

# SCOR Annual Conference

3 & 4 October 2019

**The acceleration of Hubs, Networks & Connectivity**

How to ensure sustainability of insurability and its development?

## Climate Change – The Great Disruptor?

Junaid Seria

# Executive summary

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Climate Change and Extreme Events – managing the uncertainties



Societal response – transitioning to a low carbon economy



Re/insurance – a sustainable business model?



# Climate Change & Extreme Events



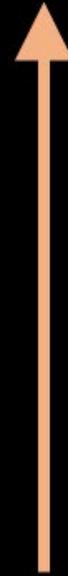
**2019 CO<sub>2</sub> 415 ppm**



**+ 100 ppm**

**1960 CO<sub>2</sub> 315 ppm**

**2010s warming 0.9°C**



**+ 0.5°C**

**1980s warming 0.4°C**

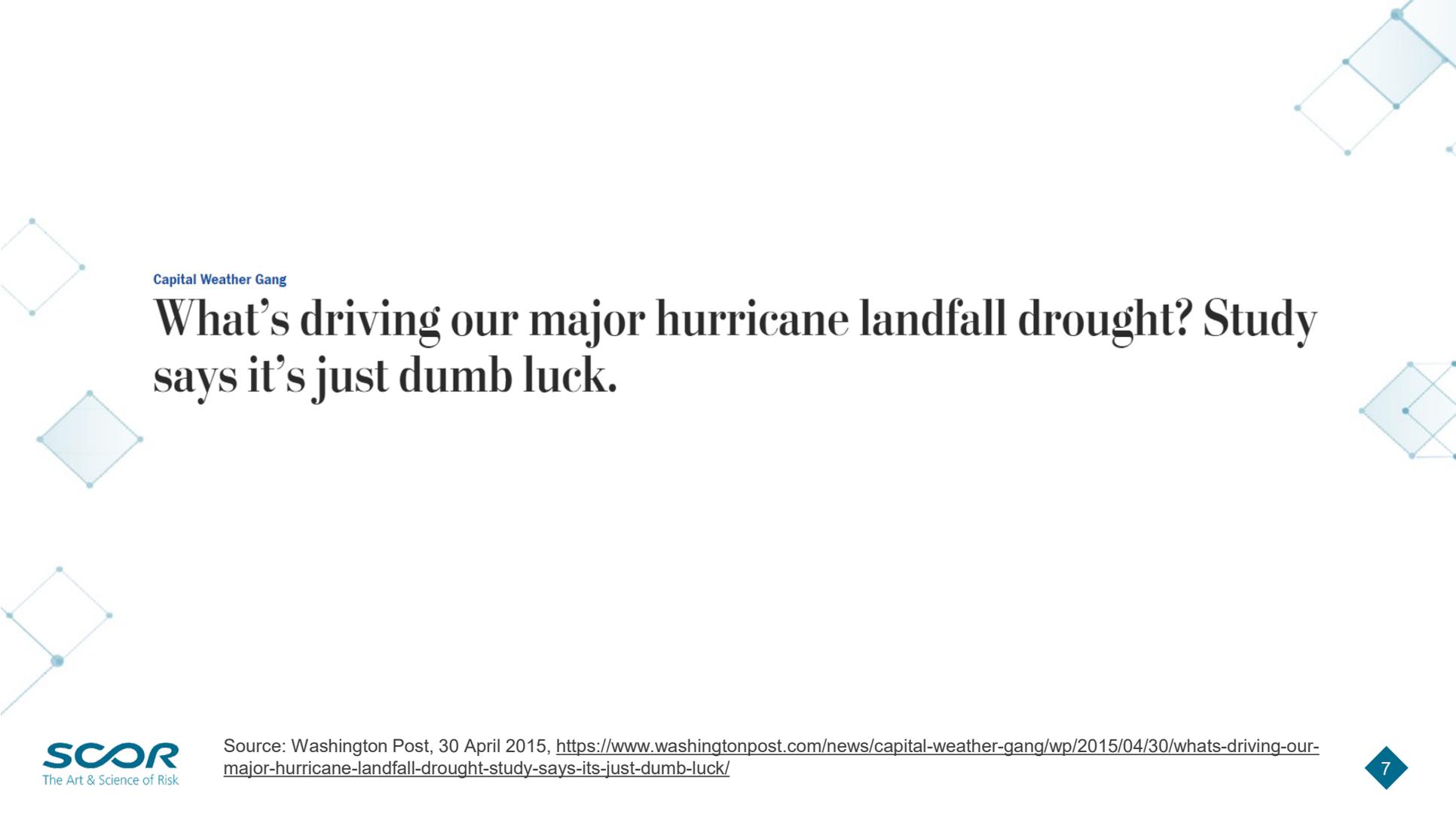
*Source: Dr. Emily Shuckburgh,  
Environmental Data Science Group,  
Cambridge University*



2017 Harvey (Houston, TX, US)  
Econ. Cost: USD 130 bn  
Fatalities: 107



2005 Katrina (New Orleans, LA, US)  
Econ. Cost: USD 165 bn  
Fatalities: ~1,500

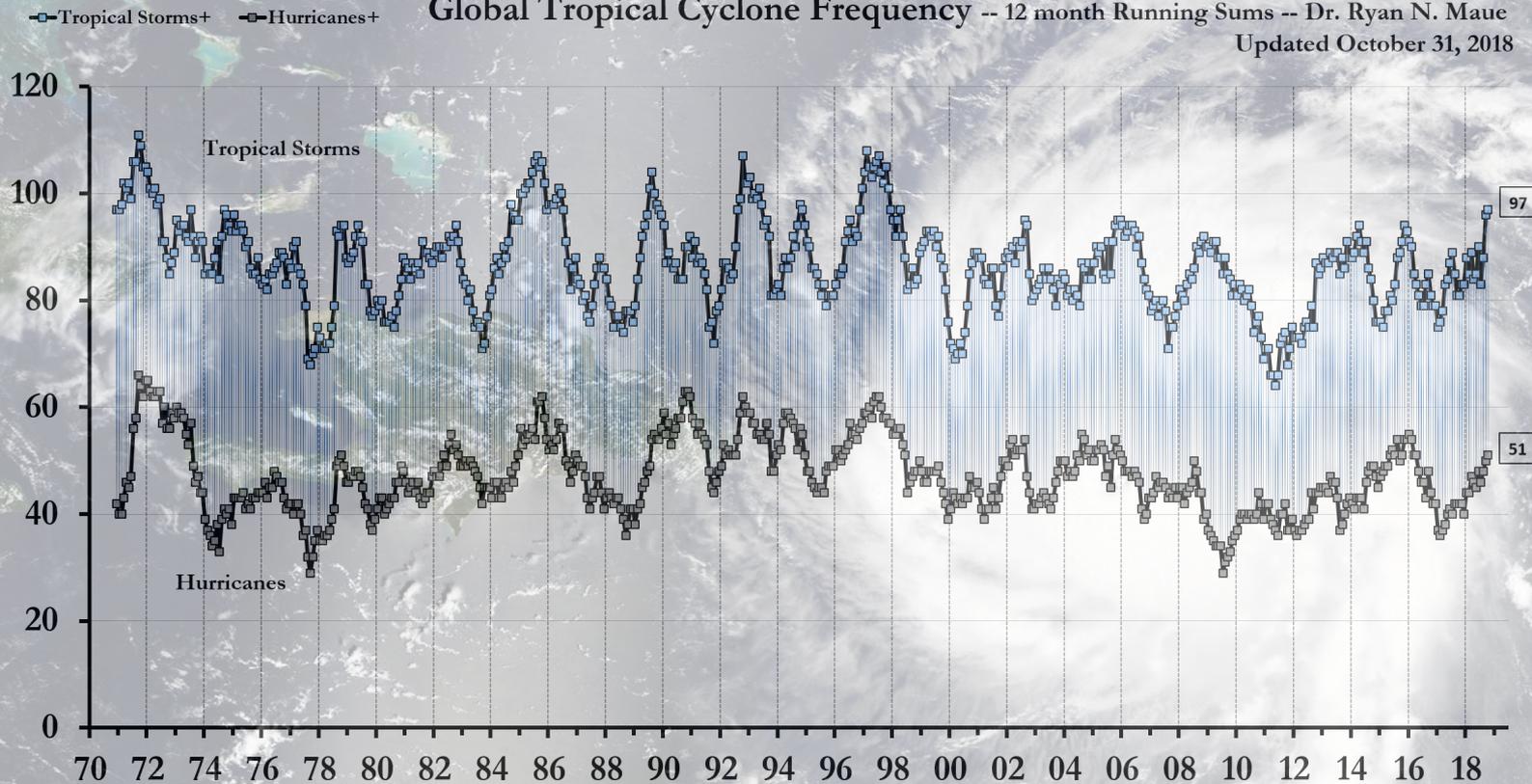
The slide features several decorative diamond shapes (rhombuses) in light blue and white, scattered across the background. Some are solid, while others are outlines. They are positioned in the top right, middle left, and bottom right areas.

Capital Weather Gang

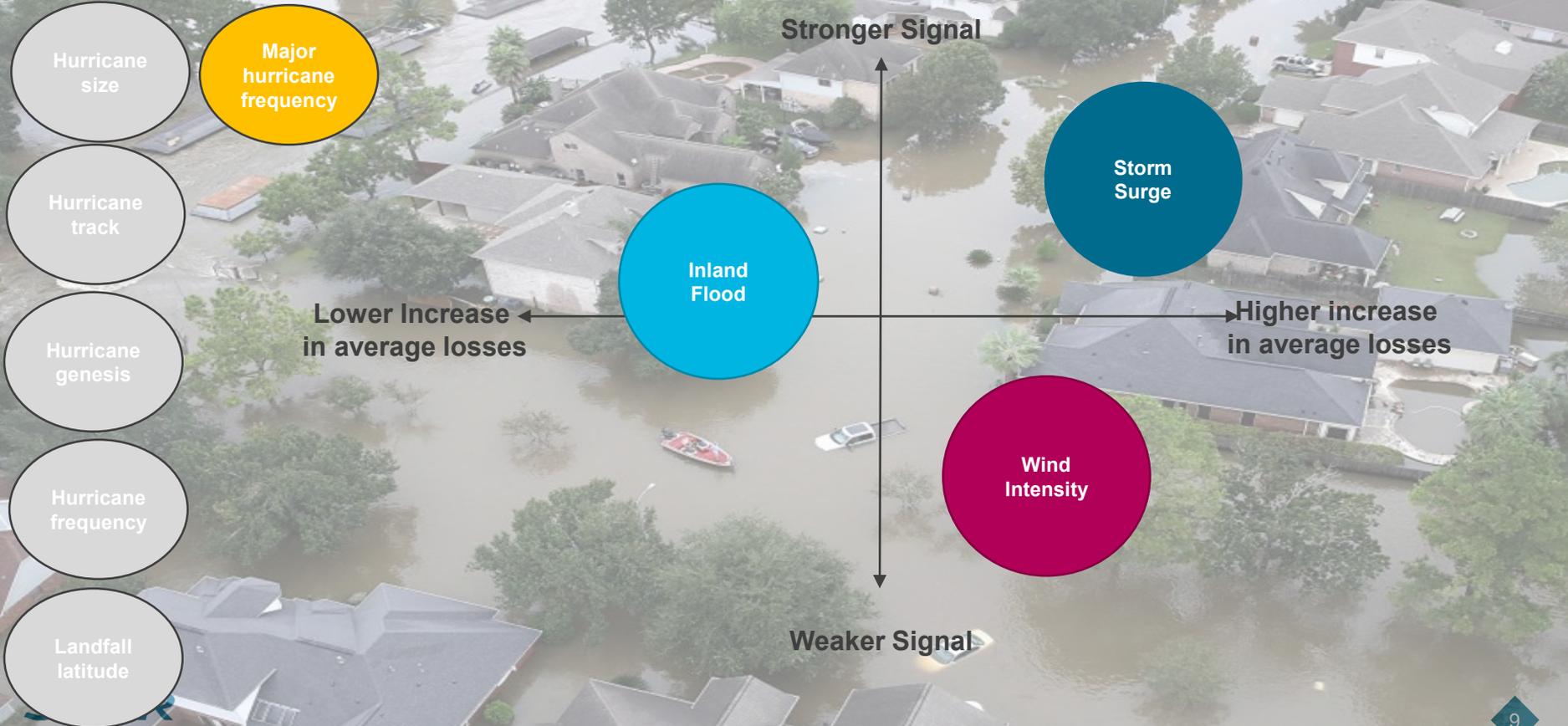
# What's driving our major hurricane landfall drought? Study says it's just dumb luck.

# Global Tropical Cyclone Frequency -- 12 month Running Sums -- Dr. Ryan N. Maue

Updated October 31, 2018



# North Atlantic Tropical Cyclones



# Climate Change and Extreme Events



Little or no rain



Increased & reduced EU  
wind storminess



Extreme precipitation  
(rain and snow)



High-tide flooding and  
increased storm surge



Extreme heat



Tornados and  
thunderstorms



Western wildfire  
activity



More intense hurricanes



Parched soil



Extreme rainfall from  
hurricanes

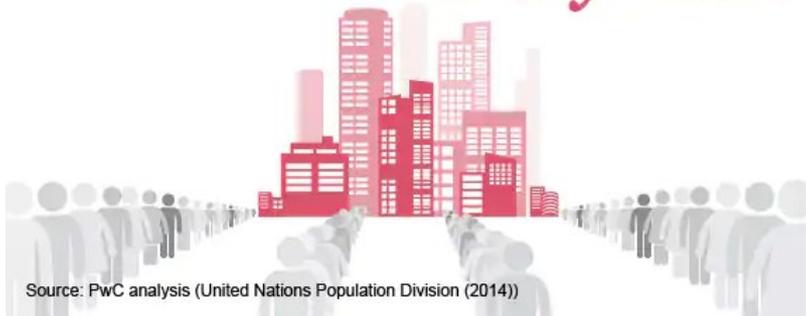
← Weakest Evidence

→ Growing Evidence

→ Strong Evidence

→ Strongest Evidence

**1.5 million** people are added to the global urban population **every week**



Source: PwC analysis (United Nations Population Division (2014))

**85%** of global GDP was generated in cities



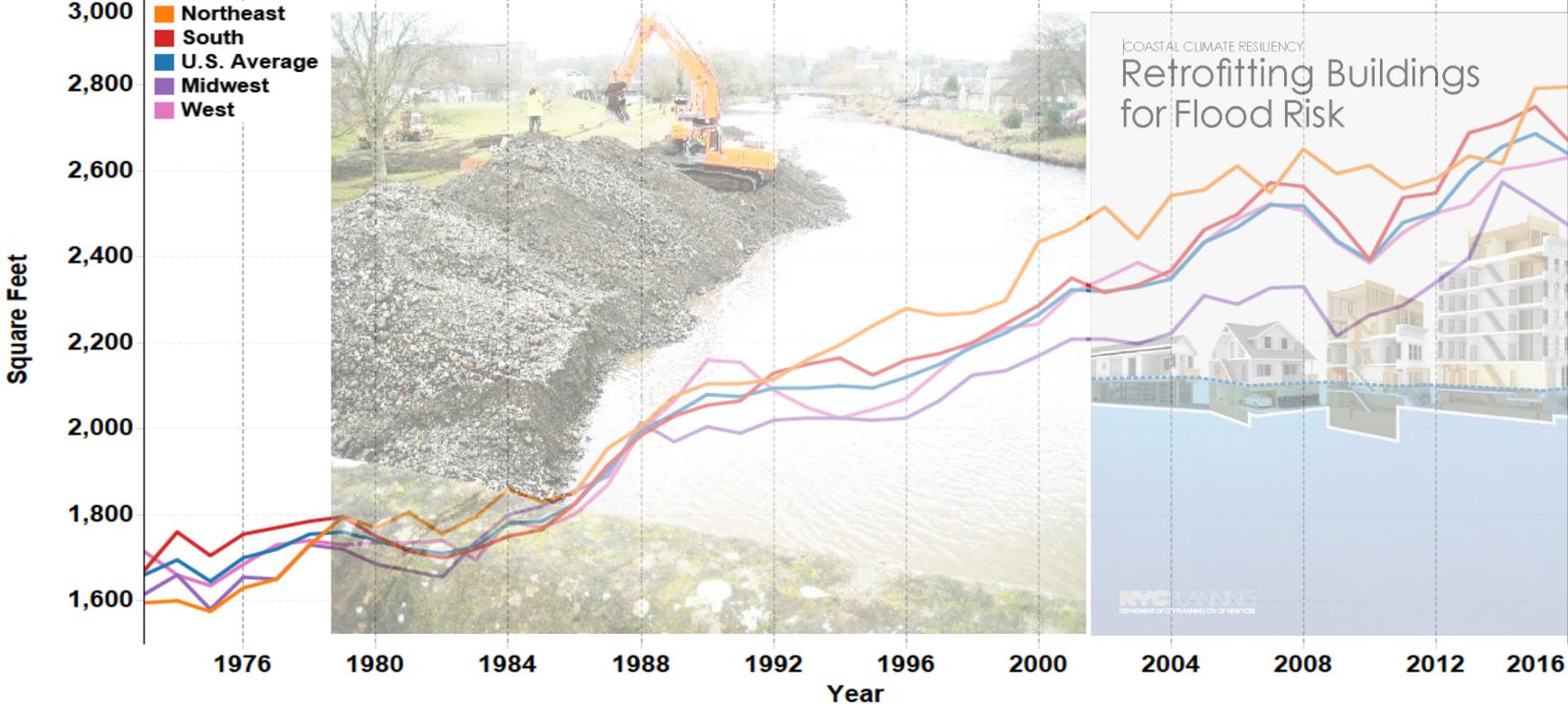
Source: The New Climate Economy, Seizing the Global Opportunity

**\$8 trillion** in infrastructure spending will be needed in **New York, Beijing, Shanghai** and **London** over the next **10 years**



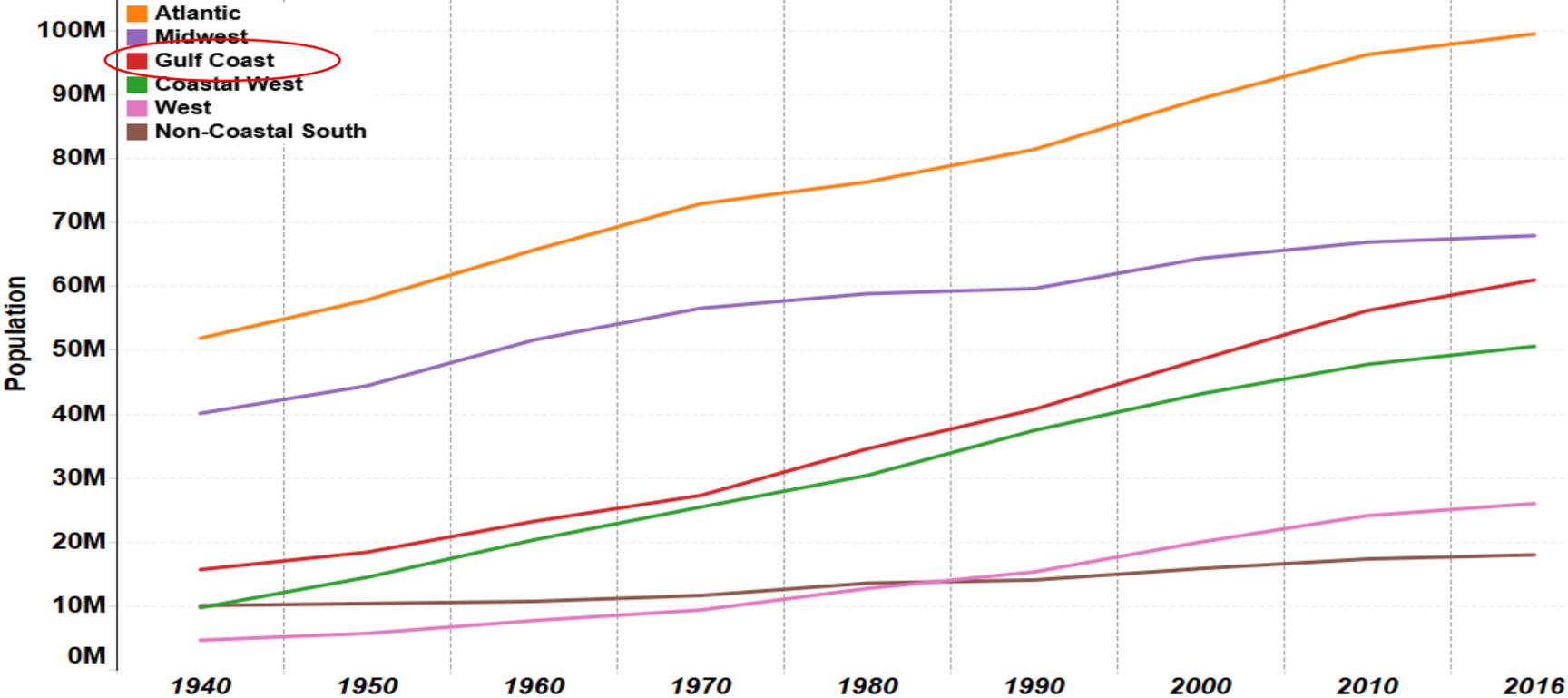
Source: PwC analysis

# Building stock and vulnerability changes



1) Source: Klotzbach et. al., 2018

# US Population Growth



1) Source: Klotzbach et. al., 2018



BANK OF ENGLAND

## A framework for assessing financial impacts of physical climate change

A practitioner's aide for the general insurance sector

May 2019



InsuResilience  
GlobalPartnership



PSI  
Principles  
for Sustainable  
Insurance



eiopa  
EUROPEAN INSURANCE  
AND OCCUPATIONAL PENSIONS AUTHORITY

SCOR  
The Art & Science of Risk





**Seasonal hurricane forecast skill and relevance to the reinsurance industry**

Seasonal hurricane forecasts are subject to considerable uncertainty, yet they provide reinsurers and business owners with valuable information for risk management and pricing. This newsletter explores the skill and relevance of these forecasts to the reinsurance industry.

**Introduction**

The seasonal hurricane forecast is a key tool for reinsurers and business owners. It provides information on the expected number and intensity of hurricanes for a given season. This information is used to assess risk and set prices for reinsurance coverage.

**Relevance of tropical climate activity**

The seasonal hurricane forecast is based on a variety of factors, including sea surface temperatures, wind shear, and the El Niño/Southern Oscillation (ENSO) cycle. These factors influence the formation and intensity of hurricanes.

**Conclusion**

Seasonal hurricane forecasts are a valuable tool for reinsurers and business owners. They provide information on the expected number and intensity of hurricanes for a given season, which is used to assess risk and set prices for reinsurance coverage.



**GUIDE TO EARTHQUAKES - PART III**  
Earthquake modeling for the (re)insurance industry

**Overview**

This guide provides a comprehensive overview of earthquake modeling for the reinsurance industry. It covers the basics of earthquake risk, the challenges of modeling, and the various methods used to assess risk.

**An event set framework to represent the risk**

An event set framework is a mathematical model used to represent the risk of earthquakes. It consists of a set of events, each representing a specific earthquake scenario. The framework is used to calculate the probability of an event occurring and the potential impact of that event.

**MANY REINSURERS HAVE DEVELOPED EFFECTIVE TECHNIQUES TO MANAGE THE SCOURING RISK OF NATURAL DISASTERS UTILIZING THE BENEFITS OF PROBABILISTIC MODELS**

Probabilistic models are used to assess the risk of natural disasters. They provide a more accurate and detailed view of risk than deterministic models. These models are used to calculate the probability of an event occurring and the potential impact of that event.



**TECHNICAL NEWSLETTER**  
#37 - June 2017

**GUIDE TO AGRICULTURE INSURANCE PART III**  
Risk modelling aspects

**INTRODUCTION**

This newsletter provides a detailed look at risk modeling for agriculture insurance. It discusses the challenges of modeling crop and livestock risk and the various methods used to assess risk.

**A risk quantification framework**

A risk quantification framework is a mathematical model used to represent the risk of agriculture. It consists of a set of events, each representing a specific agriculture scenario. The framework is used to calculate the probability of an event occurring and the potential impact of that event.



**TECHNICAL NEWSLETTER**  
#40 - July 2017

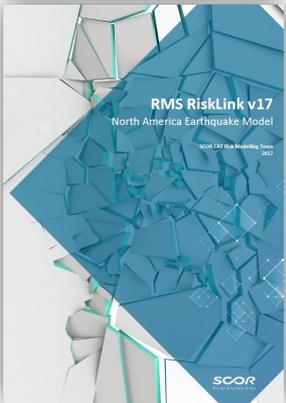
**VOLCANIC RISK AND INSURANCE**  
Past, present and future scenarios

**OVERVIEW**

This newsletter explores the history and current state of volcanic risk and insurance. It discusses the challenges of modeling volcanic risk and the various methods used to assess risk.

**Conclusion**

Volcanic risk and insurance are a complex and challenging area. It requires a deep understanding of volcanic activity and the ability to model and assess risk accurately.



**RMS RiskLink v17**  
North America Earthquake Model

SCOR Cat Risk Modelling Team

This graphic shows a 3D visualization of the RMS RiskLink v17 North America Earthquake Model. It displays a grid of risk levels across the continent, with higher risk areas highlighted in red and orange.



**2018 Hurricane Season Circular #3**

SCOR Cat Risk Modelling Team

This graphic shows a satellite-style image of the Atlantic Ocean and Caribbean Sea. It highlights the path of a hurricane and the areas affected by its winds and rain.



**TECHNICAL NEWSLETTER**  
#45 - September 2018

**WHEN FROST BITES**  
A new way of assessing winterkill insurance risk

**INTRODUCTION**

This newsletter introduces a new method for assessing winterkill insurance risk. It discusses the challenges of modeling winterkill risk and the various methods used to assess risk.

**Conclusion**

The new method for assessing winterkill insurance risk provides a more accurate and detailed view of risk than traditional methods. It is a valuable tool for reinsurers and business owners.



**TECHNICAL NEWSLETTER**  
#46 - November 2018

**WATER SECURITY: THE CASE OF CAPE TOWN'S SEVERE WATER SHORTAGE**

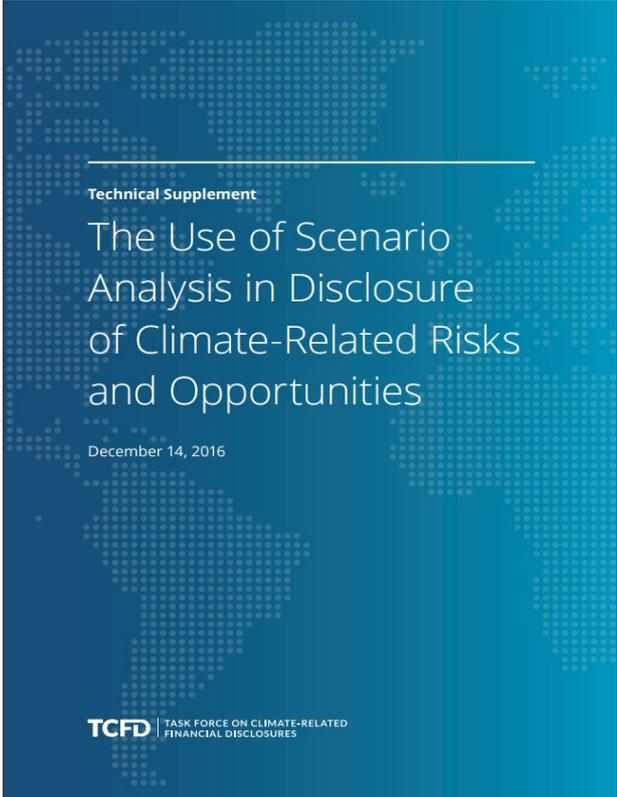
**OUR CHALLENGE**

This newsletter discusses the severe water shortage in Cape Town, South Africa. It explores the causes of the shortage and the challenges of managing water resources in a dry climate.

**Conclusion**

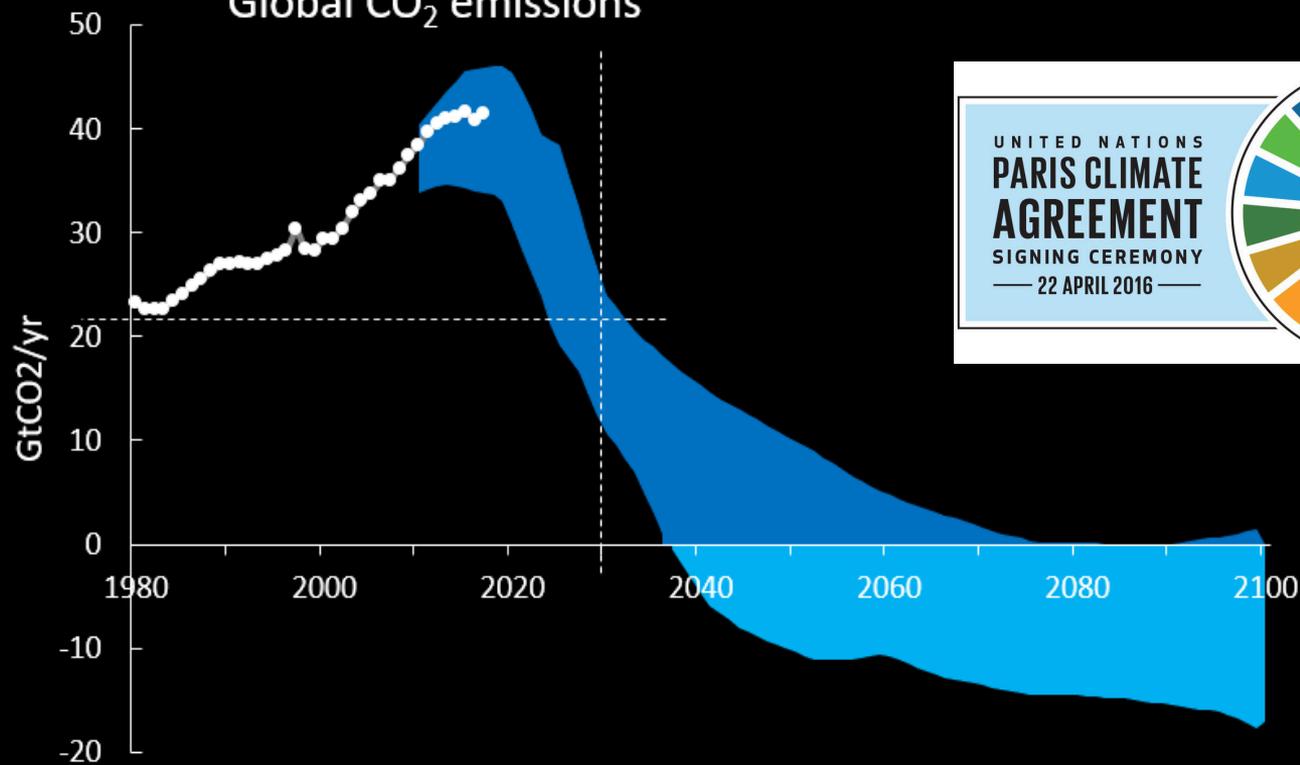
The severe water shortage in Cape Town is a stark reminder of the importance of water security. It highlights the need for better water management and conservation practices.

# Task Force on Climate-Related Financial Disclosures (TCFD)



# Transitioning to a low carbon economy – what's all the fuss about?

## Global CO<sub>2</sub> emissions



Net negative emissions

Source: Dr. Emily Shuckburgh,  
Environmental Data Science Group,  
Cambridge University



I HAVE  
A DREAM

LA CONTINENTAL VOCA  
ES UN ESTADO DE EMERGENCIA  
ENTRE EL HOMBRE Y  
LA TIERRA  
#CREAREVOLUCION

QUAND LA  
PLANETE  
BRULERA, ON FERA  
LA REBOOT

LA PLANETE  
EST PLUS  
CHAUDE QUE MA  
MEUF

ARRÊTE  
DE NIEUR

for future  
PLANET

SKOLSTREJK  
FOR  
KLIMATET

GREVE  
MONDIALE  
POUR LE  
FUTUR

# Could climate change disrupt the laws of diversification?

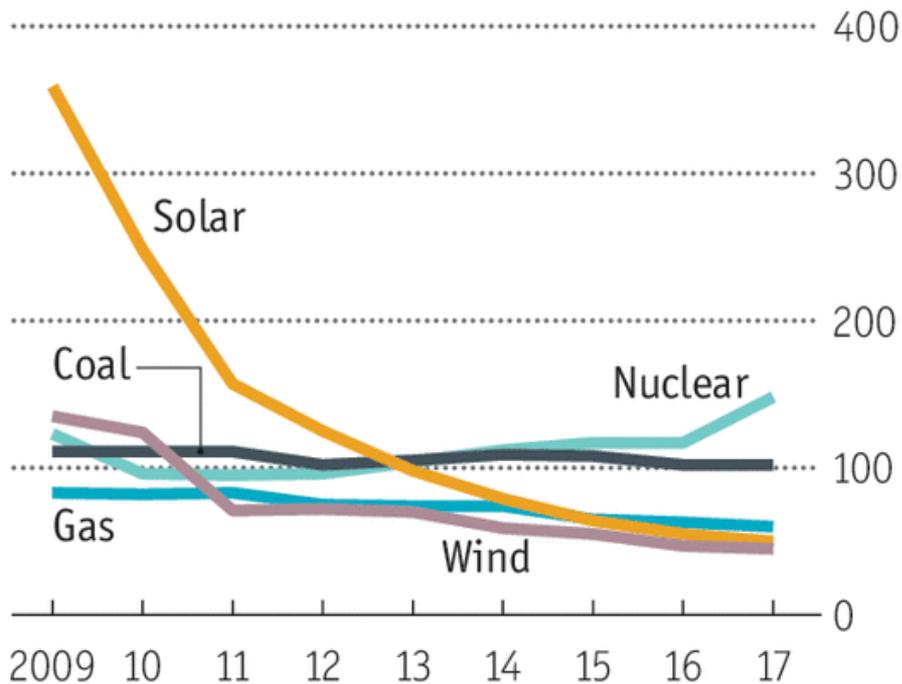




## Clean equals cheap

North America, average cost of energy

\$ per MWh



Source: Lazard, levelised cost of energy analysis





# Incentivising an energy transition

## Mining scoring grid

|                      |                   | Criteria  |  |
|----------------------|-------------------|---|--|
| Company level        | CSR               | Sustainability information                      | CSR agency rating  |
| Insured assets level | Activity          | % of revenue from thermal coal activities       | Volume of thermal coal produced per annum (Million Tons) |
|                      | Quality           | Metallurgical / thermal / Lignite               |  |
| Company level        | Trend             | Coal activity: Decreasing, Stable, Increasing   |  |
|                      | Industry Standard | International Council on Mining & Metals Member |  |

## Power Scoring Grid

|               |                      | Criteria   |  |
|---------------|----------------------|--|--|
| Insured level | Generation           | Share of coal in energy production                               | Share of renewables in energy production           |
|               | Technology and coal  | Types of technology used   | Type of coal used                                  |
| Company level | CSR                  | Sustainability information                                       | Trend on renewables production                     |
|               | Moral Responsibility | Country where plant(s) located (Developing vs. mature economies) | Resources available (local coal vs. imported coal) |

## An 'orderly' transition...

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- *'Axa has broken new ground by not only divesting from 25 tar sands companies but also from three major pipelines needed to deliver their oil to market and by ending the insurance it provides, a total of €700m. The company declined to name the pipelines but it is understood they are major pipelines in North America.'*
- *'Chubb has ruled out selling new insurance policies to companies which build or operate coal power plants, or those which generate more than 30% of their revenue from coal mining or supplying coal-fired electricity.'*
- *'From July 1, QBE will no longer offer any new direct insurance services for construction projects for thermal coal mines, coal-fired power stations or thermal coal transport infrastructure, it said.'*
- *'Suncorp, which owns insurance brands AAMI and GIO, said it will no longer insure new thermal coal mines and power plants, and will not underwrite any existing thermal coal projects after 2025.'*
- *'Zurich generally will no longer underwrite or invest in companies that: generate more than 30% of their revenue from mining thermal coal, or produce more than 20 million tons of thermal coal per year; generate more than 30% of their electricity from coal; are in the process of developing any new coal mining or coal power infrastructure; generate at least 30% of their revenue directly from the extraction of oil from oil sands; are purpose-built (or dedicated) transportation infrastructure operators for oil sands products, including pipelines and railway transportation; generate more than 30% of their revenue from mining oil shale, or generate more than 30% of their electricity from oil shale.'*



# Climate Risk Partner

## Transition Risk Partner