

Natural Hazards Observer

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March 1997



Natural Hazard Mitigation Planning for a Disaster-Resistant Community

—an invited comment

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Introduction

Recently, Ken Topping wrote an Invited Comment entitled "Mitigation From the Ground Up" (see the *Observer*, Vol. XX, No. 6, p. 1), emphasizing disaster-resistant community design (DRCD) as a long-term strategy for natural hazard mitigation. He stressed that DRCD is a concept that will push communities to factor the complex relationships between natural hazards and the built environment into the community development process. Topping also advocated a strategy combining land use and building code mandates and incentives to encourage mitigation activities. This is a wonderful idea.

Unrelated to Mr. Topping's proposal, a discussion at the November 1996 annual workshop of the Central United States Earthquake Consortium (CUSEC) noted that some barriers to mitigation include: 1) political hurdles, 2) diffuse responsibility for mitigation among

many public and private sector organizations, and 3) weak local technical and organizational capacity related to hazards.

The purpose of this article is to discuss how hazard mitigation professionals can both develop a political constituency for mitigation by identifying DRCD roles and responsibilities among a wide spectrum of functions and identify strategies to overcome the sort of barriers described at the CUSEC session so that mitigation measures and incentives can be implemented.

Cross-Sectoral Planning

A three-pronged local-level strategy to move DRCD from concept to community action might include:

- identifying community hazards, risks, and existing mitigation measures;

- identifying organizational and individual responsibilities for key functions related to natural hazard mitigation and preparedness, disaster response, and recovery; and
- using the "decision by consensus" concept to involve all public- and private-sector principals in building a community mitigation plan, thereby identifying leaders in hazard mitigation and confronting the political, economic, and organizational impediments to mitigation.

The effort to institutionalize mitigation should include potential mitigation experts beyond the disciplines of land-use planning and building code administration, especially those professionals who are active in disaster response. Professionals in these disciplines will play major roles in the community's response and recovery after a major disaster because they understand disaster risks. Hazard mitigation professionals must develop innovative ways to bring these individuals into the mitigation planning process to help design a disaster-resistant community.

In Portland, Oregon, we have launched an initiative to build a disaster-resistant metropolitan region by incorporating natural hazards into the Regional Framework Plan for urban growth management mandated by the Metro¹ charter. Public-sector agencies, businesses, and citizens will be involved in the development of this plan. The Regional Framework Plan outlines specifically what changes the region must make to implement growth management policy during the next 20 years. Metro and local governments in the regions will also be developing regional and local natural hazard mitigation plans specifically designed to create a disaster-resistant region.

Mitigation Support Functions

Metro used the Federal Response Plan (FRP) Emergency Support Functions concept to identify "Mitigation Support Functions" (MSFs) as the conceptual framework for developing regional and local natural hazard mitigation plans (see Table 1).

The FRP provides a structure for identifying those functional areas within which mitigation actions and resources can immediately improve response and recovery, thereby reducing potential losses and costs, and getting businesses, governmental agencies, and citizens back on their feet quickly. The proposed MSF planning framework can help identify and describe the roles and responsibilities of agencies and individuals integral to building a disaster-resistant community.

Within each MSF, mitigation measures, impediments, and solutions can be developed for disasters such as earthquakes, floods, landslides, and wildland/urban fire. The initial list of potential MSFs serves to organize principles for natural hazard mitigation plan development.

Table 1. Mitigation Support Functions

MSF	Function	MSF	Function
1	Transportation	9	Urban Search and Rescue
2	Communications	10	Hazardous Materials
3	Public Works	11	Food
4	Fire Fighting	12	Energy
5	Information	13	Building
6	Mass Care	14	Land Use
7	Rescue Support		
8	Health and Medical Services		

Damage and loss information from previous disasters or from scenario-based models such as HAZUS (the earthquake loss estimation methodology being developed by the Federal Emergency Management Agency and the National Institute of Building Sciences)², and SLOSH (Sea, Lake, and Overland Surges from Hurricanes) are necessary tools for providing planning information for each MSF.

For example, HAZUS can produce earthquake damage scenarios that search and rescue professionals (MSF 9) can use to identify the requirements for locating and safely extricating survivors trapped in damaged structures. During this planning process, these professionals may identify their needs as well as structural and nonstructural mitigation measures that may not be apparent to professionals in other disciplines. Their needs and mitigation requirements can then influence the design practices and implementation strategies of professionals in other disciplines.

At a workshop designed for participants in the Portland metropolitan region that will be held this month, representatives of the public and private sectors will identify mitigation measures, impediments to mitigation, and roles and responsibilities for implementing the MSFs. The workshop also will provide a forum for identifying other issues that may be addressed in the regional and local natural hazard mitigation plans.

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The author will appreciate any comments or suggestions. Contact Gerald Uba, Metro, 600 N.E. Grand Avenue, Portland, OR 97232; (503) 797-1737; fax: (503) 797-1909; e-mail: ubag@metro.dist.or.us.

1. Metro is the only directly elected regional government in the U.S. Its activities include regional growth management, transportation planning, parks and greenspaces operation, zoo management, solid waste disposal and recycling, sports and recreational facilities management, and natural disaster planning.

2. See the *Observer*, Vol. XXI, No. 2, p. 11.

Western Governors Seek Drought Relief

The summer of 1996 brought the worst drought in 25 years to the American Southwest, increasing forest and range fires, threatening municipal water supplies, eliminating critical wildlife habitat, destroying grazing land for livestock, and causing grain shortages. In response, governors from western states established the Western Governors' Association Drought Emergency Task Force to recommend better policies for coping with future droughts.

The task force identified several priorities, including possible congressional actions, expansion of federal fire prevention and suppression assistance, and modification of the U.S. Army Corps of Engineers Emergency Water Transportation Authority so that assistance can be provided on a cost-share basis upon request of a governor when a drought is declared. The governors feel that current requirements and limitations are so stringent that the program is rarely used.

The governors did succeed in convincing the 104th Congress that drought-relief measures needed to be included in the Safe Drinking Water Act (Public Law 104-182), particularly the creation of a "State Revolving

Loan Fund" for drought mitigation to finance development of water system infrastructure and alternative water sources in drought-prone areas.

On November 22, 1996, the Western Governors' Association adopted long-term recommendations for managing drought, and they have been published in *Drought Response Action Plan* (1996, 12 pp., free). The report notes that, at the present time, 11 western states have drought contingency plans, and that most of these plans include some kind of response and coordination group or drought management task force. However, most of these plans only address response, not mitigation.

The *Action Plan* contains recommendations concerning agricultural activities, forest fires and forest health, and water resource management. The drought report is available via the Internet: <http://www.westgov.org/wga/publicat/introweb.htm>. Printed copies can be obtained from the Western Governors' Association, 600 17th Street, Suite 1705 South Tower, Denver, CO 80202-5452; (303) 623-9378; fax: (303) 534-7309.

Europeans Form Drought Mitigation Network

Following significant droughts in Europe in 1995, the Drought Mitigation Working Group of the U.K. National Committee of the International Decade for Natural Disaster Reduction (IDNDR) began establishing a European network on drought mitigation. The overall aim of the proposed network is to encourage research on drought and its management and to inform others about this important issue. Ultimately, the network seeks to reduce the environmental, social, and economic costs of droughts through improved early warning, preparedness, and mitigation.

Specifically, the network hopes to:

- compile an inventory of significant European research and of drought management research centers, researchers, and drought managers;
- create a vehicle for sharing information on drought hazard, vulnerability, and management; and
- conduct an international workshop on drought research in Europe.

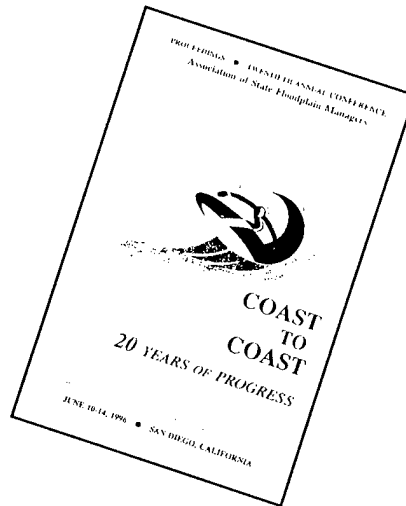
Key participants will be identified in the coming months, including those outside Europe. Interested persons should contact *Jim Wallace*, Institute of Hydrology, Wallingford, Oxfordshire OX10 8BB, U.K.; tel: +44(0)1491 838800; fax: +44(0)1491 692430; e-mail: jsw@unixa.nerc-wallingford.ac.uk, or *Tom Downing*, Environmental Change Unit, University of Oxford, Oxford OX1 3TB, U.K.; tel: +44(0)1865 281180; fax: +44(0) 1865 281181; e-mail: tom.downing@ecu.ox.ac.uk.



Floods from Sea to Shining Sea

For the past two decades, the Association of State Floodplain Managers (ASFPM) has worked to reduce the damage and loss of life caused by flooding in the U.S. Each year the ASFPM conducts a national conference to foster knowledge about the state of the art of floodplain management. The Natural Hazards Center's latest publication, *Coast to Coast: 20 Years of Progress* (1996, 414 pp., \$20.00), contains the proceedings of the ASFPM's 20th annual conference, which was held in San Diego, California, June 10-14, 1996.

Coast to Coast comprises 60 papers that address all aspects of the American flooding problem, including national floodplain policy and programs, multihazard mitigation, multiple uses of watercourses, local planning and flood mitigation, coastal



issues, hydrology and hydraulics, modeling and computer programs, mapping, forecasting and warning, stormwater management, Building techniques and performance, and flood-control structures.

To order *Coast to Coast* (Special Publication #32), contact the Publications Clerk, Natural Hazards Research and Applications Information Center, IBS #6, Campus Box 482, University of Colorado, Boulder, CO 80309-0482, (303) 492-6819; fax: (303) 492-2151; e-mail: jclark@spot.colorado.edu. Prepayment is required.

Checks should be payable to the University of Colorado and must be in U.S. dollars drawn from a U.S. bank. Mastercard, Visa, American Express, and Diners Club cards are also accepted. See the chart below for shipping charges.

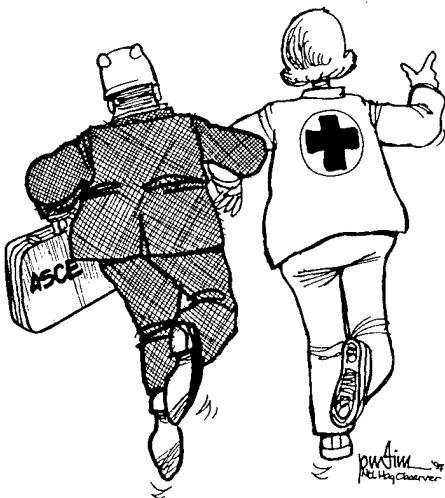
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ASCE and Red Cross Launch Cooperative Disaster Mitigation and Response Effort

The American Society of Civil Engineers (ASCE) and the American Red Cross have initiated a cooperative program that will encourage ASCE members at the local level to volunteer their expertise in disaster mitigation and recovery. Last summer the two organizations signed a statement of understanding that calls on ASCE members at the section/branch level to assist local Red Cross units in disaster-related work. As part of the agreement, ASCE will work to heighten member awareness of the need for volunteer support in predisaster mitigation and postdisaster relief and recovery activities, such as inspection, assistance with building codes, consultation on standards and zoning, and damage mapping. For more information or to contribute suggestions or comments on this project, contact *Mike Peralta*, ASCE, 1801 Alexander Bell Drive, Reston, VA 20191, (703) 295-6085; e-mail: mperalta@asce.org.

[Taken from *NCEER Information News*—a newsletter of the National Center for Earthquake Engineering Research]



European Union Members Pool Resources to Look at Floods

In the early 1990s, the EUROFLOOD project was undertaken to examine European flood hazards, their modeling, and their management. Researchers from member countries of the European Union worked to determine the nature, extent, and severity of flood hazards, including reviewing literature from meteorological and other scientific disciplines concerning climate change.

The project team produced a book, *Floods Across Europe*, by Edmund Penning-Rowsell and Maureen Fordham (see the *Observer*, Vol. XIX, No. 3, p. 21), that summarizes the project and synthesizes results from the different research modules. For ordering information, contact *Middlesex University Press, Middlesex University Services Limited, Bounds Green Road, London N11 2BR, U.K.*; tel: 081-362-6142; fax: 081-362-5736.

In addition to *Floods Across Europe*, the participating researchers produced the following annexes:

- *Simplified Modelling of Rainfall Flood Damage.* G. Hubert, J.C. Deutsch, and M. Desbordes. *Technical Annex 7.* 1996. 34 pp.
- *Economic Assessment of Flood Hazards Regional Scale Analysis-Decision Support System (RSA-DSS).* M. Gewalt, J. Kalus, E.B. Peerbolte, W. Pflügner, R.F. Schmidtke, and L. Verhage. *Technical Annex 8.* 1996. 38 pp.
- *Regional Scale Analysis: Decision Support System (RSA-DSS)—User Manual.* *Technical Annex 9.* 1996. 56 pp.
- *Regional Prioritisation Models Based on Local Scale Analysis.* V. Laglaine and G. Hubert. *Technical Annex 10.* 1996. 76 pp.
- *For the Module on Evaluation of Environmental Impacts.* A. Van der Veen and E. Wierstra, Editors. *Technical Annex 11.* 1996. 90 pp.
- *Innovative Approaches to Comprehensive Floodplain Management: A Framework for Participatory Valuation and Decision Making in Urban Developing Areas.* F.N. Correlá, M.G. Saralva, F.N. Silva, C.B. Costa, I. Ramos, F. Bernardo, P. Antão, and F. Rego. *Technical Annex 12.* 1996. 112 pp.
- *The Use of Economic Instruments in Catchment Management.* C. Green, M.J.R. Lopez, A.M. Ketteridge, A. Van der Ween, E. Wierstra, H. Otter, and B. Reitano. *Technical Annex 13.* 1996. 82 pp.
- *Evacuation.* A.M. Ketteridge, M. Fordham, and L. Clarke. *Technical Annex 14.* 1996. 91 pp.
- *Assessment of Land Use Controls in Flood Plain Management.* N. Pottier and G. Hubert. *Technical Annex 15.* 1996. 34 pp.
- *Participation Strategies.* J. Sawyer. *Technical Annex 16.* 1996. 58 pp.
- *Identification of Uncertainty Sources in Flood Damage Assessment.* C.J. de Blois. *Technical Annex 17.* 1996. 204 pp.
- *Typology of Floods and its Management.* J. Rocha. *Technical Annex 18.* 1996. 48 pp.



To obtain Technical Annexes 8 and 9, contact E. Bart Peerbolte, Delft Hydraulics, P.O. Box 152, 8300 AD Emmeloord, The Netherlands, or Walter Pflügner, Braschel and Schmitz, Gernerstrasse 19, D-80638 Munich, Germany.

For Technical Annexes 7, 10, and 15: Gilles Hubert, ENPC-CERGRENE, La Courtine, F-93167 Noisy-le-Grand, Cedex, France.

For Technical Annexes 13, 14, and 16: Edmund Penning-Rowsell, Flood Hazard Research Centre, Middlesex University, Queensway, Enfield, Middlesex EN3 4SF, U.K.

For Technical Annexes 11 and 17: Anne Van der Veen and Herman Wind, University of Twente, P.O. Box 217, 7500 AE Enschede, The Netherlands.

For Technical Annex 12: Fancisco Nunes Correia, Departamento de Engenharia Civil, Instituto Superior Tecnico, Av. Rovisco Pais, 1096, Lisbon, Portugal.

For Technical Annex 18: João Rocha, Hydrology and River Hydraulics Division, Laboratoria Nacional de Engenharia Civil (LNEC), Av. Brasil 101, P-1799 Lisbon Codex, Portugal.



The Internet Page



These are a few of the interesting sites we've encountered recently on the World Wide Web. A more extensive, annotated list of useful hazard/disaster Web pages is posted on the Hazard Center's World Wide Web page:

<http://adder.colorado.edu/~hazctr/sites.html>

<http://adder.colorado.edu/~hazctr/Home.html>

The Natural Hazards Center site offers several new full-text quick response reports resulting from recent disaster research. The latest additions include:

- Quick Response Report #91: *Perceptions of the Rhode Island Oil Spill*, by Richard Burroughs and Christopher L. Dyer
- Quick Response Report #92: *Survival Mechanisms to Cope with the 1996 Tornado in Tangail, Bangladesh: A Case Study*, by Bimal K. Paul
- Quick Response Report #93: *The Environmental Impacts of Flooding in St. Maries, Idaho*, by Burrell E. Montz and Graham A. Tobin

The entire list of quick response reports is available at <http://adder.colorado.edu/~hazctr/qr/qr.html>.

<http://www.paho.org/english/disaster.htm>

We've mentioned the Pan American Health Organization (PAHO) Web site before, but it deserves another mention—and another look—because of the additional information now available. Specifically, take a look at the “Special Reports” section, which includes the complete text of the “Recommendations and Conclusions” from the First International Conference on Disaster Mitigation in Health Facilities, held in Mexico City in February 1996. In addition, the PAHO site provides access to the PAHO catalog of training materials and to the excellent PAHO newsletter, *Disasters: Preparedness and Mitigation in the Americas*.

<http://www.netsalud.sa.cr/ops/cdd/>

Meanwhile, PAHO's Regional Disaster Documentation Center (DDC) in San José, Costa Rica, now has its own site. The DDC is perhaps the best resource available for hazard/disaster information pertinent to Latin America and the Caribbean. The DDC Web site offers information in both Spanish and English about the center, the extensive bibliographic data bases it maintains, and the services it offers.



<http://www.eas.net/index.html>

This site is the official internet access point for the Emergency Alert System. The Emergency Alert System (EAS) began supplementing the Emergency Broadcast System (EBS) on January 1, 1997, and will replace it January 1, 1998 (see p. 10 of this *Observer*). (The new system is called the Emergency Alert System because it includes communication media other than broadcast.) Some EAS information is already available from this site for designated EAS areas across the United States, and more information is being added regularly. Actual emergency alert information, operational information, and transition information will be available to the general public and official emergency personnel here. Although all are not yet active, the site includes sections entitled: alerts, weather, media, government agencies, private agencies, preparation, about EAS, transition, equipment vendors, listservers, e-chat, e-links, system information, and e-store. For more information about EAS and the EAS Web site, e-mail *Dave Biondi*, EAS Net Administrator: dbiondi@eas.net.

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

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

The first Web site above is a compendium of information on “The Societal Aspects of Weather” maintained by the Environmental and Societal Impacts Groups of the National Center for Atmospheric Research. The group now

publishes *WeatherZine*—available through their Web site or directly via the second URL above. *WeatherZine* is an informal newsletter for people interested in the relation of society and weather. The site includes interesting statistics on the societal aspects of weather, as well as sections on floods, lightning, agriculture, the general public, and upcoming events. The newsletter is available by e-mail as well as through the Web. To subscribe to the e-mail version, send an e-mail message to thunder@ucar.edu with the subject line "Subscribe Zine." Include your name and the e-mail address you would like the newsletter sent to in the message. *WeatherZine* and its parent WWW site accept and encourage the submission of articles on activities, events, or links of interest to the community. Information should be e-mailed to thunder@ucar.edu.

<http://www.fema.gov/pte/gaheop.htm>

The Federal Emergency Management Agency's new *State and Local Guide for All Hazard Emergency Operations Planning* (see the *Observer*, Vol. XXI, No. 3, p. 19) is now available from the FEMA Web site. As the forward to the guide states: "This State and Local Guide (SLG) provides emergency managers and other emergency services personnel with information on FEMA's concept for developing risk-based, all-hazard emergency operations plans. . . . It offers FEMA's best judgment and recommendations on how to deal with the entire planning process—from forming a planning team to writing the plan."

<http://www.floodplain.org>

The Floodplain Management Association (FMA) has established this Web site to serve the entire floodplain management community. It includes full-text articles, a calendar of upcoming events, a list of job opportunities, a catalog of publications available free or at nominal cost, a directory of associations, a register of firms and consultants in floodplain management, a list of newsletters dealing with flood issues (with hypertext links to them, if available), a section on the basics of floodplain management, and, of course, a copious catalog of Web links.

<http://www.serve.com/NESEC>

The New England States Emergency Consortium now maintains this Web page that includes sections describing NESEC, surveying the various hazards of the region and actions that can be taken to limit their effects, listing regional resources to aid mitigation, outlining current NESEC projects, and providing other news about the agency. NESEC has also just begun publishing an agency newsletter; for information on subscriptions, contact NESEC, 607 North Avenue, Suite 16, Wakefield, MA 01880; (617) 224-9876; fax: (617) 224-4350; e-mail: nesecc@serve.com.

<http://stonefly.arc.nasa.gov>

The NASA/Ames Research Center has developed an emergency information server called the StoneFly Project. This server provides the latest information on disaster relief efforts, weather, earthquakes, and emergency response groups around the world. Future expansion of this homepage will include desktop video-teleconferencing for emergency preparedness officials and disaster relief responders at the site of a disaster. StoneFly also offers a newsletter for emergency preparedness officials. To receive the newsletter, call up the StoneFly homepage and fill out the information requested in the "New Members" section. Questions regarding the StoneFly project can be directed to John Peterson: (415) 604-0988; e-mail: eric@mail.arc.nasa.gov.

<http://www.cdc.gov/nceh/programs/internat/ierh/ierh.htm>

The goal of the International Emergency and Refugee Health Program of the National Center for Environmental Health, Centers for Disease Control and Prevention (CDC), is to strengthen the emergency preparedness capacity of other nations and to provide assistance to persons affected by complex humanitarian emergencies. The program is dedicated to building and strengthening partnerships in international emergency preparedness and response. This Web site provides extensive information about this program; interested persons can also contact the *International Emergency and Refugee Health Program, National Center for Environmental Health, Centers for Disease Control and Prevention, Mail Stop F-48, 4770 Buford Highway, N.E., Atlanta, GA 30341-3724; (770) 488-3526; fax: (770) 488-7829; e-mail: ncehinfo@cdc.gov*.

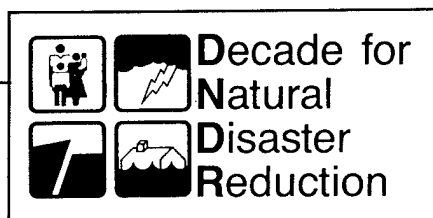
www.nap.edu

The National Academy Press has launched a major initiative to provide full-text documents via the World Wide Web; their long-range goal is to establish a complete archive of the almost 10,000 volumes published by the press this century. Over 1,000 works are already available, and several deal with natural hazards and disasters.

<http://vulcan.wr.usgs.gov>

The Web site of the Cascades Volcano Observatory—a home page we've touted before—now has lots of new, useful documents on-line, including:

- **Volcano Hazards from Mount Rainier, Washington.** R.P. Hoblitt, J.S. Walder, C.L. Driedger, K.M. Scott, P.T. Pringle, and J.W. Vallance. *Open-File Report 95-273*. 1995. WWW: <http://vulcan.wr.usgs.gov/Volcanoes/Rainier/Hazards/>.
- **Volcanic-Hazard Zonation for Mount St. Helens, Washington, 1995.** Edward W. Wolfe and Thomas C. Pierson. *Open-File Report 95-497*. 1995. WWW: <http://vulcan.wr.usgs.gov/Volcanoes/MSH/Hazards/>.
- **Volcano Hazards in the Mount Adams Region, Washington.** William E. Scott, Richard M. Iverson, James W. Vallance, and Wes Hildreth. *Open-File Report 95-492*. 1995. WWW: <http://vulcan.wr.usgs.gov/Volcanoes/Adams/Hazards/>.
- **Volcanic-Hazard Zonation for Glacier Peak Volcano, Washington.** Richard B. Waitt, Larry G. Mastin, and James E. Begét. *Open-File Report 95-499*. 1995. WWW: <http://vulcan.wr.usgs.gov/Volcanoes/GlacierPeak/Hazards/>.
- **Potential Volcanic Hazards from Future Activity of Mount Baker, Washington.** Cynthia A. Gardner, Kevin M. Scott, C. Dan Miller, Bobbie Myers, Wes Hildreth, and Patrick T. Pringle. *Open-File Report 95-498*. 1995. WWW: <http://vulcan.wr.usgs.gov/Volcanoes/Baker/Hazards/>.



Planning the Final Years of the IDNDR

The International Decade for Natural Disaster Reduction (IDNDR), a United Nations program for the 1990s, is entering its closing phase. The U.N. General Assembly has authorized a "closing event" during 1999 and has designated the IDNDR Secretariat in Geneva as the office in charge of the event and of the preparatory process leading to it.

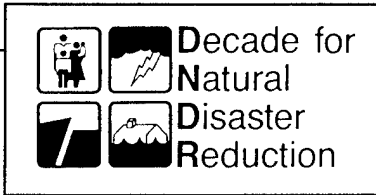
Planning the closing process and the strategy to be pursued in disaster reduction beyond the year 2000 were the main topics of discussion when the IDNDR Scientific and Technical Committee (STC) met at UNESCO Headquarters in Paris, January 20-24, 1997. The STC advises the United Nations Secretary-General on matters related to the Decade and the development of its overall programs.

The nature of the "closing event" is yet to be determined. It appears that the major donors for U.N. conferences are weary of large, politicized events, and have in mind a more modest conference to wrap up the Decade. The secretariat is exploring options, one of which would

be a meeting in Geneva at the Palais des Nations. Alternatively, a meeting in a hazard-prone, developing country would be welcomed by many Decade participants as an ideal venue to highlight natural hazard issues and to showcase mitigation methods.

The STC recommended that the title of the closing event should be "Second World Conference on Natural Disaster Reduction." This, of course, builds on the World Conference held at Yokohama in May 1994, and implies that there will be future events, because efforts to mitigate and prevent impacts from natural disasters will go on after the Decade as integral activities in the many organizations that participate in the IDNDR.

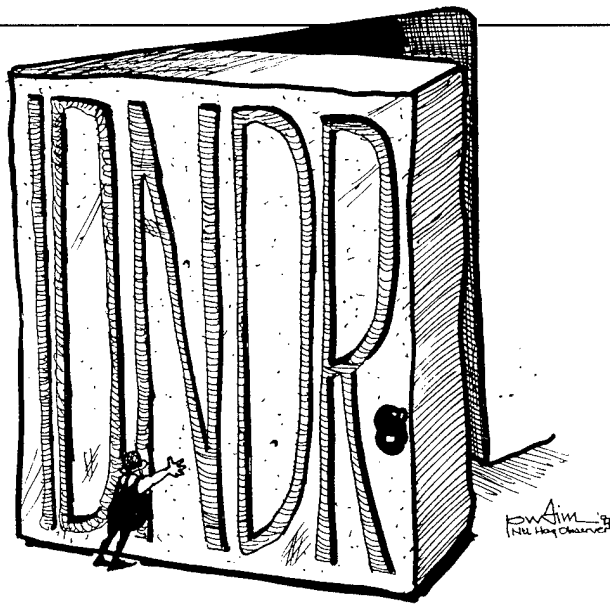
Suggestions were made that all organizations participating in the Decade provide a report on their IDNDR activities and that the conference sessions be organized by topics, including progress toward meeting the three IDNDR targets: assessment of risks, completion of disaster reduction plans at national and local levels, and provision of access to early warning systems.



It is anticipated that various regional and topical meetings will be convened by national, regional, and international organizations leading up to the closing event. For example, the STC endorsed a proposal to the German government to hold a large meeting in Potsdam in 1998 on early warning for natural disasters. A French conference on economic aspects of natural disaster reduction is also foreseen for 1998.

The STC recognizes that the closing process should focus on how science and technology can most effectively be used to reduce losses caused by natural hazards. In other words, the emphasis should be on applications, and the closing process should be used to promulgate best practices. This focus is appropriate because application of science and technology requires understanding and commitment among decision-making authorities at national and local levels. Moreover, the economic and social rationales that relate disaster reduction to development are of paramount importance.

The IDNDR has brought attention to preventing natural disasters rather than merely responding to them. In many countries and organizations, thinking has clearly evolved in this direction. In the U.S., for example, the Federal Emergency Management Agency (FEMA) has developed a National Mitigation Strategy, and FEMA Director James Lee Witt has strongly and repeatedly addressed the need for prevention and mitigation. Granted that substantial losses from recent disasters may



have provided more stimulus for action than the Decade, nevertheless, IDNDR participants were prepared to step up to the podium to articulate the scientific and technical approaches to prevention and mitigation that provided the foundation for the new approach.

Thus, the Decade is providing a ramp to a higher level of attention and action toward reducing the impacts of natural disasters. The main goal of the Decade's closing process is to consolidate this progress and to institutionalize prevention and mitigation as integral elements in managing earth's resources for current and future generations.

Robert M. Hamilton
Chair
Scientific and Technical Committee

Wind Engineering Group Reorganizes

The Cooperative Program in Wind Engineering, a joint research effort conducted by the Fluid Mechanics and Wind Engineering Program at Colorado State University and the Wind Engineering Research Center at Texas Tech University, recently reorganized to focus on four topics related to the behavior of low-rise buildings under severe winds: wind loads, wind engineering methodology, wind flow around buildings, and the economic impacts of wind damage.

The Hazards Assessment Laboratory at Colorado State University has been working on several aspects of the economics project, including a damage function analysis, surveys to assess interest in the study by insurance companies and local governments, and a literature review to determine the willingness of potential wind victims to pay for mitigation.

For further information on the Cooperative Program in Wind Engineering, contact the *Fluid Mechanics and Wind Engineering Program, Colorado State University, Fort Collins, CO 80523; (970) 491-8574; e-mail: meroney@lance.colostate.edu*, or the *Wind Engineering Research Center, Texas Tech University, Lubbock, TX 79409; (806) 742-3476, ext. 321; e-mail: fnkcm@ttacs.ttu.edu*.

WASHINGTON UPDATE

Witt Lets States Take 5% for Mitigation

In a memorandum to all regional directors, Federal Emergency Management Agency (FEMA) Director James Lee Witt established a policy to allow 5% of all Hazard Mitigation Grant Program funds, which are awarded to states when presidential disaster declarations are issued, to be used for hazard mitigation measures at the state's own discretion. Witt stated that he is allowing this set-aside option because some mitigation measures, such as research related to building code implementation or hazard warning systems, require substantial amounts of time to establish and evaluate. Nonetheless, these activities help to reduce potential losses.

In order to be eligible, a project type must be identified in the state's hazard mitigation plan and must be an activity that will reduce or prevent future damage and loss of life due to disaster. The program is intended to provide states with discretion in selecting projects as well as the responsibility to determine cost-effectiveness.

For further information on this new policy, contact FEMA, 500 C Street, S.W., Washington, DC 20472; (202) 646-4600; fax: (202) 646-4086; e-mail: eipa@fema.gov; WWW: <http://www.fema.gov>.

[Adapted from *The B.F.E.*, the newsletter of the Oklahoma Floodplain Management Association, January 1997.]

U.S. Moves into the EAS Age

On January 1, 1997, the Emergency Alert System (EAS) replaced the old Emergency Broadcast System (EBS). The new system features digital automation for broadcasting of emergency messages via multiple media.

In 1951, President Truman established the first national alerting system to warn of enemy missile attacks, and, in 1963, President Kennedy established the Emergency Broadcast System (EBS), which is a joint government-industry effort to enable the president to address the entire nation on very short notice due to a grave national threat.

Under EBS, the distribution of emergency messages relied on one broadcaster passing on an initial alert to others in a distribution chain. This resulted in unreliable warning dissemination when one or more stations failed to pass on a warning. EAS eliminates distribution problems at individual stations and is designed to use technological advances that have occurred since 1963 to provide more reliable, flexible, and effective trans-

mission, through such new media as cable television and the Internet (see p. 6 of this *Observer*).

When responding to an FCC public notice considering the change to EAS, many broadcasters and emergency management professionals strongly supported the new system because of its ability to perform needed services, including issuing EAS alerts, alerting individual customers, and turning on inactive receivers (radios, televisions, etc.). Additionally, they cited the system's ease of activation, the ability to receive alerts from multiple sources, and an enhanced security system. Moreover, in order to avoid unnecessary equipment duplication, any EAS decoder can directly receive NOAA Weather Radio alerts, which account for 80% of all emergency broadcasts in the U.S.



Although radio and television broadcasters are required to implement the new national system, the broadcast of local emergency messages will still be voluntary.

For more information, contact the *Emergency Alert System*, Federal Communications Commission, MS 1500C, Room 736, 1919 M Street, Washington, DC 20554; (202) 418-1220; WWW: <http://www.fcc.gov:80/cib/eas>.

NWS Finalizes Criteria for Closing Field Offices

Changes in technology and the ongoing National Weather Service modernization have resulted in the need to close some National Weather Service field offices, automating many functions, and transferring others to nearby field offices. Recently, the National Weather Service (NWS) issued a final rule that requires certification before closing a field office.

The rule requires that the consolidation or lack of consolidation of the functions of a field office be documented; that automation be certified; that the transmittal of remaining services and/or observations be authenticated; that the resolution of any valid user complaints be verified; and that statistics on the warning and forecast activities of the office be provided.

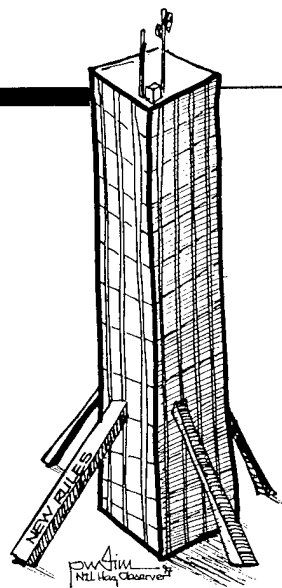
Under Public Law 102-567, which authorizes the modernization, the NWS cannot close a field office until the Secretary of Commerce certifies to the Congress that there will be no degradation of service to the affected area. The law also requires that NWS continue to provide the same level of weather forecasts, warnings, and advisories for the "protection of life and property in the United States."

Copies of the final rule can be found in the October 11, 1996, *Federal Register* (Vol. 61, No. 199), available from your *government depository library* or via the Internet at <http://www.access.gpo.gov>.

USDA Revises Rules to Make Construction More Earthquake Resistant

On January 5, 1990, President Bush signed Executive Order 12699, "Seismic Safety of Federal and Federally Assisted or Regulated New Building Construction," which requires that measures to assure seismic safety be imposed on federally assisted new building construction to the extent permitted by law. Specifically, it requires each federal agency that assists in financing through federal grants or loans, or that guarantees financing through loan or mortgage insurance programs of newly constructed buildings, assure appropriate consideration of seismic safety. This order was issued to meet the requirements of the amended Earthquake Hazards Reduction Act of 1977, which directs the president to "establish and maintain an effective" National Earthquake Hazards Reduction Program (NEHRP).

To support the implementation of E.O. 12699, the federal Interagency Committee on Seismic Safety in Construction (ICSSC) recommends the use of seismic codes and standards that are equivalent to the "NEHRP Recommended Provisions for the Development of Seismic



Seismic Regulations for New Buildings," which represents state-of-the-art seismic design standards and is incorporated into national building code standards and most model building codes. As a result, all federal agencies that fall under the Consolidated Farm and Rural Development Act (7 U.S.C. 1921)—the U.S. Department of Agriculture's Rural Housing Service, Rural Business-Cooperative Service, Rural Utilities Service, and Farm Service Agency—are required to comply with the seismic requirements of these model building codes. Second, the ICSSC also recommends that the construction and housing programs authorized by Title V of the Housing Act of 1949 also comply with these requirements.

The final rule, which appeared in the *Federal Register* December 11, 1996 (Vol. 61, No. 239, pp. 65153-65157), states that "new building construction and additions shall be designed and constructed in accordance with the earthquake (seismic) requirements of the applicable Agency's development standard (building code). The analysis and design of structural systems and components shall be in accordance with applicable requirements of an acceptable model building code." The model codes include the 1991 Uniform Building Code from the International Conference of Building Officials; the 1993 Building Officials and Code Administrators International, Inc. National Building Code; or the 1992 Amendments to the Southern Building Code Congress International Standard Building Code.

Agricultural buildings that are not intended for human occupancy are exempt from these requirements. The final rule also sets out requirements for single and multi-family housing as well as masonry design, and requires that acknowledgment of compliance with these standards be contained in the certification of final plans, requiring the date, signature, and seal of a registered architect or engineer and the name and date of the model code used.

Copies of the final rule can be obtained from your *government depository library* or via the Internet at <http://www.access.gpo.gov>.

WASHINGTON UPDATE

NRC Requires Consideration of Natural Hazard Risk in Reactor Siting

The Nuclear Regulatory Commission (NRC) has amended its regulations regarding the criteria used in power reactor siting to require geologic and earthquake engineering for future nuclear power plants. This action updates regulations that were originally adopted April 12, 1962, and amended periodically since. The new regulations were enacted to "provide a stable regulatory basis for seismic and geological siting and applicable earthquake engineering design of future nuclear power plants that will update and clarify regulatory requirements that provide a flexible structure to permit consideration of new technical understandings."

The final rule requires that the geological, seismological, hydrological, and meteorological characteristics of any proposed reactor site be evaluated, and that these findings be considered in the design and construction of the plant. It also requires that "site parameters, such as design basis flood conditions or tornado wind loadings be established," describes changes in the designation of the required "Safe Shutdown Earthquake," and discusses the "Operating Basis Earthquake Ground Motion" requirement.

The full text of the final rule can be found in the December 11, 1996, *Federal Register* (Vol. 61, No. 239, pp. 65157-65177), which is available in government depository libraries or on the World Wide Web at <http://www.access.gpo.gov>. For further information, contact Andrew J. Murphy, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington DC 20555-0001; (301) 415-6010.

USFA Releases Risk Management Manual for Emergency Services

The United States Fire Administration (USFA), part of the Federal Emergency Management Agency, has published a new manual that details risk management techniques and strategies for fire and emergency service departments.

Risk Management Practices in the Fire Service (Publication Number FA-166,1996) was written as a guide to help local fire and emergency service departments understand risk management principles and applications. The manual emphasizes that effective risk management must be ongoing, evolving, and continually improved.

Both organizational and operational risk management activities are covered in this publication, as well as

information management. The manual also includes examples of specific fire service risk management programs.

Copies of *Risk Management* are free. To order, contact the *United States Fire Administration, Publications, 16825 South Seton Avenue, Emmitsburg, MD 21727; WWW: <http://www.usfa/fema/gov>, click on "publications."*

FEMA Issues Manual for Office Employees with Disabilities

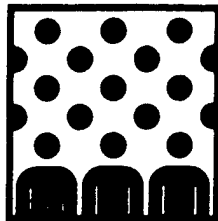
In emergencies, evacuating individuals with special needs can offer a special challenge. USFA has recently published the *Emergency Procedures Manual for Office Employees with Disabilities*, which provides tips for facilities managers who someday may be confronted with such a situation. The manual furnishes detailed information on the types of equipment and accepted procedures to use to assist disabled persons in exiting a building.

The manual is offered in five different formats: English-print (Publication No. 25, FA Number 154); Spanish-print (Publication No. 25, FA Number 154S); Braille; audio cassette; and 3.5 inch diskette (IBM compatible). Copies are free and can be ordered from the *United States Fire Administration* at the above address.

First, We Need a Plan

The Organization of American States is looking for help in creating a Hemispheric Plan of Action for Disaster Reduction in the Education Sector. This plan will be used to gain political, institutional, technical, and financial support to carry out natural hazard mitigation activities in the western hemisphere; it will be discussed and finalized by participants at the Hemispheric Conference for Natural Hazard Mitigation in the Education Sector, which will be held in Caracas, Venezuela, July 14-16, 1997. Organizers hope the plan will promote involvement of regional and international organizations, governments, and nonprofit groups.

For more information, contact the *Natural Hazards Project of the Unit of Sustainable Development, Organization of American States; 1889 F Street, N.W., Room 240-V, Washington, DC 20006; (202) 458-6295; fax: (202) 458-3560; e-mail: bender_stephen@oas.org.*



CONFERENCES AND TRAINING

These are the most recent notices received by the Hazards Center. A comprehensive list of hazard/disaster meetings is posted on our World Wide Web site:

<http://adder.colorado.edu/~hazctr/Home.html>

Sixth Multidisciplinary Conference on Sinkholes and the Engineering and Environmental Impacts of Karst. Sponsors: Association of Engineering Geologists and others. Springfield, Missouri: April 6-9, 1997. Geologists and geographers study when and where karst develops and how sinkholes form, but engineers must use this information to build structures. The sharing of knowledge between these disciplines can be enhanced through an emphasis on practical applications and case studies, and that is precisely what this conference will feature. Its many presentations will cover sinkholes, groundwater contamination, water supply, stormwater drainage, land-use planning, governmental regulation, and numerous other issues concerning karst terrain. Civil or environmental engineers, geologists, planners, and government regulators who deal with water resources, waste disposal, foundations, or other geotechnical issues could benefit from this conference. For more information, contact *Barry F. Beck, P.E. LaMoreaux & Associates, Inc., P.O. Box 4578, Oak Ridge, TN 37831-4578; (423) 483-7483; fax: (423) 483-7639; e-mail: pelaor@usit.net; WWW: http://www.uakron.edu/geology/karstwaters/6th.html.*

Dissemination Technology Conference. Sponsor: U.S. Department of Commerce. Washington, D.C.: April 15, 1997. This meeting is being held both to present and to seek information regarding plans and technologies for national weather service dissemination of weather and hazards information to the public. For specifics, contact *Ann Radding, National Weather Service, W/OSO153, SSMC#2, RM 17100, 1325 East-West Highway, Silver Spring, MD 20910; (301) 713-1724, ext. 154, or (212) 645-1127; e-mail: ann.radding@noaa.gov.*

22nd General Assembly of the European Geophysical Society. Vienna, Austria: April 21-25, 1997. The 1997 EGS assembly includes an extensive program on natural

hazards. For more information, contact the *EGS Office, Max-Planck Straße 1, 37191 Katlenburg-Lindau, Germany; tel: +49-5556-1440; fax: +49-5556-4709; e-mail: egs@linux1.mpae.gwdg.de; WWW: http://www.mpae.gwdg.de/EGS/EGS.html.*

21st Annual Conference of the Association of State Floodplain Managers (ASFPM). Little Rock, Arkansas: April 28-May 1, 1997. The ASFPM annual meeting will address the entire spectrum of floodplain management issues, tools, programs, and resources. Since 1977, this conference has served as the premier venue for individuals involved in flood management to meet and exchange ideas, concerns, and solutions. To receive a conference announcement, contact *ASFPM, 4233 West Beltline Highway, Madison, WI 53711; (608) 266-1926; fax: (608) 274-0123; e-mail: asfpm@execpc.com.*

Retrofitting Floodprone Residential Structures Short Course. Sponsors: Association of State Floodplain Managers (ASFPM) and Federal Emergency Management Agency. Little Rock, Arkansas: May 2-3, 1997. To be held immediately following the ASFPM Annual Conference, this two-day course is designed to inform floodplain managers about the options available for protecting existing structures in flood areas. For further details, contact *Wallace Wilson, Land and Water Management Division, Michigan Department of Environmental Quality, P.O. Box 30458, Lansing, MI 48909-7958; (517) 335-3194; fax: (517) 373-9965; e-mail: wilsonw@deg.state.mi.us.*

Basin and Range Province Seismic Hazards Summit. Sponsors: Western States Seismic Policy Council (WSSPC), Federal Emergency Management Agency, and the U.S. Geological Survey. Reno, Nevada: May 13-15, 1997. Abstracts due March 10. Beginning with summary

presentations on seismic hazards of the basin and range province, participants in this meeting will develop a comprehensive overview of the current situation, as well as an assessment of the outstanding problems in the region. The conference will include individual presentations, panel and general discussions, and poster sessions. For more information, contact WSSPC, 121 Second Street, Fourth Floor, San Francisco, CA 94105; (415) 974-6435; fax: (415) 974-1747; e-mail: wsspc@wsspc.org; WWW: <http://vishnu.glg.nau.edu/wsspc/brpshs.html>.

Geological Society of America (GSA), Cordilleran Section, 93rd Annual Meeting. Kailua-Kona, Hawaii: May 21-23, 1997. This GSA conference will include numerous sessions on geologic hazards, as well as field trips to examine the geologic wonders and perils of Hawaii. For conference information, contact the GSA Meetings Department, P.O. Box 9140, Boulder, CO 80301-9140; WWW: <http://www.soest.hawaii.edu/>.

Eighth U.S. National Conference on Wind Engineering. Baltimore, Maryland: June 5-7, 1997. Held every four years, the National Conference on Wind Engineering provides a major forum for the discussion of recent developments in, and applications of, wind engineering. Virtually all aspects of the discipline will be addressed. For a complete conference announcement, contact Nicholas P. Jones, Eighth U.S. National Conference on Wind Engineering, Department of Civil Engineering, The Johns Hopkins University, Baltimore, MD 21218-2686; (410) 516-7874; fax: (410) 516-7473; e-mail: 8usncwe@jhu.edu; WWW: <http://www.ce.jhu.edu/~8usncwe/index.html>.

1997 Congress of the Insurance Institute for Property Loss Reduction (IIPLR). Cosponsors: Federal Emergency Management Agency and American Red Cross. Irvine, California: June 18-20, 1997. IIPLR's 1997 congress will examine opportunities for mitigation partnerships at the local, state, and national levels. The dangers of earthquakes, floods, and wildfires will be addressed with respect to the built environment, mitigation techniques, and educational opportunities. On the opening day, the congress will also offer basic courses on earthquakes and hazard-resistant construction. More information is available from Karen Gahagan, IIPLR, 73 Tremont Street, Suite 510, Boston, MA 02108-3910; (617) 722-0200; fax: (617) 722-0202; e-mail: kgahagan@iiplr.org, or info@iiplr.org.

1997 Joint Assemblies of the International Association for Meteorology and Atmospheric Sciences (IAMAS) and International Association for Physical Sciences of the Ocean (IAPSO); and Symposia of the International Tsunami Commission, International Association of Geodesy, International Association of Hydrological Sciences, International Association of Volcanology and

Chemistry of the Earth's Interior. Sponsors: The Australian Academy of Science and others. Melbourne, Australia: July 1-9, 1997. As the wide range of participating groups implies, this conference, entitled "Earth, Ocean, Atmosphere: Forces for Change," will offer a broad selection of papers on various aspects of climate change, weather, geologic processes, oceanography, earth/atmosphere/ocean interaction, and the various hazards associated with these processes. For more information, contact IAMAS/IAPSO Secretariat, 224 Rouse Street, Port Melbourne, Victoria 3207, Australia; tel: 61 3 9646 4122; fax: 61 3 9646 7737; e-mail: convnet@peg.apc.org; WWW: <http://www.dar.csiro.au/pub/events/assemblies/>.

Health Emergencies in Large Populations (H.E.L.P.). Organizers: International Committee of the Red Cross, Medical Division, and others. Baltimore, Maryland: July 7-25; and Honolulu, Hawaii: July 14-August 1, 1997. Intended for any health professional involved in disaster management, this course will cover planning, food and nutrition, environmental health, communicable diseases, health services, epidemiology, coordination, ethical issues, and international humanitarian law. For more information, contact the Center of Excellence in Disaster Management and Humanitarian Assistance, Tripler Army Medical Center, 1 Jarrett-White Road (MCPA-DM), Tripler AMC, HI, 96859-5000; (808) 433-7035; fax: (808) 433-1446; WWW: <http://coe.tamc.amedd.army.mil/>; or the International Committee of the Red Cross, Medical Division, H.E.L.P. 96-U.H., 19, avenue de la Paix, 1202 Geneva, Switzerland; tel: 4122/730 28 10; fax: 4122/733 96 74.

Tenth International Disaster Management Course. Offered by: the Disaster Preparedness Centre, Cranfield University; and the Oxford Centre for Disaster Studies. Swindon, Wiltshire, U.K.: July 29-August 29, 1997. Cranfield's widely recognized disaster management course provides both classroom and "hands on" instruction regarding current and future needs in disaster management. For example, the 1997 course will contain extended sections devoted to complex emergencies and post-war reconstruction. However, as disasters grow in size and severity, the course increasingly emphasizes the importance of disaster reduction and the links between mitigation and development. For a conference brochure, contact the Disaster Preparedness Centre, Cranfield University, RMCS, Shrivenham, Swindon, Wiltshire SN6 8LA, U.K.; tel: 44 1793 785287; fax: 44 1793 782179; e-mail: disprep@rmcs.cranfield.ac.uk.

Training of Trainers in Disaster Management and Protection. Offered by: the Oxford Centre for Disaster Studies (OCDS) and the Disaster Preparedness Centre, Cranfield University. Oxford, U.K.: September 1-12, 1997. This course immediately follows, and complements, the above-mentioned disaster management course conducted

at Cranfield University. It covers everything from training needs assessment to program design and development to implementation and evaluation. For a complete course description, contact OCDS, P.O. Box 137, Oxford OX4 1UE, U.K.; tel: 44 1865 202772; fax: 44 1865 202848; e-mail: 100612.1153@compuserve.com.

Thirteenth Semiannual Meeting of the Floodplain Management Association (FMA). Sacramento, California: September 10-12, 1997. Abstracts and proposals for presentations are currently being solicited. Although the agenda is not yet complete, among the topics to be addressed at the fall FMA meeting will be the early 1997 flooding in California and Nevada, as well as issues surrounding erosion and scour and the establishment of setbacks. For more complete information, contact Mark Forest, 961 Matley Lane, Suite 110, Reno, NV 89502; (702) 329-6123; fax: (702) 322-9380; e-mail: mforest@harding.com; WWW: <http://home.navisoft.com/fldplnma>.

Western States Seismic Policy Council (WSSPC) 1997 Annual Conference. Victoria, British Columbia, Canada: November 4-7, 1997. WSSPC is a partnership of emergency managers and geoscientists working to improve earthquake hazard mitigation, preparedness, emergency response, and recovery throughout the western U.S., its Pacific Territories, and western Canada. The council promotes regional cooperation, public awareness, effective seismic policies, and hazard reduction programs for the region through the provision of information, support of research, and promotion of education. For more information about the conference, contact WSSPC, 121 Second Street, Fourth Floor, San Francisco, CA 94105; (415) 974-6435; fax: (415) 974-1747; e-mail: wsspc@wsspc.org; WWW: <http://vishnu.glg.nau.edu/wsspc/brpshs.html>.

Second International Conference on Environmental Management (ICEM2). Sponsor: University of Wollongong and others. Wollongong, New South Wales, Australia: February 10-13, 1998. ICEM2 will focus on "21st Century Solutions to Problems within the Fields of Environmental Engineering, Geotechnology, and Mining Engineering," and will include sessions on slope stability and landslide management, risk and decision making, environmental hazards legislation and policy, seismic risk and earthquake-resistant design, and computer applications to environmental management. Details are available from the Conference Secretary ICEM2, Department of Civil and Mining Engineering, University of Wollongong, Northfields Avenue, Wollongong, NSW 2522, Australia; 61-42-213055; fax: 61-42-213238; e-mail: icem2@uow.edu.au; WWW: <http://www.uow.edu.au/eng/conf/icem2.html>.

Seventh International Symposium on Society and Resource Management. Sponsor: University of Missouri-

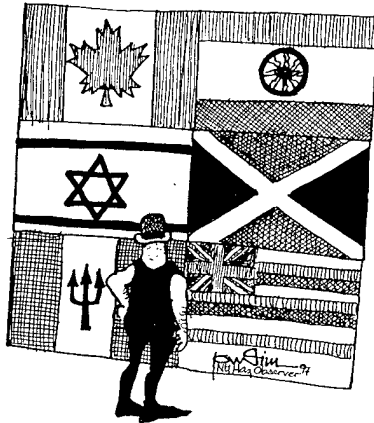
Columbia. Columbia, Missouri: May 27-31, 1998. Abstracts and proposals due November 15, 1997. This biennial symposium focuses on the contributions of the social sciences and humanities to a better understanding of the environment and resource management. Understanding links between culture, environment, and society will be a guiding theme at the 1998 event, but any presentations bringing social science perspectives to resource and environmental issues will be welcomed. The symposium will include paper and poster sessions, panel and roundtable discussions, film/video sessions, and various field trips. For more information on participation, contact Sandy Rikoon, ISSRM Co-Chair, University of Missouri-Columbia, Rural Sociology, Sociology Building 108, Columbia, MO 65211; (573) 882-0861; fax: (573) 882-1473; e-mail: ssrsjsr@muccmail.missouri.edu; WWW: <http://silva.snr.missouri.edu/issrm>.

Sixth U.S. National Conference on Earthquake Engineering: "Seismic Design and Mitigation for the Third Millennium." Sponsor: Earthquake Engineering Research Institute (EERI). Seattle, Washington: May 31-June 4, 1998. Abstracts due March 15, 1997. The 1998 National Conference on Earthquake Engineering will bring together professionals from a broad range of disciplines, all of whom are dedicated to making a difference in earthquake engineering and mitigation policy in the 21st century. The conference will provide these individuals with an opportunity to share the latest knowledge and techniques for understanding and mitigating the effects of earthquakes on the built, natural, and social environments. For information on submitting proposals and/or a conference brochure, 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>.

Eighth International Symposium on Landslides. Cardiff, Wales. U.K.: June 26-30, 2000. Abstracts due September 1998. The provisional program of this symposium includes numerous field trips as well as regular conference sessions on landslide types and mechanisms, causes of landslides, groundwater and landslides, landslide mapping, and other topics regarding the hazards associated with mass earth movements. For more information, contact Eddie Bromhead, Chairperson of the Organizing Committee; School of Civil Engineering, Kingston University, Penrhyn Road, Kingston-upon-Thames, KT1 2EE, U.K.; tel: (44) 181-547-2000; fax: (44) 181-547-7972; e-mail: e.bromhead@kingston.ac.uk; WWW: http://www.king.ac.uk/~ce_s011/isl8-000.htm.



Three New Centers . . . and Two Not So New



Announcing the New International Training Facility and Logistics Base in Canada

The Environmental Emergency Response System, Inc. (TEERS-Canada), a humanitarian organization, has signed a memorandum of agreement with Harvest Park International College in Penhold, Alberta, Canada, enabling TEERS-Canada to open a new International Rescue Team Logistics Centre and Materials Storage Facility and a base of operations for its Canadian and international rapid deployment rescue teams.

In addition, in the fall of 1997, TEERS-Canada will open a new International Disaster Training School on the campus of Harvest Park International College and offer courses in disaster management and the training of rapid deployment teams. The aim of the school is to teach a

uniform standard of disaster management using the latest technology and equipment. Such standardization will allow the international rescue community to integrate rescue efforts to achieve more rapid and effective response. Instructors and lecturers for the school will be selected from the international community and will be among the world leaders in their given fields.

For additional information about the new International Disaster Training School, contact *David Pottier, Environmental Emergency Response System—Canada, 71 Dock Street, Victoria, British Columbia, Canada V8V 1Z9; voice/fax: (250) 480-0254; dpottier@freenet.victoria.bc.ca.*

Introducing the Center of Excellence in Disaster Management and Humanitarian Assistance

The Center of Excellence in Disaster Management and Humanitarian Assistance (COE) was developed to implement lessons learned in recent international crises. The center opened in Honolulu, Hawaii, in October 1994 with the goal of providing education and training, and conducting research regarding civil-military operations, particularly those requiring international disaster management and humanitarian assistance.

COE is a partnership of the United States Pacific Command, the Pacific Health Services Support Area of Tripler Army Medical Center, and the University of Hawaii. Modeled after other academic centers of excellence, the COE's international faculty provides expertise in international and regional humanitarian operations.

Focusing on the Asia-Pacific region, the COE conducts needs assessments, program review and development, curriculum development, conferences, training programs, and research, and offers information and education through

the Internet. The COE is also collaborating with the University of Hawaii to offer Master's-level classes and, eventually, a degree in humanitarian assistance.

The COE Web site—<http://coe.tamc.amedd.army.mil/>—features select links to other disaster-related Internet sites; disaster-related news and weather reports; historical data; Pacific Rim disaster-related information; situation reports on current disasters; electronic journals and newsletters; discussion and e-mail groups; fully-searchable full-text publications, including country-specific disaster management handbooks and plans; as well as considerable information about the center itself. For additional information, contact the *Center of Excellence in Disaster Management and Humanitarian Assistance, Tripler Army Medical Center, 1 Jarrett-White Road (MCPA-DM), Tripler AMC, HI 96859-5000; (808) 433-7035; fax: (808) 433-1446; WWW: <http://coe.tamc.amedd.army.mil/>.*

Presenting the New National Centre for Disaster Management in India

A new National Centre for Disaster Management (NCDM) has been created by India's Ministry of Agriculture. The center, established within the Indian Institute of Public Administration, has as its primary objectives providing training for senior- and middle-level government officials; promoting awareness of the need for disaster mitigation; and coordinating research on different

aspects of disaster management at the national level. A schedule of center workshops for 1997 is now available; for details, contact *NCDM, IIPA, Indraprastha Estate, Ring Road, New Delhi 11002, India*; fax: (+91-11) 331-9954.

[Adapted from the *INCEDE (International Center for Disaster-Mitigation Engineering) Newsletter*]

Featuring the Bar-Ilan Mass Emergencies Project

The Bar-Ilan University Mass Emergencies Project (MEP) was founded in 1989 to examine emergency impacts on communities in Israel and around the world. MEP supports a broad, generic all-hazards definition of emergency and disaster and examines human problems on all levels—individual, family, organizational, and society at large.

Based in university's School of Social Work, MEP promotes effective, measured intervention by mental health and welfare organizations and individuals. MEP emphasizes inherent individual capacity to cope with adversity, along with community-based planning and

management of response to human needs in emergencies. The project is interested in both applied research and training and offers courses, workshops, conferences, and other instruction covering a broad spectrum of crisis and emergency management issues.

For more information about this program, contact *Hayim Granot, Director, Mass Emergencies Project, School of Social Work, Bar Ilan University, Ramat Gan 52900, Israel*; fax: (927)3-5347228; e-mail: granot@ashur.cc.biu.ac.il; WWW: <http://www.biu.ac.il:80/SOC/sw/merge.html>.

Re-Introducing the CDERA

In light of the region's disaster experiences of the past few decades and following the conclusion of the Pan Caribbean Disaster Preparedness and Prevention Project (PCDPPP) in 1991, Caribbean governments decided that a permanent mechanism was needed to coordinate regional disaster management. Hence, the Caribbean Disaster Emergency Response Agency (CDERA) was founded as an intergovernmental regional disaster management organization through an agreement of heads of government of the Caribbean Community (CARICOM) (see the *Observer*, Vol XV, No. 6, p. 7; Vol. XVI, No. 2, p. 12). At present, CDERA has 16 participating states.

CDERA's main function is to launch an immediate and coordinated response to any disastrous event affecting any participating state, once the state requests such assistance.

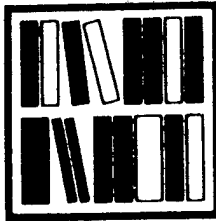
Other functions include:

- Securing and distributing to governmental and nongovernmental organizations, comprehensive and reliable information on disasters affecting the region;
- Mitigating or eliminating the consequences of disasters affecting participating states;

- Establishing and maintaining, on a sustainable basis, adequate disaster response capabilities among participating states;
- Mobilizing and coordinating disaster relief from governmental and nongovernmental organizations for affected participating states.

A CDERA Web site—<http://www.cdera.org>—is currently being developed as a comprehensive source of information on disaster management in the Caribbean and on the activities of CDERA and the National Disaster Organizations (NDOs) of participating states. The site will also provide access to various publications from CDERA, NDOs, and other regional and international agencies, as well as situation reports on recent or ongoing events. It already includes information about the agency and its member states, a list of upcoming events, a set of Web links, and information about some of the ongoing hazard events in the region, such as the eruption of the Soufriere Hills volcano on Montserrat.

For more information, contact *CDERA, The Garrison, St. Micheal, Barbados*; tel: (246) 436-9651; fax: (246) 437-7649; e-mail: cdera@caribsurf.com.



RECENT PUBLICATIONS

All Hazards

Environmental Management and Governance: Intergovernmental Approaches to Hazards and Sustainability. Peter J. May, Raymond J. Burby, Neil J. Erickson, John W. Handmer, Jennifer E. Dixon, Sarah Michaels, and D. Ingle Smith. 1996. 272 pp. \$74.95, hardbound; \$24.95, paperback. Available from Thomson Publishing, 7625 Empire Drive, Florence, KY 41041; (800) 865-5840; fax: (606) 647-5013.

Environmental Management and Governance addresses aspects of environmental management that also raise fundamental questions about human actions and government roles. The authors examine "cooperative" and "coercive" intergovernmental regimes by comparing policies in New Zealand and Australia that empower local governments to devise sustainable methods to manage land use with the more coercive and prescriptive approaches used in the U.S. They also focus on how the different regimes influence choices by local governments about land use and development in areas subject to natural hazards.

Natural and Anthropogenic Hazards in Development Planning. Frederic R. Siegel. 1996. 200 pp. \$69.95. For sale from Academic Press, Order Fulfillment Department, DM 19750, 6277 Sea Harbor Drive, Orlando, FL 32887; (800) 321-5068.

This book addresses the importance of planning for both natural and anthropogenic hazards by outlining the technical, scientific, economic, political, and social factors that should be considered in the earliest stages of development planning. It presents a financial viewpoint to show economists, lenders, and planners the value of initial investment against hazard impacts, resulting in a better economic yield for investors and a better quality of life for others. The author discusses development planning with respect to volcanoes, earthquakes, mass earth movements, flooding, coastal environments, water resources, wildfires, hazardous wastes and other anthropogenic risks, and sustainable development.

Natural Disaster Reduction. George W. Housner and Riley M. Chung, Editors. 1996. 433 pp. \$45.00. Available from the American Society of Civil Engineers (ASCE), 345 East 47th Street, New York, NY 10017-2398; (800) 548-2723; fax: (212)

705-7300; e-mail: marketing@ny.asce.org; WWW: <http://www.asce.org>.

This volume contains the proceedings of a conference held in Washington, D.C., in December 1996 to examine a broad range of issues related to natural disaster reduction. Although sponsored by the American Society of Civil Engineers, it provides perspectives from numerous disciplines. Sections examine earthquake hazard analysis, megacities, risk assessment, international and regional programs and plans, formal education, response and recovery, the roles of all levels of government, recent disasters, future disaster scenarios, vulnerability assessment, damage evaluation, multihazard programs, public awareness, performance of glazing systems, wind hazards, structure performance, hazard analysis, national mitigation programs, response and recovery, mapping, insurance, forecasting, design and construction, administration and coordination, technology transfer, codes and standards, land-use zoning, and lifelines.

Mitigation and Adaptation Strategies for Global Change. Vol. 1, No. 1 (1996). \$277.00, subscription for four issues. To subscribe, contact Kluwer Academic Publishers Groups, P.O. Box 358, Accord Station, Hingham, MA 02018-0358; WWW: <http://www.wkap.com>.

Mitigation and Adaptation Strategies for Global Change is a new international journal "devoted to scientific, engineering, socio-economic, and policy responses to environmental change." The inaugural issue contains articles on climate modeling, uncertainty, and responses to predictions of change; regulatory and mixed policy options for reducing energy use and carbon emissions; greenhouse gas inventory and land use change in Finland; the science/policy interface; and incentives for greenhouse gas reduction.

Hydrology of Disasters. Vijay P. Singh, Editor. 1996. 450 pp. \$215.00. Copies can be obtained from Kluwer Academic Publishers, P.O. Box 358, Accord Station, Hingham, MA 02018-0358; WWW: <http://www.wkap.com>.

Natural disasters often have unanticipated consequences for the environment. For example, a hurricane may render water undrinkable, a flood may cause widespread contamination, or an earthquake may cause severe damage to dams and water

transportation systems. This volume examines ways to implement comprehensive, integrated planning to minimize the environmental impacts of disasters and discusses both technical and public policy aspects. Chapters address extreme wind, climate change and hydrological disasters, flooding, dam breaks, droughts, mud and debris flows, landslides, subsidence, salt water intrusion, avalanches, volcanoes, and earthquakes.

Disaster Field Manual for Environmental Health Specialists. 1994. 160 pp. \$25.00. Available from the California Association of Environmental Health Administrators, CCDEH/CAEHA, P.O. Box 1471, Folsom, CA 95763-1471.

In a disaster, medical and public health resources may be severely stressed, communication systems inoperable, and access to affected areas difficult or impossible. Supplementing existing disaster plans, the *Disaster Field Manual* was prepared for environmental health professionals to use following a major disaster. It provides guidance on basic emergency operations, organizational and jurisdictional issues, the incident command system, water provision, emergency water sources and disinfection procedures, food distribution and feeding centers, liquid waste and sewage issues, solid waste disposal, housing and emergency shelters, control of disease and pests, hazardous materials, medical waste, and radiological incidents. Each topic is presented with recommended first, second, or third priority activities.

"Kobe's Lesson: Dial 711 for 'Open' Emergency Communications." *Science* 24 (November 1, 1996). Eli. M. Noam and Harumasa Sato. For subscription and membership information, contact the American Association for the Advancement of Science, 1200 New York Avenue, N.W., Washington, D.C. 20005; (202) 326-6400; (800) 731-4939; e-mail: membership@aaas.org; WWW: <http://www.aaas.org>.

Reflecting on the lessons of the Kobe (1995), Mexico City (1985), Northridge (1994) and Loma Prieta (1989) earthquakes, the authors conclude that the usual approach of a military-style, top-down disaster communication system that shares information only on a "need to know" basis should be replaced. Instead, they recommend an open-access emergency information system accessible to a wide variety of public and private participants. Drawing on the lessons from the four quakes mentioned above, they conclude that telephone networks are "not so much destroyed as congested in uselessness"; television over-dramatizes and does not provide the details that people on the scene really need, although radio is extremely useful; computer networks and bulletin boards are more effective than voice phone networks and broadcasting; and government authorities are almost as much in the dark in a catastrophe as individuals. They suggest a new emergency information system, reached by calling 711, that provides computer access to bulletin boards with detailed information on all aspects of a disaster.

Reducing Risk: Participatory Learning Activities for Disaster Mitigation in Southern Africa. 1996. 300 pp. \$29.95, plus \$9.00 shipping. Available from BEBC Distribution, P.O. Box 1496, Parkstone, Poole, Dorset BH12 3YD, U.K.; fax: 01202 715556.

Reducing Risk offers relief workers techniques to strengthen the capacities of vulnerable communities to deal with emergencies such as drought, epidemics, floods, and large population movements. Drawing on the experiences of practitioners working in southern Africa, the book addresses disaster management, gender issues, emergency preparedness, risk reduction, mapping, community-based research, hazard assessment, resource identification, household food security, public awareness campaigns, and the role of development workers in risk reduction.

NDR 96: Papers Presented to the Conference on Natural Disaster Reduction 1996, Surfers Paradise, Queensland, 29 September - 2 October 1996. R.L. Heathcote, C. Cutler, and J. Koetz, Editors. 1996. 424 pp. \$50.00 (Australian). To obtain copies, contact the Publications Officer, Institution of Engineers, 11 National Circuit, Barton, ACT 2600, Australia; tel: +61 6 270 6555; fax: +61 6 273 1488.

NDR 96, an Australian contribution to the International Decade for Natural Disaster Reduction, contains papers on all aspects of natural hazards. It includes discussions of the last 20 years of disaster management, disaster management in Australia, Australian education and training activities and programs, and the use of technology to reduce the impacts of disasters. It also includes papers on natural disaster reduction in China, bushfires, general disaster management, community disaster management, disaster response, floods, insurance issues, hazard monitoring, legal issues, tropical cyclones, and risk management, as well as case studies of particular disasters.

Planning for Disaster Debris. EPA530-K-95-010. 1995. 24 pp. Free. To obtain a copy, call the Environmental Protection Agency's Document Line: (800) 424-9346.

This guide highlights the need for communities to plan for the cleanup of debris after a major natural disaster. Based on lessons from actual disasters, it shows local governments how to prepare for such events and recover more quickly. Chapters address the magnitude of the debris problem created by natural disasters, federal resources available to communities, state and local resources, speeding recovery and reducing costs, case studies in managing disaster debris, and information sources.

Disaster Mitigation, Preparedness and Response: An Audit of U.K. Assets. David Sanderson, Ian Davis, John Twigg, and Belinda Cowden. 1995. 150 pp. \$23.95, plus an additional 25% for postage and handling. Available from IT Publications, Ltd, 103-105 Southampton Row, London, WC1B 4HH, U.K., tel: +44 (0) 171 436 9761; fax: +44 (0) 171 436 2013.

This audit brings together for the first time information on the British individuals and organizations working in disaster mitigation, preparedness, and response. It covers the scope and locations of U.K. disaster activities; provides a breakdown of organizational types; identifies International Decade for Natural Disaster Reduction focal points, with U.K.-based and European contacts; and offers directories of individuals and organizations.

Developing a Comprehensive Disaster and Crisis Response Program for Mental Health: Guidelines and Procedures. Elizabeth K. Carll, Editor. 1996. 75 pp. \$6.95, plus \$3.00 shipping, U.S., Canada, and Mexico; \$9.25 shipping, international. Order from the New York State Psychological Association, Executive Park East, Albany, NY 12203; (800) 732-3933.

This publication was developed in response to numerous requests to the New York State Psychological Association over the years for practical information on and guidelines for developing a mental health disaster response program.

Natural Disasters. Patrick L. Abbott. 1996. 438 pp. \$50.75, plus \$3.50 shipping. To order a copy, contact William C. Brown, Publishers, c/o McGraw-Hill Higher Education Group, 2460 Kerper Boulevard, Dubuque, IA 52001; (800) 338-5578; fax: (800) 346-2377; e-mail: custserv@tmhe.com.

This book examines how the normal processes of the earth can concentrate their energies to cause severe consequences for humans and their structures. It examines the energy sources underlying disasters, plate tectonics and climate change, earth processes, geologic time, and the complexities involved in

disasters. It also provides detailed case histories; describes basic principles of earthquake geology and seismology; discusses earthquakes in both western North America and the rest of the continent; and presents scientific concepts regarding volcanism, mass earth movements, climate change, severe weather, floods, ocean waves, fire, impacts with space objects, and the role of population growth in increasing vulnerability.

Cities at Risk: Making Cities Safer . . . Before Disaster Strikes. 1996. 40 pp. Free. To obtain, contact the International Decade for Natural Disaster Reduction (IDNDR) Secretariat, United Nations, Palais des Nations, CH-1211 Geneva 10, Switzerland; (41-22) 7986894; fax: (41-22) 7338695; e-mail: idndr@dha.unicc.org, or the Regional IDNDR Office, Latin America/Caribbean, Apartado 3745-1000, San José, Costa Rica; tel: (506) 257-2141; fax: (506) 257-2139; e-mail: pedcor@sol.racs.co.cr.

This publication highlights the threat from natural, environmental, and technological hazards in urban settlements. Throughout the world, more people are settling in and relocating to areas vulnerable to hazards, making it difficult for authorities to protect people from disasters and upsetting the natural functions of ecosystems. *Cities at Risk* provides tips on helping authorities to lead the way in disaster protection; raising awareness among local, national, and international organizations about the growing need for disaster prevention and emergency management in urban areas; outlining policies that can be adapted to local circumstances; and facilitating the exchange of experiences and the creation of partnerships to make cities safer.

Hurricanes and Coastal Hazards

The Corps and the Shore. Orrin H. Pilkey and Katharine L. Dixon. 1996. 287 pp. \$22.95, plus \$4.75 shipping for the first book and \$1.00 for each additional book. Washington, D.C., residents add 5¼% sales tax; California residents add 7¼% sales tax. Available from Island Press, Box 7, Department 2NET, Covelo, CA 95428; (800) 828-1302; fax: (707) 983-6414.

To many beachfront dwellers, the beach protects their home, and when it no longer adequately serves that purpose, it should be replaced with a wall or a new beach. But to coastal scientists, a beach needs saving only when something, like a house, stands in the way of its natural movements in response to a rising sea level and the forces of weather. Standing between homeowners and nature is the U.S. Army Corps of Engineers, which builds seawalls, pumps up beaches, dredges inlets, builds rock jetties, and undertakes many other beach preservation activities. *The Corps and the Shore* examines the impacts of the Corps' activities on American beaches, particularly the scientific quality of the Corps' design efforts, its interaction with scientists and environmentalists, and its divisions' presentations of their projects on a local level. It also offers general discussions of coastal processes; beach replenishment; and the politics, science, and engineering of coastal protection; as well as specific case studies.

Living by the Rules of the Sea. David M. Bush, Orrin H. Pilkey, Jr., and William J. Neal. 1996. 180 pp. \$49.95, clothbound; \$17.95, paperback. Published by Duke University Press, Box 90660, Durham, NC 27708-0660.

This book begins with the statement, "We do not recommend living on barrier islands and we definitely would not want our loved ones to live there . . . Development on these islands is destroying a critical and limited ecosystem. Read on, however, if you are a gambler and you'd like to take your chances. This book will help you reduce your risk." The authors follow this

opening challenge with discussion of development in the coastal zone; storm processes as coastal hazards; risk assessment; damage mitigation through engineering, regulation, and land-use planning; inlets and property damage; selected risk assessment and property damage mitigation recommendations for both the Atlantic and Gulf coasts; and the principles of mitigation in general.

"Impacts of Hurricane Andrew on the Coastal Zones of Florida and Louisiana: 22-26 August 1992." *Journal of Coastal Research*, Special Issue No. 21 (Spring 1995). Gregory W. Stone and Charles W. Finkl, Editors. Subscriptions (four issues per year): \$48.00, student; \$58.00, individual; \$125.00, institution. Add \$10.00 for surface postage or \$45.00 for airmail postage for subscribers outside the U.S. Available from the *Journal of Coastal Research*, Attn: Karen Hickey, P.O. Box 1897, Lawrence, KS 66044; (913) 843-1235; fax: (913) 843-1274.

Hurricane Andrew was responsible for more than 60 deaths and damage in excess of \$27.4 billion, making it the costliest natural disaster in U.S. history. Many scientists in Florida and Louisiana assessed the hurricane's impacts on the coastal zone. This volume contains the results of those studies and includes research relating to the storm's meteorological and hydrological aspects, impacts on shoreline habitats, effects on coastal and interior forests, sedimentation along the south Florida coastline, storm surge, beach erosion, impacts on coastal marshes, and damage to forested wetlands in Louisiana.

Tsunamis Affecting Alaska, 1737-1996. J. Lander. 1996. 195 pp. \$15.00. The printed version can be ordered from the National Geophysical Data Center, 325 Broadway, E/BC4, Department 988, Boulder, CO 80303-3328; (303) 497-6277; fax: (303) 497-6513.

The report is also available free via the Internet: <http://www.ngdc.noaa.gov/seg/hazard/tsudb.html>.

This report is the third in a series of publications that catalog the tsunamis of the world—this one describing all known tsunamis that have affected Alaska in historic time. Detailed descriptions of each tsunami are included, as well as pictures, tables, margin records, and other figures. The report also includes a separate section on the 1964 Prince William Sound tsunami, triggered by the strongest earthquake ever recorded in North America.

Floods and Flood Control

Dams and Rivers: Primer on the Downstream Effects of Dams. Michael Collier, Robert H. Webb, and John C. Schmidt. U.S. Geological Survey Circular 1126. 1996. 94 pp. Free. To obtain a copy, contact the Branch of Information Services, U.S. Geological Survey, Box 25286, Denver Federal Center, Denver, CO 80225-0046; (303) 202-4210 or (800) USA-MAPS; fax (303) 202-4695; WWW: <http://www.usgs.gov>.

Dams provide many benefits to humans, including reducing flood hazards, providing reliable water supplies, generating hydroelectric power, and creating recreational boating areas. Nevertheless, they also have environmental consequences such as eroding river banks, altering waterfowl habitat, limiting recreational opportunities, and destroying river sand bars. *Dams and Rivers* outlines the role of science in mitigating these downstream effects. It discusses the Upper Salt River in central Arizona; the Snake River in Idaho, Oregon, and Washington; the Rio Grand in New Mexico and Texas; the Chattahoochee River in Georgia; the Platte River in Wyoming, Colorado, and Nebraska; the Green River in Utah; and the Colorado River in Arizona.

Silenced Rivers: The Ecology and Politics of Large Dams. Patrick McCully. 1996. 366 pp. \$20.00, *International Rivers Network (IRN) members*; \$25.00, *nonmembers*. Order from Aleta Brown, IRN, 1847 Berkeley Way, Berkeley, CA 94703; (510) 848-1155; fax: (510) 848-1008; e-mail: aleta@irn.org.

In *Silenced Rivers*, the author states that "massive dams are much more than simply machines to generate electricity and store water. They are concrete, rock and earth expressions of the dominant ideology of the technological age: icons of economic development and scientific progress." He follows with a history of rivers and dams and discussions of the environmental effects of dams, their human consequences, technical failures, hydro-power, flood control, public water supply, river transport, fisheries, recreation, irrigation, watershed management, the political economy of damming, and the international anti-dam movement. McCully includes detailed references, an index, and an international list of organizations with contact information.

Using Multi-Objective Management to Reduce Flood Losses in Your Watershed. 1996. 74 pp. \$14.00, *Association of State Floodplain Managers (ASFPM) members*; \$17.00, *nonmembers*. Order from ASFPM, 4233 West Beltline Highway, Madison, WI 53711; (608) 274-0123; fax: (608) 274-0696; e-mail: asfpm@execpc.com.

This publication documents the results of a multiyear project, funded by the Environmental Protection Agency and conducted by ASFPM, to explore planning and implementation techniques for multiobjective watershed management. It provides a general introduction to multiobjective management and the planning process that helps a community select the flood-loss reduction measures most suitable to its situation. It explains how to define problems and goals, build partnerships, combine needs and solutions creatively, and begin formal implementation. It also provides short case studies, a glossary, and lists of information and assistance sources.

Floods, Floodplains, and Folks: A Casebook in Managing Rivers for Multiple Uses. 1996. 88 pp. Free. To obtain a copy, contact the National Center for Recreation and Conservation, National Park Service, P.O. Box 37127, Washington, DC 20013; (202) 565-1200; fax: (202) 565-1204; e-mail: rivers_intern@nps.gov.

This handbook, produced by the Rivers, Trails, and Conservation program of the National Park Service, contains 19 studies of cities throughout the U.S. that successfully combined flood hazard mitigation with other goals and uses of their floodplains, such as recreation, streambank stabilization, hazardous waste removal, fisheries improvement, habitat improvement, economic revitalization, and environmental education. It also includes a detailed list of references, numerous maps, contact information for officials who worked on each project and for sources of further information.

Floodplain Management: Ecologic and Economic Perspectives. Nancy Philippi. 1996. 225 pp. \$69.95. Available from Academic Press, Order Fulfillment Department DM 19750, 6277 Sea Harbor Drive, Orlando, FL 32887; (800) 321-5068.

Although floods may be of great interest during periods of intense flooding, floodplain management can remain a difficult enterprise—in part because of the conflict between social and environmental goals and values. When economic and ecologic concerns conflict, effective floodplain management often suffers. Philippi examines the reasons behind these conflicts and points to solutions. She discusses the challenge of managing floodplains, the need for floodplain management, the public interest and how to define it, governments and their roles, harmful effects of

floodplain management, the theory and practice of the profession, case studies of the Mississippi and American Rivers, and scenarios for effective management.

Severe Weather

"Ice Dams." *Natural Hazard Mitigation Insights 6* (January 1997). Free. Copies can be obtained from the Insurance Institute for Property Loss Reduction, 73 Tremont Street, Suite 510, Boston, MA 02108-3910; (617) 722-0200; fax: (617) 722-0202.

Ice dams on sloped roofs are a common cause of property damage in the winter, resulting in stained or ruined walls and ceilings, saturated insulation, and dry rot of structural framing. This brochure suggests specific activities for reducing ice dams, minimizing damage, and improving resistance to water damage.

Thunder in the Heartland: A Chronicle of Outstanding Weather Events in Ohio. Thomas W. Schmidlin and Jeanne Appelhans Schmidlin. 1996. 362 pp. \$45.00, plus \$4.00 shipping. Published by Kent State University Press, P.O. Box 5190, Kent, OH 44244; (800) 247-6553.

Ohio can be a land of weather extremes—drought followed by flood, arctic cold followed by searing heat in the same year, ice jams, and tornadoes. The authors of this volume are native Ohioans who have brought together data from government records, scientific studies, memoirs, diaries, and newspapers to chronicle 200 extreme Ohio weather events from 1790 to the present.

The Snowy Torrents: Avalanche Accidents in the United States 1980-86. Nick Logan and Dale Atkins. *Colorado Geological Survey Special Publication 39*. 1996. 286 pp. \$16.00, plus \$5.00 shipping. To order, contact the Colorado Geological Society, Publications Department, 1313 Sherman Street, Room 715, Denver, CO 80203; (303) 866-3340; fax: (303) 866-2461.

Nearly 10,000 avalanches are observed in the U.S. each winter, and experts estimate that this is only 10% of actual avalanches that occur. Of those, a significant number, many of which are chronicled in *The Snow Torrents*, involve accidents, rescues, and loss of life. The authors provide descriptions of 149 events, survivor and witness recollections, data from the U.S. Forest Service Westwide Avalanche Network, and author comments on decisions and actions taken in relation to each avalanche. They also discuss risk taking, avalanche zoning, post-control releases, temperature releases, route-finding techniques, clues to instability, survival techniques, and luck.

Earthquakes

Michael V. Pregnoff and John E. Rinne. *Connections: The EERI Oral History Series*. 1996. 170 pp. \$15.00. Copies can be ordered from the Earthquake Engineering Research Institute (EERI), 499 14th Street, Suite 320, Oakland, CA 94612-1934; (510) 451-0905; fax: (510) 451-5411; e-mail: eeri@eeri.org; WWW: <http://www.eeri.org>.

EERI created this series to preserve the rich history of those who pioneered the fields of earthquake engineering and seismic design. The interview with Michael Pregnoff includes his recollections from the 1920s, when the first generation of earthquake engineers worked to develop earthquake-resistant designs. Among the many projects Pregnoff worked on were the San Francisco Opera House, Army and Navy buildings, and various structures on the Stanford University campus. The interview with John Rinne, an earthquake engineer who was an

early member of EERI and chaired the First World Conference on Earthquake Engineering, describes his experiences developing and heading various professional organizations and generally profiles his lifelong commitment to the improvement of seismic design.

The Geology of Earthquakes. Robert S. Yeats, Kerry E. Sieh, and Clarence R. Allen. 1997. 576 pp. \$65.00, plus \$3.50 postage and handling. To order, contact the Order Department, Oxford University Press, 2001 Evans Road, Cary, NC 27513; (800) 451-7556; fax: (919) 677-1303.

The Geology of Earthquakes uses examples from many seismically active regions in the world, including China, Japan, the Mediterranean, the U.S., and New Zealand, to demonstrate the purposes, methods, and principles of geologic investigation of earthquakes. It includes introductions to plate tectonics, structural geology, seismic waves, geodesy, and geomorphology, and discusses earthquakes and the tectonic environment in general. Case histories of recent earthquakes demonstrate the interdisciplinary nature of earthquake science, and the concluding chapters examine secondary effects such as liquefaction, landslides, tsunamis, and the use of geology in earthquake hazard assessment.

Post-Earthquake Rehabilitation and Reconstruction. F.Y. Cheng and Y.Y. Wang, Editors. 1996. 478 pp. \$144.00. To order, contact Elsevier Science Regional Sales Office, Customer Support Department, 655 Avenue of the Americas, New York, NY 10010; (212) 633-3730; fax: (212) 633-3680; e-mail: usinfo-f@elsevier.com.

Following natural disasters, measures requiring immediate attention include damage assessment, rehabilitation, response, amelioration of social consequences, and repair and reconstruction. The United States and the People's Republic of China now regularly organize bilateral symposia to investigate hazard mitigation, and this book contains state-of-the-art reports presented at the US/PRC Symposium Workshop on Post-Earthquake Rehabilitation and Reconstruction held in Kunming, Yunnan, China, in May 1995. It addresses damage assessment, recovery and reconstruction, public policy, land-use options, repair and retrofit of lifelines, socioeconomic problems, human and organizational behavior, and real-time monitoring of earthquake response and damage.

Earthquake Vulnerability of Transportation Systems in the Central United States. 1996. 24 pp. \$10.00. Available from the Central U.S. Earthquake Consortium (CUSEC), 2630 East Holmes Road, Memphis, TN 38118; (901) 544-3570.

Transportation systems in the Central U.S.—including highways, bridges, railways, waterways, ports, and airports—are vulnerable to a damaging earthquake originating in the New Madrid seismic zone. In an effort to increase awareness of this risk, the U.S. Department of Transportation and CUSEC prepared this document, which discusses transportation system vulnerability; aspects of earthquake risk, including multistate impacts; probability; faulting; earthquake-related hazards; liquefaction; slope stability; dam or levee failure; and hazardous materials spills. It also includes discussions of earthquake effects on specific transportation systems and offers guidance for reducing their vulnerability.

Planning Scenario for a Major Earthquake in Western Nevada. Special Publication 20. 1996. 128 pp. and ten 11" x 17" full-color maps. \$32.00. Available from the Nevada Bureau of Mines and Geology/178, University of Nevada, Reno, NV 89557-0088;

(702) 784-4415; fax: (702) 784-1709; e-mail: info@nbgm.unr.edu; WWW: <http://www.nbgm.unr.edu>.

This earthquake scenario describes possible consequences of a major earthquake in western Nevada and was created to assist planning and mitigation in the region. It provides information on both the seismic hazards of western Nevada and the Carson Range fault system and the characteristics of the scenario quake. It describes potential impacts on and mitigation measures for buildings and other structures, schools, hospitals and medical facilities, transportation systems, power systems, water and wastewater systems, and petroleum systems. The report also discusses the roles of fire and police services, hazardous materials responders, emergency operations centers, dispatch centers, local governments, and communications providers in earthquake response.

Report of the Observer Panel for the U.S.-Japan Earthquake Policy Symposium. 1997. 64 pp. Free. For copies, contact Susan Sherwin, National Research Council, Board on Natural Disasters, 2101 Constitution Avenue, N.W., HA 370, Washington, DC 20418; (202) 334-1964; fax: (202) 334-1377.

In September 1996, a U.S.-Japan Earthquake Policy Symposium was held at the National Academy of Sciences in Washington, D.C., as part of a new bilateral initiative for cooperation on policy and research to reduce earthquake losses. Hosted by the Federal Emergency Management Agency (FEMA), the meeting involved high-level representatives from both the U.S. and Japan. To assist FEMA as it plans and implements this new program, the Board on Natural Disasters of the National Research Council, charged with assessing the outcomes of the symposium and identifying opportunities for future scientific and policy exchanges between the two countries. The panel recommended increased policy leadership to identify research topics, strategic planning to define specific activities, creation of performance measures, and the involvement of policy makers and researchers from the two countries with comparable roles and responsibilities.

ASPEP Journal Calling for Papers

The American Society of Professional Emergency Planners (ASPEP) has issued a call for papers to be published in conjunction with the 1997 National Coordinating Council on Emergency Management (NCCEM) Annual Conference to be held September 13-17, 1997, in Phoenix, Arizona. Representatives from disciplines related to emergency management are encouraged to submit papers on any relevant topic. Selected papers will be published in the 1997 edition of the *ASPEP Journal*, and authors of selected papers will be invited to present their papers at a poster session during the NCCEM conference.



Papers are due June 1, 1997. For additional information, contact the *ASPEP Journal* Committee, attn: Mike Selves, 111 South Cherry Street, Suite 100, Olathe, KS 66061-3441; or call Lyn M. Gross, *ASPEP Journal* Chairperson, (206) 776-3722.

Homebuyer's Guide to Earthquake Hazards in Utah. Utah Geological Survey Public Information Series 38. 1996. 27 pp. \$3.00, plus \$2.00 shipping. Utah orders, add 18¢ sales tax. Copies can be ordered from the DNR Bookstore, 1594 West North Temple, Salt Lake City, UT 84114; (801) 537-3320; fax: (801) 537-3395; e-mail: nrugs.geo-store@state.ut.us

This nontechnical guide, created by the Utah Geological Survey, will help readers assess a home's vulnerability to earthquake hazards. It explains the nature of earthquakes, lists additional resources of information, and describes specific earthquake-related hazards, such as ground shaking, soil liquefaction, surface fault rupture, slope failure, and flooding.

Volcanoes

Volcano Management in the United States and Japan. Ronald W. Perry and Hirotada Hirose. 1991. 230 pp. \$73.25. Order from JAI Press, Inc., 55 Old Post Road, No. 2, Greenwich, CT 06830; (203) 661-7602.

Although the chance of a volcanic eruption is relatively low at any given time, the negative consequences of an event for humans are almost universally high. Thus, volcanoes pose a special challenge for environmental management. This volume explores human response to volcanism in Japan and the United States (primarily the behaviors of those who are directly affected by volcanic events), the similarities and differences between the two cultures, and the consequences of the behaviors for the social management of volcanic eruptions. Chapters address the eruptions of Mt. Usu in Japan and Mt. St. Helens in the U.S.; responses to eruption warnings; sheltering and victim assistance; perceptions of community; social impacts of disaster damage; and recommendations about warning, sheltering, and coping with community changes following an eruption.

Other Geologic Hazards

Planning for Hillside Development. Robert B. Olshansky. Planning Advisory Service Report No. 466. 1996. 50 pp. \$32.00. Available from the American Planning Association, Planners Book Service, 122 South Michigan Avenue, Suite 1600, Chicago, IL 60603-6107; (312) 431-9100; fax: (312) 431-9985; e-mail: bookservice@planning.org.

Hillsides pose unique problems for construction and maintenance of buildings. This report notes the importance of planning for hillside development before adopting regulations that shape that development, particularly if there are contradictions in ordinances that address safety, aesthetics, environmental preservation, and affordability. Based on a survey of 190 local governments in 22 states, the report offers a variety of approaches for achieving community development goals. It also includes excerpts from 13 ordinances, an analysis of the survey, and a bibliography.

Environmental Geology. Edward A. Keller. Seventh Edition. 1996. 560 pp. \$64.00. When ordering, please give the "key code": E1001-A1(3). Available from Prentice-Hall, Inc. One Lake Street, U Saddle River, NJ 07458; (800) 643-5506; fax: (800) 835-5327; e-mail: webmaster@prenhall.com; WWW: <http://www.prenhall.com>

Environmental Geology is an introduction to the use of geologic information in understanding the interactions between humans and the physical environment. It is arranged in five parts: fundamental principles of environmental geology; natural processes, including natural hazards and disasters; human

interactions with the environment, including water resource management, waste management, and environmental health; mineral and energy resources; and earth system science, global change, and environmental laws and issues.

Environmental Geology. Barbara W. Murck, Brian J. Skinner, and Stephen C. Porter. 1996. 553 pp. \$61.95; no shipping charges if prepaid; charges will be added if order is billed. Copies can be purchased from John Wiley & Sons, Inc., Distribution Center, One Wiley Drive, Somerset, NJ 08875-1272; (800) 594-5396; fax: (908) 302-2300.

This book, like the volume above, was written to provide an introduction to the science and application of environmental geology. Divided into four parts, it discusses earth systems, cycles, structure, and materials; hazardous geologic processes, including earthquakes, volcanoes, tsunamis, landslides, subsidence, floods, oceanic processes, and meteorite impacts; soil and mineral resource management; and human impacts on the environment.

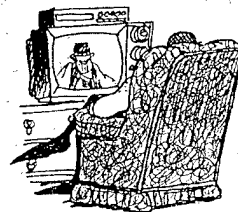
Videos, Slides, and Other Electronic Media

Great New Jersey Coastal Storms of the 20th Century. VHS. 1996. 90 minutes. \$24.00. Copies can be purchased from Greg Hoffman, P.O. Box 1341, Beach Haven, NJ 08008; (609) 492-3815.

In this video documentary, Greg Hoffman recounts many of the major storms that have affected the New Jersey coast since 1900. To personal recollections by those who experienced the storms, Hoffman adds meteorological information from satellite observations and conversations with meteorologists, as well as maps of the areas where the storms hit. Storms include the 1944 hurricane that claimed many lives at sea, the March 1962 storm, the Halloween storm of 1991, the December 1992 storm, and the Superstorm of March 1993.

Tornado Alert: What You Need to Know. 1994. VHS. \$19.95, plus \$5.00 shipping. Copies can be purchased from KERA/KDTN Catalog, 3000 Harry Hines Boulevard, Dallas, TX 75201; (214) 740-9290; fax: (214) 740-9321; WWW: <http://www.kera.org/order.htm>.

Tornadoes can cause wind speeds of between 150 and 300 mph., causing serious damage and loss of life in minutes. **Tornado Alert: What You Need to Know** provides information on how tornadic storms form as well as how to take safety measures. It includes interviews with research scientists, weather forecasters, and tornado survivors, footage of tornadoes and their impacts, and a ride along with storm chasers to study a storm firsthand.



THE HAZARDS CENTER

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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. Forest Service, Environmental Protection Agency, U.S. Department of Transportation, the National Atmospheric and Space Administration, and the Insurance Institute for Property Loss Reduction. Please send information of potential interest to the center or the readers of this newsletter to the address below. The deadline for the next Observer is March 15, 1997.

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