

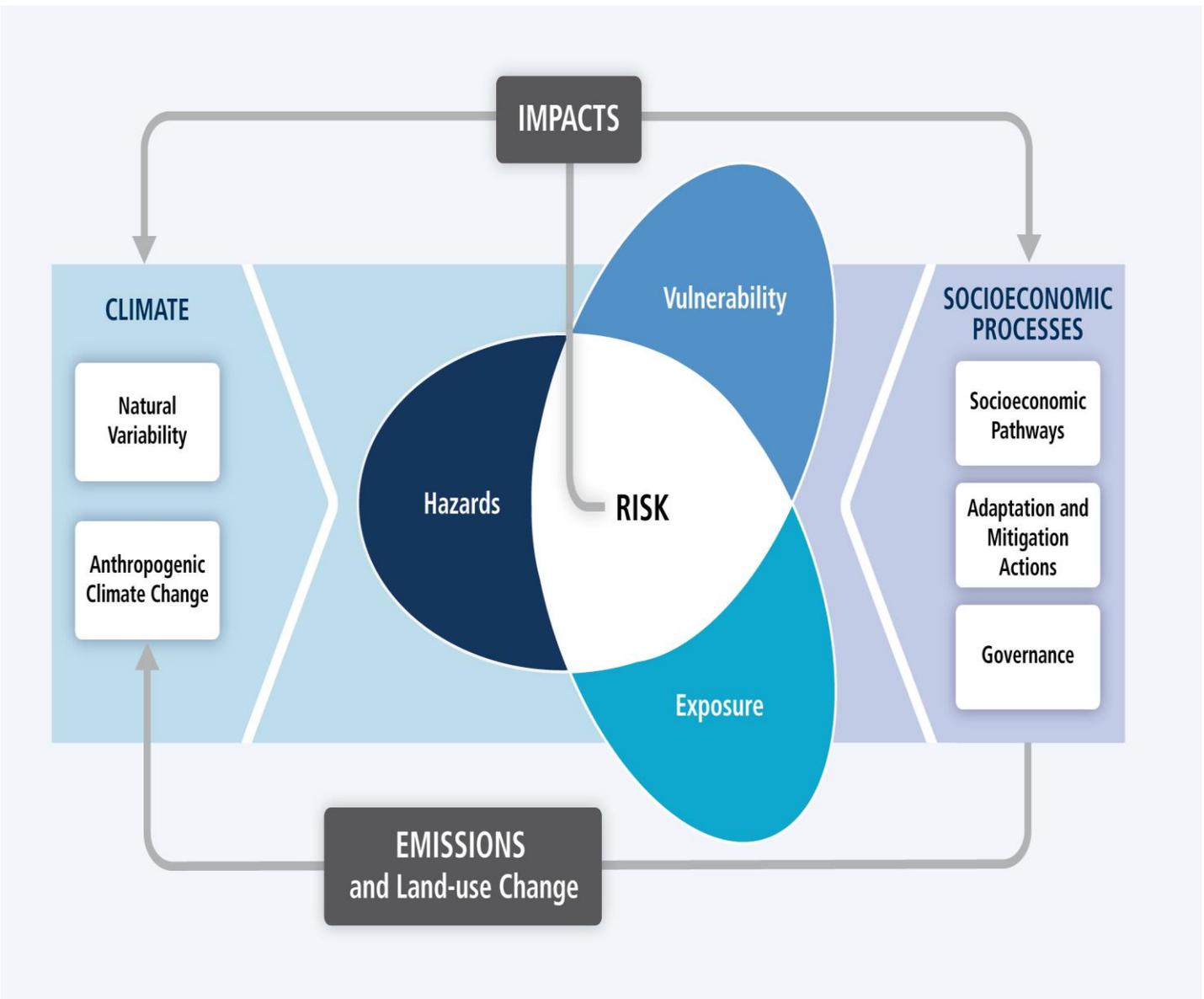
Understanding Comprehensive Risk Management from the Perspective of Science

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Koko Warner, UNFCCC

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Recent IPCC definition of risk:

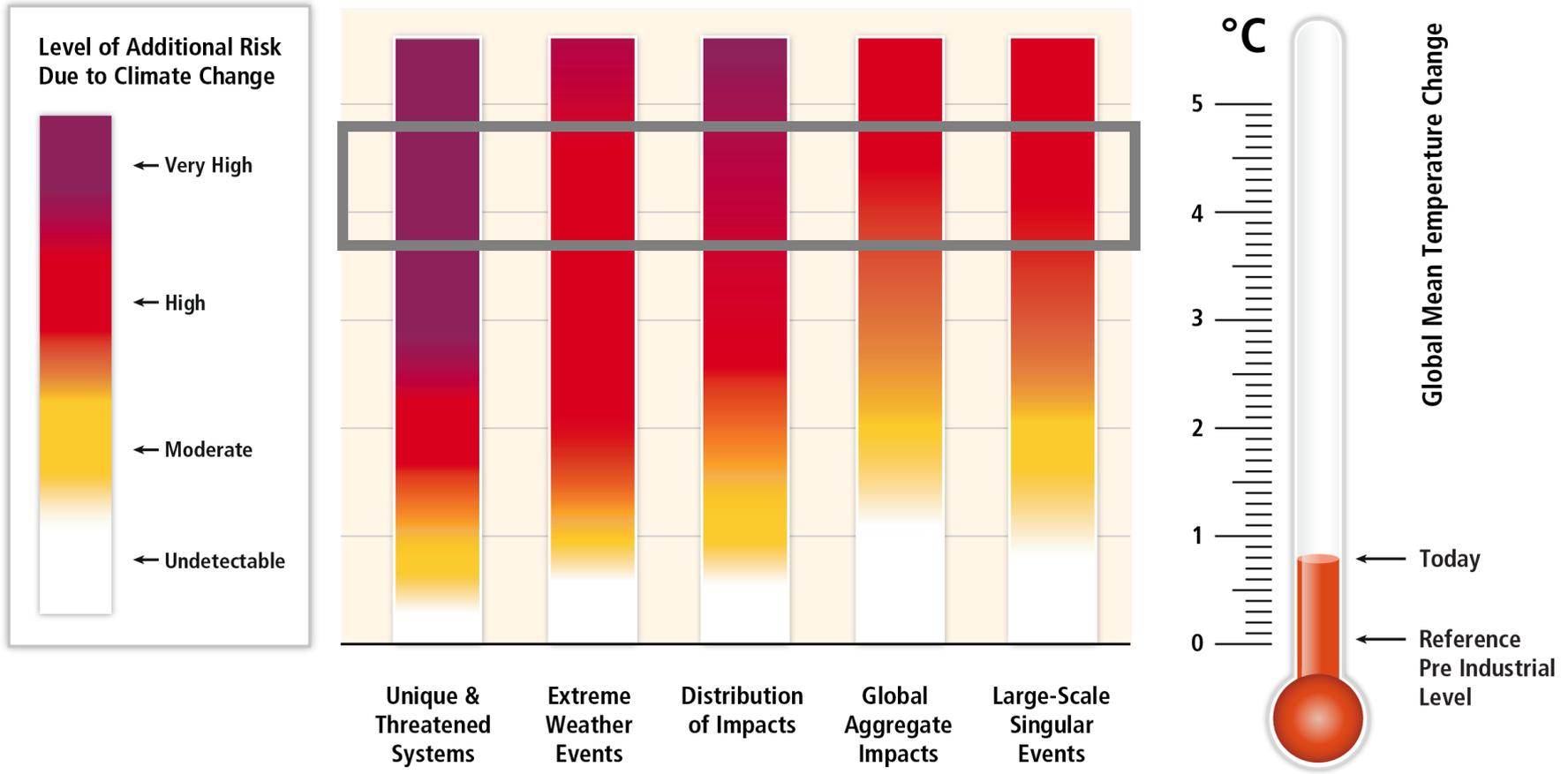
“The potential for adverse consequences for human or ecological systems, recognizing the diversity of values and objectives associated with such systems.

In the context of climate change, risks can arise from potential impacts of climate change as well as human responses to climate change.

Relevant adverse consequences include those on lives, livelihoods, health and wellbeing, economic, social and cultural assets and investments, infrastructure, services (including ecosystem services), ecosystems and species.

In the context of climate change impacts, risks result from dynamic interactions between climate-related hazards with the exposure and vulnerability of the affected human or ecological system to the hazards. ...”

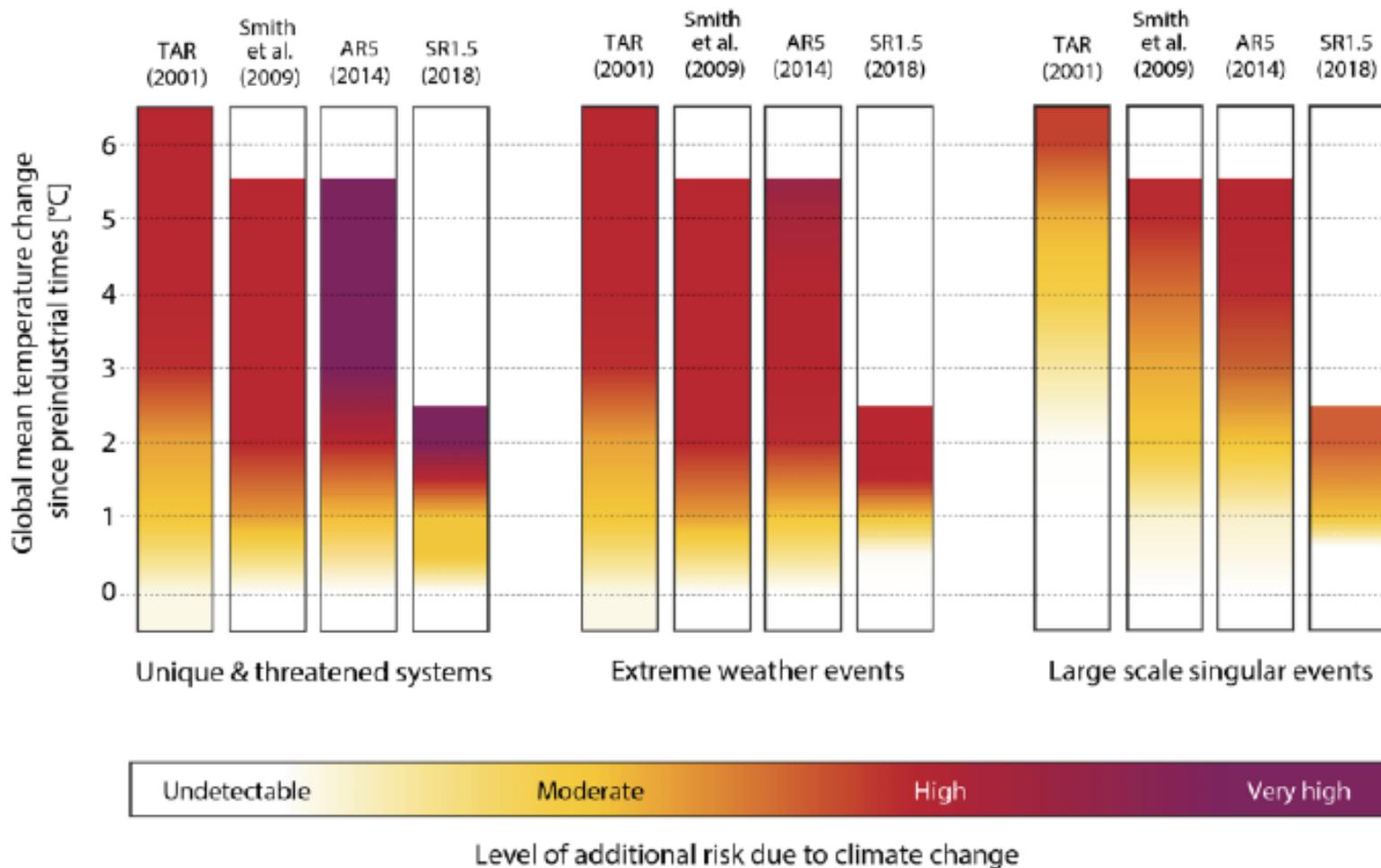
Without additional mitigation, global mean surface temperature is projected to increase by 3.7 to 4.8°C over the 21st century.



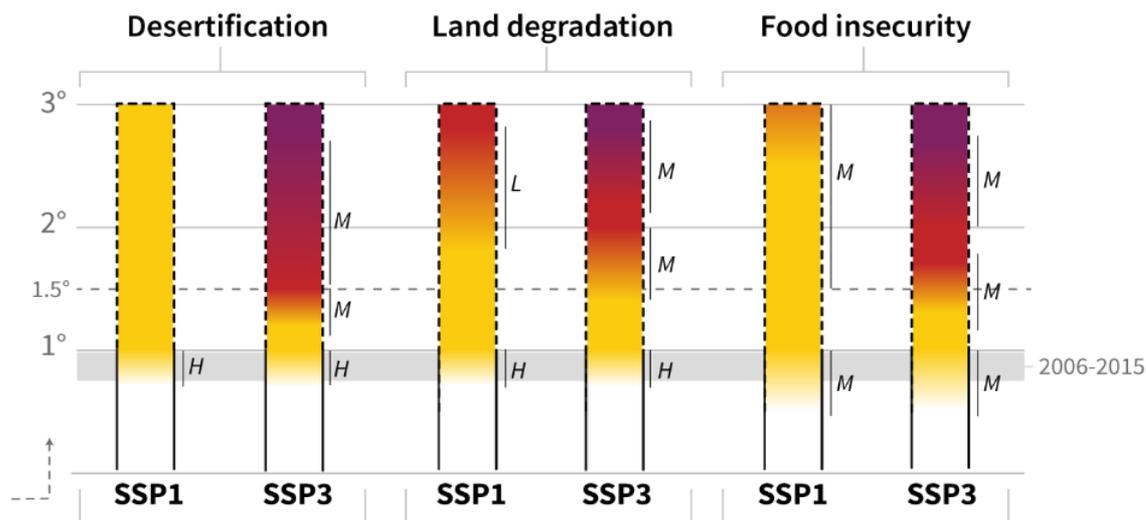
Based on WGII AR5 Figure 19.4

“United in Science” Report 2019

Change over time of the science-based risk assessments of IPCC's *Reasons for Concern*



Special Report on Climate Change and Land



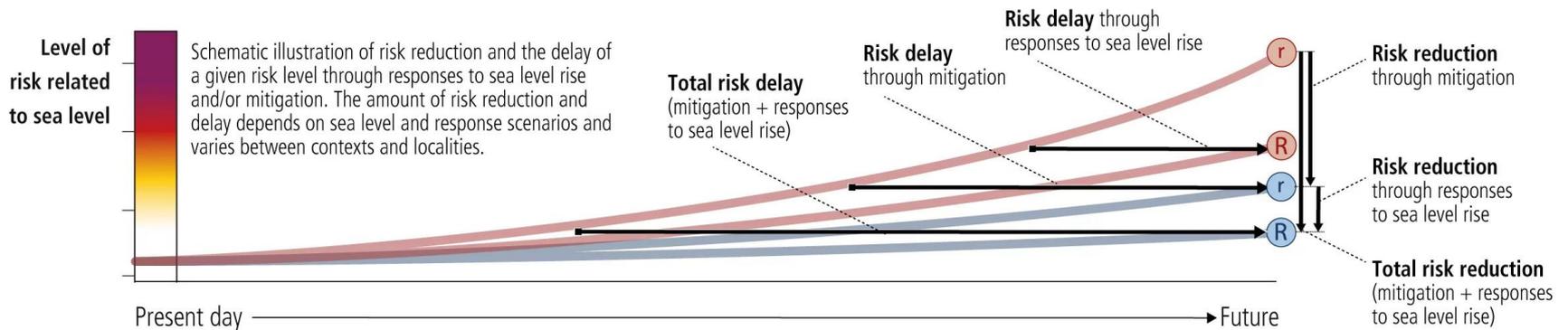
- Socioeconomic pathways impact risk:
 - SSP1 has lower population, higher income, and lower land conversion than SSP3
 - SSP1 has high adaptive capacity, while SSP3 has barriers to adaptation.
 - As a result, SSP1 has lower risks than SSP3 at the same GMST.

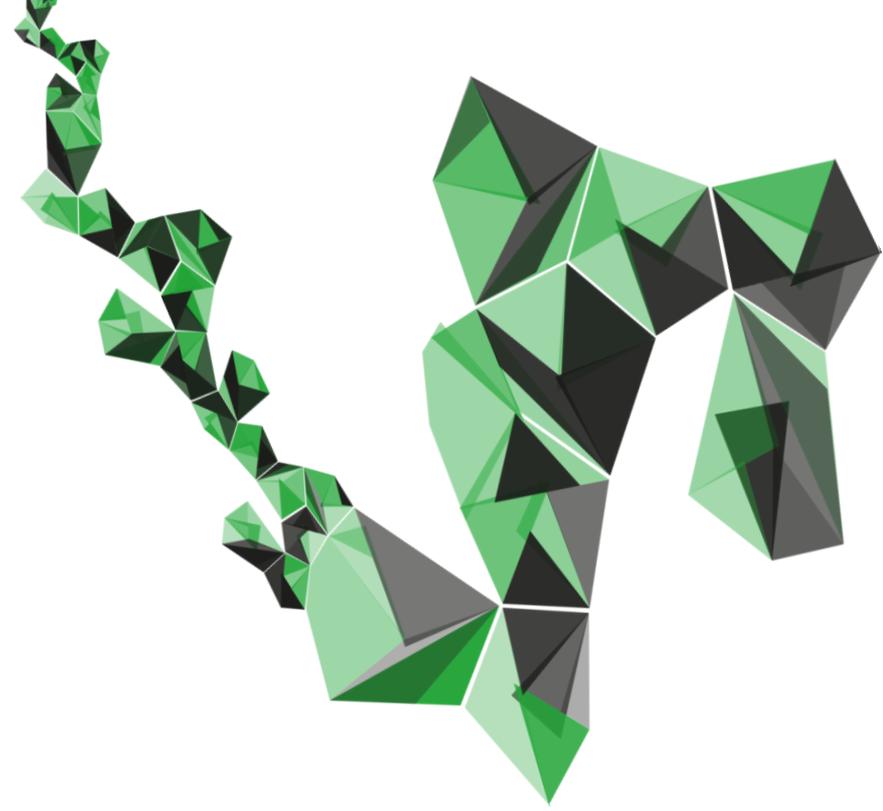
The Shared Socioeconomic Pathways (SSPs)

- **SSP1** includes a peak and decline in population (~**7 billion** in 2100), **high income** and reduced inequalities, effective land-use regulation, **less resource intensive consumption**, including food produced in low-GHG emission systems and lower food waste, free trade and environmentally-friendly technologies and lifestyles. SSP1 has low challenges to mitigation and low challenges to adaptation.
- **SSP3** includes high population (~**13 billion** in 2100), **low income** and continued inequalities, **material-intensive consumption**, barriers to trade, and **slow rates of technological change**. SSP3 has high challenges to mitigation and high challenges to adaptation.

Special Report on Ocean and Cryosphere in Changing Climate

(b) Benefits of responses to sea level rise and mitigation





FROM AWARENESS TO ACTION
PAST, PRESENT AND FUTURE

EXTREME EVENT ATTRIBUTION

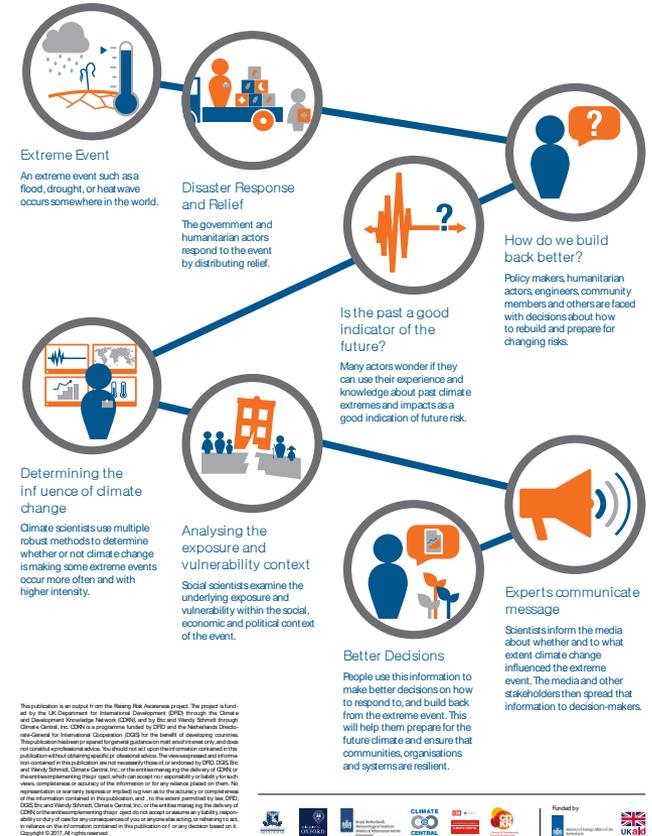
The New York Times

Scientists Link Hurricane Harvey's Record Rainfall to Climate Change



Evading a wave in Houston after Hurricane Harvey hit on Aug. 25.
Brendan Smialowski/Agence France-Presse — Getty Images

Raising Risk Awareness: making informed decisions to prepare for extreme weather events



EARLY WARNING, EARLY ACTION



Nat. Hazards Earth Syst. Sci., 15, 895–904, 2015
www.nat-hazards-earth-syst-sci.net/15/895/2015/
doi:10.5194/nhess-15-895-2015
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Natural Hazards
and Earth System
Sciences 

Forecast-based financing: an approach for catalyzing humanitarian action based on extreme weather and climate forecasts

E. Coughlan de Perez^{1,2,3}, B. van den Hurk^{2,4}, M. K. van Aalst^{1,3}, B. Jongman^{1,2}, T. Klöse⁵, and P. Suarez¹

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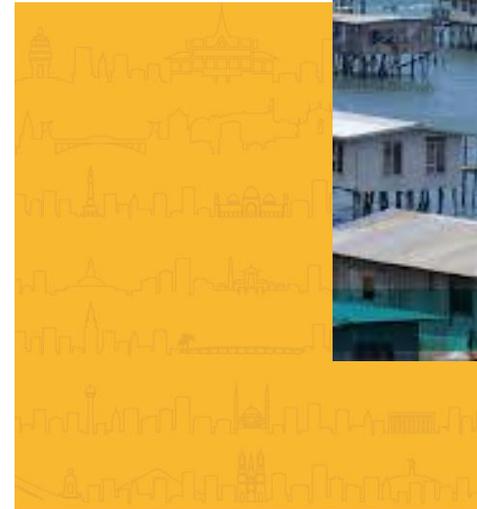
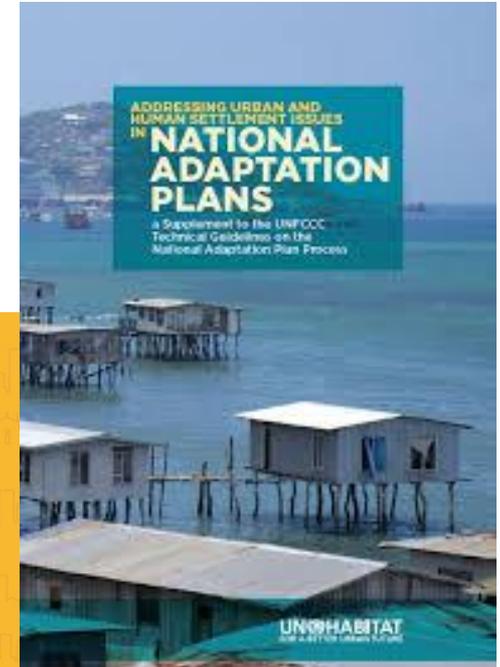
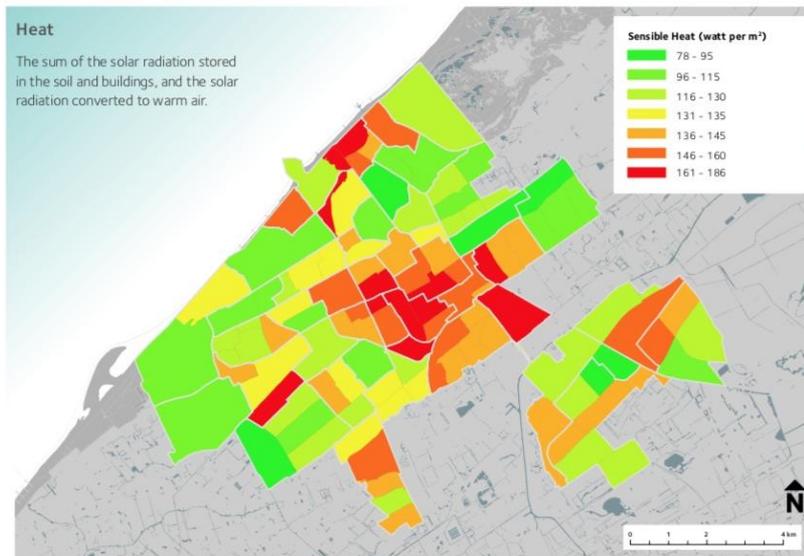
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⁵German Red Cross, Berlin, Germany



Earlier action: From early warning to long-term planningx



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GUIDE FOR CITIES**

RISING UNCERTAINTIES, EXTREME VULNERABILITY



ICRC

INTERNATIONAL COMMITTEE OF
THE RED CROSS

English

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WHO WE ARE

WHAT WE DO

WHERE WE WORK

WAR & LAW

SUPPORT US

ICRC to UN Security Council: Double impact of climate change and armed conflict harms people's ability to cope

ICRC Statement to UN Security Council Open
Debate "Addressing the impacts of climate-
related disasters on international peace and

