

CLIMATE CHANGE AND TOURISM IN THE CARIBBEAN

THREATS AND OPPORTUNITIES

CARIBBEAN TOURISM ORGANISATION

9TH Annual conference on Sustainable Tourism
Development

Grand Cayman, B.W. I

U. O Trotz – Caribbean Community Climate Change
Centre

23rd May 2007

GLOBAL CLIMATE CHANGE

Recently released Fourth Assessment Report of the IPCC concludes.

- Unequivocal evidence that the earth's temperature is rising and attributable to anthropogenic activities – **Green House Gases**
- **Rise in global temperatures** of between 2 -4.5 degrees Centigrade
- Sea level rise of between 11 -77cm.
- Changed weather patterns
- **More intense extremes –drought ,floods**
- **More intense hurricanes**

CLIMATE TRENDS IN THE CARIBBEAN

- Mean temp. increase for past 3 decades
- By end of 1970's a significant warming detected in lower part of atmosphere
- Significant >> in minimum temp.(1.4 deg. since 1960)
- 2 degree decrease in diurnal temp. range for region.
- No. of warm days in region >>, no. of cold nights <<.
- Frequency of droughts >> since 1960 (Cuba)
- Frequency of occurrence of extreme events changing-
Flooding & hurricane passage > in 1990's

RECENT PROJECTIONS FOR CARIBBEAN REGION

- Annual warming by 2080's of between 1 and 5 degrees C.
- Greater warming in NW Caribbean than in E Caribbean.
- Greater warming in summer months than in cooler traditionally drier earlier months of the year.
- Drier Caribbean basin in annual total by 2080's

RECENT PROJECTIONS FOR CARIBBEAN REGION

- Wetter wet season & drier dry season.(from May – October 25 % drier)
 - 16/24 simulations suggest a wetter Caribbean (up to 28% wetter) in Dec.-Jan.- Feb..
- Summer drying more severe i.e. during the Caribbean wet season.
 - 20/24 simulations suggest drier Caribbean (up to 60% in most severe case) in Jun. – Jul. – Aug

TOURISM RESOURCES

Tourism in the Caribbean dependent on:

- Equitable climate
- Tourism plant-
 - Hotels and other facilities
 - Infrastructure- airports, cruise ship berths, roads, coastal protection structures etc.
 - Natural amenities – beach, reefs, wetlands,
 - Access to clean and adequate supply of water
 - Access to ready supply of energy
 - Financial services especially insurance
 - Healthy environment free from diseases
 - Adequate supplies of food.
 - Social harmony.

IMPACTS ON TOURISM

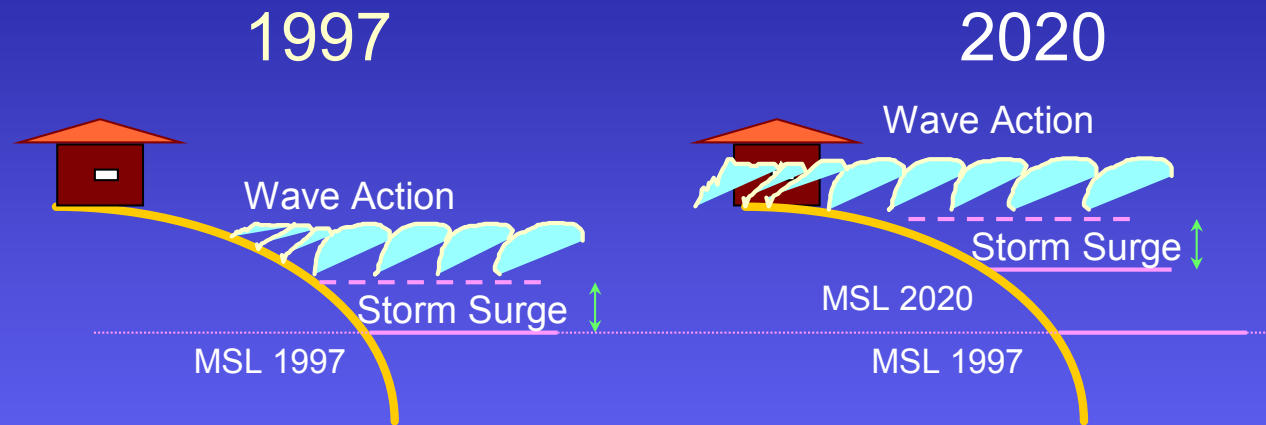
- Direct Impacts – climate variability and changing weather patterns affect:
 - Planning of tourism programs
 - Tourist's comfort
 - Travel decisions
 - warmer winters
 - Heat waves
 - Hurricanes
 - Tourist flows

IMPACTS ON TOURISM

- Indirect – Sea Level Rise (SLR)
 - Coast and Beach erosion
 - Inundation of flood plains
 - Soil and aquifer salinisation
 - Exaggerated storm surge
 - Loss of mangroves and other coastal ecosystems.
 - At worst total submersion

SLR & Storm Surge

Coastal Impact of Storm Surge and Wave Action under a Sea Level Rise Scenario



Response Strategies:

- Retreat
- Accommodation
- Protection

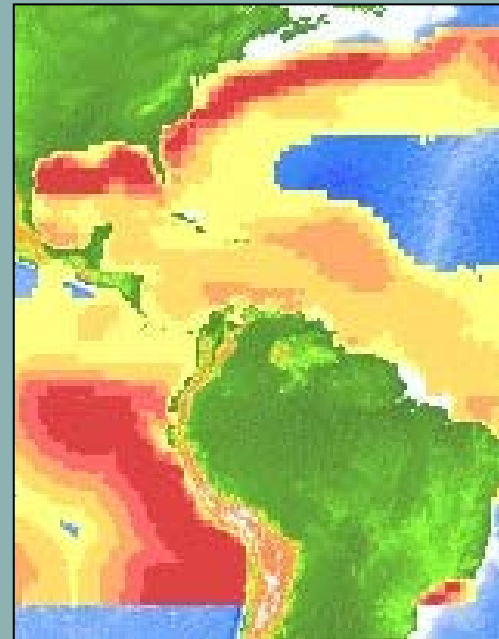
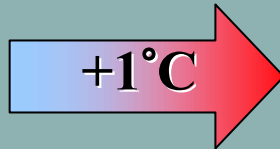
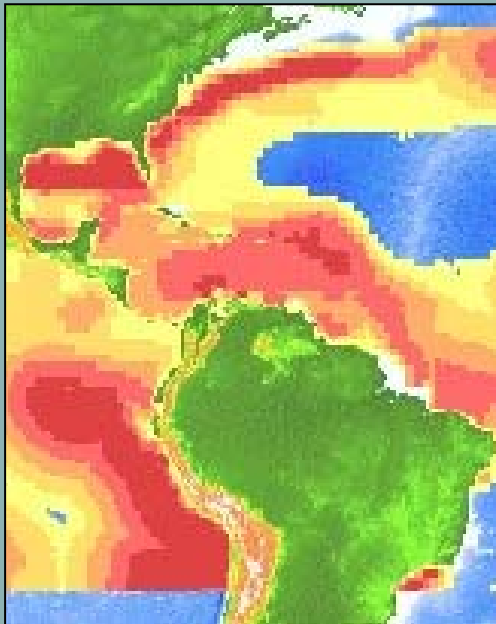
IMPACTS ON TOURISM

- Warmer sea temperature
 - Coral bleaching – El Nino 1998 extensive bleaching in region
 - Breakdown of reef protection
 - Amenity loss for divers and snorkelers
 - In combination with loss of mangroves, sea-grass beds impact on fisheries
 - Projected increase in frequency of extreme events floods, droughts
 - Projected increase in intensity of hurricanes

Likely impact on Yellow tuna resulting from a 1°C rise in sea temperature



Habitat becomes less favourable



IMPACTS ON TOURISM

- Increase in frequency?? And intensity of hurricanes:
 - Damage to sea-defences.
 - Damage to reefs
 - Destruction of mangroves
 - Beach and coastal erosion
 - Storm surge damage to shoreline
 - Damage to coastal infrastructure – roads, utilities, airports,
 - Damage to hotels and other tourism plant
 - Disruption of services.

IMPACTS ON TOURISM

- Changing weather patterns & water supply
- Projected decrease in precipitation
 - Less water available
 - Aquifer salinization
 - Serious consequences for water short countries – Barbados, Antigua & Barbuda
 - Inadequate aquifer recharge.

RESPONDING TO IMPACTS

- Developing countries responsible for negligible percentage of global GHG emissions.
- However because of their inherent vulnerability they stand to bear the brunt of CC impacts.
- While we need to insist on Mitigation (reducing GHG emissions) by the industrialized and large developing countries
- We as a region need to “adapt” to climate change i.e. take proactive action that would decrease climate change impacts.

SOME INDICATIVE ADAPTATION OPTIONS FOR THE CARIBBEAN

- Adaptation to SLR:
 - Building seawalls and breakwaters
 - Enhancing preservation of natural sea-defences (mangroves)
 - Relieve anthropogenic stresses on reef system
 - Beach nourishment (expensive)
 - Prohibit sand mining
 - Adjust setbacks and enforce
 - Institute a local system of marine protected areas.

SOME INDICATIVE ADAPTATION OPTIONS FOR THE CARIBBEAN

- Adaptation in the water sector
 - Desalination
 - Water conservation
 - Recycling grey water in the industry
 - Water harvesting
 - Low flush toilets
 - Aquifer recharge
 - Drip irrigation in agriculture

SOME INDICATIVE ADAPTATION OPTIONS FOR THE CARIBBEAN

Built Environment

- Building design for efficient cooling
- Adequate setbacks from eroding coasts
- Locating coastal infrastructure away from eroding coasts
- Facilities designed to accommodate future climate (revisit CUBIC)
- Incentives (fiscal, insurance) to industry for compliance.
- Factor in increased insurance costs into resort profitability

SOME INDICATIVE ADAPTATION OPTIONS FOR THE CARIBBEAN

- Enabling Government Policy
 - Fiscal incentives for changes to built tourism infrastructure (e.g retrofitting to comply with adjusted building codes)
 - Fiscal regime to encourage sustainable construction in less vulnerable coastal zones
 - Greater public infrastructure for new tourism developments e.g. coastal defence
 - Land use planning to incorporate CC considerations
 - Retraining of displaced workers.

TOURISM AS A CONTRIBUTING CAUSE

- GHG emissions from the sector derived from:
 - Transport
 - Road
 - Sea
 - Aviation
 - Activity specific tourism e.g. sport
 - Buildings and other tourism amenities – use of energy
 - Increased stress on natural ecosystems – coastal ecosystems, natural resource base for ecotourism

DECREASING TOURISM EMISSIONS FOOTPRINT

- Encourage green tourism
- Energy efficient building designs –cooling/light
- Water conservation – low flush toilets etc.
- Energy efficiency management practices
- Renewable energy use e.g. solar water heating
- Encourage use of energy efficient vehicles, cycling & activities that use less energy.
- Bear in mind that some countries thinking of an aviation tax – increased airfares disincentive for travel????

DJERBA DECLARATION ON TOURISM & CLIMATE CHANGE

- Call on UN, international, financial & bilateral agencies to support govts. Of developing countries in their efforts to address and to adapt to the adverse effects of cc and formulate appropriate action plans.
- Request international organizations, govts. NGOs and academic institutions to support local governments and destination management organizations in implementing adaptation and mitigation measures that respond to th specific climate change impacts at local destinations.

DJERBA DECLARATION ON TOURISM & CLIMATE CHANGE

- Encourage the tourism industry, including transport companies, hoteliers, tour operators, travel agents and tourist guides, to adjust their activities, using more energy efficient and cleaner technologies and logistics, in order to minimize as much as possible their contribution to climate change.
- Call on govts. bilateral and multilateral institutions to conceive and to implement sustainable management policies for water resources , and for the conservation of wetlands and other freshwater ecosystems.

DJERBA DECLARATION ON TOURISM & CLIMATE CHANGE

- Call upon govts. to encourage the use of renewable energy sources in tourism and transport companies and activities, by facilitating technical assistance and using fiscal and other incentives.
- Encourage consumer associations, tourism companies and the media to raise consumers' awareness of destinations and in generating markets, in order to change consumption behaviour and make more climate friendly tourism choices

SUSTAINABLE TOURISM

- Sustainable tourism thrust of regional industry in consonance with actions to mitigate climate change impacts
- Improve environmental performance of industry through benchmarking & eco-labeling e.g. through Green Globe 21 – includes GHG emissions as one of nine key indicators.
- Explore potential of tourists to participate in carbon offsetting schemes- Trees for Travelers, Climate Care, Business Enterprises for Sustainable Travel.

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