Natural Hazards Observer-September 1996

Natural Hazards Observer

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Two Decades of Observing and Two Questions

--an invited comment

This issue of the ***Natural Hazards Observer*** marks the end of its 20th year of publication, inviting some reflections on its history and two questions about its future.

The ***Observer*** was launched in September 1976 as one of the components of the clearinghouse--the Natural Hazards Research and Applications Information Center (NHRAIC)--established with a grant from the National Science Foundation (NSF) in response to a recommendation in the first assessment of research in that field (see p. 16 of this ***Observer***). That assessment had revealed an urgent need for improved communication among researchers in all fields of hazards, and for exchange of information and ideas between practitioners and students of measures to cope with extreme events.

Since then, the ***Observer*** has been shaped by a series of editors who combined imagination and rigorous analysis in serving its highly diverse readers. Beginning with Penny Waterstone and Anne U. White, who were soon succeeded by Jacquelyn Monday, then by Sarah K. Nathe and David B utler, and more recently by Sylvia Dane, the publication has brought news and views to an expanding constituency. Throughout those decades its unique visual interpretations have been provided by one philosopher/artist--Rob Pudim.

The range and volume of contents--research grants, policy changes, government programs, meetings and conferences, new publications, Internet listings, and pertinent opinions--has gradually expanded. In the

first year, all four issues of the ***Observer*** used 32 pages and reported about 30 new publications. In its most recent year, it required 144 pages--in six issues--and reviewed about 180 new printings with details on an exploding number of gatherings.

The first issue reached about 3,000 subscribers, but by the end of that year the number had reached 5,000. At this time, there are about 14,000 subscribers, with 350 located outside the United States.

In 1989, drawing on an experiment at the University of Delaware, David Butler began publishing the ***Disaster Research*** newsletter on the Internet. From 100 individual subscribers in that year, its numbers have grown at the rate of about 50% yearly and now exceed 1,500. Subsequently, with the creation of the Hazards Center's home page, the center also began distributing mu ch of its information on the World Wide Web, including past issues of the ***Observer*** and ***Disaster Research*** . David whimsically describes his role in that communications revolution as Web Spinner or Cyberian Husky, and it has tantalizing implications for the future.

There is no accurate count of the number and type of users. One printed copy of the ***Observer*** may end on the desk of an isolated scientist, or it may go into an office where it is routed to a dozen researchers and administrators. One issue of ***Disaster Research*** in a foreign country has been known to be circulated on a "bulletin board" to at least 100 other offices.

When the clearinghouse was first funded by NSF in 1976, it was viewed as an experiment that after three years would have to prove its worth as judged by users and by the willingness of user agencies to support its continuance. At the outset, financing by a single agency was thought to be unwise: if it was worth doing, the intellectual task should be shared and flexible. Since then, 10 different federal agencies have contributed financial support all or part of the time, and in 1992, the property insurance industry began contributing annually. (Present sponsoring agencies are listed on the back page of this issue.) No one knows how many subscribers in the United States (not employed by one of those agencies) would pay an annual subscription fee to receive the ***Observer*** . In the early years it was generally believed (and still is believed) that some of the people in great need of natural hazards information would be least likely to pay for it initially.

There are many indications that the clearinghouse and its ***Observer*** have had a major constructive effect on the whole field of natural hazards research and its applications. In the year ahead, the second assessment will be completing its appraisal of the health and needs of the field. This 20th year, therefore, seems an a ppropriate time to raise at least two questions about the future role of the ***Observer*** .

One is whether it is reaching the full array of people who are involved in decisions about social and economic action affecting or affected by natural hazards. Are there types or sectors that have been neglected? To what extent is it possible that in deal ing with many users directly involved in natural hazards research and applications, other significant groups are neglected? As an ancient academic, for example, I have been distressed to learn how many schools for planners are deficient in providing eleme ntary information on natural hazards.

The second question is whether the current format and selection of the ***Observer*** , and of its companion ***Disaster Research*** , are appropriate to current needs, especially taking into account the rapidly changing electronic means of handling information. The time seems ripe to again ask whether they could be made more effective.

Any reader of the ***Observer*** or ***Disaster Research*** who has read this far may have personal views on these questions and is invited by this voice from the past to share them with todays' editors.

Gilbert F. White, Director, NHRAIC, 1976-1984 and 1992-1994

The Natural Hazards Center's Quick Response Program

The Natural Hazards Center is soliciting proposals for its 1997 Quick Response (QR) program, which enables U.S. social scientists to conduct short-term research immediately after a disaster in order to collect perishable data. If you are a disaster resear cher and would like to go to a disaster site before the last of the debris is swept up, we encourage you to submit a brief proposal describing the research question you would like to pursue. If your proposal is approved, you are then eligible to receive f unding to carry out your investigation, if a suitable disaster takes place in the coming 12 months. Grants average between $1,000 and $3,000 and essentially cover travel only. In return, grantees must submit reports of their findings, which the Natural Ha zards Center publishes both electronically and in print.

Interested researchers should request a QR solicitation letter from *Mary Fran Myers, Co-Director, Natural Hazards Center, Campus Box 482, University of Colorado, Boulder, CO 80309-0482; (303) 492-2150; fax: (303) 492-2151; e-mail: myersmf@colorado.edu.* The deadline for proposal submission is October 15, 1996.

In the meantime, to obtain a list of Quick Response reports and all our other publications, along with their prices, send $3.00 to the *Publications Clerk* at the address above. This list, as well as full text copies of recent QR reports, are available from the center's home page on the World Wide Web: *Home. html* .

The 1996 Annual Hazards Research and Applications Workshop

In early July, hazards professionals from around the U.S. and the world gathered in Colorado for four days for the 1996 Annual Hazards Research and Applications Workshop. Federal, state, and local

government officials; representatives from nonprofit, huma nitarian organizations; private industry disaster planners; and a host of others dedicated to alleviating the suffering and loss caused by natural disasters talked, listened, and learned from one another about the latest issues and developments in hazard management. The theme of this year's meeting was "Toward Hazard Resilient Communities."

To further distribute the ideas and information generated at the workshop, the Natural Hazards Center publishes brief summaries of each of the sessions, abstracts of the hazards research presented, and descriptions of the programs and projects discussed a t the meeting. A single abstract or summary costs $4.00 (shipping included). An entire set of all the materials (including the workshop agenda and participant list) costs $20.00, plus shipping ($4.00, domestic printed matter; $5.00, domestic first class; $5.00, surface printed matter to Canada and Mexico; $6.00, air printed matter to Canada and Mexico; and $6.00 for other international destinations).

All orders must be prepaid and checks should be payable to the University of Colorado. Visa, Mastercard, American Express, and Diner's Club cards are also accepted. Orders should be directed to the *Publications Clerk, Natural Hazards Research and Applications Information Center, Campus Box 482, University of Colorado, Boulder, CO 80309-0482; (303) 492-6819; fax: (303) 492-2151; e-mail: jclark@spot.colorado.edu.*

Session Summaries

S96-1: The National Mitigation Strategy: Challenges for Implementation

S96-2: Real World Constraints to Implementing Hazard Adjustments

S96-3: Innovative Paths and New Directions*

S96-4: What Is Known and Trends for Improving Recovery and Reconstruction Following Disasters*

S96-5: Innovative Dissemination

S96-6: Politics and Disasters

S96-7: Partnerships for Seismic Zonation

S96-8: Engineering, Codes, Standards, and Control and Protection Works: A Research Agenda for the Future*

S96-9: The Forgotten Factors in Hazard Mitigation*

S96-10: New Directions for Prediction, Forecast, Warning, and Planning*

S96-11: Mitigation: How to Evaluate Effectiveness

S96-12: Gender and Disaster Response: Why Is it Important?

S96-13: Challenges Facing Health Care Delivery Following Disasters

S96-14: What are the Realities of GIS Use in Hazards Mitigation?

S96-15: Local Mitigation: Building Bridges with the Front Line

S96-16: Insurance: Its Role in the Past, Present, and Future for Hazard Mitigation*

S96-17: Emergency Preparedness and Response: Advances in Theory, Research, and Applications*

S96-18: Integrating Hazards Curricula to Enhance Professional Educational Opportunities

S96-19: Public and Private Partnerships for Hazard Mitigation and Emergency Management - I

S96-20: Hazards and the Natural Environment

S96-21: Heat and Cold: The Nation's Most Underrated Disasters

S96-22: Gaps in Data to Facilitate Risk Assessment and Hazard Mitigation*

S96-23: The Bottom Line--Economics of Hazard Mitigation*

S96-24: Land Use Planning for Safer Communities*

S96-25: Public and Private Partnerships for Hazard Mitigation and Emergency Management - II

S96-26: Hazards Management and Sustainability: A View for the Future

S96-27: Hurricanes: Lessons Learned, Forgotten, and Never Addressed

S96-28: U.S.-Japan Collaborative Project on Postearthquake Reconstruction Strategies

S96-29: Assessment of Floodplain Management in the Flint River Basin

S96-30: Enabling the Next Generation of Hazards Researchers

S96-31: Historical and Legal Issues in Disaster Policy and Application of a Geographic Information System to Identify Spatial Dispersion of Disasters

S96-32: Use of Satellite Data and the Internet for Disaster Planning and Response

S96-33: Research in Hazards by New Professionals - I

S96-34: State Legislative Guide for Hurricanes

S96-35: Mitigation and Evacuation Decisions in the Face of an Impending Disaster

S96-36: A Methodology for Regional Earthquake Damage and Loss Estimation Within GIS

S96-37: Overcoming Barriers in Lifeline Seismic Risk Reduction

S96-38: Continuing Archival Studies of Role Enactment, Organizing, and Disaster

S96-39: Research in Hazards by New Professionals - II

***** These sessions presented the preliminary findings of the Second Assessment of Research and Applications on Natural Hazards **.**

Abstracts of Current Research

R96-1: The Proof is in the Pudding: To What Extent Did Earthquake Hazard Mitigation Help Businesses Survive the Northridge Earthquake? Daniel J. Alesch, University of Wisconsin

R96-2: The Potential Effects of Changing EMS Systems on Disaster Medical Response. Rick Bissell, University of Maryland-Baltimore County

R96-3: Continuing Archival Studies of Role Enactment, Organizing, and Disaster. Susan Bosworth and Gary Kreps, College of William and Mary

R96-4: The Factual Underpinnings of Planning: Assessing the Risks from Natural Hazards. Robert E. Deyle, Florida State University

R96-5: Women Will Rebuild: A Case Study of Feminist Response to Natural Disaster. Elaine Enarson, University of British Columbia, and Betty Hearn Morrow, Florida International University

R96-6: "Men Must Work and Women Must Weep": Examining Gender Stereotypes in Disasters . Maureen H. Fordham, Anglia Polytechnic University, Cambridge, U.K.

R96-7: Tsunami Warnings. James F. Lander, University of Colorado

R96-8: Policy Design and Hazards Management . Peter J. May, University of Washington

R96-9: Heat-Related Deaths . Michael A. McGeehin, National Center for Environmental Health

R96-10: A Historical Examination of Environmental Equity in South Carolina Using Toxic Release Inventory

Facilities. Jerry T. Mitchell, University of South Carolina

R96-11: Longitudinal Assessment of Earthquake Disaster Mitigation in Turkey . William A. Mitchell, Baylor University

R96-12: Tornado Preparedness Behavior: The PrE Model of Coping with Threat . John-Paul Mulilis, Pennsylvania State University

R96-13: Gender Issues in Earthquake Preparedness Behavior . John-Paul Mulilis, Melanie Boyde, and Joseph Dewhirst, Pennsylvania State University

R96-14: Rural Areas and Disaster Planning. Susan A. Murty, University of Iowa

R96-15: Gender and Disaster Response: Why is it Important? Jane C. Ollenburger, Boise State University

R96-16: Real World Constraints to Implementing Hazard Adjustments . Risa Palm, University of Oregon

R96-17: Hazard Mitigation: Cornerstone or Grains of Sand? Rutherford H. Platt, University of Massachusetts at Amherst

R96-18: Questioning the Effect of Spatial Scale on a Neural Network Analysis of Environmental Equity in South Carolina. Michael S. Scott, University of South Carolina

R96-19: Women, Children, and Technological Risk . Deborah Thomas, University of South Carolina

R96-20: The Forgotten Factors in Hazard Mitigation: Climate Change. Henry Hengeveld, Environment Canada

Abstracts of Hazards Programs And Projects

PP96-1: Disaster Planning and Mitigation Technologies . Stephen B. Baruch, Community Technology Solutions

PP96-2: INADE-UNDP-OAS Program for Natural Hazard Vulnerability Reduction. Stephen O. Bender, Organization of American States

PP96-3: OAS-ECHO Natural Hazard Vulnerability Reduction Program for the Education Sector in Central America. Stephen O. Bender and Pedro Bastidas, Organization of American States

PP96-4: OAS-ECHO Country Vulnerability Reduction Project . Stephen O. Bender and Enrique A. Pantoja, Organization of American States

PP96-5: Energy Sector Natural Hazard Vulnerability Reduction Program. Stephen O. Bender and Ignacio Taveras, Organization of American States

PP96-6: OAS-ECHO-PIH Program for Natural Disaster Reduction of the Road Network in Central America and the Andean Countries . Stephen O. Bender and Gabriela Vigo, Organization of American States

PP96-7: Gaps in Data to Facilitate Risk Assessment and Hazard Mitigation . Paul M. Cogswell, Insurance Institute for Property Loss Reduction

PP96-8: Disaster Resistant Communities Program . Don Geis and Kendra Briechle, International City/County Management Association

PP96-9: Earthquake Engineering Research Institute Internship Program. Marjorie Greene, Earthquake Engineering Research Institute

PP 96-10: EERI Conference on Economic Impacts of the Northridge Earthquake. Marjorie Greene, Earthquake Engineering Research Institute

PP96-11: The Role of Local Government in Mitigation: Experiences in Georgetown, Texas. Bob Hart, City of Georgetown, Texas

PP96-12: Some Observations on Forging Public/Private Partnerships for Mitigation. Walter W. Hays, U.S. Geological Survey

PP96-13: Lifeline Seismic Vulnerability Assessment and Implementation Program. Le Val Lund, Los Angeles, California

PP96-14: Wind Engineering . Kishor C. Mehta, Texas Tech University

PP96-15: Invincible Towns? Karl G. Palmér and Mats Lindkvist, National Board of Civil Emergency Preparedness, Sweden

PP96-16: Training Curriculums . John Swanson, FEMA, Region VIII

PP96-17: Overcoming Barriers in Lifeline Seismic Risk Reduction . Craig Taylor, EQE International; Elliott Mittler, UCLA/USC; and LeVal Lund, Los Angeles, California

PP96-18: Learning from Earthquakes . Susan K. Tubbesing, Earthquake Engineering Research Institute

PP96-19: Mapping Paths to Natural Hazard Mitigation: Samples from the Portland, Oregon, Metropolitan Area Disaster Geographic Information System . O. Gerald Uba, Portland, Oregon, Natural Hazard Mitigation Program

PP96-20: Integrating Hazards Curricula to Enhance Professional Educational Opportunities . Nancy K. Grant, The University of Akron

PP96-21: A Model Recovery and Reconstruction Ordinance . Kenneth C. Topping, Topping Jaquess Consultants

Poster Session Abstracts

PS96-1: Pre-Disaster Baselines of the Prevalence and Incidence of Stress-Related Disorders in Urban Firefighter & Paramedic First Responders . Randal D. Beaton and Shirley A. Murphy, University of Washington

PS96-2: Comprehensive CD-ROM Index on Earthquake Engineering. Patricia Ann Coty, National Center for Earthquake Engineering Research, State University of New York-Buffalo

PS96-3: Activities at the University of South Carolina's Hazards Research Lab, 1995-96 . Susan L. Cutter, Hazards Research Lab, University of South Carolina

PS96-4: New Collection of Strong Motion and Earthquake Catalogs on CD-ROMS . Paula K. Dunbar , L.S. Whiteside, and D.T. Dater, National Geophysical Data Center

PS96-5: Lessons and Experiences in an EOC Using Real Time Meteorological Displays. David George and Bradley Reese, National Oceanic and Atmospheric Administration

PS96-6: A Look Toward Assessing Multi-Hazard Mitigation Strategies on a Regional Basis, Overview of RAMP (Regional Assessment of Mitigation Priorities). Laurie A. Johnson, EQE International

PS96-7: CREDIT and CREEP: Systems for Information Transfer an d Earthquake Preparedness in the Central United States. Jill Stevens Johnston and Paul Bodin, Center for Earthquake Research and Information, University of Memphis

PS96-8: National Geological Hazards Synthesis. Pavel J. Kurfurst, Geological Survey of Canada

PS96-9: GIS for Local Emergency Planners: Analysis of Chemical Releases During Flooding. Charmel Menzel, Hazards Research Lab, University of South Carolina

PS96-10: Preparing for Tornados: Gender Issues. John-Paul Mulilis, Pennsylvania State University

PS96-11: The Spatial and Temporal Distributions of Hazards Events and Losses: A Second Assessment. Michael Scott and Susan Cutter, Hazards Research Lab, University of South Carolina

PS96-12: EQHAZMAT : Data Base of Earthquake Caused Hazardous Materials Incidents. Guna Selvaduray, San Jose State University

PS96-13: The Canadian Natural Hazards Poster-map. Chris Tucker, Emergency Preparedness Canada

PS96-14: Importance of Geologic Studies to Volcanic Hazard Assessments. David R. Zimbelman, White Salmon, Washington

The Internet Page(s)

More Flotsam and Jetsam Snared by the Net

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

sites .html

Home.html

The Natural Hazards Center Web site just keeps growing. Our latest additions, include:

- Quick Response Report #85: ***The Potential Impact of Information Technology on the Structure of Interorganizational Relationships during Crisis Response: The Pennsylvania Floods of 1996*** , by Diana Burley Gant:

qr/qr85.html

- Quick Response Report #86: ***Th e Political Process of Presidential Disaster Declarations*** , by Richard Sylves:

qr/qr86.html

- Quick Response Report #87: ***Coping Self-Efficacy and Psychological Distress Following t he Oklahoma City Bombing*** , by Charles C. Benight:

qr/qr87.html

- A list of recently awarded grants in hazards/disaster research:

grants.html

Printed copies of the Quick Response reports cited above are also available for $5.00, plus shipping charges. Shipping costs are $3.00 for the U.S., Canada, and Mexico; $4.00 for international surface mail; and $5.00 for international air printed matter. To order copies, 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.color ado.edu*

http://www.reliefweb.int

This United Nations Department of Humanitarian Affairs (DHA) Web site is intended to aid national,

international, and nongovernmental agencies and organizations involved in response and relief following major natural and technological disasters and comple x emergencies. The site addresses prevention, preparedness, and response, and includes country and emergency profiles, a bulletin section with daily updates, a "Wha t's New" feature, and various maps of countries and regions where emergency oper ations are currently underway. All documents are organized into three retrieval categories: "The Latest," "By Source," and "By Format" (appeal, situation report, news, map, et c.), and the data base can be searched using keyw ords. The site also provides access to "DHA-Online"--information about resources, publications, and other services available from DHA.

http://www.eqnet.org

EQNet is a free, one-stop source for identifying Internet information related to earthquake hazards mitigation. It is a voluntary, cooperative, unfunded project supported by a consortium of U.S. earthquake information providers--part of their attempt to b etter coordinate efforts and improve communication with the public (see the ***Observer*** , Vol. XX, No. 5, p. 9). Although EQNet is still very much under construction, it is now available to the public. The site is organized into various lists, including an alphabetic listing of Web resources, subject lists of resources, and other files curre ntly under development. Comments, criticisms, suggested additions, and changes are welcome and should be addressed to those people responsible for individual sections (as listed on the Web site), or to the chairperson of the EQNet working group, *Patricia Coty, National Center for Earthquake Engineering Research (NCEER), c/o Science and Engineering Library, 304 Capen Hall, State University of New York-Buffalo, Buffalo, NY 14260-2200; (716) 645-3377; fax: (716) 645-3379; e-mail: coty@acsu. buffalo.e du* .

http://www.eeri.org/

The Earthquake Engineering Research Institute (EERI) is a national, nonprofit, technical society of engineers, geoscientists, architects, planners, public officials, and social scientists--including researchers, practicing professionals, educators, govern ment officials, and building code regulators--all of whom are concerned about mitigating earthquake hazards. The new EERI Web site provides an introduction to the institute; a list of upcoming EERI meetings and other events; descriptions of EERI services; a catalog of publications, slides, and videos available from the institute; and other information and news about earthquake hazard mitigation generally. Additionally, EERI now has several full-text earthquake reconnaissance reports on-line, as well as ot her information about recent seismic events.

http://www.partner.org

In 1994 and 1995, the Federal Emergency Management Agency (FEMA), in conjunction with the National Emergency Management Association (NEMA) and the National Coordinating Council on Emergency Management (NCCEM), hosted national meetings to coordinate and im prove information sharing--principally via the Internet and other computer-mediated means--among all the various agencies, organizations, and groups using such methods to mitigate and manage disasters. The result was

th e formation of an Emergency Informa tion Infrastructure Partnership (EIIP) that has now established this Web site. Much of the site is still under construction. However, persons interested in finding out what this partnership is all about can peruse the proceedings of the early meetings to learn what is going on and who (hopefully) is doing what. Through a cooperative agreement between FEMA and NCCEM, Avagene Moore, a former NCCEM president, has been contracted to further the partnership and has outlined a n extensive program for continuing this effort. Persons interested in the EIIP should contact Ms. Moore at *1017 Hayes Road, Lawrenceburg, TN 38464-4007; (615) 762-4768; fax: (615) 762-7359; e-mail: amoore@partner.org* .

http:/www.es.mq.edu.au/NHRC/

The Natural Hazards Research Centre (NHRC) at Macquarie University, Sydney, Australia, conducts research on natural hazards in the Australia/Pacific region (see the ***Observer*** , Vol. XIX , No. 5, p. 7). The center has prepared earthquake probable maximum loss (PML) estimates for most of Australia's state capitals and is currently reviewing losses to domestic housing resulting from the 1989 Newcastle earthquake. It has recently assessed windstorm and hailstorm hazards in the Sydney area and published an analysis of the 1994 Rabaul volcano eruption in Papua New Guinea. The NHRC is also developing data bases on natural hazards, such as earthquakes, landslides, tsunamis, tropical c yclones, bushfires, floods, hailstorms, and heatwaves, and is involved in developing integrated natural hazard risk assessments for various parts of the region. The NHRC Web site contains information about the center; past issues of the center newsletter, the ***Natural Hazards Quarterly*** ; a listing of the center's staff; descriptions of completed projects; and ordering information regarding center publications. For more information about the NHRC, or to subscribe to the newsletter, contact: *Natural Hazards Research Centre, School of Earth Sciences, Macquarie University, North Ryde, NSW 2109, Australia; tel: +61 2 850 9683; fax: +61 2 850 9394; e-mail: NHRC@ocs1.ocs.mq.edu.au* .

http://www.vita.org/nvoad

The National Voluntary Organizations Active in Disaster (NVOAD) is a 27-year-old association of voluntary organizations, including the American Red Cross, Salvation Army, Catholic Charities, and Second Harvest National Network of Food Banks, that engage i n disaster response and recovery using volunteers. NVOAD coordinates planning and response by these agencies in order to ensure effective service with minimal duplication. The NVOAD Web site includes information about the organization's history, mission, organization, activities, publications, and membership, as well as recent situation reports and other helpful information for response agencies.

http://members.aol.com/ASWMI/homepage.htm l

The Association of State Wetland Managers has entered cyberspace. The association's new e-mail address is ASWMI@aol.com, and their new Web page includes information about the structure, activities, and membership procedures of the association, as well as information about their 1996 national symposium, a complete list of books available from the association book service, and a national

registry of wetland professionals.

http://www.nws.noaa.gov/oso/oso1/oso12/document/emwin.htm

This Web site contains information about the Emergency Managers Weather Information Network (EMWIN)--a cooperative effort of the National Weather Service (NWS), Federal Emergency Management Agency, and other public and private organizations. EMWIN is inte nded to provide the emergency management community with access to basic NWS warnings, watches, forecasts, and other products and involves a suite of methods--including radio, Interne t, and satellite--to distribute this basic weather information.

http://www.firewise.org/

The Firewise home page was created for people who live, vacation, or own structures in wildfire-prone areas. It offers online fire protection information, including the "Firewise Landscaping Checklist," an informational booklet-- ***Protecting Your Home from Wildfire*** , as well as listings of other publications, videos, and conferences. The interactive home page allows users to ask questions of fire protection experts and to register and receive further information as it becomes available. This site is sponsored by the National Wildland/Urban Interface Fire Protection Program, a consortium of agencies and associations that includes the U.S. Forest Service, Department of the Interior, National Association of State Foresters, National Fire Protection Association, and the U.S. Fire Administration.

http://www.cla.sc.edu/geog/hrl/gislist.html

Observer readers might recall that in the last issue we asked those of you using or investigating the use of geographical information systems (GISs) in hazards management and research to contact the Hazards Research Laboratory (HRL), University of South Carolina, with information about yourself and your work so that the information could be incorporated into a data base to be maintained on the HRL Web site. That Web page is now available. If you would like to know who's doing what in GIS/hazards research, check ou t the address above.

Two Perspectives on the National Mitigation Strategy

ON THE LINE I

The American Red Cross and Mitigation

Introduction

The American Red Cross has been at the cutting edge of disaster relief activities for more than 100 years--helping people prevent, prepare for, respond to, and cope with disasters and other emergencies. Like many organizations and millions of Americans, w e are very concerned about the skyrocketing social and economic costs of disasters. Therefore, we are helping to spearhead the nation's efforts to do more to limit the harm disasters cause people, property, and the environment.

Our roots in mitigation can be tracked back to our congressional charter, which was written in 1905:

to continue and carry on a system of national and international relief in time of peace and apply the same in *mitigating* the sufferings caused by pestilence, famine, fire, floods and other great national calamities, and to devise and carry on measures for *preventing* the same.

In July of 1992, we embarked on a concerted effort to significantly enhance our ability to deliver timely and effective disaster relief services. We also renewed our commitment to help prevent and mitigate the effects of disasters by cooperating closely w ith the Federal Emergency Management Agency (FEMA) and other government and nongovernment organizations to help at-risk people and communities reduce their vulnerability. Our board of governors also recently updated our corporate goals and objectives, whi ch, among other things, call for us to expand our efforts to advocate and mobilize support for mitigation.

Current Mitigation Activities

While there is much more to be done, the American Red Cross is already engaged in activities that support mitigation, including:

- **Promoting mitigation awareness and mobilizing support** by making community presentations and providing awareness and education information before disasters strike, to raise the public's awareness and show ways to minimize risks. We also include mitigation in some of our community disaster education materials. For example, the highly successful ***Against the Wind*** video and brochure, developed in partnership with FEMA and other organizations, demonstrate actions t hat prevent or reduce wind damage in hurricane or wind-prone areas. Another, ***Repairing Your Flooded Home*** , describes methods of repairing homes that prevent or minimize future damage.
- **Serving as advocates for mitigation at the local, state, regional, and national levels** by supporting actions and efforts that reduce the vulnerability of people to disasters. For example, we serve on a number of state and local mitigation committees or task groups that advocate mitigation and coordinate specific mitigation programs and proj ects.
- **Helping identify resources to support mitigation following disasters** by providing casework assistance to locate financial support for mitigation actions such as elevating appliances, elevating and/or relocating homes, and purchasing flood insurance.
- **Serving on the federal Interagency Mitigation Committee** to promote nationwide mitigation awareness and encourage mitigation actions. Also, we are collaborating with the Central U.S. Earthquake Consortium (CUSEC), the American Society of Civil Engineers (ASCE), the

Insurance Institute for Property Loss Reductio n (IIPLR), and many other organizations to pursue shared or common mitigation goals and objectives.

- **Supporting the United Nations International Decade for Natural Disaster Reduction** by sharing mitigation information with the International Federation of Red Cross and Red Crescent Societies.
- **Helping to publicize the National Mitigation Strategy** by promoting mitigation awareness within both the American Red Cross and throughout the public sector.
- **Cosponsoring FEMA's Biennial National Mitigation Conference and other meetings** by helping to plan and organize them and serving on panels that focus on ways to build public support for mitigation and encourage mitigation actions.
- **Serving on the Mitigation Committee of the annual National Hurricane Conference** to highlight the need for and importance of mitigation, as well as to share mitigation success stories.

The Challenge

Time and time again, experience shows that one of the principal causes of the soaring costs of disasters is that there is a distinct absence of proactive programs and activities to reduce the vulnerability of at-risk people and communities. Although mitig ation has been around a long time as a concept, it has yet to be fully embraced as a practice. Like many people and organizations, we in the American Red Cross believe that it will not be, unless and until the public fully understands the risks they face and what they can do to reduce their exposure, comprehends the significant benefits of mitigation, and appreciates the severe consequences and enormous costs of inaction. In other words, mitigation will fully take hold only when an *informed* public is convinced that it is necessary and feasible; that it is cost effective and reaps large, long-term dividends; and, that failing to mitigate is both unaffordable and unacceptable. Then, and only then, will America begin to break the vicious, costl y, and destructive disaster-rebuild-disaster cycle.

Mitigation: Breaking the Disaster Cycle

While the American Red Cross is already involved in a number of local, state, and national efforts to promote and support mitigation, we know there is much more that needs to be done. Therefore, we recently released our own mitigation strategy paper entit led ***The American Red Cross and Mitigation--What We Can Do to Help Make America Safer from Disasters.*** It outlines our current mitigation activities and presents a preliminary strategy describing other actions we should consider to help institutionalize mitigation in communities. We will also soon establish a Red Cross Mitigation Task Force to examine more closely the extent and effectiveness of our current mitigation activities and to chart the course for our mitigation efforts into the next century.

Summary

For many years, the American Red Cross has effectively helped people prevent, prepare for, and respond to disasters, and we believe that by fully supporting the National Mitigation Strategy, we can build on

this proud tradition. In short, we believe that our slogan, "Help Can't Wait ," means that the American Red Cross will not only continue to be there after disasters strike, but also, that we must do everything we can to keep people and communities from becoming victims.

Don Jones, Vice President, Disaster Services, American Re d Cross

Ken Deutsch, Senior Mitigation Associate, American Red Cross

For further information on Red Cross mitigation activities, contact *Ken Deutsch, American Red Cross, 8111 Gatehouse Road, Falls Church, VA 22192; (703) 206-8631; fax; (703) 20 6-8833; e-mail: deitscjl@usa.red-cross.org.*

ON THE LINE II

Hazard Mitigation: Cornerstone or Grains of Sand?

FEMA's National Mitigation Strategy declares hazard mitigation to be "the corner stone of the Nation's system of emergency management." The strategy calls for partnerships between the federal government and other sectors of American society to a ddress five major elements of mitigation: 1) hazard identification and risk assessment; 2) applied research and technology transfer; 3) public awareness, training, and education; 4) incentives and resources; and 5) leadership and coordination.

While the elements listed above are, of course, important, the strategy is vague regarding who is required to do what. The strategy assumes that, provided with adequate information about hazards, nonfederal authorities and private property owners will do the right thing, e.g., avoid unsafe building locations and/or practices. But recent experience along the nation's coasts and in areas subject to wildfire suggest that local governments and owners are eager to rebuild and expand housing in areas of high am enity value, despite the risks involved.

If persuasion fails, will regulation take over? The strategy shuns the "R word" and in fact scarcely mentions existing regulatory requirements of the National Flood Insurance Program (NFIP), which arguably need to be strengthened in certain resp ects.

Clearly, no one is currently suggesting the imposition of federal land-use controls in hazardous areas (although the federal government does exercise direct oversight of wetlands, drinking water quality, endangered species, and other areas of environmenta l concern). But there is plenty of legal authority for state and local land management in accordance with federal minimum standards. For instance, the 1973 Flood Disaster Protection Act requires states and local communities, as a condition of future feder al assistance, to participate in the NFIP and "to adopt adequate flood plain ordinances with effective

enforcement provisions consistent with federal standards to reduce or avoid future flood losses." Furthermore, section 409 of the Stafford Act requires, as a condition of federal assistance, that relevant state or local governments agree that "the natural hazards in the [disaster] areas . . . shall be evaluated and appropriate action shall be taken to mitigate such hazards, including safe land-use and construction practices, in accordance with standards prescribed or approved by the President."

These provisions in essence established a "partnership" for disaster mitigation years before the 1995 National Mitigation Strategy. In those acts, Congress declared that the federal government will provide a major share of disaster assistance an d will facilitate an affordable flood insurance program provided that states, local governments, and private owners shoulder a fair share of the burden of mitigating future risks from hazards through land-use and building regulations.

Much progress has in fact been made in building regulations (which so far seem to have escaped the ire of the property rights movement). But land-use regulation seems to have vanished as an element of the National Mitigation Strategy, even though it has a bundant constitutional support and is practiced in various states and communities.

Meanwhile, Congress and the president may be creating disincentives to nonfederal mitigation through overly generous disaster assistance policies. Since 1989, a succession of very costly disasters has prompted a veritable landslide of federal disaster pol icy critiques, e.g., by the National Academy of Public Administration, the National Performance Review, the General Accounting Office, the Congressional Research Service, the Interagency Floodplain Management Task Force, the National Earthquake Hazard Red uction Program (NEHRP)

Advisory Committee, the "Galloway Committee" that examined the Midwest floods of 1993, the House and Senate Task Forces on Disaster Assistance, and the FEMA Inspector General. A common concern of most of these critiques is that the federal gover nment is itself fostering the perception among states, local governments, and private interests that the costs of disasters will be predominantly absorbed by the nation through grants, subsidies, insurance programs, loans, and other benefits. Contributing to this perception is the lack of clear criteria for disaster declarations (particularly criteria defining the low-end threshold), the waiver of nonfederal cost shares in a number of disasters, and the willingness of Congress to fund disaster assistance through off-budget supplementary appropriations.

Every revision of the federal disaster assistance law has retained the original principle stated in the 1950 act that federal assistance is intended to supplement--not replace--state and local provision for their own needs. Ironically, as Congress has add ressed disasters ever more generously, states and local governments increasingly may have neglected to provide for their own capabilities for dealing with disasters, making it *easier* to obtain federal assistance. It has become pragmatic politics for many jurisdictions, struggling with other more immediate needs, to count on the federal government to rush to their assistance when even small disasters strike.

This perception of federal benevolence discourages responsible hazard mitigation among nonfederal

interests, thus contributing to the potential for greater loss es in future disasters, a process referred to as "moral hazard" in the Galloway Repo rt. Shirking of responsibility for hazard mitigation among states and local governments may take two forms: 1) unwillingness to expend their own funds for disaster planning and hazard mitigation, and 2) avoidance of the political and fiscal burdens of reg ulating private use of land in areas subject to severe natural hazards.

Some of these issues are beyond the power of FEMA to resolve. Supplemental appropriations are the province of Congress, not FEMA. Presidential declarations, by definition, are primarily the province of the White House, with FEMA serving in an advisory and administrative role. The waiver of nonfederal cost sharing is likewise a political act, not the responsibility of the director of FEMA.

But FEMA, as the agency's director, James Lee Witt, has declared countless times, is the advocate of sound national disaster policy. It administers both the National Flood Insurance Program and the Disaster Assistance Program and is a major partner in the NEHRP. The intent of Congress in creating these programs, particularly the first two, was to require reasonable assumption of burden by states, local communities, and private parties to provide for their own safety--in other words "partnership." ; FEMA needs to distance itself from the sometimes excessive zeal of Congress to convert disaster assistance into an entitlement. As with the surgeon general in the case of smoking, FEMA needs to be the designated conscience of the federal government, eve n when to do so displeases certain members of Congress.

On the other hand, FEMA must resist the overblown rhetoric directed at public land use planning and regulation by the property rights movement and its allies among local governments. As I have written earlier regarding the Lucas v. South Carolina Coastal Council Supreme Court decision (***Natural Hazards Observer*** , September 1992) and on Dolan v. Tigard (***Environment*** , October 1994), there is no reason to view those decisions as devastating to reasonable land use restrictions in hazardous areas. Yet, for some time FEMA has been reluctant to vigorously advocate that approach.

In preference to regulation, since the Midwest floods F EMA has emphasized acquisition of chronically flood-prone properties. Buy-out of inexpensive homes in the Mississippi Valley was both feasible and sensible, but that approach can scarcely be applied to properties costing hundreds of thousands of dollars o n the coast or on California hillsides. Moreover, with "nonfederal cost-shares" often derived from Community Development Block Grant funds, the entire cost may end up being federal. The Na tional Mitigation Strategy declares that "all mitigation is local," but unrefuted is the impression that "all mitigation is federally funded."

In summary, FEMA's worthy goal to place mitigation at the heart of federal disaster policy is threatened by the larger political context of disaster response. On the one hand , the president and Congress must be persuaded to exercise reasonable restraint in paying for disaster costs. On the other hand, states and local governments must assume a meaningful share of the fiscal and political burden of mitigating hazards, including the willingness to use noncompensatory land use controls when necessary. If th ese adjustments in the larger context are not made, FEMA's mitigation efforts will not be a "cornerstone" but

merely grains of sand scattered by the winds of political and private expedience.

Rutherford Platt, Professor of Geography, University of Massachusetts at Amherst,

and

Author, ***Land Use and Society: Geography, Law, and Public Policy*** (Island Press, 1996).

Copies of ***National Mitigation Strategy: Partnerships for Building Safer Communities*** (1995, 50 pp., Free) can be obtained from the *FEMA Distribution Center, 8231 Stayton Drive, Jessup, MD 20794; (800) 480-2520; fax: (301) 497-6378.*

WASHINGTON UPDATE

FEMA Establishes a Mapping Advisory Council

Accurate floodplain maps are the cornerstone of the National Flood Insurance Program (NFIP), providing information that is used by local officials to make land use decisions, by lenders to determine insurance requirements for mortgages, and by builders an d architects to determine placement and design of structures. In order to improve the use of maps in mitigating the impacts of floods, the National Flood Insurance Reform Act of 1994 mandates the creation of a Technical Mapping Advisory Council (TMAC) (se e the ***Observer*** , Vol. XIX, No. 2, p. 8).

The act assigns three duties to the council:

1. make recommendations to the Federal Emergency Management Agency (FEMA) director on how to improve, in a cost-effective manner, the accuracy, general quality, ease of use, and distribution of Flood Insurance Rate Maps (FIRMs);
2. recommend mapping standards and guidelines for FIRMs to the FEMA director; and
3. submit an annual report to the director that describes the activities of the council, includes an evaluation of the status and performance of FIRMs and mapping activities to revise FIRMs, and provides a summary of recommendations.

The council held its first meeting on May 2, 1996. Members were chosen based on their knowledge of surveying, cartography, remote sensing, geographic information, or technical aspects of FIRMs. The act specifies that certain individuals and organizations must be represented on the council, including the American Society of Civil Engineers, the Association of American State Geologists, the Association of State Floodplain Managers, the Federal Home Loan Mortgage Corporation, the Federal National Mortgage As sociation, the National Flood Determination Association, the Under Secretary of

Commerce for Oceans and Atmosphere, Nationsbanc Insurance Company, and the U.S. Geological Survey.

Committee member s identified several goals to direct their work, including delineating hazards other than floods on NFIP maps; improving public education on the use of flood maps; automating the flood zone determination process; improving communication a mong lenders, FEM A, and local communities; investigating the reliability of data; increasing the distribution of NFIP maps; simplifying the review process; and improving the documentation and availability of technical data used to prepare maps.

For more information about the Technical Mapping Advisory Council, contact *FEMA, Office of Emergency Information and Public Affairs, 500 C Street, S.W., Washington, DC 20472; (202) 646-4600; fax: (202) 646-4086; e-mail: eipa@fema.gov; World Wide Web: http://www.fema.gov/fema/tmac.htm#tmacinfo* .

GAO Looks at Disaster Assistance

The public assistance program of the Federal Emergency Management Agency (FEMA) funds the repair of public and private nonprofit facilities--such as roads, government buildings, utilities, and hospitals--that are damaged in natural disasters. Through this program, from 1989 through 1994, FEMA allocated over $6.5 billion, compared to $1 billion for the previous six year s. Concerned about these growing costs, the chairman of the Subcommittee on VA, HUD, and Independent Agencies, Senate Committee on Appropr iations, asked the General Accounting Office (GAO) to review FEMA's criteria for determining eligibility for assistance and to identify changes in eligibility that could lower the costs of future public assistance. The GAO presents the results of that stu dy in its report, ***Disaster Assistance: Improvements Needed in Determining Eligibility for Public Assistance*** (GAO/RCED-96-113, 1996, 68 pp).

The GAO concluded that FEMA's criteria for determining eligibility of public facilities for funding is ambiguous, as are the criteria for determining the eligibility of certain private nonprofit facilities. The GAO recommends that FEMA develop clear and u p-to-date criteria that can be distributed to regional offices, so that those offices and temporary disaster workers can prepare more equitable and consistent damage survey reports.

In addition, public assistance program officials in FEMA's 10 regional offices identified a variety of options that could reduce the costs of public assistance programs, including placing limits on the number of appeals; eliminating eligibility of certain facilities that generate revenue, lack insurance, or are not delivering government services; and limiting the impacts of building codes and standards (for example, paying for seismic code upgrades for only the damaged portion of a structure).

Individual copies of ***Disaster Assistance*** are free; additional copies cost $2.00. The report can be ordered

from the *U.S. General Accounting Office, P.O. Box 6015, Gaithersburg, MD 20884-6015; (202) 512-6000; fax: (301) 258-4066; TDD: (301) 413-0006; e-mail: info@www. gao.gov; World Wide Web: http://www.gao.gov* .

GAO Says Emergency Disaster Farm Loans Too Risky

Over the past seven years, the Farm Service Agency (FSA), part of the U.S. Department of Agriculture, has forgiven over $6 billion in unpaid principle and interest in its emergency disaster farm loan program. In a recent report, ***Emergency Disaster Farm Loans: Government's Financial Risk Could Be Reduced*** (GAO/RCED-96-80, 1996, 36 pp.), the General Accounting Office (GAO) states that even more losses can be expected, because 80% of $3 billion in outstanding loan principle is held by borrowers who are delinquent or who have previously had difficulty repayin g emergency or other f arm program loans.

The GAO believes that, although emergency farm loans are inherently risky, several lending practices have added to the risk. For example, current legislation does not prohibit borrowers who have received debt forgiveness on past loans from receiving new e mergency loans. In addition, borrowers with minimal projected cash flow are eligible to receive additional loans as long as their expected income equals their expected expenses. (Most lenders require that the income of borrowers b e greater than expenses in order to provide a financial cushion.) The GAO also noted the FSA often does not verify the accuracy of information in loan applications.

Of particular interest, the GAO found that, although crop insurance was generally available, few recipients of emergency loans purchased such coverage. Instead, loan recipients relied on the federal government for assistance after a natural disaster. Alth ough recent legislation strengthens the requirement for crop insurance, in most years Congress has waived this requirement.

Individual copies of ***Emergency Disaster Farm Loans*** are free; additional copies cost $2.00 each. They can be obtained from the *U.S. General Accounting Office* at the above address.

HAZARDS ASSESSMENT UPDATE

With the help of dozens of experts, the Natural Hazards Research and Applications Information Center is currently undertaking an assessment of knowledge and research needs regarding natural hazards in the United States (see the ***Observer*** , Vol. XX, No. 2, p. 6). This column has been instituted to inform readers of the ***Observer*** of the efforts of the many contributors to the project.

Losses Due to Natural Hazards

Introduction

Over a 20-year period from 1975 to 1994, the U.S. spent approximately one quarter of a billion dollars per week on meteorological natural disasters. Worse, some 6,000 people were killed and over 50,000 injured by meteorological natural disasters in this p eriod. These figures are from a preliminary compilation of losses due to natural disasters in the United States and its territories by the Natural Hazards Research and Applications Information Center (NHRAIC) as part of the Second Assessment of Research a nd Applications on Natural Hazards. By gathering property and crop loss data as well as death and injury statistics, the center is striving to assess more accurately the cost of natural disasters to the nation.

The Data Base

The NHRAIC loss data base contains information on over 30,000 separate disasters. In order to be included in the data base, an event must fulfill at least one of the following criteria:

1. it caused at least $50,000 or more in damages;
2. it caused at least one death; or
3. if the event was an earthquake, it must have registered at least IV on the Modified Mercalli scale.

Although every effort was made to insure accurate data entry, the Natural Hazards Center is serving as a repository for loss data gathered by many different individuals and organizations. Hence, the accuracy of the raw data cannot be certain.

The data are contained in four separate data bases:

- **Losses from meteorological events as contained in *Storm Data*** (1975-1994). ***Storm Data*** is published monthly by the National Climatic Data Center, National Oceanic and Atmospheric Administration, and contains information on the losses and physical aspects of meteorological phenomena. By using a $50,000 threshold, we estimate that almost two million separate events are *not* included in this part of our data base. In other words, the estimated one-quarter of a billion dollars per week spent on meteorological natural disasters could be considerably higher if all losses due to meteorological phenomena are recorded.
- **Losses incurred in presidentially declared disasters** (1989-1994), according to the Federal Emergency Management Agency (FEMA);
- **Insured losses as reported by Property Claims Services (PCS)** (1975-1994); and
- **Losses from geophysical events** such as earthquakes and volcanoes (1975-19 89), garnered from numerous sources.

The following hazards are included in the data base: avalanches, droughts, dust storms, earthquakes, extreme cold, fires, floods, fog, heat, hurricanes, landslides, lightning, microbursts, rogue waves, severe storms/hail, ice/sleet, rain, snow/wind, torna does, tropical storms, wind (not associated with severe

storms), and volcanoes.

In addition to those data described above, each disaster record in the NHRAIC data base also includes the date of the event, the location by county and state, and, if applicable, the intensity of the phenomenon.

Some Preliminary Statistics

During the last 20 years, earthquakes and hurricanes were the primary causes of monetary losses, and tornadoes were responsible for most deaths and injuries. Again, from 1975 to 1994, approximately 6,000 fatalities and 50,000 injuries were attributable to meteorological hazards. Tornadoes, floods, and heat were the three meteorological hazards that caused the most fatalities (accounting for 23%, 14%, and 11% of the 20-year total); while tornadoes, wind due to severe storms, and hurricanes were responsible for the majority of injuries during this period (accounting for 51%, 11%, and 10% of the 20-year total).

Insured property losses for damages incurred from natural disasters from 1975 to 1994 amounted to $72 billion.

Hurricanes, floods, and tornadoes were the three meteorological hazards that caused the most property damage (accounting for 42%, 33%, and 6% of the 20-year total), while the majority of crop damage was caused by floods, drought, and hurricanes (accountin g for 27%, 26%, and 20% of the 20-year total).

During the last 20 years, new records were frequently set for the costliest single natural disaster in the United States. In 1989, Hurricane Hugo exacted losses of $6 billion. In the same year, the Loma Prieta earthquake cost $10 billion. In 1992, Hurrica ne Andrew cost $20 billion, and in 1994, the estimated loss from the Northridge earthquake topped $25 billion. These individual events dominated the FEMA and PCS data sets, as well.

The three costliest presidentially declared disasters between 1989 and 1994 (and the corresponding FEMA payouts for disaster assistance) were the 1994 Northridge earthquake ($9.7 billion in disaster relief); Hurricane Andrew in 1992 ($2 billion), and Hurr icane Hugo in 1989 ($1.3 billion). Not surprisingly, the PCS data set also shows that the three costliest years during this period were 1992, 1994, and 1989 (with $18.2 billion, $16 billion, and $7.6 billion paid out on insured losses, respectively).

The magnitudes of these losses are greater when considered at local rather than national levels. For example, while direct losses from the Northridge earthquake w ere only % of the U.S. Gross National Product (GNP), they represented approximately 3% of th e California 1993 Gross State Product (GSP); similarly, direct losses from Hurricane Andrew represented approximately 7% of Florida's GSP.

Compiling this data has revealed many problems in keeping track of losses due to various natural disasters. Previous loss records have only indicated the overall scale and scope of the problem. Floods

rank as one of the deadliest and costliest disasters w orldwide; yet, according to the Army Corps of Engineers, there is no one agency with the specific responsibility for collecting and evaluating flood loss information. As a result, national flood loss estimates are approximations at best.

By themselves, these data are little more than another set of statistics. To help create a safer nation, they need to be integrated with national data bases on likely future events and mitigation practices. Future data generation will require the systemat ic collection of information on the type of loss, the location, and the actual dollar amount to ensure accurate comparisons across hazards.

Betsy Forrest, Natural Hazards Center, University of Colorado at Boulder

Stuart Nishenko, FEMA/Mitigation Directorate, Formerly, Natural Hazards Center

The Subgroup on Losses and Costs welcomes comments from both researchers and practitioners regarding their efforts. Please contact *Betsy Forrest, Natural Hazards Research and Applications Information Center, Campus Box 482, University of Colorado, Boulder, CO 80309-0482; (303) 492-1028; fax: (303) 492-2151; e-mail: betsy.forrest@colorado.edu.*

EQHAZMAT

Data Bases of Earthquake-Caused Hazardous Materials Incidents

With funding from the National Science Foundation, the Department of Materials Engineering at San Jose State University has prepared and is now distributing two data bases on earthquake-caused hazardous materials incidents. The first, ***EQ HAZMAT: Japan*** , contains 177 records covering hazardous materials incidents that occurred during Japanese earthquakes through July 1993. The second, ***EQHAZMAT: Northridge*** , includes 239 records of incidents (except natural gas breaks an d releases) caused by the January 1994 Northridge, California, quake.

The data bases, on 3" computer diskette, use public domain software that will run on any DOS-based computer with a 386 processor or better. Copies cost $20.00 and can be obtained b y contacting *Guna Selvaduray, Department of Materials Engineering, San Jose State University, San Jose, CA 95192-0086; e-mail: gunas@email.sjsu.edu* .

CONFERENCES AND TRAINING

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

Home.html

EMI

The Federal Emergency Management Agency's Emergency Management Institute (EMI) recently published its catalog of courses for October 1996 through September 1997. To obtain a copy, contact *EMI, National Emergency Training Center,1 6825 South Seton Avenue, Emmitsburg, MD 21727; (301) 447-1000 or (800) 238-3358* . Alternatively, EMI offerings will soon be listed on the FEMA World Wide Web site: *http://www.fema.gov/EMI/emi.htm* .

Meetings

Technical Seminar on Earthquake Mitigation and Building Seismic Safety. Sponsors: Earthquake Engineering Research Institute and Central United States Earthquake Consortium (CUSEC). Memphis, Tennessee: September 25-26, 1996 . This seminar will cover a range of topics of interest to engineers, architects, planners, building code officials, hazard managers, geoscientists, and other professionals who have a role in earthquake hazard reduction. For details, contact *Jim Wilkinson, C USEC, 2630 East Holmes Road, Memphis, TN 38118-8001; (901) 345-0932; fax: (901) 345-0998; e-mail: cusec@ceri. memphis.edu* .

Crises in our Schools--Coping With the Consequences of a Disaster. Sponsor: Greater Manchester Fire and Civil Defence Authority Emergency Planning Unit. Manchester, U.K.: September 26, 1996 . This conference is being held to encourage teachers and school administrators to think ahead and plan for disasters. It will both raise awareness of the effects of disasters on school children and suggest ways to reduce disaster impacts. For further inf ormation, contact *Nick Hayes, tel: 0161 797 0700; fax: 0161 797 1235; e-mail: nhayes@implex.co.uk* .

Seminar on ***Guidelines for the Seismic Rehabilitation of Buildings*** *. Sponsors: Applied Technology*

Council (ATC), Building Seismic Safety Council (BSSC), and the Structural Engineers Association of California (SEAOC). Kamuela, Big Island, Hawaii: September 30, 1996 . The Federal Emergency Management Agency recently underwrote the development of a volume, ***Guidelines for the Seismic Rehabilitation of Buildings*** , and supporting documents to advise engineers, architects, building officials, and others concerning the upgrading of existing structures to withstand earthquakes. This seminar provides a half-day tutorial on the documents and the techniques described th erein. For additional information contact *ATC, 555 Twin Dolphin Drive, Suite 550, Redwood City, CA 94065; (415) 595-1542; fax: (415) 593-2320; e-m ail: atc@atcouncil.org* .

World Assembly of Nongovernmental Organizations (NGOs) for Disaster Reduction. Sponsors: Global Forum of NGOs for Disaster Reduction. Kathmandu, Nepal: October 9-16, 1996 . This conference will forgo formal plenary presentations in favor of smaller informal discussions that will enable participants from all countries and organizations to meet and share their concerns and insights; the goal is to improve links among the wor ld's nongovernmental organizations involved i n disaster reduction. An entire half day will address "how government, nongovernment, and the private sector can work together for disaster reduction." The conference is intended for representatives of NGOs, government agencies and legislators, scientific and academic institutions, the United Nations, and other international organizations concerned with disaster management. For details, contact the *Joint Assistance Center, G-17/3, Qutab Enclave-1, Gurgaon-122002, Haryana, India; tel: 0124-352141, 35383 3; fax: 0124-351308; e-mail: nkjain@jac.ernet.in* ; or, *Ms. Bishnu Thapa and Gopal Sivakoti, INHURED-International, P.O. Box 2151, Kathmandu, Nepal* .

Joint Dam Safety Conference. Sponsors: Canadian Dam Safety Association (CDSA) and Canadian Congress on Large Dams (CANCOLD). Niagara Falls, Ontario, Canada; October 6-10, 1996 . Besides pre- and postconference workshops and tours, plenary speeches, and numerous sessions on various aspects of dam safety, this conference will feature discussion regarding the formation of a single dam authority for Canada through the amalgamation of CDSA and CANCOLD. For complete conference details contact *Maurice Lewis, CDSA Co-Chair, 1557 Eagleview Drive, Pickering, Ontario, Canada L1V 5H7; tel/fax: (905) 420-7119* ; or, *Jim Tang, CANCOLD Co-Chair, tel: (416) 592-5219; fax: (416) 592-4446* .

Federal Emergency Management Agency Emergency Education Network (EENET) Program: "Training Civilians for Disaster Response." October 10, 1996; 2:00-4:30 p.m., EDT. This video broadcast will feature several front-line emergency managers who will describe their approaches to preparing civilians to respond quickly and appropriately following a major disaster. During the broadcast, viewers will be able t o speak with th ese representatives via EENET's toll free number: *(800) 527-4893* ; or e-mail: *sisenber@fema.gov.* Also during the broadcast, EENET will premier a new training videotape that demonstrates a civilian disaster response team in action. For satellite broadcast information and other details, contact *EENET, National Emergency Training Center, Room E-217, Emmitsburg, MD 21727; (800) 527-4893 or (301) 447-1068; fax: (301) 447-1363; e-mail: sdownin@fema.gov* .

Conference on Crisis Management and Disasters. Sponsor: Crisis Research Unit, Ain Shams University. Cairo, Egypt: October 12-13, 1996 . This is the first conference offered by the new Crisis Research Unit

in Cairo (see the article on p. 22 of this ***Observer***). Persons interested in participating should contact the *Crisis Research Unit, Faculty of Commerce, Ain Shams University, El Abbassia Cairo, Egypt; tel/fax: 00-202-2619509* .

Ninth Annual Emergency Preparedness Conference. Sponsors: British Columbia Rehabilitation Society and others. Vancouver, British Columbia, Canada: October 22-24, 1996 . This annual conference was instituted to improve emergency preparedness among all sectors of society by promoting awareness; providing information, tools, and solutions to problems; sharing experiences; showcasing technologies; and creating networking o pportunities. The meeting includes three preconference workshops and five hands-on workshops, as well as plenary sessions, concurrent sessions, and an exhibition. For a conference booklet, contact *Emergency Preparedness Conference, BC Rehab, 700 West 57th Avenue, Vancouver, BC, Canada V6P 1S1; (604) 321-3231; fax: (604) 321-7833* .

Regional Workshop on Emergency Telecommunications in the Caribbean and Central American Region. Organizers: Secretariat of the Working Group on Emergency Telecommunications (WGET), c/o United Nations Department of Humanitarian Affairs, Geneva. Port-of-Spa in, Trinidad: November 5-9, 1996 . All persons concerned with communications during disasters and emergencies in the Caribbean/Central American region are invited to participate in this conference. For specifics, contact *Hans Zimmermann, United Nations Department of Humanitarian Affairs, Palais des Nations, CH-1211 Geneva 10, Switzerland; tel: +41 22 917-3516; fax: +41 22 917-0023; e-mail: hans.zimmermann@itu.ch* .

Central United States Earthquake Consortium (CUSEC) Annual Meeting. Memphis, Tennessee: November 18-20, 1996 . Mitigation will be th e focus of this year's CUSEC conference. Topics to be addressed include the new National Earthquake Program (see the ***Observer*** , Vol. XX, No. 6, p. 10), methods for loss estimation, implementation of mitigation strategies, financing mitigation , the role of business councils in mitigation, marketing mitigation, and education and seismic safety. For more information, contact *Jim Wilkinson, Central United States Earthquake Consortium, 2630 East Holmes Road, Memphis, TN 38118-8001; (901) 345-09 32; fax: (901) 345-0998; e-mail: cusec@ceri.memphis. edu* .

Disaster '97 International Disaster Management Conference: "Expanding Your Knowledge Base." Sponsors: Florida Emergency Medicine Foundation and others. Orlando, Florida: January 30-February 2, 1997 . Intended for all persons and agencies involved with disaster planning, management, and response, Disaster '97 will cover basic disaster planning, terrorism planning and response, sheltering and evacuation, hospital management for disaster response, haza rdous materials incidents, multiple casualty management, search and rescue, wildfire preparedness and management, disasters and the media, medical legal issues, on-line disaster resources, volunteer planning, and other issues. For a conference brochure, c ontact the *Florida Emergency Medicine Foundation, 3717 South Conway Road, Orlando, FL 32812; (800) 766-6335 or (407) 281-7396; fax: (407) 281-4407* .

PROMIT 97 International Exposition and Congress: "Solutions for Natural and Man -Made Disasters." Miami Beach, Florida: April 14-16, 1997 . Government agencies, universities, associations, and all other

groups involved in disaster preparedness, prevention, response, recovery, and reconstruction are welcome to participate in PROMIT 97-- billed by its organizers as the world's premier marketp lace for solutions to disaster problems. Persons interested in attending or making presentations should contact *Rick Lelchuk, Judy Zelko, or Carmen Torres, c/o The Meeting Source, Inc., 5240 N.W. 163rd Street, Miami, FL 33014-6226; (800) 339-6338 or (305) 624-6247; fax: (305) 624-0441; e-mail: 74117.54@compuserve.com* .

International Association of Hydrological Sciences (IAHS) 5th Scientific Assembly. Rabat, Morocco: April 23-May 3, 1997 . The organizers of the 1997 IAHS assembly anticipate including symposia on sustainable water resources under hydrological extremes and climate change, GIS and remote sensing for water resources management, erosion and sedimentation, karst hydrology, flow forecasting, water resources assessment, and other issues surrounding water resources management. For further information contact *Gordon Young, Secretary General, IAHS, Department of Geography, Wilfrid Laurier University, Waterloo, Ontario, Canada N2L 3C5; (519) 884-1970, ext. 2387; fax: (519) 846-0968; e-mail: gyoung@mach1.wlu.ca* .

21st Annual Conference of the Association of State Floodplain Managers (ASFPM). Little Rock, Arkansas: April 28-May 1, 1997 . As usual, the ASFPM annual meeting will attempt to 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 m eet and exchange ideas, concerns, and solutions. To receive a conference announcement, contact *Alison Nicholson, Conference Director, Arkansas Soil and Water Conservation Commission, 101 East Capitol, Suite 350, Little Rock, AR 72201; (501) 682-3982; fax: (501) 682-3991* .

CPM '97--Contingency Planning and Management Conference and Exhibition. Sponsor: Contingency Planning and Management magazine. Orlando, Florida: May 21-23, 1997 . CPM '97 is directed toward decision makers involved in business continuity planning. It will address all aspects of contingency planning, response, and recovery through basic, intermediate, and advanced seminars. Persons interested in attending or contr ibuting to the program should contact *Brad Kent, Contingency Planning and Management, Witter Publishing Corporation, 84 Park Avenue, Flemington, NJ 08822; (908) 788-0343, ext. 134; fax: (908) 788-3782* .

Wind Erosion: An International Symposium/Workshop. Sponsor: Wind Erosion Research Unit, Kansas State University . Manhattan, Kansas: June 3-5, 1997 . During the 1930s, prolonged drought across the prairies of North America culminated in the dust storms and soil degradation that resulted in America's "Dust Bowl." Subsequently, the U.S. Department of Agriculture began an intensive research pr ogram on wind erosion in cooperation with Kansas State University. Today, the resulting Wind Erosion Research Unit continues to serve as a focal point for wind erosion research nationally and internationally. This conference, commemorating the 50th annive rsary of the research unit, will bring together leading scientists, conservationists, and policy makers to identify the present and future wind erosion threat; summarize current understanding of wind erosion processes, predict ion, and control; identify s ociety needs; and develop strategies for sustaining agriculture, protecting the environment, and conserving natural resources against wind erosion. Additional information is available from *USDA-ARS,*

NPA, Wind Erosion Research Unit, Throckmorton Hall, Kansas State University, Manhattan, KS 66506; (913) 532-6495; fax: (913) 532-6528; e-mail: sym@weru.ksu.edu; World Wide Web: http://www.weru.ksu.edu/ .

Multihazard Building Design Summer Institute (MBDSI). Sponsor: Federal Emergency Management Agency, Emergency Management Institute. Emmitsburg, Maryland: July 14-25, 1997 . The MBDSI is intended to demonstrate the latest design techniques for mitigating the effects of floods, fires, earthquakes, and hurricanes to faculty of colleges of engineering and architecture around the U.S. Participants are encouraged to return to th eir respective institutions and incorporate the ideas presented at the MBDSI into their curricula.
Two courses are presented each year. A course July 14-18 will cover earthquake and fire safety design; the following course, July 21-25, will cover flood and wind design. The courses are tuition free and qualified applicants are eligible for reimbursement for transportation to the National Emergency Training Center. For more information, contact *Joseph K. Bills, Emergency Management Institute, 16825 South Seton Avenue, Emmitsburg, MD 21727; (301) 447-1356; fax: (301) 447-1598; e-mail: jbills@fema.gov; World Wide Web: http://www.fema.gov/EMI/mbdsi3.htm* .

Annual Conference on Flood Warning Systems, Technologies, and Preparedness: Second National Conference and Exposition of the National Hydrologic Warning Council in conjunction with the 10th Annual Conference of the Southwestern Association of ALERT System s. St. Louis, Missouri: October 29-31, 1997 . This conference is the largest in the U.S. devoted specifically to flood warning systems, technologies, and preparedness. The 1997 edition will include a wide variety of sessions and workshops covering everything from basic to highly technical knowledge . In addition, information will be presented on financial and technical support available from federal and state agencies. The conference will include an exposition demonstrating the latest flood warning technologies and services. For a conference circula r, contact *Chris Crompton, National Hydrologic Warning Council, 10852 Douglass Road, Anaheim, CA 92806; (714) 567-6360; fax: (714) 567-6340; or, Andy Rooke, (800) 776-5272, ext. 7945; e-mail: rooke@io.com; World Wide Web: http://www.io.com/~rooke/alert/nhwc* .

Sixth U.S. National Conference o n Earthquake Engineering (6NCEE). Sponsors: Earthquake Engineering Research Institute (EERI) and others. Seattle, Washington: May 31-June 4, 1998 . The theme of 6NCEE will be "Seismic Design and Mitigation for the Third Millennium." To receive a conference brochure and the call for papers and panel proposals, to be issued in January, contact *EERI, 499 14th Street, Suite 320, Oakland, CA 94612-1934; (510) 451-0905; fax: (510) 451-5411; e-mail: eeri@eeri.org; World Wide Web: http://www.eeri.org* .

World Forum on Seismic Safety of Big Cities. Sponsors: International Commission on Earthquake Prognostics and the Turkish Earthquake Foundation. Istanbul, Turkey: September 1998 (dates to be announced). Themes f or this forum include: new approaches to the understanding of earthquake activity; hazard assessment; risk analysis and evaluation; measures of protection; disaster preparedness and emergency control; public awareness and preparedness; and earthq uake scenarios for big cities. Numerous workshops will be held on various aspects of seismic hazard determination, monitoring,

modeling, and management. Persons wanting to receive future announcements should contact the *Turkish Earthquake Foundation (TDV), c/o Hasan Boduroglu, Technical University of Istanbul, Faculty for Civil Engineering, 80626 Ayazaga/Istanbul, Turkey; tel: 90-212-2856655; fax: 90-212-2856656; e-mail: inbodur@tritu.bitnet;* or the *International Center for Earthquake Prognostics, c/o An dreas Vogel; tel: 49-30-7792268; fax: 49-30-7757083; e-mail: 101744.1577@compuserve.com .*

Help Wanted

HRRC Seeks Director

Texas A&M University and A&M's College of Architecture are currently soliciting applications for the position of director of the university's Hazard Reduction and Recovery Center (HRRC). The HRRC is a multidisciplinary center conducting basic and applied research on hazard and disaster mitigation, preparedness, response, and recovery.

Eligible candidates must hold a Ph.D. and have an outstanding record of scholarship and grant acquisition in disciplines related to the study of hazards and disasters. Their scholarly record must merit senior faculty status with tenure at a major graduate , research university. Previous administrative experience is preferred, and prior experience in administration of research grants is required. Although applicants from all hazard-related disciplines are encouraged to apply, preference will be given to app licants from disciplines associated with the Departments of Architecture, Construction Science, and Landscape Architecture and Urban Planning within the College of Architecture.

The director is the chief administrative officer of the HRRC and is responsible for managing its budget, support staff, and activities. The director is also expected to contribute to the undergraduate and graduate teaching missions of her/his department.

Application review began in August. However, the process will continue until an acceptable candidate is found, and interested persons should still apply. Applicants should submit a copy of their curriculum vitae and the names and addresses of three refere nces to *Walter V. Wendler, Dean, College of Architecture, Texas A&M University, College Station, TX 77843-3137 .*

For a complete position announcement, contact the *HRRC, College of Architecture, Texas A&M University, College Station, TX 77843-3137; (40 9) 845-7813; fax: (409) 845-5121 .*

Likewise IHC

The International Hurricane Center, a center of the Florida State University System housed at Florida International University (FIU), is seeking applications for a director who also qualifies for the "We Will Rebuild" Eminent Scholar Chair. The IHC is a multidisciplinary center created to initiate basic and

applied research to mitigate damage caused by hurricanes and tropical storms. FIU describes this position as a unique opportunity for a person of vision to develop a new center established an d supported by private, state, and university funds.

Applicants must have a demonstrated record of scholarly achievement, strong organizational and leadership skills in a multicultural, interdisciplinary environment, and the ability to work effectively with both the private and public sectors. Candidates sh ould hold a terminal degree and demonstrate scholarship meriting senior faculty status with tenure in order to be appointed to the Eminent Scholar Chair. Applicants from hazards-related disciplines, including the social and policy sciences, engineering, a rchitecture, and related disciplines are encouraged to apply, with preference given to individuals with credentials related to the mitigation of damage to the built environment. Additional preferred experience includes a strong record of grant procurement , involvement in international or comparative research, and practical experience related to hazard mitigation.

Nominations and applications consisting of a letter, curriculum vitae, and list of references should be sent to *Betty Morrow, c/o Office of the Provost, Florida International University, Miami, FL 33199* . Further information is available by calling *(305) 348-2151* or e -mailing *morrowb@solix.fiu.edu* . Applications and nominations are due October 15, 1996.

Ain Shams Establishes Crisis Research Unit

The Faculty of Commerce of Ain Shams University, Cairo, Egypt, recently established a Crisis Research Unit (CRU)--the first center of its kind in Egypt and the Arab world. The unit will focus on:

- conducting scientific research on disasters and industrial crises, as well as on organizational and societal responses to community-wide disasters and other stress situations;
- conducting training programs to help managers develop skills in forecasting potential crises, preparing prevention plans, managing crises, and developing communication plans;
- providing consulting services for various organizations and aiding in the preparation and evaluation of crisis management plans and the establishment of crisis management teams;
- organizing seminars and conferences on crisis management;
- hosting scholars and consultants for the exchange of knowledge and experience; and
- establishing a crisis management library.

Among the issues to be studied by the CRU are product recall, industrial accidents, violence in the workplace, environmental accidents, fire, explosion, natural disasters, labor strikes, unexpected litigation, negative press reports, false rumors, industr ial espionage, and terrorism.

CRU will hold its first Conference on Crisis Management and Disasters October 12-13, 1996, at the university (see the "Conferences and Training" section of this ***Observer***).

For more information, contact *M. Rashad El Hamalawy, Crisis Research Unit, Faculty of Commerce, Ain Shams University, El Abbassia Cairo, Egypt; tel/fax: 00-202-2619509* .

St. Petersburg JC Offers EM Degree

The Institute of Emergency Administration and Fire Science, St . Petersburg Junior College, Pinellas County, Florida, now offers a two-year Associate of Science degree in Emergency Administration and Management (EAM). The program offers a wide array of bo th residence courses and instruction via the Internet. The program is intended for fire service, law enforcement, emergency medical services, and emergency management personnel. However the courses should also be of interest to urban and community planner s, public works personnel, public and nonprofit disaster relief organizations, and businesses. For more information, check the college Web site: *http://beat1.spjc.cc.fl.us/em/em.html* ; or contact *George Buck, Institute of Fire Science and Emergency Management, St. Petersburg Junior College, Allstate Center, P.O. Box 13489; St. Petersburg, FL 33733-3489; (813) 341-4479; fax: (813) 341-4547; e-mail: buckg@email.spjc.cc.fl.us* .

IIPLR Spotlights Mitigation

The Insurance Institute for Property Loss Reduction (IIPLR) is looking for communities that have undertaken exemplary catastrophe mitigation programs in 1996. Outstanding programs will receive the IIPLR Community Spotlight Award.

The deadline for submitting entries is March 14, 1997. Applications are available from *IIPLR, 73 Tremont Street, Suite 510, Boston, MA 02108-3910; (617) 722-0200; fax: (617) 722-0202.*

Don't Forget

World Disaster Day

Wednesday, October 9

This year's theme: *Cities at Risk*

Decade for Natural Disaster Reduction

RECENT PUBLICATIONS

All Hazards

Computing and Communications in the Extreme: Research for Crisis Management and Other Applications. *Computing Science and Telecommunications Board, National Research Council. 1996. 174 pp. $33.00, U.S.; $39.75, international orders. Copies are available from the National Academy Press, 2101 Constitution Avenue, N.W., Box 285, Washington, DC 20055; (800) 624-6242. The report is also available free via the World Wide Web at: http://www.nap.edu/readingroom/books/extreme .*

Computing and Communications in the Extreme contains the final report of the Computer Science and Telecommunications Board's Workshop Series on High Performance Computing and Communications. These workshops brought together specialists and researchers to explore unmet technological needs and their implications for research. In particular, the series focused on crisis management applications, such as response to and recovery from natural and technological disasters. Chapters examine needs in computing and communications, the research problems they c reate, research challenges for crisis management, support of human activities, system creation and interoperability, adaptability to uncertainty and change, and the performance of distributed systems.

What Disaster Response Management Can Learn from Chaos Theory. *Gus A. Koehler, Editor. 1996. 222 pp. Free. Copies can be obtained by writing Gus Koehler, California Research Bureau, P.O. Box 942837, Sacramento, CA 94237-0 001; e-mail: gkoehler@library.ca.gov. Copies are also available via the World Wide Web at: http://library.ca.gov/california/State_Library/.*

In the hit movie ***Jurassic Park*** , Jeff Goldblum's character uses a drop of water to explain chaos theory, demonstrating that water may run down a hand one way the first time and a different direction the second time. He makes the point that life is unpredictable because there are always factors we do not fully understand. This document contains the proceedings of a conference held by the California Research Bureau and the California Emergency Medical Services Authority in May 1995 to determine what lessons chaos theory might offer disas ter managers. *What Disaster Response Management Can Learn from Chaos Theory* notes the unpredictability of disasters, as well as our responses to them, describes chaos theory in this context, and lists administrative and legislative options. Individual papers examine the massive explosion that rocked the Indianapolis Coliseum duri ng a "Holiday on Ice" performance in 1963, nonlinear analysis of disaster response data, disaster responders' perception of time, theoretical approaches to characterizing emergency medical responses to major disasters, self-

organizing processes in disasters, and lessons for managing periods of extreme instability.

Natural Catastrophes and Major Losses in 1995: Decrease Compared to Previous Year, but Continually High Level of Losses Since 1989. *Sigma #2. 1996. 40 pp. Free via the World Wide Web at: http://www.swissre.com . For further information about this report, contact the Swiss Reinsurance Company, Economic Research Section, P.O. Box CH-8022, Zurich, Switzerland; tel: +41 1 285 25 51; fax: +41 1 285 47 49.*

This study examines insured losses due to natural disasters throughout the world in 1995. Most notably, the Swiss Reinsurance Company found that in 1995, insured losses were about $14.6 billion, which was 31% lower than in 1994, but considerably higher than the average losses per year from 1970 to 1994. Total losses were estimat ed to be more than 10 times insured losses, and half of all losses w ere due to the Kobe earthquake in Japan. The report notes that losses in excess of $1 billion for individual ev\ents are increasing, particularly since 1988, and that the most common cau se of losses is severe meteorological events. Finally, the report note s that the U.S. continues to experience the greatest insured losses and has done so for the past 25 years, primarily because Americans are better insured than people in other countries .

"Risk Management and Natural Disasters," ***Tephra****, Vol. 1 5, No. 1 (June 1996). Individual free copies are available on request from the Ministry of Civil Defence, P.O. Box 5010, Wellington, New Zealand; tel: +64-4-473 7363; fax: +64-4-473 7369; e -mail: okanek@actrix.gen.nz; World Wide Web: http:// www.mocd.govt.nz .*

This issue of ***Tephra*** examines why accurate risk analysis does not always lead to public understanding of risk. It contains articles on the New Zealand government's efforts to promote risk management techniques in dealing with natural disasters and technological accidents, vol canic hazards created by Mount Ruapehu, natural hazards and risk management, storm surge on the New Zealand coast, rehousing after a disaster, and funding the restoration of essential community services following a disaster.

Responding to the Needs of People with Serious and Persistent Mental Illness in Times of Major Disasters. *Publication No. PB96-159280HDV. 1996. 70 pp. Free. Copies are available from th e U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, National Mental Health Services Knowledge Exchange Network, P.O. Box 42490, Washington, DC 20015; (8 00) 789-2647; fax: (301) 656 -4012.*

This guide for state and local mental health agency administrators, program planners, and service providers presents the basic principles of disaster recovery, an introduction to crisis counseling programs and services for those who are mentally ill, and information on the state's role in disaster response in relation to mental health, local disaster services for people with psychiatric disabilities, crisis counseling for disaster survivors with mental illness, and disaster response in a psychosocial reha bilitation program.

"Women and Children in Disasters." ***Biblio-des****, No. 19. 1995. 20 pp. Free.*
"Construction and Disasters." ***Biblio-des****, No. 20. 1996. 151 pp. Free.*

"Economic Aspects and Natural Disasters in Latin America and the Caribbean." ***Biblio-des****, No. 21. 1996. 48 pp.*
To obtain these bibliographies, contact the Regional Disaster Documentation Center, Apartado postal 3745-1000, San José, Costa Rica; (506) 296-3952; fax: (506) 231-5973; e-mail: cddcor@paho.org.
Biblio-des is a periodic bibliographic bulletin issued by the Regional Disaster Documentation Center listing publications on specific disaster-related topics. The three most recent offerings are listed above. "W omen and Children in Disasters" cites docume nts that examine the impacts of disasters on these populations as well as their roles in disaster preparedness in the home and in the community. "Disaster Prevention and Construction" lists various studies of mitigation measures for earthquakes, hurricanes, and other natural disasters, and includes guidelines on specific construction methods for a variety of structures. "Economic Aspects and Natural Disasters in Latin America and the Caribbean" points to publications that address the d irect and indirect economic costs of disasters in those regions, as well as their impacts on social development. All three documents are printed in both English and Spanish. An English version is also available via the Internet at: *gopher://gopher.paho.org:70/11/info/ped/center/info/DIBLIOD.ENG* .

International Conference on Disaster Mitigation in Health Facilities: Mexico City, 26-2 8 February 1996. *1996. 310 pp. Free. Copies can be requested from the Pan American Health Organization, 525 Twenty-third Street, N.W., Washington, DC 20037; (202) 861-4325; fax: (202) 775-4578; e-mail: disaster@paho.org.*
Since 1960, natural disasters in Latin America and the Caribbean have caused more than 180,000 deaths and over $54 billion in property damage. The health sector has been particularly hard hit--hundreds lost their lives when health facilities collapsed, an d others were victims of interrupted health services at critical times. This proceedings volume contains papers presented at a meeting to address this problem. Topics include the economic impacts of disaster on the health infrastructure, the role of inter national development financing agencies, investment in health infrastructure, seismic mitigation, hospital response in seismic disasters, the 1985 Mexico earthquake, Colombian political commitment to hospital seismic risk reduction, the impact of hurrican es on health facilities, reconstruction and mitigation in Jamaica after Hurricane Gilbert, and seismic reinforcement of hospitals in Costa Rica.

The Canadian Fire Officer's Guide to Emergency Management. *Ron Kuban, Editor. 1996. 420 pp. $35.00 (US). Available from Turning Point Consulting Corporation, 3116 36B Avenue, Edmonton, Alberta, Canada T6T 1H4; (403) 463-5252; fax: (403) 468-4224; World Wide Web: http://www. turningpointcorp.com* .
The Canadian Fire Officer's Guide was created to help local officials through all phases of emergency management. Although directed primarily toward fire officers, it draws on varied perspectives and approaches; contributors to the volume include experienced fire officers and emergency ma nagers from across Canada. Chapters discuss disasters and their consequences, legal foundations of fire and emergency services, emergency planning, exercise design and implementation, fire command systems, response, medical considerations, small community preparedness and response, short- and long-term recovery, and lessons for Canadian fire officers.

Natural Hazard Mitigation Insights. *1996. Single copies are free. Contact the Insurance Institute for Property Los s Reduction (IIPLR), 73 Tremont Street, Suite 510, Boston, MA 02108-3910; (617) 722-0200; fax: (617) 722-0202.*

Insights is a new series of irregularly published newsletters, created by IIPLR, to inform the public of ways to reduce t he impacts of natural disasters. To date, the publication has addressed four topics. The first brochure looks at tornadoes, including their ph ysical characteristics and frequency, personal safety, property protection, in-residence sheltering, and structural mitigation. The second asks the question: "Why Building Codes?" and discusses the benefits of codes, the need for adequate enforc ement, and the costs versus the value of codes. The third examines freezing and bursting pipes, describes how pipes burst, how to mitigate the problem, and regional impacts on plumbing. The fourth edition covers the wind-resistance of various roof coverin gs.

Canadian Geographic *, July/August 1996. Membership in the Royal Canadian Geographical Society is required to subscribe and costs $24.95 (Canadian) per year for Canadians, $32.95 for Americans, and $52.95 for international subscribers. To join, contact the Royal Canadian Geographical Society, 39 McArthur Avenue, Vanier, Ontario, Canada K1l 8L7; (613) 745-4629 or (800) 267-0824; fax: (613) 744-0947; World Wide Web: http://www.cangeo.ca .*

This issue of the Canadian version of the U.S.'s *National Geographic* magazine contains two items of interest to natural hazards devotees: an article entitled "Tornado! The Spin on Twisters in Canada," complemented by a poster-size map (39" by 26") of Canadian natural hazards, prepared cooperatively by E mergency Preparedness Canada, Natural Resources Canada, the Insurance Bureau of Canada, the Weather Network, and the Canadian Geographic Society. The map provides information on floods, volcanoes, hail, ocean dangers, tornadoes, tsunamis, and landslides a nd snow avalanches, as well as a time line of major natural disasters. It also offers tips on protection from these threats. Copies of the poster/map can also be purchased separately from ***Canadian Geographic*** at the *above address* or from the *Canada Map Office, Geomatics Canada, Ottawa, Ontario, Canada K2A 0E 9; (800) 465-6277; fax: (800) 661-6277.*

Pets in Disaster: Get Prepared. *1996. 4 pp. $4.25 for 25 copies. Available from your local Red Cross chapter.*

Because pets are not permitted in Red Cross disaster shelters, with recent major disasters there has been increased interest in how to deal with pets during evacuations and following catastrophes. This brochure, produced by the American Red Cross and the Humane Society of the United States, provides information about creating a pet disaster plan. It covers steps for identifying a safe place to take pets; gathering pet disaster supplies; preparing for an approaching disaster; and anticipating the special n eeds of birds, reptiles, and small mammals.

Chapel Hill Announces New Series

The Center for Urban and Regional Studies at the University of North Carolina at Chapel Hill recently

announced its new Natural Hazard Working Paper Series, covering research on hazard mitigation efforts carried out under the Robert T. Stafford Disaster R elief and Emergency Assistance Act of 1988 for hurricanes and severe coastal storms, earthquakes, and flooding. These studies evaluate the content of mitigation plans, as well as expenditures, outcomes, and processes, and offer recommendations for improvi ng mitigation policy. Fifteen working papers have been or will be published. They are listed below with their expected publication date.

WP1: Assessing Planning and Implementation of Hazard Mitigation Under the Stafford Act: Study Approach*, by David R. Godschalk. June 1996.*

WP2: Opinions of State Hazard Mitigation Officers About Mitigation Planning and Implementation: Report of a Survey*, by Mark Healey and Philip Berke. June 1996.*

WP3: Analysis of Content and Quality of State Hazard Mitigation Plans Under Section 409 of the Stafford Act*, by Edward J. Kaiser and Matthew Goebel. July 1996.*

WP4: Analysis of Section 404 Hazard Mitigation Grants Under the Stafford Act*, by Charles C. Bohl and David R. Godschalk. July 1996.*

WP5: Opinions of Federal Hazard Mitigation Officers About Mitigation Planning and Implementation: Report of a Survey*, by Kevin Young. August 1996.*

WP6: National Trends in Mitigation Policy: An Evolving Framework*, by Timothy Beatley. August 1996.*

WP7: Policy, Capacity, and Commitment in Hazard Mitigation: Intergovernmental Linkages*, by Philip Berke and Charles C. Bohl. August 1996.*

WP8: Ethical Dilemmas in Hazard Mitigation*, by Timothy Beatley. September 1996.*

WP9: Hazard Mitigation in Missouri Following the Great Midwest Floods of 1993*, by Edward J. Kaiser and Matthew Goebel. June 1996.*

WP10: Hazard Mitigation in Iowa Following the Great Midwest Floods of 1993*, by David R. Godschalk and Timothy Beatley. June 1996.*

WP11: Hazard Mitigation in Tennessee*, by Edward J. Kaiser and Charles C. Bohl. June 1996.*

WP12: Hazard Mitigation in Massachusetts *, by Matthew Goebel and David J. Brower. August 1996.*

WP13: Hazard Mitigation in Florida Following Hurricane Andrew*, by Timothy Beatley and David J.*

Brower. August 1996.

***WP14: Hazard Mitigation in California Following the Loma Prieta and Northridge Earthquakes**, by Philip Berke and David R. Godschalk. August 1996.*

***WP15: Lessons from Six Mitigation Case Studies**, by David R. Godschalk and Edward J. Kaiser. August 1996.*

The papers cost $5.00 each, including postage; checks should be payable to the "Center for Urban and Regional Studies." Order from the Center for Urban and Regional Studies, C.B. 3410, University of North Carolina at Chapel Hill, Chapel Hill, NC 27514-3410; (919) 962-3074; World Wide Web: http://www.unc.edu/home/basolov/curs001.html .

Floods and Severe Weather

***Impacts and Responses of the Weather Insurance Industry to Recent Weather Extremes**. Stanley A. Changnon, David Changnon, E. Ray Fosse, Donald C. Hoganson, Richard J. Roth, Sr., and James Totsch. 1996. 180 pp. $30.00, plus $3.00 shipping. Order from Changnon Climatologist, 801 Buckthorn Circle, Mahomet, IL 61853; phone/fax: (217) 586-5691.*
The authors of this report recently studied the effects of extreme weather in the U.S. on the weather insurance industry. Specifically, they examined severe weather impacts from 1991 to 1994, the response to these events from the insurance industry, optio ns for softening the hardships created by these events to both the insurance industry and policy holders, and the question of whether the increasing frequency of weather-related losses is due to climate shifts or natural variability. The report contains c hapters on the specific weather events that caused substantial losses, climatological aspects of that period, impacts on the crop insurance industry, effects on the property-casualty insurance industry, impacts on and responses of the property catastrophe reinsurance market, and effects on and responses by the insurance brokerage sector.

***Flood Report Analysis.** Water Resources Report No. 54. 1996. 48 pp. Free, single copies only. To obtain a copy, contact Steve MacIntosh, Missouri Department of Natural Resources, Water Resources Program, P.O. Box 176, Jefferson City, MO 65102; (573) 751-2867; fax: (573) 751-8475.*
This document analyzes four publications: ***Report and Recommendations of the Governor's Task Force on Flood Plain Management; Sharing the Challenge: Floodplain Management into the 21st Century; National Flood Policy in Review--1994**;* and ***The Floods of '93--State of Missouri.*** These documents were published by state and federal agencies as policy and planning reports following the widespread flooding in the Midwest in 1993. ***Flood Report Analysis*** sought common conclusions in the reports that could improve Missouri's approach to dealing with floods. The analysis discusses floodplain management, hydrology, post-flood disaster assistance, lending and flood insurance, levees, buy-outs and hazard mitig ation, open space and environmental considerations, and hazardous materials issues.

Earthquakes and Other Geologic Hazards

Construction Quality, Education, and Seismic Safety. *EERI Endowment Fund White Paper. 1996. 68 pp. $5.00. Copies can be purchased 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.*
In an effort to improve the quality of seismically resistant construction, the EERI Endowment Fund Committee commissioned a study to examine construction practices and their contribution to earthquake damage. The study focused on seismic resistance inform ation in education programs for those who construct and inspect buildings. Recent earthquakes have shown that deficient construction and inspection processes are responsible for a considerable amount of unnecessary damage. The pa per provides a list of &q uot;fundamental knowledge" that construction professionals should have, summarizes the types of training available, evaluates training techniques and materials, and recommends improvements in materials and methods of delivery.

Abstract Journal in Earthquake Engineering *. Vol. 26, No. 1 (Fall 1996). A subscription to Volumes 1 and 2 costs $100.00, U.S., Canada, and Mexico; $125.00, all other countries. California residents add 8% sales tax. Order from* ***Abstract Journal in Earthquake Engineering,*** *Earthquake Engineering Research Center, 1301 South 48th Street, Richmond, CA 94804-4698. Checks should be payable to the "Regents of the University of California." Visa and Mastercard are also accepted.*
The latest version of the ***Abstract Journal*** provides 2,400 abstracts from technical journals, research reports, books, monographs, and other publications. Topics include seismology in general, engineering seismology, strong-motion seismometry, soil dynamics, structural dynamics, earthquake-resistan t design and construction, earthquake damage, and earthquakes as natural disasters. The ***Journal*** includes a subject index, an author index, and an alphabetical list of titles.

Survey of Damage to Historic Adobe Buildings After the January 1994 Northridge Earthquake *. E. Leroy Tolles, Frederick A. Webster, Anthony Crosby, and Edna E. Kimbro. GCI Scientific Program Report 1996. 1996. 176 pp. $20.00, plus $3.00 shipping. Order f rom the Getty Conservation Institute, 4503 Glencoe Avenue, Marina del Rey, CA 90292-6537.*
Spanish colonial missions and Mexican rancho and pueblo adobe structures are among California's oldest structures and are the only above-ground remains of t he state's original settlement by the Spanish and Mexican peoples. The Northridge earthquake of 19 94 caused substantial damage to some of these historic buildings, but it also provided an opportunity to assess the damage that could occur elsewhere. This document contains the results of a survey of the damage to these buildings and an evaluation of the ir seismic performance in order to help owners, building officials, cultural resource managers, architects, and engineers limit future risks to these buildings.

Images of Kobe: Prospects for Wellington, Lessons for New Zealand *. Wellington Earthquake Lifelines Group Report. 1995. 166 pp. $50.00 (U.S.). Order from the Wellington Earthquake Lifelines Group, P. O. Box 10-804, Wellington, New Zealand; tel: (04) 499 7256; fax: (04) 499-7253.*
The Wellington Earthquake Lifelines Group was established in 1993 to coordinate efforts to reduce the

vulnerability of New Zealand's capital to damage from earthquakes. Following the Great Hanshin earthquake in 1995, the Wellington group sent representati ves to study the quake's impacts on Kobe, Japan's lifelines and to identify lessons for New Zealand. This report describes the physical characteristics of the Kobe quake; its impacts on water supplies, wastewater services, transportation, port facilities, gas supplies, electrical networks, and telecommunications; the political response; economic aspects; housing impacts; and implications for emergency management. The report also includes a list of lessons and key recommendations for New Zealand.

Using Earthquake Hazard Maps for Land Use Planning and Building Permit Administration *. Report of the Metro Advisory Committee for Mitigating Earthquake Damage. 1996. 60 pp. $7.00, plus $1.00 shipping. Copies are available from Susan Lorain, Metro Regional Government, Data Resource Center, 600 N.E. Grand Avenue, Portland, OR 97232; (503) 7 97-1725; fax: (503) 797-1909.*
Recent studies indicate that Portland, Oregon, could suffer a major damaging earthquake. In an effort to guide safe land use decisions and building regulation, the state of Oregon's Department of Geology and Mineral Industries and the Metro Regional Gover nment mapped the earthquake hazard in the metropolitan area. These maps port ray such seismic hazards as landslides, liquefaction, and ground amplification. In support of this effort, this report describes the mapping project and the use of maps for land use planning in a seismically active area, in building permit administration and project review, and in the design of local ordinances.

Landslides: Investigation and Mitigation *. Special Report 247. 1996. 672 pp. $65.00, hardcover; $45.00, paperback. Overseas orders add $8.50 for surface mail or $28.00 for airmail. Or der from the Transportation Research Board, National Research Council, P.O. Box 289, Washington, DC 20055.*
This report provides comprehensive information on landslide research and mitigation. Written by a collection of landslide experts from around the world, it is divided into five broad sections: 1) principles, definitions, and assessment; 2) investigation; 3) strength and stability analysis; 4) mitigation; and 5) special cases and materials. In addition to engineering and geologic discussions, subtopics include the socioeconomic significance of landslides, their types and processes, risk assessment, hazard reduction, and mapping.

Recent CDs

Geologic Hazards Photos*. No. 1115-A27-001. 1996. Two-volume Compact Disk (CD) set. $74.00.*

Seismicity Catalog. *No. 121-A27-001. 1996. Two-volume CD set. $137.00.*

Spitak Earthquake. *No. 1131-A27-001. 1996. Single CD. $74.00.*

All three items are available from the National Geophysical Data Center (NGDC), 325 Broadway, E/GC4, Department 980, Boulder, CO 80302-3328; (303) 497-6826; fax: (303) 497-6513; e-mail:

info@ngdc.noaa.gov; World Wide Web: http://www.ngdc.noaa.gov . Prepayment is required, and checks should be payable to "Commerce/NOAA/NGDC." For delivery outside the U.S., add $10.00 handling fee.

The National Geophysical Data Center is publishing CD-ROMs in a big way. In the first set, ***Geologic Hazards Photos,*** the NGDC took a former slide set and replicated it on CD-ROM. Each image is in a 24-bit TIF format and also a compressed 24-bit PCX format. Windows-based software is included for PCX image access. In addition, each image includes a caption that explains t he particular hazard.

The ***Seismicity Catalog*** contains data for more than 4 million earthquakes that occurred between 2100 B. C. and 1996 A.D. Data include information on epicentral time of orig in, location, magnitudes, depth, and other earthquake-related parameters.

The ***Spitak Earthquake*** CD provides a complete set of data on the devastating earthquake that occurred in Armenia December 7, 1988. It also provides geological and geophysical data collected prior to the quake. DOS and Windows access software are also included.

USGS Response to an Urban Earthquake

Northridge '94

The United States Geological Survey (USGS) has just released via the World Wide Web a summary document on the January 1994 Northridge, California, earthquake. ***USGS Response to an Urban Earthquake--Northridge '94*** (USGS Open File Report #96-263, 100 pp.) includes the findings of approximately 100 scientific investigators and describes the role and actions of the USGS immediately after the earthquake and in the following months.

The USGS efforts were accomplished according to an Interagency Agreement among the four National Earthquake Hazard Reduction Program (NEHRP) agencies: the Federal Emergency Management Agency (FEMA), the National Science Foundation (NSF), the National Inst itute of Standards and Technology (NIST), and the USGS. Additional tasks were assigned t o the USGS, funded by postdisaster appropriations from the president's discretionary fund.

The report, produced by the USGS Scientific Communications Group of the Central Region Geologic Hazards Team, contains 70 full-color illustrations and is designed so that a variety of views and levels of detail can be presented to a broad spectrum of info rmation users. It covers USGS roles and actions in response to the earthquake, the earthquake's setting and impacts, ground response, ground failures and land slides, structural damage to buildings and freeways, seismic hazards assessments for the future, methods of communicating scientific information, and policies and plans for seismic safety.

The electronic versions of ***USGS Response to an Urban Earthquake*** are currently available as both Portable Document Format (PDF) and HyperText Markup Language (HTML) files on the World Wide Web: http://gldage.cr.usgs.gov; or: http://geohazard s.cr.usgs.gov/northridge/ . Printed versions of the report, Open File Report #96-263, are available from the *U.S. Geological Survey, Information Services, Denver, CO 80225-0046; (303) 202-4200.*

Who We Are

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 Foun dation, 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, 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 September 15, 1996.

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The Natural Hazards Center also publishes ***Disaster Research*** , an electronic newsletter, and maintains a World Wide Web site:

Home.html

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