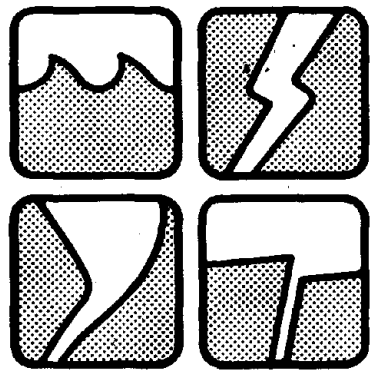


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Natural Hazards OBSERVER



Volume II

Number 4

June, 1978



FDAA PROSPECTIVE --an invited comment

The recently strengthened commitment of the Federal Disaster Assistance Administration in hazard mitigation has not yet had a major impact. Nevertheless, the reception so far has certainly been encouraging.

For example, federal/state agreements executed by the FDAA regional director and the governor of the state whose state has received a disaster declaration now contain a paragraph, referring to Section 406 of the Disaster Relief Act of 1974, in which the governor represents that he will initiate hazard mitigation planning in the affected areas within several months after the disaster. No governor has objected to this assertion in the agreement and several have expressed a desire to secure technical assistance from federal agencies in implementing the request.

The most notable interest in hazard mitigation has come from Governor Dukakis and Lt. Governor O'Neil of Massachusetts after last winter's "white hurricane" and tidal surge. Some environmentalists in Massachusetts, however, feel that the land clearance objectives in the high damage areas are far too modest.

The House of Representatives Public Works Committee has also expressed an interest in testimony on hazard mitigation at a public hearing to be held shortly after the deadline for these comments. In addition, a portable exhibit on hazard mitigation prepared by FDAA is receiving considerable attention and favorable comments from planning groups, environmentalists, etc.

Needless to say, there are discouraging aspects of the situation. Some states, like Pennsylvania (despite support from Governor Shapp and two leading state senators), are unable to enact effective flood plain management legislation. Some developers and local government officials fight any control on either building standards or careless development. The Federal Insurance Administration is under legal assault from a wide range of plaintiffs. If this suit is successful the flood insurance management elements of the federal flood insurance program would be voided. Some state insurance commissioners are having trouble after a flood scare

Stichman
NAT. HAZARDS
1978

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NATIONAL SCIENCE FOUNDATION

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persuading potential victims to renew their flood insurance policies. Even planners and environmentalists sometimes have the attitude "It will happen to somebody else." 37 million citizens who have never experienced a hurricane live in highly vulnerable areas along the Gulf Coast.

Nevertheless, even a modest effort in hazard mitigation education does seem to be worth that effort. Greater efforts and a broader base of support could have profoundly favorable results.

--William H. Wilcox
Federal Disaster Assistance Administrator
Department of Housing and Urban Development

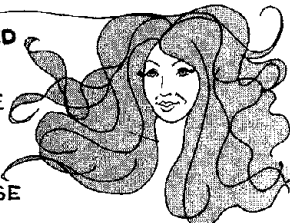
DCPA SPOTS

The Defense Civil Preparedness Agency has prepared 60-second public service announcements for radio and television to call attention to the important role of the local Civil Defense organization in peacetime, as well as in nuclear disasters. The series includes 1) how warning, planning, and Emergency Operating Centers saved lives on "The Day of the Killer Tornadoes," when 147 twisters swept the South and Midwest in a single day; and 2) the safe evacuation of 80,000 people from Wilkes-Barre, when Tropical Storm Agnes flooded the city.

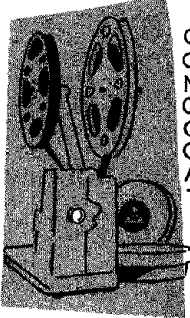
There is also a new series of cartoons, "Did You Know", stressing the interrelation of nuclear and natural disaster preparedness and response.

DID YOU KNOW - ?

THAT "A LADY CALLED CAMILLE," A DCPA FILM ABOUT THE MOST DESTRUCTIVE HURRICANE EVER TO STRIKE THE UNITED STATES, SHOWS CIVIL DEFENSE IN ACTION.



THIS AND OTHER FILMS CONCERNING EMERGENCY OPERATIONS DURING NATURAL DISASTERS, OR IN PREPARATION TO COPE WITH THE EFFECTS OF NUCLEAR ATTACK ARE AVAILABLE THROUGH THE DEFENSE CIVIL PREPAREDNESS AGENCY (DCPA).



**MORE FACTS?
CONTACT YOUR LOCAL CIVIL DEFENSE**

Distribution of the above series is being handled through local civil defense offices.

Any opinions, findings, conclusions or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

THE PUBLIC WANTS TO BE INFORMED

It has often been suggested that the public resents being reminded of the danger from impending earthquakes and that people would prefer less media coverage of earthquake matters. Believing it is of considerable practical importance for media representatives and officials engaged in earthquake safety education to know whether the two years of news concerning the southern California uplift has produced a saturation effect, a UCLA project studying community response to earthquake threat in southern California conducted a telephone survey of 500 adults in Los Angeles County to elicit opinions about the amount of earthquake media coverage in the past six months.

The findings are overwhelmingly one-sided, and the message is surprisingly clear. Over two-thirds of the respondents want more coverage of the Palmdale Bulge and scientific earthquake prediction, how to prepare for an earthquake, and what to do when an earthquake strikes. The consensus, that too little is reported about preparations by government officials, is particularly striking. No more than 3% feel there has been too much coverage on any of these topics. Only on the topic of predictions by people who are not scientists do a substantial number feel that the coverage has been excessive. But even on this topic, only 43% say the coverage has been excessive and 25% would like more coverage. There is plainly no evidence here to support the fear that well-conceived earthquake news and features will be rejected by a "saturated" public. Most of the public are ready for more extensive treatment of earthquake prediction than they have received in recent months. For more information, contact *Ralph Turner, Institute for Social Science Research, University of California, Los Angeles, CA 90024, (213) 825-4385.*

ATLANTIS: A TRAINING TOOL

A computer based simulation exercise in disaster relief management, named ATLANTIS, offers administrators the opportunity to deal with a simulation of the confused and distorted information flows in disaster. Developed by Ritchie at Manchester University, it allows participants to practice the techniques of assessing relief requirements and of managing resources during disaster situations in general, rather than the needs associated with one type of disaster only.

The exercise has now been run with three groups of senior public administrators from a wide selection of developing countries, with a group of senior UK public servants, and with ambassadors and other senior level officials from the disaster-concerned community in Geneva--UNDRO, WHO, Red Cross, and other public and private agencies--as players. For further information, write *Lt. Col. G.N. Ritchie, The Royal Military College of Science, Shrivenham, Swindon, Wilts, SN6 8LA England.*



THE UN FAMILY CONSULTS ON EARTHQUAKE RISK

The International Advisory Committee on Earthquake Risk, sponsored by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in cooperation with the United Nations Disaster Relief Organization (UNDRO), held its first session in Paris on December 12-16, 1977. The Advisory Committee recommended that UNESCO promote international cooperation in research by:

- supporting a study of the need for and feasibility of a global seismic data bank;
- supporting case studies of the effect of earthquake-resistant building codes in reducing damages at the request of or in agreement with the countries involved;
- organizing an international symposium on earthquake prediction in 1979; and
- initiating studies, in cooperation with UNDRO, regarding insurance against earthquake risks.

It was also recommended that UNESCO and UNDRO take a larger part in professional training and public education efforts regarding earthquake risks and their mitigation.

The Committee reports that Jean-Paul Levy, representing UNDRO, "reiterated the need for a multidisciplinary approach to earthquake problems, and a multi-hazard approach to disaster problems in general. He stated that seismic risk is often underestimated and cited the particularly high losses of the year 1976 (more than 800,000 deaths and billions of dollars of damage), which ranked earthquakes as possibly the most destructive among natural phenomena. Mr. Levy spoke of the need for UNESCO and UNDRO to take a special initiative in encouraging government authorities to make plans against earthquakes, these being one of a set of multiple risks to which many developing countries are exposed. The effect of these risks, and their negative impact on development, is more than simply cumulative and must be considered compositely."

For further information: E. M. Fournier D'Albe, Director, Division of Earth Sciences, UNESCO, 7, Place de Fontenoy, 75700 Paris, France, or J. P. Levy, Chief, Prevention and Planning Division, UNDRO, Palais des Nations, 1211 Geneva 10, Switzerland.

The General Assembly of the United Nations at its 32nd session endorsed a resolution of the Economic and Social Council [No. 2102 (LXIII), 3 August 1977, 2084th plenary meeting] which calls upon those concerned with disaster situations to promote measures to facilitate and expedite international relief assistance and to emphasize disaster prevention. The measures adopted were prepared by joint efforts of the Office of the United Nations Disaster Relief Coordinator (UNDRO) and the League of Red Cross Societies in consultation with both official and non-governmental organizations from many countries which participate in disaster relief.

The resolution of the General Assembly invites governments of disaster-prone countries to take preparedness and planning measures to assure relief to natural disaster victims, utilizing the assistance of other countries and of UNDRO. As part of the UN assistance, the Resident Representative of the United Nations Development Programme, in cooperation with UNDRO and appropriate specialized agencies, is urged by the Assembly to cooperate with and assist those governments which wish to include in their country's programs projects designed to reduce the impact of disasters and to lessen their long-term social and economic effects.

The Coordinator, Farouk N. Berkol, reported to the General Assembly that "the first UNDRO/UNDP joint regional project in disaster prevention is now being carried out in Central America. My Office is implementing the project and two experts are working in Guatemala, Honduras, Costa Rica, El Salvador and Nicaragua for the purpose of evaluating, in cooperation with the Central American Bank for Economic Integration, the vulnerability to disaster risks of ongoing development projects and projects in the pipeline. These projects may be financed in whole or in part by the World Bank, the Inter-American Development Bank, the Central American Bank for Economic Integration or UNDP. I believe that the method which we are developing in this project may well be applicable to other disaster-prone regions."

Another result of Assembly action was a firmer budget position for UNDRO. Over 50% of UNDRO's financing will now come from the regular budget of the United Nations, with the remainder dependent as before on voluntary funding. Ten posts have been transferred to the regular budget, together with associated costs, thus assuring the financial stability of a substantial part of UNDRO's core activities.

For further information, write the Office of the United Nations Disaster Relief Coordinator (UNDRO), Palais des Nations, 1211 Geneva 10, Switzerland.

Cartoons for the Observer are drawn by Rob Pudim.





FLASH FLOODS

AN AMS STATEMENT OF CONCERN

The American Meteorological Society has issued a Statement of Concern that "Flash floods now rank as the major killer and destroyer among weather-related disasters in the United States. Since 1968 the average annual death toll from flash floods has risen to about 200--more than double the rate of the 1960s and more than triple the rate of the 1940s. Property damage is now running at about a billion dollars a year.

Every state has been affected. The Federal Disaster Assistance Administration reports that 85% of all Presidential declarations of major disasters currently are associated with floods and flash floods.

The U.S. Water Resources Council predicts that damage from floods and flash floods will reach \$3.5 billion annually by the year 2000 unless flood plain management is improved.

The increase in deaths and destruction from flash floods results partly from the spread of urban development and partly from increased population mobility...The list of danger spots is growing. By latest count, more than 15,000 U.S. communities and recreational areas were identified by the Flood Insurance Administration as flash flood prone...

In a great many places hit by flash floods, the communities had no semblance of a warning system. Many people ignored the danger with the attitude, 'it can't happen here' or by unwillingness to put resources into nonstructural defenses. Despite two previous disastrous floods and because dams and levees had been built to 'protect' their city, Johnstown, PA, was convinced that it was 'flood free'. The flash flood of 19-20 July 1977 brought a tragic rebuttal...."

Actions recommended by the AMS include steps to:

- increase regulation of the use of areas subject to flash flooding;
- certify and monitor the safety of dams;
- improve information on frequency of maximum precipitation and associated runoff for design and planning;
- institute a governmental review of all parts of the problem in order to clearly define the role of each federal, state, and local agency in getting timely information to the public and in encouraging community and individual responses to warnings;
- provide for concerted action by the appropriate governmental agencies at all levels to provide the leadership and resources needed to reduce the tragic losses of lives and property from the nation's number one natural disaster--the flash flood.

See *Bulletin of the American Meteorological Society*, 59, no. 5, May 1978.

FLASH FLOOD CONFERENCES

Flash floods in their full range of meteorological, hydrological and human aspects were examined in an unprecedented set of two conferences held back-to-back in Los Angeles on May 3-6, 1978. The conference on *Hydrometeorological Aspects of Flash Floods* was arranged by the American Meteorological Society. The conference on *Human Aspects of Flash Floods* was arranged by the U.S. Army Corps of Engineers (South Pacific Div.), the National Weather Service, and the California State Office of Emergency Services with the collaboration of the Natural Hazards Research and Applications Information Center. The first conference gave special attention to problems of using satellite imagery, radar, and telemetering in forecasting floods. The second concentrated on organizing to disseminate warnings and to increase the awareness of the population at risk. Copies of the hydrometeorological papers reprints may be ordered from the *American Meteorological Society*, 45 Beacon Street, Boston, MA 02108. \$30.00 each, prepaid. Proceedings of the Human Aspects of Flash Floods will be available from *Public Affairs Office, Los Angeles District, U.S. Army Corps of Engineers*, P.O. Box 2711, Los Angeles, CA 90053, (213) 688-5320.



ESTIMATING THE LONG TERM EFFECTS OF FLOODS, TORNADOS AND HURRICANES

A persistent question in the literature on natural hazards is what are the long term needs of communities that have experienced natural hazard events that are serious enough to be called disasters. Although considerable research has centered around the immediate post-disaster needs for emergency aid and immediate relief supplies, only a few studies have attempted to study needs that persist beyond that immediate post-disaster period.

Recently completed work by Peter H. Rossi, James D. Wright, Sonia R. Wright, and Eleanor Weber-Burdin at the Social and Demographic Research Institute of the University of Massachusetts has provided estimates of long term lasting effects of floods, tornados and hurricanes that occurred in the period 1960 to 1970. One set of estimates was made by statistically contrasting counties that had experienced serious disaster events in that period with those that were free of such experiences, holding constant such county characteristics that could be expected to affect growth trends in population and housing. A second set of estimates was based on making similar contrasts on the level of census tracts within Standard Metropolitan Statistical Areas. All of the counties of the continental USA and a large sample of SMSA were the sets of units studied. Population and housing characteristics contained in the 1960 and 1970

Long Term Effects (cont.)

Censuses for counties and census tracts were the sources of data.

The analyses can be briefly summarized: when the long term trends of growth (or decline) were taken into account, no discernible long term effects of having experienced natural disaster events could be found. In other words counties and census tracts that had experienced natural disasters in the period between 1960 and 1970 were not discernibly different from those who had no such experiences. This finding held both for areas that had such experiences very early in the decade as well as those that had such experiences in the later years of that decade.

It is important to emphasize that these findings obtain for small areas within major metropolitan areas and for counties for the disasters that occurred in the decade 1960 to 1970. Despite the fact that the disasters studied were among the most severe experienced during that period, most of them were relatively minor events in terms of damages and injuries relative to the population and housing stock involved. The events studied were "typical severe disasters" many of which triggered Presidential declarations, but were not of the character of major catastrophes. The findings also should not be interpreted to mean that the damages and injuries inflicted by such disasters were not tragic and traumatic events to the households, or organizations who were their victims. The findings only indicate that as far as housing and population trends are concerned, it is not possible to find that such experiences had effects that lasted more than a few months.

The SADRI research group is currently engaged in a study of the receptivity to disaster mitigating public policies among key persons in a sample of 20 states and 100 local communities within those states. Interviews have been conducted with approximately 2,300 legislators, public officials, leading members of the private sector and major political figures within the states sampled. The analyses of these data will provide estimates of the extent to which there is resistance or acceptance to such disaster mitigating policies as flood plain land use management, stricter building codes, and seismic risk zoning among the key persons and among organized groups within the states and local communities sampled. For further information, contact one of the authors at the *Social and Demographic Research Institute, University of Massachusetts, W-34 Machmer Hall, Amherst, MA 01003, (413) 545-3417.*

GOVERNORS' PROJECT ON EMERGENCY PREPAREDNESS

In a preliminary look at emergency preparedness and response in 57 states and territories, the Emergency Preparedness Project of the National Governors' Association found that wind and water have been the greatest source of disaster over the last five years in the 1,461 emergencies and disasters reported by these political entities. During the current year, 402 additional

disasters have been reported, with man-made disasters such as explosions or spills accounting for nearly two-thirds of this total.

This information, plus the results of 30 case studies of individual disasters, will be used in the preparation of a Governor's Manual. "We expect the Manual will help fill the management gaps in governmental policy for dealing with disasters," says Hilary Whittaker, Project Director, and will provide a management overview for all risks of this sort."

Currently, most states have one lead agency which is responsible for their emergency programs though they are required to relate to multiple, frequently conflicting federal organizations, the study finds.

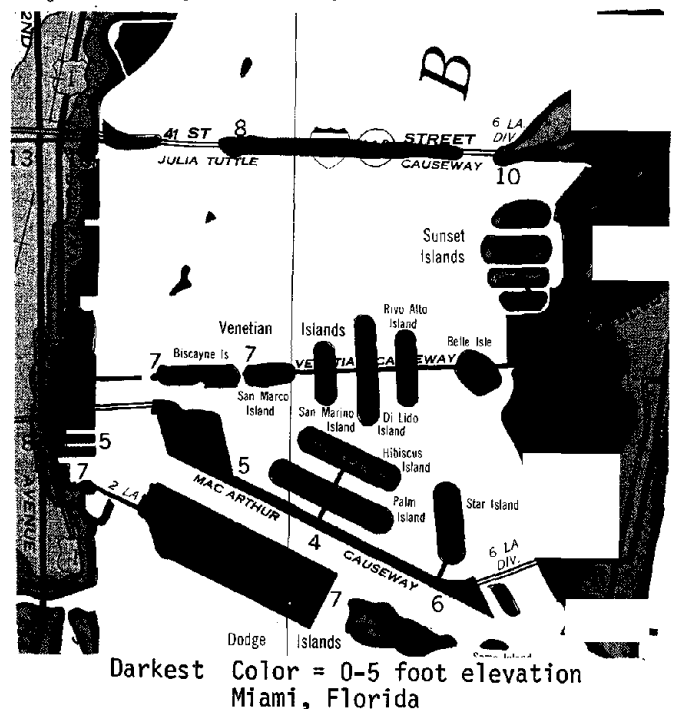
With regard to reorganization, most of the states urge a merger of peacetime and attack preparedness at the federal level, including mitigation, preparedness, response, and short and long term recovery. While the states differ as to the degree to which they merge such functions, they generally are merged at the local level.

For further information: *Hilary Whittaker, National Governors' Association, Emergency Preparedness Project, 444 N. Capitol St., Washington, DC 20001, (202) 624-5365.*

EMERGENCY EVACUATION ROUTE MAPS

Storm evacuation maps have been published by the National Ocean Survey for 71 areas in the Gulf and Atlantic coastal regions. The most recent maps include Jacksonville Beach and Fernandina Beach in Florida; Ludowici, Darien, Woodbine and Brunswick in Georgia.

The maps delineate the areas subject to flooding by surges of various heights, and give main emergency evacuation routes and feeder roads, low points along the road which might be under water, and high spots less likely to be affected by flood waters. The maps may be obtained from the *Distribution Division, National Ocean Survey, Code 44, Riverdale, MD 20840. \$2.00 each.*



SEISMIC DESIGN AND PUBLIC POLICY

The Seismic Design Decision Analysis (SDDA) project at MIT is continuing its effort to develop data and identify procedures for balancing the increased cost of more resistant construction against the risk of losses during future earthquakes. Funded by the National Science Foundation, the project involves a particular effort to work with engineers, building officials and public bodies to learn how this information might be used as a basis for making decisions about seismic design requirements.

A recent report from the SDDA group is a first step towards identifying an acceptable level of cost for modification of existing structures to reduce seismic risk. Most buildings in major U.S. cities were constructed prior to enactment of earthquake resistant design standards, and many are quite vulnerable to earthquake damage. These existing buildings present a dilemma for those concerned with mitigating earthquake hazards. It is often uneconomical and socially undesirable to replace these buildings with new earthquake resistant structures. However, the cost of bringing such buildings up to standards required for new construction is prohibitive. A set of guidelines is needed to indicate a cost beneficial trade-off between doing nothing and requiring too much.

This pilot study examined two specific buildings to identify minimum steps that might be taken to increase their resistance and to estimate the increase in safety and in cost as a result of these steps. The report suggests realistic measures for improving the seismic safety of renovated buildings for possible inclusion in the Massachusetts Building Code.

Copies of the report Structural Evaluation of Existing Buildings in Massachusetts for Seismic Resistance by Frank J. Heger, Rene W. Luft, and Simpson, Gumpetz & Heger, Inc., November 1977, Publication # MIT -CE R77-44, Order # 585, are available from the *National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22151*. For information about the Seismic Design Decision Analysis project or for a list of other reports, contact *Robert V. Whitman, Principal Investigator, Department of Civil Engineering, Massachusetts Institute of Technology, Cambridge, MA 02139, (617) 253-7127*.

GEOLOGIC AWARENESS

In the autumn of 1976, a public lecture series was sponsored by the San Diego Natural History Museum to acquaint the general public with San Diego's geologic hazards. Lecturers emphasized that the disaster potential from several hazards has been aggravated by a rapid increase in building during a lull in the occurrence of potentially hazardous geologic events.

Located within one of the most active earthquake belts in the world, San Diego has not experienced a large earthquake in its 200-year history, and development has proceeded with little regard to earthquake hazard. Enormous growth has occurred since World War II--a period of long-term drought. As a result, areas are being developed within river floodplains. Major landslides in the San Diego area most typically oc-

cur when water-saturated surface rocks and soils are triggered into motion by earthquakes. Again, due to the lack of rain and earthquakes in recent years, some weak rock masses on unstable slopes have been used as building sites.

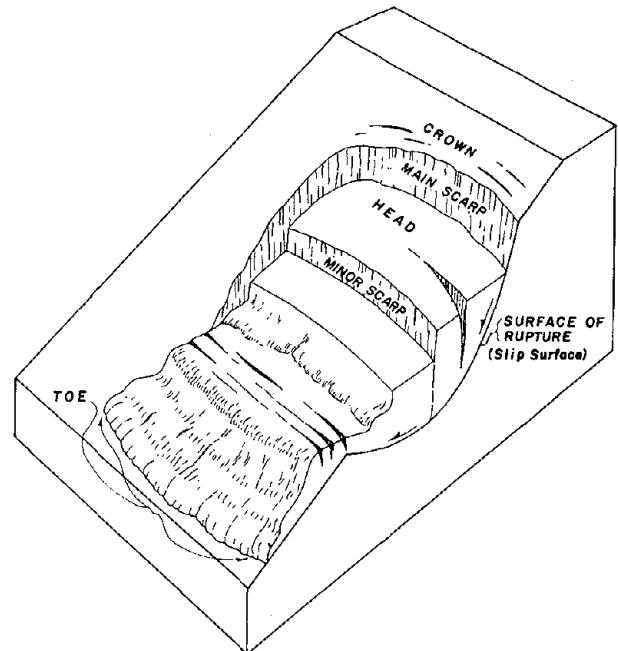


Figure 3. Diagram of a slump landslide (From Eckel, 1958).

It is hoped that public awareness of these and other potential hazards will serve as a basis for rational approaches to the existing problems in their city.

Copies of a book based on the lecture series, Geologic Hazards in San Diego, edited by Patrick L. Abbott and Janice K. Victoria, are available from the *San Diego Society of Natural History, P.O. Box 1390, San Diego, CA 92112, \$6.95 plus \$.50 each for postage (and 6% sales tax for California residents)*.



BIBLIOGRAPHY

AVAILABLE

A Selected Partially Annotated Bibliography of Recent (1976-1977) Natural Hazards Publications by David Morton is ready for distribution. This annual bibliography includes natural hazards

publications which have come to the attention of this Center during the past year. It is arranged by hazard and has subject and author indexes. The 113 entries are annotated. Addresses and prices for ordering each entry are given whenever possible. Copies of the 1975-1976 annual bibliography are also still available. Both bibliographies can be obtained from *Natural Hazards Research and Applications Information Center, IBS #6, University of Colorado, Boulder, CO 80309 (\$2.00 each prepaid)*.

POTENTIAL GEOLOGIC HAZARD IN NEVADA

The United States Geological Survey has called the attention of Nevada state officials to a recent USGS report which indicates that continued differential sinking of the land surface related to groundwater withdrawal in Las Vegas Valley, Nevada, may lead to additional fissuring and ground faulting and possible damage to buildings and other structures.

Thomas Holzer, author of the report, said, "A zone of differential subsidence occurs in Las Vegas Valley that is generally coincident with a known prehistoric fault. An analysis of leveling data suggests that the ground surface has been displaced... Surface and subsurface structures such as highways, buildings, and pipelines may in the future be damaged by additional fissuring and by new movement along old faults from increased differential subsidence... Although the evidence for potential surface faulting in Las Vegas Valley is not conclusive, the available data indicate that zones of potential surface faulting may occur within heavily developed areas... and could damage existing structures."

The USGS is assisting state agencies in developing a work program for a study to identify the degree of seriousness of the potential hazard and to determine what, if any, additional studies, actions or mitigation measures might be taken.

The 10 page report, "Documentation of Potential for Surface Faulting Related to Groundwater Withdrawal in Las Vegas Valley, Nevada," T. L. Holzer, Open File Report #78-79, may be purchased from *Open File Services Section, Branch of Distribution, USGS, Box 25425, Federal Center, Denver, CO 80225, \$3.00 prepaid.*



WARNINGS: THE HUMAN FACTOR

In October, 1977, the American Meteorological Society held its 10th Severe Local Storms Conference. As part of this conference, two sessions were devoted to the warning system--pre-disaster planning, hazard detection, warning decisions, dissemination, and public response. Participants emphasized the importance of pre-disaster preparedness programs and the use of Amateur Radio Service in developing supplemental storm spotter networks.

Two speakers addressed the problem of understanding the human factor in the warning system; even an early detection system is of no use if no one gets the message. They cautioned that warning is a complex process involving many organizations and individuals. Furthermore, for an effective warning process one must understand and utilize the ongoing social situation. It is better to adjust plans to people than to try to force people to follow plans. Specific recommendations for improved warnings include:

- 1) develop guidelines for when, how and what messages will be released to the public;
- 2) issue warnings which are consistent in content to facilitate confirmation by the public;
- 3) provide information that will lead to adaptive behavior, especially by providing alternative choices for behavior; and
- 4) devise feedback mechanisms to allow those issuing warnings to determine how those warnings are being received, and to modify future warnings to insure appropriate responses.

A summary of these sessions and reprints of four of the papers are available from the *Disaster Preparedness Staff of the National Weather Service, Wx5, 8060 13th Street, Silver Spring, MD 20910.* A complete conference preprint volume can be obtained from the *American Meteorological Society, 45 Beacon Street, Boston, MA 02108.* The cost is \$16.00 for AMS members and \$21.00 for non-members.

WASHINGTON UPDATE

EARTHQUAKE HAZARD REDUCTION ISSUES

On April 21, 1978, the Executive Office of Science and Technology Policy released a report which is viewed as the first step in implementing PL 95-124, the Earthquake Hazards Reduction Act of 1977. Single copies of Earthquake Hazards Reduction Issues for an Implementation Plan are available at no charge upon written request from *Branch of Distribution, U.S. Geological Survey, 1200 S. Eads Street, Arlington, VA 22202.*

The implementation plan itself, as drafted by the Working Group on Earthquake Hazard Reduction under the chairmanship of Karl V. Steinbrugge and revised by the OSTP, is in the hands of the President's senior staff advisors and is expected to go to the President late in May.

REORGANIZATION

As of this writing, the President's Reorganization Plan for federal emergency preparedness and response is still with the concerned departments and agencies for comment. It is expected to go to the President by May 19, 1978 and is targeted to reach Congress the first week of June, 1978. June 5th is considered by many to be the deadline for this plan to reach Congress and permit 60 days for consideration prior to adjournment, which is expected in late summer.

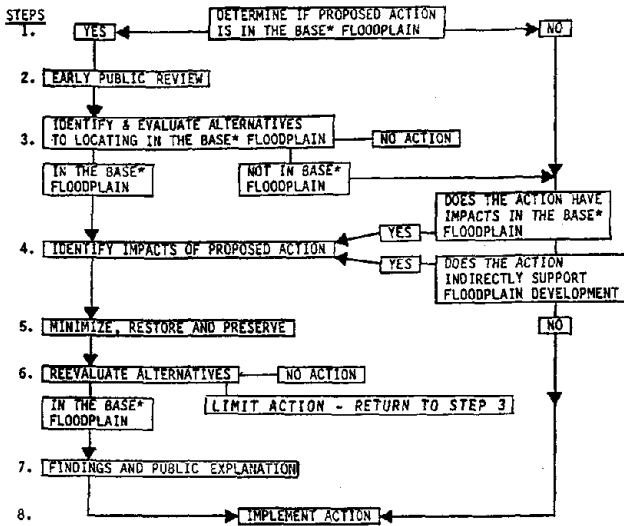
E.O. 11988--GUIDELINES FOR FEDERAL AGENCIES

A set of guidelines for federal agencies to use in implementing Executive Order 11988--Floodplain Management--has been issued by the Water Resources Council (Federal Register 43, no. 29, Feb. 10, 1978). The objectives of the Executive Order are "to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative..." Through their regulations and procedures, the federal agencies are required to take a leadership role in:

- avoiding the base (one percent chance) floodplain if at all possible,
- acting to adjust to the base floodplain,
- keeping the public informed of proposed actions in the base floodplain and encouraging public participation in floodplain decision-making.

The Guidelines, the result of a 12-month effort of an interagency task force, spell out the responsibilities of the agencies to recognize that floodplains have unique and significant public values, and to evaluate the potential effects of any action which they may take in a floodplain. The agencies must take floodplain management into account both in formulating their own water and land use plans, and in evaluating the water and land use plans of others. Procedures for doing this are to be prepared in consultation with the Water Resources Council, the Federal Insurance Administration, and the Council on Environmental Quality.

DECISION-MAKING PROCESS FOR E.O. 11988
FIGURE 1



* FOR CRITICAL ACTIONS SUBSTITUTE "500 YEAR" FOR "BASE".

The steps in the decision-making process are outlined above.

For further information contact Frank H. Thomas, Floodplain Management Specialist, Policy Division, U.S. Water Resources Council, 2120 L Street, N.W., Washington, DC 20037, (202) 254-6352.

STATUTE OVERRIDES EXECUTIVE ORDER

The Guidelines for E.O. 11988 designate the various agencies to which the order applies, in-

cluding those lending agencies enumerated in the Disaster Protection Act of 1973. A recent ruling of the Justice Department has determined that legislation amending Section 202(b) of that Act takes precedence over the Executive Order. Therefore, federal agencies regulating loan institutions cannot impose flood insurance purchase requirements as a condition of loans in flood-prone communities not participating in the National Flood Insurance Program.

PEOPLE

Gloria M. Jimenez was sworn in March 31, 1978, as Federal Insurance Administrator for the Department of Housing and Urban Development. The third Administrator of FIA since it was created in 1968, she is the first woman in the post. Trained as a lawyer, and with experience in housing and urban programs, she is responsible for administering three insurance programs: National Flood Insurance, Federal Crime Insurance, and Urban Property Insurance, which includes the FAIR plan and Riot Reinsurance.

H. William Menard, Jr. has been confirmed by the U.S. Senate as Director of the U.S. Geological Survey. A scientist with extensive experience in marine, atmospheric and solid earth sciences, Menard has been a professor of geology at Scripps Institute of Oceanography in San Diego since 1955, and has served on a number of National Research Council committees concerned with natural resources. He succeeds Vincent E. McKelvey, Director since 1971.

FLOOD INSURANCE SURVEY

Senator Thomas F. Eagleton, (D) MO, has released the results of a questionnaire which he sent to 3,400 communities which were designated by the Flood Insurance Administration as having failed to meet the flood insurance deadlines for participation in the National Flood Insurance Program. The communities are small; of the 728 (21%) which responded, 426 (59%) are under 1,000 in population, and 198 (27%) are under 5,000.

Most of the communities indicated that only a small percentage of their area had been mapped as flood prone, and that the designated area was, for the most part, not prime industrial, commercial or residential land.

Multiple reasons were given by responding communities for failure to meet the requirements for entering the program and include:

	No.	%
The respondents say the community has never been flooded	376	52
The HUD map was found inaccurate	261	36
Mistakes in the FIA program	104	14
Red tape (paperwork)	65	9
No information	56	8
Not needed or wanted	51	7
High ground	38	5
Too costly	27	4
Has own flood management program	11	2

Several areas of concern reflected in this study are being addressed by FIA; a spokesman states that an ongoing effort is being made to make appropriate corrections in the program. Through March 31, 1978, FIA has rescinded 1,440 maps, so that these communities are no longer considered as having serious flood prone areas, and sanctions no longer apply. As of the same date, there are 3,287 communities remaining under sanction. FIA also has a study underway on technical assistance to small communities.

FIA UPDATE

As of April 30, 1978, the Federal Insurance Administration reports that 15,960 communities are participating in the National Flood Insurance Program, with 1,905 of these in the regular program. Twenty-seven communities have been suspended from the program for failure to adopt the minimal required flood plain management ordinances based on technical data made available to the community by FIA. A total of 1.2 million policies were in effect by that date, representing \$39 billion of insurance in force.

COMPENSATION FOR FLOOD DAMAGE

The Secretary of Housing and Urban Development, Patricia Roberts Harris, has clarified the National Flood Insurance Program's regulations concerning restoration of a structure. According to New Jersey law, structures damaged more than 50% of value, when located in a regulatory floodway selected and adopted as such by the local government, may not be restored. Residents were concerned that in the event of a disaster, they might not be compensated by insurance for the full loss of a home where rebuilding was precluded.

In a letter to the Senator from New Jersey, Clifford Case (Feb. 16, 1978), Secretary Harris states a policy that where repair of a structure damaged by an insured peril is prohibited by statute or regulation, the loss becomes a constructive total loss, and the owner's flood insurance claims will be appropriately adjusted. "It is to the taxpayer's and the program's benefit that existing, heavily subsidized risks be eliminated," she states. "At the same time, the citizens required, in effect, to purchase insurance cannot justly be called upon to bear the chief economic burden because of inadequate insurance coverage, narrowly construed. So while we sincerely applaud states and local communities for their various flood plain management regulations, we are not going to walk away from insureds who face tremendous economic loss because of insufficient recoveries under their policies as compared to their actual losses where a reasonable construction of the federal policy permits the interpretation that such losses are covered under the policy."



GRANTS

Flood hazard notification effectiveness. "Study of Effectiveness of Notification of Occupants of Flood Plains." Denver Urban Drainage and Flood Control District, \$10,000, 9 months. Principal Investigators: *Gary H. McClelland and Gilbert F. White, Institute of Behavioral Science, University of Colorado, Boulder, CO 80309.*

An assessment of the effectiveness of alternative methods of notifying flood plain occupants in the Denver Urban Drainage and Flood Control District of their location in flood hazard areas will be conducted. The District is sending notification brochures to all residents of the smaller flood plains in the metropolitan area. The aim is to determine the extent to which the distribution of maps, accompanying brochures, public meetings, newspaper articles or other media techniques have an effect on: a) articulated awareness of the existence of the flood hazard, b) interest in or willingness to purchase flood insurance, c) interest in or willingness to participate in efforts to manage land use or take other public measures which would mitigate vulnerability to flood losses and d) interest in or willingness to take private measures to reduce vulnerability.

Earthquake liability. "Liabilities of Local Governments for Earthquake Hazard Reduction," National Science Foundation, \$125,000, 12 months. Principal Investigator: *Terry R. Margerum, Association of Bay Area Governments, Hotel Claremont, Berkeley, CA 94705, (415) 841-9730.*

An examination of what are and what should be the liabilities of local governments for reducing, or failing to reduce, known earthquake hazards has recently been undertaken by ABAG. The purpose of the study, which includes five site visits and a survey of 50-100 local governments in several states, is twofold: 1) to find out what information and perceptions local governments have about their liability and 2) to determine how that understanding influences their behavior as demonstrated in policies, codes, ordinances, resource allocation, etc.

After extensive legal analysis, the study will seek to define legislative and administrative strategies which will help local governments deal with their potential liabilities while actively supporting measures to increase seismic safety for their citizens.

CONFERENCES



The American Water Resources Association's Fourteenth Annual Conference will be held in Lake Buena Vista, Florida, November 6-10, 1978. Papers on all aspects of water resources planning, development, management, education, and information systems will be presented. *Bent Christensen, Department of Civil Engineering, University of Florida, Gainesville, FL 32601, (904) 392-0952.*

A special *National Symposium on Wetlands* will be held in conjunction with this conference. Wetland ecology, hydrology, social and economic problems, legislation, planning, and management will be discussed. *Eugene Odum, Institute of*

Conferences (cont.)

Ecology, University of Georgia, Athens, GA 30602, or Joseph Larson, Holdsworth Hall, University of Massachusetts, Amherst, MA 01003.

COASTAL ZONE 78, a symposium on the technical, environmental, socioeconomic and regulatory aspects of coastal zone planning and management, was sponsored in March 1978 by the American Society of Civil Engineers, the Conservation Foundation and the U.S. Office of Coastal Zone Management in cooperation with various related federal and California state agencies. The four volume set of proceedings will be available from Paul A. Parisi, Director, Publications Services, American Society of Civil Engineers, 345 East 47th Street, New York, NY 10017. All sessions were recorded and the tapes can be purchased from *Convention Cassettes of San Francisco, 1255 Post Street, Suite 728, San Francisco, CA 94109.*

An International Symposium on the February 4, 1976 Guatemalan Earthquake and the Reconstruction Process was held in Guatemala, May 14-20, 1978. In addition to discussions on seismology, geology and structural engineering, participants reviewed problems associated with damage evaluation, response capability and the reconstruction process. Symposium proceedings will be published. Information: *Jose Asturias, General Secretary--ISGE, 8a. Calle 6-06 Zona 1--Apt. 602, Guatemala, Guatemala, C.A.*

International Seminar on Disaster Preparedness (SIPAC '78), Vina del Mar, Chile, March 6-14, 1978. Organized by the National Office of Emergencies of the Chilean government, in cooperation with the League of Red Cross Societies and the Office of Foreign Disaster Assistance of the U.S. Agency for International Development, the conference examined the state of disaster preparedness in Latin America and the need for vulnerability analysis and mitigation measures. Subsequent regional seminars to be held at two year intervals were recommended. For information contact *Jeffrey A. Clark, Office of U.S. Foreign Disaster Assistance, Agency for International Development, Department of State, Washington, DC 20523, (202) 632-8927.*

Second International Conference on Microzonation for Safer Construction Research and Application, November 26-29, 1978, San Francisco, CA. The conference is sponsored by the National Science Foundation, UNESCO, American Society of Civil Engineers, Earthquake Engineering Research Institute, Seismological Society of America and the Universities Council for Earthquake Engineering Research.

The conference will bring together persons from such diverse backgrounds as geophysics, geology, seismology, engineering, economics, sociology, architecture, urban planning, government administration and insurance. Knowledge concerning earthquake microzonation techniques will be summarized and future research needs identified. Contact: *M.A. Sherif, Conference Chairman, 132 More Hall, FX-10, University of Washington, Seattle, WA 98195, (206) 543-6777.*

The Office of Earthquake Studies of the U.S. Geological Survey sponsored a workshop on *Communicating Earthquake Hazard Reduction Information in Denver, CO, May 22-24, 1978.* The proceedings will describe the experience of several groups who are conducting hazard awareness programs--California Seismic Safety Commission, Federal Disaster Assistance Administration, Colorado Geological Survey, and others. For each program the flow of information will be outlined and lessons to be learned will be examined. Recommendations will be developed to aid the USGS in its efforts to communicate earthquake hazards information to the public. Contact *Walter Hays, Office of Earthquake Studies, USGS, Mail Stop 966, Box 25046, Denver Federal Center, Denver, CO 80225, (303) 234-4029.*

RECENT PUBLICATIONS



NOTE: The publications listed below should be obtained from the author, organization or publisher cited. They are not available through the *Natural Hazards Observer*.

Debris-Flow Hazard Analysis and Mitigation: An Example from Glenwood Springs, Colorado. Arthur I. Mears. Colorado Geological Survey, Dept. of Natural Resources, Room 715, 1313 Sherman St., Denver, CO 80203. Information Series #8. 1977. 44 pp. \$4.00.

This study features a probability estimate for a debris flow of similar magnitude as the event described, and a discussion of debris flow dynamics. Closely spaced trees were effective in stopping large rocks. Such trees, used together with structural catching fences, debris storage reservoirs, and a storm drainage plan for flood waters, are recommended as mitigation measures. In undeveloped areas, avoidance and non-development probably will be the least costly and most effective methods of hazard reduction.

Land Use: Tough Choices in Today's World. Soil Conservation Society of America. 7515 Northeast Ankeny Road, Ankeny, IA 50021. Special Publication # 22. 1977. 454 pp. \$7.00.

This anthology, the result of a symposium held March 21-24, 1977, examines a number of important land use problems including "Land For Food and Fiber," in which five specific agricultural land preservation programs are examined. "Putting it All Together: Federal and State Involvement in Land Use Control" discusses impacts of four federal programs (including an essay titled "Coping with Intergovernmental Confusion"). "Facing the Tough Choices," features contributions such as "Courts: the Ultimate Arbiters in Land Use Disputes." Although natural hazards are not emphasized, useful information about current attitudes, practices, trends, and programs in land use planning is condensed into a manageable format.

Perceived Frequency of Lethal Events. S. Lichtenstein, P. Slovic, B. Fischhoff, M. Layman, and B. Combs. Decision Research, 1201 Oak Street, Eugene, OR 97403. Decision Research Report 76-2. 1978. 81 pp.

This study found that people have difficulty in estimating the frequencies of lethal events that they may encounter in life, and as a result, do not have an accurate knowledge of the risks they face. Improved public education is needed before citizens can be expected to make reasonable public-policy decisions about societal risks. Experts who make policies designed to reduce risks (speed limits, banning certain drugs, etc.) should be aware that when they rely on their memory, experience, and common sense rather than on statistical data, then they, too, may not be immune to bias. Frequency of death due to tornado and flood were relatively overestimated by two subject groups. Also, flood and tornado were among the ten most overestimated causes of death, while lightning as a lethal event was generally underestimated.



Recent Publications

(cont.)

U.S. Geological Survey Yearbook, Fiscal Year 1977. U.S. Department of the Interior, USGS. 1978. 229 pp. For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. Stock # 024-001-03042-0.

This annual report to Congress and the public summarizes the Survey's varied activities, budgetary allotments, operational procedures, and accomplishments. The chapters on "Water Resources Investigations" and "Land Information and Analysis" will be of interest to natural hazards observers. The land use summary includes geologic hazards information, the budget for the Land Information and Analysis Office, geography program activities (such as the status of land use and land cover mapping), accomplishments in remote sensing technology, and a listing of environmental impact statements completed or in progress. Organizational information (including basic agency directories) and the Survey's budget are detailed.

The Role of Technology in International Disaster Assistance: Proceedings of the C.I.D.A. Workshop, March 1977. National Academy of Sciences, National Research Council, Committee on International Disaster Assistance, 2101 Constitution Avenue, N.W., Washington, DC 20418. 1978. 102 pp. (A limited number of copies are available from the C.I.D.A., National Research Council at the above address.)

This workshop investigated the extent to which scientific and technological knowledge can be applied to prevent, prepare for, and assist in mitigating the effects of foreign disasters, particularly floods and earthquakes. Four major technological issues are examined: 1) emergency shelters, 2) search and rescue, 3) emergency communications and 4) the possible use of satellites for disaster warning. Disaster preparedness and the importance of postdisaster evaluations of relief response emerged as major areas for further investigation.

The U.S. Government Foreign Disaster Assistance Program. National Academy of Sciences, National Research Council, Committee on International Disaster Assistance, 2101 Constitution Avenue, N.W., Washington, DC 20418. 1978. 108 pp.

This report assesses the U.S. government role in foreign disaster relief with regard to both programs and management of operations. It covers the decision-making problems inherent in disaster response, a generalized concept of disaster, information requirements for both pre- and post-disaster assistance, and a history of the U.S. foreign disaster relief program. Recommendations include greater budgetary support for the planning and preparedness activities of the AID/OFDA's technical assistance program; a critical re-evaluation of AID/OFDA's computerized data bank; and an evaluation of the entire disaster-reporting system of the AID/OFDA. The report has an extensive bibliography.

"Xenia Rebuilds: Effects of Postdisaster Conditioning on Postdisaster Redevelopment." Richard V. Francaviglia. *Journal of the American Institute of Planners* 44 (1978) 1:13-24.

The Xenia, Ohio tornado has the dubious distinction of being the most costly tornado yet recorded--\$100 million worth of damage. The social, political, and financial forces at work during Xenia's reconstruction planning process are described, and their resolution in the actual rebuilding process is examined. Because of the extensive damage, Xenia had the opportunity to avoid past mistakes in planning and rezoning, but reconstruction so far has produced some discouraging results. For example, the repair of homes and businesses in the Shawnee Creek floodplain proceeded without regard to federal regulations, and many of these structures now face difficulty in qualifying for federal flood insurance.

The Furious Days: the Relief of Darwin. Alan Stretton. Sydney: Collins. 1976. 207 pp.

This informal account of the relief and reconstruction of Darwin, Australia after the onslaught of Cyclone Tracy was written by the coordinator of the relief effort. It describes the immense social upheaval precipitated by the mass exodus from Darwin, and the ensuing problems associated with repopulating the town. The author found that 1) there was a complete breakdown of civil and military communications

during the hours immediately following the storm's passage 2) Darwin's building regulations were totally inadequate and 3) the warning system was unprepared for a storm of Tracy's magnitude.

Bolivia: A Country Profile. U.S. Department of State, Agency for International Development, Bureau for Private and Development Cooperation, Office of U.S. Foreign Disaster Assistance, Washington, DC 20523. 1978. 80 pp.

OFDA's profile on Bolivia is the first of an anticipated series of evolving country profiles designed specifically to meet the Office's needs in dealing with disasters. The format is a computer printout with the usual "computer-terse" English, containing information useful for both short and long term disaster response. It includes information on current government organization and political leaders including names and phone numbers of Bolivian disaster officials; airports and runway conditions; air entry details; diet; agricultural imports, exports, local crops and their growing seasons; and electricity, radio and telephone communications facilities.

Local Tsunamis and Possible Local Tsunamis in Hawaii. Doak C. Cox and Joseph Morgan. *Hawaii Institute of Geophysics, University of Hawaii, Honolulu, HA 96822. Publication # HIG-77-14.* 1977. 118 pp.

This report is the product of a project to identify and verify all local tsunamis in Hawaii since 1848, and brings together in one volume, for the first time, a complete list of events. In developing a rational plan for the management of an infrequent hazard, it is essential to establish an accurate historical record of occurrence, particularly if future projections of risk are to be based on this record. Height-frequency distributions indicate that a local tsunami with a height of about 40 feet may be expected, on the average, every 100 years.

Johnstown, Pennsylvania Flash Flood of July 19-20, 1977: A Report to the Administrator. U.S. Dept. of Commerce, NOAA, 6010 Executive Blvd., Rockville, MD 20852. *Natural Disaster Survey Report 77-1.* 1977. 60 pp.

A National Oceanic and Atmospheric Administration survey team reviewed the performance of the warning system in this flood, and made recommendations for improvements. Since projective precipitation models and subsequent zone forecasts gave no indication of the abnormally heavy rainfalls in Pennsylvania, July 19-20, the report recommends that NOAA initiate, with the highest priority, a coordinated program to develop an improved capability for forecasting rainfall amounts associated with convective storm activity. In addition, a centralized office should be established incorporating experience and expertise in issuing heavy rainfall guidance for general areas, and the National Weather Service should model the flash flood warning system more closely after the hurricane/tornado warning system.

Two Tales of a Snowstorm: How the Blizzard of January, 1977 Affected the Niagara Region of Ontario. Joseph Scanlon and Brian Taylor. *Carlton University, Emergency Communications Research Unit, School of Journalism, Ottawa, Ontario, Canada. ECRU Field Report 77/3.* 1977. 45 pp.

Two separate but related studies compare the effects on two locales of the blizzard which struck lower Ontario in 1977. The most critical problem in both areas was, as is almost always the case in unexpected events, communications. The telephone proved to be the most effective communications link. CB radio did help, but was often ineffective and there was duplication of efforts. The study concludes that sophisticated technology is perhaps far less effective in emergencies than people suppose.

Glaciological Data: Avalanches. World Data Center "A" for Glaciology, Institute of Arctic and Alpine Research, University of Colorado, Boulder, CO 80309. Report GD-1. 1977. 134 pp. *Glaciological Data is distributed without charge to interested individuals and institutions. Direct all communications to the editor, Marilyn J. Shartran, at the above address.*

Contributions in this issue include an "Informal, Annotated Glossary of Avalanche Terms," "A Note on Procedures and Problems in Avalanche Data Collection," and "Avalanche Damage and Avalanche Protection in Switzerland," plus a brief history of the Soviet avalanche investigation program. Of interest to researchers and planners is a selected bibliography with 647 citations on avalanches for the years 1950-1977.

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