

# Session 4

## Efforts Questioned?: Impacts and Challenges of Climate Change



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Canada Research  
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du Canada

# The New Realities of Tourism in an Era of Global Climate Change



Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra

Federal Department of Economic Affairs IDEA  
State Secretariat for Economic Affairs SECO

WORLD  
ECONOMIC  
FORUM

COMMITTED TO  
IMPROVING THE STATE  
OF THE WORLD

DAVOS



‘The scientific evidence is clear - climate change must be considered the greatest challenge to sustainable tourism in the 21st century.’

-Davos Declaration on Climate Change and Tourism (2007)

## Climate Change and Tourism

Responding to Global Challenges

ADVANCED SUMMARY

Prepared for the  
2nd International Conference on  
Climate Change and Tourism  
Davos, Switzerland, 1-3 October 2007



# The State of Climate Change Science

*IPCC 5th Assessment (2013, 2014)*

- Confidence is ***stronger*** that changes in the climate system, are significant or unprecedented on time scales of decades to hundreds of thousands of years.
- Globally CO<sub>2</sub> is by far the ***strongest driver*** of climate change
  - CO<sub>2</sub> concentrations are unprecedented in the last 800,000 years
  - *Very high confidence* that natural forcings contribute a small fraction to climate change
- Many aspects of climate change will ***persist for centuries*** even if greenhouse gases are stabilized.



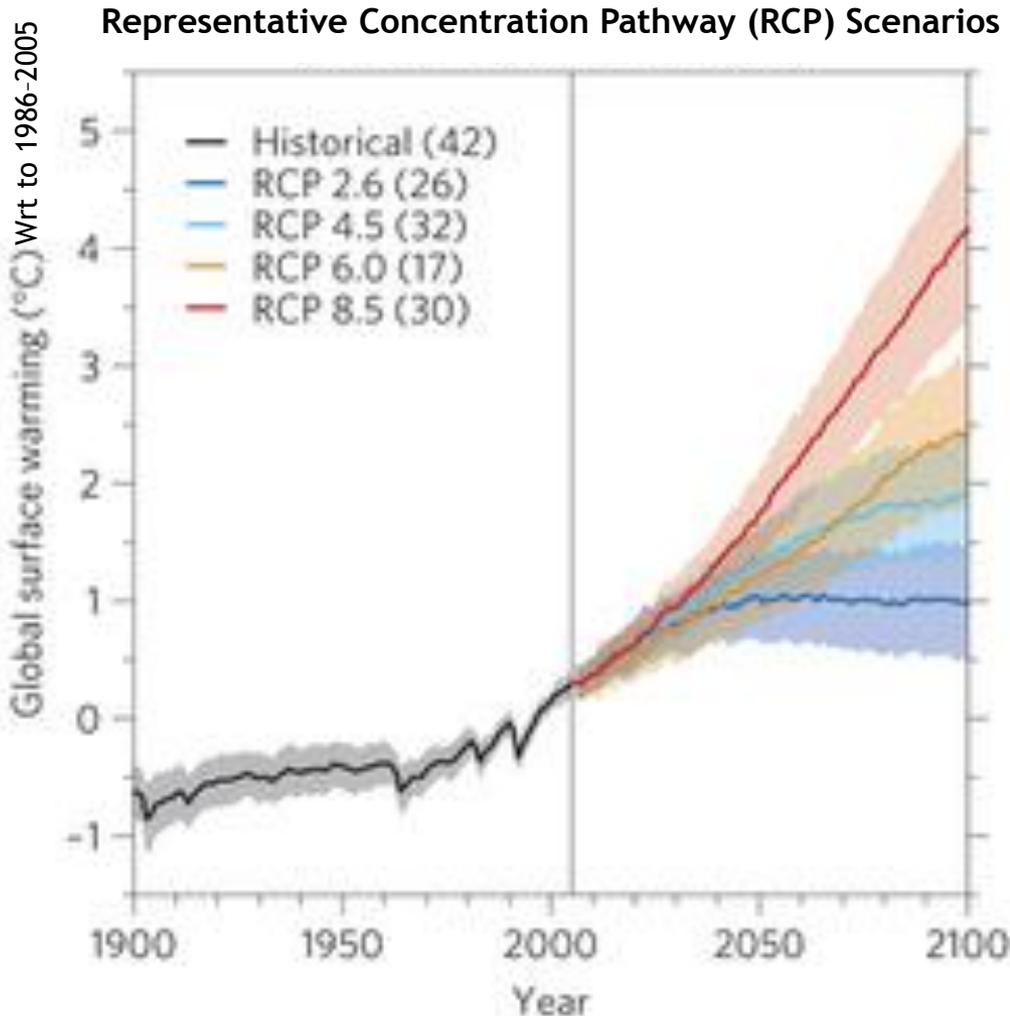
WMO

INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC)



UNEP

# Global Temperature Projections



20<sup>st</sup> century warming  
+0.8 °C

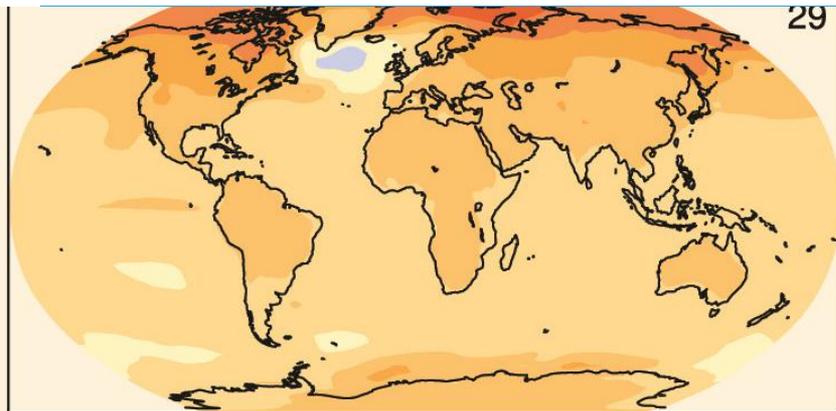
21<sup>st</sup> century warming  
+1 °C to +4.2 °C

All RCP scenarios  
exceed AOSIS  
+1.5 °C target

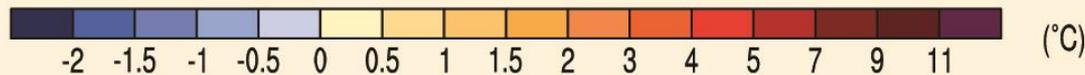
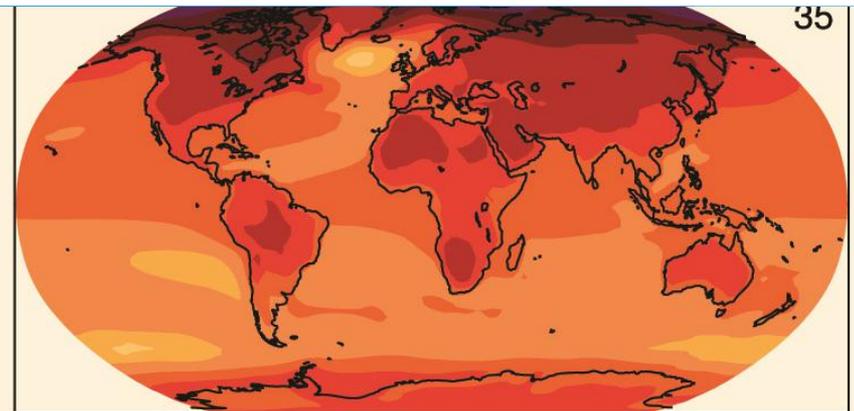
Current emissions  
trajectory slightly higher  
than 'worst case'  
RCP8.5 scenario

# Warming in Island Regions (by 2100)

RCP 2.6



RCP 8.5



Caribbean  
+1.4°C to +3.2°C

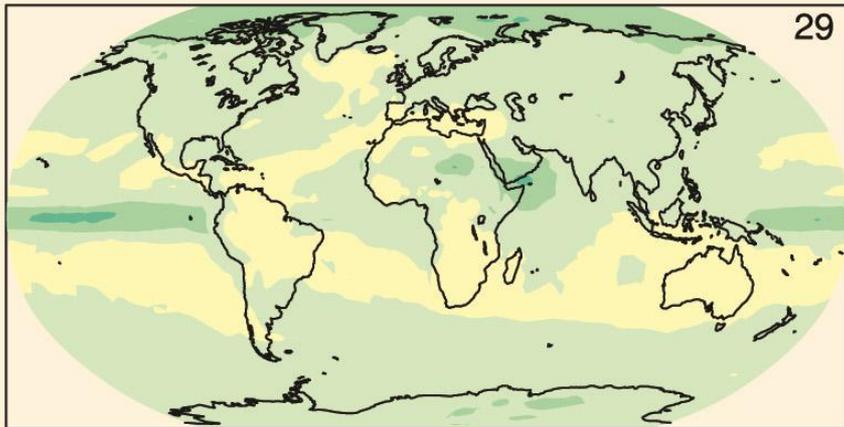
Indian Ocean  
+1.4°C to +3.7°C

South Pacific Ocean  
+1.4°C to +3.1°C

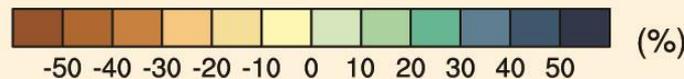
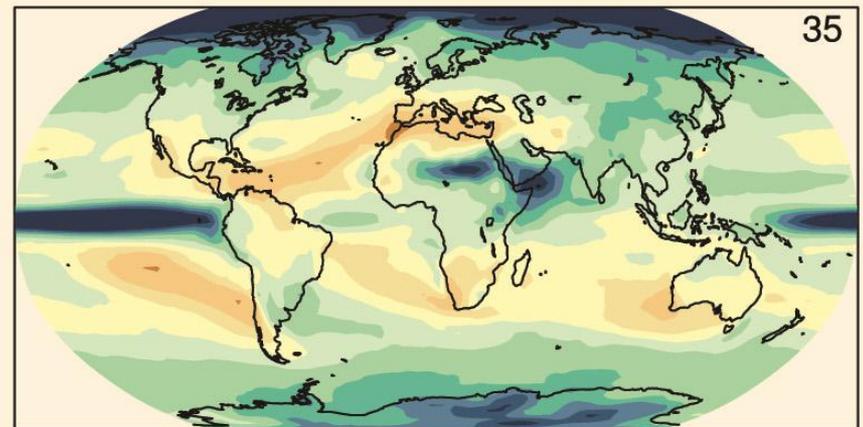
Under RCP8.5 scenario maximum temperature events become 10 to 20 times *more frequent*

# Precipitation Change in Island Regions (by 2100)

RCP 2.6



RCP 8.5

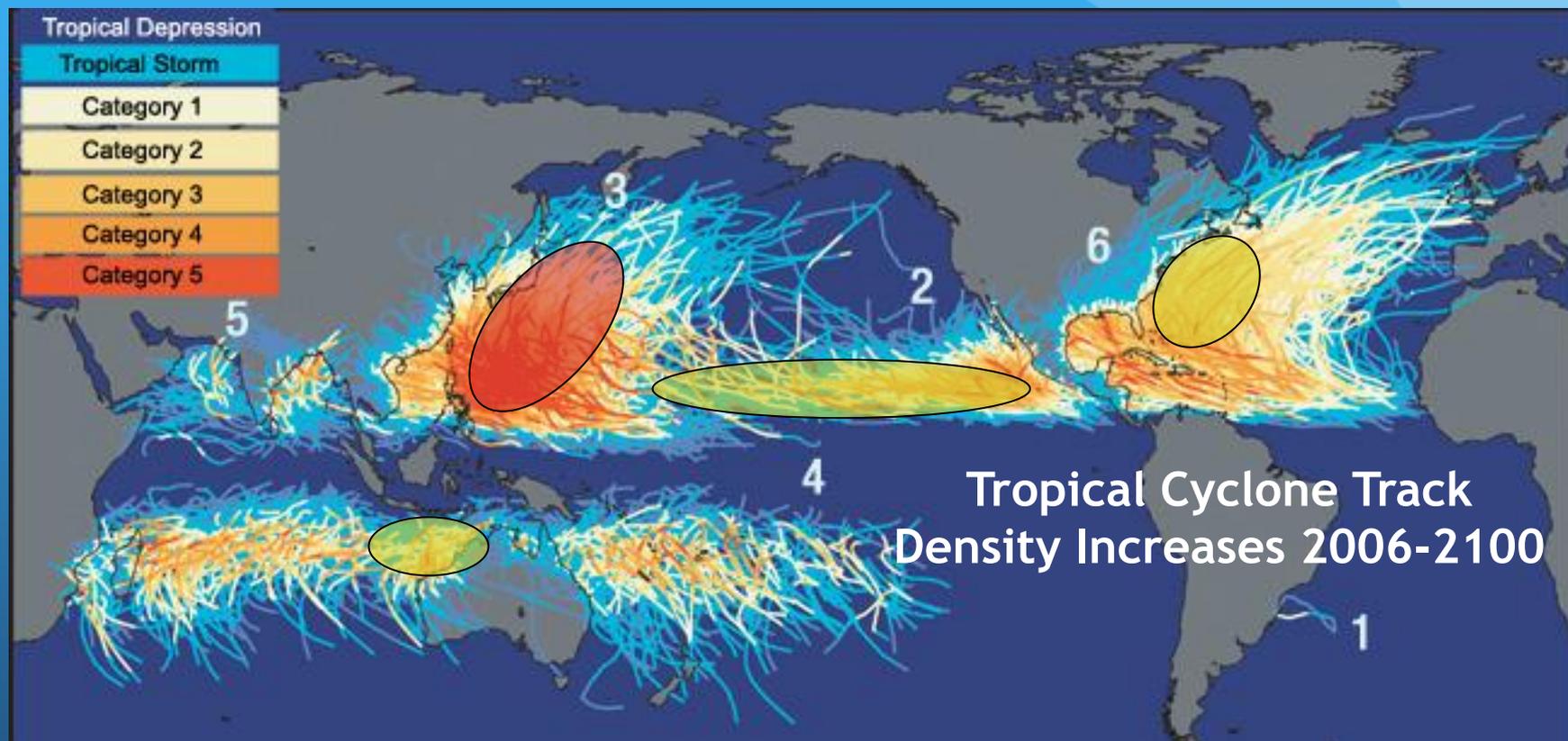


Caribbean  
mean -12%

South Indian  
Ocean  
mean -4%

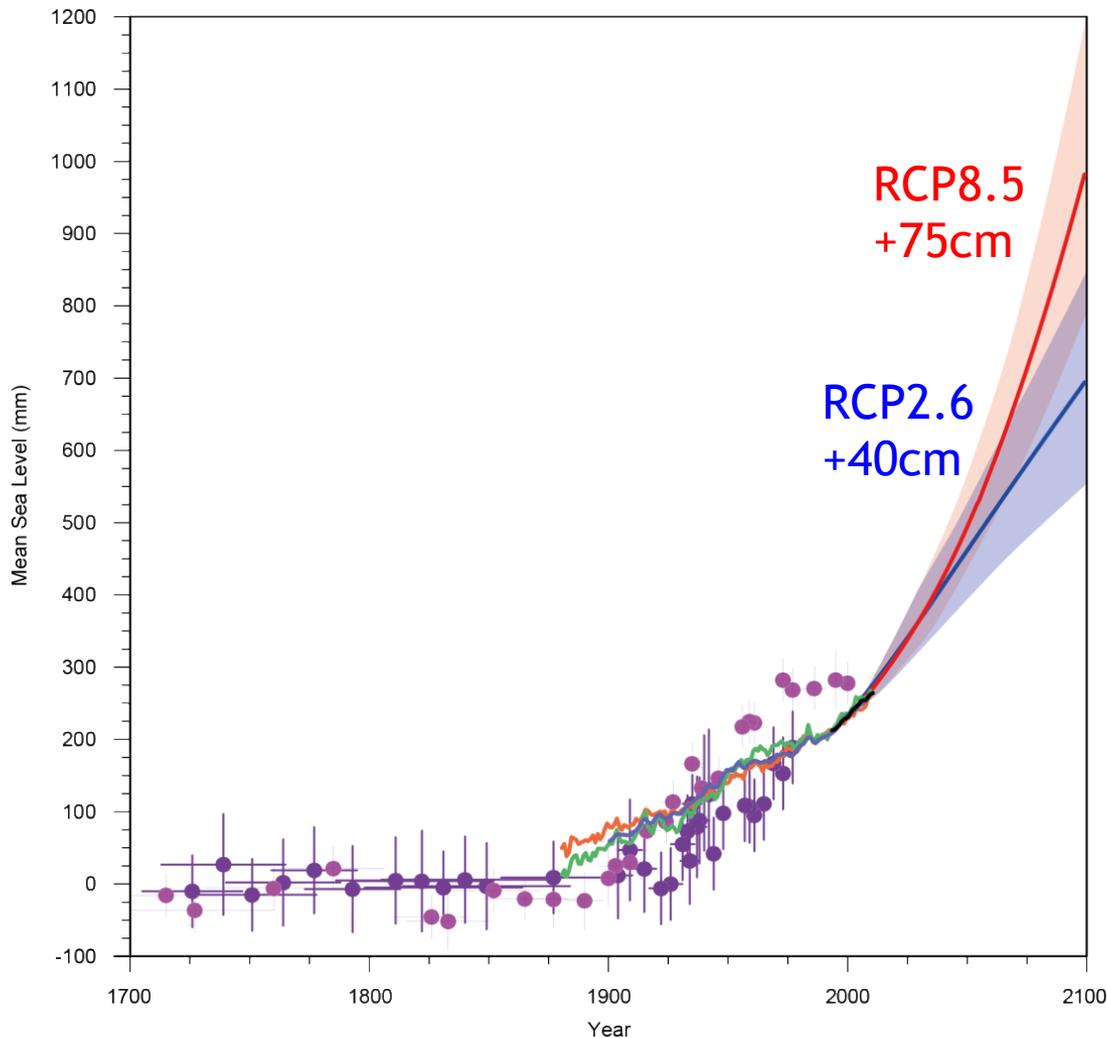
South Pacific  
Ocean  
mean +3%

# Changes in Tropical Cyclones (by 2100)



- *Slight increase* in number of tropical cyclones globally, but with distinct regional patterns
- shift towards *stronger* storms - global increase of 40% of Category 3+ (under RCP 8.5 scenario)

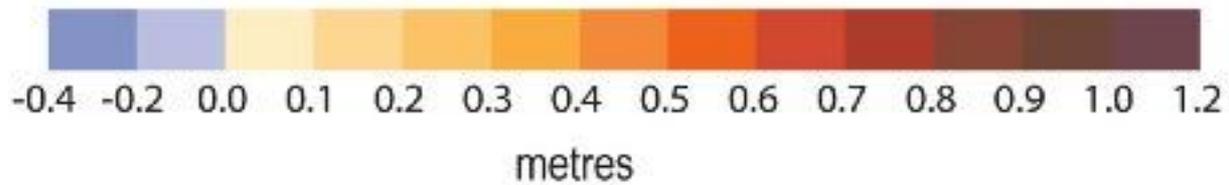
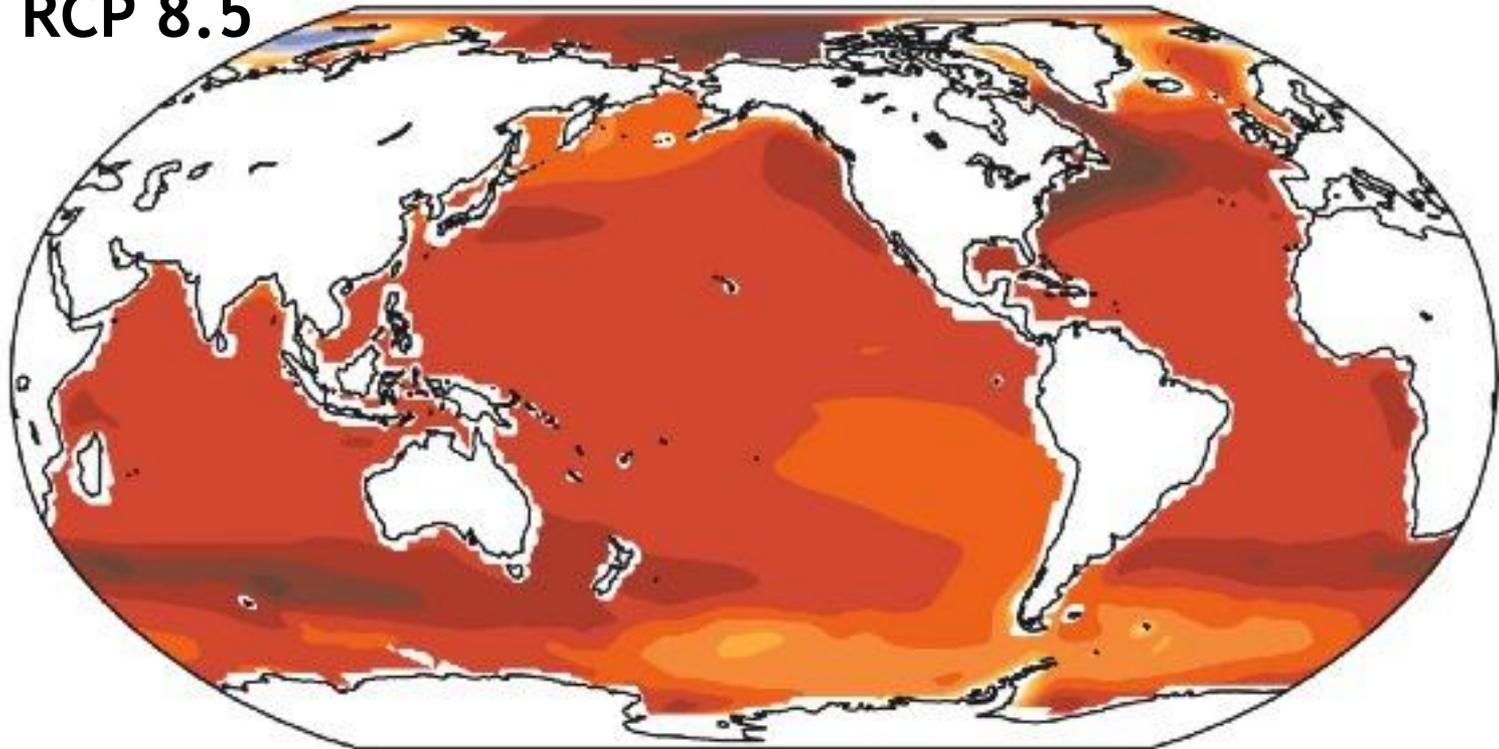
# Global Sea Level Rise (to 2100)



- Rate of sea level rise has **increased** over last 30 years
- Greenland and Antarctic Ice Sheets are **losing** mass
- SLR of 8-15 mm/yr in 2090s (RCP8.5)

# Regional Sea Level Rise (to 2100)

RCP 8.5



# Climate Change Vulnerability of Islands

- Climate change is *already affecting* economic growth, health, water availability, food production and ecosystems of islands (UN-OHRLLS)
- Climate change will *increasingly impact* the lifestyles, livelihoods, and health of island populations in the 21<sup>st</sup> century (IPCC)
- UN Framework Convention on Climate Change recognizes small islands *merit particular consideration* for understanding the risks of climate change and adaptation assistance.

# Island Destinations Will Not be 'Too Hot' for Tourism

**BBC**  
**NEWS**

Last Updated: Saturday, 26 August 2006, 00:32 GMT 01:32 UK

## Package holiday 'will be history'

Climate change may lead to the British package holiday to the Mediterranean becoming "consigned to the scrapbook of history", a report claims.

Places like Majorca may be too hot by 2030, and replaced by UK holidays, and health, sport and cultural visits, the Halifax Travel Insurance study said.



Popular destinations may lose their attraction

The report said more extreme weather events and higher temperatures may put tourists at greater risk abroad.

**THE**  **HINDU**

**2007 - Over-heated Mediterranean Stokes Tourism Fears**

*Experts warn global warming may severely hit traditional holiday spots.*

# Island Water Security and Tourism



- UN has described water security as a '*disaster in the making*', with a 40% gap between demand and supply by 2030.
- Climate change will *reduce* freshwater on many islands.
- Tourism is an important sectoral water user on many islands (e.g., Mauritius 39%, Barbados 13% of domestic water use).
- Need to re-evaluate tourism strategies (golf tourism, cruise ship provisioning) with *diminished and more expensive* water resources.

# Extreme Events and Insurance

- Increase in tropical cyclone intensity (higher wind speeds and rain) and changing storm tracks.
- Gulf of Mexico-Caribbean premiums likely *increase* 40-100% (Association of British Insurers).
- *Crisis of insurance availability and affordability.*
- Uninsurable high-risk coastal areas will *alter tourism investment and development.*
- Governments as insurers-of-last-resort.



# Sea Level Rise and Coastal Tourism



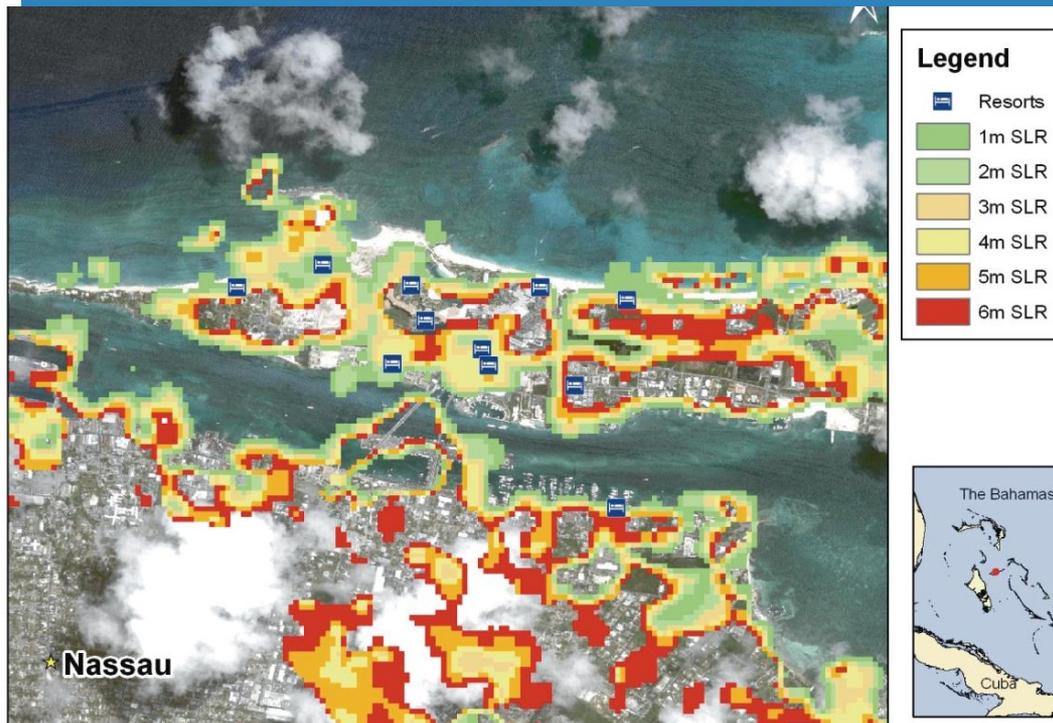
- Degraded beaches and flood-erosion risks have major implications for property values, insurance costs, destination marketing and competitiveness.



‘Coastal Squeeze’:  
when 3S tourism, becomes 2S

# Mapping Coastal Tourism Risk to Sea Level Rise in 19 Caribbean Countries

- 29% of coastal resorts partially *flooded* by +1m SLR
- 49% to 60% of coastal resort properties damaged by *erosion* associated with +1m SLR



# What does 1m Sea Level Rise look like?



+1m SLR



+1m SLR

# Increased Pressure for Coastal Protection and Beach Nourishment

- Beach nourishment / structural protection is very expensive and has environmental impacts
- Creates adaptation path dependency
- Policy implications
- Influence resort price structure / credit risk and ROI, property price “discounting”.



# Climate Change Policy and Accessibility



- **IATA** - goal to reduce net CO<sub>2</sub> emissions 50% by 2050 and achieve carbon-neutral growth after 2020.
  - Market-based Mechanism (mandatory carbon offsetting scheme)
  - Purchase of emission credits add US\$1-8 to ticket prices
- **UK Air Passenger Duty** - structural changes 2007-2010
  - Did *not* alter the geography of outbound tourism
  - Change in UK arrivals to long-haul island destinations was similar to other European markets

# Climate Change - Is Island Tourism Future Ready?

- Climate change and climate policy *will alter* the competitiveness and sustainability of island destinations.
- For most islands, *limited information* on climate change risks continues to constrain the ability to identify effective adaptations. (*IPCC AR5*)
- Tourism remains in the *early stages* of understanding its climate risk (*KPMG 2008, PwC 2010, Deloitte 2011*).
- A new tourism sector climate change risk assessment following the IPCC 5<sup>th</sup> Assessment Report is needed to address information gaps.

# Moving Forward ...

## Tourism in the Low-Carbon Economy



- A +4° C world is destructive for islands and for tourism.
- Tourism is committed to the low-carbon development agenda, with strong aspirational emission targets.
- **Develop a low-carbon tourism roadmap to achieve aspirational emission reduction targets**
  1. Evaluate risks of future energy pathways *promoted by others*
  2. *Create low-carbon tourism scenarios* based on best practices and innovation (for 2015 negotiations)

# Moving Forward ...

## The Adaptation Imperative for Island Tourism

- *All destinations need to adapt* to minimize risks and capitalize on new opportunities in an sustainable way
- Adaptation planning needs to *commence now*
- Adaptation is an *opportunity for islands* to leverage climate-action funds for sustainable development.
- Develop a destination climate change vulnerability tool.



**‘Climate change is calling the  
tourism world to a revolution ...’**

**Conclusion of Tourism Ministers Summit  
London - 13 Nov. 2007**

# Session 3

## Distinguished Panelists

- **Mr. João Bettencourt** - Regional Director of Tourism, Azores Regional Government.
- **Mr. Miloud Bessafi** - Professor, La Réunion University, Laboratoire Energétique, Electronique et des procédés
- **Mr. Ibrahim A. Mussa** - Director of Tourism, Ministry of Natural Resources and Tourism, Dar Es Salaam - United Republic of Tanzania
- **Mr. Ahmed Salih** - Permanent Secretary of Tourism, Arts and Culture of the Maldives

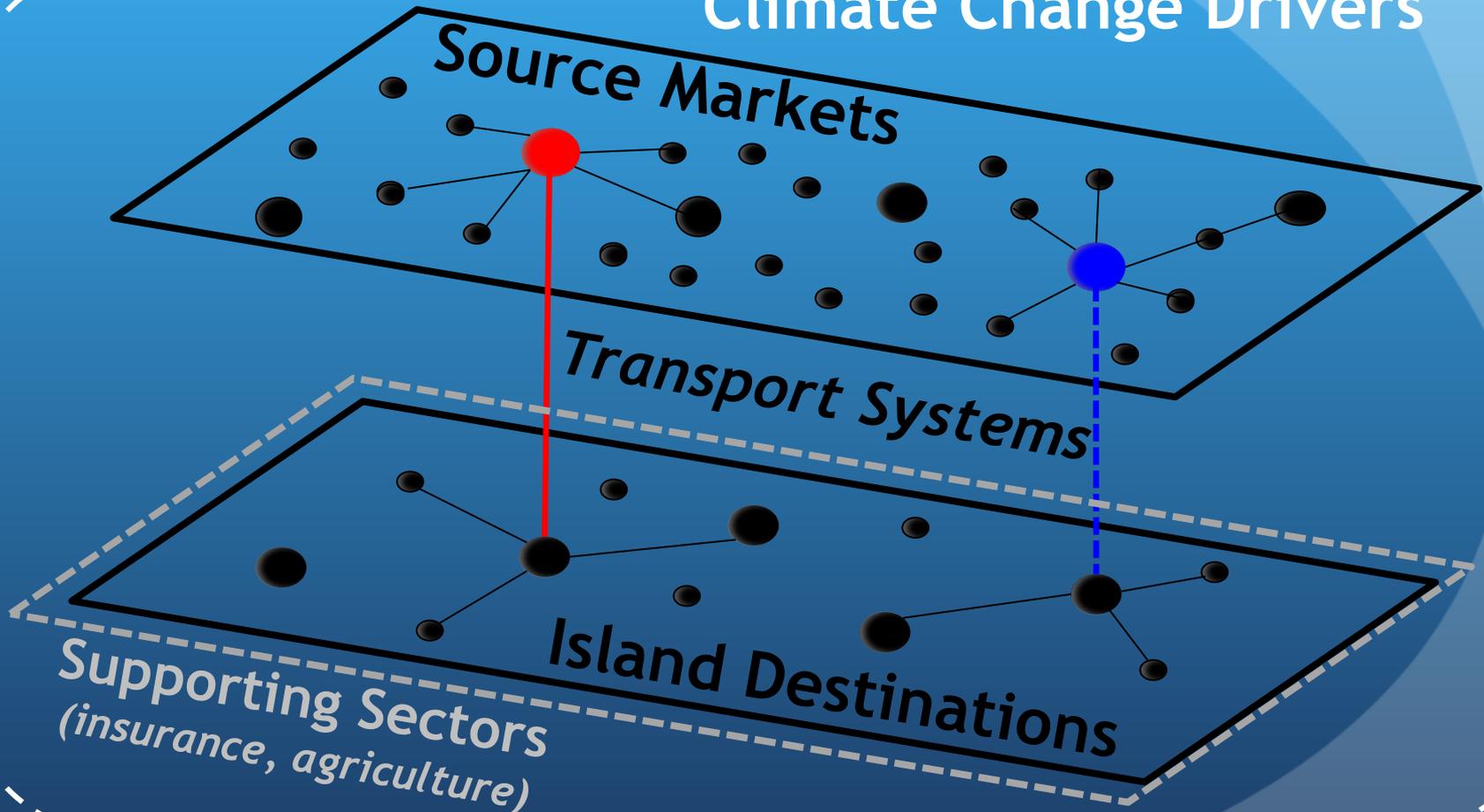


# **Extra Slides for Discussion Session**

# Understanding Climate Change Risks

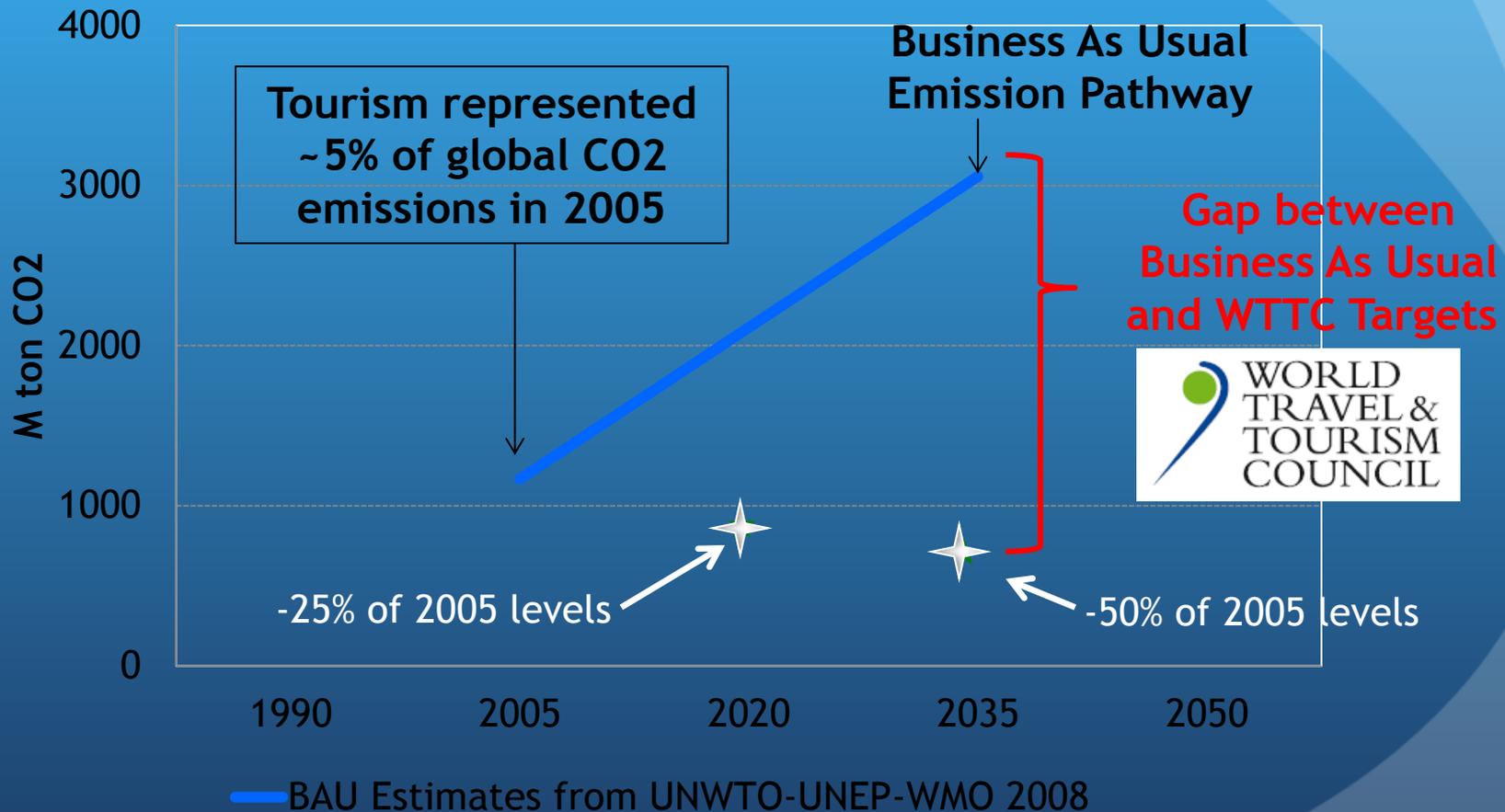
*(physical, regulatory, reputational risks)*

## Climate Change Drivers

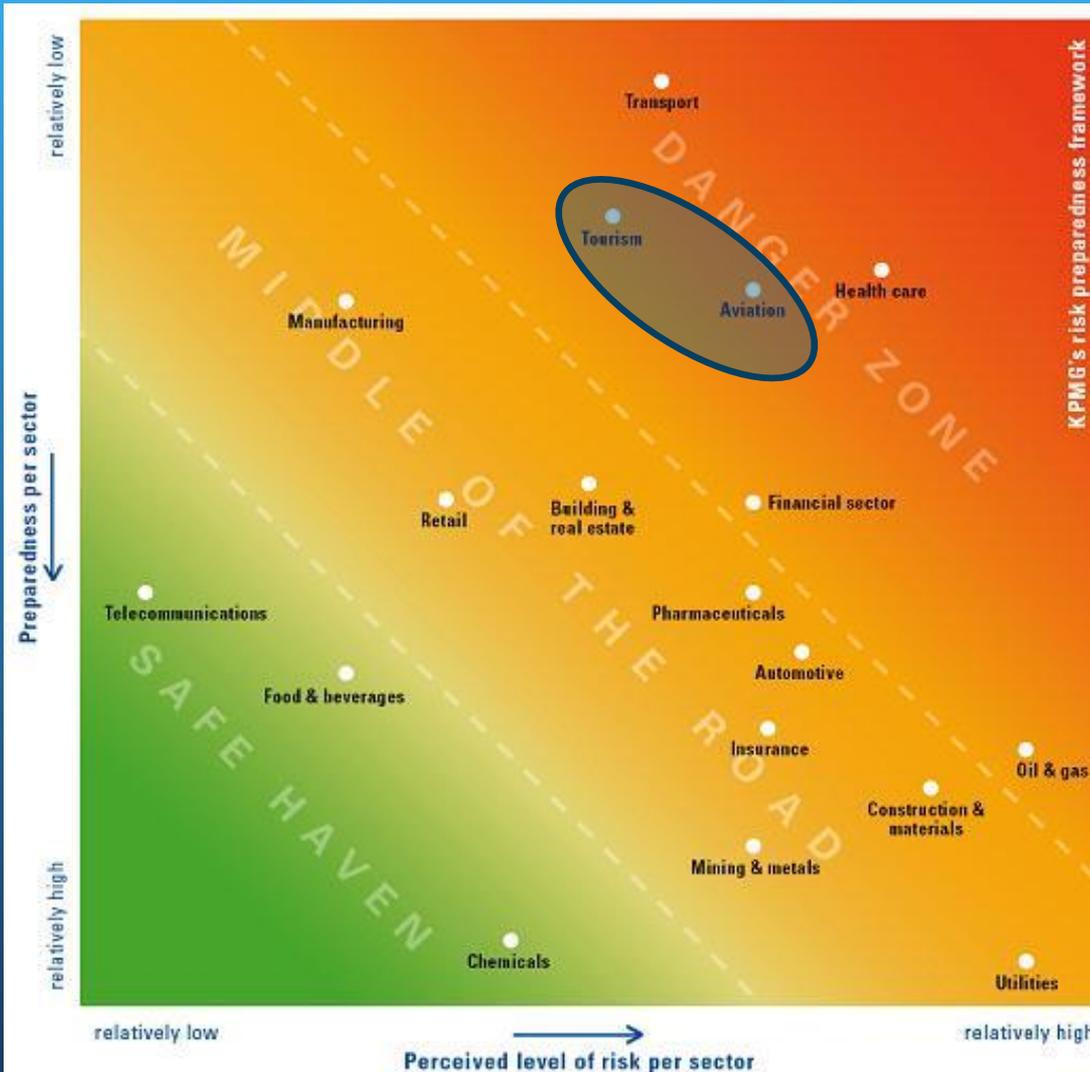


**Non-Climate Drivers**

# The Emission Reduction Challenge for Global Tourism

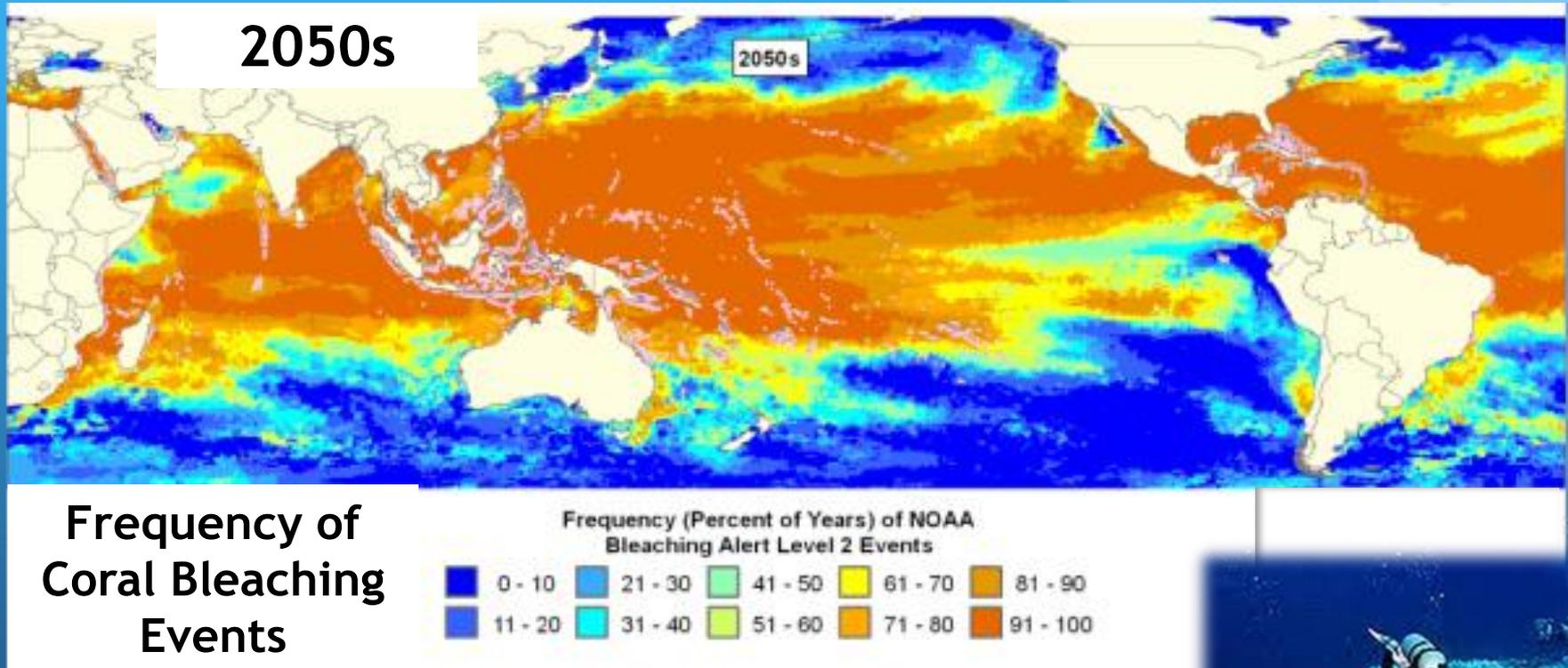


# Investors Conclude: Tourism in the 'Danger Zone'



**Six Industry Sectors  
Should Be on Alert Over  
Climate Change Risks**

# Coral Reefs and Dive Tourism



- Majority of dive tourists surveyed stated bleaching *would affect* their decision to visit.
- Dive tourists were found to have a *willingness to pay* to visit reefs that were not bleached.

