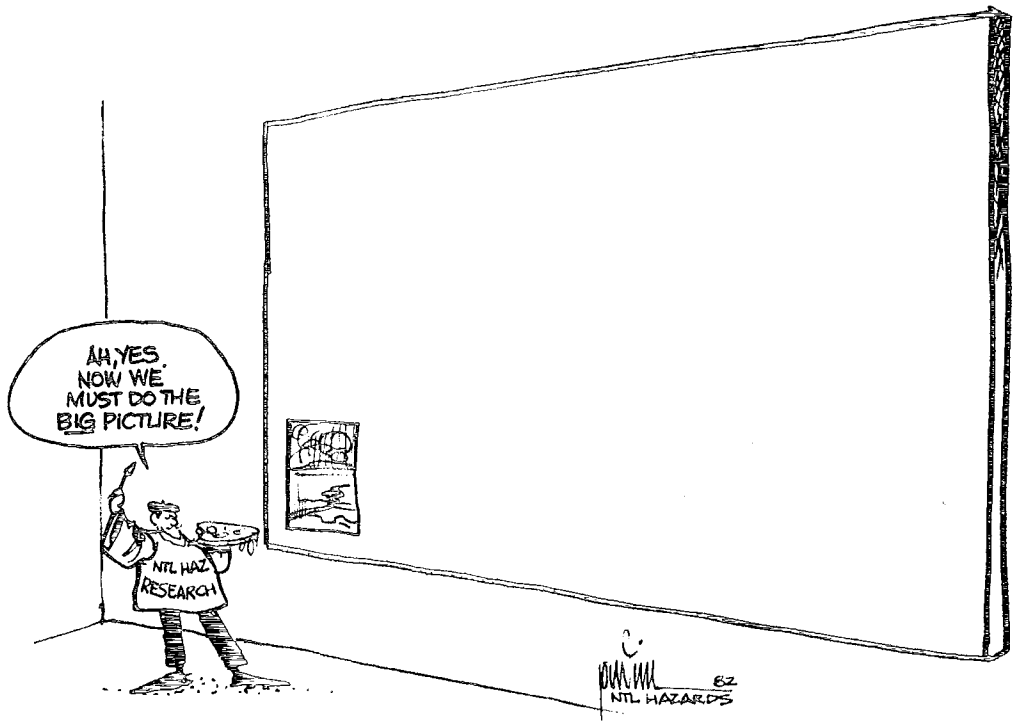
NSF/CEE-83004

Natural Hazards OBSERVER

VOLUME VII NUMBER 3 January, 1983



A STRATEGIC RESEARCH NEXUS
—an invited comment

The University of Colorado's natural hazards research program, under Gilbert White's leadership, has endured for over a decade now. This fall, The Ohio State University's Disaster Research Center will begin its third decade. Soon one of Henry Quarantelli's incoming research assistants may share a birthday with the DRC.

In part stimulated by scholars at both U.S. centers, somewhat parallel research programs have emerged in Canada, England, Sweden, Australia, France, Germany, New Zealand, Italy and Japan. While the continued presence of these programs reflects the personal tenacity, creative vision, and ability to find funds of numerous individual scholars scattered around the world, I believe the survival and proliferation of hazards research programs indicates something far more profound. As we near the end of this century, we should recognize that the study of human response to natural and technological hazards comprises a vitally important research nexus.

While most readers of this newsletter might agree casually with this conclusion, the matter deserves more of our attention; its meaning and implications must be articulated more effectively. As an inter-

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dependent cluster of research topics, hazard studies are located at the intersection of numerous critical avenues. Their strategic location is not undimensional; there are several levels: 1) *applicability*—many findings can be applied immediately by emergency managers, others contribute to altered policy perspectives; 2) *scope*—numerous studies can be done with modest investments; and 3) *theoretical enrichment*—more theories of human behavior can be refined through these empirical studies.

The potential may go unrealized, however, unless certain developmental goals are recognized explicitly and nurtured carefully. Although significant progress has been made to date, at least four goals merit our renewed commitment: 1) increased interaction between researchers and practitioners; 2) improved theoretical integrations, especially strengthened links to broader theories of human behavior; 3) refined data analysis and data-gathering techniques; and 4) development of comparative data sets that are both cross-cultural and multi-hazard.

These thoughts were provoked by a recent invitation to think through a sociological research agenda on flood hazard mitigation. Even more so than its predecessor (the National Science Foundation's ***A Report on Flood Hazard Mitigation,*** 1980), a new volume successfully juxtaposes the physical science dimensions of the flood hazard against the inherent social dynamic. Reviewing the other chapters in the new report (Illinois State Water Survey, ***A Comprehensive Plan of Research on Floods and Their Mitigation,*** forthcoming) intensified my belief that hazards studies truly occupy a unique niche at this point in human history.

The ways in which societies cope with the hazards they confront are telling. Knowledge of those ways can be liberating in the most classic sense of the term. So much more so than when DRC's doors first opened, it is clear that all of us must help others understand the various ways better. Our degree of success—and failure—will have profound impacts on the evolutionary path of a far more fundamental issue confronting all societies: the role of the scientific community in the public policy process. Let us expand our perspective.

Thomas E. Drabek
University of Denver

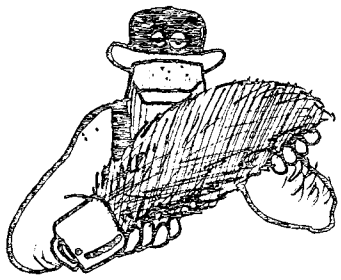
TOOLS AND TALISMANS

A tremendous reduction in the impact of disasters on people and property can be realized by using techniques already known to researchers; however, such information must be expressed in understandable terms to be useful in local communities. ***Practical Mitigation: Strategies for Managing Disaster Prevention and Reduction,*** by James Morentz, Hugh Russell, and Judith Kelly, lives up to its name by capturing those fugitive concepts and strategies, and presenting them in readily comprehensible form.

The authors interviewed over 200 managers engaged in mitigation activities across the country and conducted more than 80 intensive case studies. The experiences drawn from this research were synthesized into 25 tools and techniques for nonstructural mitigation of natural and technological hazards that were, in turn, verified and expanded by participants at five workshops.

This thorough background work and the philosophy of comprehensive emergency management underlie the manual's step-by-step treatment of mitigation needs assessment, selecting techniques appropriate to the locale and its particular risks, coordinating with other levels of government, educating and cooperating with the public and the media, professional training, and using research. The latter half of the guide is devoted to highlights of each of the 80 case studies. These are invaluable in giving a holistic view of how communities dealt with their own hazards, funding levels, public interests, and political situations in carrying out mitigation programs. The case studies are indexed by hazard, making it easy to use them as references when approaching a particular problem.

Obtain ***Practical Mitigation*** for $27.95 from *Research Alternatives, 705 New Mark Esplanade, Rockville, MD 20850, (301) 424-2389.*



LANDSLIDE INFORMATION SOUGHT

Earl Brabb, of the U.S. Geological Survey, has begun a new project to assess the extent of landslide problems on a state-by-state basis, to collect existing information on landslides, to prepare a bibliography of landslide reports and maps, and to determine which mapping methods will be most successful in different regions. He has contacted nearly all state geological surveys and highway departments for information and he is well along in compiling bibliographies. He invites readers of the ***Observer*** to contribute any information they have on landslides, especially reports, newspaper clippings, and theses that are not listed in the ***U.S. Bibliography and Index of Geology.*** Earl would especially welcome references to professional reports by economists, sociologists, foresters, lawyers and planners, and others, to supplement the more familiar literature by geologists and engineers.

Contact Earl Brabb at *U.S. Geological Survey, 345 Middlefield Road, MS 75, Menlo Park, CA 94025, (415) 323-8111, x2203; FTS 467-2203.*

50272-101

REPORT DOCUMENTATION PAGE	1. REPORT NO. NSF/CEE-83004	2.	3. Recipient's Accession No. PB83 193289
4. Title and Subtitle: Natural Hazards Observer, Vol. VII, No. 3, January 1983			5. Report Date: January 1983
			6.
7. Author(s): None listed			8. Performing Organization Rept. No.
9. Performing Organization Name and Address: University of Colorado, Natural Hazards Research and Applications Information Center, Campus Box 482, Boulder, CO 80309			10. Project/Task/Work Unit No. 11. Contract(C) or Grant(G) No. (C) (G) ENV7605682
12. Sponsoring Organization Name and Address: Directorate for Engineering (ENG), National Science Foundation, 1800 G Street, N.W., Washington, DC 20550			13. Type of Report & Period Covered 14.

15. Supplementary Notes
Submitted by: Communications Program (OPRM)
National Science Foundation
Washington, DC 20550

16. Abstract (Limit: 200 words)

This edition discusses the information flow barrier that exists between emergency management practitioners and the research community with regard to natural hazards research. Results are presented of a study undertaken to develop a model for simulating the economic effects of earthquakes and earthquake prediction, and it is concluded that economic losses resulting from an earthquake are likely to be higher when measured from a regional perspective than when measured from a national one. A report recommending that the Federal Emergency Management Agency adopt a better monitoring program to ensure that local communities are actually enforcing flood plain management regulations is summarized. A plea for information on landslides, especially in the form of newspaper clippings and theses, is presented. Conferences, publicatons, and grants are listed. The funding of a project to produce a nonstructural flood mitigation plan for Harlan County, Kentucky is announced.

17. Document Analysis a. Descriptors

Hazards
Disasters
Earthquakes
Floods
Kentucky
Local government
State government
Documents
Meetings
Landslides
Grants

b. Identifiers/Open-Ended Terms

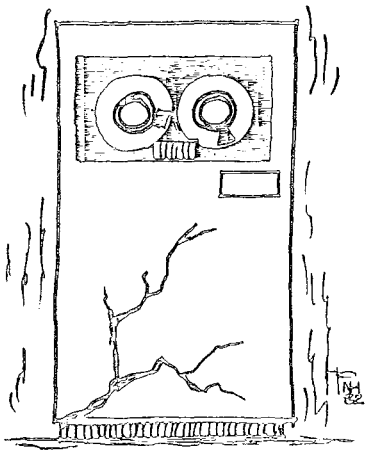
Harlan County (Kentucky)
Italy
G.F. White, /PI

c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report)	21. No. of Pages
NTIS	20. Security Class (This Page)	22. Price

(See ANSI-Z39.18) See Instructions on Reverse

OPTIONAL FORM 272 (4-77)
(Formerly NTIS-35)
Department of Commerce



SIMULATING AN EARTHQUAKE'S ECONOMIC EFFECTS

Economic losses resulting from an earthquake are likely to be higher when measured from a regional perspective than when measured from a national one. Because of this, the level of mitigation activity judged to be appropriate, when expected losses averted are weighed against the cost of the adjustments, may differ according to whether a regional or national point of view is adopted. This is one of the conclusions of a recently completed National Science Foundation study that developed a model for simulating the economic effects of earthquakes and earthquake prediction.

Starting with an existing regional econometric model for the Charleston, South Carolina area, the researchers added supply side equations to represent the structural changes expected in manufacturing investment, the stock of capital in the manufacturing sector, inmigration and outmigration, transportation, and financial and capital flows after an earthquake or earthquake prediction. A process model was incorporated to describe the expected operation of the housing sector. Five simulations were run using the new model—three of unanticipated quakes with different damage levels, one of a prediction of a quake that never occurred, and one of an accurately predicted quake. The simulations yielded figures on the aggregate regional effects on population, employment, and personal income that reveal the regional economy to be resilient and able to recover from a quake or prediction as long as the pertinent aspects of national growth are maintained.

For more information, contact *R. Blaine Roberts, College of Business Administration, University of South Carolina, Columbia, SC 29208, (803) 777-7044.*

FLOOD INSURANCE AND DEVELOPMENT

Flood insurance offers a marginal added incentive for development in coastal and barrier island communities, according to a study released recently by the General Accounting Office. The GAO observed that providing flood insurance and other federal assistance in extremely hazardous areas may be undesirable public policy because of the high potential for loss of life and damage to property should people be encouraged by those programs to keep living in the areas.

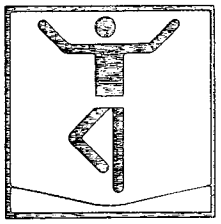
The report recommends that the Federal Emergency Management Agency adopt a better monitoring program to ensure that local communities are actually enforcing flood plain management regulations, and that the flood zones have not been erroneously designated. Further, the Congress is urged to reconsider whether flood insurance and other federal assistance should continue to be available for new or improved structures in coastal high hazard areas.

National Flood Insurance: Marginal Impact on Flood Plain Development; Administrative Improvements Needed, Accession #119428 (GAO/CED-82-105), is available free of charge from the *U.S. General Accounting Office, Document Handling and Information Services Facility, P.O. Box 6015, Gaithersburg, MD 20877.*

COASTAL BARRIER RESOURCES SYSTEM

A general statement of policy has been issued by the Department of the Interior describing the approach it will take in administering the new Coastal Barrier Resources Act (see ***Observer,*** Vol. VII, No. 2, p. 4). Interior has now distributed to the appropriate states, federal agencies, and Congressional committees maps of the Coastal Barrier Resources System—those undeveloped barrier islands along the Atlantic and Gulf coasts that are subject to the limitations of the Act. Copies of the maps are also available for public inspection and purchase. A procedure has been established for making minor and technical boundary modifications, but Interior has indicated its plan to approve such changes only when they are in accord with a strict interpretation of Congressional guidelines and intent.

See ***Federal Register,*** Vol. 47, No. 224, pp. 52388-52392.



ON THE LINE

IF ALL OF THE EXISTING VOLUMES OF NATURAL HAZARDS RESEARCH WERE PLACED IN SANDBAGS, AND IF THESE SANDBAGS COULD THEN BE TRANSPORTED BACK IN TIME TO NOAH, IT IS ALMOST CERTAIN THAT HE WOULD HAVE MORE THAN ENOUGH SANDBAGS TO PREVENT THE WORLD FROM FLOODING.

Though the title statement may not be true, much time, effort, and money continues to be spent on natural hazards research. Unfortunately, however, the volumes of valuable research findings and conclusions often are not disseminated to, or are ignored by, the emergency coordinators, planners, responders, and the general public who could benefit.

Why is it that an information flow barrier exists between the practitioners and the research community? Why is the research ignored or not applied? As emergency management practitioners, we offer the following observations.

- Research results are often "too scientific" for the practitioner. The length of the document, the terminology, concepts, and jargon often make the results unreadable.
- The dissemination of research findings is often limited. The average practitioners simply do not know what publications are available, nor do they know where to look or how to keep informed. Few emergency management agencies have funds to purchase the hundreds, if not thousands, of useful documents produced each year.
- The political and economic leaders of a community may resist the dissemination of research conclusions and recommendations for personal and political reasons.
- There is a general feeling among practitioners that research is "over-funded" and that there tends to be little, if any, funding available for practical application and solution of hazard problems. Emergency managers often comment that the research did not really tell them anything they did not already know, and that the funds could have been better spent actually correcting the hazard problem.
- Another common complaint is that the research community's primary motivation may not be for the advancement of comprehensive emergency management, but instead for self-gratification or the need to perpetuate the demand for more research.
- Often research findings, conclusions, and recommendations are too vague.
- Existing emergency management training and education programs are not using or applying the research conclusions.

What can be done to ensure maximum utilization of research rather than have it sit on shelves or be used for Noah's sandbags? First, involve practitioners in the review process or use them on advisory panels. Second, develop a summary abstract specifically for practitioners stating in clear, understandable terms the salient points that you want them to know about the research results, emphasizing in particular the implications for mitigation, preparedness, response, or recovery. Third, keep the practitioners informed about research and publications through their associations and newsletters. Lastly, support the effort described in the next paragraph.

Two major training and education projects, "Managing Emergency Operations" and "Emergency Preparedness Education," are being developed and presented by the National Association for Search and Rescue (NASAR), the National Park Service, and the Emergency Response Institute. We are anxious to utilize the findings and conclusions of natural hazard research projects in the course curricula and publications. We are in the process of locating relevant natural hazard research projects, and condensing and presenting the research findings in terms that are easily understood by the emergency management community and the general public. Topics of particular interest are disaster case studies, natural hazard technical data, conclusions from disaster research, experience and observations by emergency planners and responders, common sense, and state-of-the-art technologies.

Our goal is to close the communication gap between researchers and practitioners through these training and education programs and supporting publications.

Rick La Valla
Training Chairman
National Association of
Search & Rescue
and
Skip Stoffel
Emergency Response Institute
9035 Golden Given Road
Tacoma, WA 98445

IN PRAISE OF A GOOD THING

Harrison County
Civil Defense Council
WADE GUICE, DIRECTOR
OFFICE 864-3643
P. O. BOX 66 · GULFPORT, MISSISSIPPI 39501

Natural Hazards Observer
Campus Box 482
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Boulder, Colorado 80309

Dear Friends:

We read with interest the Comprehensive Emergency Management article in your November issue. Our Council has been deeply involved in CEM since the formation of the National Task Force to develop a standard plan format covering the four phases of CEM: mitigation, preparedness, response, and recovery. . . . We of Harrison County Civil Defense (Hurricane Camille Country) took it upon ourselves to revamp our plans using the format for CEM. . . . This is the first plan in the nation which uses the standard plan format. . . .

I must admit that when we first began this project that it was with reservation and it took a great deal of self-discipline to keep plugging while maintaining a wait-and-see the final product before you condemn attitude. As time passed and the pieces of the puzzle began to fit together, we became more and more convinced that the standard format is the best way to go, and I am now firmly convinced that CEM is the best professional tool available for that purpose. Thank you, Hilary Whittaker and the National Governor's Association for bringing us out of the "dark ages".

With kindest personal regards, I am,

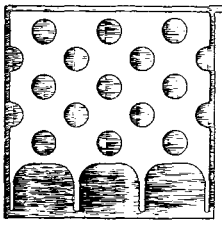
Wade Guice, Director
Harrison County Civil Defense

ALL GOOD THINGS MUST END

The State Services Office of the National Governors' Association announced recently that its valuable and influential Emergency Management Project was being discontinued. In operation since 1977, the Project advised state, regional and local officials in the practice of comprehensive emergency management. It published guides to the process, a bulletin briefly, risk maps and management forms, and developed a computerized interactive index in its unflagging attempts to help frequently confused practitioners plan and implement CEM (see ***Observer,*** Vol. VII, No. 2, p. 2).

The State Services Office will continue to take requests from governors' offices (but regrettably *only* governors' offices) for advice on any subject, including emergency management. Nolan Jones, staff director of the NGA Committee on Criminal Justice and Public Protection, may be contacted in reference to matters concerning public protection at (202) 624-5360. Hilary Whittaker, Director of the Emergency Management Project, is available as an individual consultant—as time allows—and can be reached at (202) 624-5365.

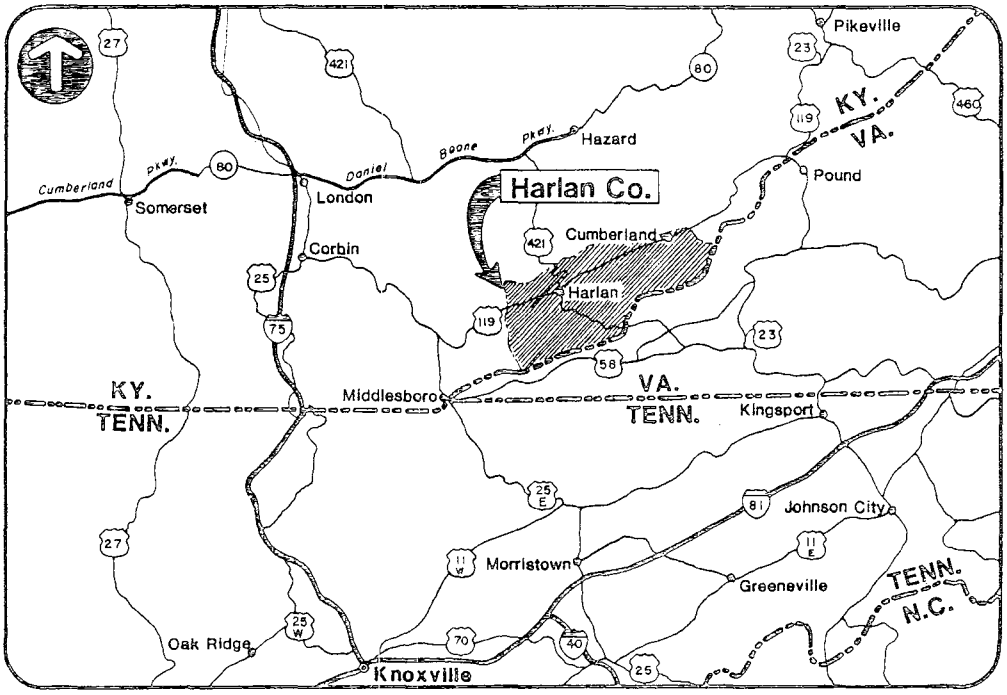
Another program of great utility to state and local officials has also been phased out. The Natural Disaster Recovery and Mitigation Resource Referral Service, operated for the last two years in the Academy for State and Local Government, has closed its doors and files. The Service, under the management of Claire Rubin (see ***Observer,*** Vol. V, No. 3, p. 8), collected information on natural hazards and all issues pertinent to recovery from them, and made the information available to concerned government officials dealing with effects of a disaster or attempting to mitigate future potential damages.



CONFERENCES

Association of State Flood Plain Managers Annual Conference. Sacramento, California: April 26-30, 1983. All those interested in acquiring information or improving their knowledge of the concepts of flood plain management and flood damage abatement are invited to participate. Sessions will address such issues as public awareness of flood hazards, regulation of flood-prone areas, flooding on alluvial fans, mud flows, nonstructural mitigation measures, and the National Flood Insurance Program. More information is available from *A. J. Brown, Department of Water Resources, P.O. Box 388, Sacramento, CA 95802, (916) 445-6249.*

International Symposium on Urban Hydrology, Hydraulics and Sediment Control. University of Kentucky College of Engineering, Office of Continuing Education. Lexington, Kentucky: July 25-28, 1983. The symposium will provide useful information on urban water problems, including water distribution. Papers will report research results, design and analysis techniques, and case studies on the following areas of concern: quantifying rainfall, runoff, sediment production, and nonpoint water quality (including acid rain); innovative methods for controlling stormwater runoff and sediment; hydraulics of drainage systems; legal aspects of urban hydrology; analysis, management and design of water distribution systems; and comparisons of field and predicted results for distribution systems. For further information, contact *Harry J. Sterling or M. Levent Kavvas, Co-Chairmen, Department of Civil Engineering, University of Kentucky, Lexington, KY 40506-0046, (606) 257-1748 or (606) 257-3765.*



FLOOD MITIGATION PLANS PREPARED

Communities in the Appalachians have been plagued by flooding problems since the first settlements were established in the region's steep and narrow valleys. A variety of physical, social and economic conditions have complicated flood protection efforts, promoting continued construction and redevelopment even after repeated devastating floods. The NFIP has encouraged local communities to assume responsibility for wiser flood plain management, particularly the use of nonstructural measures especially applicable to the region's problems. To help them do this, the Federal Emergency Management Agency funded a demonstration project to produce a nonstructural flood mitigation plan for Harlan County, Kentucky.

After examining the county's socioeconomic trends, population projections, status with regard to the NFIP, potentially developable flood-free land, and building techniques, various flood damage mitigation strategies were enumerated. Each plan described the role of the agencies responsible for its implementation, priorities for carrying it out, and the significance of combining complementary nonstructural mitigation techniques. The county was then divided into smaller areas in order to better match a strategy with the area to which it would be most applicable. One community was selected for intensive study—each flood-prone structure was examined, detailed base maps were prepared, and the residents were interviewed about their attitudes toward different potential mitigation techniques.

Although the initial study has been completed; its design was such that the Harlan County Fiscal Court and the Cumberland Valley Area Development District can continue implementation of the program. Funding sources and strategies have been identified to help the local organizations follow through.

A useful product of the study is a guidebook that documents in a general fashion the planning process used to develop the Harlan County program. Those methods can thus be used by other communities, particularly those in Appalachia, that want to develop their own comprehensive nonstructural flood hazard mitigation program. Designed for local officials and community interest groups, the concise guidebook also identifies sources of technical information and assistance, and provides a glossary of terminology with which the flood hazard novice will have to cope.

To obtain a copy of ***Flood Hazard Mitigation: A Guidebook for the Appalachian Region,*** contact *John Seyffert, Mitigation Assistance Division, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472, (202) 287-0520.*

FUNK AND WAGNALLS

REVISITED

To supplement the helpful glossary of research definitions published in the November, 1981, ***Observer,*** we set down here some invaluable vocabulary insights furnished us by a friend of the engineering persuasion. It will be obvious, however, that the use of the following words and phrases is not peculiar to that redoubtable profession.

- *"We will look into it"*—By the time the wheel makes a full turn, we assume you will have forgotten about it
- *"Under consideration"*—Never heard of it
- *"Under active consideration"*—We are looking in the files for it
- *"Consultant (or expert)"*—Any ordinary person more than 50 miles away from home (must have briefcase)
- *"Reliable source"*—The person you just met
- *"Informed source"*—The person who told the person you just met
- *"Unimpeachable source"*—The person who started the rumor originally
- *"Conference"*—A place where conversation is substituted for the dreariness of labor and the loneliness of thought
- *"Note and initial"*—Let's spread the responsibility for this
- *"Let's discuss"*—Come down to my office, I'm lonesome
- *"Let's get together on this"*—I'm assuming that you're as confused as I am
- *"We will advise you in due course"*—If we figure it out, we'll let you know
- *"To give someone the whole picture"*—A long, confused and inaccurate statement to a newcomer
- *"Point up the issue"*—Expand one page to fifteen
- *"Research work"*—Looking for the jerk who moved the files
- *"Program"*—Any assignment that can't be completed with one telephone call
- *"Expedite"*—Confound confusion with commotion

THE AFTERMATH OF AN EARTHQUAKE

The series of earthquakes that struck the Friuli area of northeastern Italy in 1976 affected nearly 100 urban and rural communities spread over 4,800 square kilometers. The impacts varied not only with physical circumstances, but also with the cultural, social and political characteristics of the communities. During the four years following the disaster, researchers from both Italy and Germany did extensive field work in the stricken region, investigating both the immediate aftermath of the quakes and the slow process of recovery and reconstruction. The reports from these varied efforts have been compiled, integrated and published in ***Disaster and Reconstruction,*** by Robert Geipel, translated by Philip Wagner.

One of the significant objectives of the research was to determine the applicability of various North American models of human reaction to natural hazards to an area with a high degree of poverty, a strong potential for external political influence on the recovery process, and a considerable degree of cultural diversity. The results of the studies reported in the volume clearly indicate that the cultural and socioeconomic context of a disaster has a critical influence on how the subsequent problems are perceived and solved.

For example, many small communities suffered severe damage to their church buildings. In those communities with anti-clerical majorities, the remnants of the church building were often cleared away rather expeditiously, providing a "clean slate" for planning and constructing new structures. Communities in which the residents' religion still played a significant role in day-to-day life, on the other hand, sometimes engaged in lengthy deliberations over what, if any, of the rubble could be saved for religious, cultural, and historical reasons. Thus, the recovery process was delayed, and in some instances made more costly, since frequently a private firm had to be hired to clear away debris that would have been removed by one of the assisting governments, at no cost to the community, had the decision been made in time.

Besides its comprehensive and insightful treatment of this major disaster, the book offers extensive references throughout, plenty of maps and illustrations, and a thorough description of the methods and survey instruments used in the investigations.

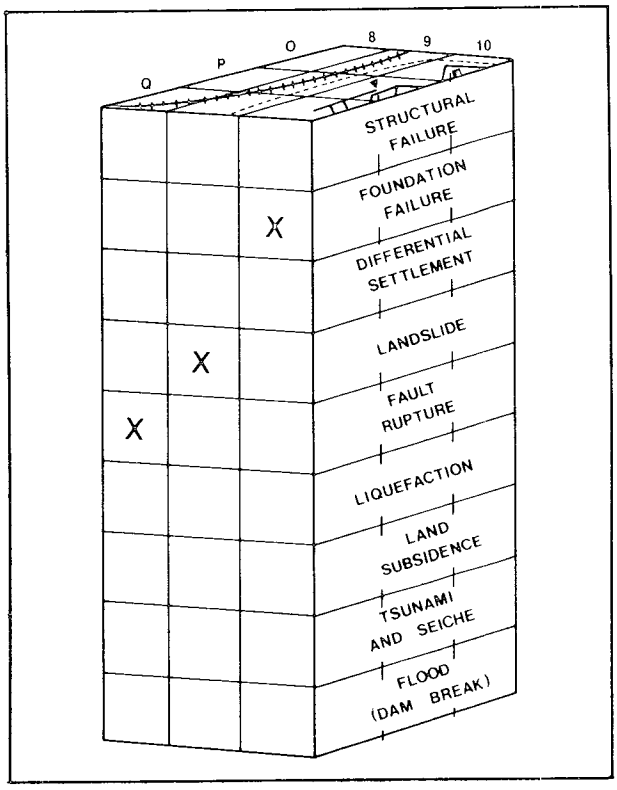
Obtain ***Disaster and Reconstruction*** for $40.00 for the hardbound edition and $19.95 for the paperback from *Allen & Unwin, Inc., 9 Winchester Terrace, Winchester, MA 01890, (617) 729-0830.*

BLUEPRINTS FOR SAFETY

With the increasing recognition that earthquakes are a great hazard in more places in the United States than California, comes a desire on the part of hitherto uninformed professionals and citizens to lessen the risk to which they are exposed. Of great service to architects and planners in learning mitigation strategies are two recent books: ***Building Configuration and Seismic Design,*** the first architecturally oriented guide to earthquake-resistant structure design; and ***Reducing Earthquake Risks: A Planner's Guide,*** prepared by the American Planning Association with funds from the National Science Foundation.

The authors of ***Building Configuration and Seismic Design,*** Christopher Arnold and Robert Reitherman, are both architects with considerable knowledge of engineering practices and seismic dynamics. This volume emphasizes design concepts

FIGURE 15. DETERMINING LAND-USE CAPABILITY FOR HAZARDS FOR EACH GRID UNIT*

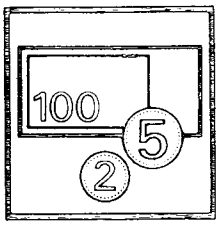


rather than mathematical analysis or design restrictions. It explains complex earthquake engineering principles in clear language supplemented by abundant illustrations. The book elucidates earthquake forces, their measurement and estimation, and their effects on buildings. Other chapters review configuration problems and solutions, building type as it relates to seismic design, and the imagery of seismic design. Two case studies and a survey of a number of well-known historical buildings give an aesthetic and practical view of considerations in seismic design.

Reducing Earthquake Risks: A Planner's Guide, by Martin Jaffe, JoAnn Butler and Charles Thurow, describes how to map and evaluate local earthquake hazard areas, and suggests ways to guide growth away from hazard areas and to deal with substandard buildings in those areas. The manual examines various seismic safety programs that can be adapted to particular local needs and exigencies. ***Reducing Earthquake Risk*** tells how to upgrade building codes, subdivision regulations, and zoning ordinances. The final chapter deals with pre-earthquake planning for post-earthquake redevelopment issues, and an appendix provides a brief but helpful lesson for the uninitiated in earthquake causes and effects, and building response to ground shaking.

Building Configuration and Seismic Design, by Christopher Arnold and Robert Reitherman, 1982, 295 pp., $35.00, is available from *Wiley-Interscience, John Wiley & Sons, 605 Third Avenue, New York, NY 10158.* ***Reducing Earthquake Risks,*** 1982, 88 pp., $18, PAS Report #364, can be obtained from the *American Planning Association, 1313 East 60th Street, Chicago, IL 60637.*

GRANTS



Earthquake liability. "Earthquake Hazards and the Liability of Private Businesses and Industries." National Science Foundation, $197,305, 18 months. Principal Investigator: *Jeanne B. Perkins, Association of Bay Area Governments, Hotel Claremont, Berkeley, CA 94705, (415) 841-9730.*

The aim of the project is to determine whether the prospect of being held liable for injuries or damages encourages the adoption of hazard mitigation measures. After describing the role liability can play in stimulating responses to the earthquake hazard, the project will clarify the potential liability of private companies and professionals for various earthquake losses. An assessment will be made of the impact liability has had on private sector activities to mitigate hazards. Based on these results, recommendations will be made for legislation, administrative strategies, and professional practice to enhance the use of liability as a stimulus for earthquake hazard mitigation.

Public information. "A Prototype of a Joint Information Center as a Centralized and Uniform Source of Disaster Information," Federal Emergency Management Agency, $50,000, 9 months. Principal Investigators: *Rahul Sood and Lee Nichols, Department of Communication Studies, California State University, 6000 J Street, Sacramento, CA 95819, (916) 454-7384;* and *Everett M. Rogers, Institute for Communication Research, Stanford University, Stanford, CA 94305, (415) 497-2753.*

After interviewing approximately 70 representatives of the news media, public information officers, and heads of local, state and federal emergency response agencies, a preliminary plan will be devised for a joint information system to disseminate information to the public after a major earthquake. Particular attention will be paid to the need for interorganizational coordination and the relationships between the news media and emergency agencies. A field test of the prototype system will be conducted, and suggestions from a workshop with communications specialists will be incorporated into the plan.

Earthquake hazard mapping. "Earthquake Hazard Maps for Selected Earthquake Scenarios—San Francisco Bay Area," U.S. Geological Survey, $77,950, 12 months. Principal Investigator: *Jeanne B. Perkins, Association of Bay Area Governments, Hotel Claremont, Berkeley, CA 94705, (415) 841-9730.*

To complete the coverage of all nine San Francisco Bay Area counties, ABAG again will use its computer-based geographic information system to map anticipated intensity of ground shaking, and the statistical risk of damage from hypothetical earthquakes of various intensities. The maps are used by public agencies and private companies in their activities to mitigate the identified hazards and in their emergency response plans.

Land use planning for earthquakes. "Land Use Planning and Earthquake Hazard Mitigation: Developing a Cost-Effectiveness Framework," National Science Foundation, $136,892, 24 months. Project director: *Myer R. Wolfe, College of Architecture and Urban Planning, JO-26, University of Washington, Seattle, WA 98195, (206) 543-7679.*

The project's aim is to help local officials select land use options most appropriate in their communities by developing a framework of the various land use management methods for mitigating earthquake hazards. At least three land use strategies for urban areas will be compiled, each representing a different combination of scientific information needs and planning techniques. The development and implementation costs of each strategy will be incorporated into the framework, along with measures of each strategy's effectiveness. The applicability of the framework will be tested in three communities on the West Coast.

Disaster preparedness courses. "Preparedness Courses for Local Chief Administrative Officers and Emergency Management Coordinators," Federal Emergency Management Agency, $58,000, 12 months. Principal Investigator: *Gerard J. Hoetmer, International City Management Association, 1140 Connecticut Avenue, N.W., Washington, DC 20036, (202) 626-4600, x359.*

ICMA is organizing and conducting three disaster preparedness courses to be held at FEMA's National Emergency Training Center in Emmitsburg, Maryland. The curriculum is designed to provide local officials with a basic knowledge of comprehensive emergency management, and to assist them in evaluating their own emergency management program. Thirty teams of two people from various cities will participate in each three-day course planned for January, May and August. ICMA will evaluate and report on each of the courses.

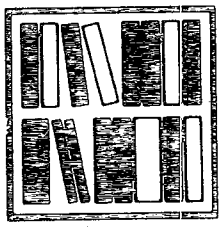
Training school children. "Analysis of Pilot-Test Materials to Ascertain their Suitability to Train Children in Grades K-12 in the Event of a Disaster," Federal Emergency Management Agency, $39,000, 6 months. Principal Investigator: *John W. Thomas, Far West Laboratory for Educational Research and Development, 1855 Folsom Street, San Francisco, CA 94103, (415) 565-3000.*

Prototype training materials have already been pilot-tested in schools in all of FEMA's nine regions. The products and findings generated by the tests will be analyzed by Far West Laboratories in order to determine the effectiveness of the materials, the changes that need to be made, and the best ways to disseminate the educational packages. A report will be prepared containing the results of the analysis and recommendations for future educational programs.

Local emergency preparedness. "The Status of Emergency Management Programs at the Local Level," Federal Emergency Management Agency, $56,000, 12 months. Principal Investigator: *Gerard J. Hoetmer, International City Management Association, 1140 Connecticut Avenue, N.W., Washington, DC 20036, (202) 626-4600, x359.*

In order to survey local emergency management practices and problems, ICMA will obtain data through a needs assessment instrument developed with FEMA. The assessment questionnaire will be mailed to 6,778 cities and counties; all cities with populations over 10,000 will be contacted as will all counties, and a sample of cities with less than 10,000 inhabitants will also be included. The survey will help to establish a data base on the status and workings of emergency management programs, and will allow ICMA to assess local priorities and needs for assistance to help strengthen programs.

RECENT PUBLICATIONS



Florida Sea Grant Program, Sea Grant Marine Advisory Program, G022 McCarty Hall, University of Florida, Gainesville, FL 32611.

In addition to its many publications concerning Florida's aquaculture and ecology, the Florida Sea Grant Program (FSGP) has prepared materials dealing with coastal construction practices and preparedness/safety measures for violent storms. Booklets that coast dwellers will find useful include: ***Guidelines for Beachfront Construction with Special Reference to the Coastal Construction Setback Line,*** by Courtland A. Collier, *et al.,* 1977, Report #20; ***Hurricane-Resistant Construction for Homes,*** by Todd L. Walton, Jr. 1976, SUSF-SG-76-005; ***Coastal Construction Practices,*** Christopher P. Jones and Leigh Taylor Johnson, editors, 1982, MAP-23; and ***Boating Safety—Thunderstorms,*** by Walter A. Sitarz, 1978, MAP-5. Handy foldout brochures produced by the FSGP offer safety guidelines and preparedness checklists for hurricane survival, for building on shoreline property, and for operating marinas and boatyards in areas subject to violent weather. A complete list of FSGP products, together with ordering instructions, can be found in its ***Publications*** catalog (MAP-10) available from the address given above.

Thunderstorms: A Social, Scientific, and Technological Documentary,* Volume 3—*Instruments and Techniques for Thunderstorm Observation and Analysis. *Edwin Kessler, editor. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Environmental Research Laboratories. 1982. 313 pp. $9.50. For sale from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. Stock #003-017-00499-6.*

This third and last volume in a comprehensive series on thunderstorms surveys the tools and techniques which are used to acquire and analyze data on the storms. Topics discussed range from measuring the acoustic properties of severe storms to the observation and measurement of both rainfall and hailfall. Among the various instruments and techniques used in the study of thunderstorm phenomena, the report describes photogrammetry, aircraft probes, weather radar, and imagery generated by satellites.

Earthquake Public Information Materials: An Annotated Bibliography. *Southern California Earthquake Preparedness Project. 1982. 47 pp. Single copies are available at no cost from the Southern California Earthquake Preparedness Project, 6850 Van Nuys Boulevard, Suite 110, Van Nuys, CA 91405-4660, (213) 787-5103.*

One of the tasks of the Southern California Earthquake Preparedness Project is to inventory available public information material and to design a program to disseminate information on earthquake safety to the public. This bibliography is a first step toward that goal. Annotations are presented for books, booklets, pamphlets and brochures that are available to the public from many sources. Most are published by government offices and agencies and are free or cost a slight amount. The materials selected for inclusion in the bibliography provide mostly non-technical explanations that lay persons can understand. The scientific materials included are also comprehendible to public readers.

"Severe Winter Storms as Natural Hazards." Nicholas Helburn. ***Great Plains-Rocky Mountain Geographical Journal*** *10 (Summer, 1982): 86-95. Copies are available for the cost of reproduction ($1.25) from the Hazards Information Center at the address on the back page.*

The problem of crippling winter storms is a not insignificant one in the northern two thirds of the United States; for the period January, 1969, to December, 1979, severe winter storms caused an average of 100 deaths and $630 million in direct damage each year. This report grew out of a study conducted in Colorado and Wyoming to identify the specific risks in winter storms, especially in rural settings, and the adjustments that people and organizations have adopted in order to deal with those risks. Among the areas of greatest difficulty and concern treated in the article are school bus safety, telephones, livestock, highway closings and official responsibility and liability for them, and emergency supplies and perishables. The article concludes that school systems and telephone communications are best prepared for the storms, but that power distribution and highway travel are less prepared and at considerable risk.

Disaster Planning for Local Government. *Roger E. Herman. New York: Universe Books, 381 Park Avenue South, New York, NY 10016, (212) 685-7400. 1982. 138 pp. $15.00.*

This publication is a practical, easy to use guide for small communities that cannot afford to maintain a full-time professional staff for disaster planning and preparedness programs. Activities and recommendations outlined can be implemented by local officials without outside consultants or temporary help. Elements of disaster planning that receive the most attention include preparation of an emergency operations plan, identification of the persons most capable of preparing a disaster contingency plan, operation of an emergency center, the utilization of disaster training programs, keeping a completed plan in good working order, and the establishment of coordination networks with other disaster organizations.

"Coastal Zone Management: A Comparative Analysis of National Programs." James K. Mitchell. Pp. 258-319 in ***Ocean Yearbook 3,*** *Elisabeth Mann Borgese and Norton Ginsburg, editors. Chicago: University of Chicago Press. 1982. 672 pp. $49.00.*

Following a discussion and evaluation of coastal zone management (CZM) practices in the United States, the author analyzes similar programs in other nations faced with accelerated development of their shorelines. Policies are examined for Australia, the United Kingdom, France, New Zealand, the Netherlands, Nigeria, and Thailand. Although inadequate data have been compiled for the accurate modeling of institutional functions and policy consequences, the analysis indicates that the concept of CZM has spread rapidly throughout the world during the past ten years. Researchers looking for non-American references to this topic should find the 200-plus notes and numerous references most helpful. Twelve citations to United Nations materials and nineteen to U.S. federal documents also add to the article's usefulness.

Problems of Volcanic Hazards in Papua New Guinea. *P. L. Lowenstein. Geological Survey of Papua New Guinea. Report #82/7. 1982. 62 pp. and maps. For further information, write the Papua New Guinea Geological Survey, Volcanological Observatory, P.O. Box 386 Rabaul, Papua New Guinea.*

The Volcanological Observatory Branch of Papua New Guinea's Geological Survey is responsible for monitoring 14 active and 22 dormant volcanoes which threaten over 200,000 people. This report is the first attempt to detail the nature of volcanic hazards in Papua New Guinea, the problems that they present, and the efforts being made to cope with them. A general description of the hazard threat is followed by brief case histories of past eruptions, a discussion of current and anticipated surveillance techniques, a description of the methods being employed to predict future eruptions, and a resume of hazard maps and evaluation plans. Also included in the report is a rating system which assigns a relative risk factor to each volcano in order to identify those most urgently in need of surveillance.

A Manual for Researching Historical Coastal Erosion. *Kim Fulton. University of California, Santa Cruz, Science Writing Program. Single copies are available at no cost from the California Sea Grant College Program, University of California, A-032, La Jolla, CA 92093. Report -T-CSGCP-003. 1981. 56 pp.*

This manual can help land use planners, geologists, engineers, and others concerned with the effects of coastal erosion to collect historical information about shoreline, sea bluff, and cliff retreat. Such information can be used in developing zoning regulations for the areas at risk. Regulations must be based on compelling evidence of past or future coastal retreat in order to withstand legal tests. Part I describes the basic sources of information and methods of investigation—weather and wave-height data are correlated with local government records and supplemented by old photographic evidence and historic maps. Part II suggests additional research to document recent and continuing erosion hazards. Part III details the application of the research findings to the planning process itself. Two appendices indicate the types of information available from a number of sources, and give the addresses of the sources.

San Francisco Bay: Use and Protection. *William J. Kockelman, et al., editors. 1982. 310 pp. $17.95. Order from the Secretary-Treasurer, Pacific Division, AAAS, c/o California Academy of Sciences, Golden Gate Park, San Francisco, CA 94118. Checks should be payable to the California Academy of Sciences.*

Several agencies from both the public and private sectors sponsored a symposium in June, 1981, which was designed to bridge the gap between scientists who have studied the Bay technically, and decision makers and planners who are concerned with balancing the demands made upon the Bay by its users. Major topics of concern were coastal zone management, the ecological problems associated with waste disposal, the impacts of regional water resource projects, and the ecological changes caused by dredging ship channels. Although the papers do not specifically deal with natural hazards, background information is presented on the status of the Bay's environment that may prove useful to disaster planners and managers. Evaluations of past planning projects are offered, together with perceptions of what the future holds for the area.

"The Effect of Location on the Adoption of Hazard Mitigation Measures." Burrell E. Montz. ***The Professional Geographer*** *34 (November, 1982): 416-423.*

Analyses are offered of three hazard zones in order to assess the influence of location on the adoption of hazard mitigation measures. With studies from Denver, Colorado, and Binghamton, New York (flood hazards), and Panama City, Florida (hurricanes), a hypothesis was proposed that persons living in the most vulnerable areas and closest to the hazard would be the most likely to adopt protective measures. Results were ambiguous, however, with little discovered that suggests a clear correlation between location and the adoption of mitigative measures. The variations in the findings point up the complexity of the problem and suggest that other factors, such as population mobility and a reluctance to plan in the face of uncertainty, also influence adoption of mitigation measures.

Urban Storm Drainage Management. *John R. Sheaffer, et al. New York: Marcel Dekker, Inc. 1982. 271 pp. $37.50.*

Drawing upon their experience in engineering, law, and geography, the authors have prepared a volume that offers alternatives to conventional engineering solutions to the problems of stormwater management. Past attempts to mitigate these problems revolved around 1) the costs and benefits of different sizes and layouts of drains in relation to postulated precipitation, and 2) the extent to which storm drainage and sanitary sewer drainage should be separated. Although both of these issues continue to claim a good deal of attention, a number of other options are available to management. A genuinely integrated management program requires an examination of unified flood plain management, of the effects of urbanization on flood flows, of alternative methods of water storage, and of the links between storm-flow disposal and water-quality planning.

San Francisco Corporate Disaster Planning Guide. *American Red Cross. 1982. 70 pp. $10.00. Available from the Golden Gate Chapter, American Red Cross, 1550 Sutter Street, San Francisco, CA 94109, (415) 776-1500, x211.*

The guide was prepared to assist executives in developing plans for corporate survival in both natural and human-caused disasters. Produced as a cooperative venture of San Francisco business people, public officials, and Red Cross personnel, the volume offers a survey of planning concepts, a prototype plan covering a variety of emergency situations, a directory to resources for equipment and supplies, and a bibliography of pertinent disaster planning publications. Included in the prototype plan are the assignment of employee responsibilities, evacuation and relocation procedures, earthquake response measures, preparedness and response to fires, and basic first aid.

Tropical Cyclone "Isaac." *J. Oliver and F. G. Reardon. James Cook University of North Queensland, Centre for Disaster Studies. Disaster Investigation Report #5. 1982. 117 pp. Australian $10 (excluding postage). Obtainable from the University Bookshop, James Cook University of North Queensland, Post Office, Townsville, Queensland 4811.*

The report describes the socioeconomic impact of relief and recovery operations on the islands belonging to the Kingdom of Tonga after Cyclone Isaac swept through the area early in March, 1982. Many of the problems encountered during the recovery period were typical of Third World nations affected by natural calamity while their society is undergoing urbanization, and access to technological expedients is minimal. Observations from the study suggest that 1) it is desirable to establish a locally staffed, operationally effective, and tested counter-disaster organization which can be activated at short notice; 2) international donors of emergency funds must revise the reference frame used to grant such funds if a nation's long-term development strategy is not to be jeopardized; and 3) a small pool of easily available heavy equipment is necessary for accelerating the rate of recovery following a natural disaster.

Planning for Rare Events: Nuclear Accident Preparedness and Management. *John W. Lathrop, editor. IIASA Proceedings Series, Volume #14. New York: Pergamon Press. 1981. 268 pp. $30.00.*

This book summarizes the proceedings of a January, 1980, workshop sponsored by the International Institute for Applied Systems Analysis (IIASA) and convened at its headquarters in Laxenburg, Austria. Although the volume does not focus on natural hazards, the contributions address general problems in risk management and emphasize procedural and organizational issues in accident management. Workshop organizers felt that analyses of recent technological mishaps had drawn disproportionate attention to the technical aspects of accident prevention and neglected the importance of non-technical, organizational aspects of accident response systems. In addition to five papers dealing with nuclear reactor accident management in the United States, perspectives on the problem are offered for a number of other national emergency preparedness programs, including those of France, the United Kingdom, the Federal Republic of Germany, the Netherlands, the USSR, and Hungary.

"San Francisco Bay Area Floods and Mass Earth Movements: 1982." Videotapes.

Approximately seven hours of videotapes have been collected on the massive flooding and mudslides which plagued central California in early January, 1982. Excerpts from the collection have been assembled into a one-hour tape (¾" format) which can be borrowed from *William M. Brown III, U.S. Geological Survey, 345 Middlefield Road, Menlo Park, CA 94025, (415) 323-8111.* The tape may be purchased for $75 from *Flood Loss Reduction Associates, 4145 Maybell Way, Palo Alto, CA 94306, (415) 493-7198.* Any person or group desiring to view the unedited seven-hour collection should contact *H. James Owen at Flood Loss Reduction Associates.* The tapes were assembled under sponsorship of the National Academy of Sciences and the U.S. Geological Survey.

The NATURAL HAZARDS RESEARCH AND APPLICATIONS INFORMATION CENTER is intended to strengthen communication between research workers and the individuals, organizations, and agencies concerned with public action relating to natural hazards. Please let us know of any research or research needs or other information which should be brought to the attention of the Center. The Center is funded by the Federal Emergency Management Agency, the National Oceanic and Atmospheric Administration, the U.S. Geological Survey, and the Corps of Engineers, acting through the National Science Foundation.

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Cartoons for the ***Observer*** are drawn by Rob Pudim.

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Published bi-monthly
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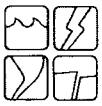

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