

# How Munich Re tackles climate change

making subject matter expertise and risk capital available to our clients

## What we do:

Education,  
Consulting and  
Advisory



Digital Tools to measure  
financial impact of  
climate risk



Sophisticated  
Risk Transfer  
solutions



Understand

Measure

Manage

## Our People and Capabilities:



Subject Matter Expertise  
on climate risk  
throughout our business

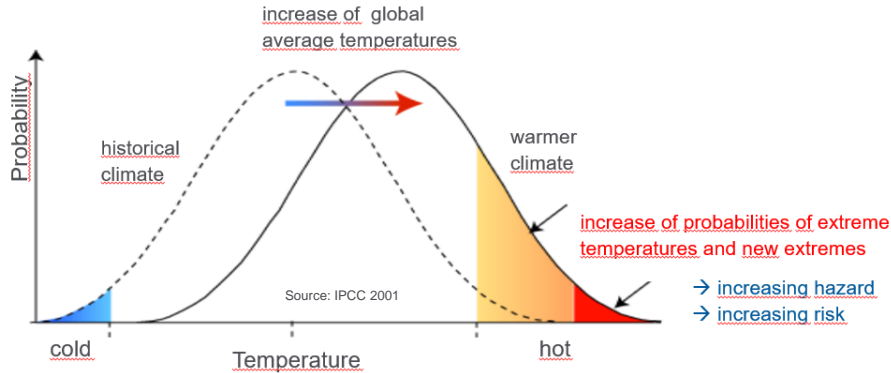


Physical risk models  
constructed with multiple  
horizons



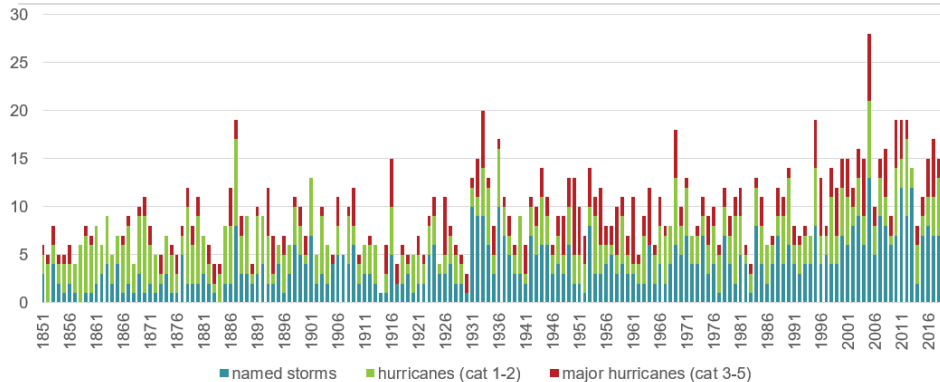
Deep expertise in  
underwriting and capital  
management

# Secondary effect of global warming: Changing hazard patterns (e.g.: tropical cyclone hazard)



effect of warming: changing probability distributions

small increase of average temperatures → large increase of probability of extremes



example: tropical storms / hurricanes in the North Atlantic

increasing frequency of storms: impact of warming?

Source: Munich Re; Data source: NOAA National Centre for Environmental Information, 2020


# Tertiary effects of global warming:

risk of change from weather related disasters (here: 2020 global NatCat losses only)

Costliest natural disaster was the severe flooding in China during the summer monsoon rains. Overall

Global losses from natural disasters in 2020:  
~US\$ **210bn**

US\$ **82bn**  
insured




© Getty Images

Costliest natural disaster in 2020:  
Severe **floods** in China

US\$ **17bn**

US\$ **0.34**  
insured



© picture alliance / gna / HPIC

Drought fuelled record-breaking **wildfires** in the US

US\$ **16bn**

US\$ **11bn**  
insured



© picture alliance / ZUMAPRESS.com

Record 2020 hurricane season brought **30 storms**, more than ever before

US\$ **43bn**

US\$ **26bn**  
insured



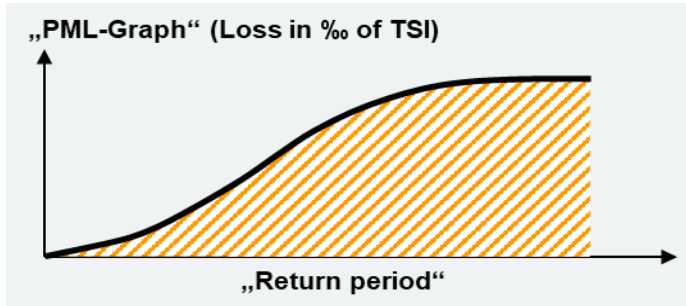
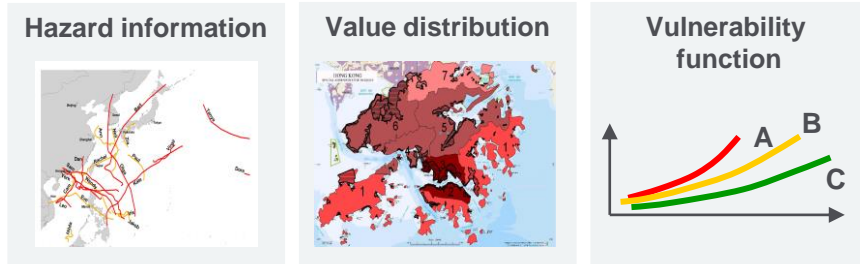
© NOAA

# How Munich Re measures physical NatCat risks

## NatCat loss simulation tools and climate scoring management systems

Loss simulation:

$$\text{risk [\$]} = \text{hazard} \times \text{exposure} \times \text{vulnerability}$$



Further info on Munich Re's Location Risk Intelligence, please visit:  
<https://www.munichre.com/en/solutions/for-industry-clients/location-risk-intelligence.html>

## IPCC scenarios translated into Climate Scores



### Munich Re's Location Risk Intelligence Climate Change Edition

A modular software solution that supports companies in analyzing and assessing the risks of future climate change.

From a single asset to multiple assets within a portfolio located in areas prone to the effects of future climate change, such as areas of extreme temperatures, extreme rainfall, drought, tropical cyclones, fire weather, floods, sea-level raise, etc.



# From NatCat/climate risks to solutions

improving bankability of low/zero carbon technologies through long term performance warranties

## Our coverage

- Risk transfer of technology and performance risks up to 25 years

## What makes us unique

- High technical expertise with across all renewable technologies
- Partnerships with research and certification institutes

## Benefits

- Improving bankability and investability of new technologies



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**On- and Off-Shore Wind**



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