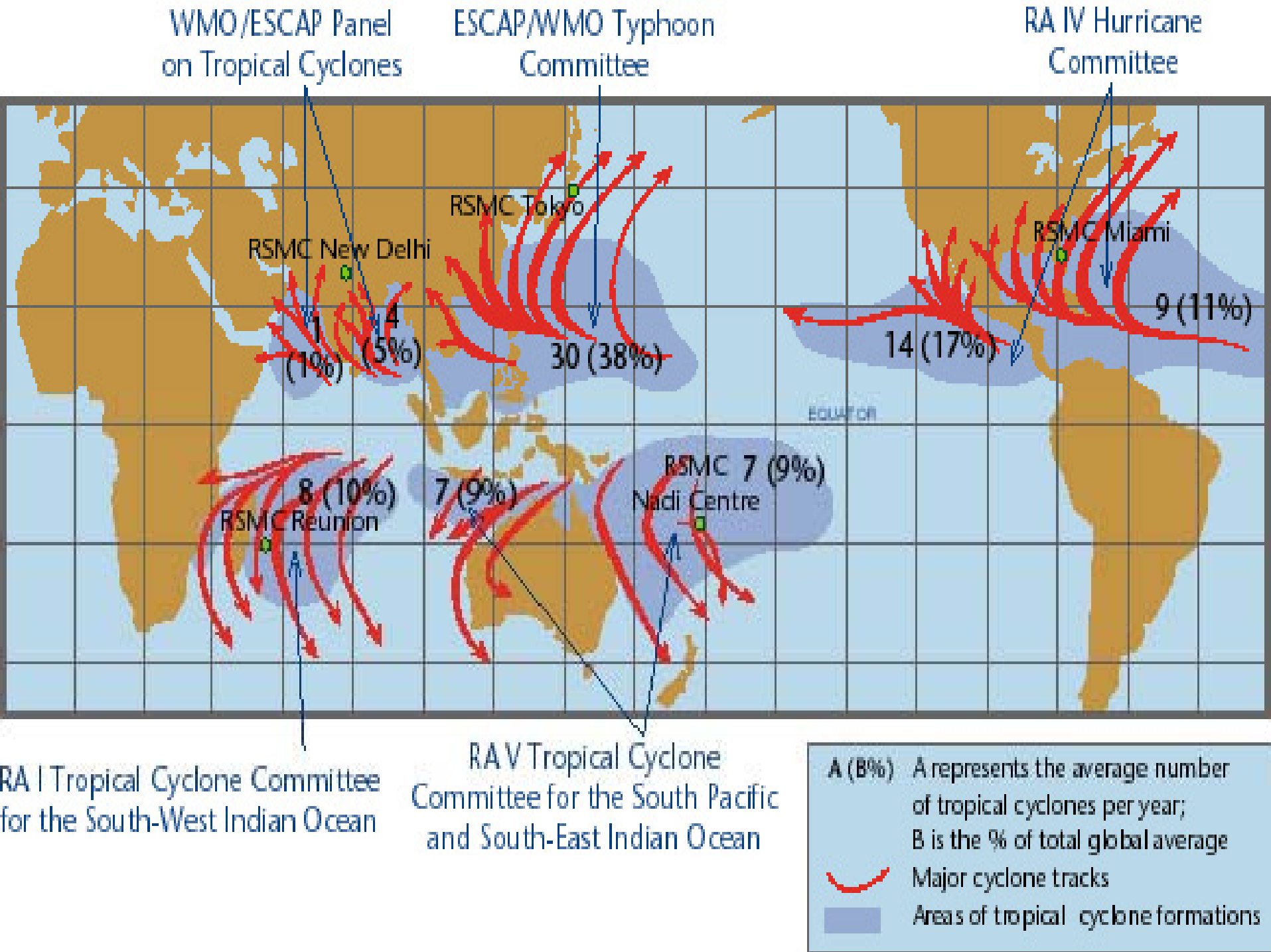
Warning System in the Caribbean

Carlos Fuller
President WMO RA IV
(North America, Central America & Caribbean)


WMO/ESCAP Panel on Tropical Cyclones
ESCAP/WMO Typhoon Committee
RA IV Hurricane Committee
RSMC Tokyo
RSMC New Delhi
RSMC Miami
1 (1%)
4 (5%)
30 (38%)
14 (17%)
9 (11%)
EQUATOR
8 (10%)
RSMC Reunion
7 (9%)
RSMC Nadi Centre
7 (9%)
RA I Tropical Cyclone Committee for the South-West Indian Ocean
RA V Tropical Cyclone Committee for the South Pacific and South-East Indian Ocean
A (B%) A represents the average number of tropical cyclones per year; B is the % of total global average
Major cyclone tracks
Areas of tropical cyclone formations

GLOBAL NETWORK OF TROPICAL CYCLONE WARNING SYSTEMS

WORLD WEATHER WATCH
GLOBAL DATA ACQUISITION AND TELECOMMUNICATIONS

GLOBAL NUMERICAL MODELS
RUN AT MAJOR CENTRES
- GLOBAL FORECAST FIELDS

REGIONAL TROPICAL CYCLONE CENTRES
- REGIONAL FORECAST TRACKS AND INTENSITY OF TROPICAL STORMS
- REGIONAL METEOROLOGICAL WATCH AND ADVISORIES

MIAMI	REUNION	TOKYO	NEW DELHI	NADI	HONOLULU
HURRICANE AREA	S.W. INDIAN OCEAN	TYPHOON AREA	BAY OF BENGAL ARABIAN SEA	S.W. PACIFIC	CENTRAL PACIFIC

NATIONAL METEOROLOGICAL CENTRES
- LOCAL METEOROLOGICAL WATCH
- SPECIFIC FORECASTS
- ADVISORIES
- WARNINGS

GENERAL PUBLIC	LOCAL GOVERNMENT	CIVIL DEFENCE AGENCIES	MEDIA

signal system

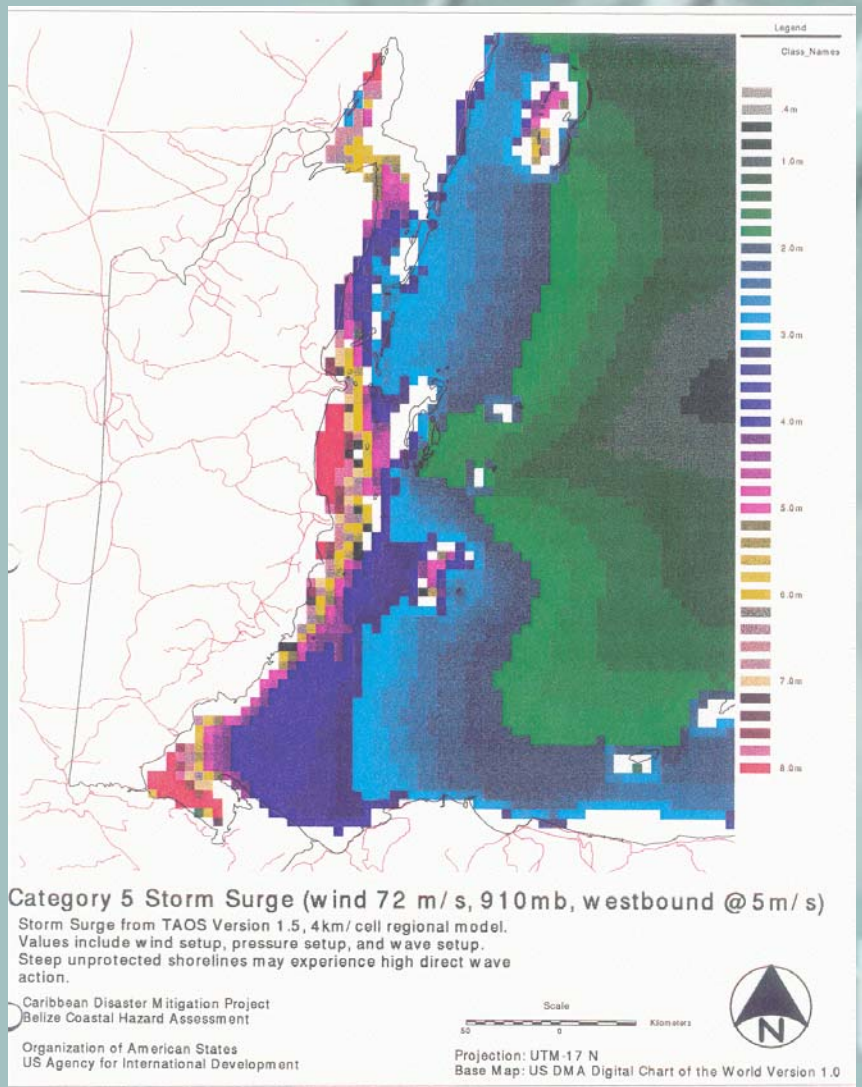
recorded announcement

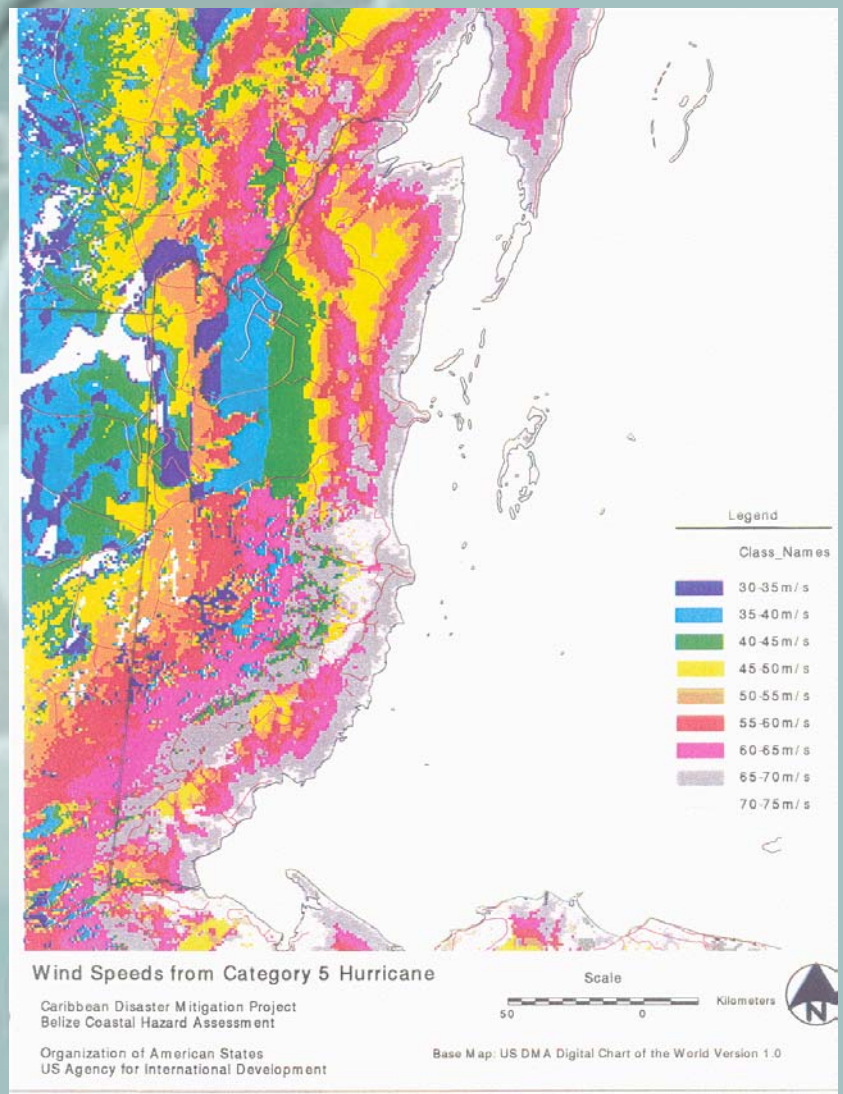
radio broadcasts

TV news

WARNING BROADCASTING

Wind and Storm Surge Hazard Maps





Disaster Mitigation

- Hazard maps
- Zoning
- Setbacks
- Building codes
- Insurance
- Monitoring and Warning systems

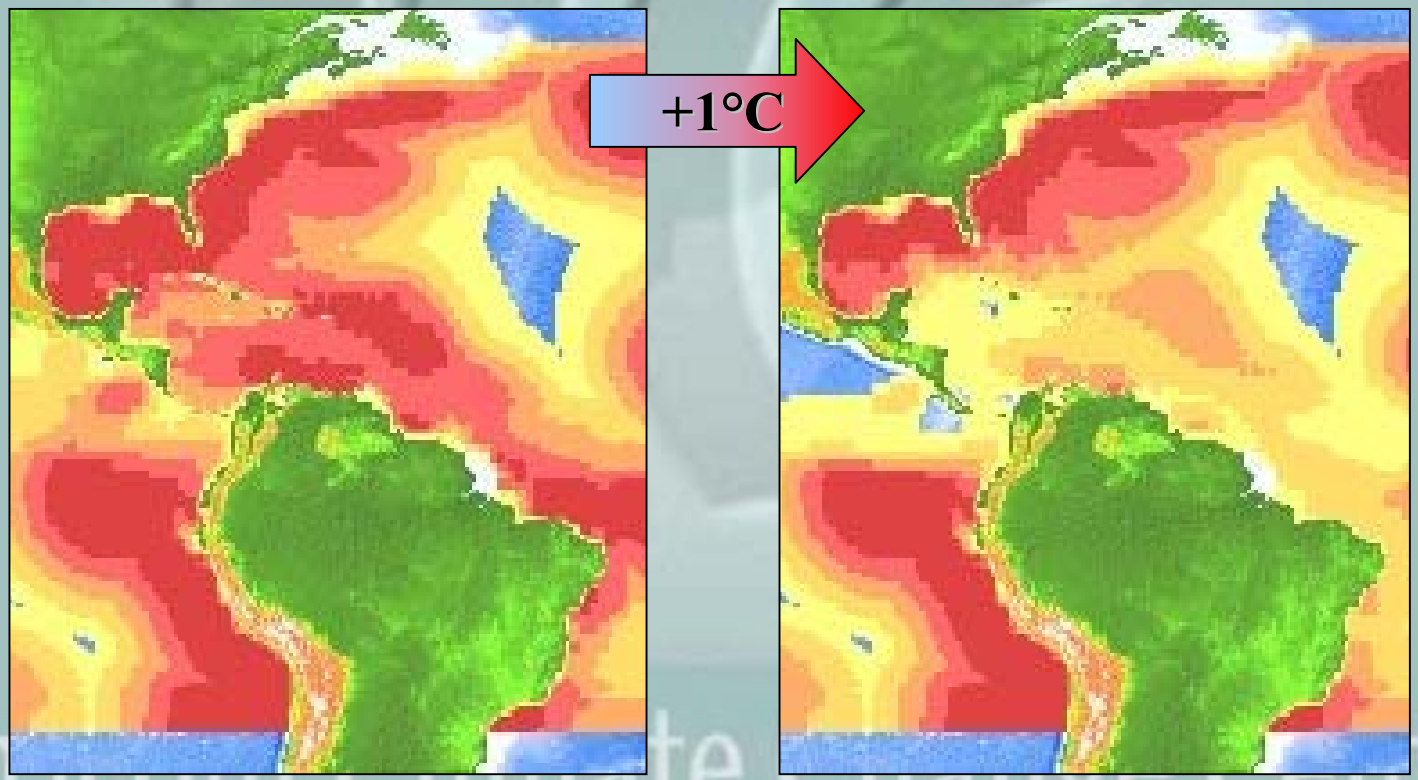
Disaster Mitigation = Climate Change Adaptation

- **Approaches to Adaptation Policy Formulation**
  - *Hazard identification*
    - primary – climate change – rise in temperature; expected consequences, e.g.
      - Sea level rise
      - Disruption of weather patterns
      - Increase in storm intensity
  - *Vulnerability assessment*
    - Determine vulnerable elements in the system, e.g.
      - Coastal infrastructure
      - Water resources
      - Agriculture and fisheries

Dolphin fish

Coryphaena hippurus

Habitat becomes less favourable



Adaptation

- Juxtaposition of hazard with vulnerability identifies systems at risk and nature of risk:
  - Impacts on socio-economic systems
  - Impacts on natural systems

- Determine responses to ameliorate impact of risks and determine feasibility of interventions
  - Risk management approach to identify “adaptation options”
    - Inventories of resources, ie. Coastal zone, water
    - Water saving devises, integrated water resource management
    - More scientific approaches in agriculture
    - Seasonal forecasts – agriculture, health, water use
    - Integration of climate change considerations into day-to-day management – all sectors

Adaptation

- In short, medium-term investment in actions that decrease present-day vulnerability to climate related events sets countries on the road to adaptation to longer-term climate change phenomena

  - Cannot afford to wait on fine-tuning the climate change signal before organizing interventions especially if latter contributes to sustainable development agenda.

  - Opportunities exist where there is coincidence between adaptation and sustainable development agendas – provides strategic entrée for implementation of the former.

Challenges of SIDS

- Limited size, prone to natural hazards and external shocks enhance vulnerability
- Low adaptive capacity and high costs
- 50% of population live within 1.5 km of coastline
- International airports, roads, capitals on coast
- Stresses: terms of trade, impacts of globalization, financial crises, international conflicts, rising external debts, rapid population growth, rising poverty, political instability, unemployment, reduced social cohesion, widening gap between rich and poor

Requirements

- Downscaling of global climate models
- Vulnerability assessments using objective techniques
- Integrated assessment models
  - Fisheries: spawning sites, migratory patterns, habitats at various life cycles, changes in sea temperature and water quality
- Scientific work published in peer reviewed literature
- National Climate Change Policies and Action Plans