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## Politics and Disaster Declarations

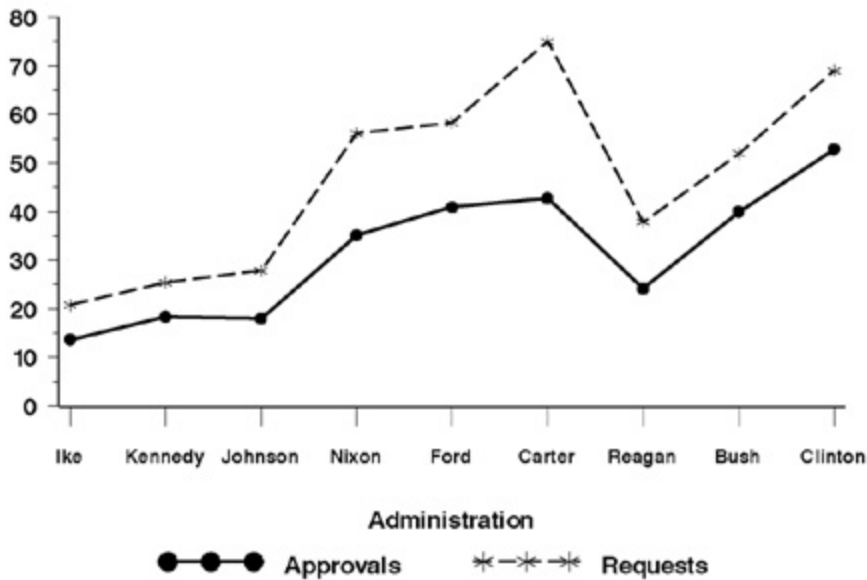
--an invited comment

Despite the Clinton Administration's notable improvements in national disaster policies, a serious flaw remains: the essentially political nature of the presidential disaster declaration (PDD) process. The Robert T. Stafford Disaster Relief and Emergency Assistance Act provides federal disaster relief to states and local communities that receive a disaster declaration from the president, generally when one or more counties are declared eligible for federal assistance. Declarations are made at the president's discretion, and presidents have differed markedly in their use of that authority. Guidelines governing the president's decision include consideration of a state's ability to respond, but these guidelines are vague, leaving the process open to influence from media coverage, cronyism, and political pressure.

One reason it is difficult to assess the PDD process is the lack of unified accounting for federal disaster costs, which are not tracked in a comprehensive or consistent manner. A complex mix of federal agencies and programs provide the disaster assistance made available by presidential declarations. Consequently, the results of presidential discretion are not subject to the usual scrutiny placed on most government activities.

During the past 20 years, the number and cost of presidential disaster declarations has increased substantially. Figure 1 shows the average annual number of PDD requests and approvals under each administration since Eisenhower. President Reagan (1981-88) averaged 24 declarations per year; President Bush (1989-92) 40 per year; and President Clinton, in his first term (1993-96), 53 per year.

### Average Annual Number of PDD Requests and Approvals



To some, including influential policy makers, this suggests an alarming trend. For example, former FEMA Director James Lee Witt attributed the increase in disaster declarations and federal costs to "more frequent and severe weather calamities" (NOAA, 2000). However, others have observed that mounting costs are more a result of increasing population and wealth. Our research suggests that, where federal costs are concerned, an additional factor should be considered: the role of presidential discretion in disaster declarations.

To compare how seven presidents made use of their discretionary authority in the disaster declaration process, we analyzed flood-related PDDs from 1965 through 1997. (A majority of PDDs are related to floods.) Because there is great year-to-year variation in weather and in damage, we also looked at precipitation and flood damage data collected by the National Weather Service (which are independent of the disaster declaration process), as well as several measures of a state's "ability to pay" for its response to a disaster.

Since 1950, criteria for issuing a PDD have required "a finding that the disaster is of such severity and magnitude that effective response is beyond the capabilities of the state and the affected local governments" (P.L. 100-707, sec. 401). Yet, an analysis of declarations for each state from 1983 to 1997 show little relationship to a state's ability to pay.

Table 1 summarizes some of the information used in our study. President Clinton issued the most flood-related declarations and included the most counties. Can this be explained by the fact that national precipitation and flood damage were also at their highest during his administration?

The short answer is "no." After controlling for precipitation and damage, we found statistically significant differences between presidents in the numbers of disasters de-clared. But, perhaps surprisingly, the number of disaster declarations is unrelated to a president's political party. For example, the number of declarations issued by Ronald Reagan differed significantly from the numbers issued by Richard Nixon and the elder George Bush.

Consider the Reagan and Bush administrations in more detail. Average annual flood damage was at its lowest (of the seven presidents considered) during the Bush administration, yet the mean numbers of disaster declarations and sites were substantially higher under Bush than under Reagan.

In 1987, during the Reagan administration, Texas incurred \$700 million (adjusted for inflation in 1995 dollars) in flood damage, but not a single flood-related declaration was issued. In both 1989 and 1990, during the Bush administration, Texas had approximately \$400 million in damage each year and received PDDs covering 103 counties in 1989 and 64 counties in 1990.

President Clinton was generous with disaster declarations and included more counties in his declarations than did the other presidents. The median number of counties per declaration ranged from five under Reagan to 11 under Clinton. Officials interviewed by Richard Sylves of the University of Delaware suggested that California's electoral votes influenced President Clinton's decision to waive the need for

preliminary damage assessments, allowing all counties that applied to be included in the California flood disaster declarations of 1995.

**Table 1. Mean Annual Flood-Related Disaster Declarations by Presidential Administration**

President	Fiscal Years	Number	Disaster Declarations	Annual Means	
				Counties Included	Damage (millions 1995 dollars)
Johnson	1965-1968	4	11.8	190	1,681
Nixon	1969-1974	6	27.2	393	4,469
Ford	1975-1976	2	26.0	251	5,370
Carter	1977-1980	4	20.0	181	3,478
Reagan	1981-1988	8	14.5	133	3,440
Bush	1989-1992	4	22.3	357	1,469
Clinton	1993-1997	5	32.2	603	7,553

Although the differences among presidents do not follow political party lines, they do correspond to some general policy orientations. President Reagan's small number of PDDs is consistent with his stated goal of reducing the role of the federal government and returning responsibilities to the states. In contrast, President Clinton put a priority on federal disaster response, expanding the role of FEMA and the prominence of its director.

Our research lends support to those calling for more rigor in the disaster declaration process, such as the Association of State Floodplain Managers, which recently declared that "vague and overly generous criteria for formal disaster declarations have created disincentives for citizens, local communities, and states to take responsibility for addressing their flood hazards or protecting their floodplain resource (see the *Observer*, [Vol. XXV, No. 1, p. 7](#)).

The federal government has within its authority and control an ability to dramatically reduce--or expand--the costs it bears for disasters. The presidential disaster declaration process should entail careful trade-offs between needed assistance in disasters and the positive and negative incentives that arise from the availability of that assistance. These trade-offs will be better made in the clear light of accountability for the president's discretionary actions. Without such scrutiny even the best laid policies and plans for reducing federal disaster costs are likely to fall short of their objectives.

**Mary W. Downton and Roger A. Pielke, Jr., Environmental and Societal Impacts Group, National Center for Atmospheric Research, Boulder, Colorado**

## References

National Oceanic and Atmospheric Administration (NOAA). 2000. "NOAA Reports Record Warmth for January-March 2000, FEMA Re-ports Presidentially Declared Disasters Have Nearly Doubled and Costs Have Skyrocketed," *NOAA News*. The article is available via the Internet at [www.noaanews.noaa.gov/stories/s412.htm](http://www.noaanews.noaa.gov/stories/s412.htm).

The authors present the complete results of this study in the article "Discretion Without Accountability: Politics, Flood Damage, and Climate," which will appear in a forthcoming issue of the *Natural Hazards Review*, available from the *American Society of Civil Engineers*, 1801 Alexander Bell Drive, Reston, VA 20191-4400; (703) 295-6163; fax: (703) 295-6278; e-mail: [marketing@asce.org](mailto:marketing@asce.org); WWW: [www.pubs.asce.org](http://www.pubs.asce.org).

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## Hazards Center Seeks Recovery Experts





As part of its project, "Developing Guidance and Expertise on Sustainable Recovery from Disaster," funded by the Public Entity Risk Institute (see the *Observer*, [Vol. XXIV, No. 4, p. 17](#)), the Natural Hazards Center is compiling a list of people from throughout the U.S. with experience, knowledge, or special expertise in disaster recovery and/or community sustainability. The center envisions a central source of information to which a city manager, public works official, citizen activist, or other concerned person can turn for advice, information, or even on-site recovery assistance.

Specifically, the database will include experts who can help localities understand, plan for, and execute holistic recovery activities and policies that will enhance a community's sustainability, including resilience in the face of hazards, environmental quality, livability, economic vitality, and social equity. It will include names, contact information, and brief background data (such as area of expertise and prior disaster experience).

Areas in which experts are being sought are: recovery, hazard mitigation, intergenerational equity, social equity, economic development, business recovery, environmental quality, consensus building, public participation, livability, smart growth, and related topics.

Having one's name listed in the database does not constitute a commitment to participate in any future disaster recovery. However, the information may be made accessible, perhaps via a Web site, at a later date.

Persons who would like to be listed in the database, or who know of other persons or groups who ought to be, should e-mail the Hazards Center's Program Manager, *Jacki Monday*, at [jacque.monday@colorado.edu](mailto:jacque.monday@colorado.edu) for more information.

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## 2000: More Catastrophes, Fewer Casualties

The world was hit by a record number of natural disasters last year, and global warming and a rising population could aggravate the situation in the future, according to Munich Reinsurance's (Munich Re's) annual summary of global disasters, announced in a press release on December 28, 2000 (see the press releases listed under "press/media" at [www.munichre.com](http://www.munichre.com)). Not to be outdone, on January 10, 2001, Swiss Reinsurance (Swiss Re) released its annual report, with similar, but not identical, numbers (see [www.swissre.com/e/media/news.html](http://www.swissre.com/e/media/news.html)); the Swiss Re report covers some human-caused, as well as natural, disasters.



According to Munich Re, although the number of natural disasters rose by over 100 last year, to 850, the number of deaths was much lower than in 1999 because less-populated areas were affected. Some 10,000 people died as a result of these disasters, compared to 75,000 in 1999. Natural disasters in 2000 caused an estimated \$30 billion in losses (compared to \$100 billion in 1999), with insured losses of \$7.5 billion (compared to \$22 billion). The Swiss Re report cites \$38 billion and \$11 billion in total and insured losses for 2000.

A lack of major earthquakes and a relatively moderate cyclone season, combined with the small number of disasters in heavily populated areas, made 2000 a comparatively inexpensive year. The cyclone season in the Pacific and the North Atlantic produced a typical number of hurricanes, typhoons, and cyclones in 2000, but fortunately, exposed countries were not severely affected, except for Taiwan, South Korea, and Belize.



According to Munich Re, the year's greatest disaster (in terms of people affected) was the flooding that left 500,000 homeless in Mozambique. Collectively, windstorms were also near the top of the year's list, with more than 300 events. The wind events dominate the insurers' loss figures and

account for 73% of insured losses.

At the same time, as in previous years, floods, including severe inundation in India and Bangladesh, Southeast Asia, and Britain were also a significant cause of damage (23% of insured losses); Swiss Re cites the India/Bangladesh floods as causing the single greatest loss of life--1,200 people. The Swiss company also notes that the number of fatalities due to human-caused disasters--almost 9,000--was significantly above the average for the past decade.

Munich Re points to storm surges, mudflows, and landslides in the Swiss and Italian Alps in mid-October as generating economic losses of about \$8.5 billion, with probable insured losses of roughly \$470 million.

In the U.S., Munich Re mentions the summer's forest fires in the western United States, especially New Mexico, as the most notable natural disasters. Swiss Re cites winter storms, springtime tornadoes, and other severe weather as causing the greatest insured losses.

Despite the moderate losses in 2000 (there was only one \$1 billion disaster, compared to seven in 1999), Munich Re is quick to point out that there is no reason to be sanguine; the year's statistics are probably an anomaly in the trend in recent decades toward greater losses due to increased population and property at risk. Moreover, a likely increase in natural catastrophes due to global climate change could also exacerbate losses.

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## The Munich Re CD on Natural Hazards

Munich Re has recently published a CD-ROM in two languages (German/English)--*World of Natural Hazards*--that provides a multimedia source of information on global catastrophes. The CD furnishes the user with a simple and fast method of identifying and quantifying the natural hazards threatening any point on the globe. It provides a modular world map of natural hazards; a tool for identifying hazards at any point on earth; information and a glossary on hazards science and related insurance issues; a catalog of world-wide catastrophes; a country-by-country database; information on earthquake and windstorm scales; additional information on topics of special interest, such as climate change, El Niño, and megacities; and details on services provided by Munich Re. More information about the CD can be found on the Munich Re web site: [www.munichre.com](http://www.munichre.com). It is available for 50 Euros (order #302-02650) from *Munich Reinsurance, Königinstrasse 107, 80802 Munich, Germany*.

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## New Emergency Management Higher Education Opportunities

### University of North Texas (UNT)

UNT's Emergency Administration and Planning Program--the first and largest undergraduate emergency management degree program in the nation--announced that it will begin offering a five-course distance learning Certificate in Emergency Administration and Planning during the winter/spring 2001 semester. In addition, in cooperation with the Graduate Department of Public Administration, the program has developed a formal Concentration in Emergency Management within the Masters of Public Administration Program. For more information, contact *David McEntire, Emergency Administration and Planning Program, University of North Texas, Department of Public Administration, P.O. Box 310617, Denton, TX 76203-0617; (940) 565-2996; fax: (940) 396-8771; e-mail: [dmcentir@scs.cmm.unt.edu](mailto:dmcentir@scs.cmm.unt.edu)*.

### Oklahoma State University (OSU)

OSU offers an Environmental Management Ph.D. Program with a focus on Disaster and Emergency Management. This focus area requires a minimum of 60 hours beyond the masters degree (including a minimum of 36 hours of course work) or 90 hours beyond the bachelors degree (with a minimum of 69 hours of course work), plus a dissertation. For more information, contact *Talya Henderson, Environmental Science Graduate Program, 002 Life Science East, Oklahoma State University, Stillwater, OK 74078-3011; (888) 477-7422 or (405) 744-9229; fax: (405) 744-7673; e-mail: [talyah@okstate.edu](mailto:talyah@okstate.edu); WWW: [www.seic.okstate.edu/envinst/envisci](http://www.seic.okstate.edu/envinst/envisci)*.



## Agreement Strengthens Emergency Management Links Between Canada and the U.S.

At a joint conference held in Halifax, Nova Scotia, last summer, New England governors and premiers from eastern Canada signed an "International Emergency Management Assistance Memorandum of Understanding," allowing the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut, and the provinces of Quebec, New Brunswick, Prince Edward Island, Nova Scotia, and Newfoundland to provide assistance to one another to manage emergencies and disasters. The compact also provides for joint planning, exercises, testing, and other training.

The states and provinces recognized that many emergencies could exceed their individual capabilities and resources and that intergovernmental and international cooperation is essential in such circumstances in order to ensure prompt response and the full and effective utilization of resources. This year, officials from the various states and provinces are establishing procedures, plans, and protocols to put the compact into effect.

The complete compact, outlining all duties, responsibilities, compensation arrangements, limitations, and requirements is available from the Canadian Intergovernmental Conference Secretariat web site: [www.scics.gc.ca/cinfo00/85007918\\_e.html](http://www.scics.gc.ca/cinfo00/85007918_e.html).



## Western Governors Call for Better Information Sharing for Disaster Response

The 2000 wildfires in the western U.S. demonstrated that technologies such as remote sensing and geographic information systems (GIS) significantly increase the ability of governments to respond to disasters. Reliable knowledge about landscape, patterns of human development, and the characteristics of natural disasters is critical to understanding risks and planning response to disasters in the western U.S. The governors of these states believe improved use of such information will help avoid the "often acrimonious conflicts" over disaster response resources that have occurred in the recent past.

In December 2000, the Western Governors' Association (WGA) approved a resolution supporting the development of a framework among the states to improve data dissemination, application development, and training.

*Policy Resolution 00-034: Utility and Use of GIS and Remote Sensing Technologies to Support Disaster Services Role at the Local, State, and Federal Level*, can be found on the WGA web site: [www.westgov.org/wga/policy/00/00034.pdf](http://www.westgov.org/wga/policy/00/00034.pdf). Printed copies can be obtained from the WGA, 1515 Cleveland Place, Suite 200, Denver, CO 80202-5114; (303) 623-9378; fax: (303) 534-7309.



## Washington Update

### A New National Mitigation Strategy to Reduce Losses from Landslides

In the United States, landslides cause 25 to 50 deaths annually, billions of dollars in economic losses, and major environmental degradation. Landslide hazards and resultant losses will increase until the United States adopts a comprehensive and coordinated strategy to alleviate these risks at the federal, state, local, and private levels. Today no such strategy exists. States, local governments, transportation departments, and numerous federal agencies, including the U.S. Geological Survey (USGS), handle landslide hazards independently of each other.

In 1999, Congress asked the USGS to prepare a strategy that would involve all parties with responsibility for dealing with landslides (Public Law No. 106-113). The recently completed report, *National Landslide Hazards Mitigation Strategy: A Framework for Loss Reduction* (USGS Open-File Report 00-450, 2000, free) is the result of an ongoing initiative by the Survey that included input from landslide experts

attending numerous stakeholder meetings and advice from representatives of scientific and professional societies as well as federal and state agencies.

Built on the premise that no single agency, level of government, or program can comprehensively address losses from landslides, the strategy outlines a new public-private partnership that encourages the use of scientific information, maps, and monitoring to aid emergency management, land-use planning, and public and private policy decisions to reduce landslide losses. It calls on the federal government, in partnership with state and local governments, to provide leadership, coordination, research support, and incentives for landslide hazard mitigation.

The Strategy has nine major goals:

- **Research**--develop a predictive understanding of landslide processes and triggering mechanisms;
- **Hazard Mapping and Assessments**--delineate susceptible areas and different types of landslide hazards at a scale useful for planning and decision making;
- **Real-Time Monitoring**--monitor active landslides that pose substantial risk;
- **Loss Assessment**--compile and evaluate information on the economic impacts of landslide hazards;
- **Information Collection, Interpretation, and Dissemination**--establish an effective system for information transfer;
- **Guidelines and Training**--develop guidelines and training for scientists, engineers, other professionals, and decision makers;
- **Public Awareness and Education**--inform and educate the user community;
- **Implementation of Loss Reduction Measures**-- encourage mitigation actions; and
- **Emergency Preparedness, Response, and Recovery**--build resilient communities.



Implementation of this strategy will require increased funding, better coordination among levels of government, and new partnerships between government, academia, and the private sector. Specifically, the strategy proposes:

- Expansion of the USGS landslide research, mapping, monitoring, and emergency response activities;
- Creation of a new state co-operative landslide program to map and assess landslides;
- Formation of a new federal agencies cooperative landslide program to map and assess landslides on federal lands;
- Implementation of a national grants program to encourage research and implementation efforts by universities, local governments, and the private sector; and
- Appointment of an interagency working group to provide guidance and coordination.

The USGS is currently distributing this report and working with state geological surveys and scientific and professional societies to promote implementation of the strategy. As one of the first tasks of the strategy, the USGS and the American Planning Association (APA) are developing guidelines for land-use planners to implement landslide hazard mitigation measures. To obtain information about this project, see the *Observer*, [Vol. XXV, No. 2, p. 5](#) or visit the APA web site: [www.planning.org/Landslides](http://www.planning.org/Landslides).

To obtain a copy of the *National Strategy to Reduce Losses from Landslide Hazards: A Framework for Loss Reduction* (USGS Open-File Report 00-450), visit the USGS Landslide Hazards Program homepage: [landslides.usgs.gov](http://landslides.usgs.gov) or write to the *USGS Information Service, Box 25286, Denver, CO 80225*. For more information on the proposed strategy, contact *Paula L. Gori and Elliott C. Spiker, USGS, 906 National Center, Reston, VA 20192*; e-mail: [pgori@usgs.gov](mailto:pgori@usgs.gov) or [espiker@usgs.gov](mailto:espiker@usgs.gov).

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## FEMA Publishes Guides on Hazard Mitigation and Sustainability

Resistance to disasters is a key characteristic of sustainable communities. To encourage communities to become more disaster-resistant, the Federal Emergency Management Agency (FEMA) recently released two publications. The first, *Planning for a Sustainable Future: The Link Between Hazard Mitigation and Livability* (Publication No. 364, 2000, 43 pp., free), illustrates how communities, either in planning for hazard mitigation before disaster strikes or after one has occurred, can become more resilient by integrating the concepts and principles of sustainable development into all phases of natural hazards planning.





This booklet should be helpful to a broad range of individuals and organizations, including local decision-makers, land-use planners, emergency managers, and those concerned with the economic vitality of their communities. It will help each of these individuals understand how the decisions they make and the actions they take in disaster planning, recovery, and mitigation can create a more sustainable community. The booklet provides examples of communities that have successfully implemented sustainable development practices and describes federal programs that can assist in this process. The "Resources" section lists numerous publications, web sites, and sources of technical assistance and funding.



The second publication, *Rebuilding for a More Sustainable Future--An Operational Framework* (Publication No. 365, 2000, 172 pp., free), is a useful reference for federal, state, and local emergency management officials.

It identifies potential resources that can help make communities less vulnerable to disasters and more sustainable. It was created to guide FEMA sustainability planners, who, following a presidential disaster declaration, evaluate and help implement opportunities for sustainable redevelopment.

The document presents standard operating procedures, guidelines for working with communities in creating sustainable plans, ideas for creating sustainability by hazard type, and 18 tools and programs for sustainability. Appendices contain a glossary of disaster terms, a list of acronyms used in the report (and there are lots of 'em!), a helpful catalog of web sites, a bibliography of recommended readings in sustainable development, a guide to federal technical assistance and funding, quotable materials on sustainability, and pertinent FEMA documents.

The first publication is on the FEMA web site: [www.fema.gov/mit/planning\\_toc.htm](http://www.fema.gov/mit/planning_toc.htm). The larger volume is only available in printed form. Copies of both documents can be requested by phoning *FEMA's Publication Warehouse*: (800) 480-2520.



As part of its on-going commitment to hazard reduction and sustainability, FEMA recently announced its Hazard Mitigation Planning web site. See [the Internet Pages](#) for details.

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## Working Group Reviews Federal Wildfire Management

Following the widespread wildfires in the U.S. in 2000, the secretaries of the Departments of Interior and Agriculture asked the Interagency Wildland Fire Policy Review Working Group to review the **1995 Federal Wildland Fire Management Policy and Program Review** and its implementation. The document provides the philosophical and policy foundation for federal activities regarding wildfires. Recently, the National Interagency Fire Center posted the results of the working group's effort, the **Review and Update of the 1995 Federal Wildland Fire Management Policy**, on its web site.



The report (2001, 94 pp., free) describes the five tasks assigned to the working group:

- Review the implementation of the 1995 Federal Fire Policy and recommend improvements if needed;
- Address issues raised in the **Cerro Grande Prescribed Fire Investigation Report** as well as in the **Independent Review Board Report** and suggest ways to resolve these issues;
- Recommend actions to strengthen the wildland fire management programs in the Agriculture and Interior departments;
- Suggest other activities that would improve the fire management programs in the two departments; and
- Propose a management structure for implementing all recommendations.

The working group found that the policy is "generally sound and continues to provide a solid foundation for wildland fire management activities and for natural resources management activities of the federal government." However, they also concluded that implementation of the 1995 policy remains incomplete in many areas, especially those that involve collaboration, coordination, and integration across agency jurisdictions and across different disciplines. The group further agreed that federal activities and

programs should provide for both firefighter and public safety, protect and enhance land management objectives and human welfare, integrate programs and disciplines, require interagency collaboration, emphasize the natural ecological role of fire, and contribute to ecosystem sustainability.

The report can be obtained from the *External Affairs Office, Bureau of Land Management, Office of Fire and Aviation, National Interagency Fire Center, 3833 South Development Avenue, Boise, ID 83705-5354; (208) 387-5457. It is also available on the web at: [www.nifc.gov/fire\\_policy](http://www.nifc.gov/fire_policy).*

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## Panel Recommends Creating New Security Agency Built Around FEMA

The U.S. Commission on National Security/21st Century was established by Congress in 1998 to examine U.S. national security policies and processes and make recommendations to maintain and improve national security. Its members include prominent delegates of both major political parties. The commission concluded that the Federal Emergency Management Agency (FEMA) should be at the center of a major federal agency reorganization to reduce the threat of a "catastrophic attack" within U.S. borders.



In its recently released report, *Road Map for National Security: Imperative for Change* (2001, 149 pp., free), the commission concluded that the U.S. faces new and different dangers, particularly within our own borders and to our scientific and educational institutions, and current methods for dealing with these dangers, based on old Cold War strategies, will not work. Consequently, the commission recommends the creation of a new independent National Homeland Security Agency (NHSA) with responsibility for planning, coordinating, and integrating various U.S. government activities involved in

homeland security. NHSA would be built upon the Federal Emergency Management Agency, with the three organizations currently on the front line of border security--the Coast Guard, the Customs Service, and the Border Patrol--transferred to it. NHSA would not only protect American lives, but also assume responsibility for overseeing the protection of the nation's critical infrastructure, including information technology.

Other recommendations by the commission include:

- • Making the NHSA director a cabinet member and a statutory advisor to the National Security Council;
- • Creating a new office of Assistant Secretary for Homeland Security;
- • Establishing homeland security as the primary mission of the National Guard;
- • Reorganizing congressional oversight to coincide with these changes; and
- • Doubling the federal research and development budget to ensure competitiveness with other countries.

The complete report is posted on the commission's web site: [www.nssg.gov/peace.nsf/Introduction.htm](http://www.nssg.gov/peace.nsf/Introduction.htm). The authors welcome comments and suggestions and have provided a place on their site where interested individuals can do just that.

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## Technical Mapping Advisory Council Finishes Work

With the passage of the Flood Insurance Reform Act of 1994, Congress directed the Federal Emergency Management Agency (FEMA) to establish an advisory body to develop recommendations for improving FEMA's floodplain mapping program--largely in response to constituents' complaints about the absence or poor quality of Flood Insurance Rate Maps (FIRMs) for their communities. The Technical Mapping Advisory Council was formed in November 1995, and during its five years of operation, the group submitted annual reports to and worked closely with FEMA to develop its Map Modernization Plan. The council completed its work in November 2000 with submission of its final report. Listed below are some of their conclusions and recommendations.

- To minimize duplication of effort and yield better maps at a lower cost, FEMA should be (and is) forming partnerships with other agencies, states, localities, universities, and private entities (see the related [article](#) in this *Observer*). Recent cooperative efforts between FEMA and others on global positioning systems, remote sensing, and other activities should be continued.
- FEMA should update, create, and maintain digital FIRMs to reflect current conditions, jurisdictional boundaries, and flooding sources.
- A complete archive of maps produced under the National Flood Insurance Program should be created and maintained in perpetuity.
- Sources of flooding not usually depicted on FIRMs should be added to enhance awareness of the

types and causes of floods. These "special hazards" include tsunamis, subsidence, alluvial fans, debris flows, dam failure areas, ice jams, and riverine and coastal erosion.

- Flood hazard areas that do not appear on any FIRM should be identified, prioritized, studied, and mapped.
- FEMA should increase its efforts to use modern technology to produce, update, and distribute flood maps.
- FEMA should seek authorization to use disaster funds to update maps following a presidential disaster declaration. The 2001 appropriations bill (see the *Observer*, [Vol. XXV, No. 3, p. 8](#)) allows FEMA to use up to \$15 million from the Disaster Relief Fund for that purpose.

The council further states that, in order to implement these recommendations, FEMA needs adequate funding. Maps are the foundation of effective land use, regulation, insurance, and other forms of flood mitigation. Only accurate, usable, and accessible flood hazard maps will reduce flood losses.

The final report is available on-line at [www.fema.gov/mit/tsd/tmc\\_main.htm](http://www.fema.gov/mit/tsd/tmc_main.htm). Printed copies can be requested from FEMA by e-mailing [sally.magee@fema.gov](mailto:sally.magee@fema.gov).

**[Adapted from *News & Views* (Vol 14, No. 1, pp. 1-2), a publication of the Association of State Floodplain Managers.]**

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## Army Corps of Engineers Listens to Stakeholders

Over a five-month period in 2000, the U.S. Army Corps of Engineers and its Institute for Water Resources (IWR) conducted "listening sessions throughout the U.S. to obtain information and feedback from a variety of stakeholders and concerned citizens regarding U.S. water resources. The resultant report, *America's Water Resources Challenges for the 21st Century: Summary Report on Identified Water Resources Challenges and Water Challenge Areas* (124 pp., 2001, free), was recently made available.

Prior to conducting the sessions, the Corps identified six general water resources challenges that require immediate attention: aging infrastructure that has not kept pace with economic and social expansion, the need for environmental and ecosystem restoration, mitigation and reduction of the impacts of natural disasters, stewardship over the marine transportation system, flood control, and utilization of smart growth processes to ensure reliable sources of clean water. The listening sessions were conducted with two main objectives: to open a dialogue about assessing water resource needs and priorities and to identify the federal role in addressing them.

The report describes in detail the challenges identified by participants, the rank of importance given to each, and the importance given according to region of the country. Participants were also asked to provide suggestions regarding the roles of federal, state, and local governments in addressing the

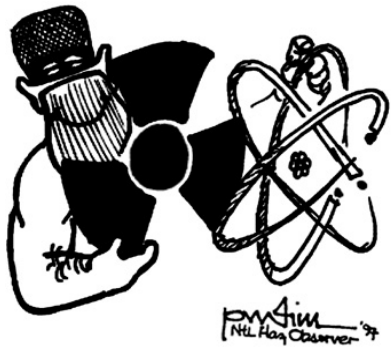


challenges.

Copies of the report, along with additional information about the sessions, can be found on-line: [www.wrsc.usace.army.mil/iwr/waterchallenges](http://www.wrsc.usace.army.mil/iwr/waterchallenges).

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## DOE Creates Commission on Fire Safety and Preparedness



The Los Alamos National Laboratory suffered considerable damage last year during the Cerro Grande wildfire, which also burned over 200 homes when a prescribed burn got out of control. In December, the Department of Energy (DOE) created the Commission on Fire Safety and Preparedness to provide the Secretary of Energy and the Assistant Secretary for Environment, Safety and Health with information and recommendations on the readiness of the DOE to deal with wildland and facility fires.

The commission will be a forum to evaluate the risk of fire, the state of the DOE's fire protection programs, and its emergency response systems. The group will also provide recommendations on a comprehensive fire policy for the department. Members will represent the disciplines of fire safety engineering, fire science, firefighter safety, risk/benefit analysis, and emergency response. Further information about this commission can be obtained from *Amina Khan, Office of Defense Programs, DP-1, 1000 Independence Avenue, S.W., Washington, DC 20585; (202) 586-6982.*

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## NASA and USGS Join Project Impact

### NASA

In December, FEMA and the National Aeronautics and Space Administration (NASA) signed an agreement under which FEMA will use NASA science, technology, research, and remote-sensing to support the agency's emergency management and disaster prevention activities.



The memorandum of understanding was signed by FEMA Director James Lee Witt and NASA Administrator Daniel S. Goldin at NASA headquarters in Washington, D.C. The FEMA-NASA partnership is a cooperative arrangement established under FEMA's Project Impact: Building Disaster Resistant Communities program and NASA's Earth Science Enterprise, a coordinated research program that studies the earth's land, oceans, ice, atmosphere, and life as a total system.

The pact will result in updated and more accurate maps of floodplains, a better understanding of wildfires, and maps to improve disaster recovery and mitigation by state and local communities throughout the U.S. The first cooperative activity under the agreement involves using advanced technology to map floodplains in California's Los Angeles basin, as well as around Sacramento and San Francisco, California; Virginia Beach, Virginia; and the Red River along the North Dakota and Minnesota borders.

As the agreement is further implemented, FEMA and NASA will use a variety of public and private satellites and aircraft-mounted earth-observing instruments to improve understanding of, and preparedness for, flood, wildfire, and geologic hazards.

For more information about this new alliance, see the FEMA web site: [www.fema.gov/impact/nasa1207.htm](http://www.fema.gov/impact/nasa1207.htm).

## USGS



Shortly after the NASA/FEMA alliance was announced, the U.S. Geological Survey (USGS) and FEMA also signed an agreement to promote mutual activities in support of FEMA's Project Impact. The partnership will enhance federal efforts to improve disaster recovery and mitigation in communities throughout the U.S. by applying science to better understand and prepare for the natural geologic processes that can cause or exacerbate disasters.

The agreement actually formalizes a strong working relationship that the USGS and FEMA have maintained for more than 20 years. The USGS will continue to provide FEMA with crucial earth science

information on such natural hazards as earthquakes, floods, volcanoes, wildland fires, and landslides.

More information about this partnership is available from both the USGS and FEMA web pages: [www.usgs.gov](http://www.usgs.gov) and [www.fema.gov](http://www.fema.gov). Interested persons can also contact *Kathleen K. Gohn, USGS, Office of Communications, 119 National Center, Reston, VA 20192; (703) 648-4242; fax: (703) 648-4466; e-mail: [kgohn@usgs.gov](mailto:kgohn@usgs.gov).*

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## Natural Hazards Caucus Calls for Hazard Mitigation To Become National Priority

"The time has come for a new national approach to natural hazards."

With this declaration, the Work Group of the Natural Hazards Caucus of the U.S. Congress recently introduced a call to refocus America's disaster policy. Intended as a transition document to guide the new administration, *A National Priority: Building Resilience to Natural Hazards*, notes that, "Today, we possess unprecedented means to anticipate hazards, protect citizens and property, and reduce accompanying disruption. There is a flip side, however: in the aftermath of disasters, today's public officials are rarely held blameless."

The resolution notes the increasing costs of disasters in the U.S. and the reasons for those increases--primarily population growth and increased occupancy of hazard-prone areas, combined with our increasing wealth--and outlines the kinds of issues the current and future administrations will face. It then lists nine steps to increase national resilience to extreme events:

- Conduct a national assessment of community vulnerabilities,
- Develop incentives for pre-event mitigation measures,
- Improve hazard detection and warnings,
- Build resilience to hazards into every relevant federal government decision,
- Create partnerships and put them to work,
- Measure progress,
- Develop a national culture of learning from mistakes,
- Work cooperatively with other nations to reduce hazard vulnerability, and
- Provide leadership.

The work group is composed of representatives from many of the nation's leading professional and scientific societies, relief organizations, higher education associations, institutions of higher learning, trade associations, and private companies involved in disaster reduction.

The complete text of *A National Priority: Building Resilience to Natural Hazards* is available on the

World Wide Web at [www.ucar.edu/communications/awareness/](http://www.ucar.edu/communications/awareness/). For further information on the Natural Hazards Caucus Work Group and its activities, see [www.agiweb.org/workgroup](http://www.agiweb.org/workgroup) or contact the work group co-chairs: *David Applegate*, (703) 379-2480, ext. 228, e-mail: [applegate@agiweb.org](mailto:applegate@agiweb.org); and *Peter Folger*, (202) 777-7509; e-mail: [pfolger@agu.org](mailto:pfolger@agu.org).



## Allbaugh Confirmed as FEMA Director

In January, president George W. Bush named Joe Allbaugh, a long-time adviser and manager of Bush's presidential campaign, to head the Federal Emergency Management Agency (FEMA). As the former Texas governor's chief of staff, Allbaugh helped shape the Bush administration's response to natural disasters such as tornadoes, floods, and hurricanes, and was directly involved in allocating resources in response to several Texas disasters.

Allbaugh was confirmed by the Senate Committee on Governmental Affairs in February. As one political observer commented, his strong association with Bush could bode well for FEMA and disaster management generally, since it would continue the agency's close relationship with and access to the president. During his confirmation hearing, Allbaugh pledged to work closely with state and local governments in responding to disasters. He added, "Taking my lead from Congress' enactment of the 2000 Stafford Act amendments [see the *Observer*, [Vol. XXV, No 3, p. 8](#)], I plan to focus on implementing pre-disaster mitigation programs that encourage the building of disaster resistant communities. FEMA has made solid progress in this area, but more can be done to limit the human and financial toll of disasters."



The complete text of Allbaugh's statement before the committee can be found on-line at [www.senate.gov/~gov\\_affairs/021301\\_allbaugh.htm](http://www.senate.gov/~gov_affairs/021301_allbaugh.htm). For more information about the new FEMA Director, contact the agency's *Office of Emergency Information and Public Affairs; 500 C Street, S.W., Washington, DC 20472; (202) 646-4600; e-mail: [eipa@fema.gov](mailto:eipa@fema.gov); WWW: [www.fema.gov](http://www.fema.gov).*



## On the Line

*In Central America . . .*

### **Improving Access to Health and Disaster Information in Honduras and Nicaragua**

Hurricane Mitch, which struck Central America in the fall of 1998, hit Honduras and Nicaragua hardest. Honduran casualties numbered more than 5,500 dead and more than 8,000 missing, while more than 2,500 died in Nicaragua and nearly 900 were reported missing. In both cases, major economic and social lifelines were crippled, including health facilities and communications services. Within a year of this tragedy, the United States National Library of Medicine (NLM) and the Pan American Health Organization (PAHO)/World Health Organization began to consider a special project to rebuild and improve the local and national health information infrastructure in Honduras and Nicaragua. Subsequently, last September, a contract was awarded by NLM to the nongovernmental foundation FundaCRID to support work in Honduras and Nicaragua to develop a system for collecting and making available health information related to disasters. The principal technical partner for NLM will be the Centro Regional de Información Sobre Desastres (CRID), the regional disaster information center located in Costa Rica. In addition to funding the initiative, NLM--principally through its Specialized Information Services Division--will be a partner in the process and, supported by the Center for Public Service Communications, will provide training and technical support. PAHO, already one of CRID's major partners, is also strongly committed to the project.

### **Background**

Mitch made apparent, again, the need for a multisectoral approach to disaster reduction. A coordinated approach to disaster reduction that includes all relevant sectors requires timely, reliable information from many sources. For example, information is needed in the areas of identification of hazards, the design of early warning and response systems, community education and disaster mitigation, health management in disasters, disaster management agency coordination, and damage assessment following hazard events. The ability to collect, manage, disseminate, and exchange such information is essential,

and the capacity of human and technological infrastructure to deal with large quantities of information has to be ensured.

Not surprisingly, the demand for information is rising among the growing number of planners who are becoming more knowledgeable about how information can be used in disaster preparedness, and, again, this information is increasing in both volume and quality. This is particularly true of information about health issues in disasters in the Latin American and Caribbean region. At the same time, many of the "lessons learned" during disasters do not find their way into the health and medical literature, and the experiences of many health professionals engaged in disaster work go unpublished. This information includes needs assessments, conference presentations, and details about training courses and curricula.

In addition, because of inadequate access to information technology, lack of training in how to find and manage information, and lack of awareness of what information is available, communities and local authorities are frequently uninformed about fundamental health issues important to their well-being.

### Project Partner Sites

To ensure that these activities are sustained in the future, the NLM/PAHO project has designated four university libraries in Honduras and Nicaragua to gather and disseminate technical and scientific disaster and health information. In addition to the CRID center in Costa Rica, the four partner sites are:

- The Medical School of the Autonomous National University of Honduras (UNAH), in Tegucigalpa, Honduras;
- The Centro Universitario Region Norte (CURN), the UNAH campus at San Pedro Sula, Honduras;
- Centro de Investigacion y Estudios de la Salud (CIES), the School of Public Health of the Autonomous National University of Nicaragua (UNAN), in Managua, Nicaragua; and
- The Medical School of UNAN in Leon, Nicaragua.

These centers will be strengthened in three areas: Internet connectivity and basic computer resources; training (to be carried out at both the NLM and at the CRID in Costa Rica); and special disaster and health information services including the development of full-text documents, databases, training materials, etc.).





## Added Benefits

Because these information services will be provided through the Internet, there will be additional important benefits for the two target countries and others. Access to important NLM resources (for example, information on toxicology and environmental health) will be promoted and facilitated through the project's web site. Training material will be published in Spanish on information management and its use and adapted to the realities and needs of users in Central America. All documents and information sources selected under this project will be available on-line to anyone, free of charge.

**John C. Scott, Center for Public Service Communications**

**Ricardo Perez, Pan American Health Organization**

**Stacey J. Arnesen, NLM, Division of Specialized Information Services**

For additional information about this project, contact the *Regional Disaster Information Center for Latin America and the Caribbean (CRID)*, e-mail: [crid@crid.or.cr](mailto:crid@crid.or.cr), WWW; [www.crid.or.cr](http://www.crid.or.cr); or Stacey Arnesen, e-mail: [arneses@mail.nlm.nih.gov](mailto:arneses@mail.nlm.nih.gov).

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*In Oregon . . .*

## Nonstructural Earthquake Hazard Mitigation: A Demonstration Project

### Purpose

Nonstructural earthquake hazard mitigation is essential in protecting university lives and property. Hazardous nonstructural items range from some architectural elements to furnishings and equipment to hazardous materials. The University of Oregon recently completed a project demonstrating methods of nonstructural earthquake hazard reduction. The purpose of this project was two-fold: to test nonstructural anchoring devices and to inform users about hazard mitigation. The project focused on "do-it-yourself" mitigation methods for hazards created by building occupants themselves. The demonstration project thus established a "grassroots" approach that encouraged users to determine and take responsibility for the hazards they identified in their own buildings.

### Nonstructural Mitigation in Other Academic Facilities

During the first phase of the project, background research revealed that efforts to seismically upgrade academic buildings have primarily been focused on structural components, although some west coast universities and school districts have developed nonstructural mitigation programs.

The University of California-Berkeley has recently developed the Q-Brace Non-structural Seismic



Safety Program, as part of its Strategic Plan for Loss Reduction and Risk Management. The program includes a matching grant program with the Federal Emergency Management Agency. The Q-Brace guidelines provide instructions for anchoring and bracing various nonstructural components, such as light fixtures, suspended ceilings, bookcases, cabinets, computer and lab equipment, and shelf contents.



At the University of Southern California, the Safety and Risk Management Department received a grant from FEMA's Hazard Mitigation Program for the bracing of suspended ceilings and installation of gas shut-off valves.

In conjunction with the Office of State Superintendent of Public Instruction, the Seattle School District developed the *School Facilities Manual: Nonstructural Protection Guide* as part of their Classroom Mitigation Program. The district encourages schools to assess their buildings and improve the safety of their communities according to the guidelines established in the manual. Inventory lists for surveying nonstructural earthquake hazards and guidelines for installing anchoring devices are included in the guide.

The Los Angeles Unified School District's Emergency Preparedness and Hazard Mitigation Program has also developed classroom inventory lists to identify nonstructural earthquake hazards. The school district provides recommendations for anchoring and bracing devices to secure components, such as bookcases, file cabinets, equipment, and shelf contents. The school district has also begun work on bracing light fixtures and suspended ceilings at 400 out of 720 schools.

## Project Background and Design

The University of Oregon demonstration project grew out of the school's Nonstructural Seismic Building Program as a collaborative effort among faculty and students in the Department of Architecture and the staff of the Office of Environmental Health and Safety (EH&S). Academic buildings were surveyed for nonstructural earthquake hazards, the most typical being unanchored furnishings, objects in danger of falling, and unsecured desktop computers. However, unbraced suspended ceilings were the most prevalent hazard (436,233 square feet in all), and a quarter of these were located in the main library. These findings revealed the need for a demonstration project on hazard mitigation.

The EH&S office was chosen for the demonstration site. This 1,344 square foot space is a typical university office setting, consisting of eight workstations, two enclosed offices, and a conference room--all tightly arranged.

The first phase of the project involved assessing the nonstructural earthquake hazards in the office. A visual screening was performed, and hazardous nonstructural components were identified. The hazards found were ones that could easily be reduced by "do-it-yourself" methods. The primary nonstructural earthquake hazards found in the office were tall storage cabinets, shelving and contents, large hanging artwork, and elevated office equipment, all of which could potentially fall, block egress routes, and cause injury and/or significant economic loss.

To mitigate these hazards, both off-the-shelf, traditional hardware and special earthquake fasteners were considered and used. In addition, some components were relocated. In some cases, different restraining methods were used for the same component so that different techniques could be compared and displayed. In part, products were also chosen based on their aesthetic quality. Due to budgetary constraints, not all equipment could be secured, but a variety of methods were tested.

In the end, with the help of donations and discounts, the earthquake-designed fasteners cost \$431.16, and other hardware cost \$54.73. With labor, the total cost of the project was \$1,325.89.

## **Dissemination to the Campus Community**

Upon completion of the installation, the demonstration project became a means for informing university staff, faculty, and students of ways to prepare for earthquakes. By providing services and information, the project staff encouraged users to become aware of hazards and learn ways to reduce them. The resulting preparation of campus spaces will in turn increase life safety, reduce damage to property, and limit interruption of university activities in the event of an earthquake. In order to promote the information and services available from EH&S, an article about the project will be published in the university's newsletter and sent out to community members via e-mail. Campus members can tour the EH&S office to view the products installed, and EH&S staff will be available to answer questions regarding mitigation techniques and installation procedures. Nonstructural mitigation literature, vendor catalogs, and samples are also available at the office.

The demonstration project at the University of Oregon is a way to inform university building users of the

hazards created by nonstructural components and to encourage people to take responsibility for the way they furnish and arrange their classrooms and workspaces. To assess the project's effectiveness, an evaluation will be undertaken by EH&S in conjunction with the Department of Architecture. Hopefully, this demonstration project will prompt other universities to follow suit and increase earthquake hazard awareness on their campuses.

**Abigail Fowle and Christine Theodoropoulos, Department of Architecture, University of Oregon**



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## Contracts and Grants

Below are descriptions of recently awarded contracts and grants for the study of hazards and disasters. An inventory of contracts and grants awarded from 1995 to the present (primarily those funded by the National Science Foundation) is available on the Natural Hazards Center's web site: [www.colorado.edu/hazards/grants.html](http://www.colorado.edu/hazards/grants.html).

**Hurricane Loss Reduction for Residences and Mobile Homes in Florida.** Funding: Florida Department of Community Affairs, \$700,000, 12 months. Principal Investigator: *Ricardo Alvarez, International Hurricane Center, Florida International University, University Park Campus, EAS 2710, Miami, FL 33199; (305) 348-1607; fax: (305) 348-1605; e-mail: [hurrican@fiu.edu](mailto:hurrican@fiu.edu); WWW: [www.ihc.fiu.edu](http://www.ihc.fiu.edu).*

Under the Florida "Bill Williams Residential Safety and Preparedness Act," which supports the state's Hurricane Loss Reduction Program, funding was allocated "to support programs of research and development relating to hurricane loss reduction devices and techniques for residences and mobile homes and to the development of credible data on potential loss reduction." This project, in its second year, is examining sheltering issues for mobile home parks, mobile home recycling programs, insurance incentives for hurricane mitigation in housing, land development and zoning issues, and structural retrofitting of existing residences and mobile homes. The project is a joint effort by the International Hurricane Center, the University of Florida, Florida Atlantic University, Florida State University, and the University of South Florida.

**Windstorm Simulation and Modeling Program.** Funding: Federal Emergency Management Agency (FEMA) and five Florida counties, \$3.2 million, three years. Principal Investigator: *Stephen P. Leatherman, International Hurricane Center, Florida International University, see contact information above.*

The aim of this project is to improve hazard mitigation by establishing a program involving recognition, planning, and adaptation to natural hazards. The principal investigator will create a model, acquire data, provide visual risk information, and promote public awareness and education. The modeling component will include a comparative assessment of existing storm surge and wind models. Data acquisition will be combined with graphic representations to make the information useful for researchers, emergency managers, and the public. The public awareness and education program will ensure a better transfer of research findings to the general population.

**Assessing the Cost of Evacuation in Response to Hurricane Warning.** Funding: Florida International University Foundation, \$33,000, 12 months. Principal Investigator: *Ricardo Alvarez. For contact information, see the first item.*

Evacuation of coastal areas has been a key component of hurricane emergency plans for many years. Recently, however, experiences with Hurricane Floyd in 1999 and Hurricane Gordon in 2000 have drawn attention to the increased potential of damage, injury, and even loss of life during mass evacuations. Moreover, not much is known about the actual cost of evacuating coastal communities. This project will identify all the elements that contribute to the cost of evacuation, explore methods to aggregate some or all cost components to arrive at a baseline unit cost for evacuation, and explore ways in which such generic methods can be applied on a community-wide or regional basis.

### **Natural Hazard Mitigation**

**Experiences in Japan.** Funding: National Science Foundation, \$99,000, 24 months. Principal Investigators: *B.F. Spencer and Yahya Kurama, University of Notre Dame, Notre Dame, IN 46556; e-mail: [spencer.1@nd.edu](mailto:spencer.1@nd.edu).*

This award will support American graduate students, middle school science teachers, and university faculty to participate in research in Japan in connection with NSF's Summer Programs in Japan. Faculty and students selected for the program will participate in workshops and site visits related to natural hazards mitigation research. The project will help connect American students and researchers to the most active Japanese university, government, and corporate laboratories involved in hazard mitigation.



**Assessment of Damage to Critical Infrastructure Facilities in the 1999 Kocaeli (Izmit) Earthquake in Turkey.** Funding: National Science Foundation, \$75,000, 11 months. Principal Investigators: *Philip L. Gould and Gayle S. Johnson, Department of Civil Engineering, Urbauer 211, Washington University, St. Louis, MO 63130; e-mail: [pgoul@seas.wustl.edu](mailto:pgoul@seas.wustl.edu).*

This research will explore the failures of two types of industrial facilities, cooling towers and stacks, during the 1999 earthquake in Turkey. The project will also compare predicted response with field observations in order to evaluate the adequacy of current design procedures.

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## **NSF Awards Funds for NEES Projects . . .**

Earthquake researchers and engineers from New York to California are forming a national network so that members can share the advanced research equipment, databases, computer models, and simulation

tools of earthquake engineering testing facilities across the nation. Recently, the National Science Foundation (NSF) awarded \$45 million to 11 universities as part of the George E. Brown, Jr. Network for Earthquake Engineering Simulation (NEES) (see the *Observer*, [Vol. XXV, No. 2, p. 18](#); and [Vol. XXIII, No. 5, p. 2](#)).

NSF plans to spend up to \$81.9 million by 2004 under NEES to enhance earthquake engineering research equipment in the United States and to build a high performance

Internet network to connect the facilities. These awards will fund construction, expansion, and modernization of equipment, including capabilities for remote observation and operation. The equipment includes new and upgraded shake tables, centrifuges, a tsunami wave basin, large-scale laboratory experimentation systems, and field equipment. NSF hopes to grant a second set of awards in the future. All equipment is expected to be operational by late 2004. Eventually, a community-led consortium will be selected to manage and operate NEES for at least 10 years (see below).

For more information about NEES, see the NSF web site: [www.eng.nsf.gov/nees](http://www.eng.nsf.gov/nees)

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## **. . . and Solicits Proposals for Developing the NEES Consortium**

As part of the development process, NSF recently released Program Solicitation NSF 01-56: "George E. Brown, Jr. Network for Earthquake Engineering Simulation (NEES): 778 Consortium Development." That solicitation "re-requests proposals for a small team to initiate and coordinate activities with the earthquake engineering community, over a maximum three-year period with a target award date of October 1, 2001, that will result in the development and formation of a single community-based and community-led NEES Consortium. The NEES Consortium will be the single entity that will operate the NEES collaboratory . . . [which] will include approximately 20 geographically-distributed, shared-use next generation earthquake engineering experimental research equipment installations . . . networked together through the high performance Internet."



Two major objectives of this consortium will be to incorporate as a legal entity in order to receive



awards from the federal government and to submit a proposal to NSF to operate the NEES collaboratory for the next 10 years.

For the complete solicitation, including details about proposal preparation, see the NEES web site: [www.eng.nsf.gov/nees](http://www.eng.nsf.gov/nees). Letters of intent are due May 4, 2001.

The NSF program officer is *Joy M. Pauschke, NEES Program Director, Engineering, Civil and Mechanical Systems, Room 545, National Science Foundation, 4201 Wilson Boulevard, Arlington, VA 22230; (703) 292-7024; fax: (703) 292-9053; e-mail: [jpauschk@nsf.gov](mailto:jpauschk@nsf.gov)*. Questions and suggestions about NEES can be e-mailed to [nees@nsf.gov](mailto:nees@nsf.gov).



## Internet Pages

Below are some new or updated Internet resources the Hazards Center staff has found informative and/or useful. For a more complete list of some of the better sites dealing with hazards and disasters, see [www.colorado.edu/hazards/sites/sites.html](http://www.colorado.edu/hazards/sites/sites.html).

### All Hazards

[www.fema.gov/mit/planning.htm](http://www.fema.gov/mit/planning.htm)

On January 17, the Federal Emergency Management Agency's Mitigation Directorate unveiled a new web site for hazard mitigation planning. In launching the site, the agency said, "We believe the information contained here will be a critical resource for all who are involved in establishing disaster resilient communities throughout our nation. Hazard mitigation planning is a collaborative process whereby hazards affecting the community are identified, vulnerability to the hazards assessed, and consensus reached on how to minimize or eliminate the effects of these hazards. . . . Based on the lessons of the '90s, it became apparent that the nation needed to shift its approach from a disaster-response driven system to a system based on pre-disaster or ongoing risk analysis so that we could become proactive rather than reactive to hazard events. . . . As a result . . . a unit for Hazard Mitigation Planning was established within the Directorate in 1998 to provide guidance and resources to States and local communities to promote and support the mitigation planning process. FEMA therefore places much value on the planning process as an approach to mitigation that must be promoted and supported in order to build sustainable, disaster resilient communities!"

The site's information is organized into three sections: What's Currently on the Shelf; What's New; and On the Horizon. The developers welcome comments and recommendations. Suggestions should be directed to *Gil Jamieson, Chief, Planning Branch, Mitigation Directorate, FEMA, 500 C Street, S.W.*,

Washington, DC 20472; (202) 646-4090; e-mail: [gil.jamieson@fema.gov](mailto:gil.jamieson@fema.gov).

[www.anglia.ac.uk/geography/radix](http://www.anglia.ac.uk/geography/radix)

Provoked by the January El Salvador earthquake (and subsequently by the disaster in India), a group of disaster scholars launched this "Radical Interpretations of Disasters" web site, which addresses the fundamental question: Given our extensive knowledge concerning natural hazards, recent historical disasters that should have provided object lessons and opportunities for change, our increasing understanding of the direct link between disaster vulnerability and unsustainable development practices, and the fundamental human value that suffering should be averted whenever possible, why is it that catastrophes like the El Salvador quake continue?

As the site developers explain, "The word `radical' is used in the sense of radix or "root"--the root causes of vulnerability and what to do about it." The essays are intended to prompt discussion and stimulate further debate, and the developers invite all persons interested in these questions to participate. The site also offers on-line background material and resources and useful links regarding the recent earthquakes.

[www.esig.ucar.edu/sourcebook](http://www.esig.ucar.edu/sourcebook)

Our ever-toiling colleagues of the Environmental and Societal Impacts Group at the National Center for Atmospheric Research (NCAR), in cooperation with the Atmospheric Policy Program of the American Meteorological Society, have recently released their 2001 *Extreme Weather Sourcebook*, a compilation of statistics regarding "Economic and Other Societal Impacts Related to Hurricanes, Floods, Tornadoes, Lightning, and Other U.S. Weather Phenomena." The goal of this report is to educate and stimulate interest in the societal impacts of weather in the U.S. The wealth of information is too great to present here, but a few highlights include:

- The annual national loss due to floods, hurricanes, and tornadoes from 1955 to 1999 was \$11.4 billion (in 1999 dollars);
- Florida easily led all other states with annual losses of \$1.67 billion;
- The Gulf Coast states of Louisiana and Texas were the next most severe-weather-prone states, with annual losses of over \$900 million;
- Total losses due to hurricanes over the 45-year period were \$510 billion;
- Annual losses due to tornadoes were \$1.1 billion; and
- Annual losses due to floods were \$5.9 billion.

For more information or to comment on the *Sourcebook*, contact Roger Pielke, Jr., NCAR, P.O. Box 3000, Boulder, CO 80307-3000; (303) 497-8111; fax: (303) 497-8125; e-mail: [rogerp@ucar.edu](mailto:rogerp@ucar.edu).

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*On Politics and Gender*

## Two New Disaster Working Papers

[www.bghrc.com](http://www.bghrc.com) (click on "Disaster Management")

The Benfield Greig Hazard Research Centre at University College London has launched a series of Disaster Management Working Papers designed to make new evidence, analysis, and ideas available to researchers and practitioners worldwide. The editors envision five main categories: research papers, case studies, field notes, discussion papers, and guidelines and training materials. The first working paper is *Physician Heal Thyself? The Politics of Disaster Mitigation*, by John Twigg of the centre. This discussion piece looks at some of the reasons why so little is being done to reduce people's vulnerability to natural disasters and suggests that part of the problem lies within the so-called disaster "community" and that the problem is political in the broadest sense of the word.

[www.ilo.org/public/english/employment/recon/crisis/publ/wp1.htm](http://www.ilo.org/public/english/employment/recon/crisis/publ/wp1.htm)

The overall goal of the International Labor Organization (ILO) InFocus Programme on Crisis Response and Reconstruction is to develop a coherent and rapid response by the ILO to different crises--natural disasters, armed conflicts, financial and economic downturns, and difficult political and social transitions. The working paper, *Gender and Natural Disasters*, by Elaine Enarson--available at the URL above--is one of the first products of the program's research effort, undertaken in consultation with an external network of researchers from around the world.

In her paper, Enarson provides a careful analysis of the gender facets of natural disasters. The report covers four main topics: the social construction of vulnerability to "natural" disasters, particularly on the basis of gender relations; the impacts of disasters on women's paid and unpaid work; six core action issues arising from these patterns; and policy and research implications for natural disaster management. Some impacts of disasters on men are also highlighted, and the data assembled cover both developing and developed countries.

Three broad conclusions emerge: first, both women and men have specific short-term needs and long-term interests in disasters; second, women are key economic actors throughout the disaster cycle of preparedness, mitigation, relief, and reconstruction; and third, women's economic vulnerability to future disasters is increased by lack of attention to gender equity in disaster interventions. The paper concludes with recommendations and proposals regarding how gender issues can be routinely taken into account in crisis response and reconstruction.

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[www.cspo.org](http://www.cspo.org)

[www.cspo.org/projects/extremeevents/framework.html](http://www.cspo.org/projects/extremeevents/framework.html)

[www.esig.ucar.edu/extremes](http://www.esig.ucar.edu/extremes)

The Center for Science, Policy, and Outcomes (CSPO), a project of Columbia University, is dedicated to rethinking the role of science in society. In June 2000, CSPO and the Environmental and Societal Impacts Group of NCAR (see above) sponsored a multidisciplinary workshop to consider an emerging theme in recent scientific research: the role of extreme events in complex natural and social systems.

The goal of the workshop was to examine those events through as many disciplinary and societal lenses as possible and to use these diverse perspectives to build a comprehensive framework to guide research. An extensive summary of the workshop is available from the second URL above; the complete report from the third.

[www.bluesky-foundation.com](http://www.bluesky-foundation.com)

The Blue Sky Foundation of North Carolina is a nonprofit corporation chartered to encourage hazard-resistant construction. The foundation provides information, public education, and professional training to promote safe construction (see the "[Conferences and Training](#)" section of this *Observer*), wise land use, disaster mitigation, and sustainable development. Its primary focus is on measures to reduce losses due to flooding, hurricanes, nor'easters, and other high-wind events. Blue Sky's web site describes the foundation's programs in detail and offers several documents on hazard-resistant construction as well as a bibliography and numerous other resources.

[www.anglia.ac.uk/geography/gdn](http://www.anglia.ac.uk/geography/gdn)

[www.anglia.ac.uk/geography/gdn/whatsoutthere.html](http://www.anglia.ac.uk/geography/gdn/whatsoutthere.html)

The Gender and Disaster Network Web site has added several papers and much additional information on gender issues in disaster management, including a complete World Bank draft report on gender impacts during Hurricane Mitch (Delaney and Shrader, 2000), and proceedings from last June's conference, "Reaching Women and Children in Disasters."

[www.arct.cam.ac.uk/disasterdiplomacy/](http://www.arct.cam.ac.uk/disasterdiplomacy/)

"Disaster diplomacy" refers to the occurrence or threat of disaster facilitating cooperation among states in conflict. This web site has been created "to foster discussion on applying disaster diplomacy to improving all disaster management activities when confronted with international political barriers and to recognizing the true role of disaster in international affairs. The goal is to determine if, how, and when disaster diplomacy could bring about advantageous change."

The site provides abstracts from a special issue of the *Cambridge Review of International Affairs* (Vol. XIV, No. 1, 2000) focusing on disaster diplomacy. The articles include:

- James Ker-Lindsay on the 1999 earthquakes in Greece and Turkey,
- Michael Glantz on climate-related disasters and relations between the USA and Cuba,
- Ailsa Holloway on the 1991 to 1993 drought situation in southern Africa,
- Louise Comfort on a complex adaptive systems analysis model applied to disaster diplomacy, and
- Vincent Gawronski and Richard Olson on Mexican attitudes toward disaster response.



Copies of this issue are available for \$20.00 (includes postage) from the **Cambridge Review of International Affairs**, Centre of International Studies, Fitzwilliam House, 32 Trumpington Street, Cambridge CB2 1QY, U.K.; tel: +44 (0) 1223 741311; fax: +44 (0) 1223 741313; e-mail: [intstudies-cria@lists.cam.ac.uk](mailto:intstudies-cria@lists.cam.ac.uk). For further information about the new web site, contact the site administrator, *Ilan Kelman*, e-mail: [disasterdiplomacy@hotmail.com](mailto:disasterdiplomacy@hotmail.com).

[www.reliefweb.int](http://www.reliefweb.int)

[www.reliefweb.int/vacancies](http://www.reliefweb.int/vacancies)

The United Nations Office for the Coordination of Humanitarian Affairs (OCHA) ReliefWeb site, which we've mentioned several times before, is designed (and frequently updated) to "serve the information needs of the [world's] humanitarian relief community." The site includes dispatches on the latest world emergencies and disasters; other news regarding international assistance; and extensive background information on both complex emergencies and natural disasters--by country, if desired. The site provides information on appeals, donations, and donation management; a large map collection; a directory of humanitarian organizations; numerous reference documents; as well as information on emergency telecommunications, early warning, and humanitarian training. Interested persons can sign up for e-mail notices of new ReliefWeb information, and the "Humanitarian Vacancies Section" now allows users to both post new positions and peruse employment opportunities.

[www.pep.bc.ca](http://www.pep.bc.ca)

The function of the British Columbia (Canada) Provincial Emergency Program (PEP) (administered through the BC Attorney General's office) is to "maintain effective awareness, preparedness, response and recovery programs to reduce the human and financial costs of emergencies and disasters." The PEP web site provides background information about the program as well as hazards management and mitigation in the Pacific Northwest generally. The site encompasses sections on hazard preparedness and response and provides *many* of the enabling laws, policies, manuals, guides, plans, and other documents in full text. It also includes incident summaries, media releases, a special section for children, a list of coming events, and an on-line forum for discussion of hazard issues.

[images.usace.army.mil/](http://images.usace.army.mil/)

Need a picture of flood, hurricane, or earthquake damage? emergency responders in action? flood mitigation structures? Take a look at the U.S. Army Corps of Engineers "Digital Visual Library," which includes both a photo library and a graphic library. The images are provided to communicate visually the programs and projects of the Corps, as well as the hazards and events with which it must contend. The searchable library includes photographs, illustrations, artwork, clipart, logos, maps, and posters from



around the world. New images are added frequently.

[www.aquarius.geomar.de/omc/omc\\_intrhttp://www.colorado.edu/hazards/o/](http://www.aquarius.geomar.de/omc/omc_intrhttp://www.colorado.edu/hazards/o/)

Or perhaps you need a map? Why not create your own? It's easy on this "Online Map Creation (OMC)" site--a great resource for students, geographers, geologists, geophysicists, seismologists, or anyone else needing a quick map for a talk or paper. The site allows a person to create an on-line or downloadable map (in any of several different projections) by simply entering the coordinates and defining the qualities he or she would like to see, such as political boundaries, rivers and lakes, cities, topography, tectonic features, seismic faults, etc.

## Floods

[www.ijc.org](http://www.ijc.org)

Via its web site, the International Joint Commission (IJC) has released *Living with the Red: A Report to the Governments of Canada and the United States on Reducing Flood Impacts in the Red River Basin*.

The IJC cautions that, although the 1997 transboundary Red River flood was a rare event, floods of the same magnitude, or even greater, can be expected in the future. Economic damage in the United States and Canada from the 1997 flood approached \$5 billion in U.S. dollars, and flood recovery and mitigation costs continue to grow. While a significant number of flood mitigation actions have been initiated since 1997, the people and property of the Red River Basin will remain at undue risk until comprehensive, integrated, bi-national solutions are developed and implemented. Solutions for one part of the basin must take into account the impacts on other parts of the basin. Flood protection for population centers, as well as small communities and individual isolated farmsteads in the Red River Basin, needs immediate attention.

The IJC found that there is no single solution to the challenge of protecting the people and property of the Red River Basin. Rather, all possible approaches, including both structural and nonstructural damage reduction measures, must be considered in a comprehensive plan. The IJC recommendations provide a blueprint for action by governments at all levels.



[www.damsafety.org](http://www.damsafety.org)

The Association of State Dam Safety Officials has launched a new web site that features current news, information on upcoming conferences and seminars, a secure on-line membership application, a bibliography of dam safety references, and much more. Comments and suggestions regarding the site can be e-mailed to [info@damsafety.org](mailto:info@damsafety.org).



## Hurricanes

[www.wn.org/newsevents.asp](http://www.wn.org/newsevents.asp)

[www.wn.org/Mitch.pdf](http://www.wn.org/Mitch.pdf)

World Neighbors is a nonprofit, charitable organization that works with rural poor in 18 countries in Asia, Africa, and Latin America to strengthen the ability of individuals and communities to solve their own problems of hunger, poverty, and disease. World Neighbors programs integrate improved agriculture, community-based health and family planning, environmental conservation, water and sanitation, and small business.

At the second URL above, the organization recently published an extensive report on post-Hurricane Mitch recovery entitled *Reasons for Resiliency: Toward a Sustainable Recovery after Hurricane Mitch*. The basic premise is that much Hurricane Mitch damage was, fundamentally, human-caused and preventable--not an act of God. Funded by the Ford, Rockefeller, and Summit foundations, the study shows that land use in Central America amplified the storm's damage, whereas alternative farming methods in the future could cut erosion by more than half, save topsoil, and reduce runoff.

## Volcanoes

[www.sciencemag.org](http://www.sciencemag.org)

The January 12 issue of *Science* (Vol. 291, Issue 5502), available on-line at the address above, contains an analysis of volcano deaths by Tom Simkin, Lee Siebert, and Russell Blong. Entitled "Volcano Fatalities--Lessons from the Historical Record," it examines more than 400 fatal volcanic eruptions. The authors describe their findings as "worrisome"; they found a marked increase in fatal eruptions in the 20th century, which they attribute to global population increase, not greater eruption frequency, which has remained roughly constant. "Of the many agents of volcanic death," they further report, "tephra (ashfall and projectiles) is more common (and more easily mitigated) than more widely feared agents such as pyroclastic flows, tsunamis, and mudflows. During the sometimes long course of an eruption, the most dangerous time is the first 24 hours, but next most dangerous are times months or years after the start, when people are tired of the eruption and guards are lowered."

## Landslides

[www.kingston.ac.uk/~ce\\_s011/landslid/slides.htm](http://www.kingston.ac.uk/~ce_s011/landslid/slides.htm)

On his personal web site, Eddie Bromhead, Professor of Geotechnical Engineering, School of Engineering, Kingston University, U.K., maintains this section with numerous photos, maps, and diagrams of landslides and landslide mitigation measures.

[greenwood.cr.usgs.gov/maps/factsheets.html](http://greenwood.cr.usgs.gov/maps/factsheets.html)

Via the web, the Central Region of the U.S. Geological Survey has published numerous brief fact sheets on geologic issues, including these three on land/soil failure:

- FS-0112-95 -- *Debris-Flow Hazards in the San Francisco Bay Region*
- FS-0071-00 -- *Landslide Hazards*
- FS-0072-00 -- *Peligros de Deslizamientos*

## Earthquakes

[www.eqnet.org](http://www.eqnet.org)

(click on "images" under "Earthquake Information Services")

EQNET is a cooperative effort among several U.S. hazards organizations; it is maintained by the Information Service at the Multidisciplinary Center for Earthquake Engineering Research (MCEER) at the University of Buffalo. EQNET is an Internet gateway to all kinds of information about earthquakes, including many different collections of photographs and other images. In a recent article in its newsletter, the MCEER Information Service highlighted the following sites:

- [nisee.ce.berkeley.edu/eqiis.html](http://nisee.ce.berkeley.edu/eqiis.html) -- the EQIIS Image Database maintained by the National Information Service on Earthquake Engineering at the University of California-Berkeley;
- [www.sfmuseum.org/1906/photos.html](http://www.sfmuseum.org/1906/photos.html) -- photos from the Museum of San Francisco's "Ninetieth Birthday of the Great Earthquake" web site;
- [www.eas.slu.edu/Earthquake\\_Center/eqphotos.html](http://www.eas.slu.edu/Earthquake_Center/eqphotos.html) -- historic earthquake photographs from St. Louis University.



## Tsunamis

Three sites that we recently added to our list of tsunami web pages

([www.Colorado.EDU/hazards/sites/tsunamis.html](http://www.Colorado.EDU/hazards/sites/tsunamis.html)) include:

- [observe.ivv.nasa.gov/nasa/exhibits/tsunami/tsun\\_start.html](http://observe.ivv.nasa.gov/nasa/exhibits/tsunami/tsun_start.html) -- The National Aeronautics and Space Administration (NASA) offers this on-line guide to tsunamis, with information about the basic science of tsunamis, tsunami warning, what to do when a tsunami strikes, and great historical tsunamis.
- [walrus.wr.usgs.gov/tsunami](http://walrus.wr.usgs.gov/tsunami) -- The U.S. Geological Survey Western Region Web site offers information on tsunami research at the USGS as well as basic background information and on-line tsunami animations.

- [www.nws.noaa.gov/pr/ptwc](http://www.nws.noaa.gov/pr/ptwc) -- Via this web page, the Pacific Tsunami Warning Center offers current bulletins (including estimated times of arrival and maps) as well as historical information concerning tsunamis of the region.

## Disaster Mental Health

[listserv@maelstrom.stjohns.edu](mailto:listserv@maelstrom.stjohns.edu)

The "DisastMH" e-mail discussion forum provides a means for disaster mental health professionals to discuss key issues in their field. To subscribe, send an e-mail message to the address above with "subscribe DisastMH <your first name, your last name>" in the body of the message (for example: "subscribe DisastMH Ruth Westheimer"). For more information, contact the list owner, *Denruth Lougeay*, e-mail: [deneelou@znet.com](mailto:deneelou@znet.com).

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## Conferences and Training

Below are the most recent conference announcements received by the Natural Hazards Center. A comprehensive list of hazard/disaster meetings is posted on our World Wide Web site: [www.colorado.edu/hazards/conf.html](http://www.colorado.edu/hazards/conf.html).

*National Symposium on Mitigating Severe Weather Impacts: Design for Disaster Reduction. Host: International Center for Natural Hazards and Disaster Research, University of Oklahoma. Tulsa, Oklahoma: March 31-April 5, 2001.* In response to the rising costs of disasters, the nation's focus is changing from reactive to proactive measures to reduce social impacts. To further these efforts, this symposium has been organized so that the diverse stakeholders in disaster mitigation can work together to perfect strategies for improving the safety and well-being of society before a natural hazard becomes a disaster. The symposium theme is "Design for Disaster Reduction," and a major conference goal is to develop public and private partnerships to create a disaster resilient society through improved engineering and architectural design and technology. Further, the meeting will address the issues of severe weather impacts on society, best methods to mitigate disasters, and new technologies for disseminating information and warnings. Several sessions are planned:

- Surviving structural damage due to hail, lightning, tornadoes, and strong winds: planning and engineering for severe weather resistant structures;
- Managing risk of extreme temperatures and weather: energy, drought, and water resources;
- Mitigating flood impacts for disaster resilient communities: warning systems and predictions;
- Interventions for change: incentives, legislation, regulations, innovations, and education; and
- Action agenda planning 2002: developing projects and initiatives for implementation of priorities identified during the symposium.

A complete agenda is available from *Cindy Ward, Manager of Special Projects, International Center for Natural Hazards and Disaster Research, University of Oklahoma, 710 Asp Avenue, Suite 8, Norman, OK 73069; (405) 447-8418; e-mail: [cward@ou.edu](mailto:cward@ou.edu).*

*11th Conference on Contingency Planning, Business Continuation, and Disaster Recovery Using Telecommunications and the First Annual Conference on Employee Security, Workplace Violence, and Protection. Host: International Disaster Recovery Association (IDRA). Providence, Rhode Island: April 9-12, 2001.* All presentations at the first conference will relate to telecommunications disaster recovery, business continuation, and contingency planning. The program includes expert speakers as well as refresher and introductory courses. The second conference, requested by IDRA members, addresses the security and protection of employees as a key element in contingency planning. The presentations will

cover how to plan for, mitigate, and respond to specific threats. More information is available from IDRA, c/o BWT Associates, P.O. Box 4515, Shrewsbury, MA 01545; (508) 845-6000; fax: (508) 842-2585; e-mail: [indraconference2000@idra.com](mailto:indraconference2000@idra.com); WWW: [www.idra.com](http://www.idra.com).

*2001 International Disaster Management Training Course. Offered by: The Disaster Management Centre, Cranfield University. Faringdon, Oxfordshire, U.K.: July 24-August 23, 2001.* Cranfield's annual disaster management course attracts a wide range of professionals from government, emergency services, nongovernmental organizations, private enterprise, and the military. It provides state-of-the-art training in disaster management through lectures, case studies, field visits, and hands-on exercises. Over the years, the course has increasingly emphasized disaster reduction and the close links between disasters and development. After completing a core program, participants can choose one of three areas of specialization: complex emergencies, rapid onset disasters, or civil emergencies and human-made disasters. The closing date for applications is June 23, 2001. For a course brochure, contact the *Disaster Management Centre, Cranfield University, RMCS, Shrivenham, Swindon, Wiltshire SN6 8LA, U.K.*; tel: +44 (0) 1793 785287; fax: +44 (0) 1793 785883; e-mail: [disprep@rmcs.cranfield.ac.uk](mailto:disprep@rmcs.cranfield.ac.uk); WWW: [www.rmcs.cranfield.ac.uk/dmc](http://www.rmcs.cranfield.ac.uk/dmc).

The training course will be immediately followed by the *Second International Course on Training of Trainers (ToT) for Disaster Management, August 27-August 31, 2001*. Applications for that course are due by August 1, 2001. Contact the *Disaster Management Centre* at the address above for additional information.

*2001 International Conference on Disaster Management. Host: International Association of Disaster Management. Orlando, Florida: August 6-10, 2001.* The primary goal of the International Conference on Disaster Management is to improve preparedness, response, and recovery for all natural and human-caused disasters in order to save lives and reduce damage. To accomplish this goal, the conference will bring together the many disciplines involved in disaster management and encourage the exchange of knowledge, problems, and solutions. The program will emphasize response and recovery lessons from recent disasters around the world, current state-of-the-art programs and strategies, and new approaches. For more information, contact the *International Conference on Disaster Management, 2952 Wellington Circle, Tallahassee, FL 32308*; (850) 906-9221; fax: (850) 906-9228; e-mail: [mail@disastermeeting.com](mailto:mail@disastermeeting.com); WWW: [www.disastermeeting.com](http://www.disastermeeting.com).

*96th Annual Meeting of the American Sociological Association (ASA). Anaheim, California: August 18-21, 2001.* Topics at this meeting include disasters and the social aspects of risk. For more information, see [www.asanet.org/convention/2001](http://www.asanet.org/convention/2001), or contact *ASA Meeting Services, 1307 New York Avenue, N.W., Suite 700, Washington, DC 20005-4701*; (202) 383-9005, ext. 305; fax: (202) 638-0882; TDD: (202) 638-0981; e-mail: [meetings@asanet.org](mailto:meetings@asanet.org).

*Sustaining Communities: Creating Markets for Mitigation. Host: Blue Sky Foundation, University of North Carolina, Federal Emergency Management Agency Project Impact, and others. Raleigh, North Carolina: August 19-22, 2001.* This exposition and symposium will bring together citizens, public



officials, scientists, and private industry representatives to examine partnerships, innovative practices, and effective incentives to ensure the construction of stronger homes and sustainable communities that can withstand natural hazards. For program and registration information, contact *Charles Dugger*, Project Coordinator, Blue Sky Foundation, 920 Main Campus Drive, Suite 100, Raleigh, NC 27606; (919) 424-4558; e-mail: [cedugger@unity.ncsu.edu](mailto:cedugger@unity.ncsu.edu); WWW: [www.bluesky-foundation.com](http://www.bluesky-foundation.com).

*Climate Conference 2001. Host: Institute for Marine and Atmospheric Research Utrecht (IMAU). Utrecht, The Netherlands: August 20-24, 2001.* Among other topics, the conference will address sea level change, meteorological aspects of climate change, integrated assessments, and impacts on coastal systems. Additional information is available from the *Institute for Marine and Atmospheric Research Utrecht (IMAU)*, Princetonplein 5, P.O. Box 80005, NL-3508 TA Utrecht, The Netherlands; tel: 31-30-253-3275; fax: 31-30-254-3163; e-mail: [cc2001@phys.uu.nl](mailto:cc2001@phys.uu.nl); or *Utrecht University Congress Bureau*, c/o M. van Haersma Buma, P.O. Box 80125, 3508 TC Utrecht, The Netherlands; tel: 31-30-253-2728; fax: 31-30-253-5851; e-mail: [m.buma@fbu.uu.nl](mailto:m.buma@fbu.uu.nl); WWW: [www.phys.uu.nl/~wwwimau/cc2001.html](http://www.phys.uu.nl/~wwwimau/cc2001.html).

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*Training in Using Disaster Recovery to Build Local Sustainability. Offered by: Natural Hazards Research and Applications Information Center, University of Colorado. Boulder, Colorado: August 27-31, 2001.* This course is intended to help local, state, federal, and private-sector decision makers, planners, emergency managers, building officials, economic development directors, environmental specialists, and others who may be involved in recovery by a disaster-stricken community. It is designed to help them prepare and implement holistic recovery that results in a more sustainable community. By juxtaposing the components of sustainability (economic vitality, livability, environmental quality, disaster resilience, social equity, and participatory decision making) with likely postdisaster problems (damaged infrastructure, inadequate housing, ecosystem degradation, business disruption, etc.) participants will explore opportunities to enhance a town, city, or county during disaster recovery. For each opportunity, the course will consider various options for planning and taking action, funding strategies, and sources of expertise. More information is available from *Jacki Monday*, Program Manager, Natural Hazards Center, 482 UCB, University of Colorado, Boulder, CO 80309-0482; (303) 492-2149; fax: (303) 492-2151; e-mail: [jacque.monday@colorado.edu](mailto:jacque.monday@colorado.edu).

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*National Emergency Management Association (NEMA) Annual Conference. Big Sky, Montana: September 8-12, 2001.* NEMA is the professional association of state emergency management directors. It is committed to providing national leadership and expertise in comprehensive emergency management, serving as an information and assistance resource for state and territorial directors and their governors, and forging strategic partnerships to improve emergency management. The NEMA annual conference will address current technical and policy issues in emergency management as well as problems and solutions encountered in recent events. More information about the conference is available from *Tina Hembree*, NEMA, P.O. Box 11910, Lexington, KY 40578; (606) 244-8162; fax: (606) 244-



8239; e-mail: [themtree@csg.org](mailto:themtree@csg.org); WWW: [www.nemaweb.org](http://www.nemaweb.org).

*Association of State Dam Safety Officials (ASDSO) Annual Conference. Snowbird, Utah: September 9-12, 2001.* ASDSO is a national nonprofit organization dedicated to the improvement of dam safety through research, education, and information. As part of its dual goals of improving the efficiency and effectiveness of state dam safety programs and providing a forum for the exchange of information, ASDSO sponsors a series of conferences and technical training seminars across the country every year. At the annual conference, issues to be addressed include dam evaluation, monitoring, maintenance, and emergency management. Besides the annual conference, ASDSO is also hosting the *West Regional Conference and Technical Seminar, Anchorage, Alaska, May 14-18, 2001*; and the *Northeast Regional Conference and Technical Seminar, Hershey, Pennsylvania, June 6-8, 2001*. For details, contact ASDSO, 450 Old Vine Street, Second Floor, Lexington, KY 40507-1544; (859) 257-5140; fax: (859) 323-1958; e-mail: [info@damsafety.org](mailto:info@damsafety.org); WWW: [www.damsafety.org](http://www.damsafety.org).

*Non-Structural Measures for Water Management Problems. Organizers: Institute for Catastrophic Loss Reduction; United Nations Educational, Scientific, and Cultural Organization (UNESCO) International Hydrology Program (IHP); Canadian Commission for UNESCO; and the University of Western Ontario. London, Ontario, Canada: October 18-20, 2001.* Nonstructural measures have become an increasingly attractive alternative and addition to structural measures to reduce the loss of life and property caused by water-related problems. Approaches that will be examined at this workshop include laws and regulations, standards, policies, water pricing, landscape management, land use and planning, public involvement, and public education. Examples of water problems that will be addressed include climatic change and variability, extreme events such as floods and droughts, other natural disasters, water shortages, unsafe drinking water, and others. Complete workshop information is available from Sandra Doyle, Workshop Secretary, Institute for Catastrophic Loss Reduction, University of Western Ontario, 1389 Western Road, London, Ontario, Canada N6A 5B9; (519) 661-3234; fax: (519) 661-4273; e-mail: [sdoyle@eng.uwo.ca](mailto:sdoyle@eng.uwo.ca); WWW: [www.iclr.org](http://www.iclr.org).

*Western States Seismic Policy Council (WSSPC) Annual Conference. Sacramento, California: October 21-24, 2001.* WSSPC is an association of state geologists, emergency managers, and other officials from western U.S. states, Canadian provinces, and Pacific island territories, all of whom are concerned about earthquake hazards. The council's interests range from legal and policy considerations to such issues as emergency response, seismic mapping, and hazard mitigation. The theme of this year's annual conference is "Risk Communication as a Means of Creating Greater Public Awareness and Action." It will feature plenary sessions on risk communication and workshops on "Coming to Consensus on Seismic Hazards and Risk," "Communicating Across Disciplines," "Communicating with the Media," and "Legal Ramifications of Risk Communication." Additional sessions will address the whole spectrum of WSSPC concerns. For details and updates, contact Todd R. Fleming, Program Manager, WSSPC, 121 Second Street, Fourth Floor, San Francisco, CA 94105; (415) 974-6435; fax: (415) 974-1747; e-mail: [tfleming@wsspc.org](mailto:tfleming@wsspc.org); WWW: [www.wsspc.org](http://www.wsspc.org).

*Coastal Disasters 2002. Organizers: Coasts, Oceans, Ports, and Rivers Institute of the American Society*

*of Civil Engineers; National Oceanic and Atmospheric Administration; the Coastal Zone Foundation; and others. San Diego, California: February 24-27, 2002.* Coastal disasters can cause loss of life, human suffering, environmental degradation, and great property damage. They include storms and storm waves, flooding, erosion, wind, hurricanes, El Niños, and tsunamis. This conference is a forum for sharing ideas and knowledge regarding the reduction of the impacts of such events. It will bring together practitioners, managers, and researchers from a wide variety of disciplines involved in coastal zone management, hazard identification, and mitigation. Additional information is available from *Lesley Ewing, California Coastal Commission, 45 Fremont Street, Suite 2000, San Francisco, CA 94105; (415) 904-5291; fax: (415) 904-5400; e-mail: [lewing@coastal.ca.gov](mailto:lewing@coastal.ca.gov)*; or *Louise Wallendorf, Hydromechanics Laboratory, U.S. Naval Academy, 590 Holloway Road, Annapolis, MD 21402-5042; (410) 293-5108; fax: (410) 293-5848; e-mail: [lou@usna.edu](mailto:lou@usna.edu)*. Interested persons should also see [www.coastal.ca.gov/cdsolutions](http://www.coastal.ca.gov/cdsolutions) or e-mail [cdsolutions@coastal.ca.gov](mailto:cdsolutions@coastal.ca.gov) to receive regular conference updates.

*Tsecond Tsunami Tsymposium. Sponsor: The Tsunami Tsociety. Honolulu, Hawaii: May 28-30, 2002.* Abstracts for this meeting are due September 1, 2001, and should be sent to *Charles Mader, 1049 Kamehame Drive, Honolulu, HI 96825-2860; e-mail: [mccoh@juno.com](mailto:mccoh@juno.com)*. Persons desiring more information about the meeting should write to the *Tsunami Society, P.O. Box 37970, Honolulu, HI 96817*, or see [www.ccalmr.orgi.edu/STH/symp2.html](http://www.ccalmr.orgi.edu/STH/symp2.html). They can also contact *James Lander, Conference Chairperson, (303) 497-6446, e-mail: [jfl@ngdc.noaa.gov](mailto:jfl@ngdc.noaa.gov)*; or *Michael Blackford, Tsunami Society Secretary, (808) 532-6423, e-mail: [michael.blackford@noaa.gov](mailto:michael.blackford@noaa.gov)*.

*Third International Conference on Computer Simulation in Risk Analysis and Hazard Mitigation. Organizer: Wessex Institute of Technology. Sintra, Portugal: June 19-21, 2002.* This series of conferences is concerned with different aspects of risk analysis and hazard mitigation, ranging from specific assessment of risk to mitigation associated with both natural and anthropogenic hazards. In the past, presentations have addressed hazard prevention, management, and control; estimation of risks; emergency response; data collection and analysis; hazardous materials in transit; water resources modeling and management; landslides; earthquakes; soil and water contamination; air quality; and specific case studies. For information on the third conference, contact *Karen Neal, Wessex Institute of Technology, Ashurst Lodge, Ashurst, Southampton, SO40 7AA, U.K.; tel: 44 (0) 238 029 3223; fax: 44 (0) 238 029 2853; e-mail: [kneal@wessex.ac.uk](mailto:kneal@wessex.ac.uk)*; WWW: [www.wessex.ac.uk/conferences](http://www.wessex.ac.uk/conferences).

*Association of State Floodplain Managers (ASFPM) Annual Conference.*

- *Charlotte, North Carolina: June 3-8, 2001*
- *Phoenix, Arizona: June 23-28, 2002*
- *St. Louis, Missouri: May 11-16, 2003*

The ASFPM annual conference covers a broad range of issues regarding floods and flood mitigation, from legislative and policy concerns to structural and nonstructural approaches to floodplain management (and much more). For information about ASFPM meetings, contact *Diane Brown Watson, ASFPM, 2809 Fish Hatchery Road, Suite 204, Madison, WI 53713; (608) 274-0123; fax: (608) 274-*

0696; e-mail: [asfpm@floods.org](mailto:asfpm@floods.org); WWW: [www.floods.org](http://www.floods.org).

## World Bank Loan Supports Natural Disaster Management in Mexico

On December 7, 2000, the World Bank approved a \$404 million loan supporting a broad initiative by the government of Mexico to reduce the country's vulnerability to natural disasters and to promote rapid recovery when they occur. A prior study by Mexico's National Center for Disaster Prevention (CENAPRED) had found that 68% of the people affected by natural disasters in that country are poor or extremely poor.

Funds from the loan will finance emergency recovery and reconstruction projects through Mexico's Fund for Natural Disasters (FONDEN), established in 1996. At the same time, the loan will help improve the efficiency and effectiveness with which Mexico responds to natural disasters, including environmental, social, and cultural consequences.



The loan, to be disbursed over four years starting in 2001, will also finance studies by government departments and agencies, leading to strategies and actions to reduce human and economic losses due to natural disasters. These studies by the Secretariats of Communications and Transportation, Agriculture, Livestock and Rural Development, Social Development, Public Education, Health, and Environment and Natural Resources, as well as the National Water Commission, will lead to recommendations regarding land use, housing, insurance, road construction, farming practices, and mapping, among other areas.

Finally, the loan will allow the government of Mexico to assess the feasibility of using insurance and new capital market instruments to manage disaster risk in order to make funds for reconstruction available quickly following a disaster, thereby facilitating rapid economic recovery. These efforts could be accompanied by policies requiring government agencies to insure public properties and encouraging recipients of support from FONDEN to obtain private insurance.

For more information on the World Bank's work in Latin America and the Caribbean, on the World Wide Web see: [wbln0018.worldbank.org/external/lac/lac.nsf](http://wbln0018.worldbank.org/external/lac/lac.nsf). For details about this project, contact Christopher Neal, World Bank, 1818 H Street, N.W., Washington, DC 20433; (202) 473-7229; e-mail: [Cneal1@worldbank.org](mailto:Cneal1@worldbank.org); or Lee Morrison; (202) 458-8741; e-mail: [Lmorrison1@worldbank.org](mailto:Lmorrison1@worldbank.org).

## Introducing the Center for Disaster Management, Bogazici University

In January 2001, Bogazici University in Istanbul, Turkey, established a new Center for Disaster Management (CENDIM). This interdisciplinary research center will bring together not only the considerable academic resources of the university but also national and international partners to further disaster understanding and mitigation in Turkey.

Specifically, the center intends to:

- Enhance knowledge of all aspects of disasters and disaster management through interdisciplinary research, and disseminate this information, including best practices in disaster management;
- Develop tools that promote the construction of disaster-resistant communities and enhance the national disaster management program;
- Conduct training to support risk reduction, contingency planning, recovery, mental health intervention, and organizational and public awareness; and
- Develop disaster, emergency, and risk management plans, programs, and decision support tools, and generally promote effective disaster management.

In short, CENDIM intends to be a center of excellence for research in vulnerability analysis, mitigation and prevention, prediction and warning, response, and recovery and rehabilitation in order to reduce the loss of life and property due to natural and technological hazards in Turkey. Indeed, the center has already undertaken a dozen projects in various areas of hazards assessment, management, and mitigation.

For more information about this new center and its ongoing research, contact *Gulay Barbarosoglu, Industrial Engineering Department, Bogazici University, Bebek 80815, Istanbul, Turkey; tel: 90-212-257-5038; fax: 90-212-265-1800; e-mail: [barbaros@boun.edu.tr](mailto:barbaros@boun.edu.tr)*. The center's web site will be available after April 1. It can be viewed at [www.cendim.boun.edu.tr](http://www.cendim.boun.edu.tr)



## Recent Publications

Below are summaries of some of the recent, more useful publications on hazards and disasters received by the Natural Hazards Center. Due to space limitations, we have provided descriptions of only a few key publications or those with a title that may not indicate content. All items contain information on how



a reader can obtain a copy. A complete bibliography of publications received from 1995 through 2001 is posted on our World Wide Web site: [www.colorado.edu/hazards/bib/bib.html](http://www.colorado.edu/hazards/bib/bib.html).

## All Hazards

***The Perception of Risk.*** Paul Slovic, Editor. 2000. 474 pp. £19.95, plus £1.99 shipping. To order a copy, contact Earthscan Publications Limited, 120 Pentonville Road, London N1 9JN, U.K.; tel: +44 (0) 20 7278 0433; fax: +44 (0)20 7278 1142; e-mail: [earthinfo@earthscan.co.uk](mailto:earthinfo@earthscan.co.uk); WWW: [www.earthscan.co.uk](http://www.earthscan.co.uk).

In a wide variety of ways, contemporary society is enlarging the number and complexity of activities that can degrade the quality of human life and its natural environment at the same time. Technology is expanding, social organization is becoming more complex, and scientific knowledge is deepening. Thus, measures to assess and manage risks are increasing, and the results are visible in proliferating standards and requirements. Understanding how affected individuals and groups judge evidence of possible losses and vulnerability is essential because these judgments affect the degree to which action is taken and support or opposition is offered for public policies and management actions. The papers in this volume address a wide range of risk perception issues, including decision processes, rationality, and natural hazards; cognitive processes and societal risk taking; insurance implications; acceptable levels of risk; risk assessment; public information about risk; social amplification of risk; technological and nuclear risks and public perceptions; and insensitivity to the value of a human life.

***Acts of God: The Unnatural History of Natural Disaster in America.*** Ted Steinberg. 2000. 294 pp. \$27.50. Available from Oxford University Press, Order Department, 2001 Evans Road, Cary, NC 27513; (800) 451-7556; fax: (919) 677-1303; WWW: [www.oup-usa.com](http://www.oup-usa.com).

The 10 most costly catastrophes in U.S. history have all been natural disasters--seven of them hurricanes--and all have occurred since 1989, a period, ironically, the United Nations dubbed the International Decade for Natural Disaster Reduction. In *Acts of God*, Steinberg explores the unnatural history of natural disasters, the decisions of business leaders and government officials that have paved the way for the greater losses of life and property, especially among the most vulnerable--the poor, elderly, and minorities. He argues that seeing nature or God as the primary culprit obscures the fact that some Americans are better protected than their counterparts lower down the socioeconomic ladder. He asks: How else can we explain that the hardest hit areas have been mobile home parks and other low-income neighborhoods?

Beginning with the 1886 Charleston and 1906 San Francisco earthquakes and continuing to the present, Steinberg examines the typical approach to natural hazards taken by real estate interests, the media, and policy makers. When authorities understate the extent of storm damage and offer quick repairs and cosmetic solutions to damaged property, fundamental flaws in the status quo go unremedied and unsafe practices continue. Even with increased scientific knowledge, poor building practices continue in seismically active areas and floodplains, often at taxpayer expense.

***The Power to Insure: Reducing Insurance Claims with New Electricity Options.*** Joe N. Gordes. 2000.

20 pp. \$8.00. Copies can be obtained from the Northeast Sustainable Energy Association (NESEA), 50 Miles Street, Suite 3, Greenfield, MA 01301-3212; (413) 774-6051; fax: (413) 774-6053; e-mail: [nesea@nesea.org](mailto:nesea@nesea.org). The report is also available from the NESEA web site: [www.nesea.org](http://www.nesea.org).

This essay provides an in-depth discussion of the impacts of power losses on insurance claims, including those caused by natural disasters such as hurricanes, heat waves, other catastrophic weather events, international power disruptions, and terrorism.

***Weather and Climate Extremes: Changes, Variations and a Perspective from the Insurance Industry.*** Thomas R. Karl, Neville Nicholls, and Anver Ghazi, Editors. 1999. 356 pp. \$132.00. To purchase a copy, contact Kluwer Academic Publishers, Order Department, P.O. Box 358, Accord Station, Hingham, MA 02018-0358; (781) 871-6600; fax: (781) 681-9045; e-mail: [kluwer@wkap.com](mailto:kluwer@wkap.com).

Are extreme weather events becoming more common? Are the losses they produce increasing? These questions were examined during a 1997 workshop, and the results of that meeting are contained in ***Weather and Climate Extremes***. Participants explored methods to evaluate potential change in climate in the next century. Much of the research in climatology and risk over the past decade has focused on possible changes in long-term averages of temperature, precipitation, and other factors. However, it is becoming increasingly clear that changes in average values will be accompanied by changes in extreme weather events. Furthermore, these climate changes will impact society to a greater extent as people around the world continue to locate in more hazard-prone areas, such as coastal zones. As a result, the insurance industry has already experienced a significant increase in weather and climate-related claims. This book presents discussions on linking climate data to the needs of the insurance industry around the world; it covers which indices to use to identify changes in climate, measurement of hurricanes, indicators for climate change on other continents, a conceptual framework for changes of extremes of the hydrological cycle, and testing for change in extreme events.

***Environmental Hazards: Assessing Risk and Reducing Disaster.*** Keith Smith. Third Edition. 2001. 316 pp. \$32.99. Copies can be obtained from Taylor & Francis/Routledge, 7625 Empire Drive, Florence, KY 41042; (800) 634-7064; fax: (800) 248-4724; WWW: [www.routledge.com](http://www.routledge.com).

***Environmental Hazards*** surveys key findings from the natural and social sciences regarding both natural and technological disasters, assesses their threat, and discusses policy responses necessary to achieve a safer world. The volume covers all major rapid-onset events that directly harm humans on a community scale. The first half examines hazards in the environment, the dimensions of disasters, risk assessment and disaster management, adjusting to hazards, and reducing losses. The second half provides a systematic treatment of different types of hazards--specifically, earthquakes, volcanoes, avalanches and landslides, severe storms, temperature extremes, wildfires, epidemics, floods, droughts, and technological hazards. In this third edition, new material has been added on disaster databases, El Niño, sea-level rise and coastal flooding, global climate change, and sustainability.

***"Duty and Disaster: Holding Local Governments Liable for Permitting Uses in High-Hazard Areas."*** Christopher City. ***North Carolina Law Review***, Vol. 78, No. 5 (June 2000, pp. 1535-1572). \$9.50, single copy; \$36.00, annual subscription. To obtain the article, contact the ***North Carolina Law Review***, University of North Carolina School of Law, Van Hecke-Wettach Hall, CB #3380, Chapel Hill, NC



27599-3380; (919) 962-3926 or (919) 962-1526; fax: (919) 962-1527; WWW: [www.unc.edu/student/orgs/nclrev/](http://www.unc.edu/student/orgs/nclrev/).

***Integrating Hazard Mitigation and Comprehensive Planning: Risk Reduction for Local Communities.*** William D. Wagoner. *Emergency Management Series No. 2.* 14 pp. Free. Copies can be requested from the Livingston County Department of Planning, 304 East Grand River Avenue, Howell, MI 48843-2323; (517) 546-7555; fax: (517) 552-2347; WWW: [co.livingston.mi.us/planning](http://co.livingston.mi.us/planning).

***Building an Emergency Plan: A Guide for Museums and Other Cultural Institutions.*** Valerie Dorge and Sharon L. Jones, Compilers. 1999. 280 pp. \$39.95.

***Seismic Stabilization of Historic Adobe Structures: Final Report of the Getty Seismic Adobe Project.*** E. Leroy Tolles, Edna E. Kimbro, Frederick A. Webster, and William S. Ginnell. 2000. 200 pp. \$40.00. Both items are available from Getty Trust Publications, Book Distribution Center, P.O. Box 49659, Los Angeles CA 90049-0659; (800) 223-3431; fax: (818) 779-0051; WWW: [www.getty.edu](http://www.getty.edu).

## Hurricanes

***Hurricanes of the North Atlantic: Climate and Society.*** James B. Elsner and A. Birol Kara. 1999. 516 pp. \$49.95. Copies can be ordered from Oxford University Press, 2001 Evans Road, Cary, NC 27513; (919) 677-0977 or (800) 451-7556; fax: (919) 677-1303; WWW: [www.oup-usa.org](http://www.oup-usa.org).

Hurricanes are phenomenal yet dangerous features of the tropical North Atlantic Ocean--a potential cause of immense social and economic upheaval. As development continues on islands and shorelines of the Atlantic, human vulnerability to hurricanes will rise at an increasing rate, regardless of changes in global climate. ***Hurricanes of the North Atlantic*** examines these storms from both the climatological and social perspectives, and the authors intend the book to be a comprehensive reference. They begin with a general description of hurricanes, including an examination of historical data sets with details on the origin and track of storms. They then describe the impacts on humans in the North Atlantic, with special emphasis on land-falling storms and storm cycles and trends. They follow with a history of hurricane modeling and a discussion of potential hurricane prediction years to decades in advance. The final chapters examine societal vulnerability, including changes in population and property, risk management, catastrophic insurance, and the use of integrated assessments to improve public and private decision making.

***Hurricane Mitch: Women's Needs and Contributions.*** 1999. 19 pp. \$6.00. To purchase a copy, contact the Women in Development Program Unit, Mail Stop W0502, Inter-American Development Bank, 1300 New York Avenue, N.W., Washington, DC 20577; fax: (202) 623-1463; e-mail: [sds/wid@iadb.org](mailto:sds/wid@iadb.org). The report is also available on-line: [www.iadb.org/sds/publication/publication\\_1527\\_e.htm](http://www.iadb.org/sds/publication/publication_1527_e.htm).

## Wildfires

***Special Environmental Analysis for Emergency Actions Taken in Response to the Cerro Grande Fire***

*at the Los Alamos National Laboratory, Los Alamos, NM. 2000. 165 pp. Free. To obtain a copy, contact Elizabeth Withers, NEPA Compliance Officer, U.S. Department of Energy, Los Alamos Area Office, 528 35th Street, Los Alamos, NM 87544; (505) 667-8690; fax: (505) 665-4872. The complete report is also available on-line: [tis.eh.doe.gov/nepa/docs/seas/seas.html](http://tis.eh.doe.gov/nepa/docs/seas/seas.html).*

*From the Ashes: Reducing the Harmful Effects and Rising Costs of Western Wildfires. 2000. 52 pp. \$10.00, printed version; free on-line. To obtain a copy, contact Taxpayers for Common Sense, Forest Document Sales, 651 Pennsylvania Avenue, S.E., Washington, DC 20003; (202) 546-8500; fax: (202) 546-8511; WWW: [www.taxpayer.net/forest](http://www.taxpayer.net/forest).*

## Climate Change

*Currents of Change: Impacts of El Niño and La Niña on Climate and Society. Michael H. Glantz. Second Edition. 2001. 248 pp. \$24.95. Copies are available from the Customer Service Department, Cambridge University Press, 110 Midland Avenue, Port Chester, NY 10573; (800) 872-7423; fax: (914) 937-4712; e-mail: [orders@cup.org](mailto:orders@cup.org); WWW: [www.cup.org](http://www.cup.org).*

*Climate Change Impacts on the United States: The Potential Consequences of Climate Variability and Change--Overview. 2000. 159 pp. \$16.95. To order a copy, contact the Customer Service Department, Cambridge University Press, 110 Midland Avenue, Port Chester, NY 10573; (800) 872-7423; fax: (914) 937-4712; e-mail: [orders@cup.org](mailto:orders@cup.org); WWW: [www.cup.org](http://www.cup.org).*

*The Implications of Climate Change for Insurers. 2001. £95.00. Copies can be purchased from BREBookshop.com, Bucknalls Lane, Garston, Watford, U.K. WD25 9XX; tel: +44 (0)1923 664262; e-mail: [bookshop@bre.co.uk](mailto:bookshop@bre.co.uk).*

*"Climate Extremes: Observations, Modeling, and Impacts." David R. Easterling, Gerald A. Meehl, Camille Parmesan, Stanley A. Changnon, Thomas R. Karl, and Linda O. Mearns. **Journal of Science**, Vol. 289, No. 5487 (September 22, 2000). Annual subscriptions are available from the Membership Department, American Association for the Advancement of Science, 1200 New York Avenue, N.W., Washington, DC 20005; (202) 326-6417; fax: (202) 842-1065; e-mail: [membership2@aaas.org](mailto:membership2@aaas.org). The article is also available on the Journal of Science web site: [www.sciencemag.org/cgi/content/short/289/5487/2068](http://www.sciencemag.org/cgi/content/short/289/5487/2068).*

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## The Hazards Center

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, Federal Emergency

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