11TH ANNUAL CWWA CONFERNECE
in conjunction with the

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AN ASSESSMENT OF THE IMPACT OF CLIMATE CHANGE ON THE WATER SECTOR IN THE CARIBBEAN

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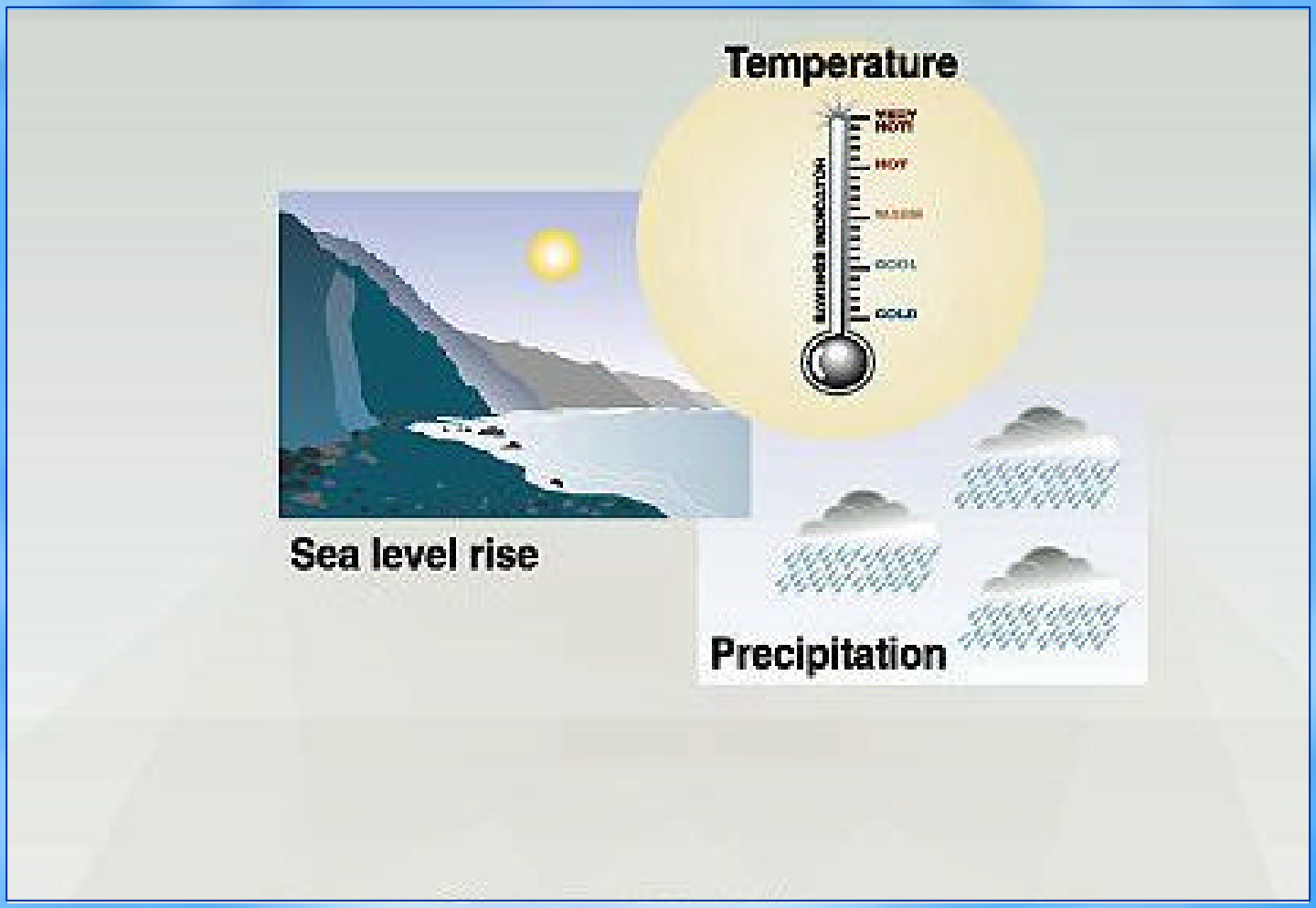
Potential Climate Change Impact



CPACC

- Establishment of a sea level and climate monitoring system
- Improved access and availability of data
- Increased appreciation of climate change issues at the policy-making level
- Meeting country needs for expanded vulnerability assessment
- Establishment of coral reef monitoring protocols
- Created a network for regional harmonization

MACC

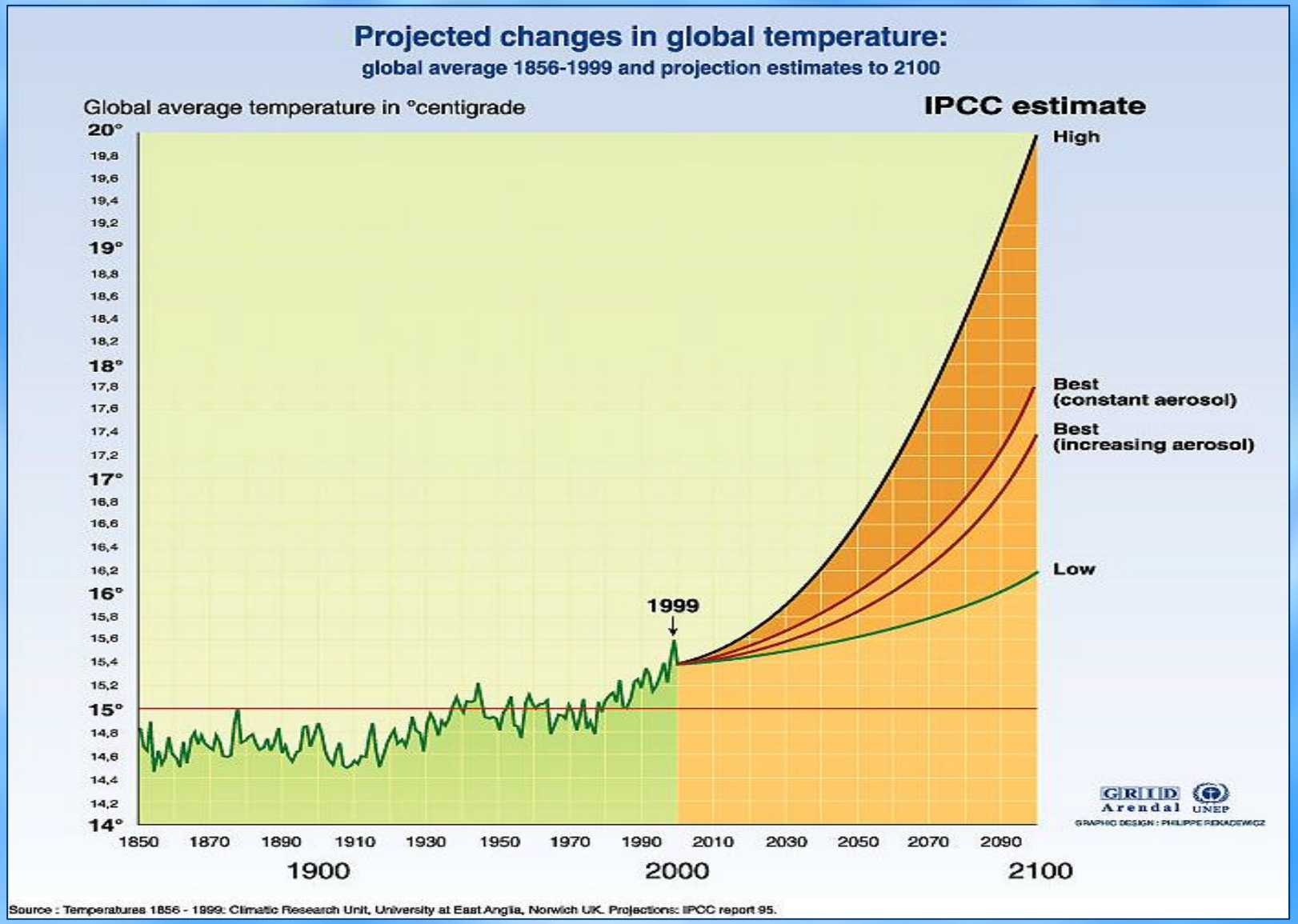
- Mainstreaming adaptation to climate change in national development planning and public and private investment decisions.
- Assisting Institutional and Technical Support mechanisms:
- Expand GCC monitoring and impact assessment as a basis for national and regional level decision making on adaptation. The following activities will be supported:
- Cross-regional Dissemination and Replication


CPACC
1998-2001
ACCC
2002 - 2004
MACC
2003-2007

ACCC

- **Formulation of implementation strategies for adaptation in the water**
- **Sustainable regional climate change centre**
- **Regional and local climate change projections**
- **Risk Management approach to climate change issues**

Projected change in global temperature



Global Climate Change

- Projections for the future

Caribbean Climate Change Present Status

- Mean temperature increases of about 1^0C
- Max and Min Temperatures ~ 5% increase
- Reduction of annual rainfall
- Increase in frequency of high intensity rains,
- Max number of Consecutive Dry Days declined by 6 days
- Sea level increases of up to 20 cm

Caribbean Climate Change
Temperature increase by season

	Temp increase Scenario 1 (low)	Temp increase (oC) Scenario 2 (high)
Dec – Feb		
2050	1.4	2.0
2080	2.0	3.3
June – August		
2050	1.5	1.0
2080	2.0	3.3

Caribbean Climate Change
Precipitation changes by season

	Ppt change % Scenario 1 (low)	Ppt change % (oC) Scenario 2 (high)
Dec – Feb		
2050	-1.5	+13.1
2080	-4.4	+24.4
June – August		
2050	-18.4	+17.1
2080	-25.3	+8.9

Caribbean Climate Change
Mean Seal Level Rise

	Scenario 1 (low)	Scenario 2 (high)
2050 2080	0.08m 0.13m	0.88m 0.70m
Eventual	0.5m	2.0m

Tropical Storms and Hurricanes

	Scenario 1 (low)	Scenario 2 (high)
# tropical storms per year	7-10	7-10
# severe hurricanes per year	2	4
Increased wind speed of strongest hurricane	5%	10-15%

Potential impacts on the water sector

Climate change factors impacting on the water sector:

- ✓ Drought, decrease in precipitation
- ✓ Increase frequency and intensity of rainfall events
- ✓ Increased frequency and intensity of hurricanes and tropical storms
- ✓ Sea Level Rise

Drought

- ✓ Intensification of water scarcity
- ✓ Reduced base flow
- ✓ Increased evapotranspiration rates
- ✓ Decrease in hydroelectric potential
- ✓ Shift in biodiversity

Implications of drought

- ✓ Impact on other sectors (tourism, agriculture)
- ✓ Reduced crop production
- ✓ Impacts on livestock
- ✓ Increased demand for cooling water
- ✓ Loss of hydro electric power potential
- ✓ Increase energy demand
- ✓ Impact on the forest and terrestrial resources
- ✓ Impact on endemic fauna and flora

Increase frequency and intensity of rainfall events

- ✓ Sedimentation, coastal erosion
- ✓ Siltation of watercourses are
- ✓ Damage to croplands
- ✓ Disruption of the economic activities,

Increased frequency and intensity of Hurricanes and tropical storms

- ✓ Storm activity impacts would affect the entire economy and foreign exchange earning potential.
- ✓ Will negatively impact the arrival of tourist
- ✓ Damage to coastal infrastructure,
- ✓ damage agricultural production
- ✓ Flooding of sewerage systems
- ✓ Alteration in forest cover
- ✓ Alteration of habitat for flora and fauna
- ✓ Potential loss of rain forest, biodiversity and endemic species

Sea level rise

- ✓ Increased evaporation from elevated water table
- ✓ inundation of fresh water resources by storm surges
- ✓ increase contamination of near surface lenses
- ✓ Saline intrusion in underground aquifers
- ✓ Salinization of agricultural soil

Generic Adaptation Options

Stage I: Planning (short term)

- General Capacity Building: Impact Studies; Identification of Vulnerable Areas
- Identification and General Assessments of Policy Options

- ✓ Regional climate change predictions
- ✓ Predictions of water demand
- ✓ Supply management options
- ✓ Demand-side management

Generic Adaptation Options

- **Stage II: Preparation (medium term)**
- Further Capacity Building in Vulnerable Regions; Development of Appropriate Adaptation Plans

- ✓ Create institutions and train staff
- ✓ R&D in desalination and recycling schemes
- ✓ Public Education and information

Generic Adaptation Options

- Stage III: Initiation (long term) Formulation of Measures to Facilitate Adaptation in Vulnerable Areas; Feasibility Studies; Insurance

✓ Pilot studies for supply measures

✓ Pilot studies for demand measures

✓ Efficient water management

Challenges faced

- ✓ primary scientific and monitoring data.
- ✓ inadequacy of global climate models
- ✓ expanding the number of monitoring sites
- ✓ capacity building in vulnerability assessment and adaptation planning.
- ✓ comprehensive public awareness programme

Further Work

Component 6 of ACCC project

- ✓Identify downscaled future climate scenarios
- ✓Develop template for testing by a pilot water agency in the region,
- ✓Caribbean Region report to the Kyoto, 2003. International consultation
- ✓Dissemination to water managers in the region.

Further Work

Acknowledgements

- CWWA/CEHI
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