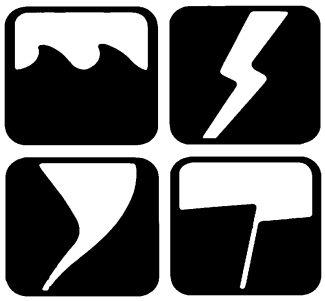

Natural Hazards Observer

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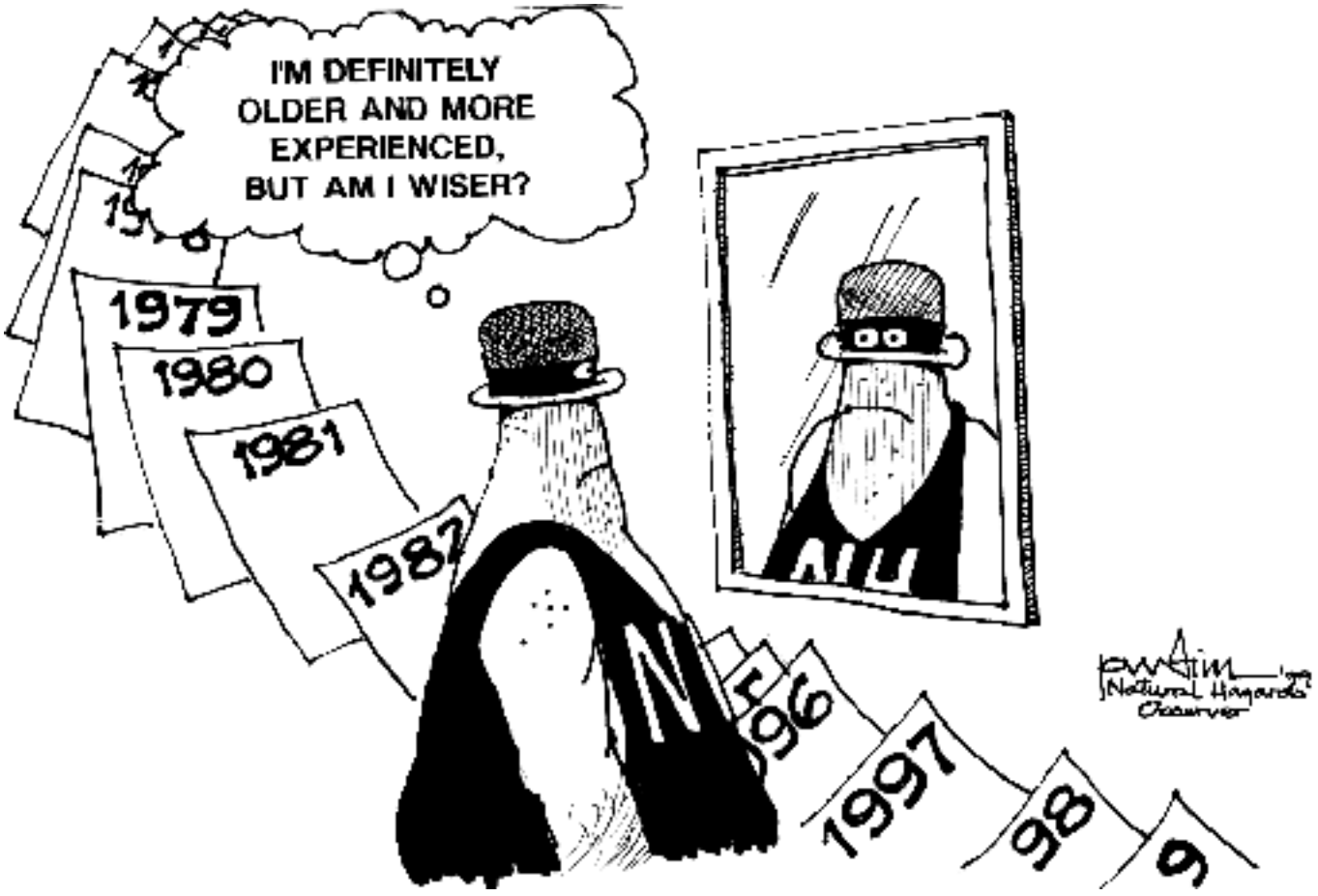
Who We Are

With this issue we launch a new year, a new decade, and a new millennium, and we thought it appropriate to ask Hazards Center founder Gilbert White to reflect on changes in hazards management in the latter part of this century. Of course he couldn't resist also citing the challenges he believes the natural hazards community will face in the future.



The Natural Hazards Scene

25- and 10-Year Perspectives

--an invited comment

As we enter a new century--25 years after the first national effort to assess the need for natural hazards research and a decade after a concerted world attack upon natural disasters--it is appropriate to reflect upon what has been achieved and what might be expected to come from the Second National Assessment of Research and Applications on Natural Hazards (see the ***Observer***, Vol. XXIII, No. 1,

p. 5; Vol. XXIII, No. 4, p. 3).

When the first Assessment of Research on Natural Hazards was launched in 1972 with support from the National Science Foundation, it was unique in several ways. It sought to review the state of knowledge in the United States of the full range of hazards presented by extreme geophysical events. It brought together scientists and engineers from all relevant fields, including physical, economic, and other social disciplines. It joined researchers with administrators and policy makers directing the whole range of actions involved in predicting, responding to, and seeking to alleviate those hazards. And it sought to identify the relevant priorities of different research problems and practicable ways of sharing existing and new knowledge with all who might put it to good use for the public welfare. It accomplished this in a report that had the active participation of more than 300 experts.

Over a decade later, the United Nations established the International Decade for Natural Disaster Reduction (IDNDR) during the 1990s to mobilize national and international agencies to reduce the impacts of extreme events worldwide. There had been an effort in 1974, sponsored by a commission of the International Geographical Union, to review local, national, and global hazards in a variety of ways, including field studies in 20 locations in 13 countries, but there was not a systematic effort within the entire United Nations organization to examine all natural hazards until the IDNDR.

We now have a thoughtful appraisal, through the Second Assessment of Research and Applications on Natural Hazards, of what has happened in the United States, but there is not yet a full assessment of what has resulted on the global level. My tentative judgment is that on balance the well-intentioned IDNDR may have been counterproductive by encouraging political leaders to think they were solving the problem of increasing damage, when in fact they were chiefly calling attention to the severity and distribution of the hazards through scientific surveys and were ignoring many opportunities to mitigate the risk. Damage continued to rise throughout the decade.

The wide range of people professionally concerned with natural hazards in the United States now should be vigorously involved in evaluating what has been achieved since the First Assessment was published in 1975 and whether or not the recommendations in the Second Assessment are sound and achievable. To spur a critical exchange of judgment, I offer a selection of my own views and hope they will stimulate expressions from others.

- Research on natural hazards now covers a full array of relevant problems from all the appropriate scientific and engineering disciplines. However, the problems receive unequal emphasis. For example, the amount of attention paid to emergency response contrasts sharply with efforts involving long-range land-use planning to reduce vulnerability. There are some weaknesses in subject and method, but there seem to be no drastic deficiencies in questions addressed. Are there still important gaps?
- New research results are widely disseminated to potential users through the publications and other products of various national associations and clearinghouses, such as those offered by the Natural Hazards Center, including the ***Natural Hazards Observer***; its e-mail publication,

Disaster Research; its new publication, the ***Natural Hazards Informer***; and through the annual Hazards Research and Applications Workshop held in Boulder. But is this sufficient?

- The use of research findings by appropriate policy agencies varies tremendously from agency to agency. The location and design of a new highway, shopping center, public building, or housing project can have a powerful impact on the vulnerability of a community or some of its components to one or more hazards. These impacts need to be considered in private as well as public decisions regarding financing of roads or housing and in land-use regulations. Some local agencies and corporations are familiar with the research findings, while others are not. Likewise, some federal grant-making agencies are sensitive to hazards, while others are not. Is enough being done to reach all responsible agencies--private and public?
- The Second Assessment takes advantage of the completed research and presents an analysis of the elements that should be incorporated in any program for the sustainable development of the U. S. social economy, but it stops short of explaining how hazard mitigation measures should be incorporated into particular programs, such as those providing highway improvements. Should such measures be specified?
- Although the First Assessment had recommended that the U.S. Congress arrange for periodic overview and evaluation by a congressional committee of hazard reduction programs and activities in all levels of government and by private and nongovernmental organizations, this was never accomplished. There still is no device for achieving a genuinely coherent public policy relating to natural hazards in which the primary goal is promoting wise social use of natural resources and in which the reduction of hazard losses is seen as contributing to that goal. Such a goal would be apparent, for example, in public policies affecting a highway relocation or a new housing development and would include but go beyond mitigation activity. Can Congress be expected to do this?
- If the nation is to benefit fully from the growing and deepening knowledge of natural hazards, some effective method must be found to translate that understanding into operative public policy and private procedures. Currently, these policies and procedures are disparate and partly counterproductive. Can the interested professional and citizen groups take initiative to achieve a unified public program?

Looking back over 25 years, and trying to look ahead to a time when our nation does not suffer unnecessarily from extreme natural events, these questions seem to me an urgent challenge for all concerned citizens.

Gilbert F. White, Distinguished Professor Emeritus, University of Colorado

On December 15, the National Academy of Sciences selected Gilbert White to receive the year 2000 Public Welfare Medal, the academy's most prestigious award. White was selected for " his enduring contributions to the study of environmental issues and for his seminal work to reduce human suffering caused by natural disasters."

The Latest On-Line Publications from the Natural Hazards Center

Two Quick Response Reports

With financial support from the National Science Foundation, the Natural Hazards Center sponsors "Quick Response" research--studies of immediate effects and initial response following disasters. Upon completing their work, quick response researchers submit brief reports to the center, which publishes their findings via the World Wide Web. The latest reports include:

- **QR121:** ***Disaster Recovery in an On-Going Hazard Situation on Montserrat: The July 20, 1999 Volcanic Dome Collapse***, by Jack L. Rozdilsky -- *http://www.colorado.edu/hazards/qr/qr121.html*.
- **QR122:** ***Natural Disaster Episode: Impacts, Emergency Response, and Health Effects of Hurricane Georges in the Gulf Coast***, by Francis O. Adeola -- *http://www.colorado.edu/hazards/qr/ qr122.html*.

The entire list of quick response reports is available at *http://www.colorado.edu/hazards/qr/qr.html*. In addition, printed copies can be purchased for $5.00 each, plus shipping ($3.00 for the U.S., Canada, and Mexico; $4.00 for international surface mail; and $5.00 for international air printed matter). Orders should be directed to the *Publications Clerk, Natural Hazards Research and Applications Information Center, Campus Box 482, University of Colorado, Boulder, CO 80309-0482, (303) 492-6819; fax: (303) 492-2151; e-mail: janet.kroeckel@spot.colorado.edu*.

One New Working Paper

In 1998 the Natural Hazards Center undertook a project, funded by the Public Entity Risk Institute, to assess the feasibility of developing a program that would enable small teams of experts to aid disaster-stricken communities in implementing long-term sustainable recovery. One of the early tasks of the project was to determine what was already being done and what was already known about how communities recover from disaster. That work is presented in Natural Hazards Working Paper #102, ***A Review of the Literature and Programs on Local Recovery from Disaster***, by Jeanine Petterson.

Rather than simply presenting a series of abstracts of recovery literature, this paper reviews both the academic and informal literature, draws lessons from it, and summarizes the programs that are already in place for providing technical assistance following disasters. Part One analyzes and applies the findings in the recovery literature to the task of developing community recovery assistance

teams (CRATs). Part Two briefly reviews the existing programs for providing technical assistance, ranging from training courses, to the provision of teams of specialized experts, to state programs for mitigation.

While recognizing that it is difficult to generalize about communities' experiences because both impacted communities and precipitating events are unique, the paper does conclude that "there is comfort in finding a thread of common themes and lessons, despite the dissimilarity of communities and events studied."

A Review of the Literature and Programs on Local Recovery from Disaster (1999) is available on the World Wide Web at *http://www.colorado.edu/hazards/wp/wp102/wp102.html*. Persons without Web access can purchase a printed copy for $9.00, plus $3.20 shipping for orders within the U.S., Canada, and Mexico. To place an order, or to determine international shipping costs, contact the *Hazards Center Publications Clerk* at the address above or consult the Hazards Center on-line publication order form at *http://www.colorado.edu/hazards/puborder.html*.

The Latest *Natural Hazards Informer*

Teaching the public about earthquake hazards is much more complicated than simply telling folks to duck, cover, and hold. Many organizations have struggled to develop programs that address seismic hazards, although little knowledge was available concerning what works and what hinders successful teaching about these risks. The latest issue of the ***Natural Hazards Informer*** contains the collective wisdom of some of the top earthquake educators in the U.S. "Public Education for Earthquake Hazards," by Sarah Nathe, Paula Gori, Marjorie Greene, Elizabeth Lemersal, and Dennis Mileti, discusses why it is important to educate the public about earthquakes, why people pay attention to earthquake preparedness information and why they don't, what activities have worked in educating the public, windows of opportunity for creating "educable moments," how to prepare effective messages, and how to disseminate those messages for the greatest effect. It also lists resources for further guidance. This second issue in the new ***Informer*** series from the Natural Hazards Center is now available on-line and in downloadable PDF format from the center Web page: *http://www.colorado.edu/hazards/informer/*.

Introducing the Institute for Hazard Mitigation Planning and Research

An Institute for Hazard Mitigation Planning and Research has been established within the College of Architecture and Urban Planning at the University of Washington. The institute supports research, offers mitigation planning courses, and supports community outreach opportunities for

graduate and undergraduate students and faculty from a variety of disciplines. Through the university's Department of Urban Design and Planning's Masters in Urban Planning Program, the institute currently offers an area of emphasis in mitigation planning and has plans to offer a certificate program during the coming year.

Institute research has already explored a wide variety of subjects, including the use of geographic information systems in hazards management, remote sensing, pre-event planning, and homeowners' attitudes toward structural retrofitting. Outreach opportunities will include intern positions in local government emergency management offices and within local disaster operations as they occur.

For further information about the University of Washington's new Institute for Hazard Mitigation Planning and Research contact *Bob Freitag, University of Washington, College of Architecture and Urban Planning, Department of Urban Design and Planning, Institute for Hazard Mitigation Planning and Research, Gould Hall, Box 355740, Seattle, WA 98195; e-mail: bfreitag@u.washington.edu; WWW: http://depts.washington.edu/mitigate*.

Introducing the IPCC Data Distribution Center

To aid climate change assessments, the Intergovernmental Panel on Climate Change (IPCC) has created a Data Distribution Center (DDC) to provide consistent and timely data relating to climate change, change scenarios, and socioeconomic factors related to climate change. The DDC is operated by the Climatic Research Unit in the United Kingdom and the Deutsches Klimarchenzentrum in Germany. It will endeavor to distribute the most current information on climate change to scientists to enable the greatest possible accuracy in impact analyses. Information will be categorized as: 1) observed global climate data sets; 2) socioeconomic scenario information; 3) results from global climate experiments; and 4) guidance material. For more information about the IPCC DDC, contact *Mike Hulme, Climatic Research Unit, University of East Anglia, Norwich NR4 7TJ, U.K.; tel: 44-1603-507784; fax: 44-1603-593162; e-mail: m.hulme@uea.ac.uk*; or contact *Michael Lautenschlager, DKRZ 55 Bundestrasse, Hamburg, Germany; tel: 49-404-1173-400; fax: 49-404-1173-297; e-mail: lautenschlager@dkrz.de*.

[Taken from the *Network Newsletter* of the Environmental and Societal Impacts Group, National Center for Atmospheric Research]

Informer Seeks Funding

Young, innovative publication summarizing state-of-the-art knowledge of natural hazards research seeks generous donor for brief relationship. Anyone interested in supporting an easy-to-read, at-a-glance summary of an important natural hazards topic is invited to make a contribution to that end. The money will ensure the production and distribution of a single issue on a topic chosen by the donor, who will receive grateful acknowledgment in print. *Serious inquiries only*.

To learn more about this exciting opportunity, contact *Mary Fran Myers, Co-Director, Natural Hazards Research and Applications Information Center, Campus Box 482, University of Colorado, Boulder, CO 80309-0482; (303) 492-2150; fax: (303) 492-2151; e-mail: myersmf@colorado.edu.*

Organizing Wind -- Part I

Wind Hazard Mitigation Consortium Formed

Ten American universities have joined together to launch an integrated research, development, and technology transfer program to reduce the excessive human, financial, and social losses due to extreme wind storms. The consortium includes Virginia Tech, Clemson, Florida International, Johns Hopkins, Louisiana State, North Carolina State, and Notre Dame universities, as well as the State University of New York at Buffalo, and the universities of Delaware and Washington. With experience and expertise in the many disciplines affecting wind hazard mitigation--from engineering to social and economic analysis--faculty from these schools are working together to develop better engineering and construction practices for new buildings, as well as practical, economical strategies for upgrading existing structures. For more information about the new Wind Hazard Mitigation Consortium, contact *H.W. Tieleman, Engineering Science and Mechanics Department, Virginia Tech University, Blacksburg, VA 24061; (540) 231-6891; fax: (540) 231-4574; e-mail: tieleman@bt.edu*.

Organizing Wind -- Part II

Congress Establishes Wind Hazard Caucus

With the conviction that a federal investment in wind hazard reduction would pay significant dividends in lives saved and property damage reduced, several members of Congress have established a Wind Hazard Reduction Caucus focused on increasing the awareness of national legislators about the safety and economic issues associated with high winds of all kinds. The principal goal of the caucus is to gain government support for a National Wind Hazard Reduction Program, similar to the National Earthquake Hazards Reduction Program, that would reduce loss of lives and property by 75% by 2010. The program would address improved design and construction, better emergency response, improved warning systems, building code enforcement, and public education. The caucus was launched on October 27, 1999, with the support of the American Society of Civil Engineers, which has pledged to lead a Wind Reduction Coalition of related professional societies, research organizations, industry groups, and companies. It is co-chaired by representatives Dennis Moore (D-KS) and Walter Jones (R-NC). For further information about the Wind Hazard Reduction Caucus, contact *Brian Pallasch, Government Relations, American Society of Civil Engineers, 1801 Alexander Bell Drive, Reston, VA 20191; (202) 789-2200; e-mail: bpallasch@asce.org*.

Washington Update

Appropriations Bills Passed and Signed

The annual tussle between Congress and the president has become a rite of autumn, as both branches of government debate who gets what money and how much. Although threats to shut down the federal government have become commonplace, as have continuing budget resolutions to keep it open, this year both sides managed to avoid much of the rancor and agree on funding for federal programs.

Of interest to readers of the ***Observer*** is Public Law 106-74, the Departments of Veterans Affairs and Housing and Urban Development, and Independent Agencies Appropriations Act, 2000, signed into law by the president on October 18, 1999. This law appropriates funds for the operation of the Federal Emergency Management Agency (FEMA), which received:

- $300 million for emergency management planning and assistance under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, including:
- $2 million for a pilot project of seismic retrofit Technology at California State University-San Bernardino;
- $6 million for a seismic retrofit project at Loma Linda University Hospital;
- $2 million for a seismic retrofit project at the University of Redlands in California;
- $1 million for a hurricane protection project at the St. Petersburg campus of South Florida University;
- $2.5 million for a windstorm simulation project at Florida International University in Miami;
- $1 million to the state of North Carolina for a logistical staging demonstration project involving warehouse facilities at the Stanley County airport; and
- $500,000 to the state of Louisiana for wave monitoring buoys in the Gulf of Mexico.
- $2.48 billion for disaster relief;
- $1.3 million under the Stafford Act for the disaster assistance direct loan program;
- $180 million for FEMA salaries and expenses;
- $267 million for carrying out activities under the National Flood Insurance Act of 1968, the Flood Disaster Protection Act of 1973, the Stafford Act, the Earthquake Hazards Reduction Act, and other emergency planning and assistance programs, including grants to states for multihazard preparedness and mitigation;
- $110 million for the emergency food and shelter program;
- $5 million for the flood map modernization fund of the National Flood Insurance Program;
- $24.3 million for salaries and expenses related to the National Flood Insurance Program and $79 million for flood mitigation activities;
- a transfer of $20 million from the National Flood Insurance Fund to the National Flood Mitigation Fund for activities designed to reduce the risk of flood damage to structures;
- $15 million to the Environmental Protection Agency for oil spill response.

Under Public Law 106-60, Congress appropriated the following to the U.S. Army Corps of Engineers:

- $162 million for the "collection and study of basic information pertaining to river and harbor,

flood control, shore protection, and related projects";
- $1.4 billion for construction related to river and harbor, flood control, shore protection, and related projects; and
- $309 million for flood control on the Mississippi River and its tributaries.

Public Law 106-79, the Department of Defense Appropriations Act, 2000, provides:

- unspecified funds for the Pacific Disaster Center to carry out disaster information management and related support of a global disaster information network;
- $5 million to the American Red Cross for Armed Forces Emergency Services; and
- unspecified funds for the Center of Excellence for Disaster Management and Humanitarian Assistance for education and training for appropriate military and civilian personnel of foreign countries.

For the complete text of these public laws, contact any *federal repository library* or access the Library of Congress via the World Wide Web: *http://thomas.loc.gov*.

GAO Reports on "Rainy Day" Budgeting for Emergencies

Federal emergency appropriations in 1999 were the highest since the Gulf War in 1991. In an effort to cope with this increasing demand for federal funds, Congress asked the General Accounting Office (GAO) to examine state practices and experiences with reserve funds, that is, funds set aside in time of budgetary surplus to prepare for periods of economic downturn or other unforeseen events. Recently, the GAO released its findings in the report, ***Budgeting for Emergencies: State Practices and Federal Implications*** (Report No. GAO/AIMD-99-250, 1999, 50 pp., free).

In the report, the GAO describes the various types of reserve funds that states use, including budget stabilization funds, emergency funds, and/or contingency accounts. States employ certain criteria for using emergency reserve funds that help control emergency spending, including standards that define conditions and events that may qualify as emergencies. For example, in one state, emergency spending must meet the conditions of being "necessary" and "unforeseen," and such funding is restricted to the costs of responding to and recovering from natural disasters. Such criteria could constrain use of an emergency designation and thus limit spending.

Besides carrying over any end-of-the-year fund balances, the five states in the GAO study also set up general purpose,

statewide, and agency-specific reserves to deal with budget uncertainty. Also, if a state did not have reserves available, it could use other strategies, such as lowering spending, raising revenues, transferring money between funds, passing supplemental appropriations, and borrowing.

Congress, in contrast, funds federal programs through emergency supplemental appropriations--what the agency calls a "more 'after-the-fact' approach" than that used by the states. Additionally, when a federal agency provides advanced funding for programs that play a role in emergency activities, such as FEMA's Disaster Relief Fund, this funding is usually only a portion of the total that is eventually appropriated by Congress in a given year. The GAO concludes that the question for Congress is not whether there will be emergency spending, but at what point in the budget process these costs will be recognized. By creating an emergency reserve, Congress could consider these costs as part of the annual resource allocation process, ensuring that emergency needs are recognized early. Congress could also establish criteria for using these reserves that might narrow the circumstances under which they are used, thus reducing the likelihood of midyear supplemental appropriations.

Finally, the report raises some difficult questions for Congress: What criteria should be used to access the reserve? Who may approve the use of these funds? How large should the reserve be? and Should the reserve be included under the spending caps? It also presents an analysis of alternative approaches to address these issues.

Copies of the report are free and can be obtained from the *General Accounting Office, P.O. Box 37050, Washington, DC 20013; (202) 512-6000; fax: (202) 512-6061; e-mail: info@www.gao.gov*. The complete text of the report is also available on-line at *http://www.gao.gov*.

FEMA Redesigns Public Assistance Program

In an effort to provide money to applicants more quickly and to make the application process simpler, the Federal Emergency Management Agency recently redesigned its Public Assistance Grant Program. The changes are outlined in the October 12, 1999, issue of the ***Federal Register*** (Vol. 64, No. 196, pp. 55158-55161).

The Public Assistance Program provides grants to state and local governments and certain nonprofit organizations, enabling them to respond to disasters, recover from disaster impacts, and mitigate the effects of future disasters. The redesigned program emphasizes better, more personal customer service; improved communications; reallocated responsibilities; more efficient and consistent program delivery; and a more efficient system for obtaining funding than under previous regulations.

The final rule outlines specific changes to regulations that rename documents, define terms, adjust responsibilities, and amend the rule in ways the agency hopes will make it easier to understand. It took

effect on November 12, 1999. The complete text of the final rule can be found in your *federal repository library* or via the World Wide Web at *http://www.access.gpo.gov*. Information about the Public Assistance Program in general can be found on the FEMA Web site: *http://www.fema.gov/r-n-r*.

BuRec Reports to Western Governors' on Floodplain Management and Dam Operations

In the western regions of the United States, water is generally scarce and demands for this precious resource are growing; residential, industrial, agricultural, recreational, power utility, and environmental needs all compete. Following discussions of the Western Governors' Association Western Flood Task Force, the U.S. Bureau of Reclamation produced an issue paper to outline the complex issues surrounding water management in the West.

In ***Flood Plain Management and Dam Operations: An Issue Paper for the Western Governors' Association*** (1999, 15 pp., free), the Bureau of Reclamation explains the problems caused by encroachment by development onto the floodplain, including residents' misplaced confidence in the ability of dams to control flooding and the need for dam operators to limit the release of water to prevent damaging downstream structures while also meeting other demands.

Noting that much of the information used to determine where development will occur is outdated, the report states that new development is often permitted in areas that are unsafe and susceptible to flood damage. Moreover, because downstream development can narrow water release options for dam operators, the potential for downstream flood damage can be increased due to the need to release incoming flood runoff or to store it in a reservoir that could overfill and cause dam failure. Because dam operators are not responsible for floodplain management regulation downstream, further difficulties arise in managing these problems.

The report recommends that the Western Governors' Association work with local governments to direct incompatible development away from floodplains; help bring local, state, and tribal governments together with federal agencies to deal with water issues; discourage state and local subsidies for development in floodplains, especially in those areas affected by federal dam operations; continue to educate the public about these issues; support efforts to sustain natural resources, ecosystems, and other

functions of the floodplain; encourage the Federal Emergency Management Agency to update floodplain maps to reflect changes in development and flow in areas with high growth rates; and encourage communities and counties to participate in the National Flood Insurance Program.

For further information about this report, contact *Shaun McGrath, Western Governors' Association, 600 17th Street, Suite 1705 South Tower, Denver, CO 80202-5452; (303) 623-9378; fax: (303) 534-7309; WWW: http://www.westgov.org.*

HUD Issues Final Rule on Floodplains and Mortgage Insurance

In the October 15, 1999, ***Federal Register*** (Vol. 64, No. 199, pp. 56108-56111), the Department of Housing and Urban Development (HUD) issued a final rule that revises that department's regulations concerning hazard exposure among properties covered by the Federal Housing Administration's (FHA) mortgage insurance program. Specifically, the revised rule permits mortgagees to obtain an Elevation Certificate as an alternative to a final Letter of Map Amendment or Revision for submission with the building plans when property improvements are located in a Special Flood Hazard Area. These provisions apply to one- to four-unit homes, whether or not a community has adopted criteria for site development.

These provisions also apply to all programs insured by the FHA, unless the mortgage in question will be secured by a dwelling unit that was completed more than one year before the application for insurance or is being sold to a second or subsequent purchaser. The mortgagee must submit a signed Builder's Certification of Plans, Specifications and Site that must cover flood hazards, noise, explosive and flammable materials, storage hazards, toxic waste hazards, and other foreseeable hazards such as unstable soils or slopes, high ground water levels, and other hazards that may affect the health and safety of the occupants or the structural soundness of the building.

The final rule also requires that flood insurance under the National Flood Insurance Program (if it is available in that area) be maintained on any FHA-insured mortgages on property in special flood hazard areas during the entire period the mortgage is insured by the FHA..The flood insurance must be at least equal to the outstanding balance of the mortgage, less estimated land costs, or the maximum amount of NFIP insurance available, whichever is less.

For more information on this final rule, contact *Mark Holman, Mortgage Underwriting and Insurance Branch, Office of Insured Single Family Housing, U.S. Department of Housing and Urban Development, 451 Seventh Street, S.W., Room 9270, Washington, DC 20410-8000; (202) 708-2121.* The full text of the final rule can also be found at any *federal repository library* or on-line at *http://www.access.gpo.gov*.

Congress and the President Make 911 Official

Although it is universally known in the United States as the phone number to dial when someone needs emergency assistance, 911 has never been officially declared as such. However, on October 28, 1999, President Clinton signed into law the Wireless Communications and Public Safety Act of 1999 (Public Law 106-81), making 911 the official universal telephone phone number within the U.S. for reporting an emergency to appropriate authorities and requesting assistance.

In addition, this new law requires the Federal Communications Commission (FCC) to support efforts by individual states to develop comprehensive emergency communications infrastructure and programs based on coordinated statewide plans to help emergency responders overcome prior limitations in wireless service. The legislation also authorizes telecommunications carriers to provide call location information regarding a user of a commercial mobile service to emergency dispatchers and personnel so that they can respond to the user's call; to the user's legal guardian or family member in an emergency situation that involves the risk of death or serious injury; and to others solely responsible for assisting in the delivery of emergency services. Finally, it requires telephone exchange service providers to provide both listed and unlisted subscriber information to providers of emergency services.

The complete text of the new legislation can be found at your local *federal repository library* or on-line at *http://thomas.loc.gov*.

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IAEM Launches Scholarship Program

The International Association of Emergency Managers (IAEM) has announced a new scholarship program for undergraduate and graduate students studying emergency management. IAEM is currently soliciting contributions in order to establish an endowment to fund the program. Persons interested in learning more about this program should contact the *IAEM Scholarship Program, 111 Park Place, Falls Church, VA 22046-4513; (703) 538-1795; fax: (703) 241-5603; e-mail: iaem@aol.com; WWW: http://www.iaem.com*.

ASFPM Offers Graduate Fellowship

Through its Floodplain Management Graduate Fellowship, the Association of State Floodplain Managers (ASFPM) offers up to $25,000 to support a full-time post-baccalaureate student for one academic year. The recipient has the opportunity to examine virtually any floodplain management or mitigation issue. The research, which must be conducted at an accredited U.S. college or university, could be conducted in such areas as land-use and comprehensive planning, engineering, design and construction, materials testing, public policy, public education, public administration, sociology, architecture, law, geography, or any other relevant discipline. The recipient is expected to submit a research project draft and final report to the ASFPM Graduate Fellowship Advisory Committee (GFAC), prepare an article for the ASFPM newsletter ***News & Views***, and present his or her findings at the ASFPM national conference.

Applicants must hold U.S. citizenship or permanent resident status. The fellowship covers tuition, fees, research expenses, travel costs, and stipend. Applicants should provide an academic transcript, statement of educational and career goals, professional resumé, and letter of nomination from the faculty host at the cooperating educational institution. Applications are due March 1, 2000. For more information, contact *ASFPM, 2809 Fish Hatchery Road, Suite 204, Madison, WI 53713; (608) 274-0123; fax: (608) 274-0696; e-mail: diane@floods.org; WWW: http://www.floods.org*.

EERI Announces Student Paper Competition

The Earthquake Engineering Research Institute (EERI) has announced its Annual Student Paper Competition, which promotes student involvement in earthquake engineering and earthquake hazards research. Instructions for preparing and submitting a manuscript can be obtained from the EERI Web site, http://www.eeri.org, or from *EERI, 499 14th Street, Suite 320, Oakland, CA 94612; (510) 451-0905; fax: (510) 451-5411*. Papers must be received by March 31, 2000. Up to four authors will receive support to attend the EERI annual meeting in St. Louis, Missouri, May 31-June 2, 2000. The papers will also be considered for publication in the EERI journal, ***Earthquake Spectra***.

NOAA Posts Grant Opportunities for Coastal Resource Management

On November 4, 1999, the ***Federal Register*** (Volume 64, Number 213) published the National Oceanic and Atmospheric Administration (NOAA) Coastal Services Center's "Broad Area Announcement" providing information on grant and cooperative agreement opportunities in several areas for FY2000. The complete notice is available from http://www.csc.noaa.gov/cms/baa.html.

Under the section "Coastal Technical Services--Coastal Technology Demonstration and Verification" the announcement states, "NOAA's Coastal Services Center seeks proposals from state or local resource management agencies, academic institutions, nonprofit organizations, and private sector companies for [pilot] projects . . . under which a cooperator(s) and the Center will scope out or design and apply prototype decision making tools and information products for coastal resource management. Emphasis will be placed on projects that address coastal habitat management and *coastal hazards mitigation*" (emphasis added).

More information is available at the Web site above, or by contacting the *NOAA Coastal Services Center, 2234 South Hobson Avenue, Charleston, SC 29405; (843) 740-1222; e-mail: csc@csc.noaa.gov*. The staff member in charge of the Coastal Technical Services proposals is *Jeff Payne, (843) 740-1207*.

NFPA 1600 Adopted by Membership

On Wednesday, November 17, 1999, at the National Fire Protection Association (NFPA) fall meeting in New Orleans, NFPA 1600--the "Standard on Disaster/Emergency Management and Business Continuity Programs"--was approved by the NFPA membership. As the NFPA states, "This standard establishes a common set of criteria for disaster management, emergency management, and business continuity programs. . . . The purpose of this standard is to provide those with the responsibility for disaster/ emergency management and business continuity the criteria to assess current programs or to develop, implement, and maintain a program to mitigate, prepare for, respond to, and recover from disasters and emergencies." The Federal Emergency Management Agency (FEMA), the National Emergency Management Association (NEMA), and the International Association of Emergency Managers (IAEM) are currently considering endorsement of this standard.

The standard will be formally issued by NFPA after an NFPA Standards Council meeting in January 2000. At that time, the standard will be printed; it will be available for distribution in April 2000. NFPA 1600 will join the family of approximately 300 voluntary codes and standards that are available for adoption by federal, state, and local entities as

well as the private sector. NFPA will continuously monitor the adoption and usage of the standard, and the NFPA Disaster Management Committee will re-examine its contents and evaluate its usage over the next 3-5 years in order to make any appropriate changes, revisions, or additions.

Specific subjects addressed in NFPA 1600 include laws and authorities; hazard identification and risk assessment; hazard mitigation; resource management; planning; strategic plans; emergency operations plans; mitigation plans; business impact analysis; recovery/business continuity plans; direction, communication, and warning; operations and procedures; logistics and facilities; training; exercises, evaluations, and corrective actions; public education and information; and finance and administration.

For more information on NFPA 1600, contact NFPA 1600 staff liaison *Martha Curtis, National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101; (617) 984-7496*; or see the NFPA Web site: *http://www.nfpa.org*.

[Adapted from an article by Pat Moore that recently appeared in *Emergency Partner Postings*, the on-line newsletter of the Emergency Information Infrastructure Partnership (EIIP) available at *http://www.emforum.org/eiip/news.htm*. Click on "Previous editions," and select Vol. 4, No. 4.]

ITCM Seeks Comments on Plans for an Enabling Technology Center in Crises Management

The federal government's Information Technology for Crises Management (ITCM) Team is seeking comments on its plan for an "Enabling Technology Center (ETC) in Crises Management"--part of the team's response to the president's Information Technology Advisory Committee's recommendation to establish ETCs in various areas. The mission of the ITCM is to promote collaborations that identify, develop, test, and implement computing, information, and communication technologies that improve the nation's preparation for, mitigation of, response to, and recovery from crises. The plan and more information about the ITCM can be obtained on the World Wide Web at *http://www.ccic.gov/fisac/itcm*. The plan is in downloadable PDF format. Comments on the ITCM ETC plan should be sent by e-mail to *fisac-itcm@ccic.gov*.

Oklahoma Says Okay to Floodplain Manager Certification

After years of effort supported by the Association of State Floodplain Managers (ASFPM), Oklahoma has implemented the first ASFPM-accredited state certification program for floodplain managers in the U.S. This program will ensure that floodplain managers in that state obtain and maintain the skills and training needed to properly administer programs to reduce flood losses.

Like existing national programs, Oklahoma's certification involves application materials and fees, continuing education to maintain accreditation, and adherence to a professional code of conduct. In addition, applicants must demonstrate knowledge of floodplain management on various topics in the profession, in part by passing a written examination.

For more information on this program and the ASFPM certification effort, contact the *ASFPM Executive Office, 2809 Fish Hatchery Road, Suite 204, Madison, WI 53713; (608) 274-0123; fax: (608) 274-0696; e-mail: asfpm@floods.org; WWW: http://www.floods.org.*

The Internet Pages

Below are a few of the more useful disaster Internet resources we've discovered recently. For a comprehensive list of selected Internet sites dealing with hazards and disasters, see: *http://www.colorado.edu/hazards/sites/sites.html*.

All Hazards

http://www.fema.gov/impact
"Lessons learned" from the Federal Emergency Management Agency's (FEMA's) Project Impact are now on the Web and updated daily at the address above. With hurricanes Dennis, Floyd, and Irene, there were many opportunities in 1999 to highlight disaster prevention lessons in both Project Impact and non-Project Impact communities. Representatives from FEMA's disaster field offices have been submitting examples of effective disaster mitigation projects, and these accounts represent a large portion of the examples now on-line. To submit additional "lessons learned" contact *Barb Sturner, FEMA, 500 C Street, S.W., Washington, DC 20472; (202) 646-3650.*

http://www.fema.gov/mit/bpat
FEMA's Building Performance Assessment Teams (BPATs) are activated after disasters to assess building and infrastructure performance and to recommend improvements in construction codes and standards, designs, methods, and materials used for both new construction and postdisaster repair. The BPAT Web site provides current BPAT news, success stories, and reports from surveys of recent disasters, as well as complete copies of the BPAT newsletter, ***BPAT Update***. The latest reports concern the Midwest tornadoes of May 3, 1999, and Hurricane Georges. FEMA is currently recruiting qualified persons to add to the BPAT roster database, and details are available from this Web site.

http://www.fema.gov/home/EMI/ishome.htm
http://www.fema.gov/emi/is394.htm
FEMA is now offering an independent study course on how home and small business owners can reduce losses from natural disasters. The course, titled ***IS 394-Mitigation for Homeowners***, is free and available for download from the FEMA Web site above. ***Mitigation for Homeowners*** is intended to help residents:

- Identify which natural hazards affect their community;

- Determine which natural hazards are most likely to affect them personally;
- Locate specific risks unique to their particular home or business; and
- Formulate a targeted plan of action to reduce risks to their property, family, and home.

The course provides nontechnical mitigation techniques for a home or small business--both predisaster (preventive) and postdisaster (corrective). In addition to signing up through the Web site, individuals and groups can enroll in this course by contacting the *National Emergency Training Center, 16825 South Seton Avenue, Emmitsburg, MD 21727; (301) 447-1076*. EMI's independent study Web page, *http://www.fema.gov/home/EMI/ishome.htm*, offers numerous other courses.

http://www.emforum.org/

Each summer for the past several years, FEMA's Higher Education Project has hosted a conference for educators and other persons interested in promoting emergency management training in colleges and universities around the country. The report for the 1999 Higher Education Project Conference is now available for download from the Emergency Information Infrastructure Partnership (EIIP) Virtual Library at the address above. This is a 97K Microsoft Word 97 file. The direct ftp address is *ftp://www.emforum.org/pub/eiip/highed99.doc*.

http://www.md.ucl.ac.be/cred/

The Centre for Research on Epidemiology of Disasters (CRED) at the School of Public Health, Catholic University of Louvain, Brussels, Belgium, has placed a comprehensive database of disaster information on-line via their Web site. As the creators of this resource state, "In recent years, natural and man-made disasters have been affecting increasing numbers of people throughout the world. Budgets for emergency and humanitarian aid have sky-rocketed. Efforts to establish better preparedness for and prevention of disasters have been a priority concern of donor agencies, implementing agencies and affected countries. For this reason, demand for complete and verified data on disasters and their human and economic impact, by country and type of disaster has been growing. Planners, policy makers, field agencies engaged in preparedness have all expressed need for data for their work. The CRED/U.S. Office of Foreign Disaster Assistance (OFDA) initiative responds to this need by making available a specialised, validated database on disasters that facilitates preparedness, thereby reducing vulnerability to disasters and improving disaster management."

The site includes background information; a "what's new" update section; the searchable database covering over 10,000 disasters; "disaster profiles" (now including data on epidemics) in three sub-sets ("top 10," "chronological table," and "raw data") and grouped according to country, region, world, and disaster type; summary data; maps; a soon-to-be-added bibliographic database; and many links to other useful sites.

For more information about this database and the work of CRED, contact the *Centre for Research on Epidemiology of Disasters, Unit of Epidemiology, School of Public Health, Catholic University of Louvain, 30.94 Clos Chappelle-aux-Champs, 1200 Brussels, Belgium; tel: +32 (0) 2 764.33.27; fax: +32 (0) 2 764.34.41; e-mail: misson@ep id.ucl.ac.be*.

Additionally, a country-by-country database compiled by OFDA and CRED is available via the United Nations ReliefWeb site: *http://www.reliefweb.int*.

http://www.ignoudismgtconf.org/

In late November 1999, the Indira Gandhi National Open University (IGNOU) hosted the International Conference on Disaster Management: Cooperative Networking in South Asia in New Delhi. The conference Web site includes dozens of papers on the many aspects of disaster management in Asia.

http://www.ibhs.org

http://www.ibhs.org/html/county_perils/county_perils_homepage.asp

The Institute for Business and Home Safety (IBHS) has created a prototype database that displays the natural hazards faced by those who live in the counties of the New Madrid seismic region and surrounding areas. The database contains hazard information for 884 counties in Alabama, Arkansas, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Mississippi, Missouri, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, Virginia, West Virginia, and Wisconsin. After picking one of these counties from a list or map, the user receives information on what damage that county could experience if an 8.6 magnitude earthquake occurred in the New Madrid area. The database also provides information on the number of flood/flash flood, hailstorm, hurricane, tornado, and wildfire events the county experienced between January 1993 and July 1999. Additionally, the user is presented with information on steps he or she can take to protect a home or business from these hazards. Finally, users can also obtain critical information on building codes and land-use planning efforts in the given state. Among other goals, the database is intended to demonstrate that natural hazards in the region are more common than most people might think.

http://www.state.gov/www/issues/relief/gdin.html

The Global Disaster Information Network (GDIN) is a U.S. initiative to make the information needed to conduct effective disaster relief operations available when and where needed via the Internet (see the ***Observer***, Vol. XXII, No. 4, p. 3). For persons interested in the progress of the development of the GDIN, this U.S. Department of State Web page provides information about past and future international meetings devoted to the creation this network. Included are the proceedings of the May 1999 GDIN meeting in Mexico City and several background papers.

http://www.bghrc.com/

The Benfield Greig Hazard Research Centre at University College London (see the ***Observer***, Vol. XXII, No. 1, p. 14), was the first multidisciplinary natural hazards research group established in the U.K. The center staff, from many different university departments, study a wide array of natural hazards, including volcanic eruptions, earthquakes, floods, windstorms, and landslides. The center's newly revised Web site provides extensive information about the center and its many activities. It offers a "News Centre" with press releases, forecasts, feature articles, case studies, a "fact file," project descriptions, other center news, and links to related sites; extensive descriptions of research and services; information about the center's new Disaster Management Unit; a list of center publications; references to other new

publications of interest to disaster researchers; a photo gallery of hazards; and much more. For more information about the center, contact the *Benfield Greig Hazard Research Centre, School of Geological and Geophysical Sciences, University College London, Gower Street, London WC1E 6BT, U.K.; tel: +44 (0)171 419 3449; fax: +44 (0)171 388 7614; e-mail: bghrc@ucl.ac.uk*.

The Benfield Greig Centre hosts a very useful e-mail listserve (*natural-hazards-disasters@mailbase.ac.uk*) from which the first item on the next page is taken.

http://www.helpage.org/members/helsinki.html
With the nongovernmental organization HelpAge International playing a major role, in September an international conference was held in Finland to look at the issue of older people in emergencies. A number of conference papers are now available on-line, together with HelpAge International's conference overview paper, "The Aging World and Humanitarian Crises." These papers, available from the Web page above, reveal the particular problems faced by older people in disasters--and the fact that humanitarian agencies appear to be largely unaware of them.

http://www.hyogo.uncrd.or.jp/
In April 1999, the United Nations Center for Regional Development (UNCRD) Disaster Management Planning Program moved from Nagoya to a new office in Hyogo Prefecture, Japan, where the Great Hanshin-Awaji Earthquake disaster occurred on January 17, 1995, and where its residents are now attempting to redevelop their city. The new office will examine the reconstruction process in Hyogo Prefecture and other disaster-damaged areas in developing countries, as well as carry out the following programs to fulfill the IDNDR goal of establishing disaster prevention as an essential element of sustainable development:

- Provide advisory services to communities vulnerable to disasters in cooperation with governmental and nongovernmental agencies and academic institutions;
- Improve the safety of core community facilities, such as schools and hospitals, and cultural heritage that may be damaged by disasters; and
- Identify and promulgate best practices in disaster management at the community level and disseminate them through workshops and information technology.

This Web site includes information about the Hyogo office--its activities and its publications--as well as useful links to other sources of information about the Hanshin-Awaji quake. For more information about the office's mission and programs, contact the *UNCRD Disaster Management Planning Hyogo Office, IHD Centre Building, 4th Floor, 1-5-1 Wakihama-kaigan-dori, Chuo-ku, Kobe 651-0073, Japan; tel: +81-78-230-7561; fax: +81-78-230-7565; e-mail: rep@hyogo.uncrd.or.jp; WWW: http://www.hyogo.uncrd.or.jp*.

http://www.unep.org/unep/eia/geo2000/
http://grid2.cr.usgs.gov/geo2000

The United Nations Environment Program (UNEP) launched the Global Environment Outlook (GEO) Project in 1995 with two components:

- The GEO Process--a global, cross-sectoral, participatory environmental assessment process initiated by collaborating scientists from over 100 countries that incorporates regional views and perceptions and builds consensus on priority issues and actions through dialogue among policy makers and scientists at regional and global levels; and
- GEO outputs, in printed and electronic formats, including the GEO Report series, which periodically reviews the state of the world's environment and provides guidance for decision-making processes such as the formulation of environmental policies, action planning, and resource allocation.

Either of the Web sites above provides ***Global Environmental Outlook 2000***, the latest GEO report, which identifies numerous environmental trends and includes several projections regarding natural hazards in the 21st century. Among others, it cites increased water shortages, desertification, deforestation, global warming, increased forest fires, and species and biological invasions due to increasing globalization as significant potential hazards in the coming century.

Earthquakes and Other Geologic Hazards

http://www.trinet.org

TriNet is a five-year collaborative project among the California Institute of Technology, the California Division of Mines and Geology, and the U.S. Geological Survey to create an effective real-time earthquake information system for Southern California. TriNet incorporates new technologies to distribute vital information within minutes of an earthquake, thus helping to mitigate the impact of large earthquakes in the region. The system is designed to aid both scientists and emergency managers. Through continuous monitoring of seismicity in Southern California, TriNet produces rapid estimates of earthquake times, locations, and magnitudes, enabling direct estimates of the strength of ground shaking near earthquakes. Its products include maps (through a program known as ShakeMap) showing the distribution of ground motion and a pilot earthquake early warning system. For more information about TriNet and ShakeMap, see the TriNet Web site or contact *James Goltz, California Institute of Technology, Mail-Code 252-21, Pasadena, CA 91125; (626) 395-3298; fax: (626) 584-1242; e-mail: jgoltz@gps.caltech.edu*.

http://mceer.buffalo.edu

On September 21, 1999, a devastating earthquake struck the central region of Taiwan. The quake became known as the "921" or "Ji-Ji" earthquake. Subsequently, researchers from the Multidisciplinary Center for Earthquake Engineering Research (MCEER) at the State University of New York at Buffalo and colleagues from the National Center for Research on Earthquake Engineering (NCREE) in Taiwan held a workshop in Taipei to identify short-term strategies and actions for postearthquake restoration and research needs, including specific cooperative projects that would involve researchers from both centers. A report on the disaster, based on discussion at the meeting and subsequent reconnaissance, ***MCEER/***

NCREE Response: Preliminary Report from MCEER-NCREE Workshop on the 921 Taiwan Earthquake, is available from the MCEER Web site above. A limited number of printed copies are available from the report editor, *Jane Stoyle, c/o MCEER Information Service, State University of New York at Buffalo, c/o Science and Engineering Library, 304 Capen Hall, Buffalo, NY 14260-2200; (716) 645-3391; fax: (716) 645-3399; e-mail: jestoyle@acsu.buffalo.edu*.

In addition, at the same address MCEER has published a preliminary report on the Athens, Greece, earthquake of September 7, 1999. MCEER colleagues at the Institute of Engineering Seismology and Earthquake Engineering (ITSAK) provided this preliminary report, which presents strong motion data and examines structural response to the event.

listserv@listserv.buffalo.edu

MCEER, in partnership with the Northeast States Emergency Consortium (NESEC) and FEMA, has established a listserve for discussion of issues related to the use and application of the National Institute of Building Sciences (NIBS)/FEMA loss estimation software, HAZUS. To join the list send the command "sub HAZUSNET-USA-LIST [your name]" to the address above (leave the subject line blank). This listserve will be regularly archived and moderated for content.

http://www.atcouncil.org

In a recently published "TechBrief," the Applied Technology Council (ATC), in cooperation with the U. S. Geological Survey (USGS), offers safety guidelines for entering earthquake-damaged buildings under emergency conditions. The guidelines are based on engineering research by ATC members and aftershock research by scientists at the USGS in Menlo Park, California. Tables summarizing the degree of risk for structures, based on the amount of initial damage and probabilities of aftershocks, are included in the report. ATC Tech Brief #2, ***Earthquake Aftershocks: Entering Damaged Buildings*** may be downloaded from the ATC Web site above. Alternatively, professionals involved in postearthquake building evaluation can order individual free copies from the *Applied Technology Council, 555 Twin Dolphin Drive #550, Redwood City, CA 94065; (650) 595-1542; fax: (650) 593-2320; e-mail: atc@atcouncil.org*.

(As an added note, scientists at the USGS began forecasting aftershocks following the 1989 Loma Prieta earthquake. Now, after any earthquake in California of magnitude 5 or greater, the Survey posts the probability of strong aftershocks on its Web site: *http://quake.wr.usgs.gov*.)

http://www.ce.washington.edu/~liquefaction/

The Soil Liquefaction Web site was developed to provide general information for interested lay persons and more detailed information for engineers on this seismic phenomenon. Visitors who are not familiar with soil liquefaction can find answers to such typical questions as: What is soil liquefaction? When has soil liquefaction occurred in the past? Where and why does soil liquefaction commonly occur? and, How can soil liquefaction hazards be reduced? For each question, more detailed information is provided separately for earthquake and engineering professionals. The site is well illustrated with photographs and animated graphics and includes links to much additional information on liquefaction and earthquakes in

general.

http://www.eerc.berkeley.edu

The National Information Service for Earthquake Engineering (NISEE) at the University of California, Berkeley, has added the Jan Kozak Collection of Historical Earthquake Images to its extensive on-line collection of modern earthquake engineering images. The Kozak collection of 876 slides (many with multiple images) depicts artistic representations of earthquakes from 54 countries between the years 1120 and 1932. This compilation is an historical art collection and a scientific record of earthquake occurrence and hazard. Many images provide "macroseismic" details of occurrence, location, intensity, and damage that can be compared with historical earthquake catalogs. The artistic treatment of cultural themes associated with sudden natural forces touches on folkloric, scientific, and religious interpretations of seismic events. The collection, which is indexed both spatially and chronologically, can be explored on the NISEE Web site above. A preface to the collection written by earthquake expert Bruce Bolt and an historical bibliography of sources accompany the collection.

http://gldpsp.cr.usgs.gov/slumtrip/slumtrip.htm

The U.S. Geological Survey has been monitoring landslides electronically for many years. Now, through this nifty Web page, the Survey offers a next-generation form of monitoring--a "Virtual Field Trip of the Slumgullion Earth Flow" in southern Colorado. The site transmits live shots from video cameras positioned around this massive flow (a viewer can pan across and zoom into the various scenes from his or her computer), as well as a 15-chapter monograph on the flow entitled ***The Slumgullion Earth Flow: A Large-Scale Natural Laboratory***, edited by D.J. Varnes and W.Z. Savage.

Climate Change, Severe Weather, and other Atmospheric Hazards

http://www.cpc.ncep.noaa.gov/

http://www.cpc.ncep.noaa.gov/products/predictions/threats/threats.html

The National Oceanic and Atmospheric Administration's (NOAA's) Climate Prediction Center Web site covers forecasts, climate monitoring, data and indices, El Niño, and lots of other stuff. There's a host of information here on climate and weather anomalies. For example the "U.S. Threats Assessment" page at the second URL above covers short-term (3-5 day), medium-range (6-10 day), and long-range forecasts. The page includes North America maps showing projected temperature/wind, precipitation, and soil/ wildfire anomalies, and other data, such as a table of rivers currently at or above flood stage.

http://www.education.noaa.gov

NOAA has recently put together an education Web site to consolidate the many educational activities and resources distributed across the agency. The site has separate sections for teachers and students but is also designed to aid librarians and the general public. It includes extensive information on severe weather and other atmospheric hazards.

http://www.dir.ucar.edu/esig/biblio

No ***Observer*** would be complete without mentioning the Web site of the Environmental and Societal

Impacts Group (ESIG) at the National Center for Atmospheric Research. This time, ESIG has released a new bibliography on the use and value of weather and climate forecasts, available from the URL above. This bibliography represents the initial document in what ESIG hopes will become a single resource for published, peer-reviewed articles on the use and value of weather and climate forecasts. This topic is a subset of the broader area of forecasting in the earth sciences, which interested persons can learn more about through another section of the ESIG Web site: *http://www.dir.ucar.edu/esig/prediction/*--"Prediction in the Earth Sciences." The authors of the bibliography solicit feedback and welcome suggestions for additions.

http://www.ucsusa.org/

From its Web site, the Union of Concerned Scientists (UCS) now offers, in downloadable PDF format, the complete text of ***Confronting Climate Change in California: Ecological Impacts on the Golden State***. In their press release, the study's sponsors, the UCS and the Ecological Society of America, state:

The report . . . provides the state's citizens and policymakers with a scientific assessment of the likely impacts of [expected warming] on the state's diverse environments and the goods and services they provide. [The authors] conclude that climate change poses a range of serious challenges for California's environment, economy and quality of life [including]:

- Increased winter precipitation will fall mostly as rain rather than snow. Thus, less water will be stored in the snow pack while more water will runoff immediately, adding to winter flooding and landslide problems. Changes in the water cycle will likely lead to water shortages during the late spring and summer, worsening drought conditions, irrigation needs and water use conflicts. Crops that require large amounts of irrigated water, such as grapes, cotton and alfalfa, will be among the hardest hit.
- Warmer summers will tend to intensify the summer drought, potentially leading to hotter, harder-to-control wildfires, especially if Santa Ana winds also increase. Higher temperatures will warm the ocean and likely raise the sea level by 8 to 12 inches over the next century, amplifying current problems with storm surge, beach erosion and flooding during major winter storms. El Niño events, with their dramatic impacts on California's weather and economy, may become more frequent and/or more intense as the climate changes.

The report's authors emphasize other consequences to the region's ecology and human population and suggest possible strategies for dealing with this evolving problem.

http://www.cla.sc.edu/geog/faculty/carbone/tropcycl/index.html

The destructive power of a tropical cyclone instills fear in those in its path and intrigues atmospheric scientists interested in its dynamics. This Web site guides the viewer through the formation, structure, energy, and movement of tropical cyclones using sketches, radar and satellite imagery, and animation.

http://www.stormweb.com

Since 1996, the Stormweb Emergency Information System has provided real-time disaster reports and

emergency information to the residents of coastal Washington and the Olympic Peninsula. Under normal circumstances, Stormweb provides links to surface and marine weather, satellite, and radar information; road condition reports; tide and river information; and much more. Stormweb will soon also offer a broad database of disaster preparedness information and a comprehensive library for researchers.

When potential emergency conditions develop, Stormweb operations increase. Conditions are continually monitored and updates are sent out to Stormweb subscribers by e-mail when warranted. Watches are posted on-line when they are issued. As conditions progress from watch to warning status, Stormweb shifts to 24-hour real-time reporting of information consolidated from dozens of sources. Stormweb's advisory system--"STORMWEB_ALERT"--provides emergency bulletins, preparedness information, and periodic newsletters via e-mail at no cost. Interested persons can sign up via the Web site.

Disaster Medicine and Mental Health

http://www.paho.org/english/ped/pedhome.htm (click on "New Publications")
One year after Hurricanes Georges and Mitch devastated Central America and the Caribbean, the Pan American Health Organization (PAHO) has published a monograph reviewing those events and reflecting on lessons learned in the health sector. ***Disaster Chronicle on Hurricanes Georges and Mitch*** includes eight reports produced in the affected countries themselves, thus recording valuable, first-hand experiences and chronicling these two, almost consecutive, disasters. Hurricane Georges is analyzed in reports from Haiti and the Dominican Republic, while Hurricane Mitch is described in reports from Honduras, Nicaragua, El Salvador, Guatemala, and Belize. Two annexes conclude the volume, which is currently available only in Spanish. The book can be accessed and downloaded from PAHO's Emergency Preparedness Program Web site above. A limited number of free printed copies are available and can be requested by e-mailing *disaster-publications@paho.org*.

This site now also offers ***Humanitarian Assistance in Disaster Situations: A Guide for Effective Aid***, a new publication that combines and updates several older guides for the donor community.

[Adapted from PAHO's "DisasterInfo" e-mail list. To subscribe, send an e-mail message to *disaster-newsletter@paho.org*.]

http://www.paho.org/english/ped/technical.htm
PAHO has also added a section to its Web site entitled "Technical Guidelines." These pages are intended to answer questions that professionals might have about the provision of public health in emergencies. More than 20 public health experts helped prepare this material, which includes sections on needs assessment, vaccinations, special needs, donations, food safety, surveillance, water and sanitation, the environment, medical services, displaced persons, and communicable diseases. The site provides contact information (e-mail addresses, phone numbers) for experts in each area.

http://www.mhwwb.org

Mental Health Workers Without Borders (MHWWB) is an international, not-for-profit, nongovernmental network of activist mental health workers of all types and professions whose aim is to provide psychosocial assistance following natural and human-caused disasters and to provide technical assistance to developing countries so that they can provide treatment and psychosocial rehabilitation for their citizens. MHWWB encourages family- and community-based approaches to mental health therapy while respecting cultural variation, drawing on local resources and traditions, and emphasizing community empowerment. The MHWWB Web site includes sections on Activities, Human Rights, Rehabilitation, and Disasters, with numerous links to sites providing information in these areas. It also offers a downloadable manual, ***Coping with Disaster: A Guide to Psychosocial Responses to Disaster***. For more information about MHWWB, contact *Mental Health Workers Without Borders, c/o Martin Gittelman, 100 West 94th Street, New York, NY 10025; e-mail: mhwwb@mhwwb.org*.

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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: http://www.colorado.edu/hazards/conf.html.

International Diploma in Humanitarian Assistance. Offered by: Center for International Health and Cooperation, Hunter College, City University of New York, in partnership with the Royal College of Surgeons, Ireland. Geneva, Switzerland: January 30-February 26, 2000; New York City: June 11-July 8, 2000. This intensive four-week training program is intended to inform participants about the many dimensions and issues involved in humanitarian assistance and thus enable them to effectively mitigate emergencies and provide assistance when they do occur. The course will be conducted in English, and a limited number of scholarships will be available. For more detailed information or an application, contact *Michel Veuthey, Academic Coordinator, IDHA5, 15 Pierre Longue, CH-1212 Geneva/Grand Lancy, Switzerland; e-mail: michel.veuthey@ties.itu.int*.

Strategic Planning and Implementation for Managers of Business Continuity and Restoration Programs. Offered by: University of California-Berkeley Extension. San Francisco, California: February 28-March 3, 2000. This course may be taken individually or as the first course in UC-Berkeley's Emergency Preparedness Planning and Management Certificate Program. The course is intended for corporate and government managers as well as planners and consultants in the nonprofit sector. More information is available from *John Laye, Contingency Management Consultants, 346 Rheem Boulevard, Suite 202, Moraga, CA 94556-1588; (925) 631-0400; fax: (925) 631-0403; e-mail: johnlaye@aol.com*.
For information about other upcoming emergency management courses in this program, contact *Environmental Management/Continuing Education in Engineering, University Extension, University of California, Berkeley, CA 94720; (510) 643-7143; WWW: http://www.unex.berkeley.edu/cert/emerg.html*.

VII International Meeting "Volcan de Colima." Sponsor: Observatorio Volcanologico de la Universidad de Colima. Colima, Mexico: March 6-10, 2000. Colima Volcano, the most active volcano in Mexico, is one of 16 "Decade Volcanoes" of the International Decade for Natural Disaster Reduction. Monitoring of its recent 1998-1999 eruption has resulted in much new, useful data. Through oral and poster

presentations the first two days of this meeting will be devoted to discussion of general problems of volcanology and volcano monitoring. This program will be followed by a one-day field trip to the Colima Volcano itself, and, to conclude, a two-day workshop devoted specifically to the monitoring methods and findings from the 1998-1999 eruption. Abstracts in English or Spanish are due January 31, 2000; instructions are available from the Web location below. For more information, contact *VII International Meeting "Volcan de Colima," Av. Gonzalo de Sandoval, 444 Colima, Col., 28045 Mexico; tel: (+52-331) 35085, ext. 174, 175; fax: (+52-331) 27581; e-mail* colima00@cgic.ucol.mx*; WWW:* http://www.ucol.mx/volcan/colima00.html.

Spring World 2000: The 11th Annual Corporate Contingency Planning Seminar and Exhibition. Sponsored by: DRI International, ***Disaster Recovery Journal****, and many others. San Diego, California: March 19-22, 2000.* This meeting and exposition includes dozens of seminars, courses, workshops, and breakout sessions on various aspects of contingency planning and management as well as a participatory mock disaster exercise. For a complete conference booklet, contact the *Conference Registrar, P.O. Box 510110, St. Louis, MO 63151; (314) 894-0276; fax: (314) 894-7474.*

Seismic Repair and Rehabilitation of Structures. Sponsors: School of Engineering and Computer Science, California State University-Fullerton, and others. Fullerton, California: March 21-22, 2000. This meeting will focus on ongoing research and recent developments in state-of-the-art technologies and methods for seismic repair and rehabilitation of structures. It is intended for structural engineers, architects, contractors, and insurance officials. For more information, contact *Mrs. Kumari Chowbey, Department of Civil and Environmental Engineering, California State University-Fullerton, 800 North State College, Fullerton, CA 92834; (714) 278-3012; fax: (714) 278-3916; e-mail:* schowbey@fullerton.edu; or *SRRS2, c/o*
ATD, 111 East Avenida San Gabriel, San Clemente, CA 92672; (949) 366-6073 or (949) 366-1056; fax: (949) 366-1057; e-mail: info@srrs2.com*; WWW:* http://www.srrs2.com.

Firewise Community Workshop Series on Wildland Fire Mitigation. Sponsored by the National Fire Protection Association (NFPA), U.S. Department of Agriculture Forest Service, U.S. Fire Administration, and many other organizations.
Stevenson, Washington: March 29-31, 2000
Durham, New Hampshire: June 2000
Brooklyn Park, Minnesota:September 25-27, 2000
Atlanta, Georgia: October 18-20, 2000
Santa Cruz, California: February 2001
Austin, Texas: April 2001
Denver, Colorado: June 2001
Hidden Valley, Pennsylvania: September 2001
St. Louis, Missouri: October 2001
Since 1970, more than 10,000 homes and 20,000 other structures have been lost to severe wildland fires, which have cost government agencies $20 billion to suppress and the insurance industry another $6 billion in restitution. To combat this problem, the NFPA and a consortium of wildland fire agencies known as the Wildland/Urban Interface Fire Protection Program have been promoting "Firewise" living since 1986. Now these partners have launched a series of workshops to present state-of-the-art tools, programs, and planning that can be used by communities to lessen wildland fire hazards and reduce damage. For more information about the Firewise Communities Workshop Series, see: *http://www.firewise.org/communities*; or contact workshop coordinator *Jim Smalley, NFPA, One Batterymar ch Park, Box 9101, Quincy, MA 02269; (617) 984-7483; e-mail: jsmalley@nfpa.org*.

Building a Disaster Resistant Asia. Sponsors: U.S. Trade and Development Agency, Federal Emergency Management Agency, and U.S. Department of Commerce. Honolulu, Hawaii: April 2-4, 2000. The objective of this conference is to match U.S. technology and know-how with emergency management needs in Asia. The conference will serve as a forum for discussion of issues in emergency management, as well as an opportunity for key decision makers from Asian countries to present current emergency management projects and programs in which American companies could become involved. Ten countries will be targeted for the conference: South Korea, Indonesia, Thailand, the Philippines, Vietnam, Bangladesh, India, Nepal, Sri Lanka, and Taiwan. For more information, contact *Gisele Lee, ICF Consulting, 9300 Lee Highway, Fairfax, VA 22031-1207; (703) 934-3255; fax: (703) 934-3243; e-mail: asia-tda@icfconsulting.com; WWW: http://www.icfconsulting.com/asia-tda*.

Risk 2000 International Conference: Space Techniques for the Management of Major Risks and their Consequences. Sponsors: UNESCO, École des Mines de Paris, and others. Paris, France: April 5-7, 2000. Space techniques (telecommunications, earth observation, global positioning) can help ameliorate natural and technological risks at all stages of risk management. The objectives of this conference are to document the state-of-the-art in space techniques for risk management, to stimulate awareness of these approaches, to assess the various international efforts to promote and use these methods, and finally, to determine additional initiatives needed to maximize the benefits of space technologies in hazards management. The conference will address three themes: natural risks, technological risks, and preservation of the cultural heritage. Topics to be covered include forecasting of meteorological and

oceanic hazards; forest fires; earthquakes, volcanic eruptions, and landslides; floods; oil spills; algal blooms; coastal erosion and change; industrial hazards; air pollution; water quality; land degradation and desertification; advanced information tools; education; and legal, economic and insurance issues. More information is available from *Risk 2000 Secretariat, Prospective 2100, 48 rue de la Procession, 75724 Paris Cedex 15, France; tel: 33 1 44 49 60 04; fax: 33 1 44 49 60 44; e-mail: deschamps@2100.org; WWW: http://2100.org/w_risk.html*.

Twenty-Second Annual National Hurricane Conference. Sponsors: American Meteorological Society, Federal Emergency Management Agency, and just about every other agency (government or non) concerned with hurricanes. New Orleans, Louisiana: April 17-21, 2000. The National Hurricane Conference is the nation's principal forum for education and professional training in hurricane preparedness, response, and mitigation. General sessions will focus on the events of the 1999 hurricane season, the outlook for 2000, hurricane-induced inland flooding along the mid-Atlantic coast, and hurricane evacuation problems. The conference also offers 36 workshops covering all major aspects of hurricane disaster management. A conference flyer and registration materials are available from the *National Hurricane Conference, 2952 Wellington Circle, Tallahasee, FL 32308; (850) 906-9224; e-mail: nhc@nettally.com; WWW: http://www.nettally.com/nhc*.

After Disaster: Addressing Management Issues. Sponsors: Coventry Centre for Disaster Management and the Economic and Social Research Council. Coventry, U.K.: April 25-26, 2000. Key themes to be addressed at this conference include corporate responsibility; bereavement damages and disaster funds; and psychosocial impacts. For more information contact *Anne Eyre, Centre for Disaster Management, School of the Built Environment, Coventry University, Priory Street, Coventry CV1 5FB, U.K.; tel/fax: 01203-838485; e-mail: a.eyre@cov.ac.uk*.

Global Disaster Information Network (GDIN) Third International Conference. Organizers: Ministry of Public Works and Settlement, General Directorate of Disaster Affairs, Government of Turkey; and the Disaster Management Implementation and Research Center, Middle East Technical University. Ankara, Turkey: April 26-28, 2000. The nations of the world share a common desire to use advanced technology--particularly remote sensing, satellite information transfer, and the Internet--to improve response to disasters. The GDIN is a collaborative effort among several nations to launch an intergovernmental program, complementing the United Nation's ReliefWeb program, that will concentrate on transmitting vital visual information to governments immediately following disasters so that relief, rescue, assistance, and other resources and services can be directed to the neediest areas in a timely way. Previous GDIN conferences were held in Washington, D.C., in July 1998, and in Mexico City, in May 1999. Records of these prior meetings are available on the Internet from *http://www.state.gov./www/issues/relief/gdin.html*. The organizers of this third meeting hope that it will include the formal adoption of a charter by the participating governments. More information about the conference is available from the *Disaster Management Implementation and Research Center, Middle East Technical University, 06531 Ankara, Turkey; tel: +90-312-210 5410; fax: +90-312-210 1328; e-mail: dmc@metu.edu.tr*. Information is also available on the World Wide Web at *http://www.deprem.gov.tr/gdin2k/index.html*; or by contacting the following: *tel: (90) 312-287 3645* or *(90) 312-287 8803; fax: (90) 312-285 5304* or *(90) 312-287 8924;*

e-mail: gdin2k@deprem.gov.tr or *afetundp@tr-net.net.tr*.

International Emergency Management Society (TIEMS) Seventh International Conference: "Emergency Management in the Third Millennium." Orlando, Florida: May 16-19, 2000. This conference is for emergency and disaster policy makers, planners, managers, researchers, educators, and practitioners interested in exchanging information on innovative technologies and methods for avoiding, mitigating, responding to, and recovering from natural and technological disasters. For more information, contact *Suleyman Tufekci, University of Florida, Industrial and Systems Engineering, P.O. Box 116595, Gainesville, FL 32611-6595; e-mail: tufekci@ise.ufl.edu*.

Fourth Annual Search and Rescue/Disaster Response World Conference and Exposition (SR/DR 2000). Sponsor: ***Responder*** *Magazine. Miami Beach, Florida: June 2-5, 2000*. SR/DR describes itself as "the only convention that brings together professionals and volunteers from areas of the fire/rescue and search and rescue communities together under one roof." It includes a wide assortment of educational sessions and hands-on workshops in 11 specialty tracks. One entire track at this year's meeting will be conducted in Spanish. Most sessions provide continuing education units. Additional information is available from *SR/DR 2000, 4418 East Wall Street, Eagle River, WI 54521; (715) 477-0170; e-mail: support@srdr.com; WWW: http://www.srdr.com*.

Public Risk Management Association (PRIMA) Annual Conference. Charlotte, North Carolina: June 4-7, 2000. The PRIMA annual meeting examines all aspects of risk faced by public entities--from natural hazards to hazardous playgrounds. Details are available from *PRIMA, 1815 North Fort Myer Drive, Suite 1020, Arlington, VA 22209; (703) 528-7701; fax: (703) 528-7966; e-mail: primahq@aol.com; WWW: http://www.primacentral.org*. Interested persons should note that scholarships to aid risk managers and other professional staff from smaller organizations and communities to attend the PRIMA conference are available from the Public Entity Risk Institute (PERI). For details, contact *Audre Hoffman, PERI, 11350 Random Hills Road, Suite 800, Fairfax, VA 22030; (703) 934-6046; fax: (703) 352-7085; e-mail: ahoffman@riskinstitute.org*. Deadline for applications is February 15, 2000.

The Coastal Society 17th Annual Conference: "Coasts at the Millennium." Portland, Oregon: July 9-12, 2000. One of the four themes examined at the Coastal Society's annual conference will be "Reducing Vulnerability to Coastal Hazards." For a conference circular, contact *Laurie Jodice, TCS 17 Office, c/o*

Marine Resource Management, College of Oceanic and Atmospheric Sciences, Oregon State University, 104 Ocean Administration Building, Corvallis, OR 97331-5503; fax: (541) 737-2064; e-mail: jodicel@oce.orst.edu; WWW: http://www.oce.orst.edu/mrm/tcs17/confhome.html.

Advanced Summer Course on Public Health and Humanitarian Aid. Offered by: Centre for Research on the Epidemiology of Disasters (CRED). Brussels, Belgium: July 17-28, 2000 (optional course July 10-14 on Computer Programs for Disaster Management). The faculty for this course is drawn from highly regarded institutions in both developed and developing countries. The program will cover both specific public health and nutrition issues (including reproductive and mental health topics), as well as cross-cutting areas, such as media, environment, and geographic issues. The organizers hope to provide some fellowships for participants from developing countries. Details are available from *Caroline Michellier* or *Regina Below, CRED, School of Public Health, Catholic University of Louvain, 30.94 Clos Chapelle-aux-Champs, 1200 Brussels, Belgium; tel: +32-2-764-3369* or *+32-2-764-3327; fax: +32-2-764-3441; e-mail: caroline.michellier@epid.ucl.ac.be* or *below@epid.ucl.ac.be; WWW: http://www.md.ucl.ac.be/cred.*

Thirteenth Annual International Disaster Management Course. Offered by: The Disaster Management Centre, Cranfield University. Faringdon, Oxfordshire, U.K.: July 25-August 24, 2000. The Disaster Management Centre at Cranfield University promotes sustainable, development-based disaster management in all countries affected by disasters. Through training, research, and consultancies with both governments and national and international agencies, the center supports local disaster management institution and capacity development, community preparedness, and the development of skills in all aspects of disaster response and recovery. The center's disaster management course is intended for any person with responsibilities for disaster management, and its comprehensive five-week curriculum covers everything from basic definitions and concepts to such topics as information management, warning systems, mitigation, ethics, recovery, gender issues, and geographical information systems. Participants can choose one of three options for specialization: slow onset disasters, rapid onset disasters, or civil emergencies and human-caused disasters. Enquiries should be directed to the *Administrator, Disaster Management Centre, Cranfield University, RMCS, Shrivenham, Swindon, Wiltshire SN6 8LA, U.K.; tel: +44 1793 785287; fax: +44 1793 785883; e-mail: disprep@rmcs.cranfield.ac.uk; WWW: http://www.rmcs.cranfield.ac.uk/departments/ddmsa/dmc/dmc.htm.*

> This course will be followed by a "Training of Trainers" course, August 28-September 1, intended for any organization conducting disaster management training. The program will cover the theory and practice of adult learning, development of personal communication skills, course and exercise design, monitoring and evaluation of training effectiveness, and various models of training. For details or an application, contact *the address above*.

University Council on Water Resources (UCOWR) Annual Meeting: "Living Downstream in the Next Millennium: Reconciling Watershed Concerns with Basin Management." New Orleans, Louisiana: July 31-August 4, 2000. The Federal Clean Water Action Plan promotes an integrated watershed management approach to address water quality and related natural resource concerns. Yet watershed management

may be incapable of addressing water quality impairments and related natural resource threats that originate upstream or culminate downstream from diverse activities throughout a river basin. The UCOWR annual meeting will address this dilemma and other problems related to comprehensive watershed management, including floodplain management issues. For more information, see http://www.uwin.siu.edu/ucowr; or contact *UCOWR Headquarters, 4543 Faner Hall, Southern Illinois University, Carbondale, IL 62901-4526; (618) 536-7571; fax: (618) 453-2671; e-mail: ucowr@uwin.siu.edu*.

Annual Meeting of the National Emergency Management Association (NEMA). Palm Beach, Florida: August 17-21, 2000. NEMA is the professional association of state and territorial 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 advance improvements in emergency management. The NEMA annual meeting addresses cutting-edge issues and developments in emergency management--from the newest techniques and tools to the latest legislation and programs. For more information about the 2000 meeting, contact *NEMA, P.O. Box 11910, Lexington, KY 40578-1910; fax: (606) 244-8239; e-mail: thembree@csg.org; WWW: http://www.nemaweb.org*.

Seventh Annual Congress of the Institute for Business and Home Safety. Newport, Rhode Island: September 13-15, 2000. The mission of the Institute for Business and Home Safety (IBHS) is to reduce deaths, injuries, property damage, economic loss, and human suffering caused by natural disasters. The institute promotes planning and construction of the built environment that incorporates structural and nonstructural loss-reduction practices, enabling all citizens to live and work in an atmosphere of personal safety, financial security, and social stability. The IBHS Annual Congress is a showcase for recent developments that further these ends, as well as a forum for identifying new issues and potential solutions. For details about the 2000 congress, contact *IBHS, 175 Federal Street, Suite 500, Boston, MA 02110-2222; (617) 292-2003; fax: (617) 292-2022; e-mail: info@ibhs.org; WWW: http://www.ibhs.org*.

National Earthquake Hazards Conference. Sponsors: Western States Seismic Policy Council (WSSPC), Federal Emergency Management Agency, U.S. Geological Survey, Cascadia Region Earthquake Workgroup, and others. Seattle, Washington: September 17-22, 2000. This meeting will focus on:

- The cost of disasters: implications for the banking and insurance industries, as well as federal, state, and local governments;
- Real-time warnings: opportunities and technological capabilities for reducing losses;
- Public policy: all-hazard approaches to mitigation, sustainability of businesses and standard of living following a major earthquake;
- The question: Does mitigation pay?--costs, benefits, and examples of what does and does not work;
- Lessons learned from the Pacific Rim: experiences and insights from recent events in seismically active regions; and
- Building codes and standards for the next century: implications and implementation of the International Building Code 2000.

To register or obtain more information, contact *WSSPC, 121 Second Street, Fourth Floor, San Francisco, CA 94105; (415) 974-6435; e-mail: wsspc@wsspc.org; WWW: http://www.wsspc.org/currenteq/events/nec2000.htm*.

Risk 2000: Second International Conference on Computer Simulation in Risk Analysis and Hazard Mitigation. Organized by: Wessex Institute of Technology. Bologna, Italy: October 11-13, 2000. The analysis and management of risk and the mitigation of hazards are increasingly important as global systems of all kinds have become more complex and interdependent and the potential for disasters on a world-wide scale has increased. New computational and modeling methods make it possible to quantify hazards, simulate effects, and determine risk more precisely. These advances are important for all areas of human endeavor but have particular relevance to environmental issues where the risks involved are increasingly perceived as substantial. This conference is concerned with all aspects of risk analysis and hazard mitigation, ranging from specific assessment of risk to hazard mitigation associated with both natural and anthropogenic hazards. Strategic issues of sustainable development, efficient use of resources, energy economics, and education will also be addressed. More information is available from *Susan Hanley, Wessex Institute of Technology, Ashurst Lodge, Ashurst, Southampton, SO40 7AA; tel: 44 (0) 238 029 3223; fax: 44 (0) 238 029 2853; WWW: http://www.wessex.ac.uk/conferences/2000/risk2000/; e-mail: shanley@wes sex.ac.uk*.

International Conference on Prevention of Hazards in Storage Areas [protecting archived cultural property]. *Sponsors: International Committee of the Blue Shield. Draguignan, France: November 6-10, 2000*. In 1996, increasing destruction of cultural property by accident, natural hazards, and armed conflicts led four nongovernmental organizations to create the International Committee of the Blue Shield (ICBS), whose mission is to collect and disseminate information about cultural property protection and to coordinate action in emergencies. To further these aims, this conference will bring together specialists in cultural heritage conservation and security, as well as scientists, researchers, and business persons, to examine the problems involved in protecting cultural property and to propose practical answers. To receive further information, contact *Laboratoire de Conservation, Restauration et Recherches (CNRS-CRA/CAV), Congres 2000, 19, rue Frederic Mireur, 83300 Draguignan, France; e-mail: wmourey@cav-researches.org*.

Summit 2000: Geological Society of America Annual Meeting and Exposition. Reno, Nevada: November 12-15, 2000. Summit 2000 will reflect on the progress of the geological sciences in America since European settlement of the continent and examine the challenges and opportunities of the next century. The GSA annual meeting always includes numerous sessions on various geologic hazards. For more information, see the GSA Web site: *http://www.geosociety.org*; or contact the *GSA Meetings Department, 3300 Penrose Place, P.O. Box 9140, Boulder, CO 80301-9140; (303) 447-2020* or *(800) 472-1988; fax (303) 447-0648; e-mail: meetings@geosociety.org*.

Americas Conference on Wind Engineering (formerly the U.S. National Conference on Wind Engineering). Sponsors: American Association for Wind Engineering and others. Clemson, South

Carolina: June 3-6, 2001. This conference will attempt to broaden participation by including both traditional wind engineers and those individuals that should or do work with wind engineers--from policy makers to emergency managers. It will also try to attract participants from all countries in the Americas. While many of the papers presented will still be technical and aimed at engineers, the organizers hope that other presentations will bridge the gaps between wind engineers and user groups. The conference proceedings will be published on CD ROM. The organizers welcome suggestions, and interested persons should contact *Scott Schiff, Department of Civil Engineering, Clemson University, Clemson, SC 29634-0911; (864) 656-0456; e-mail: scott.schiff@ces.clemson.edu*.

Tenth International Conference and Field Workshop on Landslides (ICFL). Sponsors: International Landslide Research Group (ILRG) and others. Various locations across Poland: September 2002. Every few years, the ILRG repairs to some unique corner of the world to examine what happens when gravity overcomes the cohesive forces that hold hills and mountains together. This year, Wales; two years from now, Poland. To find out more about the Poland junket, contact *David G. Howell, U.S. Geological Survey, MS 975, 345 Middlefield Road, Menlo Park, CA 94025; (650) 329-5430; fax: (650) 329-4936; e-mail: dhowell@octopus.wr.usgs.gov; WWW: http://ilrg.gndci.pg.cnr.it*.

Three from the IAFC

The International Association of Fire Chiefs (IAFC) sponsors numerous meetings and training programs, many of which are designed for emergency management personnel. Upcoming year 2000 conferences include:

- *Fire-Rescue Med: Critical Issues in Fire-Service-Based EMS. Las Vegas, Nevada: April 17-19, 2000. Contact: Professional Development Department, IAFC, Suite 300, 4025 Fair Ridge Drive, Fairfax, VA 22033-2868; (703) 273-9815; fax: (703) 273-9363; e-mail: education@iafc.org*.
- *International Hazardous Materials Response Team Conference. Hunt Valley, Maryland: June 1-4, 2000. Contact: Alice Pottmyer, address and phone as above; e-mail: prodevelopment@iafc.org*.
- *Fire-Rescue International 2000. Dallas, Texas: August 25-28, 2000. Contact: David Gudinas, address and phone as above; e-mail: dirprodev@iafc.org*.

Information is also available from the IAFC Web site: *http://www.iafc.org*.

Natural Hazards Review

An Invitation to Subscribe and a Call for Articles

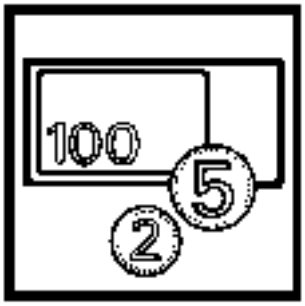
Subscribe!

In 2000, the American Society of Civil Engineers (ASCE), in conjunction with the Natural Hazards Research and Applications Information Center, will begin publishing a new quarterly journal, the ***Natural Hazards Review***. The ***Review*** will provide innovative and practical solutions to the problems and challenges faced by all sectors of the hazards community, including government, academia, the private sector, and nongovernmental organizations. Articles will range from detailed case studies to reports of original research. This cross-disciplinary journal will bring together engineering; the regulatory/policy field; and the social, behavioral, and physical sciences to address hazards loss reduction. It is intended for professionals from all of these fields who are involved in developing strategies to deal with natural hazards. The inaugural issue will address the outcomes of the International Decade for Natural Disaster Reduction.

The ***Natural Hazards Review*** will be published in print and on CD-ROM and will also be available through paid on-line access via the World Wide Web at *http://www.pubs.asce.org*. For details about subscribing, contact *ASCE, Publications Marketing, 1801 Alexander Bell Drive, Reston, VA 20191-4400; (703) 295-6163; fax: (703) 295-6278; e-mail: marketing@asce.org; WWW: http://www.pubs.asce.org*.

Submit!

The ***Natural Hazards Review*** encourages professionals from engineering and the physical and social sciences who work in private industry, government, and academia to submit articles for publication. Papers should provide insights into actual projects, programs, and/or proposed policy changes, as well as new innovations in natural hazards loss reduction. For immediate consideration, submit three double-spaced copies of articles to *ASCE, Journals Production Department, 1801 Alexander Bell Drive, Reston, VA 20191-4400*. For complete manuscript preparation instructions, contact that office for the special ***Author's Guide*** for this journal. Interested persons can also call *(703) 295-6290; fax: (703) 295-6339; e-mail: journal-services@asce.org*.



Contracts and Grants

These are some 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 Hazards Center Web site: *http://www.colorado.edu/hazards/grants.html*.

Statistical Methods to Enhance Site-Specific Tornado Hazards Analysis. Funding: National Science Foundation, $100,000, six months. Principal Investigator: *Kenneth R. Nixon, CGI, 330 West Gray, Suite 500, Norman, OK 73069; (405) 360-0472; e-mail: compgeo@telepath.com*.

This Small Business Innovation Research Phase I project will explore the feasibility of developing innovative spatial/temporal statistical techniques to improve site-specific tornado hazard analysis for any location in the conterminous United States. The approach involves the use of statistical techniques to determine regions of similar tornado occurrence at the county level. This will enable researchers and other interested organizations to develop a more accurate assessment of the "true" tornado hazard for a specific site.

Midwestern Wild Weather Project. Funding: National Science Foundation, $1,621,716, 36 months. Principal Investigators: *Olivia Diaz and Sarah Wolf, Science and Technology Interactive Center, 18 West Benton Street, Aurora, IL 60506-6013; (708) 859-8112*.

"Midwestern Wild Weather" is a traveling exhibit designed to reach audiences in small, rural communities and in science centers and museums in Illinois, Iowa, Indiana, and Michigan. This grant covers the cost of creating interactive weather exhibits describing severe weather common in the Midwest.

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Recent Publications

Below are summaries of some of the recent, more useful publications on hazards and disasters received by the Natural Hazards Center. A complete bibliography of publications received from 1995 through 1999 is posted on our World Wide Web site: *http://www.colorado.edu/hazards/bib/bib.html*.

All Hazards

The Journal of the American Society of Professional Emergency Planners *(ASPEP). 1999. 153 pp. $19.00. Order from Robert G. Goldhammer, ASPEP, c/o International Association of Emergency Managers, 111 Park Place, Falls Church, VA 22046-4513. Payment includes shipping and handling.*
The ***Journal of the American Society of Professional Emergency Planners*** is committed to sharing ideas, research, lessons, practice, and opinion among all disciplines involved in emergency management. The 1999 edition includes papers on everything from the problems posed by the crash of a bullet train to the use of the Internet in disaster management. There are also papers on the National Disaster Medical System, planning for information management during natural disasters, the costs of emergency management, hurricane hazard planning, emergency management certificate programs, issues in wildland/urban interface fire management, the future of emergency management, and several other topics.

The editors of the ***ASPEP Journal*** have issued a call for papers for the 2000 issue. For further information, on the Internet see: *http://www.globalserve.net/~tmheath/*, or contact *Thomas M. Heath, Gamewell Emergency Management Services, P.O. Box 433, Lewiston, NY 14092; (905) 844-6597; fax: (905) 849-9715; e-mail: tmheath@globalserve.net*.
Papers are due July 31, 2000, and the editors request an expression of interest by May 1, 2000.

Risk, Sustainable Development and Disasters: Southern Perspectives*. Ailsa Holloway, Editor. 1999. 74 pp. $12.00 for orders from industrialized countries; 65 South African Rand for orders from developing countries. Available from Periperi Publications, DiMP, Department of Environmental and Geographical Sciences, University of Cape Town, Rondebosch, 7700, South Africa; tel: 27 21 650-2987; fax: 27 21 689-1217; e-mail: nomdo@enviro.uct.ac.za.*
The hazards and risks facing developing countries--particularly those in Africa--are unique, as are their mitigation and management (see the ***Observer***, Vol.XIII, No. 6, p. 1). ***Risk, Sustainable Development and Disasters*** looks at the relationship between risk and sustainable development from several perspectives. The authors, all involved in risk management in developing regions, examine a wide range

of themes and issues, including livelihood analysis to determine hazard vulnerability, the HIV/AIDS pandemic in Africa, learning for risk reduction, and the lack of government support for rainwater harvesting to mitigate drought.

Business Continuity Planning: A Step-by-Step Guide with Planning Forms. *Kenneth L. Fulmer. 1999. 119 pp. $99.00, plus $6.00 U.S. shipping; $10.00 Canada/Mexico shipping; $25.00 shipping to all other countries. Available from Rothstein Associates Inc., 4 Arapaho Road, Brookfield, CT 06804-3104; (203) 740-7444 or (888) 768-4783; fax: (203) 740-7401; e-mail: info@rothstein.com; WWW: http://www.rothstein.com.*

As its name implies, this workbook gives straightforward instructions for developing a plan that will enable a business to resume operations as quickly as possible after a disaster. Beginning with a discussion of the risks a given business is likely to face, along with their potential impacts, the guide tracks the planning steps that must be taken to anticipate the specific obstacles that a disaster would pose and develop strategies for avoiding, mitigating, or recovering from them. Topics covered include assessing risk to the business, choosing personnel for development and implementation, writing a recovery plan, identifying backup vendors, and testing and maintaining preparedness. Worksheets are provided (both hard copy and diskette) to make all the data collection and decision making easier.

The Knox Mine Disaster: The Final Years of the Northern Anthracite Industry and the Effort to Rebuild a Regional Economy. *Robert P. Wolensky, Kenneth C. Wolensky, and Nicole H. Wolensky. 1999. 164 pp. $12.95, plus $3.50 shipping. Available from the Publications Program, Pennsylvania Historical and Museum Commission, P.O. Box 11466, Harrisburg, PA 17108; (800) 747-7790.*

On January 22, 1959, the roof of the River Slope Mine of the Knox Coal Company collapsed, and the swollen Susquehanna River gushed into the mine, taking the lives of 12 miners. The calamity ended deep mining in the northern-most of three anthracite fields in the region, and led to the loss of over 12,000 jobs. It was the penultimate blow to an industry and a region already in economic retreat. Drawing on oral histories; federal, state, and union archival materials; newspaper reports; and court records, this study details the precipitating disaster; the escape of 69 miners; and the effort by engineers to devise a method of corking the 175-foot-wide vortex that whirled in the river bed. The authors further examine the causes of the disaster, including illegal mining, lax inspections, and union and corporate corruption, and the numerous trials and criminal convictions that followed. The book concludes by discussing the reasonably successful postdisaster efforts to rebuild a local economy that for over 100 years had been singularly dependent upon coal. The Knox Mine Disaster has many implications for natural hazards research, particularly the social and cultural contexts surrounding a hazard's occurrence, prevention, and recovery.

Volcanoes

Encyclopedia of Volcanoes. *Haraldur Sigurdsson, Editor-in-Chief. 1999. 1,441 pp. $99.95. Order from Academic Press, Inc., Order Fulfillment Department, 6277 Sea Harbor Drive, Orlando, FL 32887; e-mail: apbcs@harcourtbrace.com; WWW: http://www.apcatalog.com* and *http://www.academicpress.com/volcano*.

Everything you want to know about volcanoes . . . and more (but pity the poor volcanology student who has to lug this 8 lb., 2½"-thick tome across campus). The ***Encyclopedia of Volcanoes***' principal sections are entitled "Origin and Transport of Magma," "Eruption," "Effusive Volcanism," "Explosive Volcanism," "Extraterrestrial Volcanism," "Volcanic Interactions," "Volcanic Hazards," "Eruption Response and Mitigation," and "Economic Benefits and Cultural Aspects of Volcanism." The book also provides a catalog of historically active volcanoes. This boat anchor is destined to become the standard reference for anyone who wants to know their aa from their pahoehoe.

Earthquakes and Tsunamis

Is Your Home Protected from Earthquake Disaster? A Homeowner's Guide to Earthquake Retrofit*. 1999. 42 pp. First copy free; additional copies $5.00 each. Available from the Institute for Business and Home Safety (IBHS), 175 Federal Street, Suite 500, Boston, MA 02110-2222; (617) 292-2003; fax: (617) 292-2022; WWW: http://www.ibhs.org (copies can be downloaded from this site).*

In its ongoing effort to educate business and homeowners on how they can protect their property from natural hazards, IBHS has recently published ***Is Your Home Protected from Earthquake Disaster?***, a well-illustrated booklet that presents basic information about earthquakes, their effects on buildings, and what one can do to prevent damage. The publication includes extensive sections on both nonstructural and structural retrofitting and concludes with a quick checklist of what to do before, during, and immediately after a quake. The first two publications in this IBHS series cover hurricanes and hail and are available from the institute at the address above or on-line from *http://www.ibhs.org*.

Progress Toward a Safer Future Since the 1989 Loma Prieta Earthquake*. U.S. Geological Survey (USGS) Fact Sheet 151-99. Free.*

The October 17, 1989, Loma Prieta, California, Earthquake--Selected Photographs*. CD-ROM, USGS Digital Data Series DDS-29. $32.00.*

Both items can be obtained from the USGS Earth Science Information Center, 345 Middlefield Road, Menlo Park, CA 94025; the fact sheet can be obtained by calling (888) 872-6277. Additionally, both items can be downloaded from the Loma Prieta Earthquake 10th Anniversary page of the USGS Web site: http://quake.usgs.gov.

Progress Toward a Safer Future highlights scientific efforts and progress toward earthquake hazard mitigation in the last decade. It describes the many ways in which USGS scientists and personnel from cooperating organizations have worked to quantify the earthquake threat in the Bay Area of California, to promote awareness of seismic hazards, and to improve strategies to reduce losses. The results have included new estimates of the prospect for future quakes (see the ***Observer***, Vol. XXIV, No. 2, p. 11), improved building codes, maps showing the distribution of seismic hazards, and improved availability of information on earthquakes when they do happen. The CD-ROM shows effects of the 1989 quake--from geological phenomena to structural damage in the many communities affected.

A Couple of Earthquake Maps

If a picture is worth a thousand words, a map must be worth 10,000; we love 'em. New maps have recently been published that offer a wealth of information about earthquakes in the western and the central United States.

First, a new set of three maps from the USGS depicts in depth (literally) more than 30,000 earthquakes that occurred in north-central California between 1967 and 1993. That time frame, of course, includes the 6.9 Loma Prieta quake (see above)--the largest earthquake to occur in the region since the great San Francisco quake in 1906. The first map indicates the magnitudes and epicenters of the quakes; the second depicts and describes earthquake "clusters"; and the third shows the earthquake data in vertical sections through the earth's crust. This set, "Seismicity Maps of the San Franciso and San Jose 1-degree x 2-degree Quadrangles, California, for the Period 1967-1993," is available from the *USGS Earth Science Information Center*, address and telephone number above. The set costs $4.00, plus $3.50 for mail order shipping. Orders should specify MAP I-2580.

Meanwhile, the USGS, in cooperation with the Association of Central United States Earthquake Consortium State Geologists has recently published a "Soil Amplification/Liquefaction Potential Map" of the central U.S. The color map shows areas of relative potential for earthquake motion (shaking) and/or liquefaction. In addition, it indicates the locations of past earthquakes of magnitude 3.5 or greater in the area, as well as the location of pipeline terminals, petrochemical plants, and other hazardous structures and infrastructure threatened by quakes. The map offers much other information about seismic hazards in the region. To obtain a copy, contact the *Central United States Earthquake Consortium, 2630 East Holmes Road, Memphis, TN 38118; (800) 824-5817 or (901) 544-3570; fax: (901) 544-0544; e-mail: cusec@cusec.org*.

***A Land in Motion: California's San Andreas Fault**. Michael Collier. 1999. 128 pp. $19.95. Available from University of California Press, 2120 Berkeley Way, Berkeley, CA 94720; fax: (512) 643-7127; WWW: http://www.ucpress.edu.*

The San Andreas is the most famous fault on earth, running nearly the entire length of western California and directly affecting the lives of more than 20 million people. This book gives a geologic tour of this highly active tectonic boundary in an accessible narrative punctuated with dramatic color illustrations, lively anecdotes, and authoritative information about earthquakes in general. With both an approach and terminology suitable for nonscientists, the author provides an overview of plate tectonics, the geological history of the San Andreas Fault, the evolution of seismology as a science, and the knowledge about earthquakes and plate tectonics that has been gleaned through work on the San Andreas. Human aspects are examined as well, including the effects of major earthquakes on the San Andreas and the potential benefits of planning and prediction. A serendipitous feature is a discussion, including photographs, of the stunning features of the California landscape that are a result of the fault's geology.

Innovative Earthquake Recovery in India. *Svetlana Nikoli-Brzev, Marjorie Greene, Frederick Krimgold, and Leonardo Seeber. 1999. 95 pp. $15.00 (California residents add 8.25% sales tax), plus $5.00 shipping ($10.00 international shipping). Copies can be ordered from the Earthquake Engineering Research Institute (EERI), 499 14th Street, Suite 320, Oakland, CA 94612-1934; (510) 451-0905; fax: (510) 451-5411; e-mail: eeri@eeri.org; WWW: http://www.eeri.org.*

This second volume in EERI's Learning From Earthquakes Series focuses on the government of the city of Maharashtra's housing rebuilding program, financed largely through a World Bank credit, after the September 1993 Indian earthquake in that region. The housing project is one of the largest ever attempted in the world and is particularly noteworthy because of its emphasis on nonengineered, unreinforced masonry construction. In the end, 27,000 new houses were built and another 189,000 repaired. All the work was done in the context of a larger rehabilitation program that included other social and economic elements as well as preparation of a comprehensive disaster management plan. Specifically, the project involved an effort to raise the standard of living in the affected area by using improved construction techniques and adding civic amenities to the new villages. The particular needs of women were addressed, and community-based organizations were enlisted to provide education and training. Villagers and artisans were taught the importance of earthquake-resistant technology. The report presents observations useful to earthquake risk reduction professionals from both developed and developing regions.

Surviving a Tsunami--Lessons from Chile, Hawaii, and Japan. *U.S. Geological Survey Circular 1187. Brian Atwater et al., Compilers. 1999. 20 pp. No charge for recipients in the U.S.; $20.00, plus $5.00 shipping, which must be prepaid, for all other orders. International orders should include an e-mail address if available. Available from USGS Information Services, Box 25286, Denver, CO 80225; (888) 275-8747; e-mail: infoservices@usgs.gov. The complete text can also be downloaded from http://geopubs.wr.usgs.gov/circular/c1187/.*

This brief booklet examines actions that saved lives, and actions that cost lives, as recounted by eyewitnesses to the tsunami generated by the largest earthquake ever measured--the magnitude 9.5 quake in Chile on May 22, 1960. It includes numerous photographs vividly portraying the inundation and destruction inflicted by that tsunami.

The Turkey Earthquake of August 17, 1999. *Paulina Isler. 1999. 8 pp. Free. Individual copies can be obtained by contacting Celia Powell, PartnerRe Services, P.O. Box HM 2573, Hamilton HM KX, Bermuda; (1 441) 292-0098; fax: (1 441) 292-5588; e-mail: powell@partnerre.com.*

After major disasters, Partner Reinsurance sometimes commissions scientists and/or engineers to examine the consequences of those events to determine why damage and injury occurred and how future losses can be mitigated. After a brief introduction, this colorfully illustrated report examines seismological, tectonic, and geological and geotechnical aspects of the August 17, 1999, Turkey earthquake. It then looks at the applicable building codes and resultant damage to buildings, industry, and infrastructure, and the consequences for the insurance industry. The investigators conclude that this disaster again demonstrated the importance of appropriate building codes and, even more, the importance of building according to those codes.

***The Kathmandu Valley Earthquake Risk Management Action Plan**. Amad Dixit et al., 1998. 43 pp.*
***Kathmandu Valley's Earthquake Scenario**. Shreeram Singh Basnet et al., 1998. 24 pp.*
Both booklets are available free to members of GeoHazards International. For information on supporting and joining this organization, contact GeoHazards International, P.O. Box 7316, Stanford, CA 94309-7316; (650) 614-9050; fax: (650) 614-9051; e-mail: info@geohaz.org; WWW: http://www.geohaz.org. Individual memberships cost $75.00. This year membership dues will support GeoHazards' work with local engineers and masons to seismically retrofit a school in the Kathmandu Valley.
In January 1999 GeoHazards International, an organization specializing in the evaluation and reduction of earthquake hazards in developing nations, and its Nepalese partner, the National Society for Earthquake Technology-Nepal, completed the 18-month Kathmandu Valley Earthquake Risk Management Project. In the first phase of the project, these organizations assessed the earthquake risk in the Kathmandu Valley, including the risk to the valley's public schools. In the second phase, they created a plan for managing this risk (see the ***Observer***, Vol. XXIII, No. 4, p. 11; Vol. XXI, No. 2, p. 8). The Prime Minister of Nepal officially released that plan on January 16, 1999. These two publications both describe the project and promote its aims. The first is the risk management plan developed within the project; the second, a scenario intended to enlighten all residents and interested organizations about what the actual effects and consequences of an earthquake in the region would be.

Drought, Climate Change, and El Niño

*"Impacts of 1997-1998 El Niño-Generated Weather in the United States," **Bulletin of the American Meteorological Society**, Vol. 80, No. 9, pp. 1819-1827. Stanley A. Changnon. The **Bulletin** costs $80.00 per year (plus additional shipping if mailed beyond the U.S.) and can be ordered from the American Meteorological Society, 45 Beacon Street, Boston, MA 02108-3693; (617) 227-2425; WWW: http://www.ametsoc.org/AMS/. The **Bulletin** is also available at no cost on-line at http://ams.allenpress.com/.*
In this paper, Changnon assesses the major impacts on human lives and the economy of the United States resulting from weather events attributed to El Niño 1997-1998. Southern states and California were plagued by storms, whereas the northern half of the nation experienced much-above-normal cold season temperatures and below-normal precipitation. Human losses included 189 deaths (many due to tornadoes); the major economic losses were due to property and crop damage from storms, loss of business in the recreation industry, and government relief costs. At the same time, benefits included an estimated saving of 850 lives because of the lack of severe winter weather. There were also significant economic benefits, including major reductions in expenditures for natural gas and heating oil, a lack of spring flood damage, and record construction levels during the mild winter. Further, the nation experienced no losses due to major Atlantic hurricanes. In sum, the net economic effect was surprisingly positive. In addition, accurate long-term predictions by the National Oceanic and Atmospheric Administration's Climate Prediction Center led California to undertake major mitigation efforts that probably reduced losses significantly.

Thunderstorms and Other Severe Weather

***Eye of the Storm: Inside the World's Deadliest Hurricanes, Tornadoes, and Blizzards**. Jeffrey J.*

Rosenfeld. 1999. 317 pp. $27.95. Available from Perseus Books Group Customer Service Department, 5500 Central Avenue, Boulder, CO 80301; (800) 386-5656; fax: (303) 449-3356; e-mail: westview.orders@perseusbooks.com; WWW: http://www.perseusbooksgroup.com/orderinfhttp://www.colorado.edu/hazards/o/.

Rosenfeld answers the question: What causes the tremendous storms that result in massive destruction and loss of life, the bolts of lightning that almost invariably accompany major storms, and the torrential downpours that can inundate communities in minutes? In presenting the historical and scientific events and findings that have shed light on this and related questions about severe meteorological events, he touches on everything from snowflake formation to the birth of hurricanes and tornadoes.

Thunderstorms, Tornadoes, and Hail! *Peter R. Chaston. 1999. 224 pp. $29.00. Order from Chaston Scientific, Inc., P.O. Box 758, Kearney, MO 64060; (816) 628-4770; fax: (816) 628-9975; e-mail: chaston111@aol.com.*

Like the book mentioned above, this volume presents current knowledge about severe storms (although it does not address hurricanes). Of its two parts, the first is intended to educate anyone with a basic knowledge of weather, while the latter covers some of the more technical aspects of severe weather. ***Thunderstorms, Tornadoes, and Hail!*** begins with an historical overview of the study of thunderstorms and then describes what is now known about them. It discusses atmospheric instability and thunderstorm development; the thunderstorm life cycle; lightning; thunder; rainfall and flashfloods; updrafts, downdrafts, and microbursts; thunderstorm classification; tornadoes; and hail. These chapters are followed by the technical chapters that explain the analysis and weather forecasting tools used by meteorologists.

Hurricanes and Coastal Hazards

The Hidden Costs of Coastal Hazards: Implications for Risk Assessment and Mitigation. *The H. John Heinz III Center for Science, Economics and the Environment. 2000. 210 pp. $30.00, plus $5.75 shipping. Available from Island Press, Dept. 5NHW, P.O. Box 7, Covelo, CA 95428; (800) 828-1302; WWW: http://www.islandpress.org.*

Society has a limited number of hazard mitigation dollars to invest. Which actions will be most cost-effective, considering the true range of impacts and costs incurred? In 1997, the H. John Heinz Center convened a panel of experts to help develop new strategies to identify and reduce the costs of weather-related hazards associated with coastal development. This book presents the findings of that two-year effort. Using Hurricane Hugo, which struck South Carolina in 1989, as a case study, the book provides information on the full range of economic costs of a major coastal disaster, including unreported, undocumented, and hidden costs such as losses due to business interruption, reduction in property values, interruption of social services, psychological trauma, damage to natural systems, and others. The authors recommend a comprehensive framework for developing and implementing community-based hazard mitigation. Among the specific steps that must be taken are vulnerability assessments that incorporate a broader set of potential losses; community-wide inventories of building stock, infrastructure, critical facilities, and public services; more research on social and business losses; and partnerships among public- and private-sector entities at all levels.

***Coastal Planning and Management**. Robert Kay and Jacqueline Alder. 1999. 400 pp. $125.00, clothbound; $49.99, paperback. To order, contact Routledge Customer Service, 7625 Empire Drive, Florence, KY 41042; (800) 634-7064; fax: (800) 248-4724; WWW: http://routledge-ny.com/support/normal/contact.html.*

Of all the areas of the planet settled by humans, coastlines are probably the most intensely used. Taking a global perspective, this volume shows how sustainable development principles can be translated into tangible actions aimed at improving coastal planning and management to ensure the long-term viability of both the ecosystems themselves and the human settlements that occupy them. Practicing planners, managers, and academics from three continents offer examples of how specific coastal resources problems have been solved by marrying conceptual and technical elements. These case studies come from both developed and developing countries and deal with both large- and small-scale issues. The authors pay particular attention to the Asia-Pacific region. The volume has plenty of diagrams, handy checklists, and sidebars describing different public policy approaches to identifying goals, implementing programs, and resolving conflicts.

***Biblio-des: Hurricanes**. No. 27. 1999. Free. Available from the Regional Disaster Information Center for Latin America and the Caribbean (CRID), Apartado 3745-1000, San José, Costa Rica; tel: (506) 296-3952; fax: (506) 231-5973; e-mail: crid@netsalud.sa.cr; WWW: http://www.disaster.info.desastres.net/crid/index.htm.*

CRID has published at least two dozen bibliographies on specific topics in hazards management in Latin America and the Caribbean. Called ***Biblio-des***, these literature reviews typically feature equal numbers of entries in Spanish and English. Because Hurricanes Georges and Mitch left such a profound mark on the region, CRID has been collecting the experiences of the affected countries and has dedicated this latest issue of ***Biblio-des*** to hurricanes. The bibliography lists hundreds of scientific publications on tropical storms, all of which are contained within CRID's larger "Desastres" database. For more information, see the CRID Web site above.

Floods

***Flood Proofing Performance: Successes & Failures**. U.S. Army Corps of Engineers. 1998. 116 pp. A free copy can be obtained by contacting Annette Wolf, (505) 342-3320; fax: (505) 342-3497; e-mail: annette.m.wolf@usace.army.mil.*

This is another volume in the series produced by the U.S. Army Corps of Engineers' National Flood Proofing Committee (NFPC) that describes how floodproofing measures have performed when they are tested by actual floods. For this report, data were collected on 12 floods in all parts of the United States. For each site, an engineer reviewed the damage and building performance data on each building (much of it assembled by local officials), and most sites also were inspected by a member of the NFPC. The report includes a description of each structure examined and clearly identifies why a particular floodproofing measure failed or was successful--the report includes more failures than successes. Among the many lessons learned are: don't use support posts or columns that need cross bracing in areas subject to ice or debris movement; floodproofing measures that require human intervention should be

practiced periodically; metal fasteners that tie structural members together should be corrosion-resistant; flood shields that span long lengths need lateral bracing; internal drainage systems should be integral parts of any levee or floodwall; and basements can rarely be dry floodproofed. Many photographs, summary tables, a glossary, and a brief overview of floodproofing techniques round out the volume. For more information about, or to provide feedback on, the contents of the report, contact Larry Buss, e-mail: *Larry.S.Buss@usace.army.mil*.

The Influence of the Threat of Flooding on Housing Values in Fargo, North Dakota and Moorhead, Minnesota. *Patrick M. Fridgen and Steven D. Shultz. Agricultural Economics Report No. 417. 1999. 22 pp. Free. Available from the Web site of the Department of Agricultural Economics, North Dakota State University: http://agecon.lib.umn.edu/ndsu.html.*

Fargo, North Dakota, and Moorhead, Minnesota, on opposite banks of the Red River of the North, suffer regular flooding. For many decades a key question in planning flood damage reduction projects for the region has been the uncertainty about how housing values are affected by the threat of flooding and by location in relation to the floodprone areas. This master's thesis summarizes a project that used the hedonic valuation method to quantify these influences. The prices of about 3,800 homes in the two cities were regressed against structural housing characteristics, neighborhood and environmental indicators, and three flood risk variables. The upshot was that being located in the 100-year floodplain lowered the sale price of an average home by almost $9,000 between 1995 and 1998; about 81% of the depreciation was associated with required flood insurance premiums. After the 1997 flood, significant negative publicity about flood damage resulted in those home prices decreasing even further. In contrast, homes in the 500-year floodplain sold for $3,100 more than those not in the floodplain. The authors conclude that area homeowners recognize the cost of flood risk and that more disclosure is needed about the location of the 500-year floodplain in the two cities.

National Directory of Floodplain Managers*. Association of State Floodplain Managers, Inc. 1999. 229 pp. $25.00, nonmembers. Available from the ASFPM Executive Office, 2809 Fish Hatchery Road, Suite 204, Madison, WI 537113; (608) 274-0123; e-mail: asfpm@floods.org.*

Besides assembling the names and contact information of all the individual, corporate, agency, and chapter members of the association, the ASFPM directory organizes other assorted pieces of information that floodplain managers like to get their hands on quickly. Among them are lists of other groups involved in water resources or disaster management; descriptions of related federal agency programs; run-downs of the goals and recent activities of the technical and policy committees of the ASFPM (flood insurance, public education, mapping and engineering standards, arid regions, to name a few); resolutions and memoranda of understanding issued during the past year in response to important flood hazard issues; and explanations of the ASFPM's past and current conferences, awards, fellowships, and other activities.

Hail

Developing Hail Databases for the United States*. Stanley A. Changnon and David Changnon. 1999. 51 pp. $25.00. Available from the authors, 801 Buckthorn Circle, Mahomet, IL 61853; (217) 586-5691.*

This is the final report of a two-year project funded by the National Oceanic and Atmospheric Administration's Office of Global Programs and the National Aeronautics and Space Administration's Mission to Planet Earth. The goal was to assemble and evaluate historical hail data from weather stations in the contiguous United States from 1901 to 1994. The resulting unique database consists of high-quality hail data for 1,061 weather stations, including monthly and annual counts of the number of days with hail and historical hail-related crop losses for the 27 states with the highest losses. Maps display the spatial pattern of annual and seasonal hail days. The final report describes the data collection procedures, explains how the data sets were evaluated, and gives the findings from the research. The database itself was digitized and distributed on CD-ROM to selected public and private organizations concerned with hail and its impacts.

A Useful CD from NOAA

Community Vulnerability Assessment Tool. *1999. CD-ROM. NOAA/CSC/99044-CD. Free. Available from the NOAA Coastal Services Center, 2234 South Hobson Avenue, Charleston, SC 29405; (843) 740-1200; e-mail: clearinghouse@csc.noaa.gov.*

The Coastal Services Center of the National Oceanic and Atmospheric Administration has developed a method whereby local and state governments can determine and set priorities for coping with the coastal hazards to which their localities are prone. The method has been issued as a tutorial that guides the user through the steps of determining the hazards vulnerability of his or her locality, including instructions on prioritizing the degree to which various segments of the community are at risk; examining the location, durability, and use of critical facilities; assessing potential environmental concerns; understanding local economic vulnerability; and capitalizing on prudent mitigation opportunities. The disk also gives information about various data management tools suitable for conducting the assessment and features a case study of a vulnerability assessment done for New Hanover County, North Carolina.

Cambridge Review Seeking Articles on Disaster Diplomacy

The ***Cambridge Review of International Affairs*** is devoting a section of its autumn 2000 issue to the topic of "Disaster Diplomacy." The journal will present case studies in which natural disaster management has brought together nations normally in conflict. The editors intend to show that, as a result of natural disaster management, political, diplomatic, cultural, social, technical, or economic links or exchanges were fostered. They envision several frameworks through which such interstate cooperation could occur, for example, international organizations, grassroots or community-based projects, and diplomatic and political processes. Possible areas to be examined include the recent earthquakes in Greece and Turkey; joint disaster management efforts between the U.S. and Cuba; the Global Seismic Hazard Assessment Program; and international disease management.

The journal invites submissions by March 15, 2000, to be reviewed by an editorial board. A combination of theoretical and practical works by authors from a variety of professional backgrounds is sought. For author guidelines, suggestions, or further information, please contact *Ilan Kelman, The Martin Centre, University of Cambridge, 6 Chaucer Road, Cambridge CB2 2EB, U.K.; tel: +44-1223-331715; fax: +44-1223-331701; e-mail: ilan_kelman@hotmail.com*.

Merry Millennium to All!

From the Natural Hazards Center

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 Management Agency, National Weather Service, U.S. Geological Survey, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Department of Transportation, National Aeronautics and Space Administration, the Institute for Business and Home Safety, and the Public Entity Risk Institute. Please send information of potential interest to the center or the readers of this newsletter to the address below. The deadline for the next ***Observer*** is *January 15, 2000*

Center phone number: (303) 492-6818
Fax: (303) 492-2151
E-mail: hazctr@spot.colorado.edu

Publications Clerk: (303) 492-6819
E-mail: janet.kroeckel@colorado.edu

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To contact the editor of the ***Natural Hazards Observer***, send an e-mail message to *sylvia.dane@colorado.edu*

To contact the editor of ***Disaster Research***, send an e-mail message to *david.butler@colorado.edu*

For other services or information provided by the Natural Hazards Center, send an e-mail message to *hazctr@spot.colorado.edu*

To reach us by snail mail, send correspondence to:

Natural Hazards Research and Applications Information Center
Institute of Behavioral Science #6
University of Colorado at Boulder
Campus Box 482
Boulder, Colorado 80309-0482

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If you have questions about this document, please contact *sylvia.dane@colorado.edu*.

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