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The Impact of Project Impact on the Nisqually Earthquake

--an invited comment

On February 28, a magnitude 6.8 earthquake occurred 32 miles below the Nisqually wetland north of Olympia, the Washington state capitol. Ironically, the quake occurred as the Seattle Project Impact Steering Committee was preparing to celebrate the initiative's third anniversary with several hundred of its partners. Had the quake occurred one hour later, all of the region's emergency managers would have been gathered at the Phinney Ridge Neighborhood Center in Seattle. Instead, committee members and a few early birds guided children from the center's two daycare programs to safety.

Members of the response and recovery community were not fully tested by the earthquake, largely because it was deep and drought conditions in the Puget Sound region reduced the number of landslides and amount of liquefaction that would normally be caused by a quake of that magnitude. There was only one significant aftershock and few secondary impacts (one fire and several major landslides). However, the quake did interrupt business operations and damaged numerous building components, such as chimneys, facades, water pipes, and equipment.

Many historic, commercial, and manufacturing facilities were damaged, including key government structures such as the state legislative building and the regional airport control tower. Additional damage is being uncovered as engineering teams complete their inspections, although structural losses (i.e., damage to components essential to a building's structural integrity) will undoubtedly be a fraction of non-structural losses (i.e., damage to nonessential building structural elements, such as architectural features

and heating and electrical systems, and losses due to lost productivity, etc.).

What effect did the Federal Emergency Management Agency's Project Impact have, if any, in reducing damage from the Nisqually earthquake? In short, the program has transformed the way residents deal with disasters and established an organizational structure that takes advantage of this change.

Project Impact has the broad goal of reducing risks by changing the way communities think about and deal with disasters. More importantly, it asks communities to be farsighted, to assess hazards rather than just respond to them, to protect themselves, and to become disaster-resistant.

The program is based on three simple principles:

- Preventive actions must be decided at the local level and must be responsive to local hazards.
- Private sector participation is vital.
- Long-term efforts and investments in prevention are essential.

The Seattle/Tacoma metropolitan area, which includes King, Pierce, and Kitsap counties, has been heavily involved in Project Impact, and Seattle is a pilot participant in the program. It is useful to examine Project Impact's effectiveness by assessing how well its stated goals were met in the context of the Nisqually earthquake.

Change in the Way We Think About and Deal with Disasters

Perhaps the most significant (and most difficult to measure) effect the initiative had is in demystifying and personalizing earthquake risk reduction for thousands of individuals, small businesses, and corporate partners.

Preventive Actions Must be Decided at the Local Level

The Seattle and King, Pierce, and Kitsap County Project Impact programs were essentially collective actions taken by hundreds of partners. Seven programs can be linked directly to Project Impact, including efforts in home and school retrofitting, hazard mapping, transportation corridor vulnerability mitigation, office and home nonstructural retrofitting, and small business resumption planning. It is too early to assess the full impact of these programs; however, here are some very early conclusions. (For a description of individual programs, see the FEMA web site: *http://www.fema.gov/impact*.)

- The most significant benefit of Project Impact might be the reduction (or minimalization) of structural damage in retrofitted buildings.
- Project Impact decommissioned very heavy and hazardous water tanks located in the attics of seven Seattle schools, and one of these schools was damaged significantly by the quake. Had the water tank been in use, the building would have suffered even more damage, and the ceilings above several classrooms most likely would have failed. The school program also included

extensive nonstructural retrofitting. No losses were reported in participating schools, and, more importantly, evacuation was not impeded. Other schools were not so fortunate.
- Over 1,000 homeowners attended home retrofitting workshops, and over 300 had retrofitted their homes before the quake. None of these retrofitted residences were damaged.
- Each of the four Project Impact jurisdictions had implemented long-range transportation corridor and hazard mapping programs. Information generated through these programs is greatly aiding the inspection process and helping to jump-start discussion on mitigation alternatives. In addition, these projects brought together public road managers who created "tool kits" for contingency routing that will be useful in other kinds of disasters. The quake elevated the priority of these initiatives and funding is expected.

Private Sector Participation is Vital

- All four Project Impact jurisdictions and their private sector partners had developed aggressive business resumption programs. Over 100 large businesses and more than 500 small businesses were involved in Project Impact, and tens of thousands of earthquake safety products were in their offices. Business hazard reduction programs had been created by partners such as Washington Mutual, Bank of America, PEMCO, SAFECO, the Boeing Company, Bartell, the Russell Corporation, the King County Labor Council, and Home Depot, and early indications are that employees of these partners had implemented earthquake safety measures in their homes as well.
- Project Impact communities and their partners ambitiously pursued risk-reduction outreach prior to the earthquake. Home Depot stores displayed home retrofitting techniques. Grocery and drug stores displayed earthquake safety products. Informational flyers accompanied utility bills, paychecks, and insurance renewal forms. A computer tie-down campaign attracted funding partners and garnered donations of computer tie-downs for area schools. The Project Impact logo was prominently displayed along with the message "Creating Disaster Resistant Communities" during hundreds of newscasts.

Effects Not Directly Related to Specific Programs

- During and immediately following the earthquake, participating news organizations provided a consistent message about the earthquake hazard and described methods for preventing damage. Since its inception, Project Impact has worked regularly with the press, and the ABC and CBS local affiliates are formal Project Impact partners.
- Shortly after the quake, homeowners were able to obtain lists of area contractors trained in seismic retrofitting. This information is particularly useful immediately after a disaster, when unscrupulous contractors can prey on disaster victims.

Long-Term Efforts and Investments in Prevention are Essential

Research is currently underway to assess the more indirect long-term impacts of the Nisqually quake.

FEMA and the University of Washington have established a clearinghouse to facilitate research, but an examination of efforts that are directly attributable to Project Impact indicates that Puget Sound residents are accepting responsibility for their hazard vulnerability and focusing on protecting themselves. Here are three examples:

- "SecureIt" was a Pierce and King County Project Impact program; however, all four project participant areas have noted increased availability of computer tie-downs and other office-related items that were difficult to obtain when the programs began. Following the earthquake, every contacted vendor saw a very dramatic increase in orders for these products.
- Home retrofitting activities have increased substantially. Roger Faris of the Phinney Ridge Neighborhood Center Home Improvement program indicated that the program cannot keep up with the demand for the Project Impact home retrofitting course. Before the quake, he scheduled one course per month with 20 to 30 attendees. He has now scheduled four per month with 60 participants per class. Similarly, private contractors cannot keep up with the substantially increased demand for retrofitting services. Homeowners are having difficulty hiring the 60 contractors who have taken the University of Washington (a Project Impact Partner) earthquake retrofitting course. Moreover, due to increased interest among contractors, additional courses have been scheduled.
- The Project Impact coordinator for the Seattle school district received the following comment by a school principal:

  Just wanted to let you know the good news on how well the building did during the earthquake--and a big thanks for the retrofitting. We did not even have a single light cover come down, a computer fall over, a book come off a shelf. Now, ... how do we get more straps to do the new things we have installed since retrofitting was done here? Thank you. You made believers out of us!

Performance Measures

Were there fewer property losses, lower costs for repairs, and less time lost from productive activity as a result of Project Impact? It depends on how one measures the costs of repairing a school that did not decommission a water tank to prevent damage, the injuries or deaths of children in classrooms directly under such a tank, the loss of homes that were not retrofitted, and the closure of firms that had not implemented business resumption measures. Whatever the savings, it looks like we will be even better prepared when the next quake occurs, and isn't that, after all, the goal of Project Impact?

Robert Freitag, Director, Institute for Hazard Mitigation Planning and Research, University of Washington

For more information on the earthquake in Seattle, view the Clearinghouse on the Nisqually Earthquake web site: *http://maximus.ce.washington.edu/~nisqually*.

Project Impact News

Project Impact Communities Unite

At the Federal Emergency Management Agency (FEMA) Project Impact Summit last November, representatives from over 100 communities involved in this national program to curb disaster losses established a "Disaster Resistant Communities Association (DRCA)." The Project Impact coordinators from these communities work to create local programs that mobilize public-private partnerships to reduce losses due to earthquakes, floods, storms, and other disasters.

The DRCA's goals are to ensure that Project Impact becomes a sustainable effort; to strengthen the project nationally and locally; to share experiences among, learn from, and aid one another; to create a forum in which the collective voice of Project Impact communities can be heard; and to build bridges to other organizations that share Project Impact goals.

The DRCA's interim web site is *http://www.hazmit.net/PIAssoc/PIHome.htm*. To be added to the group's mailing list or to request more information about DRCA, contact *Ann Patton, City of Tulsa Project Impact Coordinator, City of Tulsa Public Works, City Hall, Tulsa, OK 74103; (918)596-7808; fax: (918) 596-7265; e-mail: projectimpact@ci.tulsa.ok.us*.

FEMA Plans Project Impact "Make an Impact" Week

FEMA's Project Impact "Make an Impact" Week is a national campaign encouraging regional and local Project Impact representatives to conduct media outreach in their communities. Make an Impact Week will be conducted May 20-26 with the theme "Planting the Seeds of Prevention."

FEMA is inviting all communities participating in Project Impact to work with the agency to contact local print, radio, and TV outlets and actively work to make local citizens more aware of the hazards they face and the steps they can take to avoid them. More information about Make an Impact Week is available from the Project Impact web site: *http://www.fema.gov/impact*.

An Open Letter to the Natural Hazards Community

Dear Readers,

Below is an advertisement soliciting applications to be Director of the Natural Hazards Research and Applications Information Center. Please know that I am NOT leaving the center.

From its inception over a quarter century ago, only one of the University of Colorado's faculty, the center's director--first Gilbert White, then Bill Travis (Riebsame), and, for the last eight years, me--has formally participated in the center. When I became the director, I was committed to generating more faculty participation in the center without increasing our operating costs. There is now an opportunity to significantly further that goal.

The faculty of the Department of Sociology at the University of Colorado has voted unanimously to make environmental sociology--with a track in hazards--an area of specialization. Two new assistant professors have already been hired--Lori Hunter and David Pellow--who have a committed interest in risk and hazard-related topics. Additionally, Barbara Farhar from the Department of Energy will join us next academic year. Moreover, the University's central administration has agreed to let the department hire a new faculty member, at the full professor level, to replace me as director of the Natural Hazards Center if I remain as chair for another term.

I will remain a permanent fixture at the Natural Hazards Center when the new director is hired and will work with that person in whatever capacity is most appropriate to further the center's mission.

One final word--directing the Natural Hazards Center here at the University of Colorado is the best job in the country for a social scientist interested in hazards. Please read the job description below, and if you are interested and a hazards sociologist, be sure to apply.

Dennis S. Mileti, Director, Natural Hazards Research and Applications Information Center, University of Colorado

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Help Wanted: Hazards Center Seeks New Director

The Department of Sociology and the Institute of Behavioral Science at the University of Colorado are seeking applications for a full-time tenured full professor in sociology. The applicant must specialize in hazards, disasters, and their link to broader environmental/sustainable development issues. Related areas of interest are welcome. The person in this position will serve as the director of the Natural Hazards Research and Applications Information Center, part of the Research Program on Environment and Behavior, Institute of Behavioral Science. The director will serve as co-principal investigator on the National Science Foundation (NSF) grant that funds the center, set policy for and provide intellectual leadership to the center and its staff, work with the larger hazards community and the funding agencies that

contribute to the center through its NSF grant, secure additional external funding to support the center, conduct interdisciplinary hazards/environment-related research with colleagues in the Institute of Behavioral Science, and establish and strengthen relationships with the larger academic community engaged in environmental and risk-related research at the University of Colorado and in the Boulder vicinity. The director of the center receives substantial staff support. This position is also expected to work half-time in the Department of Sociology to help develop and teach the newly organized environmental specialty and other courses, as well as perform other departmental duties and services.

Letters of application should include a statement of research and teaching interests, a perspective on how the applicant would advance the Natural Hazards Center (*http://www.colorado.edu/hazards*), comment on how the applicant would enhance the environmental sociology specialization in the Sociology Department (*http://socsci.colorado.edu/SOC/*), a curriculum vitae, and contact information for three referees. The University of Colorado is committed to diversity and equality in education and employment.

Review of applications will begin June 1, 2001. Applications should be submitted to *Dennis S. Mileti, Chair, Department of Sociology, University of Colorado, 327 UCB, Boulder, CO 80309.*

Sustainability and Natural Hazards

This article is the first in a series on ways in which hazards management and sustainability could be linked for the betterment of both fields. The first article grew out of the Natural Hazards Center project, funded by the Public Entity Risk Institute, to develop information on sustainable local recovery and conduct training to generate expertise on this topic throughout the U.S.

Developing Guidance and Expertise on Sustainable Disaster Recovery

Among the principal recommendations of the Second U.S. Assessment of Research and Applications for Natural Hazards (see the ***Observer***, Vol. XXIII, No. 4, p. 3) was the need for the hazards community to embrace the tenets of sustainability. According to ***Disasters by Design***, the assessment summary volume prepared by Natural Hazards Center Director Dennis Mileti:

> Disasters are more likely where unsustainable development occurs, and the converse is also true: disasters hinder movement toward sustainability because, for example, they degrade the environment and undercut the quality of life. Sustainable mitigation activities should strengthen a community's social, economic, and environmental resiliency, and vice versa.

One of the many ways in which hazards management and sustainability can be more closely linked is by focusing on disaster recovery and the activities that are likely to take place--and decisions made--during that period. Sustainability ideals are beginning to be incorporated into hazards research, planning, preparedness, and mitigation. Beyond that, however, the postdisaster period remains a particularly crucial time for implementing sustainable practices because, during recovery, there is often tremendous pressure to resume the "old ways" of building and living at risk, and these forces are buttressed by relatively large amounts of political, technical, and financial pressure and assistance.

Through a project funded by the Public Entity Risk Institute (see the ***Observer***, Vol. XXIV, No. 4, p. 17), the Natural Hazards Center has been working on ways to get sustainability and disaster recovery more closely integrated at the local level. As a foundation for this effort, we have developed a framework for sustainable--or "holistic"--recovery from disaster.

Guiding Principles

First, as outlined in ***Disasters by Design***, there are six basic principles of sustainability. A community that wants to become more sustainable should:

- Maintain and, if possible, enhance, environmental quality;
- Foster local economic vitality;
- Incorporate disaster resilience and mitigation;
- Ensure social and intergenerational equity;
- Maintain and, if possible, enhance, its residents' quality of life; and
- Use a consensus-building, participatory process when making decisions.

Opportunities, Not Problems

Second, a disaster brings a range of problems that can be viewed as opportunities to build sustainability. In most situations a locality faces after a disaster, the community must take action to recover, so incorporating sustainability often does not involve much additional effort. Utilities must be restored, infrastructure re-established, housing repaired, social services reinstituted, and commercial sectors

rehabilitated.

Values Brought to Decision Making

Third, each of these situations should be evaluated in light of all six principles of sustainability to see where there are opportunities to enhance community sustainability rather than returning to the prior vulnerability. The hazards community already has become used to thinking in terms of building mitigation provisions into many recovery activities. For example, the Federal Emergency Management Agency's postdisaster and other programs in many cases specifically provide for mitigation. This step in the sustainable recovery process calls upon participants to expand this notion and examine ways to build the other aspects of sustainability into each and every recovery opportunity. This can result in some unusual combinations of problems and solutions.

For example, a stricken community with a damaged freeway overpass might well decide to incorporate seismic-resistant features into the repaired structure. However, a community striving for *sustainable* recovery would also consider demolishing or relocating the overpass to enhance livability in the surrounding neighborhood (sustainability principle #5, above), or rebuilding it to improve access to, and thus economic vitality for, a nearby commercial area that was previously difficult to reach from the highway (sustainability principle #2, above). This is just one of many possible outcomes of a systematic process of analyzing recovery in light of the six sustainability principles. The possibilities are endless, because each community has unique attributes, needs, and concerns, and each disaster superimposes a distinct set of impacts.

Local Solutions

Fourth, a community should tailor a unique set of sustainable recovery actions that satisfies its own particular concerns, takes advantage of its strengths, and uses the tools and techniques that it finds most appropriate to its situation.

Institutionalized Framework

Finally, the community should institutionalize newly adopted programs, projects, or other activities into its decision-making, budgeting, and planning processes to ensure that they endure over time. Ideally, the community would also develop indicators and a schedule for monitoring and tracking change and needed improvements.

This framework can be summarized in our working definition of ideal sustainable recovery: A sustainable recovery from a disaster is one in which the stricken locality systematically considers *each* of the six principles of sustainability in *every* decision it makes about rebuilding, reconstruction, and redevelopment.

Viewed in this way, the six principles of sustainability become a *set of decision criteria* that must be met

if the recovery is to be truly sustainable. It is a framework for ensuring that people think about all the right things as decisions are made. It is somewhat analogous to the environmental assessment process conducted by federal entities pursuant to the National Environmental Policy Act. That is, the ranges of possibilities, alternatives (including doing nothing or, in our case, returning to the status quo), and impacts of the proposed recovery actions must be considered in light of the sustainability principles during the course of making decisions about how to proceed.

A Practical Approach

All of this is a fairly simple and, one might say, common-sense approach to recovering from a disaster. A community should strive to fully coordinate available assistance and funding while seeking ways to accomplish other community goals and priorities, using the disaster recovery process as the catalyst. Indeed, this approach can help local people to think and rethink their community goals and the kind of place they want their grandchildren to inherit. It encourages each locality to perform its own carefully considered balancing act of risk vs. protection, cost vs. benefit, today vs. tomorrow.

This may be a simple idea, but its execution is daunting. The postdisaster period--even the latter part, after the immediate emergency and response needs have been met--is notoriously chaotic. Most thinking during recovery is still geared toward getting things back to normal rather than "better than normal" or, ideally, "permanently better than normal." Finally, there are few people out there in any sector or at any level who have a thorough grasp, much less practical experience, in implementing truly holistic recovery.

There are, therefore, several challenges on the horizon. One is to find ways to introduce the sustainability criteria into the local decision-making process at appropriate points. Another is to obtain sufficient flexibility in the policies, regulations, and funding guidelines of state and federal programs so that those programs can be applied to innovative, sustainable solutions. A first step toward meeting these and other challenges is fostering a shift in thinking among the hazards community toward taking a broader approach to many problems that we have hitherto tended to tackle in isolation. Sustainability is a suitable concept for doing this, and, for its part, the Hazards Center has been gathering and consolidating information, knowledge, and experience in linking sustainability and disaster recovery. Our goal is to contribute to the development and dissemination of sustainable recovery expertise both among hazards management professionals and concerned professionals in related fields. This effort will culminate in the production of a handbook on sustainable recovery and a related training session to be conducted August 27-30 (see the related article). We welcome your suggestions and input.

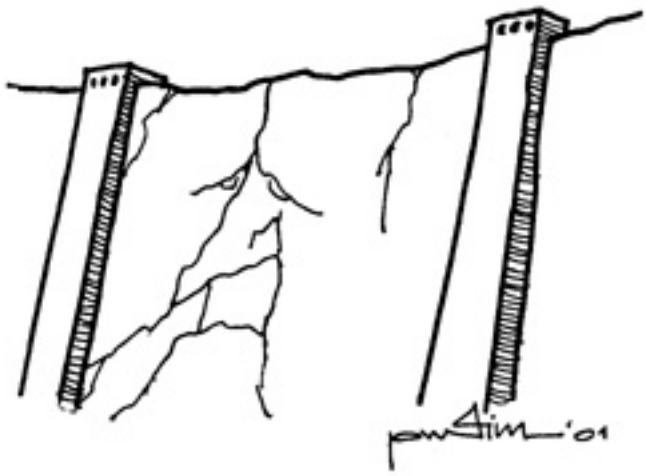
Jacquelyn Monday, Program Manager, Developing Guidance and Expertise on Sustainable Recovery from Disaster, Natural Hazards Research and Applications Information Center

The author can be contacted at the *Natural Hazards Center, 482 UCB, University of Colorado, Boulder, CO 80309-0482; e-mail: jacque.monday@colorado.edu.*

Washington Update

USDA Looks at Aging Flood Control Dams

More than 50 years ago, the U.S. Department of Agriculture (USDA) was first authorized by Congress to help local communities with upstream flood control and watershed protection. Today, there is a growing national concern that many of the early flood control dams are at or near the end of their planned design life and may pose a risk to public safety. In ***A Report to Congress on Aging Watershed Infrastructure: An Analysis and Strategy for Addressing the Nation's Aging Flood Control Dams*** (2000, 15 pp., free), the USDA's Natural Resources Conservation Service (NRCS) outlines the history of its Small Watershed Program and discusses the risk posed by some of the more than 10,000 upstream flood control dams constructed since 1948.



Many of the older small dams require significant rehabilitation, and some pose a threat to the safety of people and towns downstream or to anyone who uses the reservoirs as a source of drinking water. The NRCS stresses that if action is not taken to rehabilitate these dams, there is potential for adverse impacts on downstream floodplains and ecosystems the dams have been protecting. The agency estimates that more than 2,200 dams need work and that the total cost will be more than $540 million. The cost of rehabilitation will only rise with time as deterioration increases, construction costs rise, and more rehabilitation needs are identified. Conversely, these repairs can provide opportunities to increase municipal and industrial water supplies, firefighting water resources, recreation opportunities, and wetland and wildlife assets.

The report provides a summary of the current situation and an overview of pilot programs dealing with the dangers and opportunities for cooperative efforts. It also outlines a strategy for action legislated by the 2000 Agricultural Appropriations Bill. The report and numerous other reports that address aging dams and provide state-level information are available on the NRCS Web site: *http://www.ftw.nrcs.usda.gov/pl566/agingwater/infra.html*.

FEMA Study Evaluates Effectiveness of Flood Mitigation Activities in North Carolina

When Hurricane Floyd struck North Carolina in 1999, flood damage was severe because soil was saturated from previous storms and rainfalls of 15 to 20 inches. Because the region had been flooded before, the Federal Emergency Management Agency (FEMA) and state and local governments had implemented a variety of flood mitigation activities. Following the hurricane, FEMA funded a study to evaluate the effectiveness of these activities, and the results of that study are now available in the report, ***Evaluation of CRS Credited Activities During Hurricane Floyd*** (2000, 78 pp., free).

The National Flood Insurance Program (NFIP) Community Rating System (CRS) was implemented in 1990 to recognize and encourage community floodplain management activities that exceed minimum NFIP standards. Under the CRS, flood insurance premium rates are lowered to reflect the reduced flood risk resulting from activities that meet three goals: 1) reducing flood losses; 2) facilitating accurate insurance rating; and 3) promoting awareness of flood insurance. In the FEMA report, eight credited CRS activities were evaluated to determine their impact on flood losses.

Among the findings:

- Residents of CRS communities had a higher awareness of their local flood hazard, held more flood insurance, and implemented more flood protection measures.
- Preserving flood-prone areas as open space saved between $47,500 and $111,000 in losses per acre.
- Acquisition and relocation of flood-prone buildings is more effective in reducing flood losses than any other approach. Cost of relocation was paid back in damage foregone within three years.
- Raising structures above the required base flood elevation paid off, and the higher the building, the less flood damage it experienced.
- Homeowners who installed flood protection measures prevented, on average, $9,900 in damage.

The report is posted on the FEMA web site at *http://www.fema.gov/nfip/pfloydrpt.pdf*.

GAO Looks at Military Support to Civil Authorities

The Department of Defense (DOD) provides a variety of assistance, including disaster relief, to federal agencies, state and local governments, private citizens, and other nations. DOD provides this assistance while maintaining its combat capabilities and conducting overseas operations. Recently, members of Congress asked the General Accounting Office (GAO) to examine the extent and cost of DOD participation in civil activities as well as the effects of the activities on uniformed military personnel. Specifically, GAO was asked to determine the extent to which personnel supported civil activities, the effect this assistance had on retention of service members, alternative sources that could provide this support, and the extent to which entities have reimbursed DOD for its support.

In its report, ***Military Personnel: Full Extent of Support to Civil***

Authorities Unknown but Unlikely to Adversely Impact Retention (Report to the Chairman and Ranking Member, Subcommittee on Military Personnel, Committee on Armed Services, U.S. Senate, GAO-0109, 2001, 47 pp., free), GAO presents its findings for each of the military services. The U.S. military supported 345 entities in at least 7,125 instances; the cost was (conservatively) $180 million, and support usually lasted fewer than 10 days. Providing assistance to civil authorities did not negatively affect retention, and many uniformed personnel viewed these assignments as contributing to our national interests.

The report discusses the military's use of contractors rather than military personnel for certain activities, such as construction, transportation, and medical treatment, as well as limitations to the kinds of support that can be provided by contractors. It presents detailed data on the extent of military support to civil organizations and officer and enlisted personnel retention rates, and comments from both the Department of Defense and FEMA. An appendix ***Observer*** readers might find useful contains a list of laws that authorize DOD support to civil organizations.

Copies can be obtained from the *GAO, P.O. Box 37050; Washington, DC 20013; (202) 512-6000; fax: (202) 512-6061; e-mail: info@www.gao.gov; WWW: http://www.gao.gov.*

FEMA's Emergency Management Activities Fall Under New House Subcommittee

Oversight in the House of Representatives of FEMA operations in emergencies and disasters has been moved to the newly created Economic Development, Public Buildings, and Emergency Management Subcommittee, Committee on Transportation and Infrastructure. During the 106th Congress, jurisdiction for emergency management issues fell under the Subcommittee on Oversight, Investigations and Emergency Management. That subcommittee has been eliminated. The new subcommittee's purview includes disaster mitigation, preparedness, response, and recovery.

The subcommittee overseas FEMA activities authorized under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, which makes federal emergency assistance available whenever the president determines that assistance is necessary to supplement state and local efforts to save lives, protect property, and ensure public health and safety, or to lessen or avert the threat of a catastrophe in any part of the United States.

For further information, contact the *Economic Development, Public Buildings and Emergency*

Management Subcommittee, 589 Ford House Office Building, Washington, DC 20515-6260; (202) 225-3014; fax: (202) 225-6782; e-mail: transcomm@mail.house.gov; WWW: http://www.house.gov/transportation.

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Natural Hazards Center's Home Page

New House Subcommittee Holds Hearing on Nisqually Quake

On March 21, 2001, the newly created Subcommittee on Research of the House Committee on Science held a hearing to examine how the National Earthquake Hazards Reduction Program (NEHRP) affected the impacts of the Nisqually earthquake that occurred in Washington state on February 28. The hearing, "Life in the Subduction Zone: The Recent Nisqually Quake and the Federal Efforts to Reduce Earthquake Hazards," highlighted improved understanding of earthquake processes in order to mitigate impacts more effectively. The subcommittee heard testimony regarding how NEHRP activities in research and mitigation are conducted under four federal agencies: the Federal Emergency Management Agency, the U.S. Geological Survey (USGS), the National Science Foundation, and the National Institutes of Standards and Technology. Testimony also addressed damage caused by the quake, ground failures, liquefaction, the role of the National Science Foundation under NEHRP, earthquake research and facilities, characteristics of earthquakes in the Pacific Northwest, characteristics of the Nisqually quake, hazard assessment, USGS earthquake programs in the region, geologic and structural effects of the quake, and remote sensing and hazards planning.

The hearing charter and prepared testimony are available on the sucommittee's web site: *http://www.house.gov/science/reshearings.htm*.

Feds List Communities at High Risk Due to Wildfire

During the summer of 2000, wildfires burned more than 6.8 million acres of public and private land. Many of these fires burned in urban-wildland interface areas and exceeded the fire suppression capabilities of those regions. Consequently, Congress has appropriated substantial funds to help reduce the threats posed by wildfires and has directed the Secretaries of the Interior and Agriculture to consult with states and tribal governments to develop a list of urban wildland interface communities within the vicinity of federal lands that are at high risk from wildfires (see the ***Observer***, Vol. XXV, No. 3, pp. 8-11).

On January 4, the agencies posted a notice in the ***Federal Register*** that provides an initial list of at-risk communities as well as the preliminary criteria for risk evaluation and management that will be used to focus hazardous fuel reduction efforts funded by Congress. Communities on the list "exist where humans and their development meet or intermix with wildland fuel." The agencies divided jurisdictions into three types:

- **Interface community**: one that has structures that directly abut wildland fuels. There is a clear demarcation between residential, business, and public structures and wildland fuels.

Development density is usually three or more structures per acre or population density is 250 people or more per square mile. Fire protection is provided by a local government fire department.

- **Intermix community**: one that has structures scattered throughout a wildland area, and there is no clear line of demarcation. Development density ranges from closely situated structures to one building per 40 acres. Alternatively, this type of community may have a population density between 28 and 250 people per square mile.
- **Occluded community:** one where structures abut an island of wildland fuels, such as a park or open space. A clear line of demarcation exists between structures and fuels, development density is similar to an interface community, but the community encompasses an occluded area of less than 1,000 acres.

On May 1, 2001, the secretaries are required to publish a second list in the ***Federal Register*** of high risk communities for which fuels reduction activities will not begin in 2001. Risk factors that will be considered in narrowing the initial list include: fire behavior potential, values at risk (e.g., property, natural resources, or cultural treasures), and infrastructure (e.g., dead end roads, steep grades, fire-fighting capacity, water supply, and emergency response capabilities). The subsequent fire-reduction projects will focus on federal land and may be extended to nonfederal land in close proximity. Other factors that may be considered in project selection include community contributions, such as the establishment of a defensible space around a community, hazardous fuel reduction activities and programs, partnerships with other agencies, enforcement of fire-related laws, appropriate community planning and land- use practices, and fire safety and related environmental education.

The notice can be found in the ***Federal Register***, Vol. 66, No. 3, pp. 751-777. Copies are also on-line at *http://www.access.gpo.gov*.

Secretaries Establish Fire Stakeholder Advisory Group

On January 24, the Secretary of the Interior and the Secretary of Agriculture established the Joint Fire Science Program Stakeholder Advisory Group to provide advice to the departments concerning priorities and approaches for research and implementation of findings for the management of wildland fuels on lands administered by the Department of the Interior, the Bureau of Indian Affairs, the Bureau of Land Management, the National Park Service, the U.S. Fish and Wildlife Service, and the U.S. Forest Service.

The group's recommendations are intended to reflect national public interest, and members will represent varied stakeholders affected by the Joint Fire Science Program. For more information, contact *Bob Clark, Joint Fire Science Program Manager, National Interagency Fire Center, 3833 South Development Avenue, Boise, ID 83705; (208) 387-5349; e-mail: bob_clark@blm.gov.*

Ten-Year Strategy for Dealing with Wildfires Developed

Individual states are working with federal agencies and organizations interested in U.S. forested areas to develop a 10-year comprehensive strategy for restoring forest ecosystem health. The collaborative effort began last fall, when Congress directed federal agencies to work with states and provided funding for state and private fuels management and wildfire preparedness activities (see the previous two articles).

At press time, the report ***Ten-Year Comprehensive Strategy: A Collaborative Ten-Year Strategy for Restoring Health to Fire-Adapted Ecosystems*** (2001, 12 pp., free), was posted in draft form on the Western Governors' Association (WGA) web site. The final version was expected to be completed May 1.

The WGA also issued a statement in December 2000, calling for a long-term approach to the wildfire risk in the U.S. ***The Catastrophic Wildfires of 2000: Collaborative Effort Key to Prevention and Improved Ecosystem Health*** (5 pp., free) outlines action the chief executives feel needs to be initiated under the new Bush administration and Congress. In particular, the governors call on Congress to provide funding over the next 10 years that is consistent with the amount appropriated for fiscal year 2001 (see the ***Observer***, Vol. XXV, No. 3, p.11), asserting that this funding will "pale in comparison to that required for future fire fighting needs, lost timber value, restoration costs and damage to downstream resources if the trends continue and we see more fire seasons like the Summer of 2000."

Both reports are available from the Western Governors' Association web site, *http://www.westgov.org*.

Interim National Drought Council Established

In a recent memorandum of understanding (MOU) among federal agencies, states, local governments, tribes, and other organizations, the Interim National Drought Council was created to coordinate activities relating to drought. Specifically, it will establish a more comprehensive, integrated, and coordinated approach toward reducing the impacts of drought. Its goals include improving drought preparedness, monitoring and prediction, risk management, and response in the U.S. By coordinating the partners to the MOU, the council hopes to resolve drought-related issues, promote the exchange of information about effective programs, and improve public awareness of the need for drought planning and mitigation. The interim council, which held its first meeting in November, will continue for five years or until Congress establishes a permanent National Drought Council.

For further information about the interim council, contact *Leona Dittus, Executive Director, Interim National Drought Council, U.S. Department of Agriculture, 1400 Independence Avenue, S.W., Room*

6701-S, Washington, DC 20250-0501; (202) 720-3168; fax: (202) 720-9688; e-mail: leona.dittus@usda.gov.

Hurricane Awareness Week May 21-25

History teaches that a lack of hurricane education and planning are common threads among all major hurricane disasters. The goal of Hurricane Awareness Week is to educate the public about the hazards associated with hurricanes and ways to reduce the risk. Each day of Hurricane Awareness Week will have a special focus: coastal and marine hazards, wind hazards, inland flooding, forecasting, and disaster prevention. The National Weather Service's Tropical Prediction Center has posted web pages regarding this event; see *http://www.nhc.noaa.gov* for more information.

On the Line

The Hazard Mitigation Planning Initiative in North Carolina

The Hazard Mitigation Planning Clinic in the University of North Carolina Department of City and Regional Planning has been working with the North Carolina Division of Emergency Management (NCDEM) to promote mitigation planning at the local level throughout the state. The resultant products and activities are applicable throughout the country. The following are some of the activities currently underway in the Hazard Mitigation Planning Initiative (HMPI).

Mitigation Plans

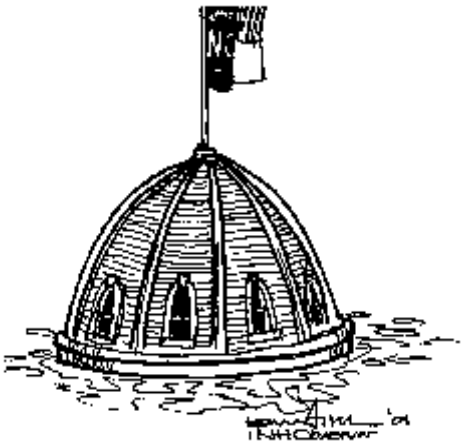
HMPI's objective is to foster the development of local hazard mitigation plans. To that end, NCDEM, along with the Hazard Mitigation Planning Clinic, have supported the development of demonstration

mitigation plans (11 completed) and watershed mitigation plans (one completed). In addition, they are currently supporting the formulation of local mitigation plans in 63 communities affected by Hurricane Floyd.

Training Programs

At the heart of this initiative is training to build local government capacity to plan for mitigation. HMPI has developed and conducted the following training programs:

- *How Do I Write A Mitigation Plan?* (Mitigation planning workshop for local planners).
- *GIS and Hazard Mitigation: GIS Methods and Analysis* (GIS training for local planners)
- *North Carolina Emergency Management Planner Training* (Training modules for newly hired emergency management planners)



Publications and Videos

The initiative has also produced numerous media presentations:

- ***More than Mere Chance: Incorporating Risk Communication Methods into the Natural Hazard Mitigation Planning Process***. By examining concepts of risk communication across disciplines, this document outlines components of successful communication programs that further goals in the mitigation planning process. An added user-friendly guide illustrates North Carolina's particular vulnerability to coastal storms. (Available summer 2001.)
- ***Mitigation of Natural Hazards: Activities a Local Government Can Afford Today***. This publication provides an overview of activities that can improve community resilience to natural hazards, including policies and retrofitting programs that a local government could initiate without the benefit of state or federal aid. It includes a discussion of useful budgeting practices for leveraging mitigation costs, as well as information on often unrecognized losses attributable to non-action. (Available summer 2001.)

- ***Duty and Disaster: Holding Local Governments Liable for Permitting Uses in High Hazard Areas***. Published in the ***North Carolina Law Review*** in June 2000, this article analyzes whether local governments should be liable for development decisions in hazardous areas. For reprints, e-mail your name and address to *mjanders@email.unc.edu*.
- ***Mitigation Planning for Our Community*** (VHS). This video was produced for distribution to mitigation planning workshop participants so they could show their community members why mitigation planning is important. It is intended to increase community knowledge and acceptance of the mitigation planning process and is also available in either slide show or overhead format.
- ***Guiding Principles for the Quality Redevelopment of Eastern North Carolina*** (VHS). In 1999, following Hurricane Floyd, this video, introduced by then-governor Hunt, was produced to outline the principles of sustainable development that should guide postdisaster redevelopment.
- ***Keeping Natural Hazards from Becoming Disasters: A Basic Workbook for Local Governments***. Designed for communities with limited resources, this workbook is a guide to mitigation planning. It has been distributed across North Carolina and adapted for use nationally and internationally.
- ***Steering Barrier Island Communities Toward a More Sustainable Future.*** Barrier islands face a unique set of problems in hazard mitigation. While retreat from the destructive forces of the ocean has long been proposed as a method of reducing vulnerability of barrier island communities, there has been relatively little research into how this approach can actually be effected. This publication will describe a project exploring various means of planning for retreat through the redevelopment process. It will address issues regarding mitigation, beach economies, the built environment, and environmental conservation within the broader context of developing a sustainable, high quality-of-life community. (Forthcoming.)
- ***Local Hazard Mitigation Planning Manual***. The manual is a more extensive guidebook for preparing mitigation plans. It discusses the rationale behind writing a plan and has been adapted for use beyond North Carolina.
- ***Tools & Techniques: Putting a Hazard Mitigation Plan to Work***. ***Tools & Techniques*** catalogs, describes, and critiques a wide variety of mitigation options available to local governments.

Data

Besides specific plans, programs, and products, HMPI has collected extensive data to support its work:

- **Local Government Database and Spreadsheet**. This database contains land-use planning and hazard vulnerability information for 635 units of local government in North Carolina.
- ***Summary of Reported Storm-Related Damage and Casualties in NC Counties: Storm Data***. The National Climatic Data Center has collected information by county since 1993 for hurricanes and thunderstorms and since 1950 for tornadoes. The data include damage estimates adjusted to 1999 dollars.

For further information regarding these activities and products, contact the *North Carolina Division of Emergency Management, 4713 Mail Service Center, Raleigh, NC 27699-4713; (919) 715-8000, ext.*

275; WWW: http://www.dem.dcc.state.nc.us.

Editor:

I would like to correct a couple of inaccuracies in Abigail Fowle and Christine Theodoropoulos' article on nonstructural earthquake hazard mitigation in the March 2001 ***Observer***. The University of California, Berkeley's Q-Brace (Quake Bracing Assistance) Program was not recently developed; in fact, it is in its fourth successful year. Furthermore, it involves no money from the Federal Emergency Management Agency (FEMA); the Vice Chancellor for Business and Administrative Services provides funds that are matched equally by the departments and units that choose to participate.

This is one of three programs related to nonstructural hazard mitigation here at UCB. The other two are research projects designed to give us a better understanding of the scope of the probable losses due to nonstructural damages on a university campus, and realistic estimates of the resources necessary to begin reducing them. One study being conducted by Professor Mary Comerio of Architecture is funded by the Pacific Earthquake Engineering Research (PEER) Center. When it is completed in June, it will provide a typology of nonstructural hazards encountered in various campus settings, suggest effective mitigation techniques, and calculate likely costs. The second study--funded in equal parts by the Chancellor, FEMA, and PEER--involves a comprehensive survey of a laboratory building in order to develop mitigation techniques for the special, expensive equipment and systems used there, and to create a cost model that UCB and other universities can use. This study is being co-directed by Professor Comerio and the Vice Provost for Academic Planning and Facilities. When its first and second phases are completed early next year, the next phase will involve creating a funding mechanism to support mitigation.

For more information on any of these three programs, please contact me.

Sarah Nathe, Disaster-Resistant University Program Manager University of California-Berkeley, Berkeley, CA 94720-1500; e-mail: *sknathe@uclink4.berkeley.edu*.

Internet Pages

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

All Hazards

http://www.colorado.edu/hazards/wp/wp106/wp106.html

In the Natural Hazards Center's newest Working Paper (#106), the author, California State University-Long Beach geographer Christine M. Rodrigue, examines how the public's understanding of hazards and risks is being shaped by the Internet. In ***Construction of Hazard Perception and Activism on the Internet: Amplifying Trivial Risks and Obfuscating Serious Ones,*** she states that "social construction of hazard policy entails a risk assessment dialogue between technical experts and public interest activists and between each of these and elected risk management policy makers. These dialogues have traditionally taken place in the frequently distorting presence of broadcast and print media . . . The advent of the Internet has fundamentally altered these discussions. . . . Early results have included an impressive empowerment of individual activists vis-à-vis the corporate interests that dominate traditional media, as well as tremendous citizen pressure on risk management decision makers. This is a blade that cuts both ways, however, with new opportunities for demagoguery and for hijacking the . . . trust by which most people make political decisions on issues far beyond their training." This paper illustrates both the advantages and dangers of Internet political organizing through case studies of a technological and a natural hazard controversy.

http://www.fema.gov/emi/edu

The Federal Emergency Management Agency's Higher Education Project is a major agency effort to promote emergency management training in colleges and universities across the U.S. The project's web site offers details about this program as well as information on available training. For example, the project maintains a list of all colleges offering (or even considering) emergency management or disaster courses, indexed in various ways. In addition to the current listings (by degree offered) the site is adding:

- An alphabetical listing of emergency management collegiate programs,
- A listing of emergency management collegiate programs by state, and
- A listing of emergency management collegiate programs by type.

The site also now provides a compilation of college syllabi from hazards and emergency management courses.

http://www.redcross.org.uk

(Click on "Our Work," then on "International Activities")

For the past two years, a team funded by the U.K. Department for International Development (DFID) and managed by the British Red Cross has been researching the work of nongovernmental organizations (NGOs) in natural disaster mitigation and preparedness. The project's findings are now available from this web site. They comprise:

- An overview of research results;
- A series of short case studies for project planners, illustrating the range and nature of NGO work in this area and highlighting key issues. When complete, the series will contain 15 to 20 case

studies;
- A study of the mitigation/preparedness work of international relief and development NGOs based in the U.K. and the factors affecting this work; and
- Similar studies of NGOs in Bangladesh, Nicaragua, the Philippines, and Zimbabwe.

These documents can all be downloaded from the project web page indicated above; click on "NGO Disaster Mitigation and Preparedness Project" for the research reports and overview paper or "NGO Initiatives in Risk Reduction" for the short case studies. Questions and comments can be directed to the project's e-mail address, *dmp@redcross.org.uk*, or the research team leader, *John Twigg*, *j.twigg@ucl.ac.uk*.

http://www.pep.bc.ca
(Click on "Tools for Change: Emergency Management for Women's Services")
The British Columbia, Canada, Provincial Emergency Program (PEP) web site has made an entire workbook on disaster preparedness and response among women's services available on-line. ***It Can Happen to Your Agency--Tools for Change: Emergency Management for Women's Services***, prepared by the British Columbia Association of Specialized Victim Assistance and Counselling Programs, focuses on how women's service agencies can prepare to meet the problems and increased demands for services that will accompany any disaster.

http://www.agiweb.org/gap/legis107/hazards_caucus0101.html
http://www.agiweb.org/workgroup
http://www.ucar.edu/communications/awareness/2001/hazards
On January 22nd, the Congressional Natural Hazards Caucus (see the ***Observer***, Vol. XXV, No. 4, p. 11) kicked off its activities in the new 107th Congress with a roundtable event to consider the impacts of the recent earthquake in El Salvador and to discuss the broader natural hazards challenges facing the United States. In conjunction with the event, caucus co-chairs Senator John Edwards (D-NC) and Senator Ted Stevens (R-AK) released a discussion piece prepared for the caucus, highlighting why the nation is becoming more vulnerable to natural disasters and what actions Congress could take to address the problem. That paper is available for download from the second URL above. It identifies numerous challenges for Congress, both in the near future and long term, and offers suggestions for dealing with them. A separate administration transition document was prepared earlier by a working group of the caucus. Entitled ***A National Priority: Building Resilience to Natural Hazards***, it is available at the third URL.

http://www.iso.com
The web site of Insurance Services Office, Inc. (an insurance industry supplier of statistical, actuarial, underwriting, and claims data) provides information such as estimates of anticipated national insured catastrophe losses for the entire insurance industry on its news page (*http://www.iso.com/docs/news.htm*), as well as timely studies regarding important issues facing the insurance industry and society as a whole on its studies and analyses page (*http://www.iso.com/docs/studies.htm*).

http://www.adpc.ait.ac.th/default.html
http://www.adpc.ait.ac.th/infores/ir.html
The Asian Disaster Preparedness Center (ADPC) web site includes a large section on "Information, Research and Network Support" at the second URL above that offers disaster information resources (categorized as hazard specific information, country specific information, disaster organizations, and reference resources); the center's newsletter ***Asian Disaster Management News***; several ADPC on-line documents; a description of ADPC library services; and a recently added searchable, annotated database of ADPC library holdings.

ADPC staff have also created a new web section to support reconstruction following the January earthquake in Gujarat, India (click on "India Earthquake" at the bottom of the left-hand column of the main page at the first URL above). That section provides reports from various agencies, an annotated bibliography on reconstruction after disaster, information about an e-mail listserve established to support reconstruction, as well as an archive of past listserve messages. The listserve is open to anyone interested in or working on postdisaster reconstruction, development planning, and disaster management. To subscribe, send a blank e-mail to *rebuild_gujarat-request@ait.ac.th* with the word "subscribe" in the subject line. Messages intended for list members should be sent to *rebuild_gujarat@ait.ac.th*.

http://www.icdds.org
The Institute of Civil Defence and Disaster Studies (ICDDS) is the United Kingdom's oldest international learned society wholly devoted to international disaster studies and research. Founded in 1938, the ICDDS recently went through a reorganization and renewal. It now has an international multidisciplinary membership, publishes a quarterly journal, and organizes seminars and workshops, usually in collaboration with kindred organizations (see the Conferences and Training section of this ***Observer***). In addition, ICDDS is now publishing a series of disaster research papers on various aspects of natural, technological, and other human-made hazards, as well as nuclear, chemical, and biological warfare. For more information about ICDDS, see the web site above, or contact *G.A. Whitehead, Honorary General Secretary and Journal Editor, ICDDS, P.O. Box 74, Worcester, WR2 4YE, U.K.; e-mail: gw@icdds.fsnet.co.uk*.

emergency-management@yahoogroups.com
Another new discussion list has been established to promote communication about all aspects of the discipline among emergency management professionals and other interested persons. Individuals can subscribe by e-mailing *emergency-management-subscribe@yahoogroups.com* or consulting *http://groups.yahoo.com/group/Emergency-Management* on the World Wide Web. Additionally, anyone desiring more information can contact the listmaster, *Steve Davis, e-mail: steve@davislogic.com*.

Earthquakes

http://www.eqnet.org

Of course there are a lot of sources and a lot of material available on the Internet concerning the February 28 western Washington state (Nisqually) earthquake. For a helpful index to much of that information, see the EQNET site, which provides indices regarding the recent El Salvador and India quakes as well.

http://www.wa.gov/wsem

The Washington State Emergency Management Division web site offers an extensive section on the recent Washington earthquake. It includes official government (federal, state, and local) announcements, details about damage, and abundant information for residents about recovery and recovery resources.

http://www.eeri.org

The Earthquake Engineering Research Institute (EERI) has posted preliminary reports and photos from the EERI reconnaissance team that examined the Bhuj earthquake that devastated the state of Gujarat, India, on January 26. The site also offers observations and information about the recent Washington state quake and the two El Salvador events earlier this year.

http://geoinfo.usc.edu/gees/

Similarly, the Geotechnical Earthquake Engineering Server--a service supported by the National Science Foundation--has published the ***Preliminary Report of the India-US Geotechnical Earthquake Engineering Reconnaissance Team*** that examined the Bhuj, India, quake. The team was sponsored by NSF in collaboration with EERI (see above) and the Mid America Earthquake Center.

http://www.nicee.org/NICEE/Gujarat/iaeemanual.htm
http://64.177.169.147/NICEE/Gujarat/iaeemanual.htm

In response to the catastrophic Indian earthquake, the National Information Center for Earthquake Engineering (NICEE) at the Indian Institute of Technology (IIT), Kanpur, India, has made the International Association for Earthquake Engineering (IAEE) manual ***Guidelines for Earthquake Resistant Non-Engineered Construction*** available via the NICEE web site. Non-engineered buildings are defined as those that are "spontaneously and informally constructed using traditional techniques without the aid of an architect or engineer but that may follow a set of recommendations derived from observed behavior of such buildings in past earthquakes and trained engineering judgment." Questions

or comments about these guidelines can be directed to NICEE via e-mail: *nicee@iitk.ac.in*.

http://www.cepal.org.mx
At the request of the Government of the Republic of El Salvador, the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) has carried out a study of the socioeconomic impact of the January 13 earthquake that struck that country. According to the study, the total losses were approximately $1.3 billion (U.S.). The full text of the study and a description of study methodology are available in Spanish, with an executive summary in English, from the ECLAC web page at the address above. After a second earthquake struck El Salvador on February 13, a new evaluation mission was organized, and the results of the second evaluation will be available soon. For further information, contact *Ricardo Zapata, ECLAC, e-mail: rzapata@un.org.mx*.

http://www.oas.org/nhp/
Since the recent earthquakes, the Ministry of Education of El Salvador, with help from the Organization of American States (OAS), has created a technical committee to review the designs, blueprints, and specifications of all prototypes used in school construction. The Unit for Sustainable Development and Environment (USDE) of the OAS is supporting this update of the School Vulnerability Reduction Program in El Salvador, and information on the program in English and Spanish is available from the web site above under "Education Vulnerability Reduction." OAS/USDE would appreciate receiving any additional information that ***Observer*** readers might have about small buildings and school construction in earthquake-, volcano-, and flood-prone areas. Please e-mail details to *natural-hazards-project@oas.org*.

Landslides

http://www.ecy.wa.gov/programs/sea/landslides/
The Washington State Department of Ecology recently launched this model site on landslides in the Puget Sound region. It includes information about landslides generally, warning signs, what to do if you have a slide, what to do to prevent slides, and where and how to obtain help. It also lists frequently asked questions (FAQs) and provides slope maps and a slide show on causes, recent occurrences, repair, and prevention of landslides. Much of the information on the site could be useful to people in other regions.

Climate Change

http://www.ipcc.ch/
http://www.meto.gov.uk/sec5/CR_div/ipcc/wg1/ (IPCC Group I)
http://www.usgcrp.gov/ipcc/ (IPCC Group II)
http://www.rivm.nl/env/int/ipcc/ (IPCC Group III)
Recognizing the problems posed by potential global climate change, in 1988 the World Meteorological Organization (WMO) and the United Nations Environment Program (UNEP) established the Intergovernmental Panel on Climate Change (IPCC) to assess the scientific, technical, and

socioeconomic information available for understanding the risk posed by human-induced climate change. The panel has not carried out new research but has reviewed published and peer-reviewed scientific technical literature. The IPCC encompasses three working groups and a task force:

- Working Group I assessed the scientific aspects of the climate system and climate change;
- Working Group II addressed the vulnerability of socioeconomic and natural systems to climate change, negative and positive consequences of climate change, and options for adapting to it; and
- Working Group III examined options for limiting greenhouse gas emissions and mitigating climate change.
- The task force oversees the National Greenhouse Gas Inventories Program.

Earlier this year, for the IPCC's Third Assessment, all three working groups released their final reports summarizing more than two years of work, and those documents are available from the web sites above. Working Group I's contribution to the IPCC Third Assessment Report is entitled ***Climate Change 2001: The Scientific Basis***; Group II's is ***Climate Change 2001: Impacts, Adaptation and Vulnerability***; and Group III's is ***Climate Change 2001: Mitigation***. Each working group report is extensive; however, brief summaries intended to provide basic information to policy makers are available from each group's web site. The complete Third Assessment Report will be a comprehensive and up-to-date appraisal of the policy-relevant scientific, technical, and socioeconomic dimensions of climate change, focusing on new findings since the second report in 1995. It will also pay greater attention to the regional (in addition to the global) scale and include non-English literature.

In addition to the reports of the working groups, the IPCC web site (*http://www.ipcc.ch*) also offers numerous on-line special reports, including:

- ***The Regional Impacts of Climate Change: An Assessment of Vulnerability***
- ***Aviation and the Global Atmosphere***
- ***Methodological and Technological Issues in Technology Transfer***
- ***Emissions Scenarios***
- ***Land Use, Land Use Change and Forestry***

Additional information about this major international effort is available from the *IPCC Secretariat, World Meteorological Organization, 7 bis Avenue de la Paix, P.O. Box 2300, 1211 Geneva 2, Switzerland; e-mail: ipcc_sec@gateway.wmo.ch*.

http://www.nacc.usgcrp.gov
http://www.gcrio.org/NationalAssessment/water/water.pdf
http://www.pacinst.org/naw.html
http://www.cop.noaa.gov

The U.S. National Assessment of the Potential Consequences of Climate Variability and Change, which contributed to the global assessment mentioned above, undertook a detailed appraisal of the consequences of climate change for the nation and examined possible mechanisms for adapting to such change. The assessment surveyed these issues both by geographical region and by topic in order to produce a broad national synthesis entitled ***Climate Change Impacts on the United States: The Potential Consequences of Climate Variability and Change***. That report is available from the first web site above. More detailed reports from studies of specific regions and issues include the final report of the Mid-Atlantic regional assessment and final reports of the Water Sector Assessment Team, ***Water: The Potential Consequences of Climate Variability and Change for the Water Resources of the United States***, available at the second and third addresses above, and the Coastal Sector Assessment Team, ***The Potential Consequences of Climate Variability and Change on Coastal Areas and Marine Resources***, available from the final URL.

The report on consequences for the nation's water resources suggests that climate change may have serious impacts. It concludes that global warming has already resulted in substantial thawing of permafrost in the Alaska Arctic, unprecedented melting of mountain glaciers, an increase in sea level of 10-20 centimeters, and significant alteration of water runoff patterns. Moreover, climate models project that temperatures could increase another 3-6 degrees Celsius by the end of this century, seriously affecting U.S. water resources in several ways:

- Snowfall and snowmelt will be significantly affected in the western U.S., leading to changes in weather patterns and the timing and magnitude of runoff.
- Rising sea levels will threaten coastal aquifers and water supplies.
- The risk of increased flooding may be as serious and widely distributed as the adverse impacts of droughts.
- Changes associated with climate change could seriously threaten fish, other water species, and critical habitats such as wetlands.

Severe Weather

http://www.nws.noaa.gov/om/hazstats

Annually, the National Weather Service publishes natural hazards statistics for previous years. Recently the service posted numbers for 1999 as well as preliminary statistics for 2000 at the URL above. The statistics cover fatalities due to all hazards, as well those due to specific risks such as severe weather, lightning, tornadoes, tropical storms, heat, floods, cold, winter storms, and high winds. A few 1999 highlights include:

- Weather and flood-related hazards claimed 908 lives, injured 5,148 persons, and caused more than $12 billion in damage.
- Extreme heat was the number one cause of fatalities (502).
- Tornadoes were the leading cause of injuries (1,842).
- Hurricanes and tropical storms caused the most destruction ($5.6 billion in property and crop losses).
- States suffering the most damage were Florida, North Carolina, and Oklahoma.
- Due to extreme heat, July was the deadliest month.
- Illinois suffered the highest number of deaths (147).
- Oklahoma had the most injuries (706)--primarily due to the Oklahoma City tornado outbreak.

Floods

http://www.nws.noaa.gov/oh/hic/nho/index.shtml

With the hounds of spring on winter's traces, many of us would like to know if it's going to flood. This National Hydrological Assessment web page, provided by the National Weather Service (NWS) Office of Hydrology (OH) Hydrologic Information Center (HIC), serves up a regularly updated map showing flood potential across the nation along with explanatory text. The information does not provide specific forecasts of flood location and severity, but it does identify areas that warrant careful monitoring. The site also provides access to more detailed information on local conditions provided by NWS field offices.

http://www.fema.gov/msc
http://web1.msc.fema.gov

People concerned about getting their feet wet can now order National Flood Insurance Program mapping products on-line through FEMA's National Flood Insurance Program (NFIP) Map Service Center (MSC) Flood Map Store. Products available include flood maps issued by the NFIP, NFIP manuals, Flood Insurance Studies, community status books, Letters of Map Change (LOMCs), the Flood Map Status Information System (FMSIS), digital flood data, and coastal barrier resource area data. Customers can use a catalog, map search, or quick order facility to order products. This new MSC site is just one of a suite of on-line services being implemented to expedite the dissemination of FEMA's flood map and insurance products. The MSC Flood Map Store is now open for business customers only. Individuals wishing to purchase products for personal use and customers exempt from fees, should call MSC

customer service at *(800) 358-9616*. Customers exempt from fees will be able to place orders on-line later this summer.

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Natural Hazards Center's home page

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*.

Second Tampere Conference on Disaster Communications (CDC-2001). Host: Government of Finland, U.N. Office for the Coordination of Humanitarian Affairs, and others. Tampere, Finland: May 28-30, 2001. In 1991, Tampere, Finland, hosted the International Conference on Disaster Communications, which adopted the Tampere Declaration. This statement of experts from major humanitarian organizations, regulatory authorities, and the private sector became the foundation for subsequent work toward an international treaty allowing the unhindered use of telecommunication technology in international disaster response. Indeed, in 1998, Tampere hosted the Intergovernmental Conference on Emergency Telecommunications, which adopted the Tampere Convention on the Provision of Telecommunications for Disaster Mitigation and Relief Operations, an international treaty deposited with the United Nations Secretary General.

In 2001, Tampere will host CDC-2001--the Second Tampere Conference on Disaster Communications. As with the 1991 event, CDC-2001 is expected to result in recommendations and a statement of experts on disaster communication. In addition, the meeting will provide an opportunity for governments to sign and ratify the Tampere Convention. CDC-2001 is open to participants from all sectors concerned with the application of telecommunications to disaster mitigation and response operations. A primary goal of the meeting is to bring these disparate groups together to work toward a regulatory framework that permits the unimpeded use of all appropriate telecommunication means to respond to and mitigate disasters. Details and registration information are available from the conference web site: *http://www.reliefweb.int/telecoms*. Interested persons can also contact *Annamaija Paunu-Virtanen or Anja Hakkarainen, TAVI Congress Bureau, Papinkatu 21, FIN-33200 Tampere, Finland; tel: +358 3 233 0460; fax: +358 3 233 0444; e-mail: annamaija.paunu-virtanen@tavicon.fi*. Information about the program is available from *Seppo Sisatto, Chair of the Organizing Committee, e-mail: seppo.sisatto@kotiposti.net*; or *Hans Zimmermann, International Telecommunications Union, e-mail: hans.zimmermann@ties.itu.int*.

International Diploma in Humanitarian Assistance (IDHA 8). Offered by: Center for International Health and Cooperation (CIHC). New York, New York: June 3-29, 2001. This course provides intensive operational and academic training for individuals involved in responding to humanitarian crises, particularly during armed conflicts and disasters. The IDHA is a multidisciplinary program intended to simulate work in an actual humanitarian crisis; it involves 12-hour days, six days per week, for a full

month. Future programs include

- *IDHA 9, Geneva, Switzerland: January 27-February 22, 2002*
- *IDHA 10, New York, New York: June 2-28, 2002*

For details, and an application form, see: *http://www.idha.ch*. Applications should be submitted to *Michel Veuthey, Academic Director, CIHC, e-mail: michel.veuthey@ties.itu.int*.

Disaster Management: Developing Best Practice. Sponsor: Association of Traumatic Stress Specialists. Coventry, U.K.: June 18-19, 2001. The key issues addressed at this meeting will include emergency planning and response, post-trauma interventions, risk management, the role of volunteers in disaster response, issues for the emergency services, the media and disasters, and multidisciplinary approaches to disaster management. More information is available from *Anne Eyre, School of Science and the Environment, Coventry University, Coventry, U.K. CV1 5FB; tel/fax: 02476-888485, e-mail: a.eyre@cov.ac.uk*.

11th World Conference on Disaster Management. Host: Canadian Centre for Emergency Preparedness. Hamilton, Ontario, Canada: June 24-27, 2001. The World Conference on Disaster Management brings together professionals from the fields of emergency response, emergency management, emergency health care, business continuity planning, risk management, and security. The program includes pre- and postconference workshops, plus sessions spanning everything from "Global Warming and the Rise in Natural Disasters" to "Effective Communications in a Crisis," "Infectious Diseases and Pandemics," "North American Wildfires of 2000," "2000 Floods in the UK," and many other topics. For details, see: *http://www.wcdm.org*; or contact *Dylan Bailey, Canadian Centre for Emergency Preparedness, P.O. Box 2911, Hamilton, Ontario, Canada L8N 3R5; (905) 546-3911 or (800) 965-4608; fax: (905) 546-2629; e-mail: dobailey@ccep.ca*.

Safeguarding our Cultural Heritage: Emergency Response Regional Workshops. Offered by: Foundation of the American Institute for Conservation of Historic and Artistic Works (FAIC).

- *Seattle, Washington: July 19-21, 2001*
- *Independence, Missouri: September 6-8, 2001*
- *Fort Bragg, North Carolina: October 25-27, 2001*

Over the last several years, a task force of the American Institute for Conservation of Historic and Artistic Works (AIC), with help from other organizations, has developed, tested, and refined a disaster curriculum. The resulting course addresses a number of administrative and risk management issues as well as response and salvage measures. Thanks to a major grant from the National Endowment for the Humanities, the curriculum is being used to build a multidisciplinary cadre of experts nationwide. Hence, this workshop is intended for conservators, curators, registrars, collections managers, archivists, archaeologists, historic preservation officials and specialists, librarians, or professional emergency

responders interested in the preservation of historical or cultural artifacts threatened by disasters. Each workshop will be limited to 15 participants. To apply or receive more information, contact *FAIC, 1717 K Street, N.W., #200, Washington, DC 20006; e-mail: info@aic-faic.org*; or *Mary Lee, (860) 927-0178; e-mail: mlee@mohawk.net*.

First Annual Meeting on Integrated Disaster Risk Management: Reducing Socio-Economic Vulnerability. Sponsor: International Institute for Applied Systems Analysis (IIASA) and Kyoto University's Disaster Prevention Research Institute (DPRI). Laxenburg, Austria: August 1-4, 2001. The purpose of this conference is to allow disaster and risk professionals to present research and share ideas on selected issues in disaster risk management, keeping in mind the importance of integrating risk policy into other areas of hazard management. Topics will include:

- Disaster risk mitigation, including integrating megacity development and policies for disaster mitigation;
- New information technology and risk communication for disaster mitigation;
- Strategies for implementing mitigation measures based on cost-benefit analyses and a country's institutional arrangements;
- Upgrading public infrastructure and other facilities to improve their resilience against natural disasters;
- Long-term considerations for disaster risk management, taking into account changing demographics;
- Lessons learned from the recent El Salvador and India earthquakes;
- Reducing long-range impacts of technological disasters;
- Financial risk management, including estimating long-term direct and indirect losses from natural disasters (including the use of macroeconomic modeling);
- Sharing losses through risk-transfer mechanisms, government compensation, and international or domestic aid;
- Designing risk-transfer instruments (insurance, bonds, etc.) that link mitigation measures with financial recovery objectives and comparing and designing national programs for mitigation and loss sharing.
- Information on the meeting and on-line registration can be found at *http://www.iiasa.ac.at/Research/RMP/dpri2001/*. For additional information, contact *Helene Pankl, Conference Secretariat, IIASA, A-2361, Laxenburg, Austria; tel: 43-2236-807-456; fax: 43-2236-807-466; e-mail: pankl@iiasa.ac.at*; or *Joanne Linnerooth-Bayer at the same address; tel: 43-2236-807-308; fax: 43-2236-807-466; e-mail: idrm@iiasa.ac.at*.

Workshop on Vulnerability Assessment Techniques (VAT) II. Host: Organization of American States, Unit for Sustainable Development and Environment (OAS/USDE); NOAA Coastal Services Center (CSC). Charleston, South Carolina: August 13-15, 2001. The objective of the VAT I workshop, held in March 2000, was to explore a variety of natural hazard vulnerability assessment methodologies and identify gaps in coverage at all levels in the public and private sectors. At VAT II, additional vulnerability assessment techniques will be presented, followed by panel discussions on their

applicability to development programs and projects. Participants will identify needed additional development and recommend possible new applications. For workshop details, or to register, contact *Lacy Johnson, NOAA Coastal Services Center, 2234 South Hobson Avenue, Charleston, SC 29405-2413; (843) 740-1213; fax: (843) 740-1313; e-mail: lacy.johnson@noaa.gov; WWW: http://www.csc.noaa.gov/vata/vat_twhttp://www.colorado.edu/hazards/o/.*

"E-Health"--The Use of Information Technology and Telematics in Emergency Management and Education. Sponsor: Department of Health Policy and Management, University of Kuopio, Finland, and others. Kuopio, Finland: August 23-25, 2001. Rapid growth of the world's population, as well as increased migration and mobility, are straining health care resources around the world. In particular, emergency situations are increasingly common in both developing and developed countries, and public expectation is that response will be prompt and efficient. This conference will examine how emergency health service professionals are staying prepared to meet these challenges and expectations. It will examine current levels of emergency preparedness, look at common mistakes, highlight the role of communications technology, and introduce the latest benefits that these technologies offer for emergency health care management. A call for abstracts has been issued; for details, contact the *Conference Secretariat, University of Kuopio, Department of Health Policy and Management, P.O Box 1627, FIN-70211 Kuopio, Finland; tel: +358 17 163 631; fax: +358 17 162 999; e-mail: aapo.immonen@uku.fi.*

IV Inter-American Dialogue on Water Management: "In Quest of Solutions." Sponsors: Ministry of the Environment of Brazil, International Water Resource Association, and others. Iguacu, Brazil: September 2-6, 2001. This international conference includes sessions on floods, climate change and impacts, and mitigation of natural disasters. More information is available from *Bernhard Griesinger, Inter-American Water Resources Network, Organization of American States, 1889 F Street, N.W., Washington, DC 20006; (202) 458-3570; fax: (202) 458-3560; e-mail: bgriesinger@oas.org; WWW: http://www.iwrn.net*; or the *Executive Secretariat, Av. Brigadeiro Luiz Antonio, A317-conj. 53, 01317-901 Sao Paulo, SP, Brazil; tel/fax: +55 11/3104-6412; e-mail: dialogo@acquacon.com.br; WWW: http://www.ivdialogo.com.*

Floodplain Management Association (FMA) Fall Conference. Lake Tahoe, Nevada: September 23-26, 2001. The theme of the fall FMA meeting will be "Water Quality and Floodplain Management--A Concept Whose Time Has Come." Subtopics will include lake management, multiobjective management, interagency coordination, and other issues in floodplain management. For a conference brochure, contact *Laura Hromadka, FMA, P.O. Box 2972, Mission Viejo, CA 92692-0972; (949) 766-8112; fax: (949) 459-8364; e-mail: fmalaura@pacbell.net; WWW: http://www.floodplain.org.*

Fourth Annual Medical and Health Disaster Management Conferences: "Bioterrorism: Your Toolbox for Action!" Sponsors: California Department of Health Services, California Emergency Medical Services Authority, California Governor's Office of Emergency Services, and others.

- *Ontario, California: October 2, 2001*
- *Burbank, California: October 4, 2001*
- *Concord, California: October 10, 2001*

More information is available from *Cheryl Starling, California Emergency Medical Services Authority, 1930 9th Street, Sacramento, CA 95814; (916) 322-4336, ext. 463; fax: (916) 323-4898; e-mail: cheryl.starling@emsa.ca.gov; WWW: http://www.emsa.ca.gov*.

Geological Society of America (GSA) Annual Meeting.

- *Boston, Massachusetts: November 1-10, 2001*
- *Denver, Colorado: October 27-30, 2002*
- *Seattle, Washington: November 2-5, 2003*

The GSA annual conference includes numerous sessions on various aspects of geologic hazards--including landslides, earthquakes, and volcanoes. It also offers pre- and postmeeting field trips, short courses and workshops, exhibits, and other opportunities for professional development. The abstract deadline for the 2001 meeting is July 17. Additional information is available from *GSA, P.O. Box 9140, Boulder, CO 80301-9140; (303) 447-2020 or (800) 472-1988; fax: (303) 447-0648; e-mail: meetings@geosociety.org*.

Twenty-Eighth International Disaster Management Course (DMC-28). Offered by: Asian Disaster Preparedness Center (ADPC). Bangkok, Thailand: November 5-23, 2001. ADPC's Disaster Management Course is the cornerstone of the center's educational program. Beginning with basic concepts and proceeding to more sophisticated issues, the program uses classroom lectures, hands-on training, field trips, and exercises to improve participants' disaster management skills. For a program brochure, contact the *Training and Education Division, Asian Disaster Preparedness Center, P.O. Box 4, Klong Luang, Pathumthani 12120, Thailand; tel: (66 2) 524-5362/524-5363; fax: (66 2) 524-5350/524-5360; e-mail: tedadpc@ait.ac.th; WWW: http://www.adpc.ait.ac.th*.

Annual Applied Geography Conference. Fort Worth, Texas: November 14-17, 2001; and Binghamton, New York: October 23-25, 2002. The Annual Applied Geography Conference brings together academics and geographers working for public agencies and private enterprise. The meeting includes sessions on hazards, environmental issues, and related applications and techniques; indeed, hazards work has figured prominently in past meetings. For more information, contact *Burrell Montz, Department of Geography, Binghamton University, Binghamton, NY 13902-6000; (607) 777-2615; fax: (607) 777-6456; e-mail: bmontz@binghamton.edu*; or *Graham Tobin; (813) 974-4932; e-mail: gtobin@chumal.cas.usf.edu*.

Society for Risk Analysis (SRA) 2001 Annual Meeting. Seattle, Washington: December 2-5, 2001. Although presentations at the SRA Annual Meeting typically address human-caused hazards, chemical and health risks, and other traditional issues in risk analysis, in the past the conference has also dealt with human response to such natural hazards as floods and hurricanes. In addition, many of the issues

discussed concerning anthropogenic hazards (such as hazard communication) are applicable to the world of natural hazards. For information on this year's meeting, contact *SRA, 1313 Dolley Madison Boulevard, Suite 402, McLean, VA 22101; (703) 790-1745; e-mail: sra@burkinc.com; WWW: http://www.sra.org*.

82nd Annual Meeting of the American Meteorological Society (AMS). Orlando, Florida: January 13-18, 2002. The AMS annual conference is held in conjunction with numerous additional symposia and subconferences addressing various aspects of meteorology, including meteorological hazards. For additional information about these meetings and abstract submission, see the AMS web site: *http://www.ametsoc.org/AMS/*; or contact *AMS, 45 Beacon Street, Boston, MA 02108-3693; (617) 227-2425; fax: (617) 742-8718; e-mail: amsinfo@ametsoc.org*.

Earthquake Engineering Research Institute (EERI) Annual Meeting. Long Beach, California: February 6-9, 2002. In 2002, EERI will repair to sunny Long Beach where members will discuss the many issues related to constructing seismically safe environments (or at least *relatively* safe environments--and what "relatively safe" means is a key issue). The sessions cover everything from examinations of recent events (Seattle, Bhuj, El Salvador, Honshu) to discussions of technical engineering issues. For details about the 2002 meeting, contact *EERI, 499 14th Street, Suite 320, Oakland, CA 94612-1934; (510) 451-0905; fax: (510) 451-5411; e-mail: eeri@eeri.org; WWW: http://www.eeri.org*.

International Symposium, Rural Community Interaction, and Workshop: Exploring Alternative Ways to Combat Desertification--Connecting Community Action with Science and Common Sense. Cape Town, South Africa; six rural communities; and Gobabeb, Namibia: April 8-20, 2002. Sponsors: Desert Research Foundation of Namibia; German Ministry for Economic Cooperation; National Botanical Institute of South Africa; and U.S. Department of the Interior, Bureau of Land Management. The United Nations Convention to Combat Desertification emphasizes the importance of participation at the community level in planning, decision making, and implementation of actions to combat desertification and mitigate the effects of drought. The objectives of this symposium, field work, and workshop are to:

- Provide a forum for the exchange of knowledge and expertise among scientists, development practitioners, and dryland community members;
- Generate an understanding of the value of linking local knowledge with scientific research;
- Focus on interpretation and dissemination of information for effective application of research;
- Provide experience in innovative community action to combat desertification; and
- Give participants hands-on practical experience.

Topics to be addressed include:

- The National Action Programme process and linkage to the Convention to Combat Desertification;
- The role of regional, local, and community structures in combating desertification;
- Appropriate technologies;

- Alternative forms of income generation, e.g., community-based dryland tourism, and applied arts and crafts;
- Gender issues in rural development;
- Land tenure in the context of desertification; and
- Monitoring and evaluation of land use and community development.

The official language will be English; however, simultaneous interpretation in French and Afrikaans will be provided. Complete information is available from the conference web site: *http://des2002.az.blm.gov*. Interested persons can also contact *Roben Penny, Woodbine, Essex Road, Kalk Bay, 7975 Cape Town, South Africa; tel/fax: 27-21-788-1285; e-mail: robenpen@jaywalk.com*; or *Beaumont McClure, Special Assistant for International Programs, Bureau of Land Management, Arizona State Office, 222 North Central Avenue, Phoenix, AZ 85004; (602) 417-9430; fax: (602) 417-9398; e-mail: beau_mcclure@blm.gov; WWW: http://des2002.az.blm.gov*.

Third International Conference on Landslides, Slope Stability, and the Safety of Infrastructure. Singapore: July 10-12, 2002. The conference organizers have identified 14 themes for presentations and technical papers, ranging from landslide investigation to climatic and geological factors influencing landslides, monitoring, hazard analysis, effects on structures, remediation, disaster management, and other topics. Abstracts are due December 15, 2001. Additional information is available from *CI-Premier Ltd, 150 Orchard Road #07-14, Orchard Plaza, Singapore 238841; tel: 065-7332922; fax: 065-2353530; e-mail: cipremie@singnet.com.sg; WWW: http://www.cipremier.com*.

World Congress on Disaster Reduction. Sponsors: American Society of Civil Engineers (ASCE) Council on Natural Disaster Reduction and others. Washington, D.C.: August 26-30, 2002. The two overarching themes of this congress will be the development of sustainable societies in the face of natural and technological hazards and the provision of disaster technical assistance to achieve that goal. The congress will serve as a "global rallying point" for new and ongoing national and international hazard mitigation efforts. It is intended to strengthen and create new regional and global alliances, establish a realistic blueprint for future global disaster reduction, promote innovative technology and resource sharing among communities, identify possible new regional projects and generate public and private support for them, and establish science and technology centers of excellence to develop and disseminate science- and community-based solutions to specific hazards problems. For further information, contact *Walter Hays, ASCE, 1801 Alexander Bell Drive, Reston, VA 20191; (703) 295-6054; fax: (703) 295-6141; e-mail: whays@asce.org*; or *Michael Cassaro, ASCE; e-mail: macass@aye.net; WWW: http://www.asce.org/conferences/disaster2002/*.

(Note: a Pre-World Congress is planned for Washington, D.C., August 18-22, 2001. Contact the individuals above for more information.)

A Hazards Center Course on Sustainable Disaster Recovery

Training in Using Disaster Recovery to Build Local Sustainability. Offered by: Natural Hazards Research and Applications Information Center, University of Colorado. Boulder, Colorado: August 27-30, 2001. This course is intended for local, state, federal, and private-sector decision makers, planners, emergency managers, building officials, economic development directors, environmental specialists, and others who may be involved in recovery by a disaster-stricken community. It is designed to help them prepare and implement holistic recovery that results in a more sustainable community. By juxtaposing the components of sustainability (economic vitality, livability, environmental quality, disaster resilience, social equity, and participatory decision making) with likely postdisaster problems (damaged infrastructure, inadequate housing, ecosystem degradation, business disruption, etc.), participants will explore opportunities to enhance a town, city, or county during disaster recovery. For each opportunity, the course will consider various options for planning and taking action, funding strategies, and sources of expertise. More information is available from *Jacki Monday, Program Manager, Natural Hazards Center, 482 UCB, University of Colorado, Boulder, CO 80309-0482; (303) 492-2149; fax: (303) 492-2151; e-mail: jacque.monday@colorado.edu*.

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ISDR Announces 2001 World Disaster Reduction Campaign

The Secretariat for the United Nations International Strategy for Disaster Reduction (ISDR--the successor program to the International Decade for Natural Disaster Reduction) has announced that the theme of its 2001 World Disaster Reduction Campaign is "Countering Disasters: Targeting Vulnerability."

The secretariat will provide campaign information in two parts. First, it will publish a leaflet containing basic information and statistics on the major disasters of the past 50 years, projections for the next 50 years, and possible solutions to the risks posed by these events. Second, it will provide briefs on various aspects of disaster reduction, including: "The Role of Science and Technology in Disaster Reduction," "Building Disaster Resistant Infrastructures," and "Mobilizing Local Communities in Reducing Disasters." These publications will include suggestions for activities and examples of effective programs around the world. A special publication on risk mapping at the local level will also be developed.

The ISDR Secretariat encourages participation by all interested persons and organizations and is seeking articles and papers for possible publication as part of the campaign. Questions and comments should be sent to *Nicole Appel, Promotion and Awareness Issues Officer, ISDR Secretariat, United Nations, Palais des Nations, CH-1211 Geneva 10, Switzerland; tel: +41 22 917 97 06; fax: +41 22 917 97 98; e-mail: appeln@un.org*.

Canada Establishes Office of Critical Infrastructure Protection and Emergency Preparedness

On February 6, 2001, Canadian Prime Minister Jean Chrétien announced the creation of a new Office of Critical Infrastructure Protection and Emergency Preparedness. The office will be the Canadian federal government's primary agency for ensuring emergency preparedness of all kinds. Encompassing the existing functions of Emergency Preparedness Canada as well as additional responsibilities, it will be under the direction of Associate Deputy Minister Margaret Purdy. In his announcement, the prime minister noted that other ministries will work closely with the new office to ensure a coherent and comprehensive national approach to emergency preparedness and response.

The new organization is charged with developing and implementing a comprehensive strategy for protecting Canada's critical infrastructure and is committed to working actively with provinces, territories, and municipalities, as well as the private sector, other countries, and organizations.

Specifically, the goals of the office are to:

- Build partnerships at all levels, including with the U.S.;
- Promote dialogue among Canada's critical infrastructure owners and operators and foster information sharing on threats and vulnerabilities;
- Provide a focal point for the federal government's analysis and coordination efforts regarding information technology (IT) and support federal departments and agencies in meeting their responsibilities for protecting their IT systems and networks;
- Promote other areas of cooperation, such as raising awareness, enhancing education and training, and promoting information technology security research and development; and
- Achieve an appropriate level of national civil emergency preparedness.

For more information about this Canadian government reorganization to address disasters, contact the soon-to-be-renamed *Emergency Preparedness Canada, 122 Bank Street, Second Floor, Ottawa, Ontario, Canada K1A 0W6; (613) 991-7077 or (800) 830-3118; or see: http://www.epc-pcc.gc.ca/whatsnew/index.html*.

Contracts and Grants

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

Flood Warning Program Effectiveness in Boulder and Boulder County, Colorado. Funding: Urban Drainage and Flood Control District, $40,000, 12 months. Principal Investigators: *Eve Gruntfest and Kim Carswell, Department of Geography, Post Office Box 7150, University of Colorado, Colorado Springs, CO 80933-7150; (719) 262-4058; fax: (719) 262-4066; e-mail: ecg@brain.uccs.edu.*

The governments of Boulder County and the city of Boulder created a flood-warning program in 1979 based on behavioral science findings and recommendations made by researchers following the 1976 Big Thompson Canyon flood disaster. The investigators will use research and findings from more recent Colorado and U.S. flood disasters, such as the 1997 Spring Creek flash flood in Fort Collins, to evaluate the existing program and recommend ways to improve it. They will also conduct a survey of floodplain residents to determine their awareness and understanding of the flood threat. The investigators welcome suggestions regarding how best to measure the effectiveness of warnings and information on similar projects conducted recently.

Flood Research Partnership: Promoting Stakeholders' Participation in Sustainable Floodplain Management in the Red River Basin. Funding: Social Science and Humanities Research Council (SSHRC) of Canada, $600,000, 36 months. Principal Investigators: *John Sinclair, Natural Resources Institute, University of Manitoba, and Emdad Haque, Department of Geography, Brandon University.* Inquiries regarding this project should be directed to *John Sinclair, Natural Resources Institute, University of Manitoba, Winnipeg, Manitoba, Canada R3T 2N2; (204) 474-8374; e-mail: jsincla@ms.umanitoba.ca*.

Funded by SSHRC's Canadian National Community-University Research Alliances (CURA), the participants in this project will form a university, government agency, and community partnership to conduct research on sustainable floodplain management in the Red River Basin in southern Manitoba to develop methods for large river basin planning. Participants include Brandon University; the University of Manitoba; Lakehead University; Simon Fraser University; the University of Western Ontario; the Water Resources Branch, Manitoba Conservation; and three local Manitoba communities. During the initial phase, researchers will assess the attitudes, perceptions, and preferences of the floodplain residents of the basin. These findings will then be incorporated into a decision-making framework to ensure stakeholders' participation in forming strategic floodplain management policies in the Red River Basin. This work will also aid future decision processes in floodplain and other resource management. The research will focus on flood risk perception and risk communication, individual and community value systems, public involvement in floodplain management decisionmaking, and integration of risk perception and social value systems.

Strengthening Disaster Mitigation and Management at the State Level in India. Funding: Asian Development Bank, 12 months. For information, contact the *Asian Disaster Preparedness Center (ADPC), Asian Institute of Technology, P.O. Box 4, Klong Luang, Pathumthani 12120, Thailand; tel: 66-2-524-5353; fax: 66-2-524-5360; e-mail: adpc@ait.ac.th; WWW: http://www.adpc.ait.ac.th/Default.html*.

The overall goal of this project is to enhance the disaster management capabilities of the Indian states of Uttar Pradesh and Uttaranchal in order to reduce the adverse effects of natural disasters on their

economic and social development. Participants will form comprehensive disaster management and mitigation plans. They will also help manage the rehabilitation efforts in the earthquake affected areas of the Chamoli district in Uttaranchal. In addition, participants will review relief and rehabilitation systems in areas affected by the earthquake, develop a composite disaster vulnerability index and disaster management information system, strengthen community participation in disaster management and public awareness programs, and provide project management and reporting support.

Recent Publications

Below are summaries of some of the recent, more useful publications on hazards and disasters received by the Natural Hazards Center. Due to space limitations, we have provided descriptions of only a few key publications or those with a title that may not indicate content. All items contain information on how a reader can obtain a copy. A complete bibliography of publications received from 1995 through 2001 is posted on our web site: *http://www.colorado.edu/hazards/bib/bib.html*.

All Hazards

Compliance with Public Assistance Program's Insurance Purchase Requirements. *Report to the Chairman, Subcommittee on VA, HUD, and Independent Agencies, Committee on Appropriations, U.S. Senate. Report No. I-01-01. 2001. Free.*
Buyouts: Hurricane Floyd and Other Issues Relating to FEMA's Hazard Mitigation Grant Program. *Report to the Chairperson, Subcommittee on VA, HUD, and Independent Agencies, Committee on Appropriations, U.S. Senate. Report No. I-02-01. 2001. Free.*
Copies of both reports can be obtained from the Federal Emergency Management Agency (FEMA) Office of Inspector General, Inspections Division, 500 C Street, S.W., Washington, DC 20472; (202) 646-4166; fax: (202) 646-3901.

Managing Disaster Risk in Emerging Economies. *Alcira Kreimer and Margaret Arnold, editors. 2000. 208 pp. $25.00. Copies can be purchased from the World Bank, P.O. Box 960, Herndon, VA 20172-0960; (800) 645-7247 or (703) 661-1580; fax: (703) 661-1501; e-mail: books@worldbank.org; WWW: http://publications.worldbank.org.*
Although natural disasters have long been considered a tragic interruption to the development process, increasingly the development community is linking disaster mitigation to development. Still, earthquakes in San Fernando, California, and in Venezuela that result in equal amounts of direct economic loss will differ significantly in recovery time and loss of life experienced by each country. In the end, recovery is a function of basic development. Doing development right and making sure that human activities contribute to reducing disasters rather than exacerbating them can both lessen disaster impacts and speed recovery. This volume describes work undertaken during the first two years of

operation of the World Bank's Disaster Management Facility that led to the establishment of the ProVention Consortium in Washington, D.C. It is organized into three parts: Part I on risk identification contains chapters on the economic impacts of natural disasters, including flooding, in developing countries, and presents Buenos Aires as an example. Part II explores aspects of reducing disaster risk. Part III examines strategies for developing countries to share and transfer disaster risk more effectively.

Major Management Challenges and Program Risks: Small Business Administration. *GAO-01-260. 2001. 35 pp. Free.*
Major Management Challenges and Program Risks: U.S. Agency for International Development. *GAO-01-256. 2001. 32 pp.*
Both reports are available from the U.S. General Accounting Office (GAO), P.O. Box 37050, Washington, DC 20013; (202) 512-6000; fax: (202) 512-6061; e-mail: info@www.gao.gov; WWW: http://www.gao.gov.
The GAO recently conducted a series of analyses of various federal agencies to inform and assist the newly elected Congress and administration. The first report addresses the major challenges facing the Small Business Administration (SBA) as it seeks to aid, counsel, assist, and protect the interests of the nation's small businesses and to help these small companies and families recover from natural disasters. It summarizes actions SBA has taken and are underway to address these challenges and outlines further actions GAO believes are needed. Since its inception, SBA has, among other things, made 1.1 million small business loans and approved 1.4 million disaster loans to individual homeowners, renters, and businesses of all sizes.

The second report examines USAID, which implements U.S. foreign economic and humanitarian assistance programs. USAID is currently studying ways to deploy staff more effectively in response to emergency humanitarian situations and natural disasters--one of the agency's major strategic objectives. It is considering establishing a "ready reserve" of employees and, possibly, contractors, who could rapidly respond to natural disasters such as the hurricanes that struck Central America and Caribbean in 1998.

International Civil Defense Directory 2001. *2001. 600 pp. $33.00. Available from the International Civil Defence Organisation (ICDO), Chemin de Surville, 10-12, P.O. Box 172, CH-1213 Petit Lancy 2, Geneva, Switzerland; tel: +41 22 879 69 69; fax: +41 22 879 69 79; e-mail: icdo@icdo.org; WWW: http://www.icdo.org.*
ICDO assembled this directory to aid those who must coordinate disaster prevention and response. It contains emergency management information for over 100 countries, organized according to legislation, mission, institutional structure, staff, training, equipment, and finances.

Risk Analysis: An International Journal. *Vol. 20, No. 6 (December 2000). For subscription rate information or to order a single copy, contact Blackwell Publishers, Inc. 350 Main Street, Malden, MA 02148; (781) 388-8200; fax:(781) 388-8210; e-mail: subscrip@blackwellpub.com; WWW: http://www.blackwellpub.com.*
Efficient allocation of societal resources for risk mitigation sometimes involves trade-offs because risks

and benefits are weighted disproportionately among different groups in society. As this practice extends beyond the present to encompass more distant risks to health and safety, policy makers are faced with an even more difficult set of ethical concerns. This special issue of ***Risk Analysis*** is devoted to intergenerational equity and risk policy and contains papers that discuss nuclear reactors, waste, and weapons; discounting across generations; intergenerational planning; global climate change; societal response to Hurricane Mitch; and ecological risks and community perceptions of fairness and justice.

Natural Perils in Australia and New Zealand. *Russell Blong, David Sinai, and Colin Packham. 2000. 124 pp. Free. A limited number of copies are available from David Sinai, Swiss Re Australia; fax: 612-8295-9600; e-mail: david_sinai@swissre.com.*

This publication examines the geological risks (earthquakes, volcanoes, tsunamis, and landslides) and meteorological risks (cyclones, thunderstorms, floods, and bushfires) of Australia and New Zealand. It presents loss data for the insurance industry, and discusses building standards and loss, methods of managing risk, and the impacts of El Niño on the insurance industry in the region.

Economic Costs of Natural Disasters in Australia. *2001. 190 pp. $15.95 (Australian). To purchase a copy, contact the Bureau of Transport Economics, Department of Transport and Regional Services (DoTRS), GPO Box 501, Canberra, ACT 2601, Australia; tel: +61 2 6274 7210; fax: +61 2 6274 6816; WWW: http://www.dotrs.gov.au/bte/recent.htm#r103.*

State of the World 2001. *2001. 290 pp. $15.95. To obtain copies, contact the Worldwatch Institute, P.O. Box 879, Oxon Hill, MD 20791; (800) 555-2028 or (301) 567-9522; fax: (301) 567-9553; e-mail: wwpub@worldwatch.org; WWW: http://www.worldwatch.org.*

The Worldwatch Institute is dedicated to fostering the evolution of an environmentally sustainable society--one in which human needs are met in ways that do not threaten the health of the natural environment or the prospects of future generations. The most recent issue of its annual publication, ***State of the World***, contains a chapter on "Averting Unnatural Disasters," by Janet N. Abramovitz. She notes that around the world much of the growing devastation caused by "natural disasters stems from ecologically destructive practices and poor land- use decisions. She discusses disaster data, ecological vulnerability, social vulnerability, the politics and psychology of disasters, and the fostering of resilience in nature and communities.

Applied Geomorphology for Mitigation of Natural Hazards. *Masahiko Oya. 2001. 192 pp. $76.00. Available from Kluwer Academic Publishers, Order Department, P.O. Box 358, Accord Station, Hingham, MA 02018-0358; (781) 871-6600; fax: (781) 681-9045; e-mail: kluwer@wkap.com; WWW: http://www.wkap.nl.*

In ***Applied Geomorphology of Natural Hazards***, Oya outlines the history of geomorphological survey mapping in Japan; mapping practices in Europe; mapping of flood, volcanic, and tsunami risks; flood mapping case studies in Japan and other countries; estimation of land collapse in Japan's mountainous and volcanic regions; determination of risk of soil liquefaction during earthquakes; and the use of geomorphological land classification maps in technical assistance to developing countries. According the author, the study of natural hazards in the Asia Pacific region is poorly developed, and knowledge

about their mitigation is greatly needed.

Natural Hazards: State-of-the-Art at the End of the Second Millennium. *G.A. Papadopoulos, T. Murty, S. Venkatesh, and R. Blong, editors. 2000. 295 pp. $169.00. Available from Kluwer Academic Publishers, Order Department, P.O. Box 358, Accord Station, Hingham, MA 02018-0358; (781) 871-6600; fax : (781) 681-9045; e-mail: kluwer@wkap.com; WWW: http://www.wkap.nl.*

The papers in this volume were presented at the Seventh International Symposium on Natural and Man-Made Hazards held in Greece in 1998. Topics include regional air quality monitoring, Indonesian forest fires, tidal changes and coastal hazards, tsunamis, storm surge disasters in China, flooding in the Red River Valley in Canada, earthquake prediction, earthquake hazard assessment, the use of geographic information systems and volcanic risk management, and modeling catastrophic risk and insurability.

Induced Earthquakes. *S.K. Guha. 2000. 320 pp. $130.00. Copies can be obtained from Kluwer Academic Publishers, Order Department, P.O. Box 358, Accord Station, Hingham, MA 02018-0358; (781) 871-6600; fax: (781) 681-9045; e-mail: kluwer@wkap.com; WWW: http://www.wkap.nl.*

In ***Induced Earthquakes***, Guha examines seismic activity induced by water reservoirs and deep wells, groundwater extraction, volcanic eruption, mining, underground nuclear explosions, and tides.

Floods

Coping with Flash Floods: Proceedings of the NATO Advanced Study Institute, Ravello, Italy, 8-17 November 1999. *Eve Gruntfest and John Handmer, editors. NATO Science Series 2. Environmental Security, Vol. 77. 2001. 340 pp. $107.00, hardbound; $49.00, paperback. Available from Kluwer Academic Publishers, Order Department, P.O. Box 358, Accord Station, Hingham, MA 02018-0358; (781) 871-6600; fax: (781) 681-9045; e-mail: kluwer@wkap.com; WWW: http://www.wkap.nl.*

Coping with Flash Floods contains the proceedings of a NATO-sponsored Advanced Study Institute that was held in Italy in 1999. Thirty-five participants from nine countries and a variety of professional disciplines met to discuss issues relating to flash floods and to develop a research agenda that examines the various components required to cope with flash floods. Two major recommendations emerged from that meeting: 1) place greater emphasis on increasing understanding of the social processes involved in flash flood warnings, particularly in flood response; and 2) reduce vulnerability in sustainable ways compatible with long-term economic social goals. The proceedings contains sections on defining the problem and identifying vulnerabilities, mitigating the risk, warnings and technology, related hazards, and policy and research recommendations.

Mitigation Success Stories. *Third Edition. 2000. 88 pp. $20.00, association members; $25.00, nonmembers; plus $5.00 shipping. A CD-ROM version is available for $20.00. To order, contact the Association of State Floodplain Managers, Inc., 2809 Fish Hatchery Road, Suite 204, Madison, WI 53713; (608) 274-0123; fax: (608) 274-0696; e-mail: asfpm@floods.org; WWW: http://www.floods.org.*

Mitigation Success Stories was assembled to promote the benefits of flood hazard mitigation and describes how they were accomplished.

Severe Weather

***Thunderstorm Data**. 2001. CD-ROM. $40.00.*
*The CD also includes the report **Development and Analysis of Data Bases for Assessing Long-Term Fluctuations in Thunderstorms in the United States**. Stanley A. Changnon. 53 pp. To order, send an e-mail request to the Midwestern Regional Climate Center; hberg@uiuc.edu.*

The ***Thunderstorm Data*** CD-ROM contains three sets of historical data. The first is a list of all 956 thunderstorm-caused catastrophic events in the U.S. that generated more than $1 million in property losses, with original data compiled by the insurance industry and adjusted for changes in insurance coverage, inflation, and population at risk over the period 1949-1998. Data for each event include the date of the storm, the various conditions that caused damage (lightning, hail, etc.), the total loss in millions of dollars, and the amount of loss in each of nine U.S. climate regions and Hawaii. The second set, which presents data by state, is a listing of cooperative weather substations and their monthly and annual number of days with thunderstorms for the period 1901-1993. The third data set lists the names of 130 "first order" weather stations with historical records of days with thunderstorms during the 1901-1995 period. The data for each station includes, for each year of record, the monthly and annual number of days with thunderstorms, followed by the average values for each month and year.

Development and Analysis of Data Bases notes that weather extremes of the 1990s caused $78 billion in insured losses and killed 4,000. Much of the increase in weather losses is due to thunderstorms. The report describes how the data sets contained in the CD-ROM were developed and how they can be used in scientific research, business, and U.S. policy development related to natural hazards.

Global Climate Change and Sea Level Rise

***U.S. Insurance Industry Perspectives on Global Climate Change**. Evan Mills, Eugene Lecomte and Andrew Peara. LBNL Report #45185. 2001. 185 pp. $40.00. Available from the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161; (800) 553-6847 or (703) 605-6000; fax: (703) 321-8547; e-mail: orders@ntis.fedworld.gov. Request NTIS Order # PB2001103908. Also available free on the World Wide Web: http://eetd.lbl.gov/CBS/PUBS/LBNL-45185.html.*

U.S. Insurance Industry Perspectives on Global Climate Change, published by the Lawrence Berkeley National Laboratory, Environmental Energy Technologies Division, explores the disposition of the U.S. insurance community regarding the issue of global climate change. To provide some context, the authors first examine the history of insurance, then discuss insurance regulation, the role of government insurance and disaster relief, the relationship between insurer insolvencies and weather-related events, the emerging capital market alternatives to finance risk, and insurers' perception of and participation in climate science and catastrophe modeling. While insurers generally recognize that weather-related catastrophe losses have been rising dramatically in recent years, they are much less sure about the role of climate change. The authors' in-depth interviews with insurance executives and extensive review of the literature found that insurers have assumed positions on all points of the public policy compass regarding global climate change. In any case, the authors conclude, insurers and their constituents

clearly have significant exposure to extreme weather events, and the vulnerability will rise with climate change. The report includes nine appendices with information on research and programs addressing climate change and risk.

The Little Ice Age: How Climate Made History, 1300-1850*. Brian Fagan. 2001. 274 pp. $26.00. To purchase a copy, contact Perseus Books Group Customer Service Department, 5500 Central Avenue, Boulder, CO 80301; (800) 386-5656; fax: (303) 449-3356; e-mail: westview.orders@perseusbooks.com; WWW: http://www.perseusbooksgroup.com.*

Sea Level Rise: History and Consequences*. Bruce C. Douglas, Michael S. Kearney, and Stephen P. Leatherman, editors. 2000. 240 pp., plus CD-ROM. $59.95. Available from Academic Press, Inc., Order Fulfillment Department, 6277 Sea Harbor Drive, Orlando, FL 32887; e-mail: apbcs@harcourtbrace.com; WWW: http://www.apcatalog.com.*

An increase in sea level is one of the more feared and certain consequences of global warming. Beach erosion, increased vulnerability to coastal storms, flooding, and accelerated ecosystem destruction inevitably accompany an increase in sea level. At special risk are the 100 million persons living within a meter of present-day mean sea level and the coastal development valued in the trillions of dollars. ***Sea Level Rise: History and Consequences*** surveys the history of sea level change since the last deglaciation began approximately 20,000 years ago, when global sea level was about 125 meters lower than now. Topics covered include sea level as an elevation reference, historic and modern sea level measurements including satellite techniques, the earth's response to the melting of the great glaciers, and how sea level rise in the 20th century has impacted coastal habitability.

Avalanches

The Avalanche Booklet*. 2001. 32 pp. $5.00. Copies can be purchased from Willywaw, Summer Base Camp Department, 23 South River Drive, Narragansett, RI 02882; (401) 783-2275; fax: (401) 783-8065; e-mail: jasper@willywaw.com.*

This booklet lists avalanche forecasting hotlines in the U.S. and Canada, catalogs schools and courses that research and provide instruction about avalanches, describes avalanche survival strategies, and recommends numerous publications and videos.

Hurricanes

Hurricane Andrew: Ethnicity, Gender and the Sociology of Disaster*. Walter Peacock, Betty Hearn Morrow, and Hugh Gladwin. $20.00.*

The Gendered Terrain of Disaster: Through Women's Eyes*. Elaine Enarson and Betty Hearn Morrow, editors. $15.00.*

Both volumes can be ordered from the International Hurricane Center, Laboratory for Social and Behavioral Research, EAS 2710, Florida International University, Miami, FL 33199; (305) 348-1607; fax: (305) 348-1605; e-mail: lsbr@fiu.edu; http://www.fiu.edu/~lsbr.

Earthquakes and Other Geological Hazards

Furious Earth: The Science and Nature of Earthquakes, Volcanoes, and Tsunamis*. Ellen J. Prager, Kate Hutton, Costas Synolakis, and Stanley Williams. 2000. 250 pp. $24.95. To purchase, contact the McGraw-Hill Bookstore, 1221 Avenue of the Americas, New York, NY 10020; (800) 352-3566 or (212) 512-4100; fax: (212) 512-4105; e-mail: bookstore@mcgraw-hill.com; WWW: http://www.bookstore.mcgraw-hill.com.*

Proceedings from the Sixth International Conference on Seismic Zonation*. 2001. $200.00, CD-ROM; $150.00, printed two-volume set.*
Kocaeli, Turkey, Earthquake of August 17, 1999 Reconnaissance Report*. 2001. 474 pp. $45.00, plus $10.00 shipping. CD-ROM: $60.00, EERI members; $80.00, nonmembers.*
Images from the Bhuj, India, Earthquake of January 26th, 2001*. CD-ROM. 2001. $40.00, EERI members; $50.00, nonmembers.*
To order these items, contact the Earthquake Engineering Research Institute (EERI), 499 14th Street, Suite 320, Oakland, CA 94612-1934; (510) 451-0905; fax: (510) 451-5411; e-mail: eeri@eeri.org; WWW: http://www.eeri.org.
The ***Proceedings*** contains more than 200 papers that were presented at the Sixth International Conference on Seismic Zonation, held in Palm Springs, California, in November 2000. Topics include mapping technology, hazard estimation, seismic hazard mapping for engineering and local codes, land-use planning and local government policies, financial risk management, and lifelines and utilities.

The 7.4 magnitude quake that struck the western industrial heartland of Turkey occurred along one of the most active plate boundaries in the world. The EERI reconnaissance report, ***Kocaeli, Turkey, Earthquake of August 17, 1999***, provides information on various aspects of the quake, including seismicity, fault rupture, tsunami, strong motion, ground failure and geotechnical effects, structures and industrial facilities, building code enforcement, lifelines, and societal impacts and emergency response.

The third product is a CD that presents over 400 images from the Bhuj, India, earthquake of January 26, 2001. It illustrates geotechnical damage, liquefaction effects, and emergency response and relief. Damage to structures, bridges, lifelines, historic monuments, industrial facilities, dams, railways, and ports is also depicted.

Living with Earthquakes in California: A Survivor's Guide*. Robert S. Yeats. 2001. 416 pp. $21.95. Copies can be obtained from Oregon State University Press, 101 Waldo Hall, Corvallis, OR 97331-6407; (541) 737-3166; fax: (541) 737-3170; e-mail: osu.press@orst.edu.*
Living with Earthquakes in California recounts that state's violent geologic past as well as its efforts to cope with the earthquake threat. It is a general reader's guide to California earthquakes, combining current research with practical safety information. Beginning with a brief introduction to the geological origins of earthquakes, Yeats describes the major faults that threaten northern and southern California and Nevada; explores topics ranging from earthquake forecasting and catastrophe insurance (the California Earthquake Authority is the largest residential insurer in the world) to the risks posed by

tsunamis and soil liquefaction; reviews the current level of earthquake preparedness and disaster response, including the role of government, scientists, and the public in creating awareness and policy; and suggests actions that citizens can take to protect their families and homes.

HRRC Offers Certificate in Environmental Hazard Management

The Hazard Reduction and Recovery Center, College of Architecture, Texas A&M University, now offers a certificate in Environmental Hazard Management (EHM) for graduate students in the Departments of Landscape Architecture and Urban Planning, Construction Science, and Architecture. Graduate students in other departments (for example, Geography, Chemical Engineering, Public Health) can receive the certificate when approved by the EHM Certificate Council. The program is cross-disciplinary and was designed to provide students with an understanding of the relationship between the built environment and extreme events in the natural environment. For more information about this program, contact *Michael K. Lindell, Hazard Reduction and Recovery Center, College of Architecture, Texas A&M University, College Station, TX 77843-3137; (979) 862-3970; fax: (979) 845-5121; email: mlindell@archone.tamu.edu*.

Sustainable Community Hazard Mitigation Course to Be Offered On-Line

The University of Washington Extension's Continuing Education for Planners Program will be offering a new course beginning in the summer of 2001. "Toward More Sustainable Communities Through Hazards Mitigation" (URBDP 598) is designed to give practicing professionals skills that will enable them to recognize and reduce long-term risks associated with natural disasters. Taught through the University of Washington's Institute for Hazards Mitigation, Planning, and Research, the course is both a survey of the field of natural hazard planning as well as a practical introduction to the tools available for encouraging disaster-resistant, sustainable communities.

For more information about this new on-line course, contact *Trisha Dvorak, (206) 685-6443, e-mail: tdvorak@ese.washington.edu*; or on the World Wide Web, see: *http://www.extension.washington.edu/extinfo/arch.asp#urban*.

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http://www.colorado.edu/hazards

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Who We Are

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 Oceanic and Atmospheric Administration, U.S. Geological Survey, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Department of Transportation, U.S. Bureau of Reclamation, 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 readers of this newsletter to the address below. The deadline for the next *Observer* is *May 23, 2001.*

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