health Impact on WTC Survivors.** Funding: National Institute of Mental Health, five years. Principal Investigator: *Carol S. North, Campus Box 8134, Department of Psychiatry, Washington University School of Medicine, 660 South Euclid Avenue, St. Louis, MO 63110; (314) 747-2013; e-mail: northc@msnotes.wustl.edu.*

Previous disaster studies could not have adequately prepared the nation to address the mental health consequences of the September 11 terrorist attacks, although research, including the Oklahoma City bombing studies, provided some valuable information to guide early interventions. Studies are needed to improve understanding of the effects of such unprecedented large-scale terrorist incidents. The combined Washington University and University of Oklahoma disaster research teams, in collaboration with a New York City 9/11 research consortium, will conduct in-depth research on the mental health effects of those who survived the World Trade Center collapse. The proposed study will involve diagnostic psychiatric assessments of 400 of the most heavily exposed survivors, including workers in businesses on the highest floors of the WTC towers and their spouses/partners. The study sample will be reassessed two years after the initial evaluation to examine longitudinal persistence of post-traumatic stress disorder and other psychopathology. The findings will inform the development and implementation of interventions aimed at restoration of individuals to fuller function following disasters.

**Bioterrorism Preparedness in Rural and Urban Communities.** Funding: Agency for Health Care Research and Quality, two years. Principal Investigator: *Aram Dobalian, Col-*

*lege of Public Health and Health Professions, University of Florida, P.O. Box 100195, Gainesville, FL 32610-0195; (352) 273-6081; e-mail: adobalia@hp.ufl.edu.*

This project will promote preparedness for bioterrorism and other public health emergencies, focusing on physical and mental intermediate and long-term health needs. It will include an assessment of existing resources and response mechanisms in rural and neighboring urban communities. The assessments will highlight special concerns of certain priority populations, including women, children, and the elderly, and serve as the basis for models and recommendations to policy makers to improve preparedness in rural communities. The researchers will also develop a program to educate rural health care providers concerning mental health care, since comparatively little attention has been paid to the immediate and longer-term mental health needs of rural communities in the wake of major catastrophic events.

**Modeling U.S. Health Systems' Epidemic Response Capacity.** Funding: Agency for Health Care Research and Quality, two years. Principal Investigator: *Nathaniel Hupert, Department of Public Health, Weill Medical College of Cornell University, New York, NY 10021; (212) 746-3049; e-mail: nah2005@med.cornell.edu.*

This study will assess hospital capacity for bioterrorism and public health emergency response. The work will advance scientific understanding of health system response to medical crises and result in decision-making tools that will help hospital and public health planners improve response to both intentional and natural outbreaks of disease. Ultimately this research will promote evidence-based policy analysis and decision making regarding resource allocation for public health preparedness and hospital surge capacity.

The study will also evaluate patterns of emergency health service use in public health emergencies. Specifically, patient "surges" at eight New York City emergency departments during the 2001 anthrax attacks will be evaluated. This local study will complement the national-level hospital capacity assessment by looking at neighborhood-by-neighborhood variability in patient arrivals. These studies will advance public health preparedness by providing tools that will improve forecasting of health system capacity and support planning for efficient epidemic response.

**Northeast Biodefense Center.** Funding: National Institute of Allergy and Infectious Diseases, 4.5 years. Principal Investigator: *W. Ian Lipkin, Columbia University, Mailman School of Public Health, Department of Epidemiology, 722 West 168th Street, R1801, New York, NY 10032; (212) 342-9033; e-mail: wil2001@columbia.edu.*

The northeastern U.S. is highly vulnerable to emerging infectious diseases and terrorism. With the outbreak of West Nile virus, the World Trade Center tragedy, and subsequent anthrax attacks, the region has also accrued the experience and resolve to mobilize its many academic and institutional resources to improve national biodefense. Under this award, several institutions will establish a regional center of excellence for bioterrorism and emerging infectious disease research. This consortium, the Northeast Biodefense Center (NBC), will have strong links to state, federal, and local government agencies and laboratories, as well as biotech and pharmaceutical companies. Besides conducting long-range research, NBC has developed an emergency response plan to rapidly realign the center's activities to support first line responders in the event of a bioterrorism emergency.



# RECENT PUBLICATIONS

Below are summaries of some of the recent, most useful publications on hazards and disasters received by the Natural Hazards Center. Due to space limitations, we have provided descriptions of key publications. All items contain information on how to obtain a copy. A complete listing of all publications listed in the *Observer* may be found by searching the Hazards Library database at <http://www.colorado.edu/hazards/library/>.

## All Hazards

*Natural Disasters and Development in a Globalizing World.* Mark Pelling, editor. ISBN 0-415-27958-5. 2003. 250 pp. \$31.95. Available from Routledge Press, 10650 Toebben Drive, Independence, KY 41051; (800) 634-7064; <http://www.routledge-ny.com>.

The number of humanitarian disasters triggered by natural hazards has doubled every decade since the 1960s, while economic growth has greatly increased as well. This book explores the links between economic growth and the impacts of natural disasters along with global-scale processes and local experiences of disaster. Its discussions underscore the difficulty of attributing blame for individual disasters on specific global pressures and posit that disaster reduction and mitigation should be coordinated at local, national, and global scales with greater integration across the physical and social sciences. Sections include: global processes and environmental risk, international change and vulnerability, and local contexts and global pressures.

"FEMA's Path to Homeland Security: 1979-2003," Richard Sylves and William Cumming. *Journal of Homeland Security and Emergency Management*, Vol. 1, Issue 2, pp. 1-21. Available on-line at <http://www.bepress.com/jhsem/>. Institutional subscriptions are \$225 per year; for more information, e-mail: [info@bepress.com](mailto:info@bepress.com).

This paper explores the jurisdictional history of the Federal Emergency Management Agency (FEMA) and charts its path to becoming part of the Department of Homeland Security (DHS). The authors use four propositions to present the transformation: that the agency has always been a president-serving institution; that its path is the inevitable outcome of turf wars with other federal agencies; that internal staffing decisions favored generalists rather than technocrats or scientists; and that its role in managing national, human-caused disasters has ranged from Love Canal, to Three Mile Island, to the collapse of the World Trade Center.

*2003 World Disasters Report: Focus on Ethics in Aid.* International Federation of Red Cross and Red Crescent Societies (IFRC); Jonathan Walter, editor. ISBN 92-9139-092-5. 2003. 239 pp. \$25.00, paperback. Available through Kumarian Press, 1294 Blue Hills Avenue, Bloomfield, CT 06002; (800) 289-2664; e-mail: [kpbooks@kpbooks.com](mailto:kpbooks@kpbooks.com); <http://www.kpbooks.com>.

Published annually since 1993, this volume brings together the latest trends, facts, and analyses of contemporary catastrophes. This eleventh annual report looks at the ethical dilemmas raised by complex emergencies such as post-conflict situations, natural disasters, food crises, and forced migration in places such as central Africa.

The book analyzes how the political agenda of donors—especially following September 11, 2001—affects the aid industry,

humanitarian principles, and, in the end, the vulnerable populations. It also explores why it took so long for donors to respond to the southern Africa famine, probes recovery problems in Afghanistan, and examines why the issue of economic (and environmental) migrants remains poorly understood. It concludes with numerous tables of disaster data.

*Tracking Federal Homeland Security Funds Sent to the 50 State Governments: Second Mayors' Report to the Nation.* U.S. Conference of Mayors. 2004. 38 pp. Available free on-line in PDF format from the U.S. Conference of Mayors, 1620 Eye Street, NW, Washington, DC 20006; (202) 293-7330; <http://www.usmayors.org>.

Nearly a year-and-a-half after September 11, 2001, Congress appropriated money for state and local homeland security programs and created a federal system for the distribution of homeland security funds. In December 2003, the Conference of Mayors conducted the second of two surveys to assess the flow of funds from the federal level to the states. Responses reveal that 76% of cities have not received any money to assist first responders, and 90% of the cities surveyed reported not receiving funds from the Department of Homeland Security.

*Emergency Management Plan for Public and Private Schools (K-12).* Douglas M. Henderson. ISBN 1-931332-18-5. 2003. CD-ROM. \$199.00.

*Emergency Management Plan for Colleges and Universities.* Douglas M. Henderson. ISBN 1-931332-16-9. 2002. CD-ROM. \$199.00. Both are available from Disaster Recovery, Rothstein Associates, Inc., 4 Arapaho Road, Brookfield, CT 06804; (203) 470-7444; <http://www.rothstein.com>.

These companion CD-ROMs explore the ways that academic institutions, K-12 schools, and corporations conduct emergency management. Schools and academic institutions are generally organized more informally and must contend with students, parents, and a unique management style. These CD-ROMs present planning templates that can be edited by users to create overall emergency plans. Each includes an overview of the incident command system; the form and purpose of emergency management planning teams; and forms, task lists, and other emergency management-related planning tools for those working in a variety of school settings.

## Earthquakes

"A Framework to Quantitatively Assess and Enhance the Seismic Resilience of Communities." Michel Bruneau et al. *Earthquake Spectra*, Vol. 19, No. 4, pp. 733-752. *Earthquake Spectra*, the quarterly journal of the Earthquake Engineering Research Institute (EERI) is free to all members; otherwise the cost is \$125.00 per year

for individuals, \$185.00, institutions. For additional subscription information, contact EERI, 499 14th Street, Suite 320, Oakland, CA 94612-1934; (510) 451-0905; e-mail: [eeri@eeri.org](mailto:eeri@eeri.org). The journal is available on-line to members: <http://ojsps.aip.org/EartquakeSpectra>.

This paper presents a conceptual framework for defining seismic resilience of communities. It relies on several complementary measures of resilience: reduced failure probabilities, reduced consequences from failures, and reduced time to recovery. It also includes quantitative measures of the "ends" of robustness and rapidity, and the "means" of resourcefulness and redundancy, and integrates those measures into four dimensions of community resilience—technical, organizational, social, and economic.

**Proceedings of the Fourth International Conference on Earthquake Resistant Engineering Structures.** G. Latini and C.A. Brevia, editors. 2003. 400 pp. \$189.00. Available from Computational Mechanics Inc., 25 Bridge Street, Billerica, MA 01821; (978) 667-5841; <http://www.compmech.com/acatalog/9844.html>.

This book includes some of the latest research relating to the protection of the built environment in earthquake-prone regions of the world. It highlights ways of determining the optimal design and construction of new facilities as well as upgrading and rehabilitating existing structures. Papers are written by industrial scientists and academicians and are organized according to earthquake resistant design, bridges, seismic behavior and vulnerability analysis, seismic isolation and control, monitoring and testing, passive and active control, and ground conditions and site effects.

**General Guidelines for the Assessment and Repair of Earthquake Damage in Residential Woodframe Buildings.** CUREE Publication No. QED-02. 2004. 100 pp. Free. Available on-line in PDF format from the Consortium of Universities for Research in Earthquake Engineering (CUREE), 1301 South 46th Street, Richmond, CA 94804; (510) 231-9557; <http://www.curee.org>.

This publication is geared toward property owners, contractors, insurance adjusters, and other non-engineers involved in post-earthquake damage assessments of woodframe buildings. It contains general information about the damage assessment process and guidelines for the repair of damage to walls and foundations; it also includes sections on working with engineers, how best to re-build, structural considerations, and repair standards.

**Proceedings of a Seminar on Seismic Design, Performance, and Retrofit of Nonstructural Components in Critical Facilities.** Applied Technology Council (ATC) and Multidisciplinary Center for Earthquake Engineering Research (MCEER). ATC-29-2. 2003. 581 pp. \$65.00, bound copy; \$35.00, CD-ROM. Available from ATC, 201 Redwood Shores Parkway, Suite 240, Redwood City, CA 94065; (650) 595-1542; e-mail: [atc@atccouncil.org](mailto:atc@atccouncil.org); <http://www.atccouncil.org>.

These proceedings are from the third in a series of seminars on this subject. The October 2003 seminar showcased current research and practice regarding retrofit of nonstructural components and distribution systems in buildings, with a special focus on critical facilities. The volume contains 43 technical papers describing state-of-the-art practices regarding critical facilities, such as computer centers, hospitals, manufacturing plants with hazardous materials, and museums with fragile/valuable collections.

ATC has also recently published **ATC-13-1, Report: Commentary on the Use of ATC-13 Earthquake Damage Evaluation Data for Probable Maximum Loss Studies of California Buildings** (2003, 66 pp., \$30.00), which can be ordered from the address above.

**Earthquake Science and Seismic Risk Reduction.** Francesco Mulargia and Robert J. Geller, editors. ISBN 1-4020-1777-4. 2003. 347 pp. \$165.00, hardbound; \$70.00, paperback. Available from Kluwer Academic Publishers, 101 Philip Drive, Norwell, MA 02061; <http://www.wkap.nl>.

This book provides a comprehensive one-volume summary of the state-of-the-art in both the basic and applied aspects of earthquake occurrence and seismic risk reduction. It can be used as a

reference by both specialists (e.g., seismologists, earthquake engineers, and physicists) and related professionals (e.g., government officials, land-use planners). The volume covers scientific issues, their applications, and policy issues. Each of the eight chapters is followed by a thorough set of references to recent literature.

## Homeland Security

**First to Arrive: State and Local Responses to Terrorism.** Juliette N. Kayyem and Robin L. Pangi, editors. ISBN 0-262-61195-3. 239 pp. \$46.00. Available from the MIT Press, Five Cambridge Center, Cambridge, MA 02142-1493; (617) 253-5646; <http://mitpress.mit.edu>.

The role of the federal government in preparedness has changed greatly since September 11, 2001. In contrast with publications that highlight failure or cast blame, this book presents terrorism-related information from professionals and academicians who had been working with these issues prior to 2001. Since that time, their professions have changed greatly, and this book presents new insights and major themes and issues that have arisen. It concludes that most federal changes will have little impact on local and state responders who will be the first called to an incident. Articles in this volume are loosely grouped into protecting the nation; press, politics, and the polity; extragovernmental concerns; response operations; and political and operational hurdles.

## Wildfires

**Wildland Fire Danger Estimation and Mapping: The Role of Remote Sensing Data.** Emilio Chuvieco, editor. ISBN 981-238-569-X. 2003. 278 pp. \$82.00. Order from World Scientific Publishing, 1060 Main Street, River Edge, NJ 07661; (800) 227-7562; fax: (201) 487-9656; e-mail: [sales@wspc.com](mailto:sales@wspc.com); <http://www.wspc.com>.

This book presents a wide range of techniques for extracting information from satellite remote sensing images in forest fire danger assessment. It covers the main concepts involved in fire danger rating and analyzes the inputs derived from remotely sensed data for mapping fire danger at both the local and global scale. The questions addressed concern the estimation of fuel moisture content, the description of fuel structural properties, the estimation of meteorological danger indices, the analysis of human factors associated with fire ignition, and the integration of different risk factors in a geographic information system for fire danger management.

## Extreme Weather

**Heat Wave: A Social Autopsy of Disaster in Chicago.** Eric Klinenberg. ISBN 0-226-44322-1. 2003. 320 pp. \$15.00. Available from the University of Chicago Press, 1427 East 60th Street, Chicago, IL 60637; (773) 702-7700; e-mail: [sales@press.uchicago.edu](mailto:sales@press.uchicago.edu); <http://press.uchicago.edu>.

On July 13, 1995, the temperature in Chicago reached 106 degrees. Meteorologists warned residents about an impending two-day heat wave, but the high temperatures lasted over a week, during which city streets buckled, the records for electrical use were shattered, and power grids failed, leaving residents without electricity for up to two days. Over 700 people perished.

During a typical year more people die in heat waves in the U.S. than in all other natural disasters combined, and the reasons for this are not well understood. Klinenberg conducts what he calls a "social autopsy," examining the social, political, and institutional elements of the city. Through a combination of fieldwork, interviews, and archival research, he uncovers how forms of social breakdown—including the literal and social isolation of seniors, the institutional abandonment of poor neighborhoods, and the retrenchment of public assistance programs—contributed to the high fatality rate. The human catastrophe, he argues, cannot be blamed on the failure of particular individuals or organizations. When hundreds of people die behind locked doors and sealed windows, out of contact with friends, family, community groups, and public agencies, everyone is implicated in their demise.

## GAO Reports

U.S. General Accounting 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 that might interest *Observer* readers are listed below. Summaries and complete texts are available on the web at <http://www.gao.gov>. In addition, printed copies can be obtained from the *U.S. General Accounting Office, 441 G Street, NW, Room LM, Washington, DC 20548; (202) 512-6000; TDD: (202) 512-2537*. Individual copies are free. Multiple copies cost \$2.00 each.

***FEMA Cerro Grande Claims: Payments Properly Processed, but Reporting Could Be Improved. GAO-04-129. 2003. 18 pp.***

The Cerro Grande Fire Assistance Act (CGFAA) mandated that GAO annually audit all claim payments made to compensate the victims of the Cerro Grande Fire in 2000. For this, the third report on this topic, GAO was asked to determine whether FEMA paid fire claims in accordance with applicable guidance and implemented corrective actions to address prior GAO recommendations, including determining if FEMA properly reported claim payments to Congress. GAO found that FEMA processed and paid its claims in accordance with the policies and procedures that were established and in place at the time the claims were processed. In response to GAO's May 2003 report, FEMA established processes to address recommendations related to reconciling claimed amounts approved with actual amounts paid, and in its 2003 annual report, FEMA properly identified claimed amounts as approved amounts for payment rather than actual amounts paid in a schedule that was included in its annual report to Congress. However, in its report to Congress, FEMA no longer provided summary information on amounts claimed, amounts approved, and its remaining estimated liabilities and did not include any information on claims paid as is required by CGFAA. Without this information, the report is less useful to Congress and other stakeholders.

***Posthearing Questions from the September 17, 2003, Hearing on "Implications of Power Blackouts for the Nation's Cybersecurity and Critical Infrastructure Protection: The Electric Grid, Critical Interdependencies, Vulnerabilities, and Readiness." GAO-04-300R. 2003. 11 pp.***

At the hearing cited in the title of this document, GAO discussed the challenges that the Department of Homeland Security (DHS) faces in integrating its information gathering and sharing functions, particularly as they relate to fulfilling the department's responsibilities for critical infrastructure protection (CIP).

In its August 2003 report on information sharing, GAO identified initiatives that had been undertaken to improve the sharing of information to prevent terrorist attacks and surveyed federal, state, and city government officials to obtain their perceptions on how the current information-sharing process was working (see the *Observer*, Vol. XXVIII, No. 2, p. 26). The survey showed that none of the three levels of government perceived the current information-sharing process to be effective when it involved the sharing of information with federal agencies.

Much of GAO's work on federal CIP has focused on cybersecurity and the overall threats and risks to critical infrastructure sectors. This work did not include assessments of specific sectors that would enable GAO to identify or rank which of the sectors pose the greatest national security concern or greatest risk. The office has made numerous recommendations over the last several years related to information-sharing functions that have now been transferred to DHS, including those related to the federal government's CIP efforts.

***Bioterrorism: A Threat to Agriculture and the Food Supply. GAO-04-259T. 2003. 19 pp.***

When the president created DHS, he included U.S. agriculture and food industries in the list of critical infrastructures needing protection. The secretaries of Agriculture and Health and Human Services have publicly declared that the U.S. food supply is susceptible

to deliberate contamination, and GAO was asked to provide an overview of the potential vulnerabilities of the food supply and agriculture sector to deliberate contamination and to summarize four recent reports that identified problems with federal oversight and the nation's agriculture and food supply.

Bioterrorism attacks could be directed at many different targets in the farm-to-table continuum: crops, livestock, food products in the processing and distribution chain, wholesale and retail facilities, storage facilities, transportation facilities, and food and agriculture research laboratories. The four recent GAO reports found gaps in federal controls in all these areas. GAO found, for example, that border inspectors were not provided guidance on foot-and-mouth disease prevention activities in response to the 2001 European outbreak, inspection resources could not handle the magnitude of international passengers and cargo, and new technology used to scan shipments at a bulk mail facility was operating only part-time and in only that facility. GAO also found that federal overseers did not have clear authority to require food processors to ensure security at their facilities.

***Alaska Native Villages: Most Are Affected by Flooding and Erosion, but Few Qualify for Federal Assistance. GAO-04-142. 2003. 91 pp.***

Approximately 6,600 miles of Alaska's coastline and many of the low-lying areas along the state's rivers are subject to severe flooding and erosion. In addition to the many federal and Alaska state agencies that respond to flooding and erosion, Congress established the Denali Commission in 1998 to, among other things, provide economic development services and to meet infrastructure needs in rural Alaska communities. Congress directed GAO to study Alaska native villages affected by flooding and erosion and determine the extent to which these villages are affected, identify federal and state flooding and erosion programs, determine the current status of efforts to respond to flooding and erosion in nine villages, and identify alternatives that Congress may wish to consider when providing assistance for flooding and erosion.

Flooding and erosion affects 184 out of 213, or 86%, of Alaska native villages to some extent, and studies indicate that coastal villages are becoming more susceptible to flooding and erosion due in part to rising temperatures. The U.S. Army Corps of Engineers and the Natural Resources Conservation Service administer key programs for constructing flooding and erosion control projects. However, small and remote Alaska native villages often fail to qualify for assistance under these programs and may be faced with relocation, a daunting process that may take several years. GAO, federal, and state officials, and village representatives identified some alternatives that could increase service delivery for Alaska native villages: expand the role of the Denali Commission, direct federal agencies to consider social and environmental factors in their cost/benefit analyses, waive the federal cost-sharing requirement for these projects, and authorize the "bundling" of funds from various federal agencies.

***Centers for Disease Control and Prevention: Agency Leadership Taking Steps to Improve Management and Planning, but Challenges Remain. GAO-04-219. 2004. 44 pp.***

The scope of work at the Centers for Disease Control and Prevention (CDC) has evolved since 1946 from a focus on communicable diseases, like malaria, to a wide and complex range of public health responsibilities. The agency's Office of the Director (OD) faces considerable management challenges to ensure that during public health crises the agency's nonemergency public health work continues. In 2002, the OD began needed organizational change. In this report, GAO examines the extent to which organizational changes have helped balance OD's oversight of CDC's emergent and ongoing public health responsibilities. Specifically, the office examined OD's executive management structure, approach to overseeing the agency's work, and approach to setting agency priorities.

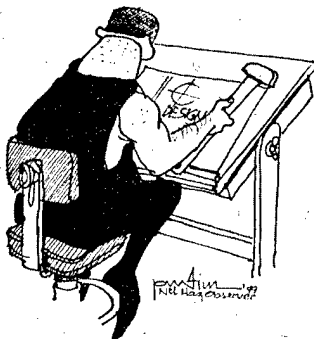
*Combating Terrorism: Evaluation of Selected Characteristics in National Strategies Related to Terrorism: Statement of Randall A. Yim, GAO Managing Director, Homeland Security and Justice Issues. GAO-04-408T. 2004. 52 pp.*

Following the terrorist attacks of September 11, 2001, the Bush administration developed and published seven national strategies that relate, in part or in whole, to combating terrorism and homeland security: National Security Strategy of the United States of America, National Strategy for Homeland Security, National Strategy for Combating Terrorism, National Strategy to Combat Weapons of

Mass Destruction, National Strategy for the Physical Protection of Critical Infrastructure and Key Assets, National Strategy to Secure Cyberspace, and the 2002 National Money Laundering Strategy. In view of heightened concerns about terrorism and homeland security, GAO was asked to identify and define the desirable characteristics of an effective national strategy and to evaluate whether the national strategies related to terrorism address those characteristics. This testimony reports GAO's findings.

## Homeland Security Advisory System Guide now Available from FEMA/USFA

The U.S. Fire Administration (USFA) Emergency Management and Response-Information Sharing and Analysis Center (EMR-ISAC—formerly the Critical Infrastructure Protection Information Center) has prepared a comprehensive guide for all fire and emergency services that suggests activities that may be appropriate for the five Homeland Security Advisory System (HSAS) levels. Prepared to promote critical infrastructure protection, the *Fire and Emergency Services Preparedness Guide for the Homeland Security Advisory System* is intended to assist the heads of fire, emergency response, and emergency medical service agencies with the development and implementation of appropriate agency-specific preparedness measures that respond to each threat level, from green to red. The preparedness actions recommended are not intended to be comprehensive. However, the developers do feel they provide a good start for development, or enhancement, of agency-specific plans. Copies of the guidelines are available from <http://www.usfa.fema.gov/fireservice/cipc/cipcjobaid.shtm>.



## New International Journal of Disaster Medicine

The *International Journal of Disaster Medicine* is the first international journal devoted exclusively to the field of disaster medicine. Practitioners and researchers in health-care, academia, industry, and government around the world will find analyses, ideas, new application of knowledge, and discussions of topical issues to help enhance the efficiency and effectiveness of disaster medicine. The journal will focus on the following themes: experiences from major accidents and disasters, vulnerability assessment and risk analyses, planning and preparedness, practical management and organization in major accidents and disasters, and research within all fields of disaster medicine.

The journal is currently soliciting papers that encompass field reports from major accidents and disasters in all parts of the world, written in a standardized format to allow for comparison of experience and results; reviews and editorials on recent development and methodology within all fields of disaster medicine; original scientific papers on research, development, and education; book reviews; and short information on meetings and courses for a meeting calendar.

All submitted papers are reviewed by an international advisory board. Editorial-related questions may be directed to *Sten Lennquist, Secretary General, International Society of Disaster Medicine and Traumatology, University Hospital, 581 85 Linköping, Sweden*. For general information about the journal, including submission guidelines and subscription information, visit <http://www.tandf.co.uk/journals/titles/15031438.asp>.

## Bienvenue, Monsieur Guibert

In February, the Natural Hazards Center welcomed a new Project Manager to our midst when Greg Guibert moved from Washington, D.C. to Boulder to join our staff. A geology graduate of Vassar College, Greg studied urban and environmental planning at the University of Virginia and brings a strong background in both natural hazards mitigation and sustainable development to the Center. We welcome him heartily!

## THE HAZARDS CENTER

## STAFF

The NATURAL HAZARDS RESEARCH AND APPLICATIONS INFORMATION CENTER was founded to strengthen communication among researchers and the individuals and organizations concerned with mitigating natural disasters. The center is funded by the National Science Foundation, the Federal Emergency Management Agency, the National Oceanic and Atmospheric Administration, the U.S. Geological Survey, the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, the U.S. Department of Transportation, the U.S. Bureau of Reclamation, the U.S. Forest Service, the National Aeronautics and Space Administration, the Centers for Disease Control and Prevention, the Institute for Business and Home Safety, and the Public Entity Risk Institute. Please send information of potential interest to the center or the readers of this newsletter to the address below. The deadline for the next *Observer* is *March 19, 2004*.

Center phone number..... (303) 492-6818  
Fax ..... (303) 492-2151  
E-mail ..... hazctr@colorado.edu  
Publications Administrator ..... (303) 492-6819  
E-mail ..... janet.kroeckel@colorado.edu

Wendy Steinhacker ..... Editor  
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<http://www.colorado.edu/hazards>

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