LESSONS FROM RECENT EVENTS
HURRICANE GILBERT

At the 1988 Hurricane Conference, attended by several Emergency officials from the Caribbean, a prediction was made that 1988 was likely to see the return of a more “normal” hurricane season for the Caribbean - that is, one in which several hurricanes would pass through the Caribbean Sea. Since 1980, the Caribbean had experienced an unusually low number of hurricanes and many students of these giant storms wondered how the countries of the region would cope when ‘normal’ hurricane behavior resumed. The period since 1980 has also seen a significant investment in Disaster Management training, technical assistance, improved telecommunication resources and the strengthening of national institutional capacity for disaster planning and response. Gilbert has provided some answers and raised new questions for nations and the bilateral and multilateral agencies supporting loss reduction measures in the Caribbean region.

Disaster planning agencies in the English speaking Caribbean were first made aware of the system which became Gilbert on Thursday September 8, during a regional teleconference organised by the UNDRO/Pan Caribbean Disaster Preparedness and Prevention Project (PCDPPP) using the UWIDITE facility of the University of the West Indies. The purpose of the teleconference was to review the first half of the 1988 Hurricane Season.

Ironically several of the regional meteorologists participating in the teleconference pointed out that from the Caribbean perspective the hurricane season had been relatively inactive.

Gilbert more than compensated for the apparent lack of activity. While not taking as many lives as the “Great Hurricane” of 1780 which took some 24000 lives, Gilbert’s size, intensity, and impact on Hispaniola, Jamaica, the Cayman Islands, Mexico’s Yucatan Peninsula and Northeast States, and Cuba, as well as the Gulf Coast of the USA ensure that it will not be soon forgotten.

In October, Joan which followed an unusual Southerly path affected the Countries of the Southern Caribbean before slamming into the Atlantic Coast of Central America, reminded us that Hurricanes are capable of many surprises by bringing us a swarm of locusts.

Gilbert and Joan were grim reminders of the vulnerability of the
Caribbean Area, Central America and Gulf Coast to the impact of strong hurricanes and the importance of Disaster Planning for disaster prone developing countries. Although Gilbert was the most severe hurricane observed in the region it did not lead to the loss of life associated with past hurricanes such as DAVID of 1979 or FLORA of 1963 or the Great Hurricane of 1780. It will be interesting to evaluate the cause of this dramatic reduction of lives lost and to determine the contribution (if any) made by the various initiatives undertaken by the National authorities, International agencies and voluntary organizations to reduce disaster losses.

Unfortunately the damage to physical assets, housing, agriculture and infrastructure remained high and much remains to be done if the protection of economic assets is to be realised in future events.

Evaluations of various aspects of Gilbert are already underway. It is hoped that the lessons from Gilbert will be disseminated through the Caribbean (and international community.) Already agencies concerned with the International Decade for Natural Disaster Reduction (IDNDR) are citing the relatively low death figures in Jamaica and the Cayman Islands as evidence for the potential of loss reduction strategies in reducing casualties in future disaster events.

Gilbert also provided an insight into the capacity of the region to mobilise resources for emergency. The Caribbean emergency relief operations mobilization in response to the damage done to Jamaica was a credit to the region. The goods were appropriate, the cash donations were substantial and the military manpower assistance which supplemented the Jamaica Defense Force efforts was timely. Already Prime Minister Sandiford of Barbados has indicated the need for the Regional Response System to be systematised and has requested action by Caricom and the inclusion of this matter on the agenda of the Heads of Government meeting for 1989.

THE LOCUSTS

Many of us were surprised at the invasion of our region by thousands of desert locusts which arrived on the winds of Tropical Storm Joan. Here was a new, unexpected threat.

Fortunately, the Agriculturalists in the region ably coordinated by the Food and Agricultural Organization (FAO) and the Caribbean Agricultural Research and Development Institute (CARDI) rose to the challenge, providing clear precise information on the nature and extent of the threat, calling upon their international network for extra expertise and alerting through their existing contacts appropriate interest groups to respond to the situation in a very objective and responsible manner. While the locust problem in the Caribbean did not escalate, it did demonstrate the capacity of international agencies to transfer lessons and methodology into the region and regional capacity to take effective coordinated action. The ability and interest of the national organisations to take swift action to control damage and eliminate the threat of locusts is worthy of emulation.

LESSONS FROM ARMENIA

The lessons which emerged from the recent December 7th destructive earthquake in the Soviet Republic of Armenia deserves more than passing attention from disaster management interests in the Caribbean. The size of the event (Ritcher 6.9 - 7.0) is within the range of events which could occur in the Caribbean. Caribbean authorities need to plan for realistic scenarios of a similar nature if we are to avoid losses on the scale seen in this event. Attention must continue to be given to the establishment and enforcement of Seismic safety systems. Cities, such as Santiago, Kingston, Port au Prince, Santo Domingo, Mayaguez and San Juan which have been devastated in past earthquakes and which now house large populations need to be given particular attention.

All indications are that no Caribbean city is fully prepared for an event of this size! The PCDPPP is planning to organise a meeting in July to review the seismicity of the Cayman Fracture and to review the Earthquake Emergency Management Systems of Caribbean Cities later in 1989. The lessons from recent events such as Armenia, Mexico City and San Salvador will certainly be part of the discussions at the latter meeting.

TROPICAL WEATHER SYSTEMS AFFECTING THE CARIBBEAN

Tropical Depression No. 6

Tropical Depression No. 6 formed near St. Vincent on August 20th and followed a westerly track for several days before dissipating in the Central Caribbean south of Jamaica on the 29th of August. Its progress was closely followed by several of the PCDPPP states and led the Jamaican authorities to initiate their severe weather procedures for the evacuation of the Pedro Cays. 4600 Jamaican fishermen occupy the Cays and other small islands which are some 120 miles off the south Coast of Jamaica. At least 24 hours are needed for the safe evacuation of these low lying islands, hence an operational plan for their evacuation has been developed by the Jamaican Coast Guard, Fisheries Division, Office of Disaster Preparedness, Meteorological Service and the fishermen themselves.

Tropical Depression No. 7

Tropical Depression No. 7 formed 500 miles off Dominica on the 22nd August and followed a track which took it over Dominica on the 23rd of August, south of Puerto Rico then over Hispaniola between the 24th and 25th August. Heavy rainfall and minor damage was experienced in most of the Leeward Islands as a result of this depression and unconfirmed reports were received of 3 deaths on Puerto Rico.

Tropical Storm Issac - TRINIDAD

Tropical Storm Isaac passed north of Trinidad and Tobago on Sept 30.
GILBERT IN THE CARIBBEAN

GUADALOUPE

Tropical depression No.12 which later became Hurricane Gilbert, affected Guadeloupe on the 9th and 10th of September 1988. No injuries were reported but the heavy rainfall experienced led to flooding and landslides and several main roads had to be closed to vehicles due to rising waters and landslides.

Electricity was cut off from eleven (11) districts as poles carrying electrical wires fell. Trees falling on dozens of high and low tension poles also triggered off circuit breakers thus cutting off East and North of Grande-Terre as well as St. Rose, Petit Bourg, Vernou and Goyave.

Water storage and distribution stations as well as food supply were not damaged.

The cost of damage caused to infrastructures by Tropical depression No. 12 was estimated at 1.5 million francs. In addition, there is the cost for containing a landslide and also a dozen fishing boats were sunk by the storm.

An estimation of the damage to agriculture is underway and the loss is expected to be a substantial part (25 to 35%) of the production expected this year (140,000 tons) from Banana.

(SDC, Saint Lucia)

SAINT LUCIA

Gilbert though only a tropical depression when it approached St. Lucia on Friday 9th September 1988 brought heavy rainfall over the island causing flooding and landslides in several areas.

Roads and bridges were damaged and about 5 percent of the banana cultivation was destroyed. The damage caused by Tropical Depression No. 12 was estimated at 2.5 million dollars mainly due to damage to the bridges.

(MDC, Saint Lucia)

MEXICO

Hurricane Gilbert left a trail of devastation in Mexico's Yucatan Peninsula, destroying houses, blocking roads and killing at least five people.

The hurricane, which hit the Yucatan Peninsula on Wednesday 14th September 1988, badly damaged hotels, and shattered numerous houses and broke telephone lines and power cables.

Approximately 100,000 people were left homeless as a result of the hurricane, the strongest yet to hit Mexico. The force of the winds bent 200 foot high microwave radio towers, wrenched off roofs and spun cars around, leaving forty (40) people injured. In the Monterey area of Mexico, more than 100 deaths were recorded.

LOOKING BACK......

GILBERT OUTDID CHARLIE

Hurricane Charlie which occurred in August 1951 was the last and worst hurricane to landfall on Jamaica before Gilbert which must now take that place in Jamaica's modern history. The loss of life from Gilbert is considerably less than Charlie's which took some 154 lives but the degree of devastation of the island by Gilbert is larger. The damage in 1951 was estimated at J$275 million while the estimated damage by Gilbert is being counted in billions of dollars - some have put it as high as J$40 billion.

The most striking feature of Gilbert's damage is the great number of roofs which were blown away either partially or totally. This attests not only to the severity of the storm but possibly also technical questions on adequacy of roofing standards which have come under fire since the passage of the hurricane and is being reviewed in the general assessment which is now taking place.

JANET LEAVES

DEATH TOLL OF 21...

This was a newspaper headline on September 23, 1955, the day after Hurricane Janet had raged immediately south of Barbados causing widespread damage and devastation in the island and leaving at least 21 people dead. It was the worst storm to hit Barbados in 57 years and packed winds as high as 120 miles per hour, overturning and flattening houses, uprooting trees and utility poles and put the island's communication system out of order.

The General Hospital treated some 150 injured persons. Raging winds literally blew houses to bits and flying sheets of galvanised posed serious threats of injury during the storm.

Many elderly persons were moved to shelters before the storm, as warning were given out from 2:57 a.m. on Wednesday 21st September when churchbells rang and sirens wailed to rouse people. Windows were battened down and general preparations made for the storm, the effects of which started to be felt by early morning. The final damage was estimated in millions of dollars.

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GILBERT SMASHES JAMAICA

Described as the worst natural disaster to have struck in Jamaica’s modern history, Hurricane Gilbert did so on Monday September 12, 1988 with an impressive force, leaving a trail of destruction never experienced before in modern Jamaica.

With winds ranging at 120 miles per hour, the hurricane rampaged across the island from east to west for some four hours leaving behind a stunned population and a devastated island with several dead and thousands homeless. Hurricane Gilbert was the first in 37 years to make a direct hit on Jamaica.

With a death toll of 45 and an estimated one-fifth of the housing stock either wrecked or severely damaged, thousands of Jamaicans were forced to seek shelter in emergency shelters which soon became crowded in the aftermath of the storm. The situation was aggravated due to the fact that many designated shelters were themselves damaged by the hurricane and rendered unfit to serve as emergency shelters.

Electricity and water supplies were cut off and some water mains were broken. Telephone service and communications both national and international were reduced to almost nil. Food and petrol however, were available.

Hurricane Gilbert left the streets of Kingston, and many other towns and highways throughout the island, littered with downed utility poles, and power lines, fallen billboards, trees, branches, street signs and traffic lights.

After a few days, there was restoration of electricity and water supplies in some areas as the country struggled its way back to a semblance of normality.

United States army aircraft began to fly in supplies the day after the hurricane as the Prime Minister, Edward Seaga reported that imports would have to be increased as local crops had been virtually wiped out by the hurricane. He reported that the local poultry industry had been destroyed and supplies of meat in cold storage had spoiled due to electricity supplies being cut off as a safety measure. The banana and coconut industries have also been badly damaged.

In the wake of Gilbert, Jamaica is now faced with major economic setbacks and a massive task of rehabilitation and construction. Assistance however was immediately forthcoming both from the Caribbean region and worldwide.

The Project Manager of the PCDPPP was sent to Jamaica to assist the UNDP Resident Representative to coordinate international response to Gilbert.

EFFECTS ON THE UWI CAMPUS

On September 12, 1988 hurricane Gilbert swept through and devastated the Mona Campus of the UWI causing damage initially estimated at J$70,000,000. Students and staff accommodation was badly hit. The Botany Department took the most severe blow, a laboratory lost its roof, greenhouses were destroyed, and important plants were uprooted; the Transmission Electron Microscope (valued at about J$2,000,000) was a complete write off and it is yet to be determined whether the Scanning Electron Microscope can be restored to use. The Department of Physics suffered the loss of the roof of the original wing and the Department of Chemistry lost the Applied Chemistry Lecture Theatre and Unit Operations Laboratory. In other Departments there was loss of parts of the roof and in all Departments the full extent of the equipment lost is yet to be estimated. As a result of all this, teaching for the 1988/89 academic year was postponed until November 7, resulting in severe dislocation of many scheduled programmes.

The Faculty of Natural Sciences’ Open Day planned in celebration of its Fortieth Anniversary, will not now take place in January, 1989. This and other University Fortieth Anniversary Celebrations planned for the 1988/89 session will now be scheduled later in the academic year.

The Vice-Chancellor, Allister McIntyre has launched a University appeal fund which will incorporate aspects of hurricane rehabilitation, University development and an endowment fund.

SUPPORT YOUR UNIVERSITY

Contributions should be sent to the Joint Office for Relief and Development Fund (JORDF)
The University of the West Indies
Mona, Kingston 7, Jamaica.
TROPICAL WEATHER.....
Oct 1, but left its mark in the form of heavy showers which caused flash flooding in northern Trinidad and left two people dead and at least 30 homeless.

The two fatalities occurred on Saturday, October 1st following flooding in the hilly Morvant area, on the outskirts of the capital, Port of Spain. A 34-year-old man drowned while he tried to rescue his 10-year-old daughter as part of their hillside house was collapsing. Neighbours dug the two bodies out of the mud later Saturday night.

Flash flooding in the hilly Mon Repos area of the Northern Range destroyed about half a dozen houses. Thirty persons left homeless were accommodated at the Mon Repos community centre.

One river breaking its banks in the northern Aranguez area damaged goods on the first floor of the Plaza Aranguez shopping centre on Saturday leaving shopkeepers with a major clean-up job. Farmers in Aranguez, often referred to as the food basket of the nation, also reported loss of some crops as fields were flooded.

Landslides were reported in a number of hilly areas bordering the Northern Range.

There was a heavy build-up of water on the east-west Churchill Roosevelt Highway and flash flooding affected the normally busy suburban Barataria area and downtown Port of Spain, which are traditionally flood-prone.

Isaac eventually petered out after being downgraded to a tropical depression. (CANA)

"HURRICANE GILBERT" AND ITS EFFECT ON THE HEALTH SECTOR IN JAMAICA: (Some observations)

The state of Emergency/Disaster Preparedness in a country/parish or community is a measure of the capacity of the country/parish or community, and its people to safeguard lives and property, and to respond appropriately in the event of disaster. Some communities were isolated after the disaster and had to rely on their own resources at least for the first forty-eight (48) hours. Reports indicate that in those parishes where disaster preparedness plans existed, health personnel and community members were able to respond appropriately and to recover quickly compared to other communities.

LESSONS TO BE LEARNT:
1. It is important to have a Parish/ District/Community Plan so that the community knows:
   a) its potential risk
   b) its resources
   c) what has to be done in the event of a disaster and
   d) who has to do it
2. Health facilities are vulnerable. The majority of health facilities suffered some form of damage. There was no electricity or water supply in most hospitals except those hospitals which had functional generators and/or its own water supply. This necessitated evacuating patients from one ward to the other for shelter.

In some hospitals compounds, the doctors and nurses’ residences were damaged or destroyed, resulting in health staff having to seek shelter in the hospital so that patient care could be provided.

3. Acquisition, inventory and maintenance of essential supplies, equipment and drugs are important. e.g. generators need to be checked periodically, water containers, water purification tablets and essential drugs need to be available at all times.
4. Types of injuries were those typical of Hurricanes namely: lacerations, simple fractures, punctured wounds. It was observed that maternity cases peaked during this period. Deaths were due mainly to collapsed houses and resultant injuries.
5. Priorities for the first 3 days were:
   a) Shelter
   b) Water supply, quantitatively and qualitatively
   c) Power
   d) Environmental sanitation particularly in shelters
6. Health Personnel were also victims of the disaster. The homes of many were damaged. Health Sector plans may have to take this into account in the future.

DISASTER MANAGEMENT BY THE HEALTH SECTOR

Prior to the Disaster. A Command Centre was set up in the Ministry of Health. Health Administrators met to prepare for and monitor the situation.

Immediate Post Disaster. The Command Centre was open to receive reports of needs and damage assessment from parishes. Personnel utilized the same format to report from each parish. Health Administrators met twice daily at the Command Centre to receive reports and plan for recovery and restoration of health services.

Water supply was tested for residual chlorine and/or bacterial contamination and disinfected before distribution as appropriate.

Epidemiological surveillance was carried out in shelters by community health personnel. Although some cases of diarrhoea were identified, the number was not significantly increased in relation to those occurring in "normal" times. There were no major outbreaks of diseases reported. There were no mass vaccination campaigns.

Some difficulties were encountered in distributing needed relief supplies to hospitals in various parishes due primarily to limitations of the transportation system.

Vector control services were restored gradually.

The devastation to the health sector in Jamaica by Gilbert, should influence Caribbean countries to give more consideration "to the health sector as a development priority, for allocation of national and international resources in the context of the forthcoming Decade on Disaster Reduction."

(PAHO Emergency Advisor, Antigua)
Hurricane Joan was described by Nicaraguan Authorities as the most destructive natural disaster in Nicaragua's recent history, having killed at least 120 persons and leading to some 300,000 people leaving their homes to flee inland. It was the worst disaster since the Nicaragua earthquake of 1972.

Hurricane Joan, with winds of up to 125 miles per hour hit Nicaragua and Costa Rica on Saturday October 22, 1988. Joan brought heavy rain and winds which tore off roofs, flattened wooden houses and caused extensive damage to utilities. More than 52,000 people were evacuated from the east coast of Nicaragua and Costa Rica as the hurricane's center passed over the coastal city of Bluefields. Some 95% of the houses in Bluefields (where hurricane resistant housing is not the norm) was destroyed.

Hurricane Joan dumped some 15 inches of rain in a two day period causing severe flooding and mudslides in both Costa Rica and Nicaragua. Earlier in the week, Joan, which was at that time a Tropical Storm, caused severe flooding in Trinidad, Venezuela, Colombia, Aruba, Bonaire and Curacao. The extensive damage caused by Joan in Curacao was blamed by one newspaper on "an inadequate warning of the population".

Heavy rain brought by Joan, set off mudslides which covered wooden huts and left 11 dead in the poorest neighborhoods of Caracas, Venezuela between October 15th-17th.

Tropical Storm Joan also left at least 26 people dead and tens of thousands homeless in Colombia when it swept the Guajira peninsula on Monday 17th October.
EARTHQUAKE - TRINIDAD

An earthquake was widely felt across Trinidad on 12th July. The Seismic Research Unit (SRU) at UWI, St. Augustine Trinidad recorded the earthquake at 1.59 p.m Tuesday 12th July, 1988. The Epicentre was located at 10.43 degrees N, 62.20 degrees W or about 60 kilometres west of Trinidad. Focal depth was 6 kilometres and the magnitude was 5.1 on the Richter Scale. The SRU reported that the event was widely felt throughout Trinidad. (Trinidad Express)

EARTHQUAKES - JAMAICA

On Friday 2nd September 1988 at 1:26 a.m. Jamaica experienced an earthquake of magnitude 4.3 on the Richter Scale. The Epicentre was located at approximately 18.1 N and 77.6 W in the island itself, and at a depth of 17 kilometres.

The tremor was widely felt in Jamaica, being strong enough to awaken people from their sleep. However, no reports of death, injury or serious damage were received. This tremor followed a similar event on 9th May 1988 which was also widely felt in Jamaica. The events have exposed problems in the seismic monitoring system in Jamaica, as on both occasions the recording system operated by the UWI, Mona failed to operate effectively.

On Friday 11th November 1988 another earthquake was recorded in Jamaica measuring 5.4 Ritcher and centered at 18.12 N and 76.58 W at a depth of 16km. This event was strong enough to cause persons to rush out of buildings into open spaces. No serious damage was reported. Coupled with heavy rain experienced since Gilbert, the earthquake triggered a landslide in the Jack's Hill area of Kingston, destroying one house, slightly damaging another and displacing 50m of the main roadway. The Seismic Monitoring System again failed to operate and no strong motion data has been collected in Jamaica from any of these events.

RAINSTORM - HAITI

Torrential rainfall (64mm) on the night of 30 September to 1 October caused considerable damage to Port- au-Prince and its environs.

The OPDES Team in the area registered 10 deaths in all, 3 adults and 7 children between the ages of 3-10 years. A father of 4 lost his wife and all four children when the house collapsed as a result of the heavy rains. The farmer escaped death as he was not present in the house on that night.

More than thirty houses were destroyed and many more damaged leaving about 200 people homeless. The Haitian Red Cross transported the injured to safety and OPDES took measures to assist the disaster victims. They plan to find temporary shelter in cooperation with the Mayor's Office, to supply clothes and cooking utensils, to distribute food provisions (milk, cooking oil, flour, etc); and to prepare a project for reconstruction.

(OPDES Haiti)

FIRE - GUYANA

Yasin's, one of the popular stores in Georgetown, was razed by a fire in July which also gutted Indira's Fashion Centre and Record Bar, and damaged another store belonging to G. Singh and Sons.

Damage is estimated to run into ten of millions of dollars. The Yasin building was recently evaluated at about G$30 million. It contained large amounts of cloth, dresses and other items of apparel.

The fire quickly swept through the upper floors of the store. Firemen battling the flames were hampered by low water pressure.

OIL SPILL - ST. LUCIA

An oil tank at Shell Antilles in St. Lucia, left accidentally open, spilled 50,000 gallons of diesel oil into the sea at Castries Harbour on the 23rd November, 1988. A specialist and a pump were brought from Barbados while the Hess Company loaned Shell a boom to contain the spill. The diesel was then pumped from the sea into an oil tanker. The Government of St. Lucia expressed concern at the slow pace of the response undertaken by Shell and has indicated that they will be reviewing their oil spill response plan in 1989.
UN TEAM TO LOOK AT IMPACT OF CLIMATIC CHANGE ON THE CARIBBEAN

The United Nations Environment Programme’s Regional Coordinating Unit (RCU) has established a Task Team to look into the possible impacts of climatic change in the Wider Caribbean, (including the Gulf of Mexico.) Based on projected climatic changes, attributed to increased levels of so-called “greenhouse gases” (among them atmospheric carbon dioxide resulting from the combustion of fossil fuel), the task is looking at the projected effects of a 20 centimetre rise in sea level by the year 2025 A.D. Such changes represent the lower levels of those proposed by the international scientific community.

As the team has discovered, the range of potential impacts and the institutional responses necessary to deal with them is enormous, encompassing changes in: wind and rainfall patterns, coastal erosion, flooding and storm surge, coastal ecosystems and salt water intrusion.

Specific recommendations, with detailed procedures to deal with projected impacts are at present difficult because of the restricted scientific data base. Much fundamental research work is required to fill the gaps.

The team includes two UWI Natural Science Alumni; hydrogeologist Michael White and meteorologist Calvin Gray, as well as Geology Department staff member Malcolm Hendry and other scientists, economists and planners from throughout the Caribbean. Two meetings have been held by the team to date. The first at UNEP’s regional headquarters in Kingston, and the second in Miami - in March - at which a state-of-knowledge report was written and initial recommendations for regional governments considered.

Disaster managers and other interests are urged to follow the work of this group.

Dr. Malcolm Hendry
Geology Dept., U.W.I., MONA
(GSJ Newsletter, May 1988)

ERUPTION OF KICK’EM JENNY SUBMARINE VOLCANO

Seismographs throughout the eastern Caribbean recorded strong underwater acoustic signals on December 29 to 30 1988. The first signals began at approximately 1950 GMT on December 29. The initial signals persisted for approximately 56 minutes. Onset of the signals was extremely emergent so that their point of origin could not be determined precisely, but the pattern of arrivals and amplitudes suggested a point of origin in the northern part of the Lesser Antilles. The most likely source was thought to be Kick’em Jenny submarine volcano located at 12:30 degrees north, 61.63 degrees west which is about 8 kilometers off the north coast of the island of Grenada. When last surveyed in 1982, the summit of this volcano was 160 meters below the surface of the sea. (See Newsletter No. 14)

A shorter, but intense signal was recorded between 2022 and 2050 GMT. At this time residents of Sauteurs on the north coast of Grenada felt strong ground vibrations and heard a deep rumbling sound. Although observers in full view of the location of the volcano had been alerted by this time, no disturbance of the surface of the sea was noticed. Vibrations were felt and heard as far away as Martinique, 250 kilometers to the north. George Boudon of the Mt. Pele volcano observatory was scuba diving at the time and distinctly heard the underwater signal.

A third explosion occurred at about 0900 GMT on December 30. Onsets for this event were much more distinct and it was confirmed that Kick’em Jenny was the source. Lt.-Col. Glen Mignon of Grenada surveyed the site from a vessel of the Grenada Coast Guard on the morning of December 30 but no disturbance of the sea surface was visible. No further explosions have been recorded up to January 2, 1989 but as a precautionary measure, small vessels were advised to keep five kilometers clear of the volcano until further notice.

The last known eruption of Kick’em Jenny was on January 14, 1977. Previous known eruptions were in 1939, 1943, 1953, 1965, 1966, 1972 and 1974. The eruptions of 1939 and 1974 ejected eruption columns above the surface of the sea. Between the first accurate bathymetric survey in 1962 and the most recent in 1983 the summit of the volcano grew towards the surface of the sea by about 40 meters.

(John Shepherd, SRU, UWI Trinidad)

CARICOM AND DISASTER PREPAREDNESS

Following the passage of Hurricane Gilbert and the devastation left in Jamaica, the Caribbean Community Secretariat was called upon to provide itself with the necessary resources that would equip it to respond to disasters in the region. This is seen as one way the region can address the problem of disaster preparedness.

The Secretariat was also asked to coordinate a regional human resource response for disaster preparedness in CARICOM so that the Secretariat would be prepared at a regional level to respond in any way the situation might require.

These remarks were made by Prime Minister of Barbados, Mr. Erskine Sandiford, during a visit to CARICOM Secretariat in Guyana. Citing hurricane Gilbert’s disastrous effects on Jamaica, Mr. Sandiford noted that “when disaster comes, it is most important in our region to demonstrate in tangible ways and in human ways, that we all support one another”. Military personnel were sent to Jamaica from Barbados, Guyana and Trinidad and Tobago to assist in the rehabilitation and reconstruction efforts taking place in Jamaica.
During 1987, the Pan-Caribbean Disaster Preparedness and Prevention Project (PCDPPP), continued to make steady progress in improving the capacity of Caribbean Nations to deal with natural and man-caused emergencies. The region was affected by tropical storm/hurricane Emily in September and hurricane Floyd in October as well as episodes of flooding in the period November-December. Assessments done after these events indicate that life saving and asset protection measures promoted by the Project and implemented by Governments were helpful in reducing the impact of these events. While much progress has been made, more work remains to be done to ensure that the PCDPPP activities lead to further procedures and operational capacity, as well as appropriate medium to long-term strategies for facilitating complementary mitigation prevention measures.

The annual meeting in March of National Disaster Co-ordinators representing 17 of the 29 participating states, requested and recommended the extension of the project to 1990 in order to ensure that achievements to date be consolidated and carried into a permanent body financed by the countries of the region. The 1987 programme focussed more attention on Public Awareness, Policy Legislation and Emergency Management Training Issues, and several Governments responded by undertaking their own reviews of National Emergency Policy.

Activities were funded with contributions received from the Canadian International Development Agency, the Government of the Netherlands, UNDRO and from the participating countries and territories.

The project management reinforced its ties with regional institutions having disaster-related expertise and with countries with well-developed disaster response systems: programmes were developed, or implemented, jointly with the University of the West Indies (UWI), the Seismic Research Unit (SRU), the Caribbean News Agency (CANA), the Caribbean Examination Council (CXC), the Caribbean Council of Engineering Organizations (CCEO), the Caribbean Telecommunications Union (CTU), the Office of Disaster Preparedness (ODP), Jamaica, the Central Emergency Relief Organization (CERO), Barbados, and others. Consultations were also held with and support received from regional organizations - CARICOM, OECS, and OAS - and from the relevant UN bodies, in particular UNDP, UNEP, UNESCO, ITU and WMO.

The programme also greatly benefited from the integrated approach of the three co-operating agencies PAHO, LRCS and UNDRO. The team members consulted each other during the planning process and, where appropriate, participated in activities executed under the leadership of one of the other components.

Following the appointment of a new Project Manager in July 1987, visits were made to nine of the participating countries and territories, to re-establish or intensify contacts with some of those who had not been very active in the past and to assess the current situation and existing needs in most of the countries and territories participating in the Project. The framework for the further development of disaster management activities at the national and regional levels during the period 1988 to 1990 has been developed, and the participating countries and territories have committed themselves to take over the core activities of the Project by establishing a self-sustained regional body at the end of this period.

Among the preparedness activities for emergency and contingency planning carried out in 1987, the Regional Exchange Programme provided four days of training in emergency management for National Disaster Co-ordinators. A total of 17 countries and territories were involved, leading to deeper dialogue on several key issues.

In June 1987, a Hurricane Simulation Exercise was held in Grenada and revealed a number of weaknesses in the emergency arrangements and procedures. The Government of Grenada has since been provided with a report of the exercise and has undertaken a review of the procedures, which were to be further upgraded prior to the 1988 Hurricane Season.

A Volcanic Simulation Exercise in Dominica, though not a PCDPPP activity, created interest in the concept of volcanic simulation exercises in other islands which has been followed up by PCDPPP since early 1986.

The plan to organize other simulation exercises was modified following the impact of Tropical Storm/Hurricane Emily which affected seven countries in the region in September 1987. The Project Management decided to use the actual experience of Emily as a Test of the Emergency Management System. Two consultants were retained to visit the affected countries and document the lessons learnt.

Significant improvements in the warning arrangements and in the procedures for the dissemination of severe weather warnings are being evolved as a consequence of this survey in the Bahamas, Bermuda, St. Vincent and the Turks and Caicos. The findings and recommendations of the case study were also been officially discussed at the 1988 WMO Regional Association IV Hurricane Committee Meeting and will lead to some revisions of the Hurricane operational plan for the region.

(UNDRO)
EFFECTS OF HURRICANE

(1) CHERRY GARDENS RESIDENCE
(2) PRINCESS MARGARET HOSPITAL, MORANT BAY
(3) STONY HILL AREA, NEAR KINGSTON
(4) MORANT BAY, ST. THOMAS
(5) HEALTH ADVISOR INSPECTS DAMAGED AIRCRAFT, NORMAN MANLEY AIRPORT
(6) DAMAGE TO MARKET, GOLDEN GROVE
(7) PRINCESS MARGARET HOSPITAL, MORANT BAY
(8) DAMAGE TO OVER-EXTENDED EAVES, KINGSTON SUBURBS
GILBERT ON JAMAICA
RISK ASSESSMENT AND NATURAL DISASTERS IN THE CARIBBEAN

Editor's note: The following remarks by Dr. W. Suite were presented at the SRU/PCDPPP Lesser Antilles Volcanic Activity Seminar, (LAVAS) April 25-26, 1988 at the University of the West Indies, Trinidad.

INTRODUCTION

In the face of the occurrence of natural disasters in the region and the consequent devastation due to their effects, Caribbean people and their governments must aggressively seek to develop and institute mechanisms aimed at mitigation of the likely damage. The cumulative effect of the annual loss of lives, loss of and damage to property and the general social and economic disruption, have from time to time wreaked havoc in our region. Natural disasters have a negative effect on economic planning and have resulted, in some extreme cases, in actual negative growth and contributed to the under development of what have largely remained agricultural island economies, two factors which have contributed in no small measure to the vulnerability of the Caribbean Basin states.

For these reasons the rational approach must be that each separate territory, and subsequently the combined community, must undertake risk and vulnerability assessments. The threat to the region would suggest that information gathering and analysis must commence immediately. Already we have procrastinated at considerable and obvious cost.

THE TASK AHEAD

Central to the exercise must be the creation and establishment of the necessary mechanisms and regional as well as national agencies to commence and/or accelerate data collection as it relates to all the possible natural disaster occurrences in the region.

We must note that fundamental to any assessment of risk must be the identification of the effects or consequences of each particular disaster phenomenon in the region.

We must identify and separate, firstly, the immediate or short-term consequences. We must be reminded that disasters seldom choose to occur one at a time but often they appear to cascade one into another or occur in clusters, devastating a community that is still reeling under the impact of a disaster not yet passed. Often the scientists tell us that we study a phenomenon in order to understand it and that at the back of this desire at mastery is the desire to be able to change it. But with natural disasters we study them and collect data to form our primary decision, to be able to remove ourselves from the focus of impending disasters. Alternately we may be content only to attempt to mitigate the effects of natural hazards. In the case of volcanic hazards, while the main focus may be limited to disaster mitigation, this may largely only be accomplished by having adequate warning to enable the threatened population to withdraw from the danger zone.

WHAT CAN WE DO?

Many have argued that there is little we can do in the face of natural disaster but as the old adage counsels us "to be forewarned is to be forearmed". From this standpoint we must argue that there is a great deal which we can do. There is need to collect and analyse historical data. This of course must be a continuous exercise resulting in a permanent monitoring system. Perhaps the most important thing we can do is to prepare a warning system where this is possible. This must be followed by a defense system, an evaluation system and a recovery system or reconstruction system.

Most Caribbean states should have some type of land use map or even a national physical development plan. These should incorporate risk and vulnerability data which can readily displayed on maps. These must be used as the basis for educating citizens about the risks to which they may be exposed whenever they have selected certain sites for residential, commercial, industrial or agricultural activity. We may not wish to choose the route of legislative restrictions but rather present the citizenry with information thereby assisting them in arriving at informed decisions. The availability of this type of information and its dissemination is a prerequisite for successfully coping with the relevant hazard.

It is necessary that the full effects of natural disasters be vividly brought home to the governments in the region since each territory must now began an inventory and reassessment of all pieces of legislation that could have bearing on the question of disaster prevention, preparedness and mitigation. We need to ensure that each territory has in place the necessary legal and legislative instruments to permit us to successfully deal with disasters.

Governments in the region must begin to allocate funds for a complete disaster potential assessment project. This budgetary allocation must begin to appear on both short-term annual budgets and on long-term or five-year development programmes.

It is necessary that each territory attempt to establish a relationship between the economic cost, should a particular disaster occur at a given scale of destruction, and the cost of a disaster prevention, preparedness and mitigation programme.

Reduction in disaster cost must be greater than the cost of the mitigation programme. This statement is the essence of disaster risk management,
RELIEF EFFORTS IN HAITI

Following heavy floods in the south of Haiti, in June 1986 and in the Capital, Port-au-Prince in July 1987, UNDRO intervened to provide relief and assistance to the flood-affected population.

Between September 1986 and December 1987, many operations were conducted under the co-ordination of the Office for Disaster Preparedness & Relief (OPDES), the official organ in charge of all disaster relief work in Haiti. The Ministry of Agriculture and Natural Resources (MARNDR) was also involved in the assessment of damages, defining technical inputs required and the execution of the projects. UNDRO, through its local representative, worked in close collaboration with UNDP and ASC (Swiss Corps for Assistance), for the evaluation of operations, the general supervision and management of funds.

The main thrust of the operation was to quickly restore infrastructure damaged as a result of the floods, so as to resume agricultural production on the irrigated plains most affected. The operations were thus executed in the agricultural district of Cayes (Dory, les Anglais, Lacorriere, and Ravine Seche).

Two important relief measures were identified: firstly, to repair blocked irrigation channels and water-ways, reparation and reconstruction of canals affected, restoring access routes (for communications and transportation), protection of river banks and sides, and building barricades. Secondly, another important UNDRO Project was the task of protecting a part of the main city of the district of Cayes and its neighbouring localities from inundation caused by the overflow of the Ravine du Sud.

The technique adopted by UNDRO, in the latter task, following the suggestion of MARNDR, was to shore-up the banks and sides with gabions (wire-nets filled with stones), a technique from Italy and found suitable for Haitian conditions. Each of these gabions measured 1 cubic metre and it needed 2,546 gabions to shore-up the banks of Ravine du Sud. The Food and Agricultural Organization of the United Nations (FAO) provided the technical expertise in this operation.

In July 1987, the Capital city of Fort-au-Prince suffered considerable damage as a result of torrential rains, the damage being heavy in the poorest quarters of the city. The Government of Haiti appealed for international assistance, following which, UNDRO once again assisted in the relief measures. Nearly 8,000 victims were provided with basic-need articles such as cooking utensils, mattresses and sheets. These materials were purchased by UNDRO through funds donated by Canada, Dominica, West Germany, Jamaica and the Netherlands. The funds also helped in the purchase of much-needed equipment for use by OPDES Emergency Rescue Team in future disasters. Distribution activities were well supervised by UNDP, OPDES and ASC, not forgetting the valuable collaboration of Haitian charitable bodies and other International bodies.

Despite uncertain political conditions these projects have been successfully completed through the collaboration of Haitian and International Organizations.


RISK ASSESSMENT...
the aim being two-fold. Firstly, the aim is to reduce the inevitable destruction caused by the disaster or, the cost of the disaster (after a mitigation programme has been put in place) to a minimum. Secondly, the aim is to ensure that the gain from instituting the programme is more than the cost of the programme.

Disaster risk management involves an analysis of the likelihood of occurrence at a particular level, then an analysis of the possible consequences and an evaluation of the economic and social loss which may follow. An attempt will have to be made by the individual societies to evaluate potential loss of life, property, economic potential and resources.

CONCLUSION
Risk management must be based on risk assessment and vulnerability assessment. It must be based on what resources it cannot afford to lose. The society must decide what it is prepared to spend in order to minimise losses due to natural disaster. Each country has to carry out its own separate analysis and establish its own unique disaster prevention, preparedness and mitigation programme. This must consist of putting in place all of the following:

(V) Efficient warning systems.
(V1) Tested operational procedures and evacuation strategy.
(V11) Recovery and Reconstruction strategy.

It is suggested to all the governments of the Caribbean and regional agencies, particularly the CDB, that each island/territory should set about putting in place its own disaster prevention, preparedness and mitigation programme to commemorate and coincide with the start of "The International Decade for Natural Hazard Reduction" due to be officially launched in 1990 and extended to the year 2000. This would appear to be a central task which now faces us.

Dr. Winston Suite, Faculty of Civil Engineering UWI. Trinidad.
**DISASTER PREPAREDNESS AND THE MASS MEDIA**

A one day workshop for media workers on the theme "Disaster Preparedness and the Mass Media" was held in Trinidad on Tuesday 12th 1988. The workshop, which was sponsored by the Pan Caribbean Disaster Preparedness & Prevention Project was run by Lorna Gordon-Gofton, a communications consultant to the PCDPPP.

The media were informed of the issues involved in disaster preparedness and told how they could assist in raising public awareness with respect to being prepared for disasters before they actually happened.

Gordon-Gofton told the group, consisting of reporters and representatives from several Government agencies, that the Caribbean area was vulnerable to a wide range of hazards, both natural and man-made. She said a disaster was defined on the basis of its human consequences and not, only the phenomenon that caused it.

She urged the media houses to play an active role in educating the public about possible emergency situations (flooding, volcanoes, oil spills, fires) before, during and not just after it happened. "People tend to wait until after the accident before reacting," she said, "but it is necessary to educate them long before an accident happens."

She suggested that all aspects of the media be utilised in reaching people all over the country, including music, drama and folk-based cultural forms. Gordon-Gofton, who has conducted similar workshops in 3 other Caribbean countries, has proposed in conjunction with PCDPPP and regional media to standardise procedures for the media relations with disaster agencies in the Caribbean.

A similar workshop was also held in St. Vincent on July 18, 1988 and follows an earlier series held in Barbados, Montserrat and Jamaica in the first quarter of 1988.

*For more information contact PCDPPP*

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**EMERGENCY MANAGEMENT IN PUBLIC WORKS**

Two workshops on "Emergency Management in Public Works" were conducted by the American Public Works Association, the first in Antigua/Barbuda on October 24 - 25, and the second in Trinidad & Tobago on October 27 - 28, 1988. The first workshop included participants from Antigua/Barbuda, Bahamas, St. Maarten, British Virgin Islands, U.S. Virgin Islands, Jamaica, Trinidad & Tobago and U.S.A. The second workshop included participants from Trinidad & Tobago, Barbados and St. Lucia.

Both workshops were very well received, coming on the heels of Hurricane Gilbert, the extensive damage done to Jamaica and the problems experienced in reconstructing after the Hurricane. The workshops however looked not only at recovery after a hurricane but also earthquakes and volcanic eruptions. In addition, presentations also covered the effects of stress on public works personnel, mitigation, media relations and the use of micro computers in emergency management. The workshops were jointly sponsored by USAID/CIDA and PCDPPP.

*For more information contact PCDPPP, ANTIGUA or the Training Officer, USAID/ CIDA.*

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**ROLE OF THE ENGINEER IN DISASTER PREVENTION**

The Caribbean Council of Engineering Organizations (CCEO) along with PCDPPP and Antigua & Barbuda Association of Professional Engineers co-sponsored a two day seminar, 26-27 October 1988, on "The Role of the Engineer in Designing for Disaster Prevention and Reducing Disaster Losses in the Caribbean", which was held in Antigua.

The seminar looked at the lessons learnt from the impact of Hurricane Gilbert on Jamaica. Participants discussed ways of reducing both structural and non-structural losses as well as dislocations in critical services. Panel discussions were also held to overview the disaster risks in the region and to look at the relevance of the International Decade for Natural Disaster Reduction (IDNDR) to the Caribbean. Participants produced action plans for the involvement of the Caribbean, at both the regional and national level, in the IDNDR; made suggestions for improving linkages between engineers and architects/planners; made suggestions for increased involvement of engineers in matters of public safety and public awareness.

The Seminar was followed on 28th October by the 21st Annual General Meeting of the CCEO, also held in Antigua.

*For more information contact PCDPPP.*
SEMINAR ON TOXIC ISSUES


Participants from English-speaking countries of the Caribbean and experts from New York Partners area analyzed the ability of Caribbean countries to respond to toxic issues and to prevent "toxic" accidents.

As a result of the Seminar, participants identified serious problems associated with chemicals in the region: a ship has sunk with chemicals in its hold resulting in a major fish kill; a pharmaceutical supply warehouse has burned causing health risks to firemen and community; dangerous chemical wastes from paint and other manufacturers are discharged into pits and coastal waters; pesticides and fertilizers are probably contaminating drinking water supplies in some islands given the large quantities of these chemicals used; hydrocarbons are released into most harbours due to the disposal of waste oils; dumps/landfill sites receive hazardous waste which may leach into the water supply and the marine environment.

The transport, storage, manufacture, use and disposal of industrial chemicals and pesticides pose risks to people in the workplace and communities, as well as to the natural environment. When these chemicals contaminate drinking water or pollute coral reefs, the economic development of the islands can be seriously affected.

It was felt that the magnitude of these threats to our ecosystems and health, and the attendant risk of serious economic loss must be recognized and that all possible measures to minimize these risks should be undertaken with some urgency.

DISASTERS DO HAPPEN. ARE YOU PREPARED?

ANTIGUA & BARBUDA EARTHQUAKE AWARENESS 1988

The Antigua & Barbuda Ministry of Home Affairs, with responsibility for Disaster Preparedness, again had its 1988 Earthquake Awareness Activities on the anniversary of the 1974 earthquake.

Participating in the activities was Prof. Joyce Bagwell, Director of the Earthquake Education Center of the Baptist College, South Carolina USA; She is also the Chief Investigator for the Lower South Carolina Seismic Network. Professor Bagwell’s trip was sponsored by the Pan Caribbean Disaster Preparedness and Prevention Project.

Professor Bagwell lectured to a total of over one thousand students mainly fourth and fifth formers, at several schools: The Antigua Grammar School, Princess Margaret School, Clare Hall Secondary, St. Joseph's Academy and Seventh-Day Adventist. She also lectured to the students from four departments of the Antigua State College.

The lectures were designed to increase public knowledge of the possibility of earthquakes occurring locally and to teach ways to minimise injury and property loss in the event of a severe earthquake.

Topics covered included: The History of Earthquakes; Incidence of Earthquakes locally; Causes of Earthquakes and Preparedness for Earthquakes.

The students were able to participate fully using the hands-on model of the globe with movable crustal plates and the shake table. The fault models stimulated many questions about the causes and side effects of earthquakes. The discussions on earthquake preparedness in schools turned to earthquake preparedness in their homes. The students were also taught the Drop and Cover Drill.

At The Public Lecture held in the Library of the University Centre, Professor Bagwell spoke to an audience which comprised Architects, Engineers, Contractors, Insurance Agents, Fire Personnel and Science Teachers. At this forum, slides of earthquakes and their effects on structural buildings, bridges and roads were shown. The audience saw the need for themselves to play a meaningful role in Earthquake mitigation.

Interviews on earthquake Preparedness were also held on ABS Radio and Television as well as Cable Television.

For more information contact:
N. Cornelia Michael,
National Disaster Coordinator,
Ministry of Home Affairs,
St. John's Street,
St. John's,
Antigua.
BOOKS AND ITEMS OF INTEREST
NEW FROM THE PCDPPP DOCUMENTATION CENTRE

NATURAL HAZARDS
JOURNAL

Natural Hazards is an international journal of hazards research and prevention, edited by Prof. M.I. El-Sabh, University of Quebec at Rimouski, Canada; Dr. G. Schneider, a professor at the University of Stuttgart, Federal Republic of Germany; and Dr. Y. Fijinawa, Science and Technology Agency, Ibaraki, Japan.

This new publication is devoted to original research on the physical aspects of natural hazards, the statistics of forecasting catastrophic events, risk assessment, and the nature of precursors of natural and/or technological hazards.


NEW LAND DEGRADATION
JOURNAL

A new international quarterly devoted to land degradation, land degradation avoidance, land degradation mitigation, and to the rehabilitation of degraded land will start in February 1989. The journal seeks to promote rational study of the recognition, monitoring, control and rehabilitation of degradation in terrestrial environments. The journal will also publish papers on the political, economic, social and historical aspects, forecasts of trends, case studies and management of land degradation.

Manuscripts should be submitted (3 copies) to the managing editor, Dr. C.J. Barrow, Centre for Development Studies, University College of Swansea, West Glamorgan SA8 8PP, UK. Manuscripts should not normally be less than 4,000 nor longer than 8,000 words.

HURRICANE WARNING POSTERS FOR CERO, BARBADOS

Subscription costs £65 in UK only and U.S.$130 elsewhere. Contact Lesley Valentine (LDR, John Wiley and Sons, Ltd., Baffins Lane, Chichester, West Sussex PO19 1UD, UK, or Department "C", John Wiley and Sons, Inc, 605 Third Avenue, New York, NY 10158, USA.

LOW INCOME SHELTER STRATEGIES IN KINGSTON, JAMAICA: SOLUTION OF THE INFORMAL SECTOR
BY RUTH McLEOD

During 1987 the Construction Resource and Development Centre carried out extensive research on the dynamics of informal shelter development among the low income population of Kingston. Several different methods of investigation were used. Totally unstructured interviews were held with entire households and the builders who worked with them. Structured interviews were held with household heads in order to build up in depth case studies of the shelter survival strategies of different households over extended periods of time.

A major survey of 677 low income households in the Kingston area was implemented and additional research was carried out at the community and settlement levels to determine the range and form of savings and loan mechanisms that are available to the low income population outside of the formal financial system. This document constitutes an attempt to sum...
marise the accumulated findings of these efforts to date in a form that, it is hoped, will be useful to those working at both the policy and implementation levels. In many ways the report itself constitutes a beginning rather than an end as it is neither totally comprehensive nor totally conclusive.

For more information, contact Ruth Mcleod, Construction Resource and Development Centre, 166/1/2 Old Hope Road, Kingston 6, Jamaica.

**SASAKAWA/UNDRO DISASTER PREVENTION AWARD**

An inter-governmental body for improving typhoon warning systems and flood forecasting in Asia and the Pacific, and for developing protective measures, has been chosen to receive the 1988 Sasakawa/UNDRO Disaster Prevention Award.

The ESCAP/WMO (Economic and Social Commission for Asia and the Pacific/World Meteorological Organization) Typhoon Committee was selected from among 21 candidates for the Award by a five-member jury representing the main regions of the world. The jury met at UNDRO Headquarters in Geneva on 10 and 11 May 1988.

Endowed by the President of the Japan Shipbuilding Industry Foundation, Mr. Ryoichi Sasakawa, the Award which carries a prize of approximately U.S. $40,000 is conferred annually in recognition of outstanding achievements in the field of disaster prevention and preparedness.

The ten-nation Typhoon Committee was established in 1968 with Headquarters in Manila, Philippines. It has played a leading role in developing and strengthening national weather services and in bringing about closer co-operation among its members in forecasting and reducing the effects of typhoons and related floods in the region. One of the Committee's most significant achievements has been the launching of the Typhoon Operational Experi-

ment (TOPEX), from 1980 to 1982, to test the disaster preparedness systems of each member country during the actual passage of a cyclone, and to improve collective and individual capabilities. Eight of the ten Member States took part in TOPEX.

In the Jury's opinion, the prevention and preparedness measures being carried out by the Typhoon Committee, and its achievements in helping to mitigate damages wrought by windstorms and floods, best exemplify the types of activities which the Sasakawa/UNDRO Award is intended to encourage. The award was presented to Dr. Kintanar, Chairman of the Committee and Director of the Philippines Meteorological Service in July during the Meeting of Experts on the International Decade for Natural Disaster Reduction. The PCDDPP was represented at the award ceremony by Franklin Mc Donald, Project Manager.

(UNDRIO News - May/June 1988)

**EMERGENCY 88 FOURTH INTERNATIONAL CONGRESS OF DISASTER PLANNING AND PREPAREDNESS**

Under the banner "EMERGENCY 88" the fourth International Congress of Disaster Planning and Preparedness was held in London at the prestigious Queen Elizabeth Conference Centre, Westminster, from 28th November to 2nd December 1988. In conjunction with the Congress an international exhibition of equipment, supplies and services for disaster protection and mitigation was mounted.

The theme of the Congress, as recommended at Emergency 86 in Barcelona, was "Disaster-Education, Training and Public Information". This was designed to cover all aspects of disaster management training and education, recognized to be the most cost effective method of disaster preparedness.

The Congress programme was jointly planned by experts from the Office of the United Nations Disaster Relief Coordinator (UNDRO), the International Civil Defence Organization (ICDO), the League of Red Cross and Red Crescent Societies (LRCIS) and the Institute of Civil Defense (ICD) London. It covered four days, each dedicated to a subsidiary theme, namely:

* Professional emergency planning education.
* Training in disaster management.
* Technical training.
* Information and education for the public

Each theme covered several topics, introduced by specialists who initiated discussion on the best possible measures to achieve effective disaster management and public education. Experts presentations also demonstrated best practice in various areas of education methods.

The attendance of The National Disaster Coordinator of Cuba, Daniel Alonso Dominguez to this conference was sponsored by UNDRO/PCDPPP and he presented a paper.

**For more information please write to EMERGENCY 88, Secretariat, 72, Fielding Road, Bedford Park, Chiswick, London. Telephone 01-895-8356, Telex 8954111 REPLAY G.**

MAINTENANCE OF BUILDINGS A MUST!
CAST SUMMER INSTITUTE 1989 TO FOCUS ON "NATURAL HAZARDS AND THE HUMAN HABITAT"

"Natural Hazards and the Human Habitat" is the theme for the fourth annual continuing education programme organised by CAST in conjunction with the University of California, Berkeley. The week-long programme, known as the Summer Institute, will run from July 10-14 on the CAST campus.

The year just ended will be remembered as one during which natural disaster spared no continent on this globe. Wind, earthquake or flood singly or in combination - took heavy toll on human life and property, and at times swept even the politics of war and peace off the front pages of the world's media.

TIME Magazine, in a departure from tradition, named the endangered planet EARTH as the end-of-the-year's hottest subject.

In Armenia, as in Jamaica, questions of building standards and of disaster mitigation focussed the minds of politicians and planners in the immediate aftermath of the disaster. The consensus is that, particularly in developing countries, and indeed in some areas of ALL countries, human settlements, production facilities and infrastructure could be made less vulnerable to natural hazards by applying the lessons from past disasters to future plans.

As a consequence of ignoring the lessons of the past, "ever larger segments of the population are affected each year", and the need for post-disaster relief reconstruction has increased.

For professionals in fields related to the built environment, those who study the natural environment, politicians and planners alike, the urgent question is how to ensure the integration of adequate measures to deliberately mitigate the ravage of wind, water and earth movements.

CAST Summer Institute 1989 will bring all the elements together in a five day programme of lectures, seminars and field trips. The three main natural hazards which will be dealt with are hurricanes, earthquakes and flooding. The topics to be covered include:

* introduction of terms and concepts relevant to natural hazard mitigation.
* the construction process and disaster preparedness.
* servicing the informal housing sector for disaster preparedness.
* the role of the insurance industry in disaster mitigation.
* natural hazards information systems and sources.
* environmental management and disaster mitigation.
* communication links and the human habitat.

A case study which demonstrates how mitigation measures can be integrated into the development planning process will be presented.

Presenters will include Mr. Franklin McDonald, Director of the Pan-Caribbean Disaster Preparedness and Prevention Project; Mrs Peggy Woodring, Director of the International Programme, College of Environmental Design, University of California, Berkeley, and other experts from the region.

FOR MORE INFORMATION CONTACT: Ms. Joy Douglas, Programme Coordinator, CAST, 237 Old Hope Road, Kingston 6, Jamaica.
Phone: 927-1830/927-6681
Fax: 927-1925

HEALTH SECTOR DISASTER MANAGEMENT DOMINICA

A 5 year Work Plan 1988 -1993 has been developed for the Health Sector Disaster Management Programme in Dominica. The plan had been developed in terms of objectives, activities, target dates, persons responsible, resources for 5 years including cost and evaluation indicators.

For further information please contact:
Dr. William Green
Medical Officer of Health
Ministry of Health
Roseau,
DOMINICA

TRINIDAD SETS UP NEMA

Trinidad and Tobago are in the process of setting up a National Emergency Management Agency (NEMA) to deal with all aspects of Emergency in the twin island republic. NEMA will be headed by a Director, under the Prime Minister, and a National Emergency Board will be appointed.

More information will be published as developments occur.
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ANNOUNCING THE 11TH ANNUAL NATIONAL HURRICANE CONFERENCE
April 5-7, Hyatt Regency Hotel, Miami, Florida

THEME
CATASTROPHIC HURRICANES OF 1988:
"The Examples of Gilbert and Joan"

With Special Caribbean Pre Conference Sessions on April 4th - 5th for Delegates who wish to review issues of particular relevance to Caribbean Nations.

CARIBBEAN SESSIONS
* Regional Hurricane Warning System
* Vulnerability of Islands
* Review of Hurricanes Gilbert and Joan
* Managing Emergency Relief and Recovery Planning
* Comprehensive Mitigation Strategies
* Visit to the National Hurricane Centre, Coral Gables.

Workshop sessions will include discussion of -:
* Public Utility, Public Works and Tourism Sector Hurricane Planning.
* Effects of Gilbert and Joan on Structures, Telecommunications, the Health Sector, and Agriculture.
* Disaster Mitigation Planning to take account of the special problems of islands.

For more information contact, STAN TAIT, National Hurricane Conference Secretariat, 864, EAST PARK AVE. TALLAHASSEE, FLORIDA, or the PCDPPP.

Pan-Caribbean Disaster Preparedness & Prevention Project
P.O. Box 1399, American Road, St. John's ANTIGUA
Tel: (809)462-4432 TLX:2195 AK FAX:(809)462-4431

SUPPORT DISASTER PREPAREDNESS
A MESSAGE FROM THE PAN-CARIBBEAN DISASTER PREPAREDNESS AND PREVENTION PROJECT (PCDPPP)