

Extreme Events in a Warming World

Risk Management Considerations for the Caribbean

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Your Panel



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Components of Climate Risk Management

Hazard

- Inter-annual variability
- Climate Change

Exposure

- Concentration on the coast
- Dependence on climate-sensitive sectors

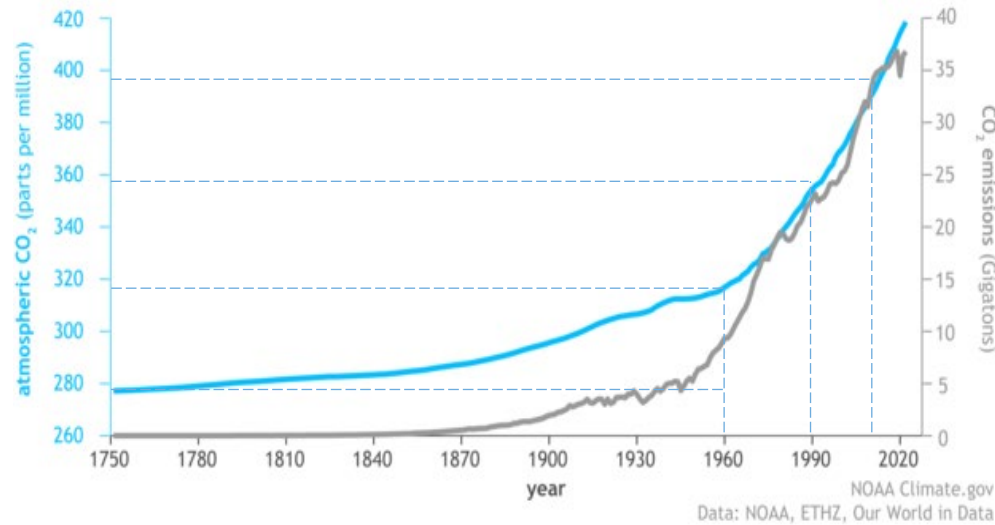
Resilience

- Inadequate building standards for extreme events
- High Protection Gap

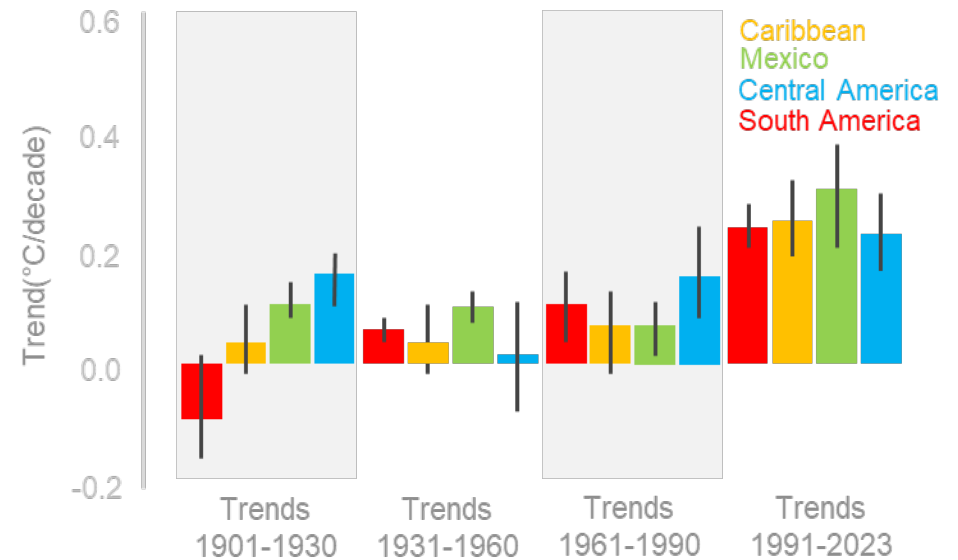
Current rate of emissions is accelerating temperature increases

Current rate of CO₂ emissions is accelerating temperature increases

Global CO₂ since 1750: atmospheric concentration (blue) vs. annual emissions (grey)



Decadal temperature increases: Caribbean 5 times hotter in a century¹

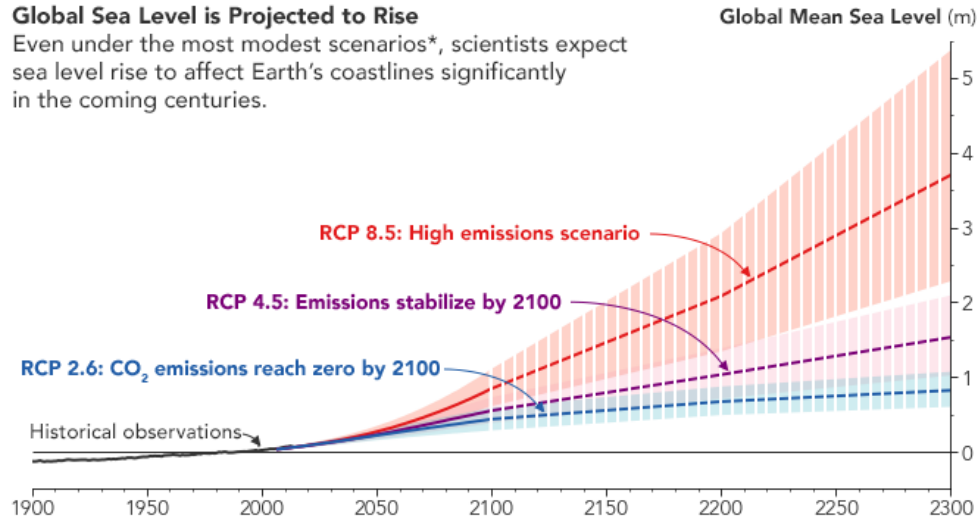


Protocols like the Paris Agreement aim to half emissions from 40Gt/annum to 20Gt/annum (i.e. 1980s level) by 2030. This is in stark contrast with the trend above.

1. World Meteorological Organization (WMO). Available in: <https://wmo.int/news/media-centre/el-nino-and-climate-change-impacts-slam-latin-america-and-caribbean-2023>

High risk on the coast

Coastal communities in the Caribbean more at risk due to rapidly rising sea levels and warming oceans

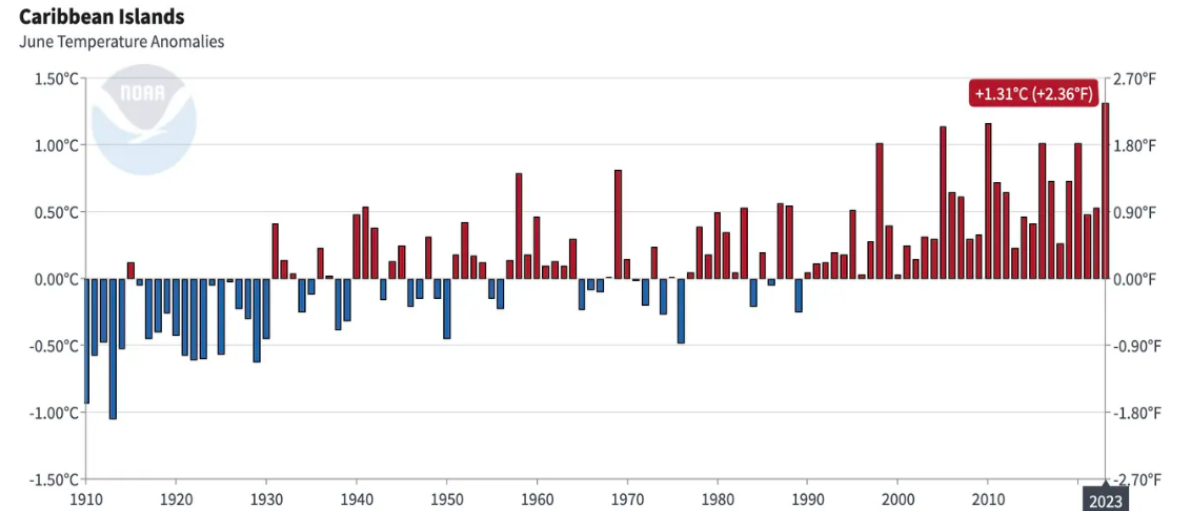


*Scientists use **Representative Concentration Pathways (RCPs)** to calculate future projections based on near-term emissions strategies and their expected outcomes in the future. The RCP values refer to the amount of radiative forcing (in W/m²) in the year 2100.

With 1 meter of sea level rise²:

- **149 tourism resorts** lost to coastal erosion
- **21 airports** and **35 ports** inundated

2. IPCC AR5 – Chapter 5 (2014)



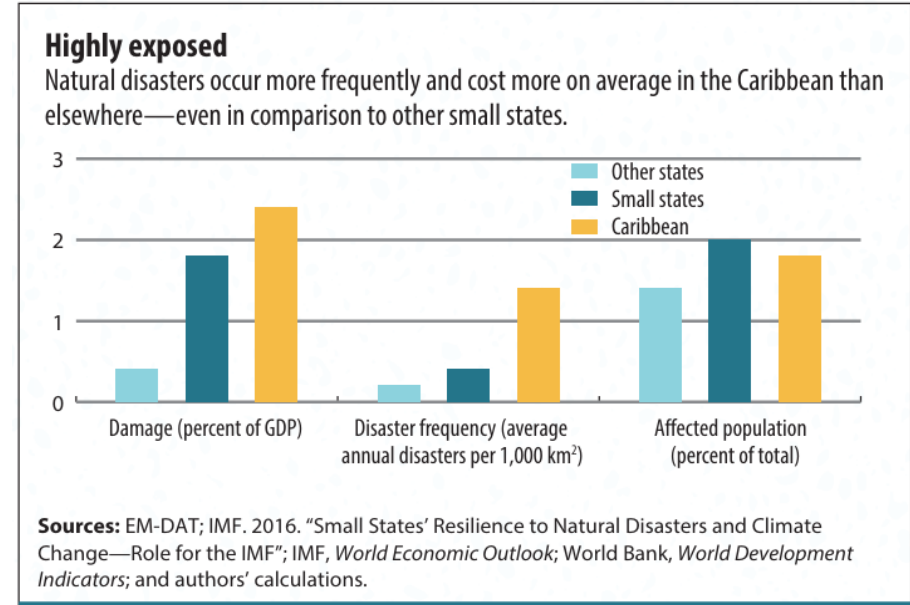
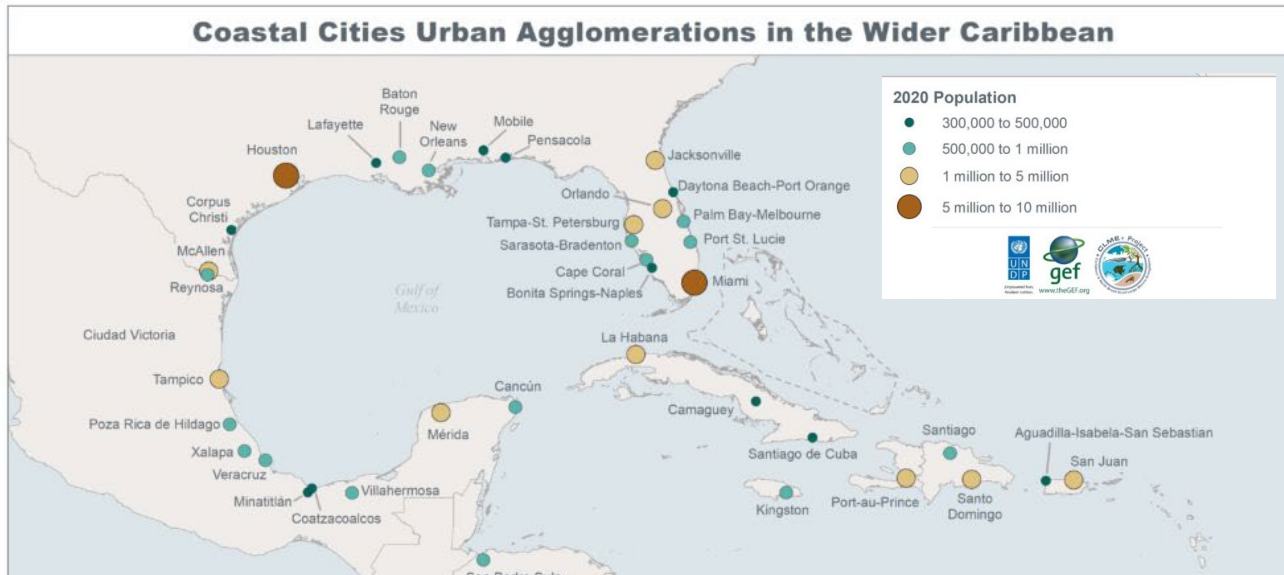
The Caribbean Sea just had its hottest June on record. | National Centers for Environmental Information/NOAA

June 2023:

Was the hottest month on record in the Caribbean sea, providing more fuel for destructive hurricanes

High coastal populations

Caribbean highly vulnerable due to concentration of population on the coast



70% of people live and work in coastal areas
 22 million people in the Caribbean live below 6-m elevation³

7 of the top 10 countries where extreme events are most costly (as % of GDP) are in the Caribbean

20% GDP loss by 2100 compared to 5% by 2025 if no action taken

3. IPCC AR6 – Chapter 15 (2021) – Small Islands

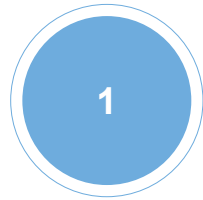
Three aspects lead to poor climate resilience in the Caribbean



2023 Hurricane Otis (similar hotels in Caribbean)

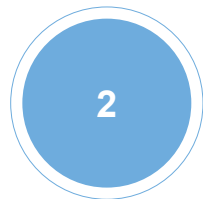


2017 Hurricane Maria



Caribbean economy heavily reliant on ‘climate-sensitive’ sectors

- Tourism represents **26% GDP** and **35% of employment**
- Agriculture represents between **7% and 17% GDP** and **17 % of employment**



Poor Resilience

Inadequate roofing and non-structural elements, coastal settlements without flood protection are extremely vulnerable to extreme events



85% Climate Risk Protection Gap for the Latin America and the Caribbean

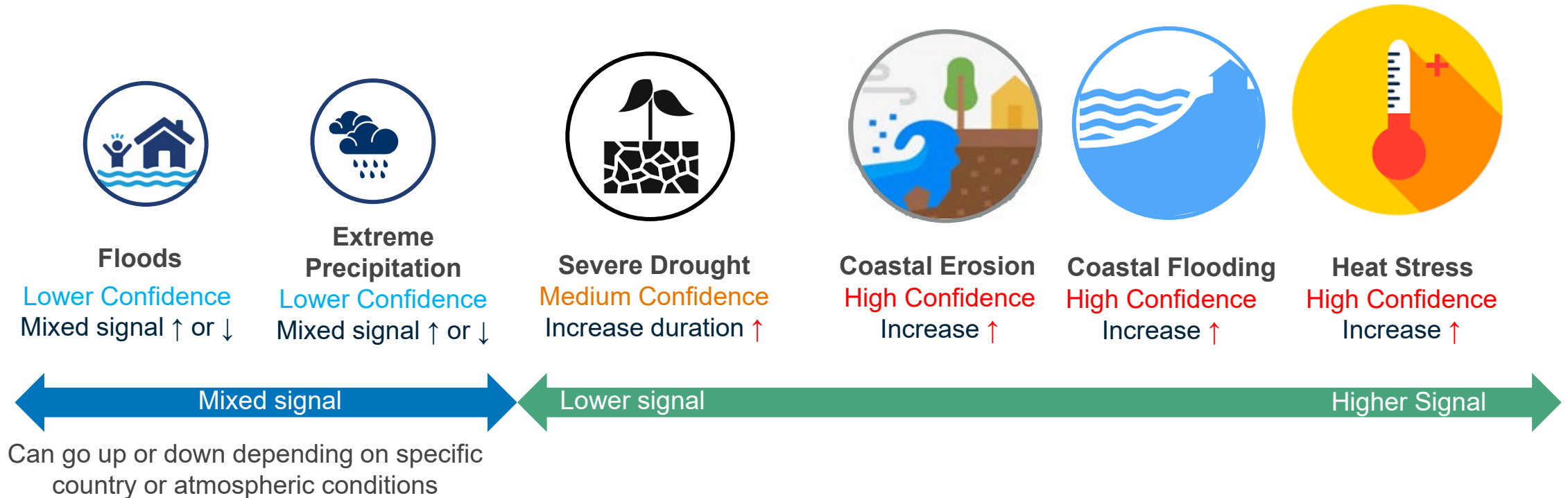


2017 Hurricane Irma



2009/1010 Droughts Jamaica

Climate Risks enhanced by Climate Change in the Caribbean



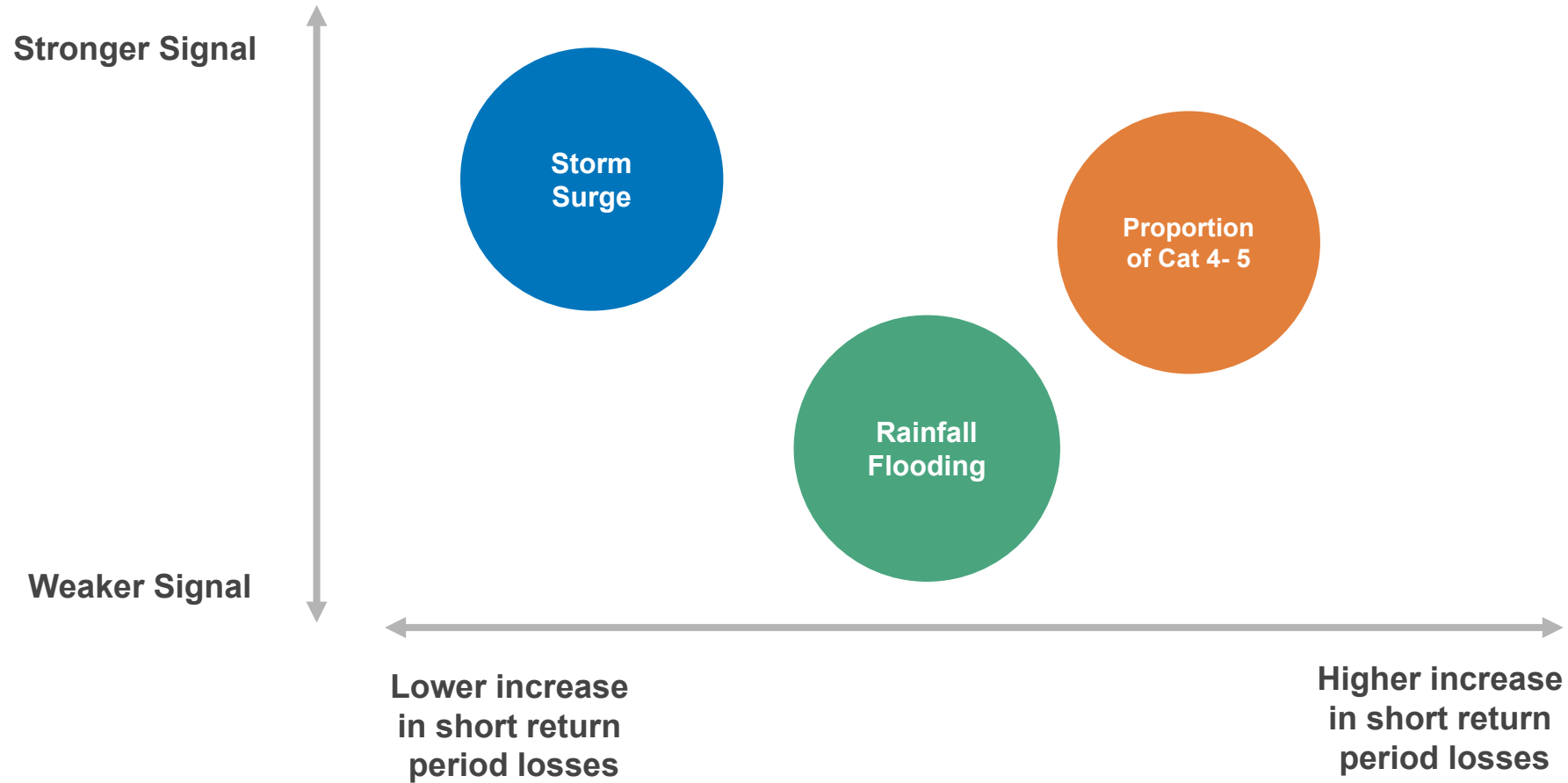
Based on IPCC AR6 – Chapter 11 (2021)

Stronger and Wetter Hurricanes in the North Atlantic



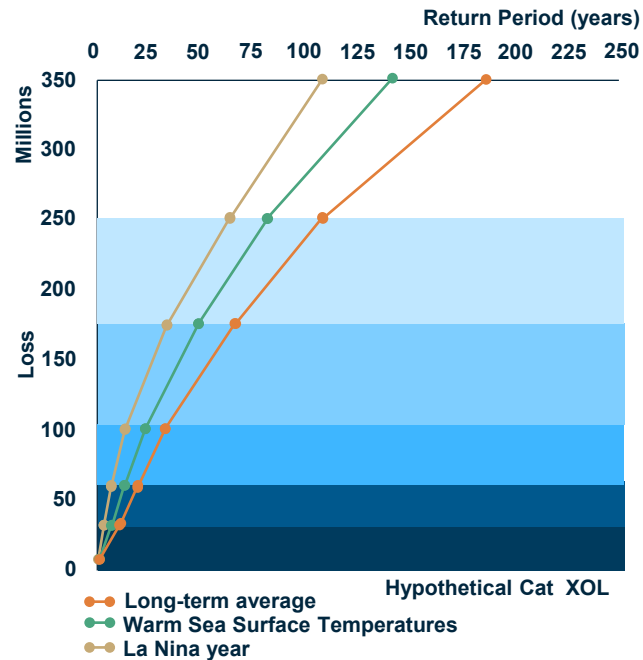
- Possible reduction in overall frequency of hurricanes
- Possible increase in frequency of intense hurricanes
- Possible increase in severity of storm surge
- Possible increase in rainfall flooding
- Possible increase in the rapid intensification of hurricanes in 24 hours.

Signal Strength + near-term loss change = Action?



Your partner in building a climate resilient reinsurance program

Loss sensitivity to natural variability



5-10 year gross loss impact due to plausible climate signals

Metric	Sea level	Rainfall	Frequency
Expected Loss	0% - 5%	0% - 10%	10% - 20%
Short return periods	0% - 5%	5% - 20%	35% - 45%
Tail	0% - 5%	0% - 5%	0% - 5%

Results here based on a hypothetical Caribbean portfolio

Climate Change: Insurance Risks and Opportunities

P & C

Change in frequency and/or severity of climate related risks impacting:

- Property
- Casualty
- Agricultural
- Credit & Surety
- Marine & Aviation

Life

Higher mortality rates:

- Chronic air related illnesses
- Heat stress and infectious diseases

Investments

- Support for transition to low carbon economy
- Green Bonds
- Investments in renewable energy
- Infrastructure financing
- Investments in efficient buildings

Opportunities

Pooling mechanisms

Close the Protection Gap

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