MANAGEMENT COMMITTEE MEETING NO. IX

The 9th Meeting of the Management Committee of the Pan Caribbean Disaster Preparedness and Prevention Project (PCDPPP) was held in Antigua on January 15-17, 1986.

Committee Members held discussions on several aspects of the Project - Program Activities, Administration and Financial Status.

The Committee again stressed the need for co-ordination and close cooperation between the components, and recognised the efforts being made in this regard by the cross referancing of activities to be undertaken by the various components.

The Management Committee members were pleased to announce the following significant developments concerning the PCDPPP -

* Financial Assistance was obtained/provided for 1986 project activities from two major donor agencies
  - Canadian International Development Agency (CIDA)
  - United States Agency for International Development/Office of U.S. for Foreign Disaster Assistance (USAID/OFDA)

* Project Activities proposed for 1986 were approved and include -
  - Technical Assistance to Member States participating in the Project.
  - In-country Workshops; Seminars, Simulation Exercises.
  - Public Information/Education including a Newsletter

COUNTRIES PARTICIPATING IN THE PROJECT

1. ANGUILLA
2. ANTIGUA AND BARBUDA
3. THE BAHAMAS
4. BARBADOS
5. BELIZE
6. BERMUDA
7. BRITISH VIRGIN ISLANDS
8. CAYMAN ISLANDS
9. CUBA
10. DOMINICA
11. DOMINICAN REPUBLIC
12. FRENCH GUIANA
13. GRENADA
14. GUADELOUPE
15. GUYANA
16. HAITI
17. JAMAICA
18. MARTINIQUE
19. MONTserrat
20. NETHERLANDS ANTILLES
21. PUERTO RICO
22. ST. LUCIA
23. ST. KITTS/NEVIS
24. ST. VINCENT AND GRENADINES
25. SURINAME
26. TRINIDAD AND TOBAGO
27. TURKS AND CAICOS ISLANDS
28. US VIRGIN ISLANDS
Collaborative activities involving all components of the Project staff.

The number of activities, workshops, seminars, conferences planned for 1986 is about 121 including activities in most of the participating States. The focus of the programme is on training of National Co-ordinators, Health Personnel, Telecommunications Personnel in response mechanisms needed in time of disaster. There will also be continuing work on improving the skills of technicians and builders in the construction of buildings resistant to hurricanes and earthquakes.

The representative of the Government of Antigua and Barbuda reported that the new headquarters building was being renovated and would soon be ready for occupation by PCDPPP.

The Committee agreed that the next meeting of the National Disaster Co-ordinators would be held in Cuba, May 1986. The UNDRD component will be making the arrangements with the Director, Civil Defence, of Cuba for the meeting.

In the area of Project administration, the Management Committee has designated Mr. Alwyn T. Wason, Prevention Advisor for the PCDPPP, to assume the additional responsibilities as Team Leader for the PCDPPP.

The next meeting of the PCDPPP Management Committee is scheduled for September 10-12, 1986, in Antigua.

C.P.R COUNCIL STAGES  CAR CRASH SIMULATION EXERCISES

The B.V.I. Cardio Pulmonary Resuscitation Council, in collaboration with Davenport College, Grand Rapids, Michigan, conducted a simulation exercise on 12 February 1986 at Prospect Reef Resort, British Virgin Islands.

The scenario included a three car collision involving nine casualties, spectators, the media, and use of Public Hospital Ambulance and Staff Nurse.

The purpose of the simulation exercise was to prepare First Responders drawn principally from the Royal Virgin Islands Police Force for action through efficient and effective methods for handling emergency situations.

Four Evaluators including the B.V.I. Red Cross, assessed the participants level of performance in Advanced First Aid procedures, techniques, identification and classification of the Injured Persons.

The territory’s National Disaster Preparedness Co-ordinator, Mr. Robert Creque, served as a resource person who also evaluated the participants’ reaction time, co-ordination capabilities and organizational capacity to respond and manage disaster problems at the crash site.

Other Resource persons include Mr. Philip Fenty, Chairman - CPRC - B.V.I. and Mrs. Candace Otie, Director, Center for Emergency Medical Services, Davenport College, Grand Rapids, Michigan.

From: Deputy Governor’s Office
      Road Town, Tortola
      British Virgin Islands.
Introduction

In keeping with the recommendations of the fifth Health Ministers Conference (Antigua, 10-12 July 1979), Guyana's first Disaster Preparedness and Emergency Management Workshop was held in Georgetown on July 22-26, 1985.

During this workshop, draft proposals for a National Disaster Preparedness plan were updated to reflect what had been accepted as a model for the Caribbean states. The Draft National Disaster Preparedness Plan - Guyana 1985, identified fifteen Management Sub-committees and enlisted the services of over thirty specialized agencies/organizations. This plan aims at perfection and within the framework of Guyana's resources, represents the first logical and co-ordinated approach to disaster planning at the national level.

Historical Perspective

It must not be construed that there were no preparedness activities in the Nation. The history of this maritime province, situated on the north-eastern coast of the mainland of South America, is fraught with disaster impacts of varying nature and magnitude. Predominantly such disasters include floods, fires, unseasonal weather conditions (subtle displacements) and transport accidents.

Hazards

Floods

The coastal strip which is approximately 1.52 meters below mean high water level of the Atlantic Ocean has to be closely guarded for over 300 km. In spite of 100 km of permanent walls, 50 km of natural sand and shell reef and 150 km of earthen embankment, low lying areas along the coast still suffer periodic inundations from the ocean. The gradient of the coastland is 1.27 cm to 1.609 km moving inland. This accounts for the maintenance of a complex inventory of ocean and river defences and the battle against the ocean, is an ongoing costly affair, which must go on.

Fires

Throughout the entire country, houses are predominately of wooden construction raised on stilts. This is due to the availability of durable hardwoods which the country possesses in abundance.

Hydrometeorological Impacts

Unlike most of her Caribbean neighbours, preparedness activities in Guyana are the everyday affair of key agencies in the nation and are not basically seasonal as with hurricanes.

Displacement by weather patterns (sunshine/rainfall) cause disruption to agricultural activities and have accounted for millions of dollars loses in the rice and sugar industries.

Other outdoor activities including mining, fishing, construction work and transport to various locations in the hinterland, are confronted with costly delays or disruptions.

(SEE PAGE 4)
DISASTER PREPAREDNESS COUNTRY PROFILE - GUYANA

Transport Accident

Guyana's gross land area of 210,000 square kilometres spreads over wide expanses of coastal plains, hills, mountains and savannahs. Accessibility to the various populated centres of the hinterland is either by river or air. Transportation on the coast is mainly by roads, highways and ferry ways. During the six-year period (1978-1984), a total of 1365 lives were lost in traffic accidents.

Tragic mishaps also occur in the areas of river and air transport. This is further aggravated by the loss of millions of dollars (in foreign exchange) suffered in terms of vehicles written off and compensations (in G.$) payable to claimants/beneficiaries. Over the years air crashes seem to escalate considering Guyana's limited facilities for such traffic into the hinterland. From 1975 to 1984 there were 36 mishaps involving light aircraft. Nine of these resulted in the destruction of the aircraft, and the loss of 23 lives. A further 20 aircraft suffered damage.

The use of riverain transport has also been marked by occasional tragedies involving both small and large craft. Defective vessels, ill-equipped vessels, unfavourable weather conditions and the absence of telecommunications equipment at air-strips are undoubtedly some of the contributing causes of these accidents.

Telecommunications

Since the coast is not the country, consideration must be given to communication linkage with population centres in the hinterland. This becomes a very pronounced priority especially in emergency planning, considering:

1) distance from the costland which extends approximately 6.21 km inland.
2) accessibility to certain centres by land, river or even air depending on the time of day.
3) the hilly sand and clay belt region
4) the mountain region
5) the hinterland savannahs.

A few agencies, e.g. Health Medical Extension Programme (MEDEX) the Police and the Military maintain their individual administrative communication links with some of these centres.

Development of Civil Defence in Guyana

The National Civil Defence Commission was set up in May 1982. The Pro-
Earthquake Series in Dominica March 9-10, 1986

John B. Shepherd
Seismic Research Unit, U.W.I.
St. Augustine, Trinidad, W.I.

On Sunday March 9, 1986 Dominicans received a sharp reminder that they live in a volcanic island. Between midday and midnight eight earthquakes occurred, some of them felt so strongly that people ran out into the streets in alarm. The local radio station rapidly contacted PCDPPP headquarters in Antigua who in turn contacted the headquarters of the Seismic Research Unit at U.W.I. St. Augustine, Trinidad. In St. Augustine the earthquakes had been recorded by seismographs which transmit their data continuously from Dominica to Trinidad through relay stations in Montserrat and Antigua and it was possible to determine rapidly that the earthquakes originated at shallow depth beneath the southern part of Dominica. This information was immediately passed on to the office of the Prime Minister in Dominica and the Seismic Research Unit, together with colleagues from the volcano observatories in Guadeloupe and Martinique where the earthquakes were recorded also, kept a particularly close watch on the Dominica seismograph records for the next few days.

Earthquakes are fairly common in the volcanic islands of the Lesser Antilles but they usually occur at depths of greater than 100 kilometers beneath the islands and are caused by the collision between the North Atlantic tectonic plate to the east and the Caribbean tectonic plate to the west. The earthquakes of March 9 were different. They occurred at a depth of less than five kilometers beneath southern Dominica, close to two innocuous-looking but highly dangerous volcanoes, Morne Plat Pays and More. Patates. (See Fig. 1) On this occasion, the earthquakes died away rapidly, but they gave a sure indication that these volcanoes are not yet dead and may one day wake up in the same way that Nevado del Ruiz in Colombia did in November, 1985.

Although Dominica, with an area of 752 square kilometers, is the largest of the Lesser Antilles it is not a particularly big island. However, within those 752 square kilometers there is one of the densest concentrations of active volcanoes anywhere in the world. From Morne aux Diables in the north to Morne Patates in the south there are at least ten volcanoes which have erupted within the past thirty thousand years and which will probably erupt again in the future. The last eruption, which was in the Valley of Desolation in 1880, was a fairly small one, but prehistoric eruptions in Dominica have been on a truly gigantic scale. The largest known was from Micritin volcano about 25,000 years ago when over forty (40) cubic kilometers of volcanic ash was erupted. In comparison, the famous eruption of Krakatau in 1883 produced about eighteen cubic kilometers. It should be noted that, in geological terms, 25,000 years is a very short time. Volcanoes often remain active for millions of years and many of the biggest eruptions of recent years have been from volcanoes which had not previously erupted within human history. Morne Patates, which was the most probable sources of the earthquakes of March 9 last erupted about 450 years ago, shortly before the European settlement.

(See page 6)
EARTHQUAKE SERIES IN DOMINICA MARCH 9-10,1986

World wide only about one per cent of volcanic eruptions are truly dangerous but West Indian volcanoes unfortunately do not conform to the general pattern. Typically, they remain quiet for hundreds, or even thousands, of years and then return to life very violently. About one third of all West Indian eruptions are extremely violent and in the twentieth century more people have been killed by eruptions in the West Indies than in the whole of the rest of the world put together.

Fortunately, there is something that can be done to prevent loss of life in the future. Volcanic eruptions are not sudden unexpected events. Almost all eruptions are preceded by fairly long periods of recognizable premonitory symptoms and if these symptoms are correctly interpreted there is usually plenty of time for people to move to the threatened areas. The 1985 eruption of Nevado del Ruiz, for example, was preceded by over a year of steadily escalating symptoms. The most common premonitory symptoms are small, shallow earthquakes such as the ones which occurred in Dominica so that the most useful method of continuous monitoring of potentially-active volcanoes is to maintain sensitive seismographs in continuous operation close to them.

In the West Indies there is at least one seismograph in operation close to each of the volcanoes. Signals from the stations in the Commonwealth islands are transmitted to the headquarters of the Seismic Research Unit in St. Augustine, Trinidad where they are monitored continuously by computers programmed to recognize unusual activity. Because of the high density of volcanoes in Dominica, signals from the stations in that island are also transmitted to the volcano observatories in Guadeloupe and Martinique operated by the Institute de Physique du Globe and additional seismograph stations in the French islands help to pinpoint the exact location of any unusual activity in Dominica.

The series of earthquakes which began on March 9 now seems to have died away. Four more earthquakes occurred on March 10 but none on March 11 or March 12. Short bursts of activity such as this are in fact fairly common not only in Dominica but also in the other volcanic islands. A particularly-severe swarm affected Montserrat from 1933 to 1938 and Nevis was equally severely shaken in 1950-51 and 1961-62. Minor swarms as the recent one occurred somewhere in the Lesser Antilles at least one every year. Only about one in twenty (20) of these earthquake swarms ends in an eruption but all must be studied closely if we are to recognize the symptoms which really do precede and eruption.

In the past, study of the swarms was hampered by communication difficulties. Even though earthquakes might be felt in an island or recognized by the local seismograph operator, there were often long delays before the information reached scientists with experience in interpreting his type of phenomenon.

Over the past few years communications have improved considerably. All of the seismographs in the volcanic Islands are now linked by radio telemetry to the Seismic Research Unit so that the data are available for immediate inspection by trained scientists. In addition, PCDPPP has provided facilities for the rapid transmission of information between government authorities and scientists. Provided that these facilities are maintained in working order there is no reason why volcanic catastrophes such as those which occurred in Martinique and St. Vincent in 1902 and in Colombia only a few months ago should ever be repeated in the West Indies.

WORK SHOP ON BUILDING GUIDELINES
KINGSTON, ST. VINCENT

A three-day workshop on the preparation of Guidelines for Planning Procedures and Building Services was held in St. Vincent on January 28-30, 1986. This workshop focused on the specific requirements needed to produce safe services including proper siting of buildings and provisions for prevention of fire and mitigation of damage.

The objective of the workshop was to develop outline guidelines for building and planning services for small buildings.

There were twenty-three participants drawn from the building and planning control professionals in Grenada, Dominica, St. Vincent and St. Lucia and these included fire officers from St. Vincent.

Participants were given an itemised list of topics for each of the four areas to be developed as follows:

- Planning Procedures
- Electrical Wiring and Installation
- Plumbing and Sanitation
- Fire Prevention.

The participants were divided into work groups, generally in accordance with their expertise and/or work involvement. Each group studied the technical requirements of the subject area assigned and with the help of the itemised list developed outline guidelines.

The procedure used in this workshop was to present participants with a list of contents to be used for designing guidelines rather than presenting a complete draft document for review - forced participants to use their knowledge and experience to recommend provisions that should be in the guidelines rather than reacting to decisions taken by others.

The resultant document, reflected the combined decisions by technicians and building professionals who have many years of "hands on" experience in the Caribbean. The next stage will be to use the document as a platform for developing guidelines for building services.

Two consultants have been appointed to prepare the Guidelines document which is currently scheduled to be completed by April 30, 1986.

For more information on the above - contact A. Wason, Prevention Adviser - PCDPPP.

WELCOME

Mr. Carl H. Jordan, a national of Barbados, has been transferred from the Office of Financial Services of the United Nations, New York, to the UNDRRO component of PCDPPP as Finance and Administrative Officer with effect from 1 February 1986.
ST. KITTS AND NEVIS UNIVERSITY

RED CROSS SEMINAR
25-26 JANUARY

In an attempt to improve and expand its services offered to the community, the St. Kitts and Nevis Red Cross conducted a 2-day Seminar, 25-26 January, 1986. The objectives of the seminar were:

- To examine the present activities of the St. Kitts and Nevis Red Cross;

- To examine the National Plans of Health and Disaster Preparedness and define the role of the St. Kitts and Nevis Red Cross in their implementation;

- To design an outline for a plan of action for the development of the St. Kitts and Nevis Red Cross Society, for its participation in National Programmes in relation to community needs.

The Seminar was opened by the Honourable S.E. Morris, Minister of Education, Health and Community Affairs, while Mr. Calvin Farley, National Disaster Coodinator, gave a presentation on the National Disaster Plan. Among the 35 participants were members of the Red Cross including Lady Arrindell, President.

Participants prepared an outline programme of priorities for the development of the St. Kitts and Nevis Red Cross Society, for the next two years. A priority of this programme is the definition of the role of the St. Kitts and Nevis Red Cross in the National Disaster Plan and the writing of a National Red Cross Disaster Plan.

The Seminar was organized in collaboration with League of Red Cross and Red Crescent Societies' First Aid Advisor to the PCDPPP and is part of the Development Plan for the Red Cross Societies in the Region, to enable them to respond efficiently and effectively in times of disasters.

Audrey Y. Mullings
LORCS/ First Aid Advisor- PCDPPP

FAREWELL

Ms. Diane E. Barkley, Administrative Secretary, returned to the U.N. Headquarters, New York, on 15 February 1986 on the completion of a two-year assignment with PCDPPP.
FOLLOWING ARE THE SEMINAR RECOMMENDATIONS:

The need for the systematic collection and collation of existing information pertaining to volcanic emergency preparedness management. It is strongly recommended that the PCDPPP act as the vehicle through which such information is collated and disseminated with a view to catering to the needs of the various national disaster services in the member territories.

2. The seminar recommends that within the framework of the PCDPPP assistance be provided to interested countries, at their request, for carrying out or updating studies of volcanic hazards in their respective territories. In addition, the Project management convene a meeting of specialists in volcanic hazard studies, who are familiar with the region and with this type of volcanism to:
   a) review all available material;
   b) recommend standard procedures for hazard mapping;
   c) prepare map(s) of one or more selected areas to serve as examples; and
   d) define a programme of further work on the subject.

3. That member states be provided with technical assistance for national volcanic preparedness planning, such assistance to be co-ordinated by the PCDPPP.

4. Recognising the grave danger posed by volcanoes existing in the several islands represented at this meeting, conscious of the need to maintain an effective system for these volcanoes, concerned over the future existence of the Seismic Research Unit of the University of the West Indies, St. Augustine Campus, strongly recommends to Governments and the University, that every effort be made to ensure the continuing existence and the enhanced capability of the Seismic Research Unit of the University of the West Indies.

5. That the PCDPPP identify and catalogue, persons and equipment which could be made available to member governments in the region in the event of a volcanic emergency, e.g. transport, rescue, first aid, and other services in which the cooperation of neighbouring countries could be of assistance.

Vue Pointe Hotel
Plymouth, Montserrat.
COASTLINE VULNERABILITY SURVEY
(SUMMARY REPORT)

Introduction

The need for an overview of the vulnerability of coastal settlements in the Caribbean was impressed upon the Pan Caribbean Disaster Preparedness and Prevention Project during the series of workshops and discussions on the development of guidelines for the construction of hurricane and earthquake resistant buildings.

Many Caribbean States now depend on tourism as an important source of foreign exchange. The use of the coastal zone and particularly of the beaches is intensifying at a relatively rapid rate. The traditional use of the beaches by the local populations for fishing and recreation has given way to intensive use for an increasing number of tourists and the pressure to construct more beaches and to deepen existing beaches are unavoidable.

The consequence of such pressures has been noticed in the destruction of many of the natural features which have characterised the coastal zone, and in the increasing destruction of the very beaches which are so valuable to the tourist trade. Many of the concerned Governments have therefore attempted to institute some measures to control the degradation of the beaches, but current data on which relevant solutions would depend has been lacking for most of the States.

The PCDPPP has therefore engaged a Consultant to survey the beaches and coastal zones in eight of the PCDPPP participating States; examine the research data available on the conditions of the coastal zones and causes for changes in the character of the beaches. The resultant report for each participating State will identify problem areas in the coastal zones and include basic recommendations for improving or maintaining the beach lands. Where research data is lacking, recommendations for collecting and analysing such data will be included. The survey was started in April of 1985 and the field visits concluded in August 1985.

The States participating were: ANTIGUA/Barbuda, Barbados, Belize, Cayman Islands, GUYANA, Jamaica, St. Lucia, and Turks and Caicos Islands.

(SEE PAGE 10)
The Problem

The coastal zone is a highly dynamic environment which is intricately linked to activities in the landward and seaward areas. Potential damage from hurricanes, storms and flood hazards may be exacerbated by man's activity within the environmental system on both landward and seaward sides of the shoreline. Consequently any assessment of hazard risk in the coastal zone must define the zone in its widest context. It is here assumed that the coastal zone includes not only the littoral band one mile wide parallel to the shore, but also drainage basins which supply water and sediment from the land to the shore and thence to the sea.

In the Caribbean, programmes to predict the occurrences of storm surge have developed in Puerto Rico and plans have been made to undertake similar work in Jamaica. Compton Dean in his study of coastal problems in the Eastern Caribbean has assessed the potential surge effects for some of the islands studied, but the need for instrumentation on the Caribbean coasts is critical for the development of the data base required for the prediction of the potential effects of storm surge, tidal flooding and high waves.

Studies and records have indicated that the Palisadoes in Jamaica is susceptible to storm surge and that in general terms the harbour area and most of the city's major financial and transportation facilities lie within the storm surge zone. Beaches, especially those that are unprotected, are generally highly susceptible to wave scour. Breaking waves can remove vast amounts of sand. This material is then transported away by long-shore currents, thus contributing to the denudation of beaches in areas where buildings or other structures prevent the natural replenishment of sand. In periods of high seas, generally in the months of December to February, loose sand may be removed from the bases of structures built on the beach. Where these structures are not on piled footings, eventual collapse may result, depending on the degree of scour caused by the waves.

The main problems affecting the design and siting of structures within the coastal zone were discussed at a workshop held in Trinidad in April, 1985. The summary recommendations were as follows:

a) Land use zoning and development control are the most important considerations. Development should be steered away from areas beyond the setback lines.

b) Where buildings exists outside setback limits preparedness measures must be implemented.

c) Construction of all coastal structures must be designed by competent professionals and must be site specific.

d) Mining of sand must be controlled if not prohibited.

e) Indiscriminate removal of vegetation, sand dunes and coral reefs must be avoided. Adequate controls should be instituted where removal of coastal vegetation appears to be necessary.

f) There should be a national policy on marine pollution.

There is a growing recognition among Caribbean Governments who participated in the 1973 study by Dean et al, that the vulnerability of beaches and structures within the coastal zone must be reduced. Unfortunately, however, it has been found that in many instances the construction of groynes designed to provide protection from erosion has been ineffective and has in some cases, increased erosion on adjacent beaches. A review of the processes of erosion and accretion of the coastal zone were necessary first steps to the examination of relevant solutions.

Method of Investigation

Data for the survey have been obtained on the:
- number and tracks of tropical storms and hurricanes passing within seventy-five nautical miles of each participating State over the past 100 years (1880-1980)
- probability of tropical hurricanes of given intensity passing within seventy-five nautical miles;
- proportional distribution of maximum wind speed;
- closest point of approach, forward speed and heading.

These data provide input for storm surge modelling which is currently being developed and refined at the Hurricane Centre for specific locations in Florida.
Vulnerability Assessment

Vulnerability of the coastal zone for each of the eight States was assessed in terms of:

a) Physical character of the coastline as it might contribute to the generation and damaging effects of storm surge, topography up to the 50 foot contour, surface material, mangrove occurrence, drainage, shape, fill, off-shore topography including occurrences and extent of the continental shelf and reefs.

b) Settlement characteristics: Number, size and distribution of settlements; accessibility; location of key services such as water supply, electricity, hospitals, and emergency services.

c) Type of structures - construction material, design, age, use.

d) Market value of property.

e) Economic base: Contribution to national economy.

f) Development Plans.

g) Historical record of storm surge and/or coastal flooding.

h) Risk maps describing vulnerability at the macro-level will assist analysis of composite risk at selected sites, and can therefore contribute to the development of site-specific and country-specific prevention plans.

Further, risk maps should influence decision-making for engineering design, land-use planning, insurance and financial considerations, and resources management. If properly integrated into land-use planning, risk analysis can assist development and implementation of policies of avoidance, zonings and distribution of losses.

i) The concepts of ‘best use’ and ‘acceptable levels of risk’ are integral to disaster prevention planning, and can be most effectively applied in conjunction with vulnerability analysis.

Summary of Findings

The main findings resulting from the survey are summarised as follows:

- Increasing dependence on tourism as foreign exchange earner and increasing economic dependence on the coastal zone as the major tourism resource.

- Increasing of major tourist facilities in the beach zone.

- Increasing construction in areas which have a history of flooding and destruction from storm surges, swell, and high tides.

- Lack of clear definition and/or enforcement of setback line requirements.

- Destruction of coral reefs by blasting and by ‘mining’.

- Changes to the chemical character of the coastal environment by the dumping of industrial and domestic effluent thereby destroying reefs.

- Active mining of sand in the beach zone.

- Increasing sediment supply to the nearshore as a result of accelerated erosion in upland areas.

- Increasing construction of groynes and jetties in the beach zones disrupting the littoral drift.

Inadequate design and maintenance of groynes and other sea defence works.

Need for continuing monitoring of the movement of sand and sediments so as to provide data for proper design of sea walls.

Inadequate attention to critical maintenance of structures in the coastal zone.

Need for clearly articulated coastal management policies and programmes.

Need for development of data base on coastal materials, processes and forms so as to enable development of predictive models.

Need for mapping, instrumentation, and monitoring to support data base development programme.
COASTLINE VULNERABILITY SURVEY

- Need for a programme of public awareness to alert Governments and users of the coastal zones to the need for appropriate building practices.

- Need for physical planners and developers to include risk analysis in land planning and project implementation.

Conclusions

These summary findings are being discussed with each of the States concerned with the objective of developing recommendations relevant to the problems and economy of each State.

The series of discussions being planned will provide the opportunity for Government Planning Officials, Developers, Engineers and Architects to explore solutions which would maintain the asset without reducing the attractiveness of the coastal zones.

It is recognised that the need to acquire foreign exchange and to provide jobs has been a powerful force influencing the decisions of Governments of the region with respect to the use of the coastal zone.

The survey has shown however that the Governments are increasingly aware of the damage caused to beaches by high waves generated by storm and hurricane winds, but in most cases there is no planned solution to the beach erosion which generally follows the high waves. The results of this survey and the discussions to be held should provide Government planners and technicians with the incentive to institute the administrative controls necessary to prevent the destruction of many of the beaches.

References:

Eleanor Jones - Consultant
Alwyn Wason - Prevention Advisor PCDPPP

LIST OF ACRONYMS

PAN CARIBBEAN DISASTER PREPAREDNESS AND PREVENTION PROJECT

CARICOM - Caribbean Community
CIDA - Canadian International Development Agency
ECCM - East Caribbean Common Market (now OECS)
ECLAC - Economic Commission for Latin America and the Caribbean.
EDF - European Development Fund
EEC - European Economic Community
LORCS - League of Red Cross Societies
OECS - Organization of East Caribbean States (former ECOM)
PAHO/WHO - Pan American Health Organization/World Health Organization
PCDPPP - Pan Caribbean Disaster Preparedness and Prevention Project
SIDA - Swedish International Development Authority
UN - United Nations
UNDP - United Nations Development Programme
UNEP - United Nations Environment Programme
UNDRO - United Nations Disaster Relief Office
USAID/OFDA - United States Agency for International Development/Office of Foreign Disaster Assistance
BDD - British Development Division in the Caribbean
ITU - International Telecommunications Union
IMO - International Maritime Organization

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