

# REGIONAL WORKSHOP ON CLIMATE CHANGE PANAMA CITY, 18 - 20 OCTOBER 2017

Resilient Coastal Management – Coastal Engineering Solutions

# Resilient Coastal Management

- Understanding the Hazards
- Importance of coastal management
- Key factors for achieving resilience
- Some recommendations

## Climate Change Impacts – Risks to Coastal Management in the Caribbean Basin

# CLIMATE CHANGE IMPACTS

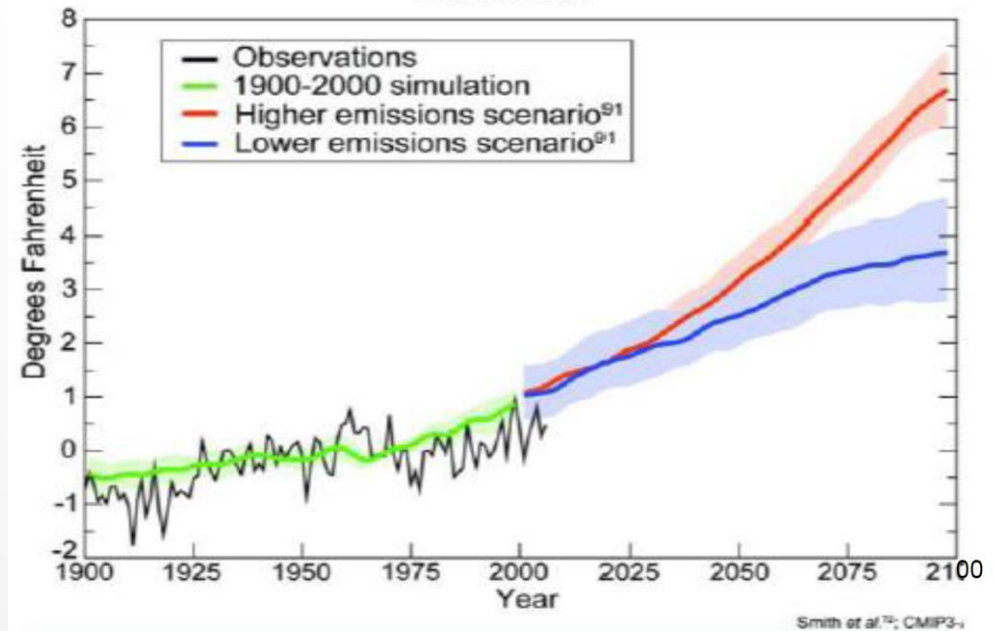
- Warmer air temps
- Increased occurrence of extreme storms
- Torrential rainfall when it does rain
- Sea level rise

## Climate Change Impacts – Risks to Coastal Management in the Caribbean Basin

# WARMER AIR TEMPERATURES

- Higher sea surface temperatures
- Increased storminess
- Coral bleaching

**Caribbean Mean Temperatures: Observed and Projected**



## Climate Change Impacts – Risks to Coastal Management in the Caribbean Basin

# MORE FREQUENT EXTREME STORMS

- Storm surge
- Coastal erosion
- Infrastructure loss





## Climate Change Impacts – Risks to Coastal Management in the Caribbean Basin

# TORRENTIAL RAINFALL

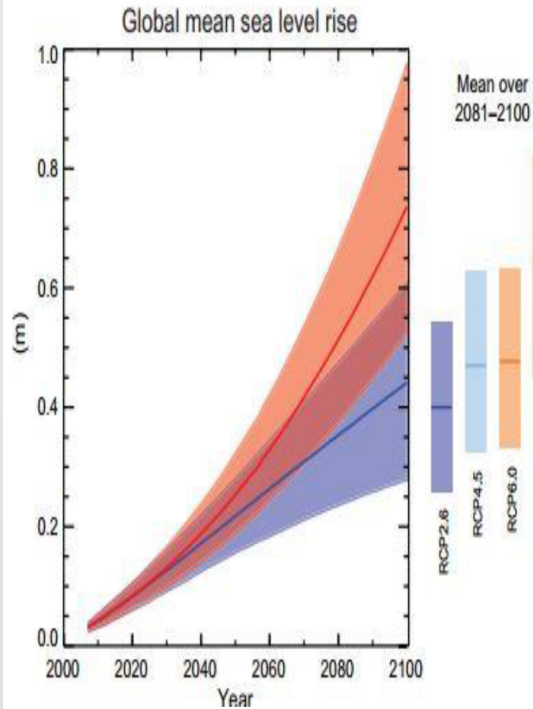
- Riverine flooding
- Landslides / Mudslides
- Loss of life and infrastructure



# Climate Change Impacts – Risks to Coastal Management in the Caribbean Basin

## SEA LEVEL RISE

### 20<sup>th</sup> Century Observed SLR in SIDS Regions



- Tropical Western Pacific → rate of rise is almost 4 times the global average.
- Indian Ocean → rate of SLR as much as twice global average
- In **Caribbean** → rate of SLR generally higher than global average,  $\sim 1.8\text{mm}^{\text{yr}^{-1}}$ .
- ▶ Impact of sea level rise will be disproportionately greater on subsiding coasts, e.g. Guyana

Climate Change Impacts – Risks to Coastal Management in the Caribbean Basin

# IMPORTANCE OF COASTAL MANAGEMENT

- Quantification of hazards
- Provides a platform for development of solutions
- Must include “buy in” from stakeholders



## Climate Change Impacts – Risks to Coastal Management in the Caribbean Basin

# KEY FACTORS FOR RESILIENCE

- Proper baseline data (topography, bathymetry)
- Incorporation of eco-engineered solutions
- Adaptation strategies for affected populations



Climate Change Impacts – Risks to Coastal Management in the Caribbean Basin

## SOME RECOMMENDED STRATEGIES

- Hold the line
- Advance shoreline
- Strategic retreat
- Hazard avoidance
- Strengthen ecosystem