

# Synchronising Climate Change and Regional Disaster Risk Reduction

CSGM DATA RESCUE AND CLIMATE  
CHANGE WORKSHOP, MAY 2012

Dr Barbara Carby  
Disaster Risk Reduction Centre, UWI

# Outline

Background

Some definitions

Climate as Hazard

CCA/DRR partnerships for intense rainfall, public awareness, institutional framework

# CCA and DRR:Background

UN ISDR – since early 2000s promoting an approach  
In which Disaster Risk Reduction included Climate Change  
Adaptation

2008 – UN Sec Gen Ban Ki-Moon states that world must draw  
on the Hyogo Framework for Action (HFA) and DRR  
knowledge to protect vulnerable from climate change

IPCC 4<sup>th</sup> Assessment Report  
advocates a risk approach to reduce risk of climate-related  
damage

# Disaster Risk Reduction (DRR)

- The concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events. (UN ISDR 2009)

# Climate Change Adaptation

## CCA – Climate Change Adaptation

- Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects which moderates harm or exploits beneficial opportunities.

(OECD, 2006)

# Climate Change Adaptation

CCA

- ✓ Practical steps to protect countries and communities from the likely disruption and damage that will result from effects of climate change

(OECD 2006)

# Mitigation in DRM

In Disaster Risk Management terminology, Mitigation is the reduction of the impact of a hazard by various means – building codes, planning and zoning laws, flood control structures etc.

# CCA and DRR : Context

Regional Economic Impact of climate-related events is great:

A major hurricane can cause losses exceeding annual GDP – Ivan 2004

Cayman Islands – 183% GDP

Grenada – 89% housing damaged or destroyed

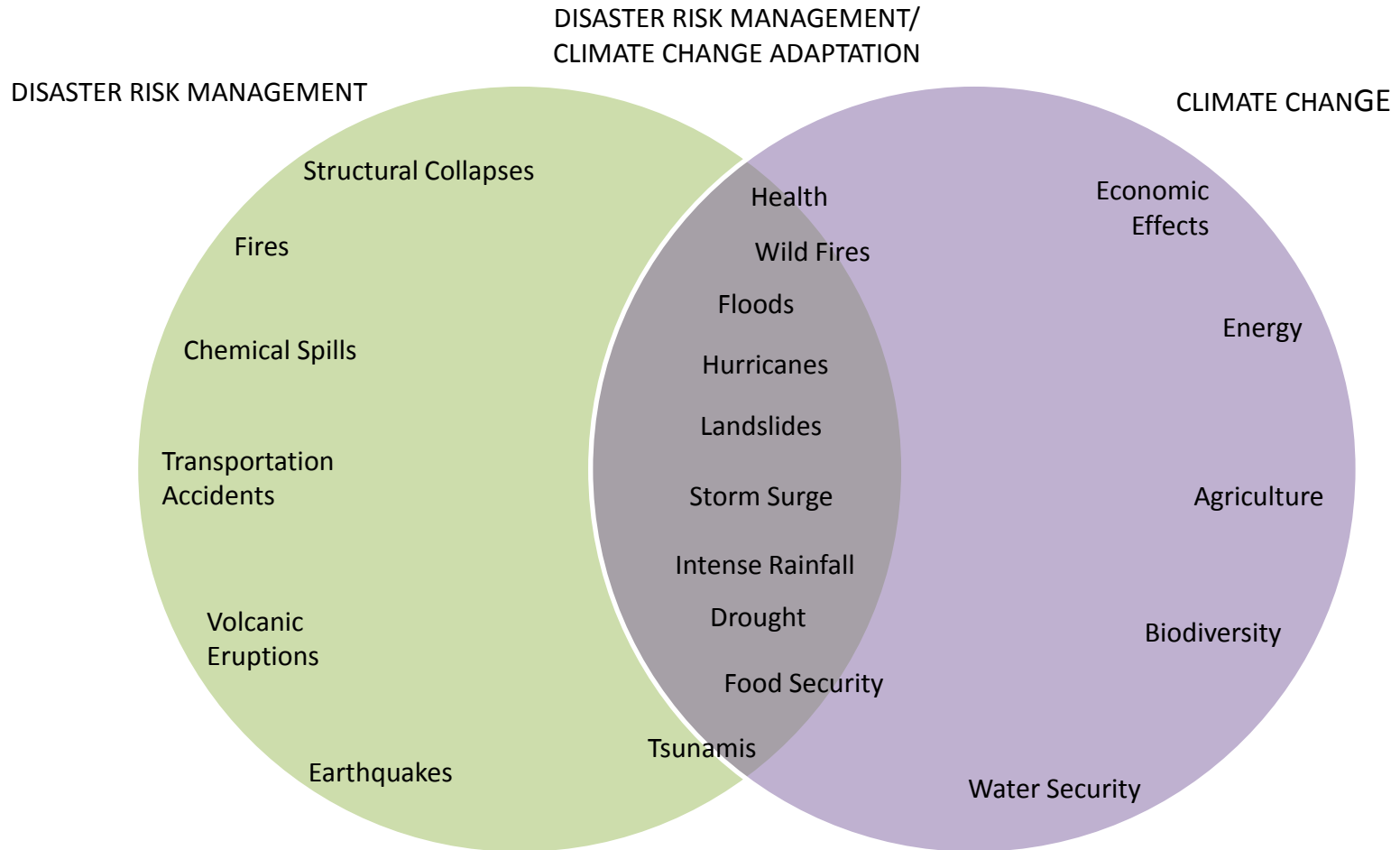
Plus US\$2.2b for Bahamas, Jamaica, Grenada, Dominican Republic



# Climate as Hazard

Hurricanes may cause the most extensive damage but .....

# DISASTER RISK MANAGEMENT AND CLIMATE CHANGE ADAPTATION



# Synchronising the Science

CCA and DRR – as an example we can examine two aspects of climate change which will be of great concern to the DRM community:-

Greater variability – less predictability

More extremes

# Synchronising the Science

Assumption:

DRM resources will not increase as threat increases

So.....

Ability to anticipate impact, preposition resources will be vital

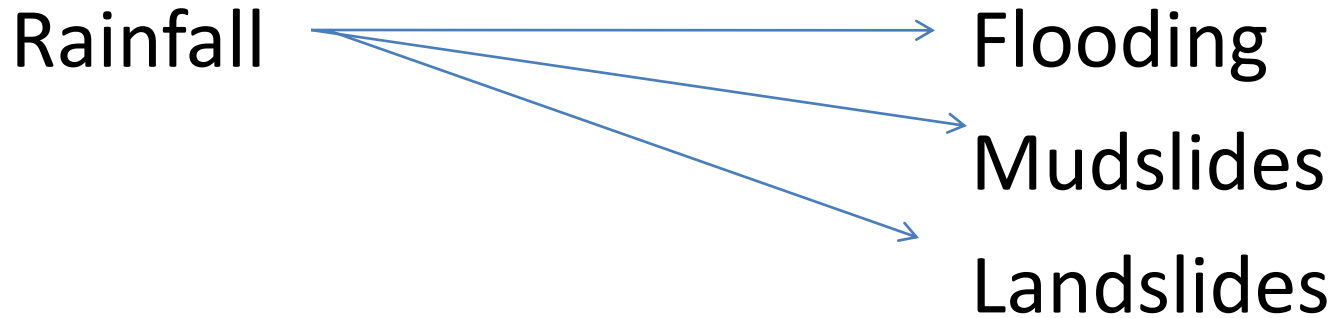
# Synchronising the Science

Better medium to long term planning is essential  
if we are to adequately adapt to hazards  
caused by a changing climate

So....

- Specific data is needed

# Synchronising the Science



Better definition needed for earth movements

# Synchronising the Science

Variability in Rainfall - more intense rainfall

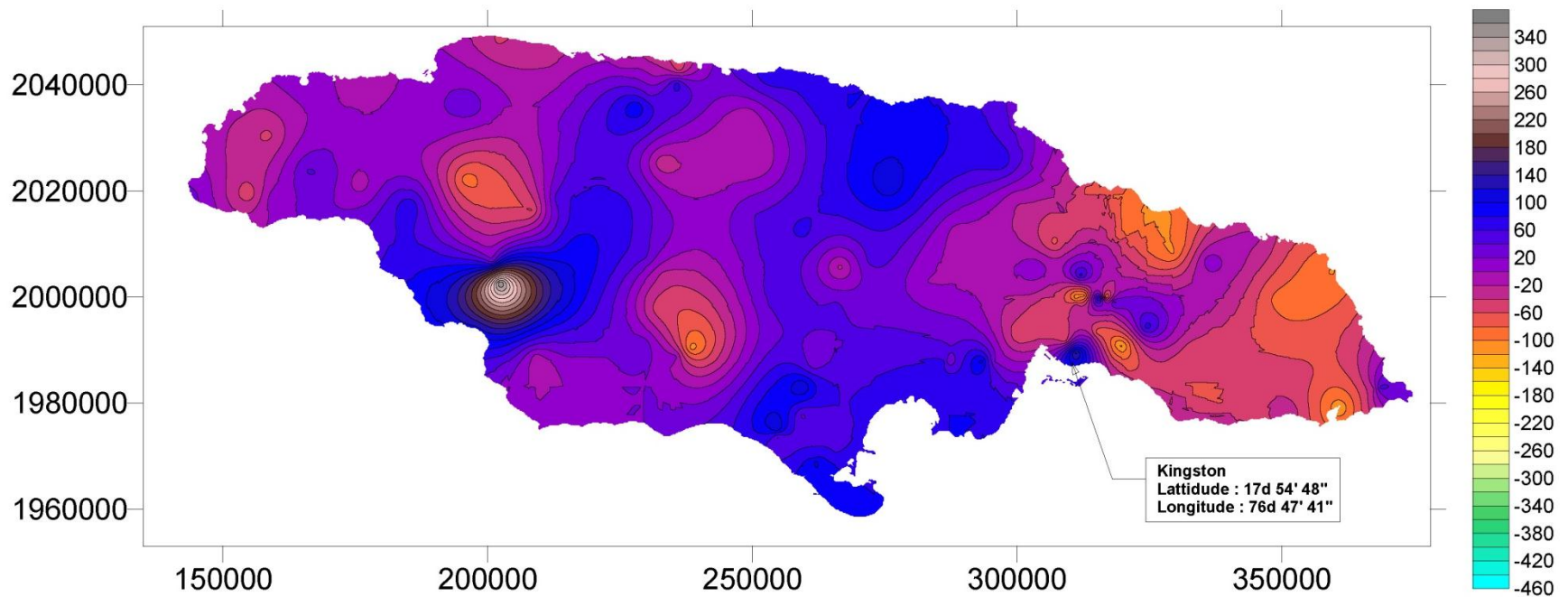
**Short term** – flood management by DR

**Managers** but their experience of ‘the usual’ may not help

Therefore need

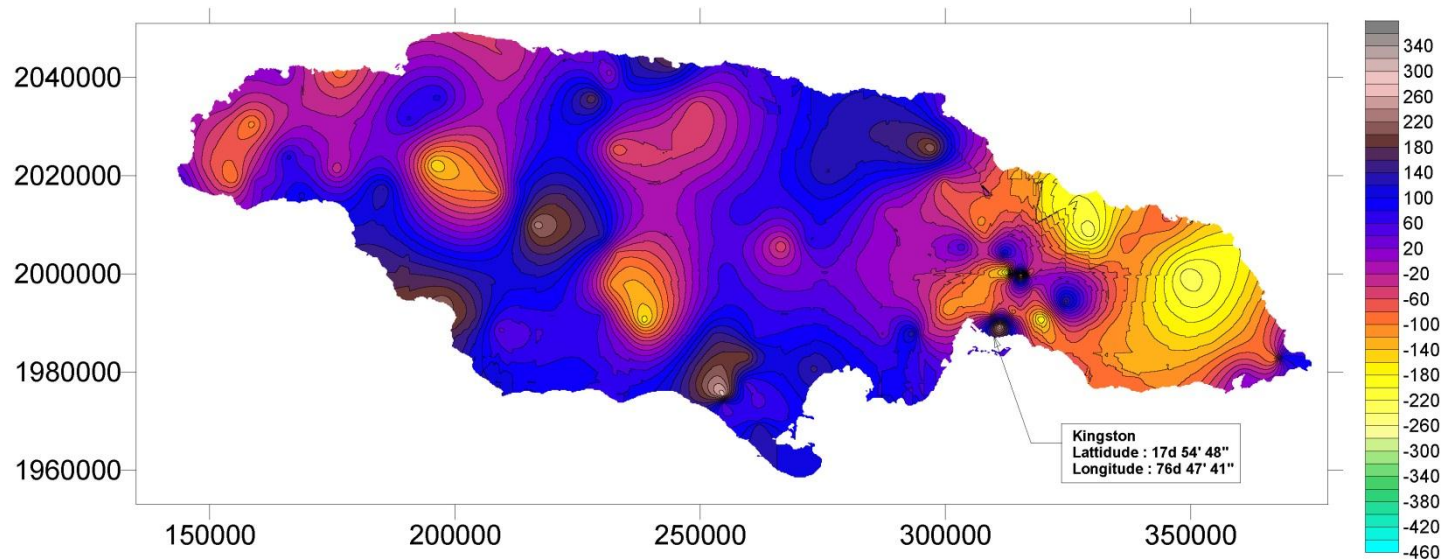
Forecasting and warning – more accurate  
forecast of intensity and location to allow  
**warning of population, placement of response  
resources, evacuation**

# Difference (mm) between the 1930-1988 and 1992 to 2008 24-hours extreme rainfall intensities for the 10 Year Return Period Event. ( Range : - 460 to +340mm)





# Difference (mm) between the 1930-1988 and 1992 to 2008 24-hours Extreme rainfall intensities for the 50 Year Return Period Event



# Synchronising the Science

## Short term

Better define link between rainfall intensity and landslides/debris flows to understand landslide trigger mechanisms and possibly develop warning systems

Remember eventual retreat from rising sea levels will necessitate population relocation into mountainous interior.

# Synchronising the Science

## Medium – long term

Flood prevention/mitigation

Redesign of infrastructure – roads, drainage, flood barriers

Design currently based on historical data-

But the past is no longer a reliable guide to the future

Study in Washington State:

‘Drainage infrastructure designed using mid-20<sup>th</sup> Century records may be subject to future rainfall regime that differs from current design standards’

(Rosenberg et al 2010)

# Synchronising the Science

Designs should be based on analysis of most recent data :  
1981-2011

If old IDF curves are used it could lead to under-design  
Problematic for DR Managers

# Synchronising Public Education and Awareness

For general public awareness:-

- ✓ Unified regional approaches desirable
- ✓ Common products which treat with both DRR and CCA
- ✓ Regional material from CDEMA/5Cs available

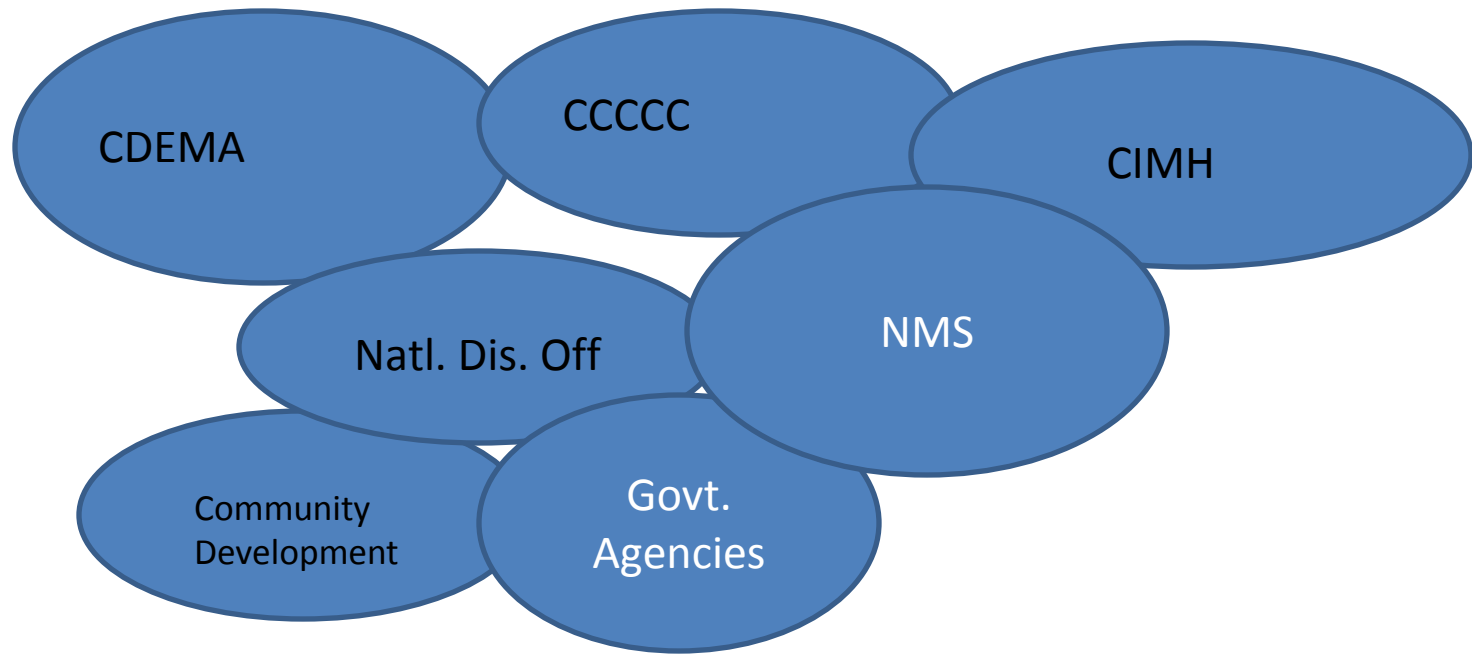
Site specific material can then be developed

# Synchronising Institutional Framework

Progress being made:-

CDEMA DRM and CCA Technical Committee  
Jamaica – Hazard Risk Reduction and Climate  
Change Adaptation Working Group under  
Vision 2030

# Institutional Framework





# Joined-up Institutional Framework

**ACADEMIA** provides research capacity

**CCCCC/CIMH/CDEMA** provide QA and technical input across region

**NMS, National DRM Offices** provide links to Regional Orgs and provide national guidance

**All parties** provide wholistic **development framework** for national programmes and community interventions

To ensure

Environmental, economic and social well-being  
for today and tomorrow.....

Flood proof house by Christopher James. Photo: Peter Faretra

