



**Climate 2050**  
***Technology and Policy Solutions***  
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# **Climate Change**

**What makes the Caribbean and Small Island  
Developing States Vulnerable**

*by*

*Kenrick R. Leslie, Ph.D*

The Caribbean Community

Climate Change Centre

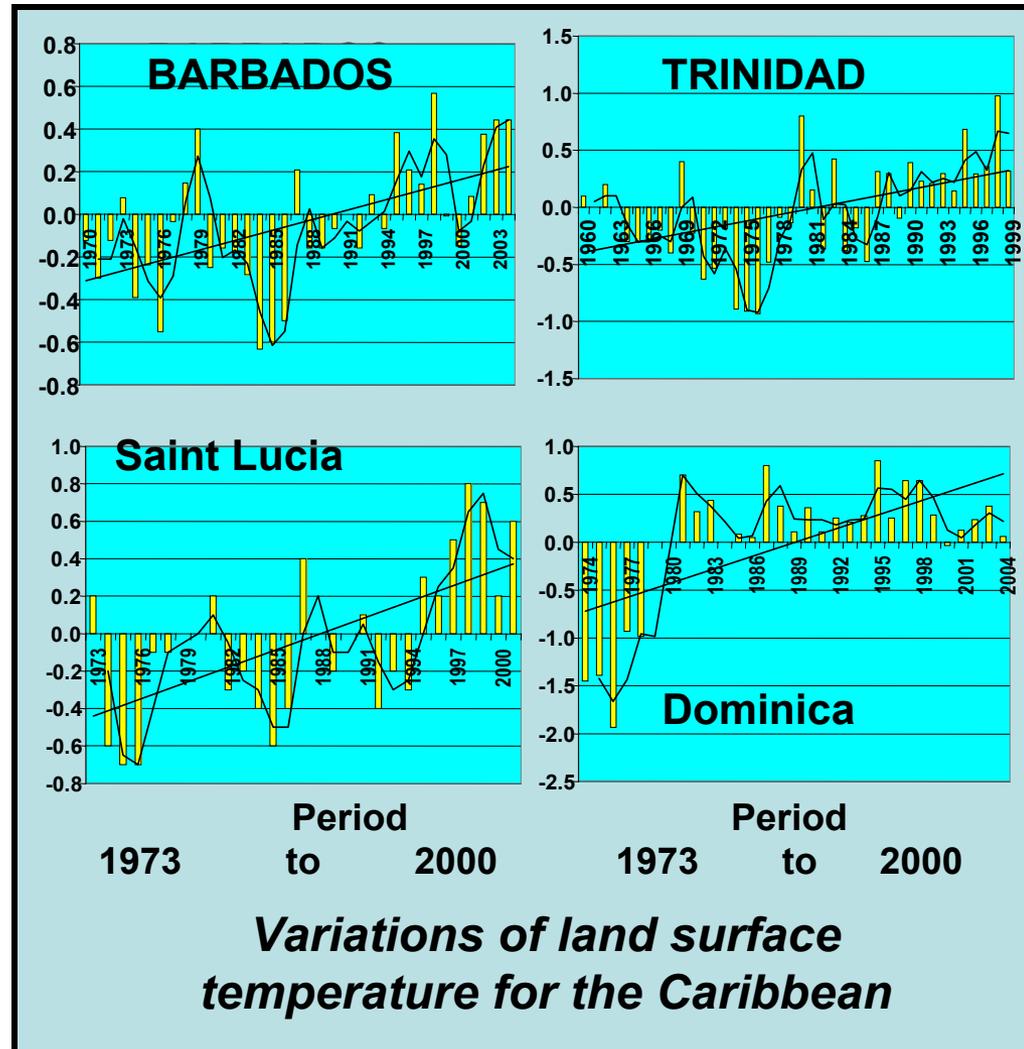
# What makes the Caribbean Vulnerable to Climate Change?

- ❑ It consists of 28 insular and coastal states and ten territories bordering the Caribbean Sea and the Gulf of Mexico.
- ❑ The estimated population is 40 million people of which some 28 million live in coastal cities, towns and villages and 38% of the population can be classified as poor.
- ❑ Economic activities are frequently dominated by specialized agriculture such as sugar and/or tourism.
- ❑ It is already experiencing the early impacts of current Climate Variability and Climate Change.



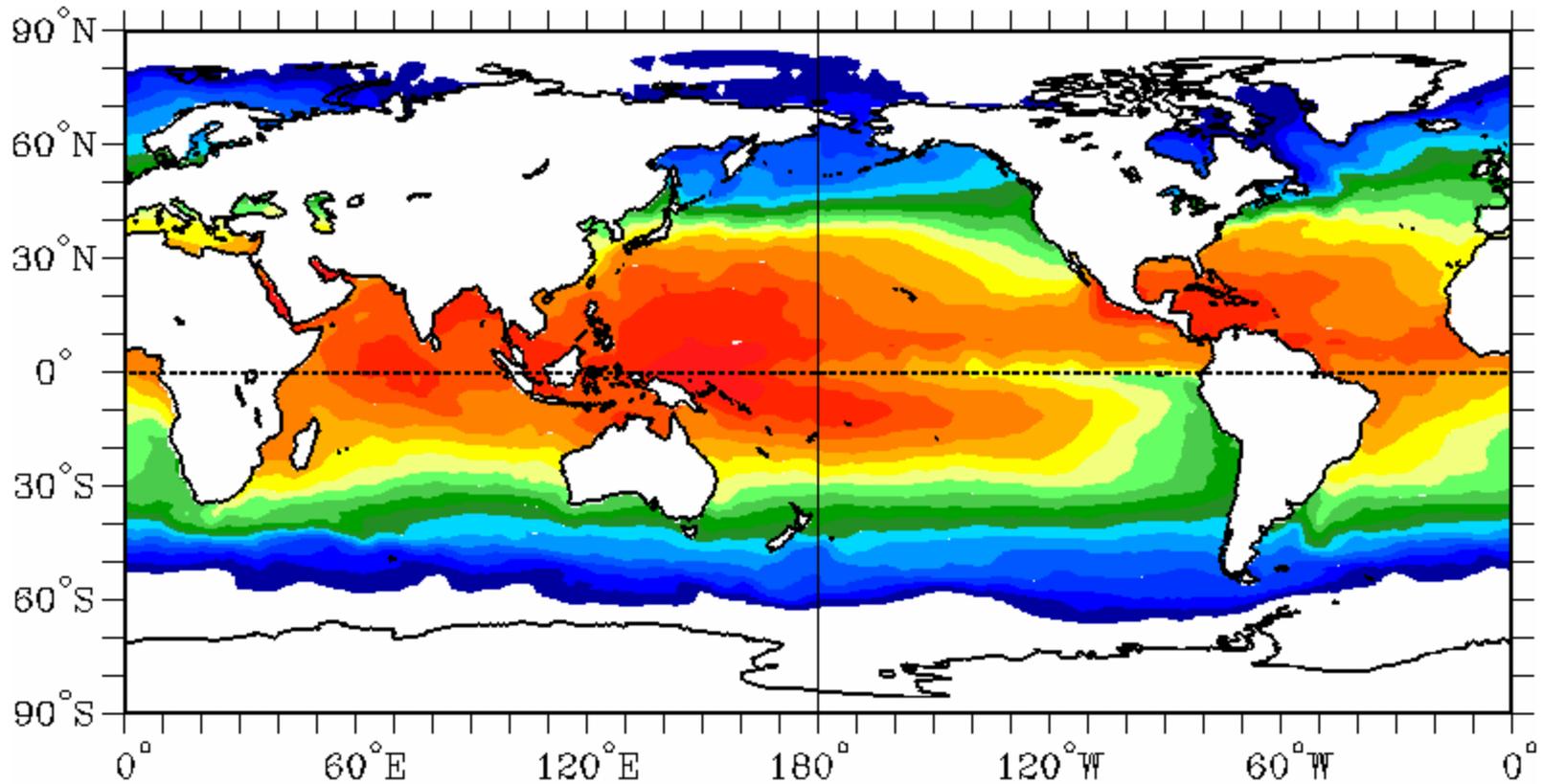
# Temperature Trends in the Caribbean

- Temperatures in the Caribbean region are changing in a manner consistent with the observed variations at global and northern hemisphere levels.
- Temperature records have shown an increase in the last century, with the 1990s being the warmest decade since the beginning of the 20th century.





# GLOBAL SEA TEMPERATURES (October 14 - 20, 2007)



SST 10/14/07-10/20/07



# **OBSERVED CHANGES ASSOCIATED WITH WARMER TEMPERATURES**

- **Lower diurnal temperature variation and much warmer nights**
- **More prevalent coral bleaching**
- **Hurricanes developing at lower latitudes and becoming more intense in shorter periods of time**
- **More frequent outbreaks of pest infestation**
- **More extreme droughts and rainfall**
- **More incidences of extreme temperature-related stress events to humans, animals, and plants**

# **CONSEQUENCES OF LOWER DIURNAL TEMPERATURE VARIATION AND WARMER NIGHTS**

- **Need for increased use of energy derived from imported fossil fuel**
- **Increased loss of water through higher evaporation rates**
- **Higher demand of limited water resources for agricultural irrigation**
- **Less available water for the recharging of aquifers**
- **Increased prevalence of vector-borne diseases**

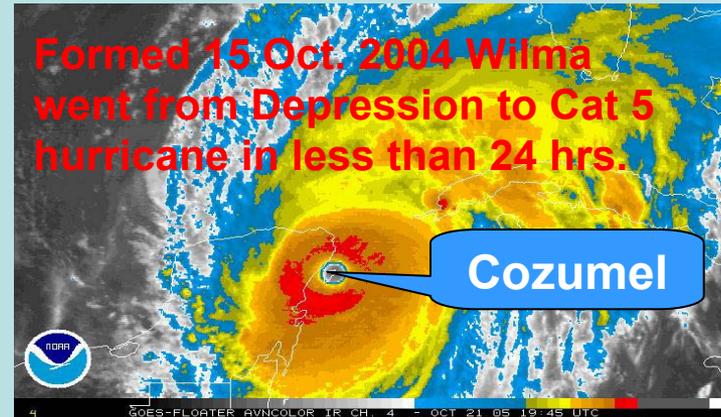
# IMPACT OF WARMER SEA TEMPERATURE

*More frequent episodes of Coral Bleaching  
since the 1980s*

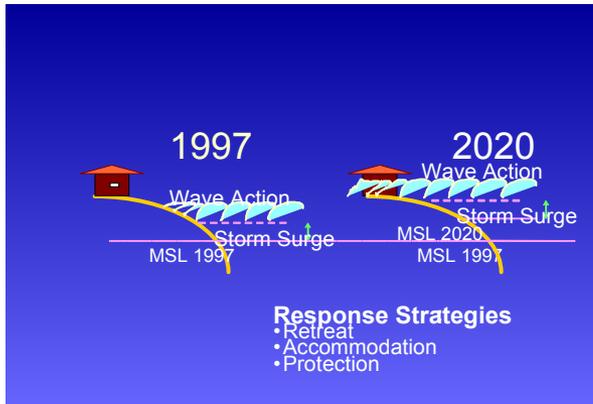


# Another Impact of Warmer Sea Temperature

**Hurricanes developing at lower latitudes and becoming more intense in a shorter period of time**

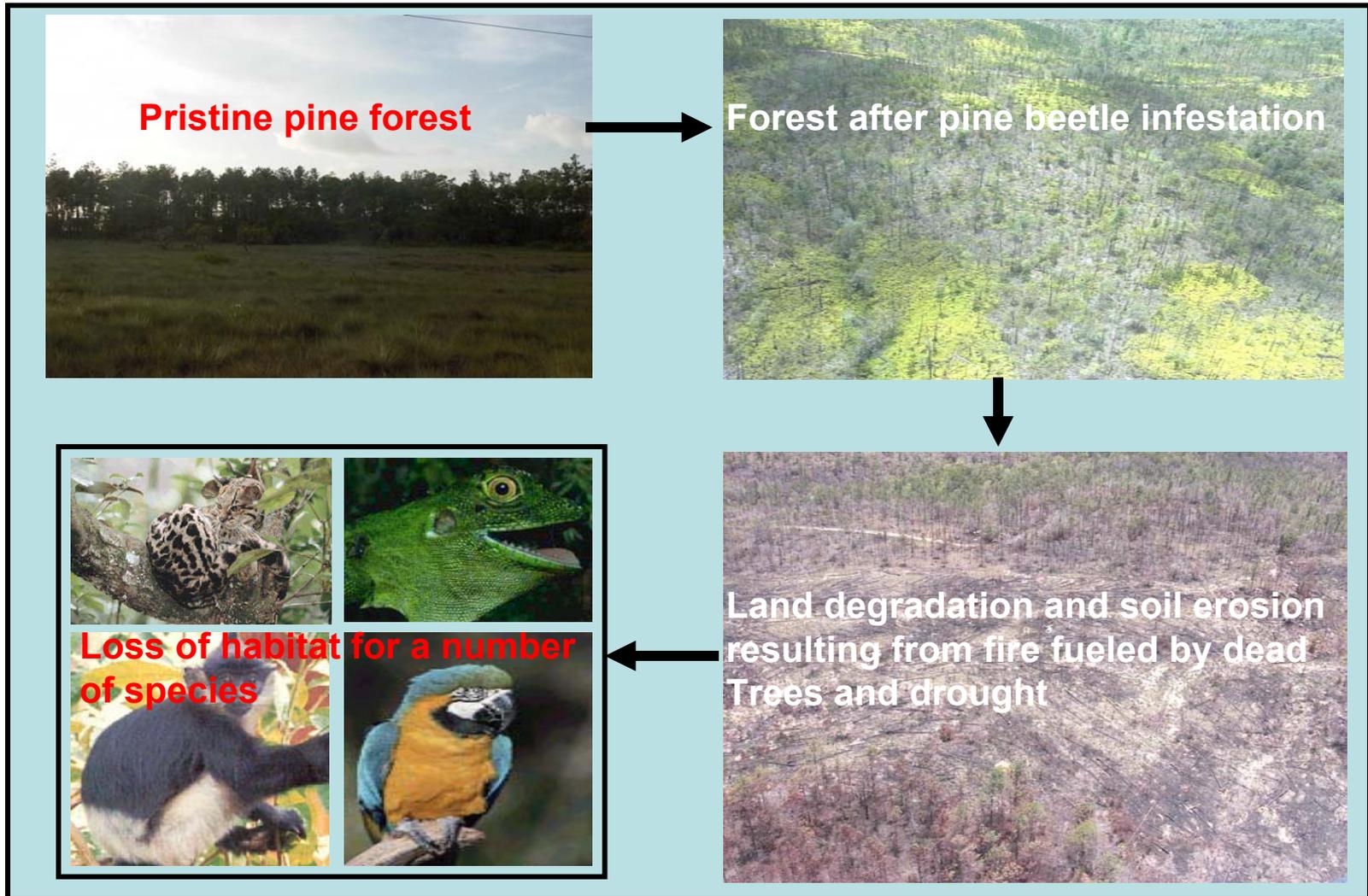


# The Impact of more intense hurricanes & Sea Level Rise



- Higher and stronger storm surge
- More severe damage to mangrove & corals
- Increase in coastal damage and beach erosion

# Impact of increases in Drought and Higher Temperatures on biodiversity and land degradation



# Increase incidences of unusually heavy rainfall



One of many flood events in Georgetown, Guyana (2005, 2006 and 2007)

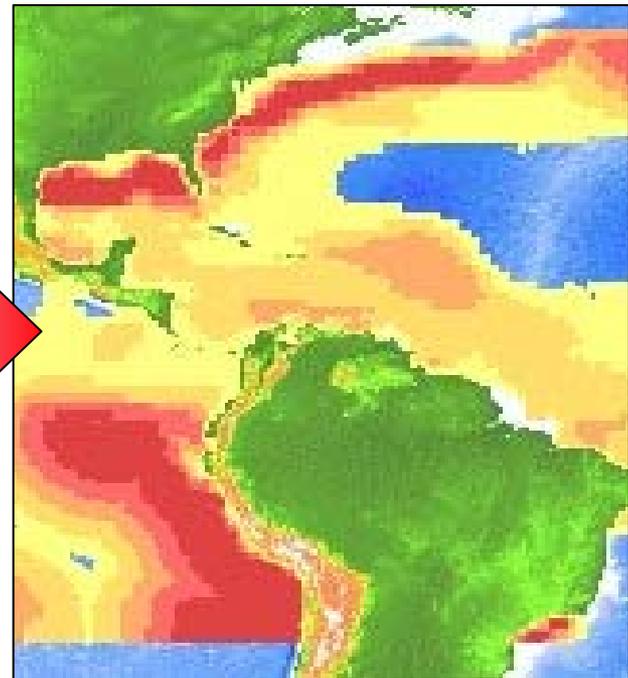
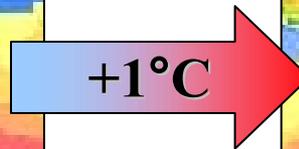
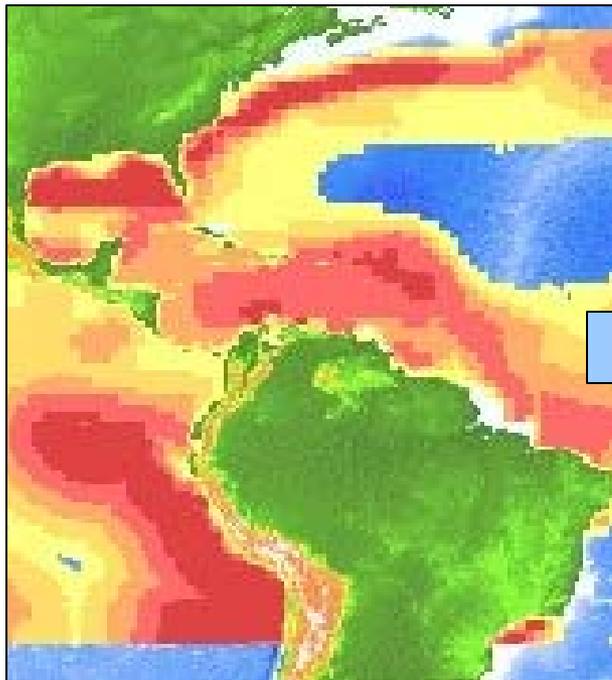


August 31, 2007 Belize City, Belize  
Tropical wave dumped over 11 inches of rain in less than 9 hours

# Impact of 1°C further rise in sea temperature on Artisan and Commercial Fishing

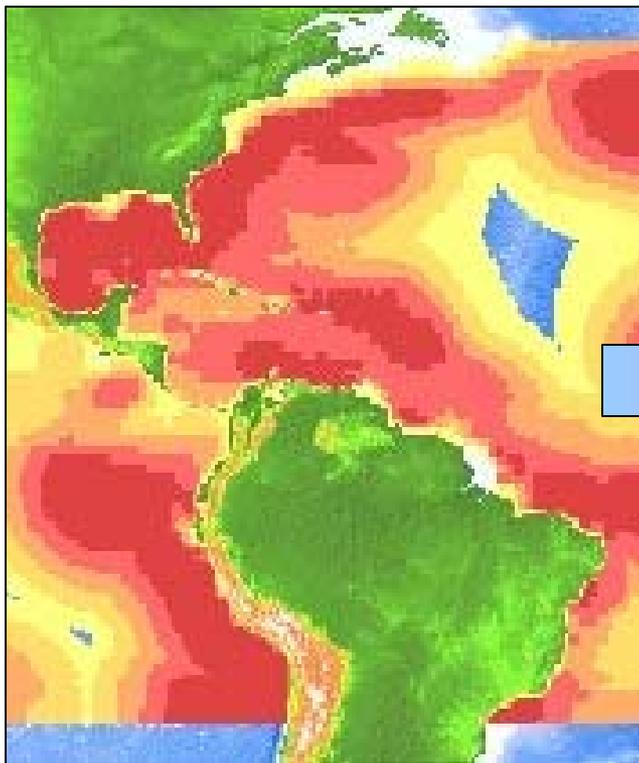


Habitat becomes less favourable

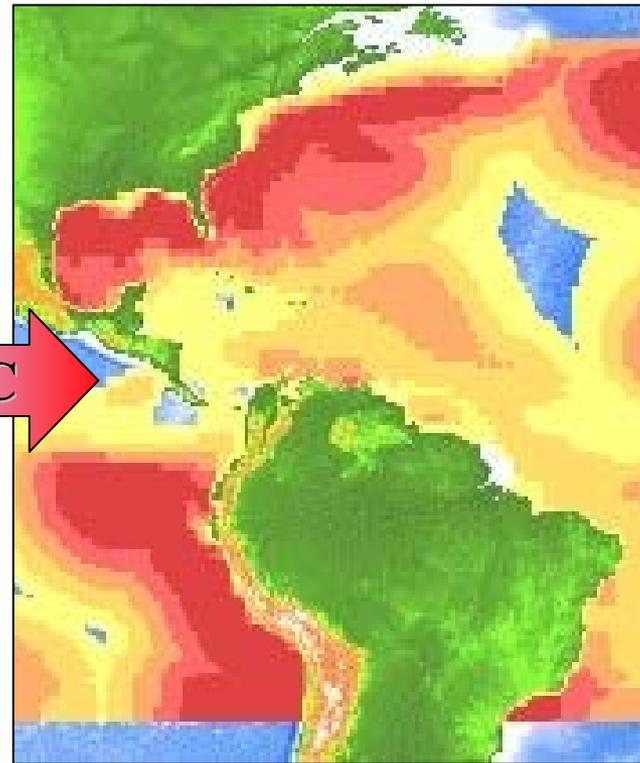




Habitat becomes less favourable

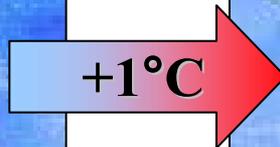
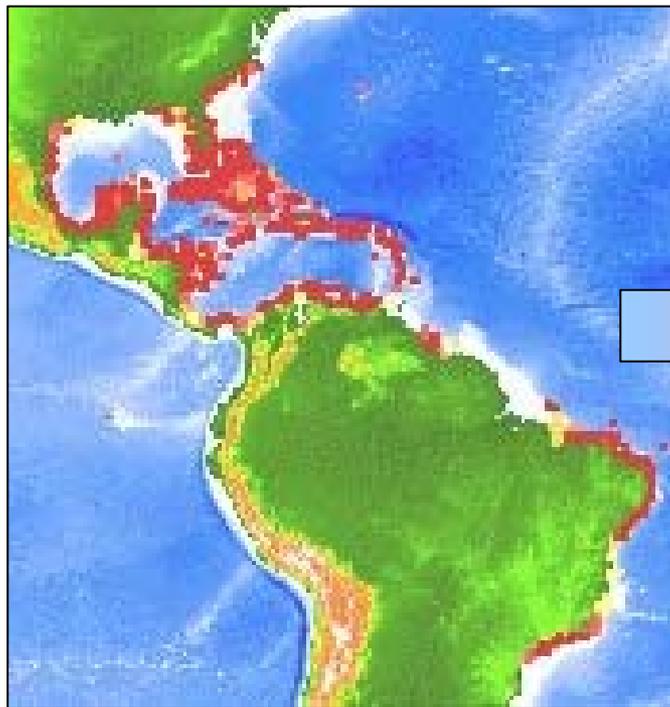


+1°C





Habitat becomes less favourable



# Impact OF 2°C rise on Agriculture

**Preliminary studies on the impact on the staples - corn, beans and rice for 2°C warmer and +/- 20% change in precipitation**

Crop	Scenario Name	Season Length (days)	Temperature Change (°C)	% Change in precipitation	Yield (kg/ha)	% change in Yield
Dry beans C3	Baseline	87	0	0	1353.6	
	Carib A	85	+2	+20	1163.7	-14%
		85	+2	-20	1092.6	-19%
Rice C3	Baseline	124	0	0	3355.5	
	Carib A	113	+2	+20	3014.4	-10%
		113	+2	-20	2887.5	-14%
Maize C4	Baseline	104	0	0	4510.6	
	Carib A	97	+2	+20	3736.6	-22%
		97	+2	-20	3759.4	-17%

# Consequences of a Warmer Climate in the Caribbean

- **Will pose significant, and in some cases insurmountable challenges to the region's Economic and Social Vulnerability**
- **Expected Areas of Negative Impact**
  - Agriculture/Fisheries
    - Food security threat
  - Tourism
    - Economic sustainability
  - Health
    - Increase in vector-borne diseases and other heat related diseases
  - Water
  - Human Settlements

# ADAPTATION AN IMPERATIVE

- **The IPCC, the world premier scientific advisory body on climate change concluded that Small Island Developing States (SIDS) and low lying coastal States of the Caribbean are among the most vulnerable to the adverse impacts of climate change.**
- **The presentation highlights some of the evidence leading to the IPCC conclusion.**
- **For the Caribbean basin it is, therefore, recognized that adaptation is an imperative for coping with the projected impacts associated with current and future climatic conditions.**
- **Appropriate Adaptation Policies in all sectors will be required for addressing:**
  - **Sea Level Rise**
  - **Water resources**
  - **Renewable energy**
  - **Agriculture**
  - **Land use**

# International Support Required

- The International Community should commit to:
  - taking aggressive actions to reduce GHG emissions to ensure a high success of achieving the global temperature rise of no more than 2°C. *This means more mitigation;*
  - the promotion of
    - prudent use of fossil fuel;
    - renewable energy investments;
    - Increase use of renewable forms of energy as a significant portion of the energy budget;
  - providing support of the development and exploitation of *Caribbean indigenous* sources of energy such as:
    - Wind, solar, biomass, hydro, geothermal and oceanic

# International Support Required

- Support fully the implementation of the Nairobi Plan of Action noting the need to adequately address the special circumstances of the Caribbean region:
  - Being among the world's most vulnerable region to the envisaged impacts of climate change;
  - The countries low capacity to adapt to the negative impacts of climate change, since the costs for adaptation will be high relative to GDP.
- Immediate support for implementation of no regrets adaptation options as recommended in the Stern Report.
- Mobilization of the Adaptation Funds (UNFCCC and Kyoto Protocol)



For further information please contact us at:

THE CARIBBEAN COMMUNITY  
CLIMATE CHANGE CENTRE  
2<sup>nd</sup> Floor, Lawrence Nicholas Bldg.  
P.O. Box 563  
Bliss Parade,  
Belmopan City, Belize  
Tel: +501-822-1094/1104  
Fax: +501-822-1365  
Website: [www.caribbeanclimate.bz](http://www.caribbeanclimate.bz)

# THANK YOU