

An Approach to Disaster Preparedness
for the Islands of the Caribbean

June 1978

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Acknowledgements

Due to the breadth of our examination of Caribbean disaster preparedness, this report necessarily trods paths taken by the many who earlier considered the subject. We are indebted to the original thinkers whose works have helped us obtain a better grasp of the complex nature of the region's disaster hazards and vulnerability.

To John Tomblin of the Seismic Research Unit, University of the West Indies, Trinidad, we offer our special thanks for his direct consultation and his many papers in the areas of Caribbean seismology and volcanology which will most certainly prove to be of continuing value in the pursuit of increased regional disaster preparedness.

BACKGROUND

This working paper is designed to explore disaster preparedness needs in the Caribbean Basin and to suggest, tentatively and only for discussion purposes at this time, what actions might be taken by Caribbean governments unilaterally or with some degree of assistance from the U.S. or others to advance disaster preparedness in the region.

The Caribbean is considered among the disaster-prone regions of the world, even though it is true that such areas as the Indian sub-continent and Central America are more frequently subject to destructive events. However, the disaster specialist realizes that a 25-100 year interval between major disasters deters development of essential preparedness measures which could ultimately result in a higher death rate, greater suffering, and otherwise avoidable destruction.

A.I.D.'s Office of U.S. Foreign Disaster Assistance (OFDA) is charged by the Congress with carrying out foreign disaster relief and preparedness programs under Section 491, International Disaster Assistance, of the Foreign Assistance Act. Past preparedness activities of OFDA have taken the form of an annual International Disaster Preparedness Seminar (IDPS) for senior disaster officials of disaster-prone developing countries; and in-country assistance by U.S. disaster preparedness staff, scientists, engineers, and others in such areas as hazard and vulnerability analysis, technological applications, development of national disaster statutes, inventory of disaster resources, and general national contingency planning.

OFDA staff believes there have been disaster preparedness benefits derived from its seven year series of annual seminars. During this period, a number of national preparedness plans were developed in participating countries. The IDPS was discontinued this year, however, in the belief that still greater results could be obtained from regional programs aimed toward known preparedness planning problems as opposed to the conceptual focus and generalization which so often characterize international disaster conferences.

Subject to the views of appropriate country teams and the recommendations of a Caribbean preparedness advisory group (comprised of selected Caribbean and U.S. representatives), a regional disaster preparedness conference is contemplated (See Attachment A) which will:

- in plenary sessions, briefly review the basic concepts of disaster preparedness;
- provide for a free exchange of ideas and experiences among participants; and
- in group sessions, work to develop or improve disaster plans and laws and scientific, engineering, and emergency programs.

Such a meeting is not seen to be an end in itself, but the initial event of a long-term comprehensive preparedness program with regional, bilateral, and perhaps multilateral involvement.

Serious national disaster preparedness has the greatest chance of success if it has the support of or is at least acknowledged by the chief of state. The level of the official assigned responsibility for directing such programs also has a vital bearing on the probability of such a venture's success. A nation's senior disaster official may find himself coordinating or even directing most of his government's resources. A weak appointee might never be given the opportunity of emergency leadership in a national crisis. Under these circumstances, even though a disaster plan exists, it is apt to be ignored and less effective ad hoc approaches followed.

The Seismic Threat

The previously mentioned preparedness problem of prolonged intervals between major disasters particularly applies in the case of Caribbean earthquakes; and unfortunately, since the seismic disaster threat is the most universal for the region. It might be considered the disaster preparedness common denominator for all the Caribbean islands.

When a seismically active area becomes quiet, a complacent sense of well-being usually ensues. But in human history there is no record of a seismically active area becoming inert.

Seismic inactivity in an area with a history of high seismicity may indicate the development of a potentially dangerous seismic deficit which will be normalized by a series of small shocks or a single great earthquake. Currently, such a deficit (J. Tomblin, UWI) exists in an area extending from western Haiti through Jamaica. While this paper deals exclusively with the Caribbean Islands, it must be noted that a similar deficit exists in the western Venezuelan coastal region and that such "seismicity gaps" are not uncommon in other tectonically active parts of the world.

The following list of cities damaged by Caribbean earthquakes during the historical period provides a better sense of the regional threat:

Kingston, Jamaica	1907
Port Royal, Jamaica (destroyed)	1692
Cap-Haitien, Haiti	1842
Les-Cayes, Haiti	"repeatedly"
Port-au-Prince, Haiti	1749, 1789
Azua, Dominican Republic	1542
Santo Domingo, Dominican Republic	1946
Santiago de Cuba	1776, 1852, 1932, 1947
Aguadilla, Puerto Rico	1918
Mayaguez, Puerto Rico	1918
Point-a-Pitre, Guadeloupe	(dates in question)

Caribbean seismic history demonstrates that a significant level of seismic risk exists in the region. Further, its current vulnerability is greater than in earlier years for the following reasons:

- . Population has nearly doubled since 1950 (from 16.67 million to more than 30 million). While the birth rate of 1.8% (1965-70) is modest compared to the 2.7% for Latin America as a whole, potential disaster sites, particularly the rapidly growing urban centers, are dangerously crowded.
- . Urbanization and construction activity accompanying rapid population growth tend to bypass such disaster mitigating imperatives as safe land-use and application of appropriate engineering technology and geophysical research and development. Therefore, such development tends to increase potential disaster impacts.
 - tall buildings and dams often are contributing elements in disaster deaths and dollar damage;
 - more extensive, vulnerable infrastructure is in place; and
 - departure from traditional adaptations to the environment leads to increased disaster potential.

Caribbean Seismic Zonation

Earthquakes occur along the entire Lesser Antilles crescent and on the adjacent seabeds. Zones of greatest earthquake probability in this region include:

- . The Cayman Trench and Puerto Rico Trench edges (strong submarine earthquakes);
- . Cuba - Sierra Maestra, Santiago, and Guantanamo basins;
- . Haiti - Plaine du Nord, Cul-de-Sac, Port Salut Peninsula;
- . Dominican Republic - Cibao;
- . Guadeloupe;
- . Antigua; and
- . Puerto Rico - west, near Mona Passage.

Secondary Earthquake Effects

No consideration of earthquake risk should omit possible secondary effects. Tsunamis, fires, and landslides can greatly multiply death and destruction.

Tsunamis, great waves caused by undersea seismic or volcanic earth movements, have been recorded at speeds of 600 mph and heights of 100 feet. When they approach shallow waters near land they slow down, gain height,

and become walls of water with a destructive potential relative to their height and speed of impact. Warning is possible in the case of distant earthquakes; however, strike areas close to the epicenter must consider the earth movement itself as the only warning. Tsunamis are rare occurrences, accompanying 1 in 15 major earthquakes. Although generally confined to the Pacific, Caribbean vulnerability both to earthquakes and to volcanoes must make tsunamis a concern to disaster planners. Ten tsunamis, with wave heights of 5 to 60 feet, have occurred in the Caribbean since 1530. Remarkably, the great Lisbon, Portugal, earthquake of 1755 is recorded as having generated a tsunami which struck the West Indies.

Major fires often follow earthquakes, particularly where automatic cut-off devices have not been installed in gas and power systems. Ignition of combustible liquids from ruptured storage containers is also a serious, common threat. The fire problem in major earthquakes is often exacerbated by broken water pipelines and the loss of water pressure. Debris-choked streets not uncommonly block early access of fire and other emergency equipment to the damaged area. Responsible officials must make difficult decisions at such times. With search and rescue in its early phase, dare they blast or bulldoze fire lanes to control the conflagration?

Landslides of the relatively slow moving type may occur in any land sloping ten degrees or more and should be given consideration in pre-disaster risk mapping. Greater topographic anomalies may cause more rapid landslides or rockfalls and should be identified if they threaten inhabited areas or transportation arteries. The flow of relief supply may be seriously interdicted by slides of both types. There have also been rare high speed, massive earth movements which have taken thousands of lives (the great Peruvian earthquake of 1970).

The Hurricane Threat

Some disaster experts feel hurricanes are by far the Caribbean's greatest natural threat. With wind velocities approaching 200 mph, their unpredictability of movement and frequency of occurrence make them a great hazard and notable preparedness adversary. It would be difficult to conclusively compare a "great" hurricane with a "great" earthquake in terms of damage potential. Normally, loss of life from storms is less than that for earthquakes, but it would be foolhardy to underestimate the Caribbean storm potential. The Great International Disaster Book describes the Great Hurricane of 1780 which killed 20,000-30,000 persons, ranking it among the most fearsome hurricanes of history. It struck Barbados first, destroyed the English fleet off Saint Lucia and killed thousands on the island itself, repeated the slaughter on Martinique, and continued taking its toll as it hit Dominica, Guadeloupe, St. Eustatius, and Puerto Rico.

Each year, destructive hurricanes strike the Caribbean area on an average of 5.25 times during the period from August to the end of October. Twice that number of sub-hurricane strength tropical storms occur during the

same period. This explains why, to date, most Caribbean regional and international preparedness has focussed on the hurricane threat.

Historical hurricane data for the region is quite complete; principal storm tracks have been charted and there appears to be a pragmatic, traditional respect for the threat and a long-standing ability to cope with it. Danger and losses, however, are probably accepted more fatalistically than, they should be.

Historically, the following cities have been particularly vulnerable to hurricane damage:

- Kingston, Jamaica
- Santo Domingo, Dominican Republic
- Port-au-Prince, Haiti
- Les Cayes, Haiti
- Point-a-Pitre, Guadeloupe

During the last fifty years, the following major hurricanes were especially destructive:

- . Santo Domingo, Dominican Republic — September 3, 1930.
2,000 dead, 6,000 injured, \$40 million in damages.
- . Santa Cruz del Sur, Cuba — November 9, 1932.
2,500 dead.
- . Haiti — October 23, 1935.
Floods killed over 2,000 in Jacmel and Jeremie.
- . Jamaica — August 17, 1951.
Kingston 150 dead, 20,000 buildings destroyed, \$56 million estimated damage.
- . Hurricane Hazel — October 5-18, 1954.
 - SW Haiti - hurricane force, severe flooding, landslides: Jeremie, Cayes, and Berley virtually destroyed. Dead: 400-1,000;
 - Puerto Rico - 12" rain; and
 - Bahamas.
- . Hurricane Flora — October 2-7, 1963.
 - started south of Trinidad and Tobago;
 - SW Haiti: hurricane force, flash floods and landslides, towns and crops destroyed, \$180 million damages, 3,500 dead, 1,500 missing;
 - Dominican Republic: 400 dead, \$60 million in damages;

- Cuba: 90" rain in 5 days, 1,750 dead (est.), 50% of sugarcane and tobacco crops destroyed; and
- Total dead in West Indies: 7,190.

The Volcanic Threat

While earthquakes and storms may vie for primary place among Caribbean disaster forces, volcanoes' third position is undebated even though recent activity is limited to Guadeloupe, Martinique, and St. Vincent.

John Tomblin and Marion Leiba of the UWI Seismic Research Unit describe the greatest volcanic hazard as coming from eruptions which yield glowing avalanches. Of a total of fourteen eruptions in the Lesser Antilles since 1700, four--and perhaps five--have produced these dangerous manifestations. In the 20th century alone, over 30,000 people have been killed in the Lesser Antilles by such eruptions. The potential threat in the Lesser Antilles is indicated by the probability that 1 in 3.5 eruptions of steam blast or larger scale will culminate in glowing avalanches. Worldwide, the proportion of such activity is far lower: 4 out of 229 eruptions in Japan and 28 out of 550 in Indonesia produced glowing avalanches.

Following is a summary of major destructive eruptions in the Lesser Antilles:

- Martinique-Montaigne Pelee: 1792, 1851, 1902, 1929, 1932
- Guadeloupe-Soufriere: 1976
- St. Vincent-Soufriere: 1718, 1812, 1902, 1971

Lesser types of volcanic action, solfataras, produce only vapor eruptions; the explosive release of sulfurous gases occasionally results in damage, as on Dominica in 1880 and on St. Lucia in 1766.

Attachment B geographically locates major areas of Caribbean natural disaster risks.

Attachment C briefly summarizes disaster risk and preparedness for islands of the region.

Dimensions of Disaster Preparedness

In the context of this paper, disaster preparedness includes all actions which can be taken by or on behalf of disaster-prone countries or their political or geographic subdivisions in advance of catastrophic natural occurrences which will prevent or mitigate the disastrous consequences of such events. Such preparedness involves most components of a nation:

elements of government; the private business, scientific and medical sectors, emergency services, private voluntary agencies, and the public.

Preparedness entails such diverse actions as:

- development of national disaster plans and organizations;
- preparation of disaster laws;
- organization and training of local disaster units;
- creation of disaster stockpiles of essential supplies, equipment, and systems for their distribution;
- pre-planning evacuation logistics and mass care requirements, including search and rescue, emergency medical aid, temporary shelter, food, water, and sanitation;
- pre-arranging systems and methods for coordinating internal and international disaster relief;
- provision of disaster-related equipment for firefighting, earthmoving, and search and rescue;
- the conduct of hazard and vulnerability analysis; and
- gathering and analyzing disaster data relative to prediction and warning assessment, structural stability, and land-use.

The State of Caribbean Disaster Preparedness

OFDA has only fragmentary information on this subject, probably for the reason that, with a few notable exceptions, there has been little preparedness activity in the region.

Scientific, technical and managerial manpower is limited by the departure of young professionals in search of greater opportunity abroad.

Between 1969 and 1977, nine disaster officials from Caribbean countries attended OFDA's International Disaster Preparedness Seminar (IDPS). It is thought that these participants, to some degree, upon returning home, used the concepts and techniques presented in the Seminars to further their government's preparedness planning. National distribution of participants were as follows:

Barbados (3)	Dominican Republic (1)	Jamaica (1)
Grenada (1)	Trinidad and Tobago (2)	Haiti (1)

The following country preparedness summaries are drawn from the 1976 worldwide study done cooperatively by LICROSS, CRS, LWF, OXFAM, and WCC.

Bahamas 1976

National Disaster Preparedness in THE BAHAMAS1. Legal Background:

A National Disaster Plan exists.

It provides for a permanent disaster committee, comprising all competent Government Departments, and gives detailed instructions on all aspects of disaster prevention and assistance.

2. Duties and Functions:

i) To direct a programme to educate the public on the hazards of hurricanes and the protective measures required.

ii) To initiate and coordinate plans of major ministries and civil organisations for action required in the event of a hurricane disaster.

3. Structure:4. Procedure:

Upon receipt of disaster information, the committee coordinates emergency assistance.

5. Role of the Red Cross and Voluntary Agencies:

Red Cross: The Bahamas Red Cross, P.B. N.91, Nassau

Cable: BAHREDCROSS, Nassau. Tel: 2 24 54

The Red Cross has its own disaster plan, covering the responsibilities assigned to it.

First aid, shelter posts, coordinating the work of voluntaries, assisting the Government in obtaining transport and distributing relief supplies and assisting the post-hurricane reconnaissance teams.

Voluntary Agencies: (Contact addresses)

Although specific roles are not permanently assigned, in time of emergency, specific needs are coordinated.

Catholic Bishop's House, The Hermitage, P.O.B. 8187, Nassau

Telephone: 24533

WCC: Bahamas Christian Council, P.O.B. 4014, Nassau

6. UNDP: Covered by UNDP Jamaica: 1, Lady Musgrave Road, Kingston 5/Jamaica
Cable: UNDEVPRO Kingston Telex: 3812245 Tel: 936-5500

National Disaster Preparedness in BARBADOS

1. Legal Background:

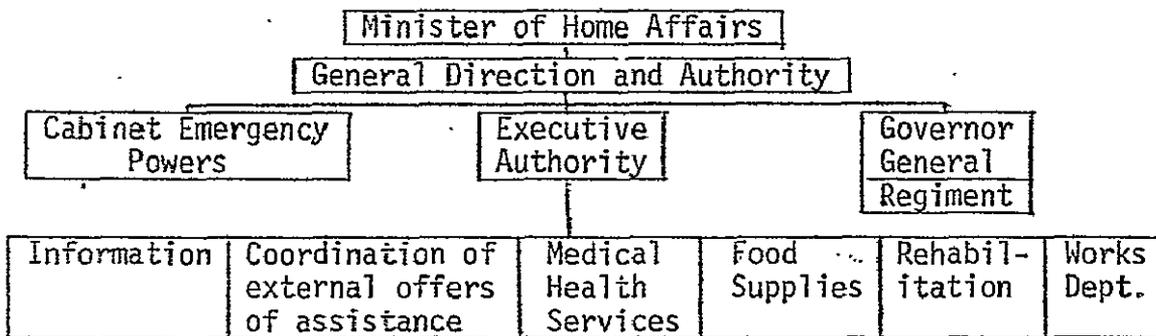
The Central Emergency Relief organisation comprises all competent authorities and organisations under the general direction of the Minister of Home Affairs. The organisation has established a national plan defining the responsibilities of members and giving detailed instructions on their duties.

2. Duties and Functions:

The preparation of plans for the organisation of relief in the various districts. Ensuring that all members of the organisations are fully instructed in their duties. Ensuring that members of the public are informed in regard to the emergency facilities of the districts.

3. Structure:

Structure of the Central Emergency Relief Organisation



4. Procedure:

Upon receipt of the disaster information, the committee assembles immediately and takes immediate appropriate measures.

5. Role of the Red Cross and Voluntary Agencies:

The Red Cross: The Barbados Red Cross, Jemmotts Lane, Bridgetown.

Cable: REDCROSS Barbados. Tel: 62052

The Red Cross under the authority of the Minister of Health and Social Welfare is responsible for transportation and distribution of emergency relief supplies, first aid and services at Relief Centres, serving of meals, etc.

Voluntary Agencies: (contact addresses)

Voluntary Agencies cooperate with the relief organisation in its activities providing relief assistance of various types.

CATHOLIC: St. Patrick's Cathedral, Jemmotts Lane, Bridgetown. Tel: 62325.

WCC: Christian Action for Development in the Eastern Caribbean. P.O.B. 616, Bridgetown. Cable: CADEC. Tel: 72638

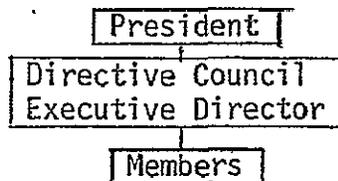
6. UNDP: covered by the UNDP office located in Port-au-Spain, Trinidad and Tobago, 19 Keats Street, Port-of-Spain. Cable: UNDEVPRO, Port-of-Spain. Telex: 387-257. Tel: 37056

National Disaster Preparedness in DOMINICAN REPUBLIC1. Legal Background:

By Law of June 17th 1978, a Civil Defence Organisation is set up under the supreme authority of the President, to prepare a disaster plan and relief programme and coordinate disaster assistance. The law provides for the necessary organs to be set up on national and provincial levels. The law also set up a 7 member Directive Council.

2. Duties and Functions:

To safeguard lives, health and property.

3. Structure:4. Procedure:

In a disaster situation, coordination occurs by calling the Committee members together along with representatives of Volags and government agencies.

The Civil Defence issues public warnings, provides transportation, helps to provide shelters, facilitates communication, supplies food-stuff, medical assistance, etc. through local/provincial communities.

5. Role of the Red Cross and Voluntary Agencies:

The Red Cross: Dominican Red Cross, Apartado Postal 1293, Calle Juan Enrique Dunant, Ensanche Miraflores, Santo Domingo, Cable: CRUZROJA DOMINICANA, Santo Domingo. Tel: 23793.

The RC is a member of the Civil Defence Advisory Board. The RC gives first aid, distributes food and clothing and assists in transportation and protection of victims.

Voluntary Agencies: (Contact addresses)

The Voluntary Agencies cooperate with the Committee in its activities providing relief assistance of various types.

CARITAS: Apartado 254, Santo Domingo. Cable: CARITAS Dominicana. Tel: 565-7746.

CRS: Calle 51 esq. Calle 10 Apartado 1457; Santo Domingo. Cable: CATIDOM. Telex: 3460034 (Baez & Ranick, Agents). Tel: 566-7776 ;

WCC: Ecumenical Action and Project Planning, Apartado Postal 252-2 Santo Domingo.

6. UNDP: Avenida Anacaona No i, Santo Domingo. Cable: UNDEVPRO Santo Domingo. Telex: 346 0115. Tel: 533-6111.

National Disaster Preparedness in HAITI1. Legal Background:

There is no national disaster plan.

2. Duties and Functions:3. Structure:4. Procedure:5. Role of the Red Cross and Voluntary Agencies:

The Red Cross: Place des Nations Unies, Port-au-prince. Tel: 2-1054.
Cable: HAITICROSS Port-au-Prince.

The RC is charged by the Government with the direction and coordination of disaster relief work and possess a comprehensive disaster plan. A National Disaster Committee of the Red Cross and Government representatives as well as regional and local committees have been established.

Voluntary Agencies: (contact addresses)

They deal with specific items of relief services.

SECOURS CATHOLIQUE DE HAITI: Place de l'Abreuvoir, Port-au-Prince.
Tel: 2-07-15.

CRS: 74, rue Dantes Destouches, P.O.B. 947, Port-au-Prince.
Tel: 2-0654. Cable: CATHWEL Port-au-Prince. Telex: CATHWEL Port-au-Prince, 329-100 via RCA/Haiti.

WCC: Service Chrétien de Haiti. P.O.B. 285, Port-au-Prince.

6. UNDP: Cité de l'Exposition, Port-au-Prince, Haiti. Cable: UNDEVPRO Port-au-Prince. Telex: 349-0891. Tel: 2-1641.

National Disaster Preparedness in JAMAICA1. Legal Background:

A Government Control Emergency Relief Committee has established a disaster plan which is revised every year. Duties have been assigned to each participating service and organization. Hurricane institutions are issued to the population.

2. Duties and Functions:3. Structure:4. Procedure:

Upon receipt of disaster information the committee takes immediate appropriate actions.

5. Role of Red Cross and Voluntary Agencies:

Red Cross: The Jamaica Red Cross, 76 Arnold Road, Kingston 5.

Cable: JAMCROSS Kingston. Tel: 926-7426.

Red Cross is member of the control committee. It is responsible for emergency assistance (food and health) during the first three days after a disaster. Red Cross has its own disaster plan and organization.

Voluntary Agencies: (contact addresses)

Although specific roles are not assigned, in time of disaster specific needs are coordinated.

GRS: 5 Emerald Road, Kingston 4. Cable: CATHWEL Kingston.

Telex: 2151 GRAKSHOP. Tel: 932-4309.

WCC: Caribbean Conference of Churches, P.O.B. 527, Kingston.

Tel: 936-07801.

6. UNDP: 1 Lady Musgrave Road, Kingston 5. Cable: UNDEVPRO Kingston.
Telex: 381 2245. Tel: 936-5500.

National Disaster Preparedness in TRINIDAD & TOBAGO1. Legal Background:

A National Plan defines the responsibilities of Government services and voluntary agencies and provides for coordination of disaster assistance. Responsible authority: the National Emergency Relief Organisation (NERO) under the Social Welfare Department.

2. Duties and Functions:

To coordinate and organise relief aids.

3. Structure:4. Procedure:

In the event of disasters, the Government coordinates relief assistance.

5. Role of Red Cross and Voluntary Agencies:

Red Cross: The Trinidad and Tobago Red Cross, the Regional Community Park, Wrightson Road, Port-of-Spain. Cable: TRINREDCROSS Port-of-Spain. Tel: 62-27220.

Red Cross is assigned responsibility for provision of food, clothing, shelter, and personnel. Red Cross has an organised disaster service also at local level. Close contacts with NERO are maintained.

Voluntary Agencies: (contact addresses)

Many voluntary agencies have programmes in the country. Cooperation with Government is also assured.

Society of St. Vincent de Paul, Catholic Centre, 10 Conblentz Ave., Cascade, Port-of-Spain. Cable: VINCENPAUL Trinidad. Tel: 6244113.

WCC: Christian Council of Trinidad and Tobago, Diego Martin Road, Diego Martin, Trinidad.

6. UNDP: 19 Keate Street, Port-of-Spain. Cable: UNDEVPRO Port-of-Spain. Telex: 387 257. Tel: 37056.

Additional OFDA regional preparedness information is limited to copies of the National Plans of Barbados and Trinidad and Tobago; and Mission Plans for Jamaica, Haiti, and the Bahamas.

A Case for Preparedness

Man's early preparedness took such elementary forms as avoidance of known natural danger areas, garnering food reserves against anticipated periods of drought/famine, food shortage, and the like. Planned disaster activity was slow to materialize and evolve. It required centuries to progress through family, tribal, and community action phases, to the more complex patterns essential to the needs of contemporary societies. Though for a number of years it has been accepted that precautionary steps could be taken in advance of catastrophe to mitigate its effects, many disaster-prone nations have yet to take action. This inertia may result from:

- . difficulty disassociating from historic fatalistic traditions;
- . lack of managerial experience; and
- . overwhelming competition from development needs for government interest and money.

Many developing nations seem resigned to the ad hoc formulation of emergency responses for each new event. A great price is often paid for this lack of planning.

It is a hopeful sign that a few developing countries have broken with tradition and have created national contingency plans, some well designed to meet indigenous national hazards. A relatively simple first step, preparatory to a formal plan, is identification and location of relief-essential human and material resources. More sophisticated planning should follow.

Creation of a national plan often results in a quantum jump in national self-reliance and a proportionate decrease in requests for external aid. From the viewpoint of the disaster victim, the effective deployment of a stricken nation's own life-saving and support systems within the first 72 hours is crucial. Affected populations increasingly demand that governments take responsibility for their well-being in time of national catastrophe. In many countries, survival and post-disaster assistance are taken to be citizens' rights. The quality of emergency help provided can be crucial to the stability or even continuation of governments.

A Summary (OFDA) Caribbean Disaster Preparedness Position

- . The Caribbean Basin is prone to earthquakes, hurricanes, and volcanic eruptions and is threatened to a lesser, but still significant, degree by drought, flood, landslides, famine, and epidemics.

- . Vulnerability is high, due to increasing populations and lack of prevention or preparedness measures.
- . The level of general preparedness, on a national basis, varies from good to non-existent.
- . The level of science-related preparedness appears better, due largely to the dedication and hard work of the region's small scientific groups. Outside help, nevertheless, appears to be indicated.
- . The level of engineering preparedness has not been evaluated; however, available evidence suggests it is modest. Considerable attention may be needed.
- . The level of medical preparedness has not been examined, but health systems are generally poorly developed outside major cities.
- . With sufficient commitment on the part of government and other national elements and some outside assistance, low levels of preparedness can be considerably improved.
- . Given sufficient interest on the part of Caribbean governments, OFDA will support the development and implementation of comprehensive preparedness programs.
- . Recognizing the humanitarian imperativeness of preparedness in the Caribbean and being aware of the economic difficulty faced by most governments, OFDA would consider some financial support to regional and country disaster preparedness project activities.

Tentative Order of Pre-Workshop Events

NOTE: *The following schedule is under review (as of 9/18/78), changes in dates should be expected. The seminar/workshop could be scheduled a month or so later.*

o/a June 23 The OFDA June 1978 Caribbean Preparedness Paper to be sent to U.S. Embassies and A.I.D. Missions, selected non-Caribbean countries and organizations with regional interests, e.g., World Bank, CARICOM, University of the West Indies. (Embassy and A.I.D. Missions are requested to suggest nominees for the policy group).

- . OFDA continues planning consultation with other associated USG agencies re their participation, i.e., U.S. Geological Survey, National Bureau of Standards Building Technology and National Oceanic and Atmospheric Administration.
- . U.S. country teams staff review proposal, consult with host Government officials and others as appropriate.

Aug. 15 Embassy/USAIDs transmit reactions and recommendations to OFDA.

- . OFDA, in consultation with ARA/LA, review recommendations and develop a final position respecting:
 - . the formulation and meeting of the policy planning group; and
 - . a decision on the substance of the U.S. regional disaster preparedness proposal to be considered by the policy planning group.
- Sept. 15 Invitations to be sent to potential policy group members for the opening meeting of the group.
- Nov. 15 Group meets; discuss preparedness proposal and develops plan for approach to seminar/workshop.
- March Two week regional seminar/workshop to be held.
- Onward Seminar-inspired projects designed and implemented.

Country Participation

OFDA prefers to delay final decision on identification of participating countries pending advice from U.S. Embassies and A.I.D. Missions and consideration by the Policy Group. We tend, however, to favor broad rather than limited attendance.

Level of Workshop Participants

The following workshop participant composition might be appropriate:

- . a senior policy-level designated disaster official from each participating government;
- . a senior working-level designated disaster official from each participating government;
- . a senior engineer or public works official from each government.
- . seismic and volcanic scientists from the UWI, Trinidad and Jamaica, and French scientific representatives.
- . voluntary agency personnel.
- . OFDA staff (perhaps other A.I.D. staff).
- . U.S. Geological Survey representatives.
- . U.S. Bureau of Standards seismic engineers.

- . Meteorologist, Hurricane Center, Miami.
- . Meteorologist, NOAA/CCEA.
- . We might also anticipate participation of staff from the United Nations Disaster Relief Office, the United Nations Development Program, and LICROSS.
- . Representatives of other donor nations (Canada, the Netherlands, France, Great Britain).

Funding

The Office of U.S. Foreign Disaster Assistance would consider funding most costs except for participation of potential donor nations and associated or dependent states of European nations. (OFDA would not be permitted to expend foreign disaster funds on behalf of Puerto Rico and the U.S. Virgin Islands, should they wish to participate in the seminar/workshop.)

An Illustrative Seminar/Workshop

Understanding that the seminar/workshop will be directed toward reduction or elimination of the preparedness problems or deficiencies of the region; the specific identification of the meeting's goals must await verification of the problems by the governments themselves. In the interests of advancing planning for the event, and to serve as a hypothetical model for guidance, OFDA has conjectured what might be an appropriate workshop form and content.

Workshop Phase I (Plenary)

Our first conclusion, despite our wish to focus as completely as possible on practical preparedness needs, was that the level of disaster preparedness knowledge in the region varies greatly; therefore, the meeting must first address basic concepts and general background. This would bring all participants to a common level of understanding.

This initial phase would encompass:

- . the universe of disaster preparedness and prevention concepts and general knowledge;
- . the humanitarian and development impact of preparedness;
- . attainment of improved national preparedness through the cooperation of all national sectors;
- . support available from the international disaster assistance community of nations and organizations; and
- . the review of the state of development of certain preparedness related disciplines.

Workshop Phase II (Task Groups)

A second phase of the workshop could be organized along the following lines:

General Preparedness (Task Group)

- . Adaptation of a model national disaster plan and disaster law to specific country needs.
- . Creation of a national disaster preparedness outline encompassing:
 - hazard analysis;
 - vulnerability analysis;
 - disaster plan;
 - disaster law;
 - disaster site preparedness plan;
 - Emergency Operations Center requirements;

- training of personnel;
- resources identification and inventory;
- warning and public awareness; and
- disaster simulations.

- . Steering panel develops recommendations for future programs and actions.

Scientific and Technological Preparedness (Task Group)

- . Seismic and volcanic:

- state of the application of sciences in the Caribbean;
- state of regional cooperation;
- prediction and warning; and
- recommendations for future programs and actions.

- . Hurricane:

- state of application of meteorological sciences in the Caribbean;
- state of regional cooperation;
- prediction and warning; and
- recommendations for future programs and actions.

Voluntary Agencies' Preparedness Role (Task Group)

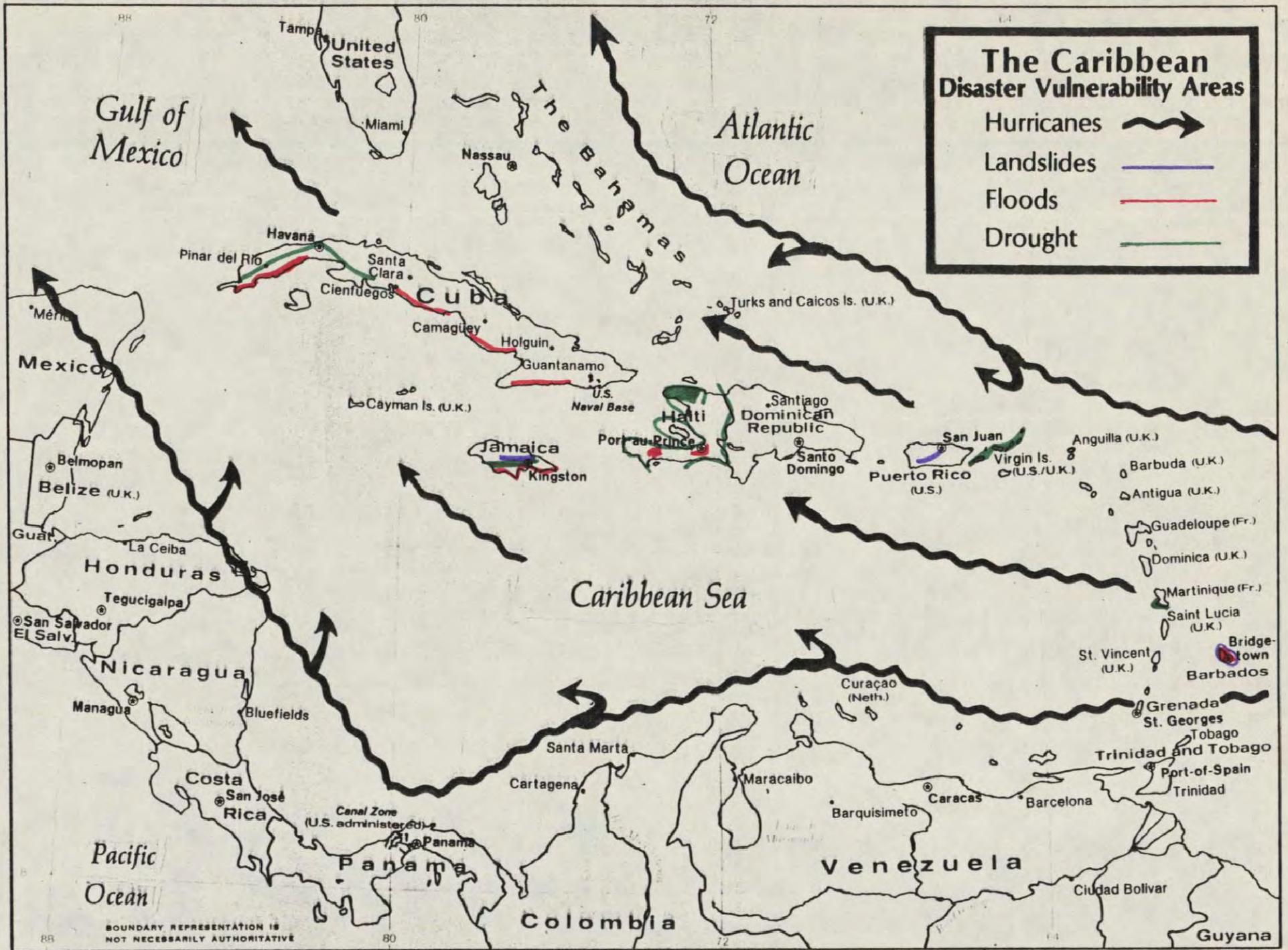
- . the state of preparedness involvement of volags.
- . a future regional and national preparedness role for volags.

Engineering Preparedness (Task Group)

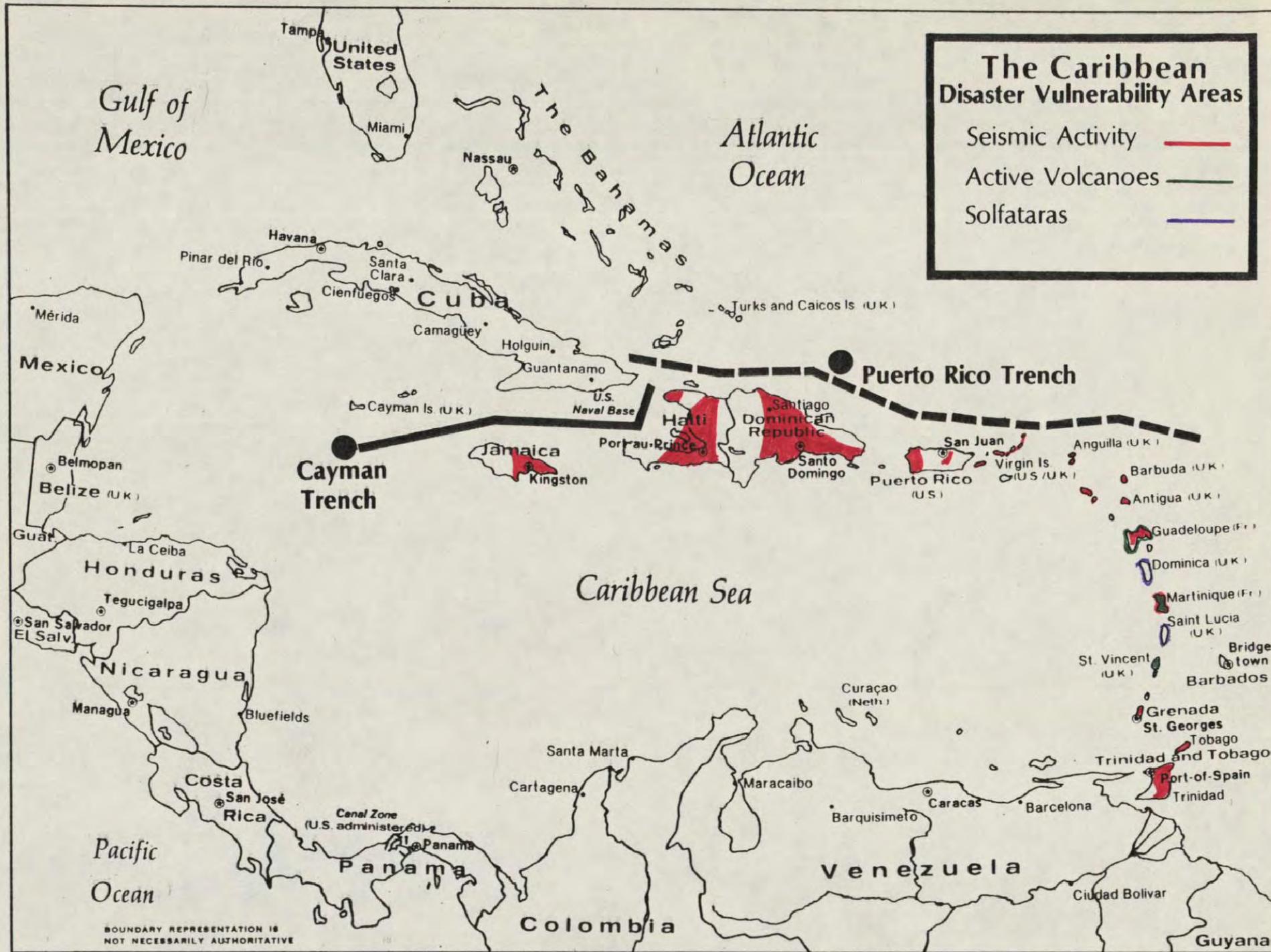
- . the state of disaster related engineering applications in the region.
- . the building technology role in preparedness and prevention.
- . an engineering role to reduce disaster vulnerability.
- . the need for closer science/emergency association.
- . recommendations for future programs and actions.

Workshop Phase III (Plenary)

Task groups report findings, recommendations, and plans for future national or regional preparedness situations.



Attachment B



BOUNDARY REPRESENTATION IS NOT NECESSARILY AUTHORITATIVE