

Natural Hazards Observer

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With the unusual spate of disasters this fall--from hurricanes to earthquakes--we thought it would be interesting to look at and compare the social and policy consequences of two of them--one within the U.S. and one overseas. Thus, in this issue, we provide two Invited Comments on recent events.

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Who We Are



Was the Izmit Earthquake of August 17, 1999, "Just Another Earthquake in Turkey?"

--an invited comment

Over the past three decades, I have had several opportunities to witness how earthquakes affect Turkish society (Gediz in 1970, Lice in 1976, Erzurum in 1983, Erzincan in 1992, and Dinar in 1995). The magnitude 7.4 earthquake that struck on August 17, 1999, with its epicenter near Izmit, along the North Anatolian fault in northwest Turkey, was similar to--and at the same time very different from--earthquakes Turkey has experienced many times this century. In just 45 seconds, over 15,700 men, women, and children were killed; about twice that number were injured; thousands were missing; 200,000 became homeless; the economy was devastated; and the state suddenly needed at least \$9 billion to recover losses. Is this disaster different from quakes in the past? Are there lessons from this tragedy for the U.S. and other countries? Absolutely yes.

Field Research Revealed Similarities

This earthquake was similar to past seismic disasters in Turkey in several ways: far too many people died or were injured; too many buildings were totally or partially destroyed; emergency responders were overwhelmed; and search and rescue efforts were overly dependent on foreign teams. As in the past, government leaders were on scene to reassure the victims that they should accept God's actions and that

the government would rebuild their homes. Yet, this catastrophic disaster was also very different.

The Dissimilarities Are More Significant

This event released not only devastating physical energy, but also a form of social and political energy not seen to such an extent in Turkey after other tragedies. Unlike past quakes, this disaster occurred in the densely populated, industrial heartland of northwest Turkey. This urbanized megalopolis in the Marmara region contains about one-third of Turkey's manufacturing and close to one-third of its 60 million citizens. Even more significant, much of the population is middle- to upper-class, representing the urban intelligentsia and social elite. One-third of Turkey's gross domestic product is generated here, and this cultural heartland contains numerous top universities, hospitals, media organizations, and tourist sites. This time the earthquake did not occur in the relatively isolated and remote poorer provinces of eastern Anatolia. It did not primarily affect subsistence farmers with limited voice. This time the urbanites were heard--loud and clear.

Buildings Killed People, Not God

Quite probably the citizens of this unitary democracy will no longer accept the explanation or excuse of fate and/or God as the cause of earthquake disasters. Once again, evidence widely viewed across the nation clearly demonstrated that shoddy construction, building on unstable land or on known faults, simple greed by unscrupulous developers, and lack of enforcement of construction and zoning codes killed people--not God, not earthquakes.

The Turkish public now insists that those responsible for the unnecessarily heavy loss of life and injuries, and of family homes and livelihood, must be held accountable. Public pressure has resulted in parliamentary debates over whether thousands of prefabricated temporary shelters should be constructed, or whether reconstruction should begin on more permanent homes, substituting temporary shelters for existing rentals, hotels, and leased empty buildings. Public outcry has also led to requests for constitutional changes to allow for more freedom of speech and for quality control of construction by requiring competitive bidding for public contracts, rather than awards to those who are the personal choices of national and local officials.

Media Led the Way

The news media in Turkey were instrumental in documenting victims' responses, actions, and attitudes toward emergency responders. For several days, the Turkish government's search and rescue efforts were slow in responding, and this inadequate response was broadcast live and uncensored from the disaster site by several television stations. At the same time, the nongovernment search and rescue team known as AKUT did respond quickly and performed admirably. All of Turkey viewed the enormous strain on the survivors as they waited for government and military emergency assistance.

Unusually Severe Criticism of Public Institutions

Citizens will no longer accept the current restrictions on free speech in Turkey. The laws on Turkish sensitivities will probably change. The populace and media have mobilized strong opposition to and criticism of government leaders, housing developers and contractors, and even the military. The minister of health, along with the director of the Turkish Red Crescent, were strongly criticized for lack of timely and appropriate action, as well as insensitive, politically motivated remarks.

Government threats, both overt and veiled, to censor or close newspapers and television stations, seem less ominous than in the past because the public has been provoked. Previously unseen to this extent in Turkey, demonstrations against state efforts reveal a strong dissatisfaction with the status quo-- particularly in response to:

- the unusually slow and disorganized emergency response,
- the poor quantity and quality of emergency shelters,
- quickness by the government to use heavy equipment while search-and-rescue teams felt they could still find survivors,
- overwhelming evidence of criminal construction practices,
- unnecessarily long periods without sanitation facilities, and
- inadequate water and other necessities.

Nevertheless, some good did come out of this tragedy. International relations between Greece and Turkey and between Turkey and the European Union have improved. Greece was quick to offer help in search and rescue and took numerous actions that enhanced rapport with their neighbor. Turkey reciprocated following the recent Athens earthquake. The business and civic leaders of both countries are now taking initiatives to enhance interaction while the public is encouraging political leaders at all levels to continue this exchange.

Lessons for Us All

Turkey, the United States, and other countries know that another powerful earthquake will strike again-- maybe next year, maybe in 20 years. Although we cannot offer a precise date, we know more are coming and we can take action now to minimize risk. Experiences from the Izmit earthquake point to certain conclusions in three major areas.

Mitigation Measures

- Illegal construction practices--the weak chain in sustainable hazards mitigation--must not be tolerated or condoned.
- States can benefit by studying the retrofitting program introduced by Athens after its 1981 earthquake.





Emergency Management

- All major megalopolises need their own search and rescue teams, trained and well equipped with state-of-the-art technology.
- To ensure the most effective emergency response, governments must delegate and encourage action at all levels of administrative organizations.
- National, provincial, and local leadership must have redundant communication capabilities.

Political-Cultural Consequences

- Repeated emergency management mistakes may lead to more liberalization in certain governments.
- The media play a major role in changing the attitude of fatalism.

I believe the political, social, and economic aftershocks from this earthquake will make a difference. Mistakes repeated so often in the past are no longer acceptable in Turkey. Years from now we may look back on the tragedy of August 1999 as the catalyst that motivated planning and retrofitting to minimize future devastation--as we study the next Istanbul earthquake.

William A. Mitchell, Department of Political Science, Director of Middle East Studies, Baylor University

William Mitchell was the social scientist on the Earthquake Engineering Research Institute and Multidisciplinary Center for Earthquake Engineering Research Reconnaissance Team to the Izmit, Turkey earthquake of August 17, 1999. He wishes to acknowledge the assistance of Professors Nazmiye Ozguc and Wendy Allman.

See [pages 16 and 17](#) of this *Observer* for a list of Web sites that have information on the recent quakes in Turkey, Greece, and Taiwan.



The North Carolina Hazard Mitigation Planning Initiative

--an invited comment

The Outer Banks of North Carolina seem to attract coastal storms striking the U.S. Numerous hurricanes of significant magnitude have made landfall along the state's coast over the years, and as development continues to boom, the number of people and amount of property in harm's way rises almost daily.

The most recent storm (as of this writing) was Hurricane Floyd, a massive hurricane in September that caused unprecedented flooding in eastern North Carolina. Entire communities were immersed literally to the eaves with flood waters, which in many areas were contaminated with sewage, waste from the many hog lagoons located in the coastal plain, spilled oil tanks, and carcasses of dead farm animals, causing serious public health concerns. As rivers continued to rise and more rain fell on the saturated region, thousands of people remained in shelters for weeks after the event. Only weeks later were ground transportation systems re-established in many areas, including sections of major highways I-95 and I-40. Inaccessibility severely hampered efforts to rescue the living and find the dead. Power was out, schools remained closed, and grocery stores were running out of food well into October, as many isolated communities waited for airlifted supplies of basic survival items. Floyd was indeed among the worst disasters North Carolina has ever suffered, and the total damage has yet to be determined.

North Carolina is Proactive

Despite the havoc that Floyd and his kin wreak all too frequently, one should not assume that the state of North Carolina sits idly by watching the waves roll in and flood waters rise. In 1996, North Carolina began taking important steps to protect its citizens and visitors from the impacts of natural hazards. In September of that year, Hurricane Fran caused massive destruction on counties in every geographical region of the state--coastal, piedmont, and mountain. The category 3 storm, which left \$3.2 billion damage in its wake, issued a resounding wake-up call.

The storm also made available significant amounts of disaster-related funding. The North Carolina Division of Emergency Management (DEM) heeded the call and is creatively putting that funding to good use in a multifaceted project designed to reduce the vulnerability of citizens and property to the impacts of all types of natural hazards, and in so doing, contributing to the sustainability of communities statewide.

The Hazard Mitigation Planning Initiative

Much of the Federal Emergency Management Agency's Hazard Mitigation Grant Program (HMGP) money that became available following Fran is being used for massive buy-outs of properties located in flood hazard areas, a mitigation technique that is now widely recognized for its long-term effectiveness in removing people and property from harm's way. However, officials at DEM realized that acquisition only applies to very specific, and relatively small, areas. Even with the best intentions, buy-outs are frequently ad-hoc; individual acquisitions may be isolated from each other and the process is often not carried out as part of a larger scheme of community-wide mitigation. With this insight, North Carolina created the Hazard Mitigation Planning Initiative (HMPI), a program that focuses on local planning as a means to mitigate the impacts of future natural hazards.

Since planning for mitigation is largely uncharted territory among local governments, select communities are serving as pilots under the aegis of DEM's initiative. The 11 "Demonstration Communities" whose applications were accepted have agreed to formulate exemplary mitigation plans that can serve as models for other localities wishing to create their own plans. Under the terms of their contracts with DEM, each community is engaging in a planning process that includes identification and analysis of locally occurring hazards, extensive vulnerability studies, and an assessment of the locality's capability to address its problems. These background studies will culminate in the formulation and local adoption of programs and policies to reduce each community's vulnerability.



The end result of the 18-month planning process will be more than a document sitting on a shelf. Instead, DEM emphasizes institution building as a major component of the HMPI. Demonstration communities are receiving technical assistance and training from DEM's initiative partners so that these communities will be able to continue the mitigation process long after their financial grants have expired. The HMPI partnership includes other state agencies, the university system,



and the private sector. The Office of State Planning's Center for Geographic Information and Analysis (CGIA) is providing each local government with the electronic data required to conduct a comprehensive hazard vulnerability assessment through the use of geographic information systems (GIS).

The Department of City and Regional Planning at the University of North Carolina at Chapel Hill has developed three planning guidebooks and related documents to assist local governments in assessing their capabilities to address mitigation and is also providing technical assistance for plan formulation throughout the HMPI effort. Geographic Technologies Group, Inc. is the initiative's private sector partner, providing GIS training for local government staff in data analysis and conducting workshops on the use of GIS in mitigation planning for local policy makers. These organizations are working closely with DEM to provide ongoing assistance to demonstration communities and to further the other long-term goals of the HMPI.

Mitigating Development's Impacts

As North Carolina's Governor Hunt toured the communities struggling to survive and recover from Hurricane Floyd, he recognized that planning is the key to avoiding future losses. During a briefing for the governor and James Lee Witt, director of the Federal Emergency Management Agency (FEMA), the governor demanded that DEM work with communities to develop ways to reduce development in high-hazard areas and tie funds associated with mitigation to the development of local hazard mitigation plans. To this end, DEM has made the preparation of a mitigation plan an integral part of every mitigation grant project funded under HMGP. The governor is also calling for state and federal money to support the development of mitigation plans for every community in the state.

Since its inception, it has been the goal of the HMPI that all counties and units of local government in the state of North Carolina prepare, adopt, and implement a local hazard mitigation plan. With the devastation from Hurricane Floyd and the governor's support for such activities, this outreach and expansion phase of the initiative has taken on greater urgency. The initiative work program is being redesigned to encompass every community in the Floyd disaster area, and planning workshops and other educational and training tools are already being put in place.

DEM is also taking the opportunity to encourage re-development that will create communities that are not only more resilient to future natural hazards, but that will provide a higher quality of life in many other respects as well. The Mitigation Section of DEM is formulating a set of guiding principles for the redevelopment of eastern North Carolina that will be disseminated widely in the form of a video and a brochure to policy makers, planners, administrators of federal and state disaster assistance, local officials, business owners, and others involved in the arduous process of rebuilding the flood-ravaged region. These principles are modeled after the goals established by the President's Council on Sustainable Development in the report *Sustainable America: A New Consensus* (1996) and include such ideals as economic prosperity, social equity, conservation of nature, and civic engagement, in addition to

the concept of reducing future vulnerability.

More Than Local Government

While local mitigation planning remains the primary focus of the initiative, HMPI partners are concurrently pursuing other projects to promote the principles of hazard mitigation. One aim of the HMPI is to engage state agencies in mitigation, encouraging state-level organizations to "tweak" their programs so that activities and funding decisions do not increase the state's vulnerability to natural hazards. Realizing the potential benefits from engaging the private sector, the HMPI team is also conducting research, formulating educational programs and incentives for business and industry, and creating a compendium of best mitigation practices based on national and international experience.

The HMPI is further advocating involvement of the private sector in mitigation practices by coordinating its efforts with those of Project Impact, the nationwide initiative launched by FEMA in 1997 that aims to create partnerships among all sectors of a community before disaster strikes. The three North Carolina communities that have been selected to participate in Project Impact are also HMPI demonstration communities, and planning efforts in these communities are being supported by both the state and federal programs.

Long-Term Sustainability

DEM is guiding a bold, new approach to hazard mitigation in North Carolina by undertaking the ambitious and far-reaching Hazard Mitigation Planning Initiative. By breaking new ground, the initiative is attempting to comb at the short-sighted development patterns that, along with a misunderstanding of how the natural environment plays a significant protective role, have contributed to making some North Carolina communities extremely vulnerable to flooding, hurricane winds, storm surge, wildfire, earthquakes, and other hazards. HMPI participants are working to ensure that such communities do not increase their vulnerability by continuing inappropriate land uses, and that they control growth and development in their communities so that natural mitigative features can provide added protection.

The mitigation plans being created by the demonstration communities and other localities throughout the state should incorporate the long-term visionary principles of sustainable development, enabling these communities to make future decisions that will decrease their overall vulnerability to natural hazards. In turn, these communities will serve as a model for others throughout the state of North Carolina and the nation.

Anna K. Schwab, Hazard Mitigation Planning Initiative, Department of City and Regional Planning, University of North Carolina at Chapel Hill

Gavin Smith and Darrin Punchard, Division of Emergency Management, North Carolina Department of Crime Control and Public Safety

More information about this effort can be obtained from *Anna Schwab, University of North Carolina at Chapel Hill, Hazard Mitigation Planning Initiative, Department of City and Regional Planning, Campus Box 3140, Chapel Hill, NC 27599-3140; (919) 942-5439; fax: (919) 962-5206; e-mail: akschwab@bellsouth.net.*

A Letter to the Editor

INEEL and Wind Research

As Chair of the Partnership for Natural Disaster Reduction (PNDR) Governing Council, I was interested to note that Rich Little has taken the initiative to clarify the status of the INEEL Homesaver proposal. Mr. Little's account of the recent National Research Council panel review in the [July 1999](#) issue of the *Natural Hazards Observer* is very timely.

The Idaho National Engineering and Environmental Laboratory (INEEL) has reported to the PNDR Governing Council that they agree that the most immediate issue is establishing a congressionally backed, nationally coordinated wind hazard mitigation program. In view of the several hundred lives lost and the \$4-6 billion in property damage incurred each year due to windstorms in the U.S., the INEEL believes it is in the national interest to move forward quickly with a national program.

The PNDR Governing Council was formed by the INEEL as a result of FEMA's support in 1998. While interest in a Large Scale Wind Test Facility (LSWTF) proposed by the laboratory was the initial objective (and remains important to the members), the primary focus of this group at this time is to bring industry input and influence to support a nationally coordinated wind hazard reduction program.

While the INEEL has studied the feasibility of an LSWTF, the INEEL also has funded various wind-related research projects, both at the laboratory and through at least 13 universities during the past five years. Examples of these projects include development of new wind sensors, research on wood/metal construction joints, collection of ground-level hurricane data, research on shutter adequacy, and studies of wind resistance of manufactured housing.

In light of the lessons learned during the past five years, the INEEL plans to review the information presented in the report concerning wind research and the role of an LSWTF. For example, the report states that "when the government formulates and implements a national wind-hazard reduction program, an LSWTF could be used to increase our knowledge and understanding of how residential and other low-rise structures behave in extreme winds." However, the report indicates that other technologies may be able to achieve similar results and certainly these technologies should be investigated.

The report acknowledges the uniqueness of a Large Scale Wind Test Facility: "Repeatable experiments at large scale in a controlled environment cannot be performed in natural winds. This characteristic sets

an LSWTF apart from other experimental methods and is the reason the committee believes there may ultimately be a place for an LSWTF in a comprehensive national program for wind-hazard reduction. The ability to demonstrate building performance, including failure, might be useful to focus public interest on the need for mitigation."

The report suggests that while there is a need for the information that could be obtained from an LSWTF, and the United States has no facility specifically constructed for this purpose, more research is needed before construction is initiated. For example, more information about extreme winds may be necessary before a full-scale test facility can be designed and operated. The INEEL has recognized this need also, and currently is involved in ground-level wind data-gathering efforts with the state of Florida and several universities throughout the United States.

Both the PNDR Governing Council and the INEEL look forward to more discussions with the various panel participants and other interested parties about pursuing a national program. Clearly, the need is there, and a National Research Council review has called for action.

Thomas M. David, Co-Chair, Partnership for Natural Disaster Reduction

Washington Update

FEMA Outlines Factors Used in Evaluating Presidential Disaster Declarations

When a disaster is sufficiently large to overwhelm state and local resources, a governor may request a presidential disaster declaration in order to receive federal disaster assistance under the Robert T. Stafford Disaster Relief and Emergency Assistance Act. In such instances, the Federal Emergency Management Agency (FEMA) provides a recommendation to the president regarding whether federal disaster assistance is warranted. In the September 1, 1999, *Federal Register* (Vol. 64, No. 169, pp. 47697-47699), FEMA issued a final rule that establishes the factors it considers when evaluating a governor's request. This rule neither affects presidential discretion in declaring disasters nor changes published regulations and policies established under the Stafford Act.





The agency will evaluate requests as they apply to its Public Assistance Program and its Individual Assistance Program.

Under the Public Assistance Program, FEMA will examine the estimated cost of the assistance, using such factors as the cost per capita impact within the state. They currently use a figure of \$1 per capita as an indicator that the disaster is of sufficient magnitude to warrant federal assistance. This figure will be adjusted annually based on the Consumer Price Index. In addition, FEMA has established a minimum threshold of \$1 million in public assistance per disaster because the agency believes that even the least populated states can cover this level of damage. FEMA will also take into account the impacts of the disaster at the county, local government, and tribal level, particularly where critical facilities are involved; the amount of insurance coverage in force; the amount of hazard mitigation undertaken prior to the disaster; recent disaster history; and other federal assistance provided.

Under the Individual Assistance Program, factors FEMA will consider include:

- concentration of damage (e.g, high concentrations of damage generally indicate a greater need for federal help than widespread, scattered damage);
- amount of trauma, such as large numbers of injuries and deaths and large-scale disruptions in community functions and services;
- impacts on special populations, such as low-income, elderly, or unemployed citizens;
- the amount and type of assistance received from voluntary agencies;
- the amount of insurance coverage; and
- the average amount of individual assistance by state.

Copies of the ruling can be found in the *Federal Register* at your government repository library or online at <http://www.access.gpo.gov>. For further information, contact Patricia Stahlschmidt, Response and Recovery Directorate, FEMA, 500 C Street, S.W., Washington, DC 20472; (202) 646-4066; fax: (202) 646-4060; e-mail: patricia.stahlschmidt@fema.gov.

GAO Looks at How Feds Manage Wildfire Programs

The two federal agencies that manage federal wildland firefighting programs, the U.S. Forest Service

and the Bureau of Land Management (BLM), could improve their programs, according to the General Accounting Office (GAO). Concerned about the rising costs of preparing for and controlling wildfires, Congress recently asked the GAO to provide information on how the Forest Service and BLM manage their wildfire programs. The results are contained in the report, *Federal Wildfire Activities: Current Strategy and Issues Needing Attention* (GAO/RCED-99-233, 1999, 35 pp.)

Specifically, the GAO examined:

- the process used by both agencies to develop their wildfire preparedness budgets;
- the roles and responsibilities of the National Interagency Fire Center in mobilizing firefighting resources;
- types of agreements reached among federal, state, and local firefighting organizations; and
- issues that could affect the agencies' ability to manage their firefighting programs in the future.

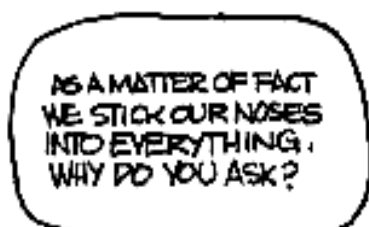
The report describes existing agency procedures for handling the first three items and lists issues GAO feels may affect future firefighting ability, including:

- a shrinking workforce of available firefighters;
- the purchase of incompatible radio technology by the two agencies that prevent their being able to communicate with each other or with other firefighting agencies; and
- the use of an outdated physical fitness test.

Single copies of the report are free, and additional copies are \$2.00 each. To obtain a copy, contact the U. S. 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 via the GAO Web site: WWW: <http://www.gao.gov>.

GAO Looks at Cost Effectiveness of Mitigation Grants

One of the Federal Emergency Management Agency's primary approaches for reducing the rising costs of federal disaster assistance is to promote mitigation measures that will reduce future damage within communities. From its inception in 1989 through April 30, 1999, FEMA's Hazard Mitigation Grant Program (HMGP) awarded over \$2.4 billion to states. Under FEMA's primary authorizing legislation, the Robert T. Stafford Disaster Relief and Emergency Assistance Act, these measures must be cost-effective, that is, they must ultimately save the federal government money.



Oversight, Investigations, and Emergency Management; Committee on Transportation and Infrastructure. His testimony supports the findings of the GAO contained in the first document.

Both reports are free and can be obtained from the GAO at the address above.

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President Signs Water Resources Development Act



In August, Congress passed, and President Clinton signed, the Water Resources Development Act of 1999 (Public Law 106-53). The bill authorizes an estimated \$6-\$7 billion in U.S. Army Corps of Engineers projects, programs, and studies, including 45 projects in 19 states and Puerto Rico. Several authorizations emphasize nonstructural flood mitigation. The bill has 27 different sections; highlights regarding floodplain management include:

- Section 212 authorizes Challenge 21, the Flood Mitigation and Riverine Ecosystem Restoration Program, at a total authorization of \$200 million over five years, starting in FY 2001. The federal cost per project is capped at \$30 million. This initiative focuses on finding more sustainable solutions to flood problems by examining nonstructural solutions in flood-prone areas while retaining traditional measures where appropriate.
- Section 201 expands the Corps' Section 205 small flood control project authority to nonstructural projects and raises the federal cost per project ceiling from \$5 million to \$7 million.
- Section 219 requires the Corps to count flood losses avoided in benefit/cost analyses for nonstructural projects "as they are counted for structural projects." It also authorizes the Corps to re-evaluate (at the request of a nonfederal interest) a previously authorized project and consider nonstructural alternatives in light of this new treatment of benefits.
- Section 219 also authorizes the Corps to provide its federal cost share (up to 65%) for a nonstructural project concurrently with the nonfederal sponsor's expenditures, that is, at the outset of construction.
- The act requires the Corps to "coordinate with the Director of the Federal Emergency Management Agency and heads of other federal agencies to assure that flood control projects

[structural and nonstructural] are complementary and integrated to the extent practicable and appropriate."

- Section 215 raises the nonfederal share for periodic beach nourishment from the current 35% to 50% on a phased-in basis from now to 2003. The nonfederal cost for initial construction of shore protection projects remains at 35%.

The text of the bill can be found at *any federal repository library* or via the World Wide Web at the Library of Congress Web site: <http://thomas.loc.gov>.

Adapted from *News & Views* (October 1999, p. 7), the newsletter of the Association of State Floodplain Managers.

SBA Outlines Rules for Pre-Disaster Mitigation Loans

In the July issue of the *Natural Hazards Observer* ([Vol. XXIII, No. 6, p. 6](#)), we mentioned that Congress had enacted Public Law 106-24, which appropriated \$15 million to the Small Business Administration (SBA) for a pilot program to provide disaster mitigation loans to small businesses in support of FEMA's Project Impact. In the September 3, 1999, *Federal Register* (Vol. 64, No. 171, pp. 48275-48277), the SBA outlines regulations for providing these loans.

This final rule amends SBA's regulations allowing pre-disaster mitigation loans so that small businesses may install mitigation devices to prevent future damage. It states that mitigation can include such activities as elevating flood-prone structures; constructing retaining and sea walls; grading and contouring land; relocating utilities; and retrofitting and strengthening structures to protect them against high winds, earthquakes, floods, wildfires, and other natural hazards. Loans are available only to those small businesses located in Project Impact communities, and applicants may borrow up to \$50,000 per year at four percent interest per year or less.

The complete text of the final rule can be found in the *Federal Register*, and more information about this program can be obtained from *Bernard Kulick, Office of Disaster Assistance, Small Business Administration, 409 Third Street, S.W., Washington, DC 20416, (202) 205-6734; fax: (202) 205-7728; e-mail: bernard.kulik@sba.gov; WWW: <http://www.sba.gov/disaster/>.*

HUD Amends Rule on Disaster Recovery Initiative

Communities are often hard-pressed to come up with funds to match federal assistance dollars, but the Department of Housing and Urban Development (HUD) recently amended the rules in its Disaster Recovery Initiative to make such financing a little easier. The September 3, 1999, *Federal Register* (Vol. 64, No. 171, p. 48411) contains an amendment to a notice published on October 22, 1998, governing the allocation and use of Community Development Block Grant (CDBG) funds made

available through HUD's Disaster Recovery Initiative.

The amendment modifies the department's position on the use of annual CDBG funds and their use to meet non-federal matching fund requirements in the 1998 Supplemental Appropriations and Rescissions Act (Public Law 105-174). Essentially, HUD found after legal review that annual appropriations of CDBG funds may be used to meet the 25% nonfederal matching funds requirement.

For more information about this notice, contact *Jan C. Opper, Office of Block Grant Assistance, Department of Housing and Urban Development, Room 7286, 451 Seventh Street, S.W., Washington, DC 20410; (202) 708-3587; fax: (202) 401-2044.* Copies of the ruling can be found in the ***Federal Register*** at your local government repository library or on-line at <http://www.access.gpo.gov>.

FEMA Asks EDA for Business Recovery Help

Communities in North Carolina, New Jersey, and Virginia flooded by Hurricane Floyd will receive help with their economic recovery through a partnership between FEMA and the U.S. Commerce Department's Economic Development Administration (EDA). This marks the third time FEMA and EDA have combined to help disaster-stricken communities by addressing business and revenue issues in addition to the reconstruction of public infrastructure and residences.

EDA will publish three reports, one for each of the areas mentioned above. The reports will describe the areas' predisaster economies, discuss the businesses affected, estimate lost revenue and property damage, and make recommendations to speed recovery and prevent future losses. The EDA reports will also encourage smart rebuilding through disaster-resistant construction and suggest incentives to retain businesses in the areas.

The recommendations in these reports will be implemented in part through grants from EDA, FEMA's disaster assistance programs, and other federal and state assistance programs. For more information about these efforts, contact *FEMA's Office of Public Affairs, 500 C Street, S.W., Washington, DC 20024; fax: (202) 646-3362; e-mail: eipa@fema.gov; WWW: <http://www.fema.gov>.*

FEMA Evaluates Cover America Campaign

In 1998, the Federal Emergency Management Agency (FEMA) created the "Cover America" marketing program to increase sales of flood insurance and raise awareness about its National Flood Insurance Program (NFIP). Recently, an independent advertising



and market research firm evaluated this campaign. FEMA made the results of that evaluation available on its Web site at <http://www.fema.gov/nfip/caeval2.htm>.

The firm concluded that FEMA successfully met its objectives for the Cover America campaign, particularly by increasing consumer awareness, changing attitudes, generating intermediate actions such as information requests, and increasing sales. Notably, the campaign has raised awareness of the NFIP from 42% to 52%, and increased the positive image of the program from 18% to 30%. Sales also increased--partly due to the effects of the National Flood Insurance Reform Act of 1994, which strengthened the mandatory purchase requirement for flood insurance--but also due to the campaign. Analysis showed a statistically significant relationship between advertising and sales of flood insurance policies.



Finally, the report concludes that certain segments of the population are more willing to purchase flood insurance than others and are thus more responsive to the advertisements. Targeting these groups may yield better sales of flood insurance policies. Moreover, the report concludes, although most people who are exposed to the advertising take no immediate action, the campaign should be used to build overall awareness of the NFIP and improve attitudes toward flood insurance, which will gradually lead to more purchases of policies in the future.

White House Establishes Drought Task Force

In response to the widespread drought affecting the eastern sections of the U.S., the White House created an Interagency Task Force on Drought and Heat in August 1999 to respond to the emergency and to prepare a comprehensive plan to meet the long-term challenge posed by drought. The task force undertook four activities:

- cataloging federal efforts already undertaken;
- identifying additional federal responses to assist communities in planning for and responding to breaking emergencies;
- assessing the impacts of the current drought to identify further needs and possible federal responses; and
- coordinating federal input into the National Drought Policy Commission created by Congress in 1998 (see the *Observer*, [Vol. XXIII, No. 1, p. 10](#) and the article below).

A recently released report outlines the efforts and recommendations of federal agencies in dealing with drought. Copies of the report are free and can be requested from the *FEMA Publications Distribution*

Facility, P.O. Box 2012, Jessup, MD 20794-2012; (800) 480-2520.



Congress Establishes National Drought Policy Commission

According to the National Drought Mitigation Center at the University of Nebraska, droughts create greater dollar losses each year in the U.S. than floods or hurricanes. Yet, we have no national policy for dealing with this often neglected hazard. In an effort to correct this situation, Congress passed and the president signed Public Law 105-199 (see the *Observer*, [Vol. XXIII, No. 1, p. 10](#)), establishing the National Drought Policy Commission (NDPC) to provide advice regarding a coordinated federal policy on drought preparedness and response.

The NDPC was charged by Congress with making recommendations on:

- how to better integrate federal drought laws and programs with ongoing state, local, and tribal programs;
- how to improve public awareness of the need for drought mitigation, prevention, and response;
- whether all federal drought preparation and response programs should be consolidated under one existing federal agency, and if so, which agency.

The NDPC will submit to Congress and the president a report with conclusions and recommendations for legislative and administrative actions.

The National Drought Policy Commission has held two meetings, in conjunction with public hearings, in Washington, D.C. in July and September of this year. At the public hearings, the commission members heard testimony from agricultural producers, state and federal officials, and nonprofit organizations.

The commission plans to distribute its draft policy for public comment in the next few months at several public hearings around the country. Public comment will be requested through an announcement in the *Federal Register* and local news media. The commission will report its findings to the White House and the Congress early next year.

For more information, contact the *USDA/FSA/AO, National Drought Policy Commission, STOP 0501, 1400 Independence Avenue, S.W., Washington, DC 20250-0501*; e-mail: leona.dittus@usda.gov; WWW: <http://www.fsa.usda.gov/drought>.

FIA Issues Rule on Insuring Against Flooding in Closed Basin Lakes

Closed basin lakes--lakes without a natural drainage like the Great Salt Lake--can cause significant flood problems, particularly in the western U.S. where fluctuations in climate can raise and lower water levels substantially. For such lakes, runoff remains in the basin until it evaporates or enters the groundwater table. Thus, in particularly wet years, these lakes sometimes overtop their basins and cause flooding. Recently, FEMA's Flood Insurance Administration (FIA) added an endorsement to the Standard Flood Insurance Policy that establishes a permanent procedure for honoring claims for buildings damaged by continuous flooding from closed basin lakes or buildings under imminent threat of flood damage from such lakes. The interim final rule appeared in the August 2, 1999, *Federal Register* (Vol. 64, No. 147, pp. 41825-41827).

This rule was issued in response to the problems faced by property owners in the Devil's Lake area of northeastern North Dakota. During the past three years, the lake has risen 12 feet, overcoming property owners' short-term flood mitigation efforts, such as temporary dikes, flooding hundreds of properties and threatening many more.

Jo Ann Howard, director of FIA, waived a policy requirement that she concluded was not appropriate in light of the unique circumstances at Devils Lake. Specifically, she said a building on Devils Lake need not be continuously flooded for 90 days before declaring it a total loss, thus allowing homeowners to use insurance payments to relocate. Howard estimates that by taking this action, the National Flood Insurance Program has saved on average 25% for each claim in that area. However, this rule also applies to other closed basin lakes in the U.S.

The interim final rule requires local governments having jurisdiction over imperiled property to adopt and enforce permanent mitigation measures, such as prohibiting new construction that may be subject to flooding by a rising lake and restricting for open space any affected property in which the community may acquire an interest.

As mentioned above, the complete text of this interim final rule may be found in the *Federal Register* at your local federal repository library or on-line at <http://www.access.gpo.gov>. For more information,

contact *Charles M. Plaxico, Jr., FEMA, FIA, 500 C Street, S.W., Washington, DC 20472; (202) 646-3422; e-mail: charles.plaxico@fema.gov.*

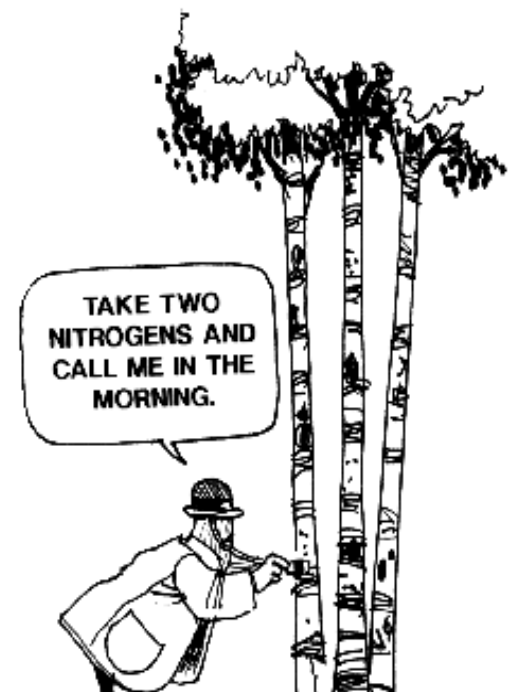
USGS Ups the Seismic Ante

There is a significant likelihood that the San Francisco Bay area will be struck by a large earthquake in the next 30 years. Indeed, according to a study released by the U.S. Geological Survey on October 14, 1999, there is a 70% chance that a quake of magnitude 6.7 or greater will strike by the year 2030. This estimate is 3% greater than the Survey's estimate in 1990 for a major quake in the area.

The study was based on a new set of computer models that considered the interaction of all the known faults that undercut the heavily developed areas around San Francisco. The study, conducted by a team of 70 scientists, looked at the earthquake hazard from the Pacific Ocean to the Sacramento Delta, about 40 miles inland. Since 1989, when the magnitude 6.9 Loma Prieta quake shook the area, rapid development has occurred in the region, leaving more people at risk. The report also provides probabilities of rupture for each fault in the region.

For more information on this report, contact *Pat Jorgenson, USGS, 345 Middlefield Road, Menlo Park, CA 94025; (650) 329-4000; WWW: <http://www.usgs.gov>.*

Western Governors Seek to Improve Forest Health on Federal Lands





Improving the health of forests is crucial to reducing the catastrophic wildfires that regularly burn the western regions of the U.S. At its annual meeting in June 1999, the Western Governors' Association (WGA) passed a policy resolution to work with Congress and the president to create demonstration projects that improve forest ecosystem health. Because the West is home to the majority of national forests in the U.S., the poor health of these forests create an unacceptable risk of wildfire, insect infestation, and disease. Specifically, the WGA points to the elimination of natural fire and poor past management activities as the cause for this decline.

As part of this policy initiative, the governors promise to work with appropriate federal agencies to identify potential projects, to work with the White House and Congress to obtain funding for these demonstration projects for the next three to four years, and to identify barriers to implementation and share these observations with Congress and the president.

For more information on this policy resolution, contact the *Western Governors' Association*, 600 17th Street, Suite 1705 South, Denver, CO 80202-5452; (303) 623-9378; fax: (303) 534-7309; WWW: <http://www.westgov.org>.

LSU Launches Hurricane Center



As many hazards researchers know, risks due to hurricanes and tropical cyclones are rapidly increasing around the world. Population growth and global migration patterns toward coastal areas, increased development and urbanization of the coastal zone, long-term climatic trends, and other factors combine to expose growing numbers of people to hurricanes. Although improved forecasting and warning systems have reduced the number of fatalities associated with hurricanes in the developed world, developing nations can still suffer casualties measured in the tens of thousands due to a single storm. Worldwide, annual monetary losses due to tropical cyclones have been increasing exponentially.

Ongoing research conducted at Louisiana State University (LSU) has shown that Louisiana is among the states most vulnerable to hurricanes. Consequently, scientists and engineers at the university have launched a new LSU Hurricane Center, which will focus on issues relating to the Gulf Coast and

Atlantic states but will also offer assistance to other vulnerable locations, including those in other nations. Indeed, LSU has already initiated a program to assist Honduras in its reconstruction following last year's devastating Hurricane Mitch.

The mission of the LSU Hurricane Center is to advance knowledge and mitigate hurricane losses through education, research, and service. The center enhances individual research by synthesizing university expertise, and it ensures that the resulting information and technology are made accessible to resource managers and emergency preparedness decision makers who actually deal with hurricanes. The new center is described in the first volume of the *LSU Hurricane Center Newsletter*, which also provides information about hurricane hazard mitigation and relevant Web pages.

For information about the LSU Hurricane Center, contact *Marc Levitan, Acting Director, LSU Hurricane Center, 3513 CEBA Building, Louisiana State University, Baton Rouge, LA 70803; (225) 388-4813; fax: (225) 388-8652; e-mail: levitan@hurricane.lsu.edu (or levitan@eng.lsu.edu);* or see the center's Web site: <http://www.hurricane.lsu.edu/hcenter.html>.

To subscribe to the *LSU Hurricane Center Newsletter*, contact *Ivor van Heerden, Deputy Director, LSU Hurricane Center (address at left); (225) 388-5974; fax: (225) 334-2527; e-mail: ivheerd@hurricane.lsu.edu (or ivheerd@unix1.sncc.lsu.edu).*

For information on the LSU in Honduras Program, contact *Bruce Sharky, Department of Landscape Architecture, Louisiana State University, Baton Rouge, LA 70803; (225) 388-1441; fax: (225) 388-1445; e-mail: lasharky@aol.com.*

[Adapted from the *LSU Hurricane Center Newsletter*, Vol. 1, No. 1]

NASA Releases New Global Change Master Directory

NASA's Global Change Master Directory (GCMD) staff recently announced the release of its newest Master Directory (MD7) via the World Wide Web at <http://gcmd.nasa.gov>. The GCMD is a source of "meta-information" about data available in the earth and environmental sciences on global change. The GCMD, intended for both scientists and the general public, provides information on how to obtain data and frequently includes direct links to data sources. More than 17,000 links are maintained within the directory's descriptions, which cover government agencies, universities, research institutions, and scientific research programs around the world. This new release includes:

- Over 7,700 earth science data set descriptions from over 1,000 data providers worldwide;
- A science keyword search facility that includes multiple additional search options;
- A subscription service that notifies users of the addition of new information;

- A learning center that includes student resources, teacher resources, FAQs, and links to important global change data sets;
- An improved global change conference calendar that allows searching for conferences by date, name, or alphabetical list;
- An "Add-A-Link" feature that allows the GCMD to include information about other institutions' and individuals' data; and
- Many other enhancements.

As always, searching for information or including information in the GCMD is free of charge. For more information, see the directory Web site or contact *Gene R. Major, Global Change Master Directory*, e-mail: major@gcmd.nasa.gov.

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The Internet Page(s)

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

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

Downloadable *Informer* Now Available On-Line

To meet the unexpected demand for its new publication, the *Natural Hazards Informer*, the Natural Hazards Research and Applications Information Center is providing a downloadable version of the first issue on the World Wide Web. The Natural Hazards Center encourages the reproduction and distribution of the *Informer*.

Written by practitioners and researchers, each volume of the *Informer* summarizes current knowledge about some specific aspect of natural hazards research and policy, saving readers the time and effort needed to research and update their knowledge regarding the given topic. The *Informer* is intended for practitioners, researchers, public policy makers, and others interested in hazards management, and is distributed free to all subscribers of the newsletter you are currently reading, the *Natural Hazards Observer*. Thus, if you are already a subscriber to the *Observer*, you do *not* need to subscribe to the *Informer*; it will be sent to you automatically.

Additionally, as mentioned above, the first issue of the *Informer*--"Flood Mitigation Planning: The CRS Approach," by French Wetmore and Gil Jamieson--is now also available from the Hazards Center Web site in both HTML (on-line) and Adobe PDF (downloadable) format. The PDF format enables interested persons to print an exact version of the original publication. For either version, on the World Wide Web, see: <http://www.colorado.edu/hazards/informer/index.htm>.

All Hazards

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

The Natural Hazards Center has published a new (and timely, in light of Hurricanes Dennis and Floyd) Quick Response report on the World Wide Web: **QR120--Assessing "Practical Knowledge" of FEMA's Responsiveness and Effectiveness in the Aftermath of Hurricane Bonnie, in Wrightsville Beach and Topsail Island, North Carolina**, by Melissa L. Tollinger and Deborah Dixon.

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

As mentioned in the last *Observer* ([Vol. XXIV, No. 1, p. 4](#)), the Natural Hazards Center has compiled summaries of the many discussions and presentations that took place at the 24th Annual Hazards Research and Applications Workshop held in Boulder, Colorado, this summer. Those summaries, abstracts of the hazards research presented, and descriptions of the projects and programs discussed at the meeting are available in paper copy for \$20.00, plus \$5.00 shipping from the *Publications Clerk, Natural Hazards Research and Applications Information Center, Campus Box 482, University of Colorado, Boulder, CO 80309-0482; (303) 492-6818; fax: (303) 492-2151; e-mail: janet.kroeckel@colorado.edu*. Checks should be made payable to the University of Colorado; Visa, Mastercard, American Express, and Diners Club cards are also accepted. (Orders beyond North America require additional shipping charges; contact the Publications Clerk at the address above for details.)

But hang on there, Pilgrim!

Those same session summaries (but not the abstracts and project descriptions) are now available at no charge from the Hazards Center Web page listed above. So, if you're interested in hearing what leading professionals had to say about some of the cutting edge issues in disaster management, take a look at <http://www.colorado.edu/hazards/ss/ss99.html>.

<http://www.reliefweb.int/telecoms/>

A comprehensive Web site on the regulatory, technical, and operational aspects of telecommunications in the service of disaster management and humanitarian assistance has been established within the United Nations Reliefweb site. These pages are being maintained by the secretariat of the Working Group on Emergency Telecommunications (WGET) at the United Nations Office for the Coordination of Humanitarian Affairs, Geneva. Comments and suggestions, including information about related URLs that could be added to those already listed, are welcome. The developers would also be grateful if existing links to their previous site (www.unog.ch/wget/) could be replaced by links to the new site. For more information, contact *Hans Zimmerman, United Nations Office for the Coordination of Humanitarian Affairs (OCHA), Palais des Nations, CH-1211 Geneva 10, Switzerland; tel: +41 22 917-3516; fax: +41 22 917-0208/-0023; e-mail: Hans.Zimmermann@ties.itu.int*.

<http://homepages.trsa.ac.za/dm/>

Disaster Management (DM) at Technikon Southern Africa was established in 1996 through

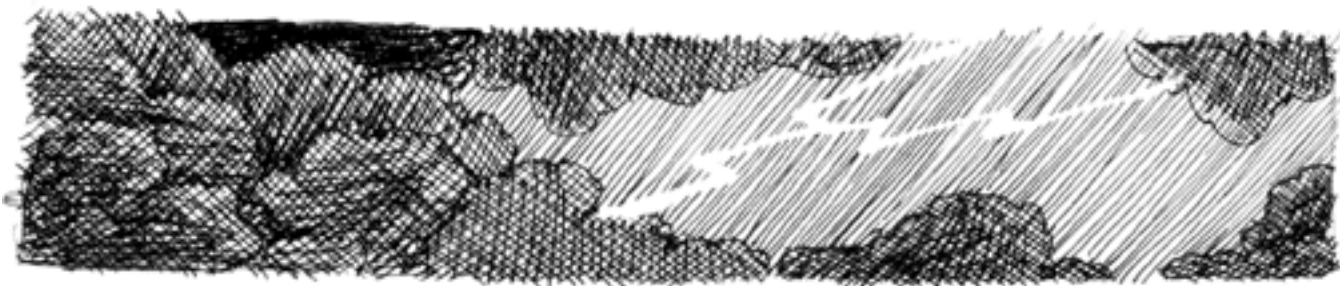
collaboration with the Disaster Management Association of Southern Africa, Cranfield University, and the University of Wisconsin-Madison. Since then numerous students from South and Southern Africa have completed the organization's internationally accredited courses in disaster management. This Web site was established to put DM's disaster management educational opportunities on-line. It is interactive and designed for students and practitioners alike. The site includes course materials, links to numerous additional disaster-related sites, a disaster management discussion forum, and (beginning January 2000) an interactive virtual classroom. The site developers welcome comments and suggestions. For more information, contact *Dewald van Niekerk, Institute for Public Management Development, Technikon Southern Africa, Room 406C, Private Bag X6, Florida, 1709, South Africa; tel: +27 11 471 3538; fax: +27 11 471 3568; e-mail: dynieker@tsamail.trsa.ac.za.*

<http://wbln0018.worldbank.org/disastmgmtteam/disastmgmtteamopenar.nsf/Homepage/Homepage?OpenDocument>

The World Bank's Web site (see the *Observer*, [Vol. XXIV, No. 1, p. 7](#)) includes this new section addressing hazards in Latin America, with information on all World Bank disaster recovery projects in that region as well as news about recent and ongoing disasters.

<http://www.disaster.info.desastres.net/PED-Ecuador/desastre/index.html>

The Web site of the Subregional Disaster Program of the Pan American Health Organization/World Health Organization (PAHO/WHO) in South America is an excellent place to locate information in Spanish about hazards/disaster management in Latin America. The site includes information and news about recent disasters, discussion lists, an index of conferences and training, several full-text documents, and links to other useful sites in both Spanish and English.



Severe Weather, High Wind, and other Atmospheric Afflictions

<http://www.nws.noaa.gov>

<http://tgs5.nws.noaa.gov/om/omdis.html>

As we've discussed before, the National Weather Service (NWS) Web site is a trove of severe weather information and data. It not only includes information on current conditions, but also encompasses IWIN--the Interactive Weather Information Network, which shows currently active severe weather warnings; EMWIN--the Emergency Managers Weather Information Network; flood and hurricane information; natural hazard statistics; drought information; and much more.

For example, after major meteorological disasters in the U.S., the NWS Office of Meteorology (OM) conducts "Service Assessments" to evaluate how the NWS performed in that disaster. These assessments offer information not only about the NWS, but also about the events themselves. Thus, they can provide useful information to hazards researchers, planners, and managers. The latest assessment examines the intense tornado outbreak of May 3 in Oklahoma and Kansas, which consisted of about 70 tornadoes, including the devastating F5 vortex that struck Oklahoma City. The complete list of assessments is available on-line at the second URL above. They can also be ordered free by contacting the *National Weather Service Headquarters, attn: Publications, 1325 East West Highway, SSMC2, Room 14408, Silver Spring, MD 20910; (301) 713-0090, ext.118*. Additional assessments are available from the NWS Office of Hydrology Natural Disaster Assessment Web site: http://tgs5.nws.noaa.gov/oh/Dis_Svy/.

<http://qsilver.queensu.ca/~icestudy>

This is the Web site for the Ice Storm '98 Project at Queen's University in Kingston, Ontario, Canada. The project consisted of an exhaustive examination of the ice storm that occurred in eastern Canada and in New York and the New England states in January 1998. In addition to photographs, the site offers over 200 interviews with emergency responders and volunteers who were involved in the restoration effort. A number of post-storm reports are also available, including several from the U.S. The project welcomes comments and inquiries. Interested persons should contact *Wayne Smith, Project Manager, Ice Storm '98 Analysis, Department of Political Studies, Queen's University, Kingston, Ontario, Canada K7L 3N6; e-mail: icestudy@qsilver.queensu.ca*.

<http://www.nssl.noaa.gov/resources/wxresource.html>

Via this Web page, the National Severe Storms Laboratory (NSSL) now provides a "Resource Listing for Weather and Climate Instruction." The document was developed to assist those who teach weather and climate at any educational level by listing some of the available instructional resources. It includes sections entitled "Career Guidance," "General Instruction," "Audiovisual," "Print," "Instruments/Equipment," "Software," "Data Sources," "Professional Organizations," and "Additional Resource Contacts," as well as a list of abbreviations and acronyms.

<http://www.dir.ucar.edu/esig/socasp/policy.html>

It's hard to keep up with the Web spinners at the National Center for Atmospheric Research (NCAR) Environmental and Societal Impacts Group (ESIG). Last month, at the address above, they added yet another page to the "Societal Aspects of Weather" Web site. Dedicated to "Weather Policy," the page provides a centralized source of information on policies for weather research and decision making. The authors welcome feedback and suggestions for additions. Beyond that new page, the Web masters at NCAR have updated the Societal Aspects of Weather site with a dedicated search engine, additional new content, and pages reorganized according to frequency of use.

<http://www.wind.ttu.edu/>

The holdings of the Wind Engineering Library at Texas Tech University are now searchable on-line. The database covers more than 4,500 articles and incorporates a simple system for searching the catalog. The site also enables users to quickly determine the availability of items.

<http://www.nationalgeographic.com/infocentral/web/weather.htm>

On its Web site, the National Geographic Society offers a section called "Info Central," which they describe as a mini-encyclopedia. It includes a "Fact Guide," "Answer Guide," and "Web Guide." In turn, the Web Guide's Science and Nature Section offers a catalog of Web sites that address "Weather, Natural Hazards, and Disasters." The extensive list covers various types of hazards, as well as such things as "K-12 Education," "Disaster Preparedness," "Disaster Response," and "Organizations and Contacts."

http://www.weather.com/breaking_weather/encyclopedia

While monitoring Hurricane Floyd on the Web, we noticed this interesting corner of the Weather Channel Web site--their "Storm Encyclopedia Home Page," which includes sections on flooding, heat waves, hurricanes and tropical systems, severe thunderstorms (including lightning and hail), tornadoes, and winter storms. Each section provides information about the given physical phenomenon, historical highlights, concomitant risks, human preparedness and response, and other aspects of these meteorological hazards.

<http://www.edf.org/pubs/Reports/hotny/index.html>

In June, the Environmental Defense Fund (EDF) released a report entitled *Hot Nights in the City: Global Warming, Sea-Level Rise and the New York Metropolitan Region*, by Janine Bloomfield, Molly Smith, and Nicholas Thompson. Available from the URL above in PDF format, the report states that "sea-level rise will contribute to the temporary flooding or permanent inundation of many of New York City's and the region's coastal areas as increased sea levels accentuate the impact of the storms that already strike the region." The study projects both more frequent droughts and increased flooding due to downpours, with consequent increases in heat-related morbidity, respiratory problems, and mosquito-borne diseases. The report concludes by outlining options for dealing with this impending crisis, detailing specific hazards and their potential effects on individual metropolitan New York areas. Paper copies of this 40-page report can be ordered from *EDF, 1875 Connecticut Avenue, N.W., Washington, DC 20009*, for \$10.00, postpaid.

Drought

<http://www.drought.noaa.gov/>

The National Oceanic and Atmospheric Administration's "Drought Information Center" Web site is "a roundup of the various NOAA Web sites and information on drought and climate conditions." It provides breaking news, including current drought assessments of various kinds; weekly and monthly roundups; links to Web sites with information about drought; and considerable background information in sections entitled "All About Drought," "Normal Precipitation for U.S. Stations," "Billion Dollar Weather Disasters," "All About Heat Waves," and "Fire Potential."

<http://md.water.usgs.gov/drought>

The torrents of Hurricane Floyd notwithstanding, this year the mid-Atlantic region of the United States

suffered its worst drought in 30 years. To address that disaster, the U.S. Geological Survey (USGS) has developed this Web site, "Drought Watch '99," which monitors water levels and rain prospects across the country. The drought, according to the USGS, will probably go down as one of the region's three worst this century. The site was launched in June, is updated every four hours, and includes information about water levels and rainfall trends nationwide.

<http://enso.unl.edu/ndmc/watch/watch.htm>

The National Drought Mitigation Center at the University of Nebraska-Lincoln has added a "Drought Watch" section to its already extensive Web site in order to provide additional information about ongoing drought problems in the U.S. These pages include links to many other sites monitoring current droughts, as well as to forecasts, information on global climate and drought monitoring, details about current drought-related impacts and humanitarian issues, and other drought news. Thus, the site is a clearinghouse for the many drought information resources now available on the Internet.

Volcanoes

<http://pubs.usgs.gov/pinatubo>

From this Web site, volcanophiles can obtain the complete text of *Fire and Mud: Eruptions and Lahars of Mount Pinatubo, Philippines*, edited by Christopher G. Newhall, U.S. Geological Survey (USGS), and Raymundo S. Punongbayan, Philippine Institute of Volcanology and Seismology (see the *Observer*, Vol. XXIII, No. 4, p. 23). This technical monograph on the large 1991 eruption of Mt. Pinatubo and its muddy aftermath includes papers on the effects of the eruption and, especially in the first section, on how warnings were formulated and received. The original volume was published in 1996 by the Philippine Institute of Volcanology and Seismology and the University of Washington Press. The on-line version is provided courtesy of the USGS.

Earthquakes

<http://www.eqnet.org>

The recently overhauled EqNET Web site--a comprehensive gateway to earthquake information on the World Wide Web--now includes a special section listing Web sites with information about the recent devastating earthquakes in Turkey and Taiwan.

<http://www.eeri.org>

<http://mceer.buffalo.edu>

Within days of the quake in Turkey, the Earthquake Engineering Research Institute (EERI) and the Multidisciplinary Center for Earthquake Engineering Research (MCEER) dispatched a number of researchers to examine the earthquake's impacts (see [page 1](#) of this *Observer*). Preliminary findings are reported on the EERI Web site and in *MCEER Response: Kocaeli, Turkey Earthquake, August 17, 1999*, a report available from the MCEER site. The latter paper includes seismological observations; reports on structural, highway, and lifeline damage; analyses of fire and political/social consequences; personal observations; and a bibliography. The MCEER site offers other reports about the quake as well

as links to additional information available on-line. Printed copies of *MCEER Response: Kocaeli, Turkey Earthquake, August 17, 1999* are available from its editor, *Jane Stoye, 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) 645-7791; fax: (716) 645-3379; e-mail: jestoye@acsu.buffalo.edu.*

<http://www.interaction.org/turkey/index.html>

Of course there are many other sites on the Web providing information about the recent quakes. For a list of nongovernmental organizations (NGOs) providing aid in Turkey or Taiwan, see this Interaction Web site.

<http://www.iris.washington.edu>

<http://www.iris.washington.edu/DOCS/turkey.htm>

The Incorporated Research Institutions for Seismology (IRIS) has put up "Special Event" Web pages for both the Turkey and Taiwan events. They include links to sites, graphics, seismic data, and general information. Persons with information that they would like to add to these pages should send an e-mail message to webmaster@iris.washington.edu.

<http://www.reliefweb.int>

The above-mentioned United Nations Reliefweb site provides information from numerous sources about the earthquakes and other recent or ongoing complex emergencies.

<http://www.gein.noa.gr/English/home-en.html>

Meanwhile, persons interested in the September 7 quake that shook Athens, Greece, killed 142 people, and left approximately 100,000 homeless, can find a report on the Web site of the National Observatory of Athens listed above.



Disaster Medicine

<http://www.hsph.harvard.edu/faculty/reich/donations/>

Faculty at the Harvard School of Public Health recently conducted a study of medical donations for emergencies and proposed uniform standards for drug donations in such situations. Professor Michael Reich's review of corporate pharmaceutical donations for relief in Armenia, Haiti, and Tanzania found that inappropriate donations were not as pervasive as anecdotal reports had previously suggested; up to two-thirds of drug types were specifically requested by the countries to which they went. Still, roughly

6% of the drugs were due to expire in 100 days or less. The complete report is available from the URL above.

PAHO Unveils Virtual Disaster Library

The Pan American Health Organization (PAHO) invites interested persons to take a look at their new Virtual Disaster Library (VDL) at <http://www.paho.org/english/ped/pedhome.htm>. The VDL is an on-line collection of disaster publications that boasts:

- More than 250 publications in English and Spanish on disasters and emergencies
- More than 25,000 pages of ideas, discussion, and solutions for disaster reduction
- A powerful yet simple search engine that helps a user to quickly locate information

The VDL can save any user hours of searching and waiting for documents by allowing them to view publications on-line or to download them in PDF format. The VDL is also available on CD-ROM (in limited supply) for disaster organizations in Latin America and the Caribbean.

The VDL is a project of PAHO in collaboration with the Regional Disaster Documentation Center (CRID) in San José, Costa Rica, and the International Decade for Natural Disaster Reduction (IDNDR). To submit comments or receive more information, e-mail disaster-publications@paho.org.

[Taken from PAHO's "DisasterInfo" e-mail list. To subscribe, send a message to disaster@paho.org.]

USGS Announces Comprehensive Publications Database

The U.S. Geological Survey (USGS) has announced World Wide Web availability of the Survey's publications database. The on-line database includes comprehensive bibliographic information on USGS reports and maps published from 1880 to the present and references for non-USGS publications with USGS authors published from 1983 to date--a total of approximately 110,000 publications. Each reference includes searchable keywords and some have abstracts. The text of the USGS documents is not included; however, access to on-line publications of the survey is.

The database is a searchable subset of the GeoRef database



produced and owned by the American Geological Institute and was created under contract with the USGS. Free public access to the database is provided as a public service by the Survey via <http://usgs-georef.cos.com>.



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>

Project Impact Summit 99. Sponsor: Federal Emergency Management Agency. Washington, D.C.: December 12-16, 1999. Building on the success of the initial Project Impact Summit last year, the 1999 meeting will provide opportunities for Project Impact communities and their partners to learn from each other's successes and work together to explore new avenues for building disaster-resistant communities. For more information, see <http://www.fema.gov/impact/summit99/>, or contact FEMA, Project Impact, 500 C Street, S.W., Washington, DC 20472; (202) 646-4600; e-mail: eipa@fema.gov.

American Geophysical Union (AGU) 1999 Fall Meeting. San Francisco, California: December 13-17, 1999. The fall AGU conference will include a special meeting entitled "The Loma Prieta, California Earthquake 10th Anniversary Session." Questions about this session should be directed to Ruth Harris, U.S. Geological Survey, 345 Middlefield Road, Menlo Park, CA 94025; (650) 329-4842; e-mail: harris@usgs.gov. For general information about the AGU conference, contact the AGU Meetings Department, 2000 Florida Avenue, N.W., Washington, DC 20009; (800) 966-2481 or (202) 462-6900; fax: (202) 328-0566; e-mail: meetinginfo@agu.org; WWW: <http://www.agu.org>.

Short Course: Engineering for Extreme Winds. Offered by: Wind Engineering Research Center, Texas Tech University. Lubbock, Texas: February 9-11, 2000. This course is intended for architects, engineers, building officials, and other persons involved in the design of buildings and structures to resist extreme winds, as well as for individuals involved with the interpretation of wind load standards and codes. It will examine new wind load standards and include case studies of wind-induced damage and design for hurricane- and tornado-resistant structures. To register or receive additional information, contact Mary Ruth Cram, Division of Extended Studies, Texas Tech University, Box 42191, Lubbock TX 79409-2191; (806) 742-7200, ext. 237; fax: (806) 742-7277.

Seismological Society of America (SSA) Annual Meeting. San Diego, California: April 9-12, 2000. The SSA annual meeting addresses all things seismic. Next year's meeting will focus on issues in Southern

California. For details, contact SSA, 201 Plaza Professional Building, El Cerrito, CA 94530; (510) 525-5474; fax: (510) 525-7204; e-mail: info@seismosoc.org; WWW: <http://www.seismosoc.org>.

21st Annual International Disaster Management Conference. Sponsored by: Florida Emergency Medicine Foundation. Orlando, Florida: April 27-30, 2000. Designed for all persons and agencies involved in emergency preparedness, management, and response, this conference will review incident command strategies used in recent disasters; showcase new resources for improving local planning, response, and recovery; and provide opportunities for participants to learn from both peers and national leaders regarding all aspects of disaster management. The meeting includes preconference workshops and specific learning tracks. The deadline for abstracts is January 10, 2000. To request a conference brochure, exhibit prospectus, or abstract submissions guidelines, contact the *Florida Emergency Medicine Foundation, 3717 South Conway Road, Orlando, FL 32812; (800) 766-6335 or (407) 281-7396; fax: (407) 281-4407; e-mail: info@fcep.org; WWW: <http://www.fcep.org>.*

Post-Graduate Training Course in Analysis and Management of Geological Risks (Certificat d'Etudes des Risques Géologiques--CERG). Organized by: University of Geneva, Faculty of Sciences; in association with the Swiss Federal Institute of Technology, Lausanne. Geneva, Switzerland: May 1-June 21, 2000. The objective of this course is to

- Develop expertise in the field of natural risk mitigation by integrating mitigation into planning for sustainable development,
- Offer a multidisciplinary approach for solving the problems posed to society by natural risks,
- Develop experts who can advise the public- and private- sectors on preventive measures to reduce the impact of natural disasters.

The training is designed for geologists, geographers, geo-technicians, civil engineers, land planners, and other persons with equivalent professional experience. The course language will be English. The deadline for applications is December 31, 1999. For details and application information, contact the *CERG Secretariat, 13, rue des Maraîchers, CH-1211 Geneva, Switzerland; tel: +41 22 702 66 02; fax: +41 22 320 57 32; e-mail: cerg@sc2a.unige.ch; WWW: <http://www.unige.ch/hazards/cerg/>.*

National Symposium on the Great Plains Tornado Outbreak of 3 May 1999. Organizer: Oklahoma Weather Center in collaboration with local, state, and federal agencies. Oklahoma City, Oklahoma: May 2-5, 2000. On May 3, 1999, extremely powerful tornadoes tore through parts of the southern Great Plains, devastating metropolitan areas and nearly destroying other communities. Despite the ferocity of the storms, the number of deaths was exceedingly low, in part because of advanced storm detection and warning technology, effective information dissemination, and rapid response by public safety and emergency officials. Because extensive information was collected during and after the event, this catastrophe provides a unique opportunity to examine relevant meteorology research and practice, economic and social impacts, public safety and emergency response, information dissemination by the media, and postdisaster relief and reconstruction.

This symposium will bring together the members of the many disciplines involved in dealing with these tornadoes to evaluate the events and actions of May 3 and to plan for future events. The symposium will be broadcast live on the World Wide Web, and a special issue of an American Meteorological Society journal will present selected papers from the meeting. Persons wishing to present oral or poster presentations should send a 200-word abstract to *Kelvin Droegemeier, Conference Chair, School of Meteorology, University of Oklahoma, 100 East Boyd, Suite 1310, Norman, OK, 73019; (405) 325-0453; fax: (405) 325-7614; e-mail: kkd@ou.edu*. Papers are especially encouraged from the social science, public safety, media, and engineering/construction science communities. The deadline for receipt of abstracts is January 15, 2000. To aid research, the Oklahoma Weather Center has established a Web site--<http://caps.ou.edu/wx/info/3may99>--containing most of the observational data (or links to them) collected during the May 3 event.

2000 National Flood Conference. Presented by: Federal Emergency Management Agency/National Flood Insurance Program. Austin, Texas: May 7-10, 2000. The National Flood Insurance Conference is intended for all persons and organizations involved in the National Flood Insurance Program (NFIP)--from insurers, to lenders, builders, compliance officials, planners, and disaster managers. To be added to the conference mailing list, contact *Becky Reardon, National Flood Insurance Program, Bureau and Statistical Agent, 7700 Hubble Drive, Lanham, MD 20706; fax: (301) 918-1471; e-mail: becky.reardon@fema.gov; WWW: <http://www.fema.gov/nfip/2000conf.htm>*.

Society for Risk Analysis (SRA)-Europe Annual Conference, in combination with the Annual Meetings of the European Safety and Reliability Association (ESRA) and U.K. Safety and Reliability Society (SaRS): "Foresight and Precaution." Edinburgh, Scotland: May 14-17, 2000. In the last few years there has been increasing recognition of the influence of social factors--such as public perceptions of risk, communication with stakeholders, and public confidence in decision making processes regarding contentious technologies--on the process of risk assessment. For this millennium meeting, the SRA-Europe conference will be combined with the annual meetings of ESRA and SaRS to explore these issues, to examine other developments in risk assessment and management, and to look at the changing public and policy context of this discipline. The conference will provide a forum for the presentation and discussion of traditional and innovative methods to evaluate and manage risks, with a particular emphasis on case studies and with specific sessions on natural hazards. More information is available from the *Safety and Reliability Society, Clayton House, 59, Piccadilly, Manchester, England, UK M1 2AQ; tel: +44 161 228 7824; fax: +44 161 236 6977; e-mail: secretary@sars.u-net.com; WWW: <http://www.sraeurope.com>*.

American Geophysical Union (AGU) 2000 Spring Meeting. Washington, D.C.: May 30-June 3, 2000. The AGU annual meetings always include sessions on various aspects of natural hazards. The organizers invite proposals. Abstracts are due March 2, 2000 (via post); March 9, 2000 (via Web). For details, contact the *AGU Meetings Department, 2000 Florida Avenue, N.W., Washington, DC 20009; (800) 966-2481 or (202) 462-6900; fax: (202) 328-0566; e-mail: meetinginfo@agu.org; WWW: <http://www.agu.org>*.

International Conference on Climate Change Communication. Sponsors: Climate Change Action Fund; Environment Canada; Departments of Geography and Sociology, University of Waterloo. Kitchener-Waterloo, Ontario, Canada: June 22-24, 2000. Obviously, communication is essential to linking science and policy. Yet there has been little collaboration among the stakeholders involved in communicating climate change issues--educators, business leaders, politicians, government agencies, researchers, nongovernmental organizations, the general public, native communities, and the media. Hence, the aim of this conference is to improve climate change communication. It will provide a forum for experts and practitioners to advance the current state of knowledge, improve the effectiveness of climate change communication programs, expand collaboration within the climate change community, and establish and maintain an international communication network. The organizers are currently seeking abstracts and particularly encourage those that focus on stakeholder perceptions and understanding of climate change, raising awareness of climate change, or identifying and overcoming barriers to action. Presentation proposals are due December 15, 1999. More information is available from, and abstracts can be submitted through, the World Wide Web: <http://geognt.uwaterloo.ca/c3confer/>. Interested persons can also contact *Jean Andrey, Department of Geography, University of Waterloo, Waterloo, Ontario, Canada N2L 3G1; (519) 888-4567, ext. 3629; e-mail: jandrey@fes.uwaterloo.ca*; or *Daniel Scott, Adaptation and Impact Research Group, Environment Canada, c/o Department of Environmental Studies, University of Waterloo, Waterloo, Ontario, Canada N2L 3G1; (519) 888-4567, ext. 5497; e-mail: dj2scott@fes.uwaterloo.ca*; or *Keith Warriner, Department of Sociology, University of Waterloo, Waterloo, Ontario, Canada N2L 3G1; (519) 888-4567, ext. 3678; e-mail: wrrr@watarts.uwaterloo.ca*.

Tenth World Conference on Disaster Management. Hamilton, Ontario, Canada: June 25-28, 2000. The World Conference on Disaster Management offers more than 50 educational sessions ranging from cross-sector planning to trauma management on an international level. The conference focuses on relationships among nonprofit, business, health care, and governmental organizations at the regional, national, and international levels in order to improve disaster preparedness, prevention, response, and recovery. More information is available from *Tracy Steel, Conference Coordinator, Canadian Centre for Emergency Preparedness, P.O. Box 2911, Hamilton, Ontario, Canada L8N 3R5; (905) 546-3911 or (800) 965-4608; fax: (905) 546-2489; e-mail: info@wcdm.org*. Registration is available via the conference Web site: <http://www.wcdm.org>.

2000 Canadian Dam Association Conference. Regina, Saskatchewan, Canada: September 16-21, 2000. The annual Canadian Dam Association meeting includes sessions on dam safety, emergency planning, and hazard analysis and remediation. More information is available from *Colin Campbell, Agriculture and Agri-Food Canada, PFRA, 1800 Hamilton Street, Regina, Saskatchewan, Canada S4P 4L2; (306) 780-5203; e-mail: pf10135@em.agr.ca*.

New Trends in Water and Environmental Engineering for Safety and Life: Eco-Compatible Solutions for Aquatic Environments. Sponsors: Politecnico of Milan, and others. Capri, Italy: July 3-7, 2000. This meeting will examine integrated, sustainable solutions involving environmental landscaping and hydrologic measures to prevent floods and erosion in both riverine and coastal systems. For more information, contact *Rossella Monti, Terr@A Dipartimento IIAR, Sezione Idraulica, Politecnico di*

Milano, Piazza Leonardo da Vinci 32, 20133 Milan, Italy; tel: 39/02/2399.6293; fax: 30/02/2399.6298; e-mail: terra@marina.iar.polimi.it.

National Beach Preservation Conference. Sponsors: American Shore and Beach Preservation Association, University of Hawaii Sea Grant College Program, and others. Kaanapali, Maui, Hawaii: August 7-10, 2000. This meeting will address coastal erosion, beach loss, and coastal hazards; case studies of successful beach restoration projects and innovative beach restoration technologies; legal and regulatory issues; relevant state and federal legislation; effects of and responses to recent hurricanes in Florida, Texas, and the Carolinas; coastal resource management in the Pacific Region; and other coastal issues. The three-day program (August 8-10, 2000) will feature many of the world's experts on coastal erosion, beach restoration, and resource management. An optional pre-conference field trip will be offered on August 7. A call for papers, conference registration form, and more information on the conference venue are posted on the conference home page: <http://www.soest.hawaii.edu/SEAGRANT/NBPC2000.html>. Persons who want to be added to the mailing list for future announcements should contact Rob Mullane, University of Hawaii Sea Grant Extension Service, Maui Community College, 310 Kaahumanu Avenue, Kahului, HI 96732; (808) 984-3254; fax: (808) 242-8733; e-mail: mullane@hawaii.edu.

American Water Resources Association (AWRA) Summer International Specialty Conference: "Riparian Ecology and Management in Multi-Land Use Watersheds." Portland, Oregon: August 27-30, 2000. Riparian areas are vital interfaces between terrestrial and aquatic ecosystems that have a wide range of ecological functions and associated social benefits. For example, riparian areas are significant buffers to the impacts of floods. This conference will focus on understanding the integrated, interactive functions of riparian areas in watersheds. Abstracts are due December 6, 1999. A conference brochure is available from AWRA, 4 West Federal Street, P.O. Box 1626, Middleburg, VA 20118-1626; (540) 687-8390; fax: (540) 687-8395; e-mail: info@awra.org; WWW: <http://www.awra.org>.

Dam Safety 2000: Association of State Dam Safety Officials (ASDSO) Annual Conference. Providence, Rhode Island: September 26-29, 2000. The annual ASDSO conference offers more than 24 hours of educational instruction conducted by experts in at least 15 technical fields, as well as opportunities to talk with over 600 dam safety professionals from the U.S. and overseas. In addition, the annual exhibit and poster show features the latest in technology, services, and award-winning designs. Before the conference, registrants receive complete conference proceedings on CD-ROM, accompanied by a user-friendly compendium of presentation abstracts. Additionally, they receive a participants list, an ASDSO "Year-In-Review" newsletter, and the *Annual Survey of State Dam Safety Programs*. Details are available from ASDSO, 450 Old Vine Street, Second Floor, Lexington, KY 40507; (606) 257-5140; fax: (606) 323-1958; e-mail: info@damsafety.org; WWW: <http://members.aol.com/damsafety/homepage.htm>.

Fifth International Conference on Corporate Earthquake Programs. San Jose, California: November 7-9, 2000. This is the only conference that specifically addresses earthquake safety among businesses and industries. It brings together public- and private-sector professionals from around the world--including risk managers, persons specifically responsible for earthquake hazard reduction, and researchers--to

exchange knowledge and insights regarding corporate earthquake preparedness. The meeting also includes exhibits of technical products developed for earthquake hazard reduction. A call for papers has been issued, and abstracts are due May 15, 2000. Areas of interest include corporate and societal earthquake hazard mitigation, communication systems for disaster response, emergency preparedness training in corporations, the role of the financial sector in earthquake recovery, volunteer activities in response and recovery, and application of performance-based engineering in hazard mitigation. Details are available from *Steven Vukazich, Department of Civil and Environmental Engineering, San Jose State University, One Washington Square, San Jose, CA 95192-0083; (408) 924-3858; fax: (408) 924-4004; e-mail: vukazich@email.sjsu.edu.*

Housing and Hazards Group Millennium Conference: "Village Infrastructure to Cope with Environmental Hazards." Dhaka, Bangladesh: November 24-27, 2000 and Exeter, U.K: December 4-5, 2000. This international conference will draw together persons interested in improving the safety of the built environment in developing countries at the rural village level. The principal venue will be Dhaka, Bangladesh, where there will be a full program of papers, discussions, and field visits. For those unable to travel to Bangladesh, a plenary session will be held in Exeter, U.K. The proceedings will be preprinted and will cover:

- Human influence on the natural environment
- Infrastructure as part of the rural economy
- The role of women in homebuilding
- Housing and floods
- Housing and winds
- Housing and geohazards
- Use and improvement of natural materials
- Appropriate research techniques
- Nongovernmental organization (NGO) experiences with house construction
- Communicating improved building technologies
- Financing housing and village infrastructure development

More information is available from *Robert Hodgson, e-mail: R.L.P.Hodgson@exeter.ac.uk; or Salek Seraj, e-mail: smseraj@bangla.net.* Interested persons can also contact the *Housing and Hazards Group, 20c High Street, Topsham, Exeter EX3 0PA, U.K.; tel: +44 (0)1392-876255; fax: +44 (0)01392-876418.*

Seventh National Conference on Earthquake Engineering. Boston, Massachusetts: July 21-25, 2002. Persons interested in participating in planning this quadrennial meeting should contact *Andrea Dargush, Multidisciplinary Center for Earthquake Engineering Research (MCEER), State University of New York at Buffalo, Red Jacket Quadrangle, Buffalo, NY 14261-0025; (716) 645-3391; fax: (716) 645-3399; e-mail: dargush@acsu.buffalo.edu.*

Emergency Management Courses Available from FEMA/EMI

The Federal Emergency Management Agency's Emergency Management Institute (FEMA/EMI) offers numerous courses that can be taken individually through its Independent Study Program. Interested persons can view course descriptions, download materials, and register via the EMI Independent Study Web page: <http://www.fema.gov/home/emi/ishome.htm>.

Alternatively, one can contact FEMA, Emergency Management Institute, Independent Study Program, 16825 South Seton Avenue, Emmitsburg, MD 21727-8998; (301) 447-1000. Courses currently offered include:



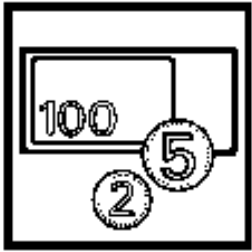
- IS-1: *Emergency Program Manager: An Orientation to the Position*
- IS-2: *Emergency Preparedness, USA*
- IS-3: *Radiological Emergency Management*
- IS-5: *Hazardous Materials: A Citizen's Orientation*
- IS-7: *A Citizen's Guide to Disaster Assistance*
- IS-8: *Building for the Earthquakes of Tomorrow: Complying with Executive Order 12699*
- IS-10: *Animals in Disaster--Module A: Awareness and Preparedness*
- IS-11: *Animals in Disaster--Module B: Community Planning*
- IS-120: *An Orientation to Community Disaster Exercises*
- IS-195: *Basic Incident Command System*
- IS-275: *The EOC's Role in Community Preparedness, Response and Recovery Activities*
- IS-279: *Engineering Principles and Practices for Retrofitting Flood-Prone Residential Structures*
- IS-288: *The Role of Voluntary Agencies in Emergency Management*
- IS-301: *Radiological Emergency Response*
- IS-324: *Community Hurricane Preparedness*
- IS-346: *An Orientation to Hazardous Materials for Medical Personnel*
- IS-393: *Introduction to Mitigation*

EMI also provides disaster management education on-site at the EMI campus in Emmitsburg, Maryland. EMI's schedule of resident courses through September 30, 2000, is available on-line from <http://www.fema.gov/EMI/rclist2000.htm>, or by writing the address above.

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Contracts and Grants

Tornado Shelter Options and Shelter-Seeking Behavior of Mobile Home Residents. Funding: National Science Foundation, \$84,040, 28 months. Principal Investigator: *Thomas Schmidlin, Department of Geography, Kent State University, P.O. Box 5190, Kent, OH 44242-0001; (330) 672-3227; fax: (330) 672-4304; e-mail: tschmidl@kent.edu.*

Approximately 45% of all tornado-induced fatalities in the U.S. during the 1990s were mobile home residents. This study will assess the shelter-seeking behavior of mobile home residents when confronted by a tornado, the availability of tornado shelters for mobile home residents, and the feasibility of using nearby vehicles as alternative shelter. In addition, two vehicle models, a sedan and a pickup, will be tested in a wind tunnel to determine the minimum wind speed required to lift and tip the vehicles at each of five wind angles. Recommendations will be made for improving current tornado safety guidelines given by the National Weather Service and other agencies.

Enhancement of Casualty Models for Post-Earthquake Response and Mitigation. Funding: National Science Foundation, \$301,909, 24 months. Principal Investigators: *Kimberley Shoaf, Hope Seligson, Maya Mahue-Giangreco, and Corinne Peek-Asa, Department of Public Health and Community Health Sciences, 36-070A CHS, University of California-Los Angeles, Los Angeles, CA 90024-1301; (310) 794-6646; e-mail: kshoaf@ucla.edu.*

Part of the U.S.-Japan Cooperative Research in Urban Earthquake Disaster Mitigation Activity, this project will apply a comprehensive database related to earthquake injuries to enhance and refine loss estimation models for emergency response and mitigation. Using data from the 1994 Northridge earthquake in Los Angeles, the 1995 earthquake in Kobe, Japan, and other sources, these researchers will examine structural damage and related injury, associated costs, and structural type and related damage; refine models predicting injury incidence and estimating loss; and transfer this knowledge to professionals involved in earthquake hazard response and mitigation.

Historic Inequities in Disaster Losses: Identifying Disaster-Prone Places. Funding: National Science Foundation, \$233,565, 12 months. Principal Investigators: *Susan L. Cutter, Hazards Research Laboratory, University of South Carolina-Columbia, Columbia, SC 29208; (803) 777-5236; fax: (803) 777-4972; e-mail: scutter@garnet.cla.sc.edu; and Dennis S. Mileti, Natural Hazards Research and Applications Information Center, Campus Box 482, University of Colorado, Boulder, CO 80309-0482;*

(303) 492-6818; fax: (303) 492-2151; e-mail: dennis.mileti@colorado.edu.

Using counties as the unit of analysis, this project will examine spatial and temporal patterns of disaster events and losses in the U.S. for the past 50 years. Primarily, this study will assess whether these losses are equally distributed over space and by social group or if some regions and groups are more affected than others. It will seek to determine whether there are differences in the broad demographic characteristics of disaster-prone versus nondisaster-prone places, and whether the impacts of losses differ from place to place, and if so, where the burdens are greatest and why.

Coping with the Littleton, Colorado, School Shootings. Funding: National Science Foundation, \$60,000, 24 months. Principal Investigator: *Roxane C. Silver, Department of Psychology and Social Behavior, University of California-Irvine, Irvine, CA 92697; (949) 824-2192, 2977; fax: (949) 824-3002; e-mail: rsilver@uci.edu.*

Much previous research has examined how people respond to traumatic life experiences, including disasters. However, little is known about how cognitive, social, and emotional responses to trauma interact and develop over time. In addition, very few studies have looked at how adolescents cope with traumatic events, and almost no research has investigated the similarities and differences among family members who are experiencing the same traumatic event. The recent Littleton, Colorado, school shootings offer a compelling and important context in which to study these issues. Residents of that community will be interviewed immediately, and followup assessments will be conducted in six and 18 months. The research will document the variability in acute responses to a community trauma among both adolescents and adults, attempt to identify early predictors of long-term adjustment to trauma, and provide insight into the psychological aftermath of human-made as well as natural disasters.

Political Ecology of Catastrophic Regional Fire in Indonesia. Funding: National Science Foundation, \$107,280, 36 months. Principal Investigator: *Judith Mayer, Department of Urban Affairs and Planning, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061; (540) 231-8954; e-mail: jmayer@vt.edu.*

This study will investigate changing policy regarding catastrophic regional fires in Indonesia over approximately the past 15 years, with particular attention to the devastating fires in 1997-98. It will focus on the changing relationships among the political-economic, ecological, and meteorological phenomena, which together have caused or exacerbated a series of catastrophic regional wildfires in Indonesia. It will examine the implications of these changes on land and

forest use, regional planning, and reform of national policy on land development and natural resource management.

Reconstructing a 1000-Year Record of Typhoon Landfalls from Chinese Historical Documentary Evidence. Funding: National Science Foundation, \$39,937, 18 months. Principal Investigator: *Kam-biu Liu, Department of Geography and Anthropology, Louisiana State University, Baton Rouge, LA 70803; (225)388-5942; fax: (225) 388-4420; e-mail: kliu1@unix.sncc.lsu.edu.*

Based on historical documentary data, this research will produce a 1,000-year record of typhoon landfalls for the entire coastal zone of China. The abundance of historical records in the form of local

county gazettes and natural disaster chronicles in China offers a remarkable opportunity for extending the climatic record beyond the period of instrumental observation to centuries or even millenia. This project will create a year-by-year, county-by-county inventory of typhoon strikes, which will be the longest documentary record of tropical cyclone activity in the world.

The On-Line Graduate Program in Community Development (Emergency Management/Human Services) at Southern Cross University

The School of Human Services at Southern Cross University, New South Wales, Australia, is currently developing several programs for delivery via the Internet, including:

- Graduate Diploma in Community Development (Emergency Management/Human Services)
- Masters of Community Development (Emergency Management/Human Services)
- Graduate Certificate in Community Development (Emergency Management/Human Services) (available as an exit point from the Diploma program, if required)

The courses offered through these programs are unique, emphasizing community development principles in both the human services generally and in emergency management particularly. This approach is intended to complement the United Nations' current focus on disaster mitigation through community development, rather than on traditional logistics-based response. In the past, both undergraduate and postgraduate courses have considered emergency management primarily from an immediate "response after the event" approach. The program at Southern Cross offers students the opportunity to look beyond that strategy and to consider the community itself as the basis not only for response, but also for longer-term planning for both disaster management and human services.

Each course unit will include the most recent information available through the World Wide Web, and materials will be constantly updated. Students will not only be able to use such material, they will also be able to interact with their fellow students and lecturers through the Internet. Because participants will be located around the world, individual students will have a unique opportunity to network and "chat" with others currently working on the front lines of emergency management and community development. To take part, participants must have access to a computer with a CD drive and to the Internet.

For more information, a list of core curriculum courses, and a list of courses available in the first trimester 2000, see the program's Web site: <http://www.scu.edu.au/emonline>.

Information can also be obtained from *Jan Foster, Course Coordinator, Graduate Programs in Community Development, School of Human Services, Southern Cross University, Hogbin Drive, Coffs*

Harbour, NSW 2457, Australia; tel: +61 2 6659 3314; fax: +61 2 6659 3103; e-mail: jfoster@chec.scu.edu.au; or Trish Welsh, Administrative Officer, (same address); tel: +61 2 6659 3210; fax: +61 2 6659 3103; e-mail: twelsh@chec.scu.edu.au.

Recent Publications

All Hazards

Shared Risks: Complex Systems in Seismic Response. Louise K. Comfort. 1999. \$98.50. To purchase a copy, contact Elsevier Science, P.O. Box 882, New York, NY 10159-0882; (212) 633-3730 or (888) 437-4636; fax: (212) 633-3680; e-mail: usinfo-f@elsevier.com; WWW: <http://www.elsevier.nl/locate/isbn/0080432115>.

In ***Shared Risk***, Comfort studies how communities at risk respond to major hazard events. More to the point, she explores the elastic boundary between structure and flexibility that enables organizations to function under uncertain, dynamic conditions. Comfort uses earthquake case studies to show how communities cope with such events, particularly how they act in their own interest to mitigate and reduce risk. She presents the theory of shared risk, including how it applies to self-organization and transition; the practice of shared risk, particularly as it applies to response systems following earthquakes; and the use of shared risk in future strategies, particularly in evolving response systems and the reduction of global risk.

Risk Management for Public Entities. George L. Head and Kwok-Sze Richard Wong, Editors. RMPE 352. 1999. 564 pp. ***Risk Management for Public Entities Course Guide.*** 1999. 193 pp. \$145.00, includes payment for examination fee for certification for public entity risk managers. For more information, contact the American Institute for Chartered Property Casualty Underwriters and the Insurance Institute of America, 720 Providence Road, P.O. Box 3016, Malvern, PA 19355-0716; (800) 644-2101; fax: (610) 640-9576; e-mail: cserv@cpcuia.org; WWW: <http://www.aicpcu.org>.

The Public Risk Management Association and the Center for Risk Management Education (a division of the Insurance Institute of America) recently teamed up to develop the first certification course for public entity risk managers. This self-study course emphasizes how risk management decision making in the public sector differs from that in the private sector, both for the protection of the public entity and for the general welfare of the public. It provides instruction on the special requirements of public entity risk management and administration, exposure identification and analysis, liability, risk control, claims and litigation management, planning risk financing, pooling financial resources, establishing risk management programs, and disaster planning and emergency response in the public sector.

Green Cross Looks at Disasters

Green Cross UK is an organization devoted to preventing and mitigating environmental damage caused by disasters, particularly in Central and Eastern Europe. Recently, Green Cross UK sent the Natural Hazards Center six of its newest reports. They include:

- ***An Analysis of the Environmental Impacts and Response to Disasters: To Support the Green Cross Environmental Response Network.*** M. Edley and G. Underhill. 1997. 79 pp. £7.00.
- ***The Floods in Poland and Germany in 1997.*** E. Penning-Rowsell. 1998. 47 pp. £5.00.
- ***Development of a GIS Model for Assessing and Predicting the Environmental Effects of Disasters.*** Anna Anderson. 1998. £7.00.
- ***A Tool for Assessing Environmental Effects of a Flood.*** 1998. 24 pp. £5.00.
- ***Environmental Issues in Disaster Prevention, Preparedness, and Response.*** 1999. 100 pp. £8.00.
- ***An Initial Evaluation of the Recent Flooding in Corrientes Province in North East Argentina: Summary Report.*** 1998. £5.00.

Copies of these documents and more information about this organization can be obtained from *Green Cross UK, Millennium House, 21 Eden Street, Kingston Upon Thames, Surrey KT1 1BL, U.K.*; tel: +44 171 547 8274; fax: +44 171 547 7789; e-mail: greencross@kingston.ac.uk; WWW: <http://www.bluekey.co.uk/gcuk>.

Floods

New Strategies for America's Watersheds. 1999. 311 pp. \$49.00; \$39.20, if purchased on-line.

New Directions in Water Resources Planning for the U.S. Army Corps of Engineers. 1999. 108 pp. \$39.00; \$31.20, if purchased on-line.

Improving American River Flood Frequency Analysis. 1999. 120 pp. \$30.00; \$24.00, if purchased on-line.

Copies of all three items can be purchased from the National Academy Press, 2101 Constitution Avenue, N.W., Washington, DC 20418; (800) 624-6242 or (202) 334-3313; fax: (202) 334-2451; WWW: <http://www.nap.edu>. The complete text of all three volumes is also available on-line at that URL.

New Strategies for America's Watersheds looks at the rise of "watershed thinking" among scientists and policy makers and recommends ways to improve watershed management. It identifies critical points in watershed planning to ensure appropriate stakeholder involvement and integration of science, policy,

and environmental ethics. The watershed approach acknowledges links between upland and downstream areas, and between surface and ground-water, and reduces the chances that attempts to solve problems in one realm will cause problems in others. This volume discusses regional variations in climate, topography, institutions, land use, culture, and law and their effects on watershed management; roles and interactions among federal, state, and local agencies; availability or lack of pertinent data; and financing recommended strategies.

The U.S. Army Corps of Engineers, like many federal agencies, is a large and complex organization driven by executive and legislative directives in combination with its own traditions. *New Directions in Water Resources Planning* contains a review of the Corps' planning procedures by a committee appointed by the Water Science and Technology Board of the National Research Council. The report evaluates the federal established principles and guidelines, assesses the implications of the Water Resources Development Act of 1986, and comments on the use of risk and uncertainty analysis in Corps planning. It also describes the evolution of Corps programs and federal water policy, gaps between Corps practices and principles, the Corps' environmental protection and restoration programs, and recommendations from the committee.

Improving American River Flood Frequency Analysis contains the results of an intensive eight-month study by the Committee on American River Flood Frequencies, a group of experts organized by the Corps of Engineers under the auspices of the Water Science and Technology Board of the National Research Council. Its sections cover the flood risk in the Sacramento region in California, sources of data, flood frequency estimates for the American River, the relationship between climate and floods, and recommendations.

Floods: Physical Processes and Human Impacts. Keith Smith and Roy Ward. 1998. 382 pp. \$124.50. To purchase a copy, contact John Wiley & Sons, Inc., Distribution Center, 1 Wiley Drive, Somerset, NJ 08875-1272; (800) 225-5945 or (732) 469-4400; fax: (732) 302-2300; e-mail: bookinfo@wiley.com; WWW: <http://www.wiley.com>.

There is a common misconception (although not among readers of the *Observer*) that in developed countries, floods are controlled by science and technology. This book demonstrates that floods are anything but controlled. Smith and Ward examine the causes of coastal and riverine flooding throughout the world and the consequences these events have for humans. They include chapters on floods as natural hazards, impacts and interpretations of flood hazards, the processes involved in both river and coastal floods, flood estimation, flood defense, forecasting and warning, land-use planning, insurance, and recommendations for dealing with this hazard.

Urban Flooding: Greenhouse Induced Impacts, Methodology and Case Studies. D.I. Smith, S. Schreider, A.J. Jakeman, A. Zerger, B.C. Bates, and S.P. Charles. CRES Resource and Environmental Studies No. 17. 1999. 68 pp. \$10.00 (Australian). To order a copy, contact the Publications Section, Centre for Resource and Environmental Studies (CRES), The Australian National University, Canberra ACT 200, Australia; tel: (02) 6249 4598; fax: (02) 6249 0757; e-mail: publications@cres.anu.edu.au.

The literature on global climate change frequently suggests the possibility of marked changes in the

magnitude and frequency of weather-related natural hazards. However, detailed studies that consider the effects of climate change on floods and urban flood damage are sparse. This study attempts to redress this deficiency by considering the effects of climate change on flood losses for Australia. Presented in three parts, the report models flood frequency and magnitude under enhanced greenhouse rainfall intensities, uses this data to assess changes in vulnerability of flood-prone urban areas and changes in tangible and intangible losses, and considers policy responses to meet these changes in vulnerability. It contains case studies of the Hawkesbury-Nepean corridor, Queanbeyan, Canberra, and the Upper Parramatta River in Australia.

Tornadoes

Tornado Alley: Monster Storms of the Great Plains. Howard B. Bluestein. 1999. \$35.00. 192 pp. Available from the Order Department, Oxford University Press, 2001 Evans Road, Cary, NC 27513; (800) 451-7556; fax: (919) 677-1303; WWW: <http://www.oup-usa.org>.

In this volume, Howard Bluestein draws on two decades of experience chasing and photographing tornadoes as a professor of meteorology at the University of Oklahoma to present an historical account of the study of tornadoes and the thunderstorms that create them. Noting that, despite Doppler radar technology and computer simulation, these storms remain remarkably difficult to study, he points out that no instrument designed to measure wind speed has ever survived a direct hit by a tornado. Leading scientists still conduct much of their research from the front seat of a moving vehicle, risking injury from flash floods, flying debris, and damaging hail. Bluestein recounts his experiences in attempting to study this weather phenomenon, describes the development of current weather technology used by scientists, explains how tornadic storms develop, and outlines where he believes the science of severe storms is headed. Appendices include a list of current World Wide Web sites and other resources related to severe weather, an explanation of the effects of momentum transport by updraft, and a description of dynamic pressure.

Hurricanes and Severe Storms

"Coastal Hazards: Counting All the Costs," Environment Vol. 41, No. 6 (October 1999), pp. 10-19. Sheila D. David, Sarah Baish, and Betty Hearn Morrow. Single copies, \$8.00; annual subscriptions, \$39.00, individuals; \$79.00, institutions. To obtain a copy, call Heldref Publications, (800) 365-9753.

This article is based on a forthcoming report from the Heinz Center for Sciences, Economics and the Environment, ***The Hidden Costs of Coastal Hazards: Implications for Risk Assessment and Mitigation***, that examines the economic costs of coastal hazard events and cost-effective public and private investment in hazard mitigation at all levels of government. The article discusses the impact of coastal hazards in general, the effects of Hurricane Hugo, social costs to communities, natural resources costs, and mitigation measures. The full report will be available in November from *Island Press* for \$30.00. It can be ordered by calling (800) 828-1302 or accessing the Island Press Web site: <http://www.islandpress.org>.

Isaac's Storm: A Man, a Time, and the Deadliest Hurricane in History. Erik Larson. 1999. 325 pp.

\$25.00. Available at any local bookstore (it's a hot item); for on-line ordering, see <http://www.randomhouse.com/catalog/display.cgi?isbn=0609602330>.

Isaac is Isaac Cline, head of the Galveston office of the U.S. Weather Bureau at the turn of the century. The storm is the Galveston Hurricane of September 8, 1900. By no means was this the "deadliest hurricane in history" (its effects pale compared to some of the great Bay of Bengal storms of this century, or even with Hurricane Mitch), but it *was* the deadliest disaster in U.S. history with over at least 6,000 fatalities.

For students of the history of disasters, this meticulously researched book (it includes 40 pages of notes and bibliography), will prove fascinating. As the title implies, Larson writes as much about the historical times and American culture that provide the setting for this catastrophe as he does about Cline and the storm. As a result, the narrative shows how the ethos of America, and particularly Galveston, in 1990 engendered hubris that, perhaps as much as wind and storm surge, contributed to the devastation and sorrow brought on by the hurricane. An implicit question for hazard managers and researchers of today is what conceits of our own time and culture put us in danger.

Wind: How the Flow of Air has Shaped Life, Myth, and the Land. Jan DeBlieu. 1999. 320 pp. \$24.00. Available from Houghton Mifflin Company, Regional Sales Offices, 103 Campus Drive, Princeton, NJ 08540; (609) 452-0200; WWW: <http://www.hmco.com>.

Wind is an intriguing cross-pollination of science, history, and descriptive prose. DeBlieu uses poetic terms to describe her personal experiences with wind, such as the "breath of a dragon, though it usually feels more like ice than fire," intermixing them with a scientific explanation of how wind is formed, a discussion of its role in religion, and descriptions of how it sculpts and forms natural features on our planet. Among other topics, she discusses coastal processes, barrier islands, famous storms, tornadoes, the Blue Sky program for hurricane mitigation, the Chernobyl nuclear disaster, the Clean Air Act, tropical cyclones, the Dust Bowl, geological processes and wind, El Niño, and hurricanes.

Reconstruction and Transformation of Central America After Hurricane Mitch: A Regional Vision. 52 pp. Free. Copies can be requested from Roberto Jovel, Secretaría General, Secretaría de la Integración Centroamericana (SG-SICA), Boulevard Orden de Malta No. 570, Urbanización Santa Elena, San Salvador, El Salvador; e-mail: rjobel@sicanet.org.sv.

The great impact of Hurricane Mitch was due to a combination of two factors: the strength of the hurricane itself and the actions of human beings. This report considers the resultant physical and economic effects on the local population and on the Central American region in general. The hurricane directly affected nearly 11% of the population of Central America, including 74% of the population of Honduras and 22% of Nicaragua. In addition, those most affected belonged to the most vulnerable groups--low income persons and those living in high-risk areas. Damage equaled 13% of the regional gross domestic product, 42% of the value of its regional exports, 67% of fixed investments, and 34% of total foreign debt. This report analyzes the impacts of the storm on these sectors and provides recommendations for a regional program to prevent and mitigate future disasters.

Drought

Living with Drought: Drought Mitigation for Sustainable Development. Astrid Von Kotze, with Ailsa Holloway. 1999. 206 pp.; accompanying VHS, 65 minutes. \$35.00. To purchase the book and video, contact Stylus Publishing LLC, 22883 Quicksilver Drive, Sterling, VA 20166-2012; (703) 661-1500; fax: (703) 661-1501; e-mail: Styluspub@aol.com; WWW: <http://www.oneworld.org/itdg/publications.html>.

Southern Africa's growing population is placing increased demands on natural resources such as water. Drought is part of the normal weather cycle in this part of the world, and ***Living with Drought*** advances the idea that responsible governance means adopting policies and practices that promote drought resilience in economies, agricultural systems, the natural environment, and society at large. This book and video were created to move the practice of drought mitigation beyond disaster management and into sustainable development policy and practice. The book outlines terms and concepts in drought mitigation and discusses perceptions of risk and common meanings of drought. It explains drought vulnerability and risk assessment, outlines methods for planning and implementing drought mitigation, and lists materials for further exploration of this topic. The video contains three training films that present the experiences of different communities dealing with drought.

Earthquakes, Volcanoes, and Other Geologic Hazards

Earthquakes: Science and Society. David S. Brumbaugh. 1999. 251 pp. \$32.40. Copies can be purchased from Prentice-Hall, Inc., Upper Saddle River, NJ 07458; (800) 282-0693; WWW: <http://www.prenhall.com>.

This volume is an introductory college textbook on the scientific, historical, and personal safety aspects of earthquakes. ***Earthquakes*** provides basic information about quakes; explains how the study of these phenomena has progressed over time; offers details on the development of earthquake instruments; discusses personal safety, building, and living in areas prone to earthquakes; and describes earthquake geography. It is divided into three sections: "Earthquakes: Myths, Legends, and Logic"; "Earthquake Data Analysis and its Contributions to Science"; and "Earthquakes, Earthquake Geography, and Safety."

Three Fearful Days: San Francisco Memoirs of the 1906 Earthquake and Fire. Malcolm E. Barker, Compiler. 1998. 320 pp. \$16.95, plus \$2.50 shipping. California residents, add 8.5% sales tax. Available from Londonborn Publications, P.O. Box 77246, San Francisco, CA 94107-0246; (415) 485-5433; fax: (415) 485-1071; e-mail: barkerme@pacbell.net; WWW: <http://www.sanfranciscocomemoirs.com>.

In the early morning of April 18, 1906, San Francisco was shaken for 60 seconds by a powerful earthquake, igniting fires that burned out of control for three days, killing more than 3,000 people, and destroying nearly 30,000 buildings. ***San Francisco Call*** reporter James Hopper provides an account: "I got up and walked to the window. I started to open it, but the pane obligingly fell outward and I poked my head out, the floor like a geyser beneath my feet. Then I heard the roar of bricks coming down in cataracts and the groaning of twisted girders all over the city, and at the same time I saw the moon, a calm, pale crescent in the green sky of dawn." This volume contains dozens of other eyewitness accounts, from the famous, including author Jack London and opera star Enrico Caruso, to the lesser known, such as the mayor, a nurse, a police officer, and countless others who survived the quake and its

subsequent firestorm. Barker provides an introduction and historical background to the accounts, which are arranged chronologically.

Geological Hazards: Their Assessment, Avoidance and Mitigation. Fred G. Bell. 1999. 648 pp. \$110.00. Available from Routledge Customer Service, 7625 Empire Drive, Florence, KY 41042; (800) 634-7064; fax: (800) 248-4724; e-mail: cserve@routledge-ny.com. Copies can also be ordered on-line at <http://www.routledge-ny.com>.

This volume examines both natural and human-caused geological hazards and disasters, including volcanic activity, earthquakes, mass land movements, problem soils such as quicksand and expansive clays, coastal erosion, desertification, waste and its disposal, landfill and gas formation, contaminated land, ground-water pollution, subsidence, and abandoned mines and shafts. It presents a survey of state-of-the-art techniques for coping with these risks, describing methods of assessing, evaluating, and combating them.

Melting the Earth: The History of Ideas on Volcanic Eruptions. Haraldur Sigurdsson. 1999. \$30.00. 272 pp. To purchase a copy, contact the Order Department, Oxford University Press, 2001 Evans Road, Cary, NC 27513; (800) 451-7556; fax: (919) 677-1303; WWW: <http://www.oup-usa.org>.

Since the beginning of time, humans have struggled to understand volcanic eruption. ***Melting the Earth*** chronicles these attempts to comprehend, describing how our conception of volcanoes has changed as knowledge of the earth's internal processes has deepened over the centuries. Volcanologist Haraldur Sigurdsson considers how both philosophers and scientists have attempted to answer the question: Why do volcanoes erupt? He begins with the Stone Age, leads the reader through the Bronze Age to Greek and Roman concepts, Christian interpretations based on the concept of Hell, the Renaissance and the beginning of earth science, the beginning of field volcanology, to current scientific understanding of volcanoes.

Hazards from Space

Comet and Asteroid Impact Hazards on a Populated Earth: Computer Modeling. John S. Lewis. 1999. 200 pp., plus 3½ floppy disk. \$49.95. To order, contact Academic Press, Inc., Order Fulfillment Department, 6277 Sea Harbor Drive, Orlando, FL 32887; (800) 321-5068; fax: (800) 874-6418; e-mail: apbcs@harcourtbrace.com; WWW: <http://www.apcatalog.com>.

Comet and Asteroid Impact Hazards explores the potential consequences of impacts from these extraterrestrial bodies, pre-senting the first computer simulations of impacts. It offers an assessment of potential casualties and discusses impact hazard prediction, including structural blast damage, firestorm ignition, and tsunami generation. It also examines potential impacts on population according to the composition and orbit of impacting comets and asteroids; discusses the economic and public policy issues of warning, interdiction, and search strategies; compares simulation results to historical records; and suggests hazard abatement strategies and areas of further study.

Training CDs from FEMA

Community Hurricane Preparedness Course. IS-324. CD-ROM. For information on enrollment in this course and software requirements, access the Federal Emergency Management Agency's Web site: <http://www.fema.gov/emi/is324.htm> or <http://www.fema.gov/emi/ispcmnt.htm>.

FEMA recently created this computer-based course (see page 21 of this *Observer*) to provide emergency management professionals with basic information about hurricane preparedness. The CD-ROM includes material on how hurricanes form, potential hazards, and forecasting. It also provides tools and guidelines to help managers prepare their communities.

FEMA also recently published **Who's in Charge Here: Exercising Leadership in an Emergency or Disaster**--a six-hour training course on CD. The course is designed for chief elected officials and others who have limited time for training but need to prepare themselves for leadership during a crisis. For copies, call the *FEMA Publications Distribution Center*, P.O. Box 2012, Jessup, MD 20794-2012; (800) 480-2520; request ID #9-1442, course code G351.

[Adapted from the *IAEM Bulletin*--the newsletter of the Inter-national Association of Emergency Managers]

Happy Trails

For the past 22 years, visitors to the Natural Hazards Center's library have been guided to gems of disaster wisdom by the steadfast, pertinacious Dave Morton. Alas, Dave has decided to pursue his other interests, including playing the accordion professionally, mentoring young musicians interested in learning eastern European music, and maybe even creating his own hybrid of *Wayne's World* and *Politically Incorrect* on the local cable access channel. In other words, Dave is retiring.

We wish Dave the best and will sorely miss his invaluable knowledge of hazards literature and the hazards community and his uncanny ability to locate the most obscure documents.

Looking forward, the *Natural Hazards Observer* would like to welcome Sarah Michaels, "information architect," who will shepherd the center's library and information services program into the new millennium.



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 *November 22, 1999*.

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

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