SECTION 4

DISASTER ORGANISATIONS AND SYSTEMS

NATIONAL DISASTER MANAGEMENT SYSTEMS

WHAT IS THE NATIONAL DISASTER MANAGEMENT SYSTEM?

The National Disaster Management System encompasses those organizations which are collectively responsible for ensuring that a country is permanently capable of reducing and/or dealing effectively with disasters.

As part of the normal government system, they enable the government to deal more effectively with the special demands which may arise out of a disaster situation.

A disaster management system is a dynamic entity and requires a range of specialists, facilities and resources.

WHY DO WE NEED IT?

Disasters can have wide/ranging effects on a country, its government and people.

The primary responsibility for coping with national disasters rest with Government. Its organizations and resources and the entire population therefore have to bear the brunt of counter-disaster action.

Disasters produce some needs which may not be covered by national government or non-governmental organizations.

WHAT IT DOES

The primary function of the national disaster management system is to ensure that at all times, and as far as possible, the resources and operations of Government departments, Non-Governmental Organisations (NGOs), private and international organisations are co-ordinated to produce the best possible counter-disaster effort.

The Disaster Management System covers:

* Prevention and Mitigation Programmes
* Disaster Preparedness activities
* Direction and coordination of disaster response, including action:

  -Alert and activation
  -Warnings
  -Emergency Communications
  -Surveys and Assessments
  -Information Management
  -Emergency Logistics

How is it organized?

Although the structure varies from country to country, national disaster management systems generally have certain common components (See page 38)

The major components of national disaster management systems are outlined below; the individual responsibilities of these components are usually stated in National Disaster Plans. The normal practice is to integrate disaster management tasks within the national public administration framework and in private organisations.

Ministerial Authority

Ministerial authority is vested in a Minister or Ministerial Committee directly responsible to Cabinet for ensuring that adequate disaster management measures exist at all times.

National Disaster Council

Responsible to the Minister for the coordination and direction of all disaster-related matters. A Council usually consists of heads of ministries, departments, the private sector and non-governmental organisations which have the necessary manpower and material resources to deal with disasters. It usually has wide powers to co-opt other members as necessary.

A National Disaster Council can also appoint special bodies, such as Task Forces. While it is desirable that the Council be kept small in the interest of timely decision making, it is usually found that in the initial stages of a disaster, it is necessary to call upon co-opted members from a fairly wide range of departments and agencies.

Operations Control Group (or Central Control Group)

Responsible to the National Disaster Council for coordination and direction of response operations, including the tasking of resource organizations. The Group usually consists of three lead resource organizations, police, fire and health.

Apart from their group responsibilities, these officials carry out the duties of Controller, National Emergency Operations Center.

National Disaster Management Systems (Cont'd)

National Disaster Management Office (NDMO)

Responsible to the Council for carrying out day-to-day disaster management responsibilities, the NDMO is usually headed by a **National Disaster Coordinator (NDC)** who coordinates the activities of the National Disaster Management Programme. The NDMO is usually required to undertake a wide range of responsibilities including:

* Training.
* Public Education and Awareness.
* Maintaining emergency resource databases.
* Reviewing and exercising Disaster Plans.
* Promoting community and public participation.

The NDMO coordinates the activities of local disaster management agencies, such as those listed below.

Parish/District Disaster Committee

Usually, these Committees will mirror the National Disaster Council in both membership and role. However, where the province constitutes the key government level, the Committee would probably be under the leadership of a community leader, local elected representative and a town clerk.

Government Departments

Government departments and agencies play key roles in coping with disasters. Their responsibilities are usually laid down in disaster plans. These responsibilities form the basis of Departmental Operating Procedures.

Utility Companies

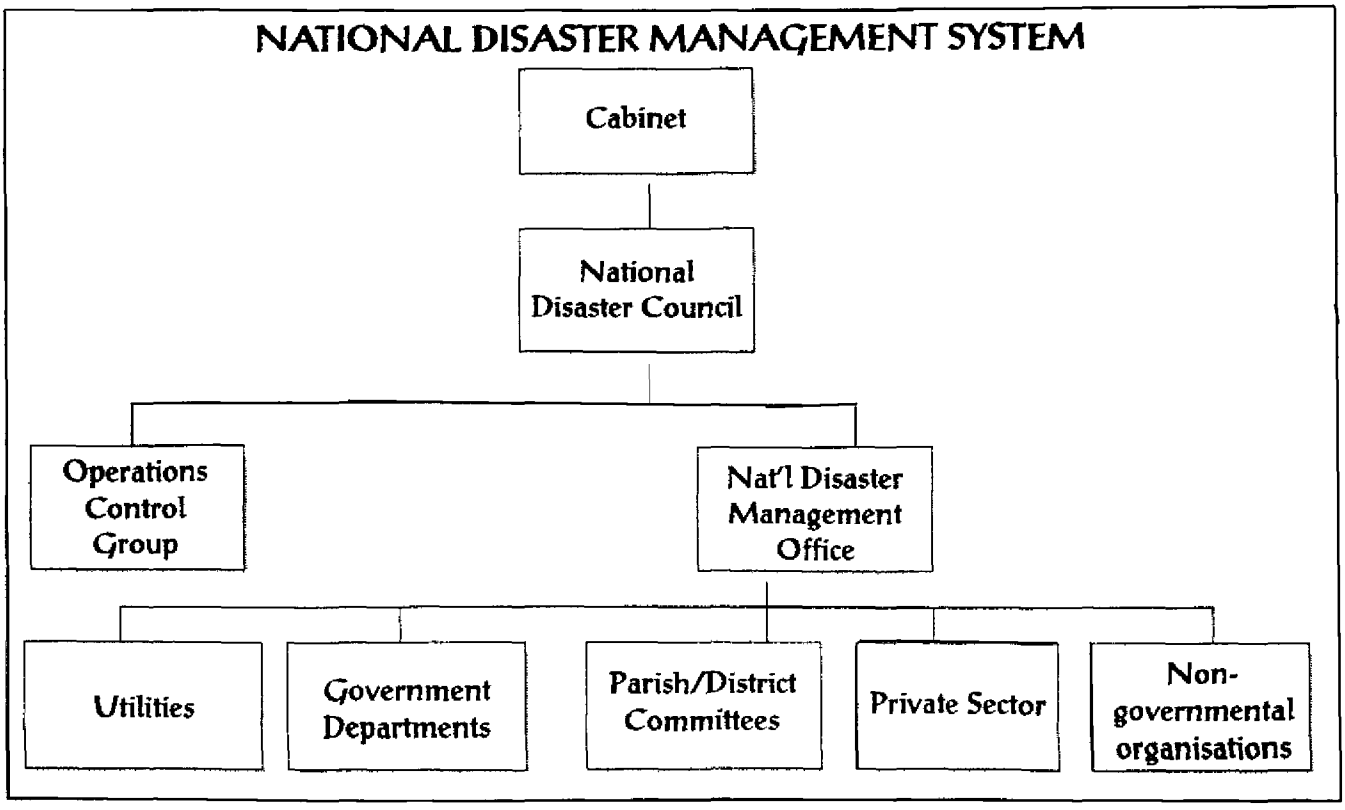
Utility companies provide essential services to the population. If such services are disrupted by a disaster, the country's ability to function is severely impaired. Utilities must therefore be involved in all aspects of disaster planning.

Non-Governmental Organisations (NGOs)

Many NGOs are actively involved in disaster preparedness and response activities, especially at the community level. These organisations often have a network of volunteers which allow them to mobilize quickly to attend to the priority needs of those affected.

Private Sector

In Caribbean countries, the Private Sector controls a substantial proportion, if not most, of the country's resources. This sector's involvement is therefore very important. The Private Sector's involvement may be through a permanent organ such as a "standing committee" or it may be through an "ad-hoc" body created in the aftermath of a disaster.



REGIONAL RESPONSE MECHANISM

WHAT IS IT?

The term "Regional Response Mechanism" refers to the arrangements which exist for national, regional and international agencies based in the region to coordinate their efforts in responding to a disaster. These arrangements help ensure a quick response and more effective use of resources.

The activities of the Regional Response Mechanism are coordinated by the **Caribbean Disaster Emergency Response Agency (CDERA)**, which started operations in September, 1991. The Agency was formed when, following the devastating hurricanes of 1988 (Gilbert) and 1989 (Hugo), 14 Caribbean governments signed an agreement establishing the institution to consolidate regional disaster response capability. CDERAs current participating states are member states of the Caribbean Community and the British Virgin Islands.

Objectives of the Agency

(a) To make an immediate and coordinated response by means of emergency relief to an affected member state.

(b) To secure, coordinate, and channel to interested inter-governmental and non-governmental organizations reliable and comprehensive information on disasters in affected member states.

(c) To mobilize and coordinate disaster relief from governmental and inter-governmental organizations for affected member states.

(d) To mitigate or eliminate, as far as practicable, the immediate consequences of natural disasters in member states.

(e) To establish, enhance and maintain on a sustainable basis adequate disaster response capabilities among member states.

HOW DOES IT WORK?: OPERATIONAL STRUCTURE

Figure 1 shows the types of organisations involved in the Regional Response Mechanism.

Lead Response Agencies

It is acknowledged that resources other than those managed by Governments will be critical to an efficient and effective regional disaster response. International and regional organizations have been co-opted in the Regional Response Mechanism. These include the Pan American Health Organization (PAHO); the U.N. Department of Humanitarian Affairs (DHA); the United Nations Development Programme (UNDP); the International Federation of Red Cross and Red Crescent Societies (IFRCS); the Salvation Army; the Caribbean Electric Utilities Corporation (CARILEC), and the regional airlines and military/paramilitary units.

The general framework for coordination of disaster response is outlined in a Regional Disaster Coordination Plan. All of the agencies assigned responsibility in this plan have developed their own Standard Operating Procedures.

Alert and Notification

Alert of an impending or actual disaster can be received through a diversity of channels including National Weather Services, Seismic Monitoring Units, Aircraft or Ships at sea or from press reports. (Figure 2).

Once alerted, the Coordinating Unit of CDERA or the NDO will notify their lead response agency as illustrated in Figure 2.

Activation

Activation of the Regional Response Mechanism will follow consultation between the threatened or affected Participating State and the Coordinating Unit of CDERA.

A decision to mobilize military/paramilitary resources will involve further consultation between the Coordinator of CDERA and the Coordinating Chief-of-Staff for the geographical area and the Caribbean Disaster Relief Unit may be activated.

Level of Response

The extent of regional involvement is determined by the level of response which in turn determined by the scale of the disaster. Figure 3 shows the 3 levels of response.

CARIBBEAN DISASTER RELIEF UNIT

In the event of a natural or other disaster in the Caribbean, there may be a need to provide military assistance to the stricken island or islands. Military Forces are in a position to react quickly in that they can call upon their manpower at short notice and mobilise in response to an emergency.

Composition, Role and Function of the Caribbean Disaster Relief Unit

The Caribbean Disaster Relief Unit (CDRU) is made up of the Military Forces of Caricom States. Its mission is to provide relief to any Caribbean country. Its functions are to provide an On-Scene Commander and staff for all Caricom Units and to receive and despatch relief supplies.

Specific tasks include:

1. The provision of an initial response to disaster.
2. The conduct of initial assessment.
3. The co-ordination of the security, receipt and despatch of emergency supplies.
4. The provision of a controlling headquarters for Caricom Forces.
5. The provision of a communication network to support the CDRU's functions, including a link with CDERA and the relevant national agencies.

The special Coordinator or Director of the CDRU will be appointed by the coordinating Chief of Staff in consultation with the Regional Coordinator of CDERA. He will be responsible for the overall management functions of the CDRU, on-site Coordinator, liaise with local authorities, relief agencies, Customs and Immigration, establish the priority of tasks for the military response, be the Regional Coordinator of CDERA's link with disciplined forces and the affected country.

RELIEF SUPPLY MANAGEMENT

One of main reasons for creating a Regional Response Mechanism was to allow greater efficiency and to minimize wastage during Relief Supply Operations. As part of efforts to achieve this, CDERA has developed a **Relief Supply Tracking System.** The main function of this computer program is to provide information that will assist emergency managers and donors in making the best decisions during relief supply operations. This is achieved by:

- Recording the various types of information required (Needs, Requests, Pledges, Dispatches, Receipts)
- Organising the information into a database so that selective retrieval can be done according to specified criteria.
- Producing reports showing key facts required to support decision-making.

The Relief Supply Tracking System is designed for use at both the national and regional levels and has also been used by Donor Agencies. To a large extent, it complements PAHO's SUMA System which at present concentrates primarily on recording supplies received at ports of entry in an affected country in the aftermath of a disaster.

INTERNATIONAL ARRANGEMENTS

Given the congruence of the objectives of the two systems, CDERA and PAHO are collaborating in order to rationalize their operations.

MEMORANDA OF UNDERSTANDING

Critical to developing the response threshold of the regional disaster mechanism are Memoranda of Understanding with resource agencies which are critical elements in the support of the regional response efforts.

In this regard, efforts were made to establish Memoranda of Understanding with regional carriers as well as agencies such as OFDA, PAHO, IFRCS.

LENGTH OF ASSISTANCE

The agreed period of initial assistance to a disaster in an affected state is one (1) week. After this, extensions are agreed upon between the government of the affected state and CDERA.

Many organisations and agencies play a role in the international management of disasters. These include United Nations agencies, non-governmental organisations and other international groups. The following are some of the UN agencies involved in international disaster management:

UN Department of Humanitarian Affairs (DHA)

DHA was created in 1992 to strengthen and consolidate existing UN Offices that deal with emergencies. The Secretariat of the International Decade for Natural Disaster Reduction is an integral part of this department. DHA is represented by UNDP at the country level.

United Nations Development Programme (UNDP)

UNDP concentrates on building national capacity in six specific areas, including environmental protection which is linked to disasters, to help governments create a framework that promotes participatory development.

Pan American Health Organisation (PAHO)

PAHO is both a member of the United Nations System and the Inter-American system. As the lead hemisphere-wide agency for health, it provides technical cooperation to member countries to strengthen national and local health systems and improve the physical and mental well-being of the people of the Americas.

WHAT IS THEIR ROLE WITH REGARD TO DISASTERS?

Department of Humanitarian Affairs (DHA)

Publishes situation reports on disasters that include information from a variety of UN and bilateral agencies. In an effort to disseminate information on overall post-disaster relief, DHA provides information on requests made by the disaster-stricken country and relief pledged to meet these needs.

United Nations Development Agency (UNDP)

As the head of the UN "family" in a country, UNDP leads national Disaster Management Teams (DMT). The DMTs have been the particular focus of the UNDP/DHA Disaster Management Training Program, which worldwide has brought together UNDP staff from disaster-prone countries to incorporate disaster prevention aspects into project planning.

Pan American Health Organisation (PAHO)

Provides technical assistance to the Ministry of Health and the Government in assessing the needs in the health sector following disasters and disseminates this information to potential donors. It also organises and coordinates international health relief assistance, provides expertise in sanitary engineering, water supply, disease surveillance and other public health concerns. In recent years, its network of satellite communications equipment has provided reliable post-disaster communications.

PAHO DISASTER RESPONSE TEAM

PAHO has put together a Disaster Response Team to assist governments of a stricken country in the management and operational activities following a disaster, particularly as it impacts on the health of the population phase and in preparation for the reconstruction phase.

The members of the Team by discipline are: Team Coordinator, Epidemiologist, Sanitary Engineer, Health Service and Management. Alternate members have been designated for each discipline represented on the Core Team.

Role of the Team

The role of the Team include:

* Impact Assessment on the health sector's capacity at national and district levels with appropriate reporting;
* Health Needs Assessment at the national level with appropriate reporting;
* Collaboration with other needs assessment agencies of requests for external assistance;
* Technical advice on all matters relevant to emergency health namely: medical care, medical supplies, water supply and sanitation communicable disease control, nutrition, animal health;
* Establishment in collaboration with national authorities of a surveillance system for disease control, drug supplies, environmental health, animal health;
* Assistance in establishing priorities and developing proposals for reconstruction;
* Facilitate and coordinate the work of the SUMA Team.

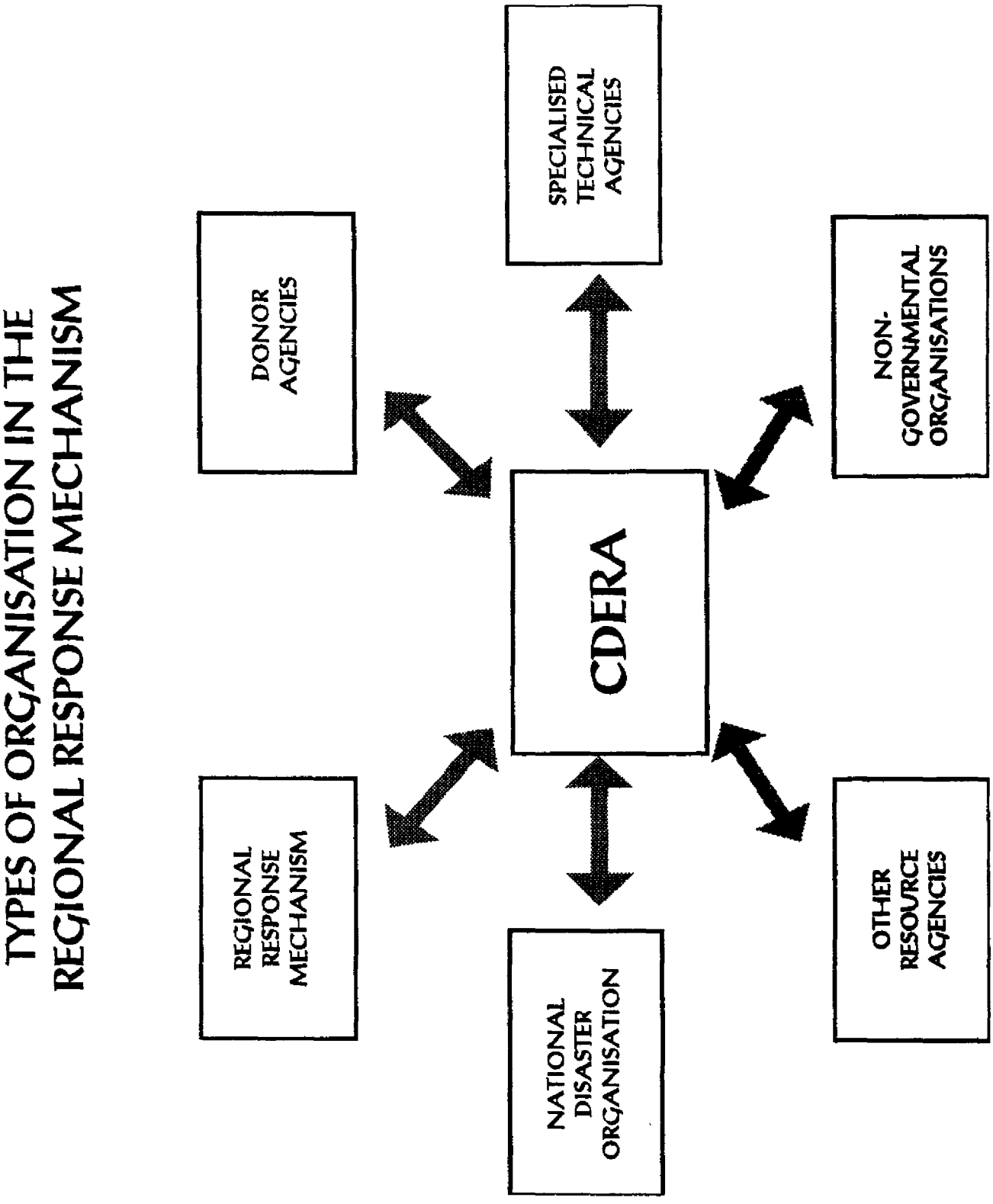
SUPPLY MANAGEMENT (SUMA)

The Supply Management Project is a joint effort of the Latin American and Caribbean countries and PAHO using computer information management technology to sort and inventorised large amount of relief supplies in a country affected by a disaster.

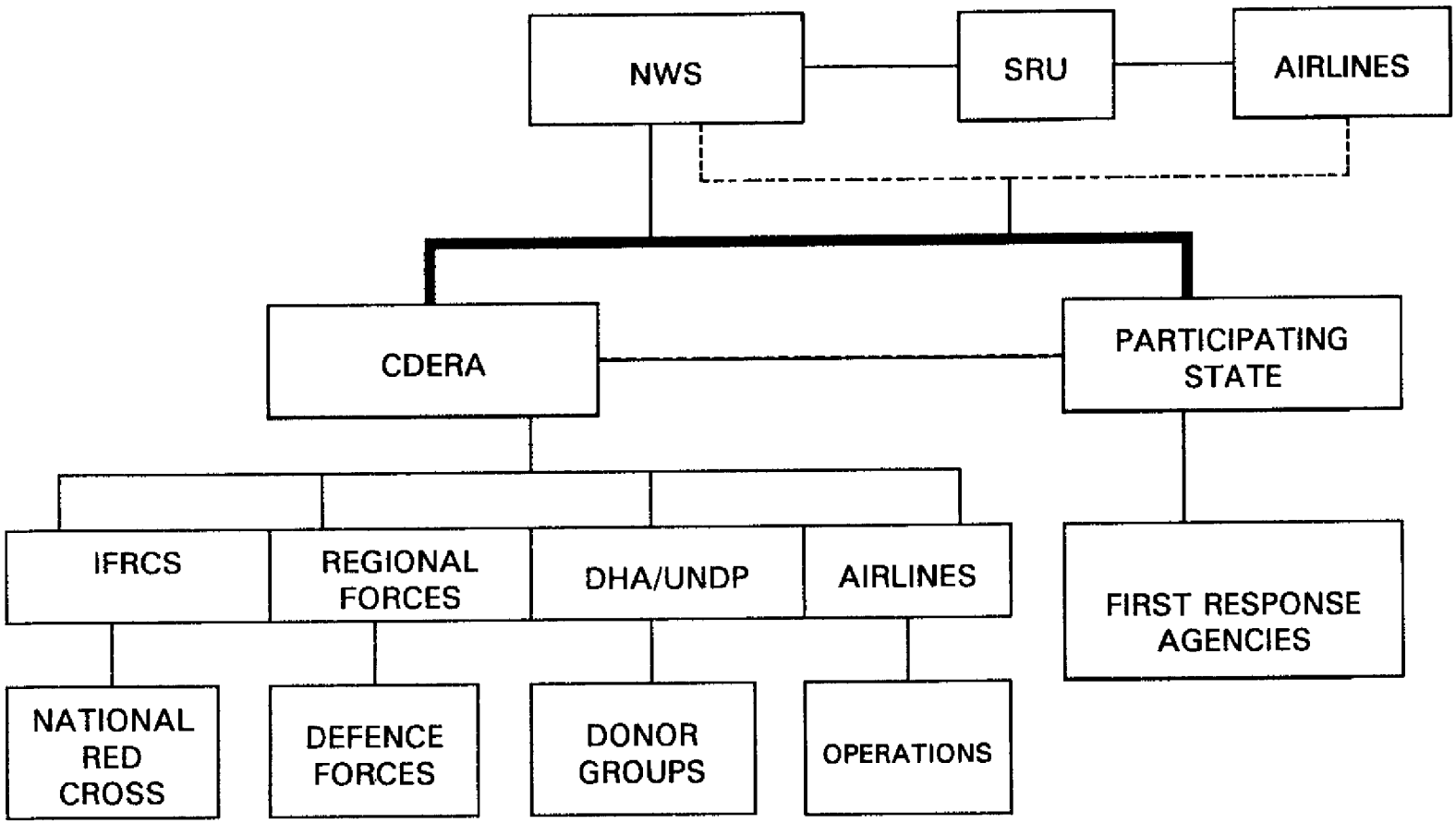
The Objectives of the Project are:

* To develop and maintain a regional capacity to assist rapidly and efficiently any country affected by a major sudden impact disaster and to manage donated medical, surgical, public health supplies and equipment and other non health supplies at the port(s) of entry.
* To activate and mobilize this regional capacity in the aftermath of a disaster and train nationals on-site to manage this project and assume full operational responsibility.
* To improve the coordination of the local response by providing timely reports on drugs, health supplies/equipment and other items donated by the international community.
* To speed up the distribution of key supplies by marking them with distinctive labels on site.
* To provide the disaster affected country with a mechanism to inform donor countries and agencies immediately on receipt of their donations.

FIGURE 1


TYPES OF ORGANISATION IN THE REGIONAL RESPONSE MECHANISM
DONOR AGENCIES
SPECIALISED TECHNICAL AGENCIES
NON-GOVERNMENTAL ORGANISATIONS
CDERA
REGIONAL RESPONSE MECHANISM
NATIONAL DISASTER ORGANISATION
OTHER RESOURCE AGENCIES

REGIONAL RESPONSE NOTIFICATION STRUCTURE



NWS - NATIONAL WEATHER SERVICES
SRU - SEISMIC RESEARCH UNIT
IFRCS - INTERNATIONAL FEDERATION OF RED CROSS AND RED CRESCENT SOCIETIES
DHA - DEPARTMENT OF HUMANITARIAN AFFAIRS
UNDP - UNITED NATIONS DEVELOPMENT PROGRAMME

FIGURE 2

LEVEL OF RESPONSE TO DISASTERS

LEVEL	DESCRIPTION	EXTENT OF REGIONAL INVOLVEMENT	EXAMPLES
I	Local incidents within a Participating State are dealt with in the regular operating mode of the response emergency services. The local national focal point is required to submit, on a timely basis, information on the emergency event for the purposes of consolidating regional disaster records.	No regional response required	Jamaica Earthquake (January 1993)
II	Disasters taking place at the national level which do not overwhelm the socio-economic structure of the Participating States. In such a case, the primary assistance at the regional level will be limited to providing technical expertise to National Disaster Organizations or facilitating their access to specific resources which may be in shortage due to the particular disaster event. The whole operation is still managed by the national disaster focal point.	Limited or specialized	Hurricane Andrew (Bahamas 1992) Tropical Storm Debby (St Lucia 1994)
III	Disasters which overwhelm a particular state, as was the case with Hurricane Gilbert, 1988 in Jamaica and Hurricane Hugo, 1989 in Montserrat. In such an instance the regional response mechanism is activated and would include the establishment of the Caricom Disaster Relief Unit (CDRU) which is the operational aspect of the regional response mechanism, whose main responsibility is logistical support for the receipt and dispatch of relief supplies.	Full activation	Hurricane Gilbert (Jamaica 1988) Hurricane Hugo (Leeward Islands 1989)

See details of Role and Responsibilities under Section: CDRU

SECTION 5

SUGGESTED QUESTIONS

QUESTIONS

Disasters have distinct phases. Some are sudden onset disasters which occur without warning. In these cases there are two distinct phases, the phase during the disaster, and the post disaster phase when recovery and clean-up efforts begin.

Earthquakes and mass casualty incidents are examples in this category.

For other types of disasters like hurricanes and volcanoes for example, there is an additional phase coming before the actual event. This of course is the pre-disaster phase, when there is an awareness that an event is pending and when certain actions need to be taken to minimize or prevent damage and deaths.

In each phase there are certain useful questions which you can ask which will not only serve to report to your audience what's happening, but which can also assist national disaster offices and coordinators to get vital life and property saving information to the public.

What follows are some examples of questions you may want to ask during each phase of a disaster.

PRE

(WHEN THE DISASTER IS IMMINENT)

Questions Most Frequently Asked:

1. What's likely to happen?
2. What areas are going to be affected?
3. Who is going to be most affected?
4. When will it happen?
5. How prepared are the people in tthreatened areas?
6. What are disaster officials doing at this time?
7. How long is it likely to last?
8. Who's doing what to minimize damage and casualties

Additional Questions To Consider

1. What do people in vulnerable areas need to know right now to help minimize damage and casualties?
2. Where are shelters located or where can people find that kind of information if they do not know?
3. What should people be taking to shelters?
4. What should people be stocking up on?
5. How can the community help its aged, disabled and others get ready for the disaster?
6. Where should people seek assistance?
7. What is the level of risk in various areas of the country?
8. What mechanisms exist at the district level to deal with the expected disaster?
9. What should individuals in those areas be doing now?

DURING

Questions most frequently asked during a disaster?

1. What is happening and where?
2. Who's affected and how?
3. Any idea of injuries, damage and deaths?
4. How are people coping?
5. When it this likely to end?
6. How does this disaster compare to disasters in the past?

Additional questions to consider?

1. How are people coping?
2. What else should people be doing right now to keep safe and protect property?
3. Who's at most risk at the moment?
4. What are national disaster officials doing now?
5. Which national agencies are involved?

AFTER THE DISASTER

Questions most frequently asked:

1. How many dead or injured?
2. Extent of damage?
3. Who has lost what?
4. What's the status with essential services?
5. How long will it take to restore service in areas where it has been lost?
6. How is the movement of people affected e.g. roads blocked etc.
7. What's being done to make movement easier?
8. What's happening at the hospitals?
9. What's the government saying?
10. What are the disaster officials saying?
11. Where's help coming from and when?

Additional questions to consider:

1. What's needed at the individual/ community and national levels
2. Can anything be salvaged?
3. What should people be doing now?
4. What should people be doing to minimize health related problems?
5. Where can people find help?

SECTION 6

MEDIA DO'S AND DON'T'S

MEDIA
DO'S AND DON'T'S

For Media Personnel "What to do"

DO'S

DO Give priority to life-saving and property protection information. Lives may depend on it.

DO Establish emergency electric power generation capability and be certain that it is checked and maintained at least once a month.

DO Develop and maintain the best possible direct communications link with the local weather service office and National Disaster Organisations by underground cable, telecommunications, VHF, Cellular phones.

DO Create plans which will enable your media house to meet its broadcast warning responsibilities even under a worst case scenario (equipment malfunction, personnel absences).

DO Make sure all editorial staff, including all announcers, know exactly how to handle every type of warning message.

DO Conduct several "simulation exercises" at the beginning of each season for seasonal hazards.

DO Be prepared to give specific information on areas which are affected or highly vulnerable.

DO Make all warning messages as specific as possible and repeat, repeat, repeat!

DO Make warning messages as personal as possible - personal in content and with well-known and highly respected persons giving the information and advice.

DO Develop and test a disaster Media Disaster Plan with special reference to preparation procedures to assure survival of the Radio Broadcast Service.

DO Establish and maintain contact with National Meteorological Offices Seismic Research Units.

MEDIA DO'S AND DONT'S

For Media Personnel "What not to do."

DONT'S

DON'T Give out any information unless you are quite confident of its accuracy.

DON'T Disseminate an occasional warning message interspersed in regular programming if you want audience to take prompt, protective action.

DON'T Assume that the listener/audience is aware of any of your earlier warning messages.

DON'T Assume that your audience knows what specific protective action to take.

DON'T Forget that your audience may include visitors or persons unfamiliar with the area.

DON'T Let months and years of freedom from disaster lull you into complacency.

DON'T Underplay or over-emphasize the danger. The best public response comes when specific information about personal danger is presented without going to either extreme.

DON'T Refer to just any random prior disaster event for background material to broadcast while a warning is in force. Have material prepared for a range of past disaster experiences and select the material that is most appropriate for the "upcoming event".

SECTION 7

DISASTER HISTORY

CARIBBEAN DISASTER HISTORY

INTRODUCTION

The Caribbean[1] region has always been disaster prone. There are records of various types of disasters dating back several centuries. Annex I gives a summary of major disasters that have affected the region since the end of the 19th century.

As the table shows, many types of events have brought death and destruction to the region. These include natural disasters such as hurricanes, floods, earthquakes, volcanoes and landslides. A number of "man-made" disasters have also occurred. These include fires, aircraft crashes, accidents at sea, civil strife and oil spills.

The following are a few examples of natural disasters that have taken their toll on the region over time:

Hurricanes

On the morning of September 12, 1988 the largest cyclonic system ever observed in the Western Hemisphere, **Hurricane Gilbert**, struck Jamaica. The hurricane's devastation of the island lasted about eight hours. During that time it became a Category V hurricane.

The damage done by Gilbert in Jamaica was extensive; the entire island and all sectors of the economy and society were affected. Damage was estimated at US$4 thousand million with damage to agriculture accounting for over 40% of this total. There was also extensive damage to health facilities, public buildings, housing and infrastructure.

One year later, on 17th September 1989, **Hurricane Hugo** made landfall on the French island of Guadeloupe and went on to completely devastate Montserrat. The hurricane also did extensive damage in St Kitts/Nevis and the British Virgin Islands before moving on to the American territories (US. Virgin Islands and Puerto Rico). Before dying out, Hugo left a trail of destruction that extended as far north as the Carolinas on the south-east coast of the United States.

Earthquakes

On **7th June, 1692**, 90% of the town of **Port Royal** in Jamaica was destroyed by an earthquake. Over 2,000 people were killed, including several killed by a fever epidemic that followed the event. Jamaica has a long history of earthquakes. The island was again affected by an earthquake in January, 1902 and in January, 1993, an earthquake measuring 5.3 on the Richter scale caused minor damage.

On **8th February, 1843**, the biggest earthquake known to have affected the **Eastern Caribbean** occurred. It was felt from St Kitts to Dominica. In Antigua, the English Harbour sank and in Point-a-Pitre, Guadeloupe, all masonry was destroyed. The number of deaths included more than 5,000 in Guadeloupe, 30 in Antigua, 6 in Montserrat and 1 in Dominica.

Volcanoes

In **1902**, the **Soufriere** volcano in St Vincent erupted. The eruption began on 6th May, 1902 and continued until 30th March, 1903. 1,565 people were killed and extensive damage was done to agriculture in the areas around the volcano. The Soufriere volcano erupted again in 1979.

On **8th May, 1902, Mt. Pelée**, in Martinique erupted. A glowing avalanche (pyroclastic flow) from the eruption destroyed the town of St. Pierre and its 28,000 inhabitants. Only one person, a prisoner, survived.

Mass Casualty Incidents

Airplane Crashes

On **6th October, 1976**, a **Cubana Airlines** aircraft with 74 persons aboard crashed into the sea 4½ miles off the coast of Barbados. All aboard were killed. The crash was caused by the explosion of two bombs that had been placed on board the aircraft. The emergency services in Barbados had the gruesome task of recovering bodies that had been dismembered by the explosion.

Accidents at Sea

On 1st August 1970, the ferry *M. V. "Christena"* sank while on a scheduled voyage between the islands of St Kitts and Nevis. The vessel was overloaded at the time with the number of passengers on board estimated at over three hundred. Of this number, more than 200 were reported dead or missing. The accident was one of the worst disasters in the English-speaking Caribbean in recent times, in terms of loss of life.

Floods

During the period 12-13 June 1979, heavy rainfall associated with a tropical depression caused severe flooding in western Jamaica. The resulting flash flood caused almost 40 deaths and extensive damage. Worst hit were the parishes of St Elizabeth, St James, Hannover and Westmoreland. In Westmoreland, it was estimated that the peak rainfall was 85 cm (34 inches).

Most of those who perished were children or elderly persons. Homes, public buildings, roads, bridges, railway tracks, livestock and crops were swept away. The flooding affected approximately 160,000 persons out of a population of 2.1 million. Of these, between 35,000 and 45,000 were reported homeless in the western parishes. The estimated cost of response and rehabilitation was well over US $30 million.

Since that time the island has again been affected by severe flooding. This includes floods in 1986 and 1993.

Oil Spills

In March, 1991, the *Vesta Belle*, a barge which was at the time carrying 13,500 barrels of tanker fuel, sank about 18 miles off the coast of St Kitts. More than one month later, oil was still seeping to the surface, some of it being deposited on the shore.

As part of the clean-up efforts, divers boarded the sunken tanker to collect what was still on the boat. This was then sent up to the surface from where it was transported to its intended destination. Despite these efforts and others, the oil that leaked from the tanker caused environmental damage.

Recent History (1963-1992)

According to a report published by the Secretariat of the International Decade for Natural Disaster Reduction (IDNDR), there were more than 80 major natural disasters in the Caribbean region during the 30-year period 1963-1992.

In the report, a disaster is classified as **major** if it satisfies at least one of the three criteria in the table below.

	CRITERIA	DESCRIPTION
1	Significant damage	Value of damage 1% or more of total annual Gross National Production GNP
2	Large number of people affected	1% or more of total population affected
3	Large number of deaths resulting	100 or more people die as a result of the disaster

[1] In this section, the term *Caribbean* refers to the Caribbean basin area, including the non-CARICOM islands.

SECTION 8

ACRONYMS

ACRONYMS

AST	-	Atlantic Standard Time
CANA	-	Caribbean News Agency
CBU	-	Caribbean Broadcasting Union
CARILEC	-	Caribbean Electric Utilities Corporation
CARIMAC	-	Caribbean Institute for Mass Communications
CCC	-	Caribbean Conference of Churches
CDERA	-	Caribbean Disaster Emergency Response Agency
CDMP	-	Caribbean Disaster Mitigation Programme
CDRU	-	Caribbean Disaster Relief Unit
CIO	-	Chief Information Officer
EOC	-	Emergency Operating Centre
IFRCS	-	Int'l Federation of Red Cross and Red Crescent Societies
IMO	-	International Maritime Organisation
NDC	-	National Disaster Coordinator
NDMO	-	National Disaster Management Office
NGO	-	Non-Governmental Organisations
OAS	-	Organisation of American States
OECS	-	Organisation of Eastern Caribbean States
PAHO	-	Pan American Health Organisation
RSS	-	Regional Security System
SRU	-	Seismic Research Unit
SUMA	-	Supply Management Project
UNDHA	-	United Nations Department of Humanitarian Affairs
UNDP	-	United Nations Development Programme
UNESCO	-	United Nations Educational, Scientific and Cultural Organization
USAID/ OFDA	-	United States Agency for International Development/ Office of Foreign Disaster Assistance

SECTION 9

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PAHO Disaster Response Team Guidelines for Health Needs Assessment in the Caribbean

PAHO Suma Fact Sheet. PAHO/WHO, March, 1990

ANNEX 1

MAJOR DISASTERS IN THE CARIBBEAN SINCE 1899

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ANNEX 1

COUNTRY	DATE	TYPE OF DISASTER	COMMENTS
ANGUILLA	02/01/55	Hurricane	"Alice"
	05/09/60	Hurricane	"Donna"
ANTIGUA & BARBUDA	01/09/50	Hurricane	"Dog"
	04/09/60	Hurricane	"Donna"
	26/09/66	Hurricane	"Inez"
	08/10/74	Earthquake	Major
	Nov. 83	Drought	Extensive damage to agricultural sector
	16/03/85	Earthquake	6.6 Richter Scale
	17/09/89	Hurricane	"Hugo"
BAHAMAS	26/07/26	Hurricane	Devastating
	26/09/29	Hurricane	Enormous damage
	29/09/35	Hurricane	In Bimini
	14/09/45	Hurricane	Heavy damage
	18/10/63	Hurricane	"Flora"
	Sept.65	Hurricane	"Betsy"
	13/11/65	Shipwreck	90 killed
	3/10/66	Hurricane	"Inez"
	August 85	Accident	100 killed
	August 92	Hurricane	"Andrew" 4 killed, 1700 affected
BARBADOS	22/09/55	Hurricane	"Janet"
	Oct. 70	Floods	Entire Island
	1976	Aircraft Crash	All passengers killed
	03/08/80	Hurricane	"Allen"
	Oct. 1983	Flood	Speightstown
	25/10/84	Floods	Widespread
	24/05/90	Fire (Julie N)	Entire commercial block destroyed
	Dec. 94	McBride Chemical Fire	Hundreds evacuated
BELIZE	10/09/31	Hurricane	1,500 killed
	28/09/55	Hurricane	"Janet"
	31/10/61	Hurricane	"Hattie"
	Sept. 74	Hurricanes	"Carmen" & "Fifi"
	Sept. 78	Hurricane	"Greta" - 5 deaths, 6,000 affected
	Dec. 79	Floods	Torr. rains
	17/5/82	Fire	Belize City
BERMUDA	12/10/48	Hurricane	Heavy damage
	Jan. 86	Tornadoes	5 parishes
	25/09/87	Hurricane	"Emily"

Major Disasters in the Caribbean since 1899 (Cont'd)

COUNTRY	DATE	TYPE OF DISASTER	COMMENTS
BRITISH VIRGIN ISLANDS	1932	Hurricane	Tortola damaged
	23/05/69	Flood	19" rain recorded
	07/09/70	Flood	Heavy damage
	April 83	Flood & torr. rains	
	Nov. 84	Tropical Storm	Heavy damage
CUBA	20/10/26	Hurricane	600 killed
	09/11/32	Hurricane	2,500 killed
	28/09/35	Storm Surge	Many fatalities
	18/10/44	Storm	
	21/09/48	Hurricane	Heavy damage
	05/10/48	Hurricane	
	04/10/63	Hurricane	"Flora"
	30/09/66	Hurricane	"Inez"
	13/10/68	Hurricane	"Gladys"
	19/02/76	Earthquake	
	June 77	Floods	Eastern area
	11/02/78	Storm	Gale
	03/06/82	Hurricane	"Alberto"
	Feb./Mar. 1983	Torrential rains/ Floods	10 weeks of Torrential rains
	25/05/85	Heavy rains	+ tornadoes
	18/11/85	Hurricane	"Kate"
	June 86	Floods	+ landslides
	Aug. 87	Fire	
	06/06/66	Hurricane	"Alma"
	August 87	Fire	
	26/5/88	Flood	20 killed, 90,000 affected
	25/6/88	Accident	25 killed, 84 affected
	04/09/89	Accident	Jet Crash, 171 killed
	04/08/94	Accident	Train Collision, 25 killed
	28/05/90	Flood	6,000 affected
	06/04/91	Accident	Shipwreck, 135 killed
	06/02/92	Flood	9,127 affected
	25/05/92	Earthquake	7 Ritcher Sc, 7,000 affected
DOMINICA	04/03/03	Earthquake	
	16/02/08	Earthquake	Slight damage
	04/02/35	Earthquake	
	21/05/46	Earthquake	7.0 Richter Scale
	25/09/63	Hurricane	"Edith"
	Aug. 79	Hurricanes	"David" & "Frederick"
	09/10/84	Hurricane	
	09/03/86	Earthquake	
	Sept. 89	Hurricane	"Hugo"

Major Disasters in the Caribbean since 1899 (Cont'd)

COUNTRY	DATE	TYPE OF DISASTER	COMMENTS
DOMINICAN REPUBLIC	03/09/30	Hurricane	2,000 killed
	02/10/63	Hurricane	"Flora"
	Aug. 64	Hurricane	"Cleo"
	April 65	Forest Fire	
	April 65	Civil Strife	22,000 affected
	29/09/66	Hurricane	"Inez"
	1968	Drought	Nationwide
	1978	Epidemic	Swine Fever
	27/04/79	Floods	N/N-E areas
	Aug. 79	Hurricanes	"David" & "Frederick"
	May 81	Floods	Heavy rains
	12/02/83	Forest fire	
	29/05/86	Storm	Heavy rains
	12,000 affected		
	02/09/87	Hurricane	"Emily"
	06/10/87	Accident	100 killed
	August 88	Flood	1,191,150 affected
GRENADA	1955	Hurricane	"Janet"
	30/09/63	Hurricane	"Flora"
	25/10/83	Emergency	2,000 affected
	27/04/90	Fire	
GUADELOUPE	12/09/28	Hurricane	
	11/08/56	Hurricane	"Betsy"
	06/10/63	Tropical Storm	"Helena"
	22/08/64	Hurricane	"Cleo"
	27/09/66	Hurricane	"Inez"
	20/08/70	Tropical Storm	"Dorothy"
	30/08/76	Volcano Eruption	Mt. Soufriere
	16/03/85	Earthquake	6.6 Richter Scale
GUYANA	1964	Civil Strife	Widespread
	July 71	Floods	21,000 affected
	April 78	Power Shortage	250,000 affected
	18/11/78	Accident	900 killed, Jonestown Massacre
	01/12/79	Fire Accident	Georgetown
HAITI	12/11/09	Hurricane	150 killed
	12/08/15	Hurricane	1,600 killed
	21/10/35	Hurricanes	"Jeremie" & "Jacme"
	27/10/52	Earthquake	6 killed
	12/10/54	Hurricane	"Hazel"
	03/10/63	Hurricane	"Flora"
	14/11/63	Floods	500 killed

Major Disasters in the Caribbean since 1899 (Cont'd)

COUNTRY	DATE	TYPE OF DISASTER	COMMENTS
HAITI	24/08/64	Hurricane	"Cleo"
	29/09/64	Hurricane	"Inez"
	1968	Drought	210,000 affected
	07/08/72	Fire	Port-au-Prince
	1974-75	Drought	N/W Peninsula
	1977	Drought	countrywide
	31/08/79	Hurricane	"David"
	11/05/80	Fire	10,000 affected
	05/08/80	Hurricane	"Allen"
	1980-81	Drought	S/W area
	20/05/85	Floods	40,000 affected
	16/05/86	Fire	3,300 homeless
	01/06/86	Floods	Extensive damage
	03/06/86	Floods	Heavy rains
	April -	Fire/Floods	
	Oct. 1986	& emergency	Returnees situation
	23/10/86	Floods	100 homeless
	11/11/86	Accident (ferry)	200 killed
	10/07/87	Heavy rains	Extensive damage
	Dec. 87	Flood	3,000 affected
	11/09/88	Hurricane	"Gilbert" (54 dead, 870,000 affected)
	02/04/89	Civil Strife	12 killed
	05/12/90	Emergency	Explosive set off, 7killed
	17/01/91	Civil Strife	70 killed, 2,000 affected
	21/09/92	Accident	Chemical explosion, 10 killed
	19/07/92	Accident	90 killed
JAMAICA	10/08/03	Hurricane	Heavy damage
	14/01/07	Earthquake	1,200 killed
	04/11/09	Flood	53 killed
	12/11/12	Hurricane	Heavy damage
	23/11/37	Flood	111 killed
	18/11/40	Flood	125 killed
	20/08/44	Hurricane	26 dead
	17/08/51	Hurricane	"Charlie"
	03/10/63	Hurricane	"Flora"
	1968	Drought	Nationwide
	17/10/73	Tropical Storm	"Gilda"
	Jan. 76	Civil Strife	1,200 homeless
	June 77	Epidemic	Dengue fever
	25/04/79	Floods	Western area
	June 79	Floods	Widespread
	20/05/80	Accident	187 killed
	05/08/80	Hurricane	"Allen"
	11/11/85	Hurricane	"Kate"

Major Disasters in the Caribbean since 1899 (Cont'd)

COUNTRY	DATE	TYPE OF DISASTER	COMMENTS
JAMAICA	15/05/86	Floods	Islandwide
	30/10/87	Floods	Tropical Storm
	12/09/88	Hurricane	"Gilbert" (49 killed, 810,000 affected)
	Dec.90	Epidemic	Thyphoid
	21/05/91	Flood	550,000 affected
MARTINIQUE	08/05/02	Vol. Eruption	Mt. Pelee 40,000 killed
	08/08/03	Hurricane	Heavy damage
	16/02/06	Earthquake	
	17/04/14	Earthquake	
	26/09/19	Earthquake	
	02/09/51	Hurricane	Crops destroyed
	19/03/53	Earthquake	Building damage
	10/07/60	Hurricane	"Abby"
	25/09/63	Hurricane	"Edith"
	07/09/67	Hurricane	"Buelah"
	20/08/70	Tropical Storm	"Dorothy"
	August 79	Hurricane	"David"
	04/10/90	Hurricane	"Klaus" 6 killed, 1,500 affected
MONTSERRAT	28/08/24	Hurricane	Heavy damage
	12/09/28	Hurricane	Heavy damage
	12/12/34	Earthquake	Building damage
	10/11/35	Earthquake	Building damage
	16/03/85	Earthquake	6.6 Richter Scale
	17/09/85	Aircraft Accident	B707 destroyed
	17/09/89	Hurricane	"Hugo"
NETHERLAND ANTILLES	Aug.1899	Hurricane	Heavy damage
	01/09/50	Hurricane	"Dog"
	04/09/80	Hurricane	"Donna"
PUERTO RICO	Aug.1899	Hurricane	6,000 killed
	06/09/10	Hurricane	San Juan damaged
	11/10/18	Earthquake	Extensive damage
	24/10/18	Earthquake	Deaths/damages
	23/07/26	Earthquake	Deaths/damages
	13/09/28	Earthquake	Deaths/damages
	10/09/31	Earthquake	Deaths/damages
	Sept.32	Earthquake	Deaths/damages
	12/08/56	Earthquake	Deaths/damages
	Sept.60	Hurricane	"Donna"
	1989	Hurricane	"Hugo"

Major Disasters in the Caribbean since 1899 (Cont'd)

COUNTRY	DATE	TYPE OF DISASTER	COMMENTS
ST. KITTS (SAINT CHRISTOPHER) AND NEVIS	13/09/28	Hurricane	Heavy Damage
	Dec.1950	Earthquake	Heavy damage
	02/01/55	Hurricane	"Alice"
	1984	Floods	In Basseterre
	16/03/85	Earthquake	6.6 Richter Scale
	May 1987	Flood	
	17/09/89	Hurricane	"Hugo"
ST. MARTAEN /SEBA	30/12/54	Hurricane	"Alice"
	04/09/60	Hurricane	"Donna"
ST. LUCIA	16/02/06	Earthquake	Extensive damage
	21/05/46	Earthquake	Building damage
	19/03/53	Earthquake	Building damage
	10/07/60	Hurricane	"Abby"
	25/09/63	Hurricane	"Edith"
	07/09/67	Tropical Storm	"Beulah"
	03/08/80	Hurricane	"Allen"
	Sept.83	Storm	Gale force winds
	08/09/86	Tropical Storm	"Danielle"
SAINT VINCENT and the GRENADINES	08/05/02	Volcanic Eruption (1,565 killed)	Mt. Soufriere
	17/07/02	Earthquake	Buildings damaged
	17/09/06	Earthquake	
	26/09/28	Earthquake	
	21/05/46	Earthquake	
	19/03/53	Earthquake	Buildings damaged
	23/09/55	Hurricane	"Janet"
	08/09/67	Tropical Storm	"Beulah"
	17/10/71	Volcanic Eruption	Mt. Soufriere
	13/04/79	Volcanic Eruption	Mt. Soufriere
	03/08/80	Hurricane	"Allen"
	03/08/80	Aircraft Accident	Complete dstr.
	08/09/86	Tropical Storm/ Floods	"Danielle" Heavy damage
	21/09/87	Hurricane	"Emily"
SURRINAME	01/08/69	Floods	4,600 affected
	07/06/89	Accident	Airport 169 killed
TRINIDAD & TOBAGO	31/01/04	Earthquake	Building damage
	26/03/15	Earthquake	Building damage
	24/02/18	Earthquake	Building damage
	04/12/54	Earthquake	Building damage

Major Disasters in the Caribbean since 1899 (Cont'd)

COUNTRY	DATE	TYPE OF DISASTER	COMMENTS
TRINIDAD & TOBAGO	27/06/33	Hurricane	Heavy damage
	30/09/63	Hurricane	"Flora"
	14/08/74	Tropical Storm	"Alma"
	26/04/88	Accident	Explosion, 6 killed
	27/07/90	Emergency	Hostage cris, 60 killed
TURKS AND CAICOS ISLANDS	20/11/85	Hurricane	"Kate"
	21/09/87	Hurricane	"Emily"
US VIRGIN ISLANDS	Aug.1899	Hurricane	Heavy damage and major flood surge
	Aug.1899	Hurricane	Heavy damage to St. Thomas
	01/10/01	Hurricane	Damage to St. Croix
	22/08/09	Tropical Storm	Major flooding
	14/07/16	Hurricane	Damage to St. Croix
	21/08/16	Hurricane	Heavy damage
	09/10/16	Hurricane	Damage to St. Thomas
	28/08/24	Hurricane	Heavy damage
	12/09/28	Hurricane	Heavy damage
	10/09/31	Hurricane	Heavy damage
	26/09/32	Hurricane	Heavy damage
	07/05/60	Flood	Heavy damage
	04/11/65	Flood	Heavy damage to St. Thomas
	01/03/69	Flood	Heavy damage
	May 1970	Flood	Heavy damage
	Oct. 70	Flood	Extensive damage to St. Thomas
	1989	Hurricane	"Hugo"

Source

Note:

Data based on records available from:

1. OFDA Disaster History: "Significant Data On Major Disasters Worldwide, 1900 - present of June 1987"
2. PCDPPP'S "Caribbean Disaster News", issues Nod. 1-11 (1984-present).
3. PCDPPP Documentation Centre, 1988
4. UNDRO's computerized list of situation/information reports ('sitrep.Prints")
5. World Map of Natural Hazards, Muenchener Rueckvers Icherungs-Gesellschaft, 1978