

# The Disaster Risk Management Benchmarking Tool for the Caribbean [BTool]

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Background

Rationale for a RMBT

Design framework

The BTool

Use as a Benchmarking Tool

Testing the Tool



Organization of Eastern  
Caribbean States

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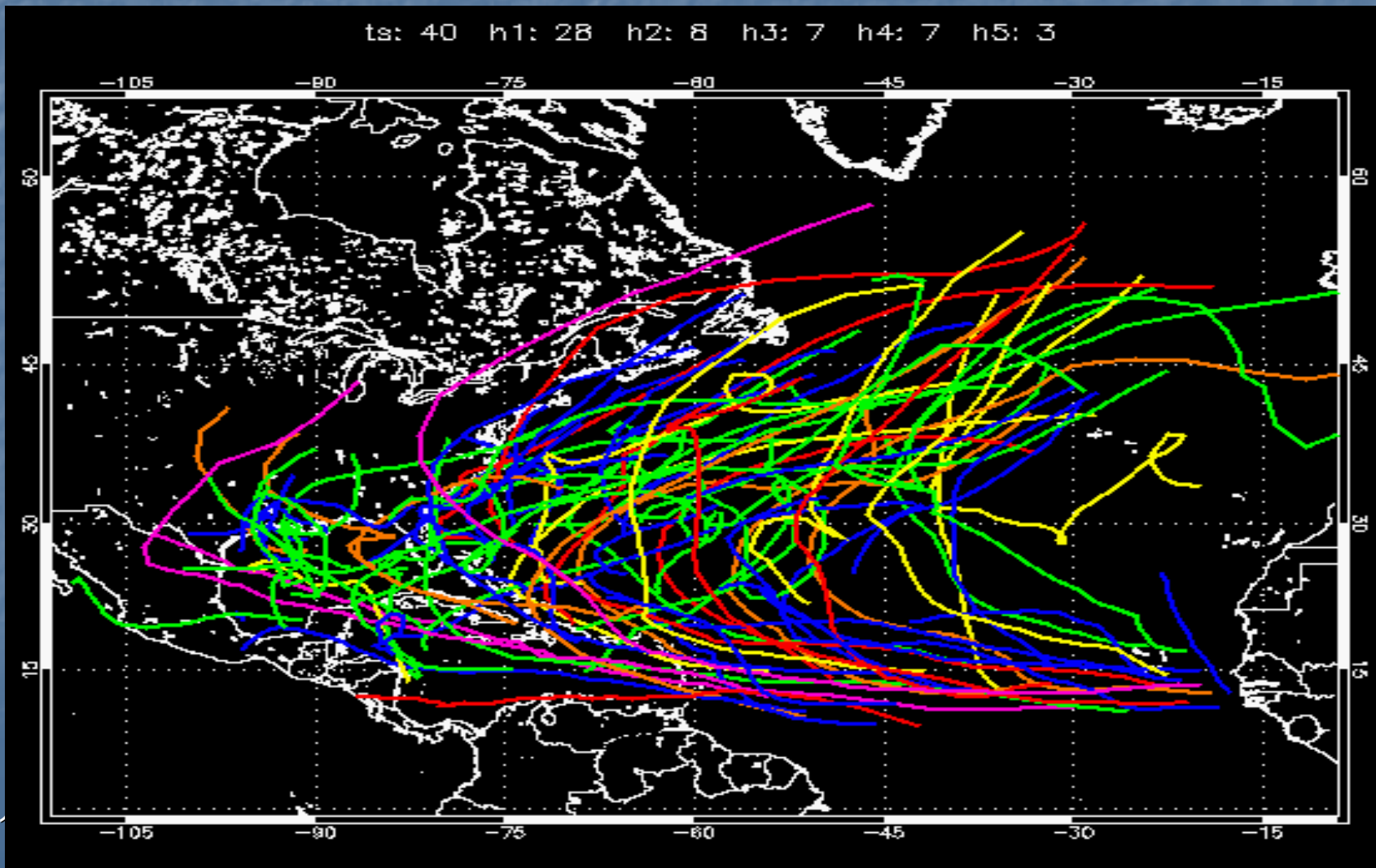
The Unwanted Guest

**Atlantic Tropical  
Storms/Hurricanes  
1980-2005**

# Atlantic Tropical Storms/Hurricanes 1980-1989.

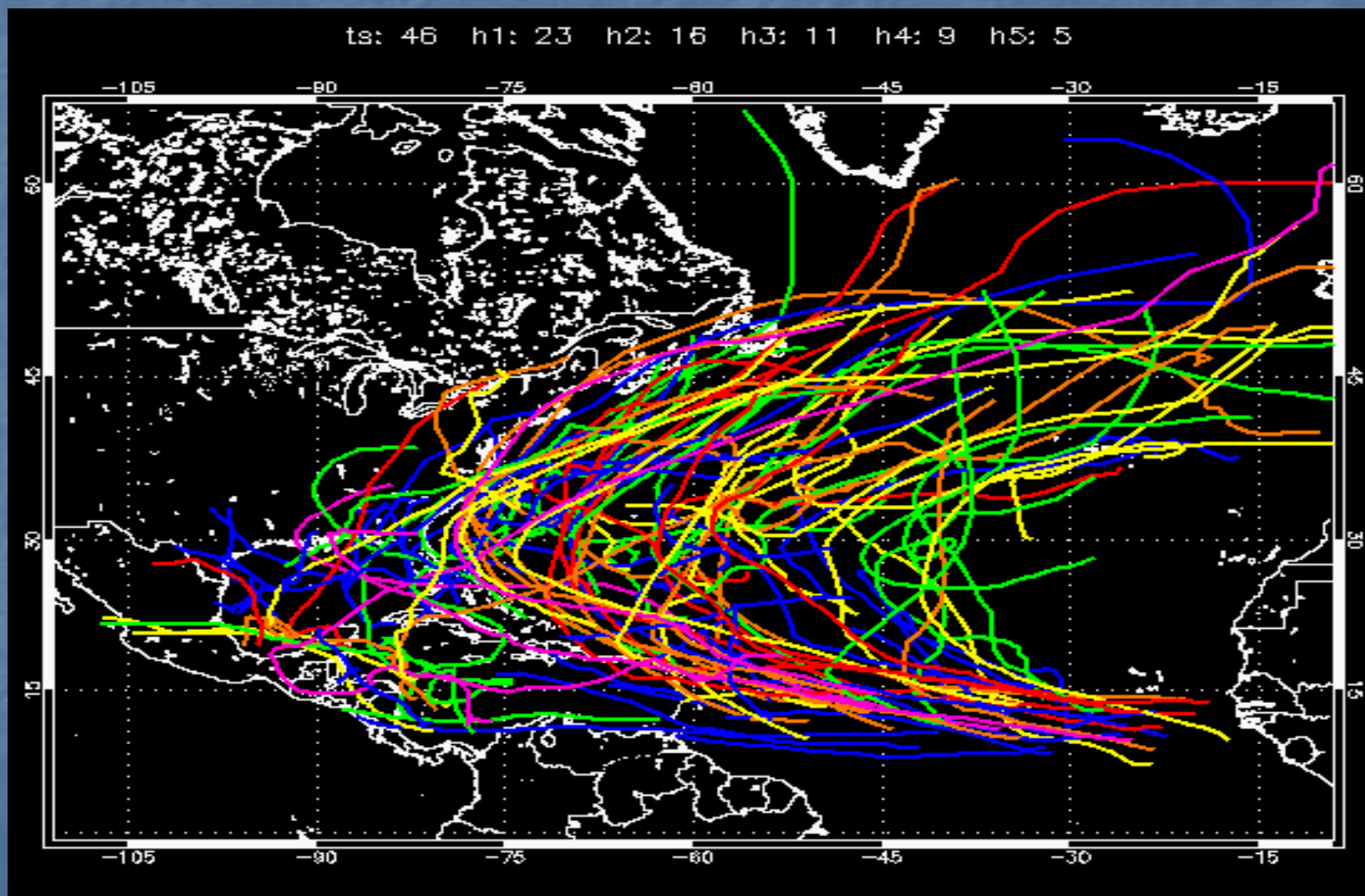
## PHYSICAL LOCATION- HYDRO-METEOROLOGY.

Source: Caribbean Hurricane Network: Climatology of Caribbean Hurricanes. www.stormCARIB.com 2006



# Atlantic Tropical Storm/Hurricane Track 1990-1999

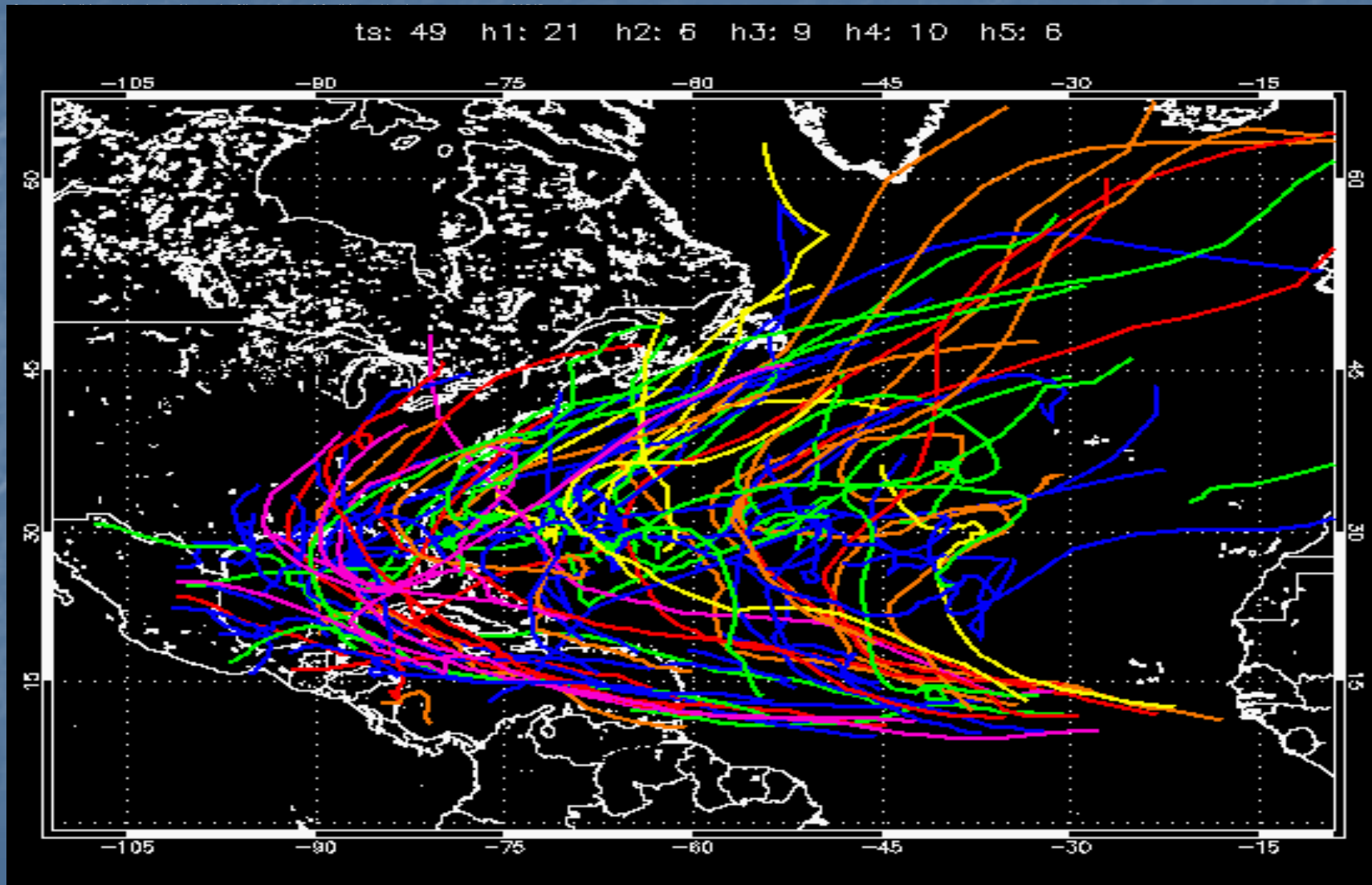
Source: Caribbean Hurricane Network: Climatology of Caribbean Hurricanes. [www.stormCARIB.com](http://www.stormCARIB.com)



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# Atlantic Tropical Storm/Hurricane Paths 2000-2005



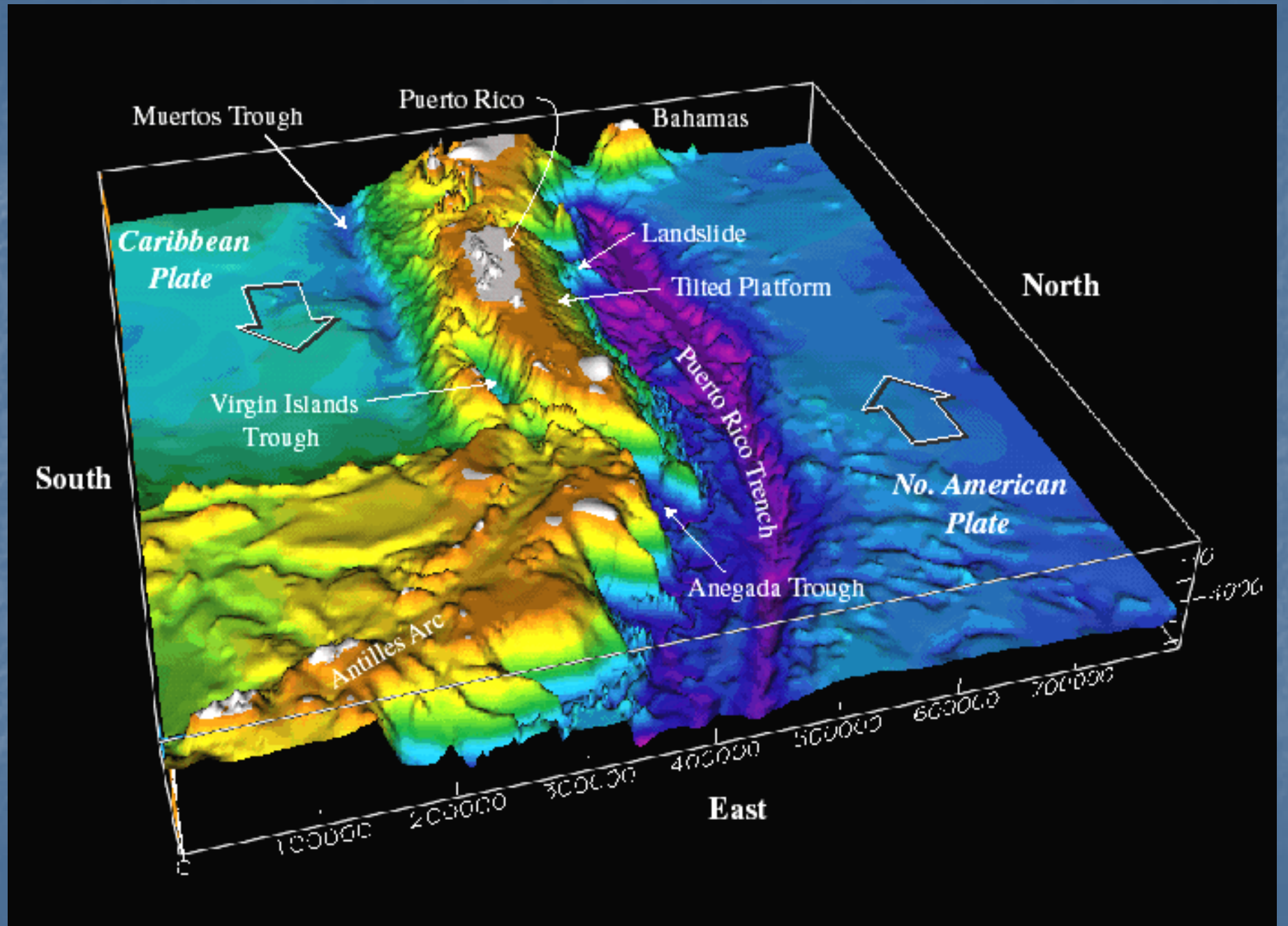
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# The Plate on which we live, build, and play

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# THE CONSEQUENCES OF DISASTER IN THE CARIBBEAN



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# CARIBBEAN NATURAL HAZARDS

TABLE 1: Hazard frequency in Caribbean 1902-2005

Country	Flood	Hurricane	Earthquake	Volcano	Landslide	Drought	epidemic	Wild fires
Anguilla	1	6				5	5	
Antigua & Barbuda		9				1		
Bahamas	1	15						
Barbados	2	6						
Cayman Islands		3						
Cuba	19	31	2			7	2	2
Dominica		10	1					
Dominican Republic	13	19	2			1	4	3
Grenada	1	6						
Guadeloupe		9	1	1				
Haiti	30	24	1		2	9	2	
Jamaica	13	24	1			5	4	
Martinique		10		1				
Montserrat								

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Country	Flood	Hurricane	Earthquake	Volcano	Landslide	Drought	epidemic	Wild fires
Netherlands Antilles		4						
Puerto Rico	6	12	1		2			
St. Kitts & Nevis	1	8						
St. Lucia		11			1			
St. Vincent & The Grenadines	4	8		4				
Trinidad & Tobago		7		1	1			
Turks & Caicos Is		3						
Virgin Is. (U.K)		6						
<b>TOTAL</b>	<b>91</b>	<b>234</b>	<b>9</b>	<b>10</b>	<b>6</b>	<b>28</b>	<b>17</b>	<b>5</b>

## Loss/ damage of homes: Some Statistics

<b>Country</b>	<b>Year</b>	<b>Event</b>	<b>Housing loss/damage(%)</b>
Dominica	1979	Hurricane David	60
St. Lucia	1980	Hurricane Allen	30
Jamaica	1988	Hurricane Gilbert	25
Montserrat	1989	Hurricane Hugo	90
Anguilla	1995	Hurricane Luis	41
St.Kitts & Nevis	1998	Hurricane Georges	85
Jamaica	2004	Hurricane Ivan	14
Grenada	2004	Hurricane Ivan	90
Cayman Islands	2004	Hurricane Ivan	50 (estimated)

# Damage to homes in Jamaica due to Hurricane Ivan 2004



Homeowner surveying the damage.

# Losses to Agriculture Due to Hurricane Dennis, Jamaica, 2005.



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# What are the Challenges to Disaster Risk Management in the Caribbean?

1. Reduction in social and economic dislocations from the impacts of hazards and disasters.
2. Realization of the social and economic benefits of mitigation.
3. Accountability among institutional stakeholders responsible for facilitating the goals of disaster management.

## Challenges to Disaster Mgt in the Caribbean cont'd

4. Equal access to resources for hazard risk reduction.
5. Inclusiveness of all stakeholders in strategies for hazard risk reduction.
6. Partnership and participation among stakeholders for hazard risk reduction.

## Challenges to Disaster Mgt in the Caribbean cont'd

7. Environmental protection, good governance and an integrated approach to hazard risk reduction
8. The Creation of a culture of hazard risk reduction at all levels of the Society.

# Disaster risk management

The systematic process of using administrative decisions, organization, operational skills and capacities to implement policies, strategies and coping capacities of the society and communities to lessen the impacts of natural hazards and related environmental and technological disasters.

## **Disaster risk reduction**

The systematic development and application of policies, strategies and practices to minimize vulnerabilities, hazards and the unfolding of disaster impacts throughout a society, in the broad context of sustainable development.

## The Disaster Risk Management Benchmarking Tool for the Caribbean

### Background

The Caribbean is particularly vulnerable to natural and technological hazards. In order to achieve sustained growth, the public and private sectors in the region there is the need to **formulate and implement meaningful plans** to measurably reduce the region's risk profile for such potential disasters.

In General,

- The approach to disaster risk reduction in the region is varied.
- National policies and plans are not in place in some countries
- Where national policies and plans do exist, implementation resources are lacking.
- There are no overarching frameworks to address disaster preparedness and mitigation.
- Specific action agenda that is directed to achieving a measurable reduction in the region's risk profile for natural disasters has largely been missing.

## Goal of the DRBMT

To improve the ability of communities, national governments, civil society organizations, and the private sector to **proactively plan and implement actions** to reduce vulnerability to natural disasters and create greater economic resilience when they do occur.

## Objective of the DRBMT

To develop and implement a practical tool that could be used to assess a country's natural disaster risk reduction profile.

A tool to remind and /or validate that disaster risk management tasks have been completed and resources are available, to report on the status of their readiness.

A list of items or tasks to be checked or consulted when investing on disaster risk management.

## What is a DR Benchmarking Tool?

1. A tool for evaluating the adequacy of current disaster risk management initiatives.
2. A tool for evaluating the readiness and capability of local and national institutions to deal with the risk of disaster.
3. A list of best practice recommendations for disaster risk management.
4. A tool for regional benchmarking of nations and programmes.

## What is a DR Benchmarking Tool?

It comprise of indicators which are measurable and which a country can take steps to address both in the short and long terms.

Examples of Indicators:

- Level of community involvement
- Preparedness of utilities
- Level of insurance coverage for public, business, and private facilities.
- Public awareness for disaster risk reduction.

## Uses of the Tool

- Identification of gaps in the development planning/disaster management continuum.
- Highlights of multi-disciplinary approach required for the development and implementation of a holistic disaster management program
- ◆ A tool for preparing programme of work
- ◆ A tool for writing Terms of Reference for Disaster Management projects
- Highlights deficiencies in public/private sector interface in disaster management.

## Other Usefulness of the BTool

### Caribbean Catastrophe Risk Insurance Fund:

- Parametric trigger mechanism to access liquidities in the immediate aftermath of a disaster
- Premiums based on local vulnerability assessment and improvements.
- Tool for preparing funded projects proposals

# Benefits of the BTool

- It provides a snapshot of a country's exposure to natural disaster.
- It can be used to build support for the allocation of resources to reduce risk in areas defined by the BTool.
- It can be used to prioritize national and regional programmes of activities.
- It can be used as an incentive at the political level to stimulate action due to the comparative nature of its scores against another country.
- It provides information, in a consistent manner, on the state of readiness of each country. This information can be used by regional and international funding agencies to define or redefine programmes of assistance to the region.

# Tool Design Considerations

- Comprehensive in scope
- A non-technical instrument
- Simple to implement
- Verifiable and replicable
- Transparent and representative
- Objective and positive in tone
- Definite and absolute

# Methodological Steps

The BTool was developed in six steps:

- Selection of a comprehensive disaster management framework
- Identification of disaster risk management tools and resources
- Design of assessment questions
- Stakeholder review and modification of the tool
- Pilot testing and modification of the tool
- Adoption of the tool by local and regional stakeholders.

# Adoption of the tool by local and regional stakeholders

## Suggested Actions:

- Provide sufficient financial and technical resources by national governments to fulfill the objectives of the BTool; that is, reducing the region's risk exposure to natural hazard events.
- Establish a **National Risk Reduction Committee** in each country that has the responsibility to implement the BTool, and present the results of each country's readiness to withstand natural hazards.
- Building the knowledge-base of political directorates, Permanent Secretaries, and Chief Executive Officers of major public and private agencies on the utility of the BTool as a self-assessment disaster risk management evaluation tool.

# Adoption of the tool by local and regional stakeholders

- Formulation of policy directives and legislative support towards the mainstreaming of the BTool as an annual audit tool to be complied by all key agencies of a country.
- Building effective public awareness programme that promote stakeholder participation and involvement in the use and adaptation of the BTool
- Establishment and funding of an award programme that recognize and rewards progress made by stakeholders towards meeting the disaster risk reduction agendas of enterprises, communities, and the nation.
- Identification and nomination of a national champion that would promote the use of the BTool.

## Step 1: Determine the Scope of the Evaluation

The following 6 Key Components of Comprehensive Disaster Risk Management were adopted (IDB, 2000)

- Risk Identification (RI)
- Risk Mitigation (RM)
- Risk Transfer (RT)
- Disaster Preparedness (DP)
- Emergency Response (ER)
- Rehabilitation and Reconstruction (RR)

## The Disaster Risk Management Benchmarking Tool for the Caribbean

### **A. Risk Identification (RI)**

- 1. Hazard mapping and assessment  
(frequency, magnitude, and location)**
- 2. Vulnerability assessment  
(population and assets exposed)**
- 3. Risk assessment  
(a function of hazard and vulnerability)**
- 4. Hazard monitoring and forecasting  
(mapping, and scenario building)**

## **B. Risk Mitigation (RM)**

**1. Physical and engineering mitigation works**

**2. Land-use planning and building codes**

**3. Economic incentives for pro-mitigation behavior**

**4. Education, training and awareness about risks and prevention**

## **C. Risk Transfer (RT)**

**1. Insurance and reinsurance of public infrastructure and private assets**

**2. Financial market instruments  
(catastrophe bonds and weather-indexed hedge funds)**

**3. Public services with safety regulation  
(energy, water and transportation)**

**4. Calamity Funds (national or local level)**

## **D. Disaster Preparedness (RP)**

- 1. Early warning and communication systems**
- 2. Contingency planning (utility companies and public services)**
- 3. Networks of emergency responders (local and national)**
- 4. Shelter facilities and evacuation plans**

## **E. Emergency Response (ER)**

**1. Humanitarian assistance**

**2. Clean-up, temporary repairs, and restoration of services**

**3. Damage assessment**

**4. Mobilization of recovery resources (public, multilateral, and insurance)**

## **F. Rehabilitation & Reconstruction (RR)**

**1. Rehabilitation and reconstruction of damaged infrastructure**

**2. Macroeconomic and budget management (stabilization and protection of social expenditures)**

**3. Revitalization for affected sectors (exports, tourism, and agriculture)**

**4. Incorporation of disaster mitigation components in reconstruction activities**

## Step 2:

### Risk Management Tools to be evaluated

- Policies
- Plans
- Regulations
- Legislations
- Human resources
- Financial resources
- Technical resources

## Step 2:

### Risk Management Tools to be evaluated (Contd.)

- **Infrastructure**
- **Administration**
- **Inter-agency Coordination**
- **Integration of plans and activities**
- **Involvement of the resident community**
- **Involvement of the private sector**
- **Involvement of the regional & international agencies**

## Premises

# Comprehensive Risk Management

$$\text{CRM} = \text{RI} + \text{RM} + \text{RT} + \text{DP} + \text{ER} + \text{RR}$$

- Risk Identification (RI)
- Risk Mitigation (RM)
- Risk Transfer (RT)
- Disaster Preparedness (DP)
- Emergency Response (ER)
- Rehabilitation and Reconstruction (RR)

## Regional Evaluation

Country	RI	RM	RT	DP	ER	RR	Total
Saint Lucia							
Grenada							
Guyana							
Belize							
Dominica							

The Disaster Risk Management Benchmarking Tool for the Caribbean

# **Benchmarking Indicators**

**Risk identification: hazard mapping**

# A1. Hazard Mapping and Assessment

- 1-7 Have any of the following prevalent hazards in your communities been assessed and areas subject to their effects mapped?
1. Earthquakes hazards
  2. Volcanic hazards
  3. Landslide hazards
  4. Flood hazards
  5. Drought hazards
  6. Hurricane hazards
  7. Chemical hazards
8. **Do the hazard maps depict the location and magnitude of hazards?**

# A1. Hazard Mapping and Assessment

9. Does every household in the communities know the impact zones of these hazards?
10. **Are records of the magnitude of their occurrence measured and recorded?**
11. Has the potential magnitude and frequency of future occurrence of these hazards been forecasted?
12. **Does the hazard map show the vulnerable human settlements in the communities?**
13. Does the hazard map show the vulnerable social infrastructure in the communities?
14. **Does the hazard map show the vulnerable economic infrastructure in the communities?**
15. Have integrated hazard maps that assess the interaction of multiple natural hazards been produced?
16. **Are these maps available in public places such as community centers, place of worship, police stations, supermarkets within the hazard impact zones?**
17. Have the causes of hazard-related disaster been studied and their remedies made public?

## A1. Hazard Mapping and Assessment

18. Are these maps produced at scales that permit their use for development planning and control?
19. **Do you have a policy that mandates the preparation, publication, and revision of hazard maps for all communities?**
20. Do you have legislation that mandates the preparation, publication, and revision of hazard maps for all communities?
21. **In the comments column, please indicate the total number of communities in the country**
22. In the comments column, please indicate the percentage of communities assessed on the basis of questions 1-20
23. **Do you have standards and regulations for the preparation, publication, and revision of hazard maps?**
24. Is the cost of producing, publishing, and revision of hazard maps budgeted for on a regular basis?
25. **Has the responsibility for the preparation, publication, and revision of hazard maps been assigned to a national entity?**

# A1. Hazard Mapping and Assessment

26. Do you have trained local capacity for the preparation, publication, and revision of hazard maps?
27. **Are local communities actively involved in the preparation, publication, and revision of hazard maps?**
28. Where local capacity is limited, do you get support from regional agencies?
29. **Where regional capacity is limited, do you get support from international bodies?**
30. Are the outputs of hazard mapping exercises centrally stored and accessible to all stakeholders?
31. **Is the country signatory to conventions on the storage and disposal of hazardous chemicals?**
32. Are there procedures in place to implement the requirements for the storage and disposal of chemicals?
33. **Have locations of significant oil spill potential been identified?**
34. Are there 'quick response' measures in place in areas of high oil-spill potential?
35. **Are there arrangements for monitoring and evaluating the effectiveness of hazard maps?**

# Results of Preliminary Sub-Regional Scores

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## Dominica

Phases of Risk Management	TNQ	Max Score	Total Score	%Score	Regional rank
Risk identification Index	105	315	113	36%	5 <sup>th</sup>
Risk Mitigation Index	63	189	35	19%	6 <sup>th</sup>
Risk Transfer Index	48	144	32	22%	5 <sup>th</sup>
Disaster Preparedness Index	122	366	148	40%	3 <sup>rd</sup>
Emergency Response Index	55	165	77	47%	4 <sup>th</sup>
Rehabilitation and Reconstruction Index	52	156	3	2%	6 <sup>th</sup>
<b>Total</b>	<b>445</b>	<b>1335</b>	<b>408</b>	<b>31%</b>	<b>6<sup>th</sup></b>

## Grenada

Phases of Risk Management	TNQ	Max Score	Total Score	%Score	Regional rank
Risk identification Index	106	318	129	41	4th
Risk Mitigation Index	62	186	76	41	4th
Risk Transfer Index	48	144	61	42	2nd
Disaster Preparedness Index	120	360	228	63	5th
Emergency Response Index	57	171	91	53	3rd
Rehabilitation and Reconstruction Index	56	168	27	16	5th
<b>Total</b>	<b>445</b>	<b>1347</b>	<b>612</b>	<b>45%</b>	<b>5th</b>

## Antigua and Barbuda

Phases of Risk Management	TNQ	Max Score	Total Score	%Score	Regional rank
Risk identification Index	105	315	83	26%	6 <sup>th</sup>
Risk Mitigation Index	63	189	39	21%	5 <sup>th</sup>
Risk Transfer Index	48	144	32	22%	5 <sup>th</sup>
Disaster Preparedness Index	122	366	246	67%	2 <sup>nd</sup>
Emergency Response Index	55	165	138	84%	1 <sup>st</sup>
Rehabilitation and Reconstruction Index	52	156	90	58%	2 <sup>nd</sup>
<b>Total</b>	<b>445</b>	<b>1335</b>	<b>628</b>	<b>47%</b>	<b>4<sup>th</sup></b>

## St. Lucia

Phases of Risk Management	TNQ	Max Score	Total Score	%Score	Regional rank
Risk identification Index	106	318	157	49	1st
Risk Mitigation Index	62	186	93	50	3rd
Risk Transfer Index	48	144	36	25	4th
Disaster Preparedness Index	120	360	247	69	1st
Emergency Response Index	57	171	95	56	2nd
Rehabilitation and Reconstruction Index	56	168	63	38	4th
<b>Total</b>	<b>445</b>	<b>1347</b>	<b>691</b>	<b>51%</b>	<b>3rd</b>

## St. Vincent & the Grenadines

Phases of Risk Management	TNQ	Max Score	Total Score	%Score	Regional rank
Risk identification Index	105	315	136	43%	3 <sup>rd</sup>
Risk Mitigation Index	63	189	127	67%	2 <sup>nd</sup>
Risk Transfer Index	48	144	48	33%	3 <sup>rd</sup>
Disaster Preparedness Index	122	366	205	56%	4 <sup>th</sup>
Emergency Response Index	55	165	92	56%	2 <sup>nd</sup>
Rehabilitation and Reconstruction Index	52	156	82	53%	3 <sup>rd</sup>
<b>Total</b>	<b>445</b>	<b>1335</b>	<b>690</b>	<b>52%</b>	<b>2<sup>nd</sup></b>

## St. Kitts and Nevis

Phases of Risk Management	TNQ	Max Score	Total Score	%Score	Regional rank
Risk identification Index	106	318	145	46	1st
Risk Mitigation Index	62	186	127	68	1st
Risk Transfer Index	48	144	67	47	1st
Disaster Preparedness Index	120	360	201	56	4th
Emergency Response Index	57	171	90	53	3rd
Rehabilitation and Reconstruction Index	56	168	144	86	1st
<b>Total</b>	<b>445</b>	<b>1347</b>	<b>774</b>	<b>57%</b>	<b>1st</b>

# Next Step

- Result verification
- Documentation of best practices
- Identification of areas of weaknesses

Many thanks for your attention