Fifth Assessment Report
Intergovernmental Panel on Climate Change:
The Key Messages

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At
Princeton E-ffiliates Partnership
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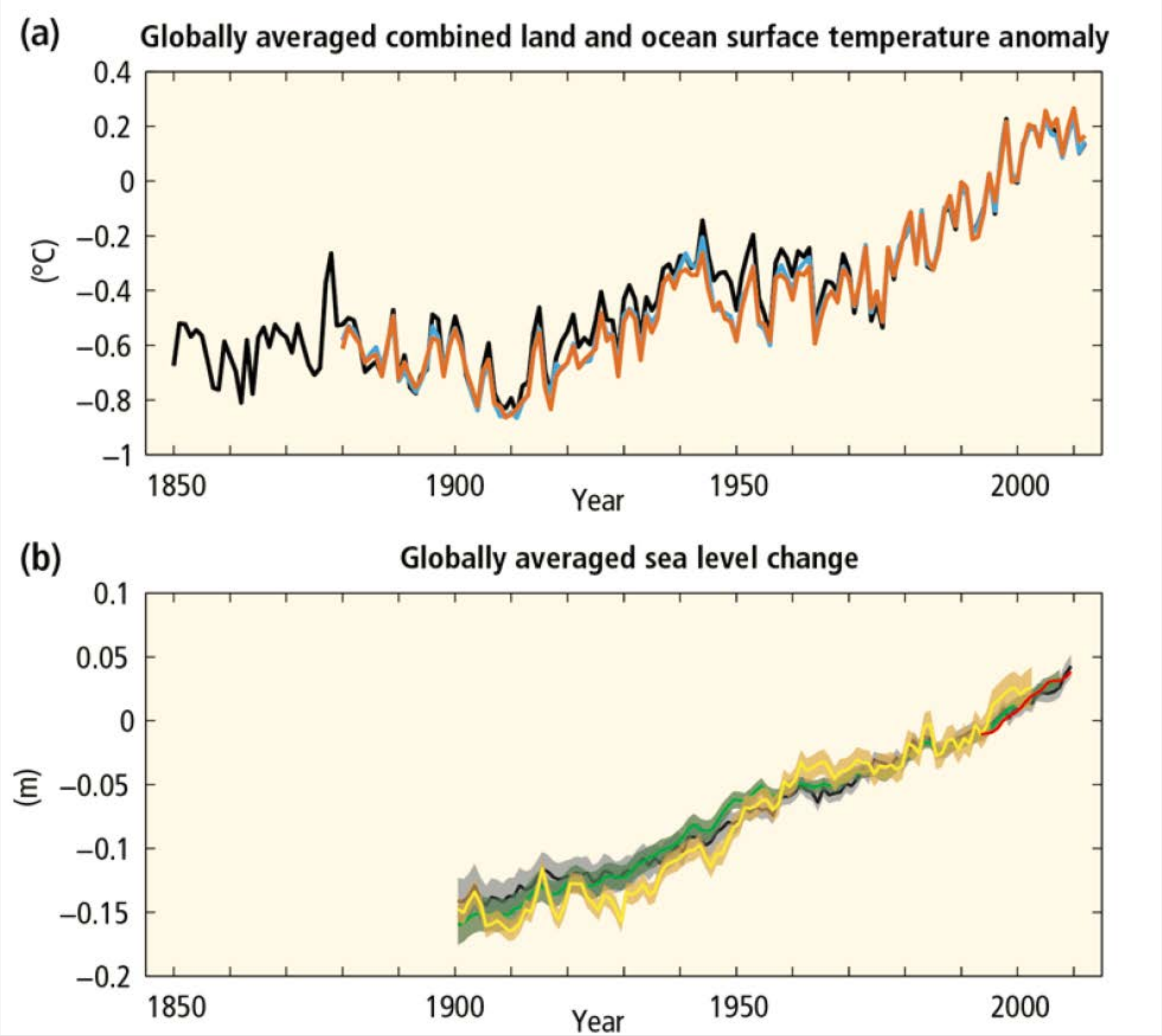
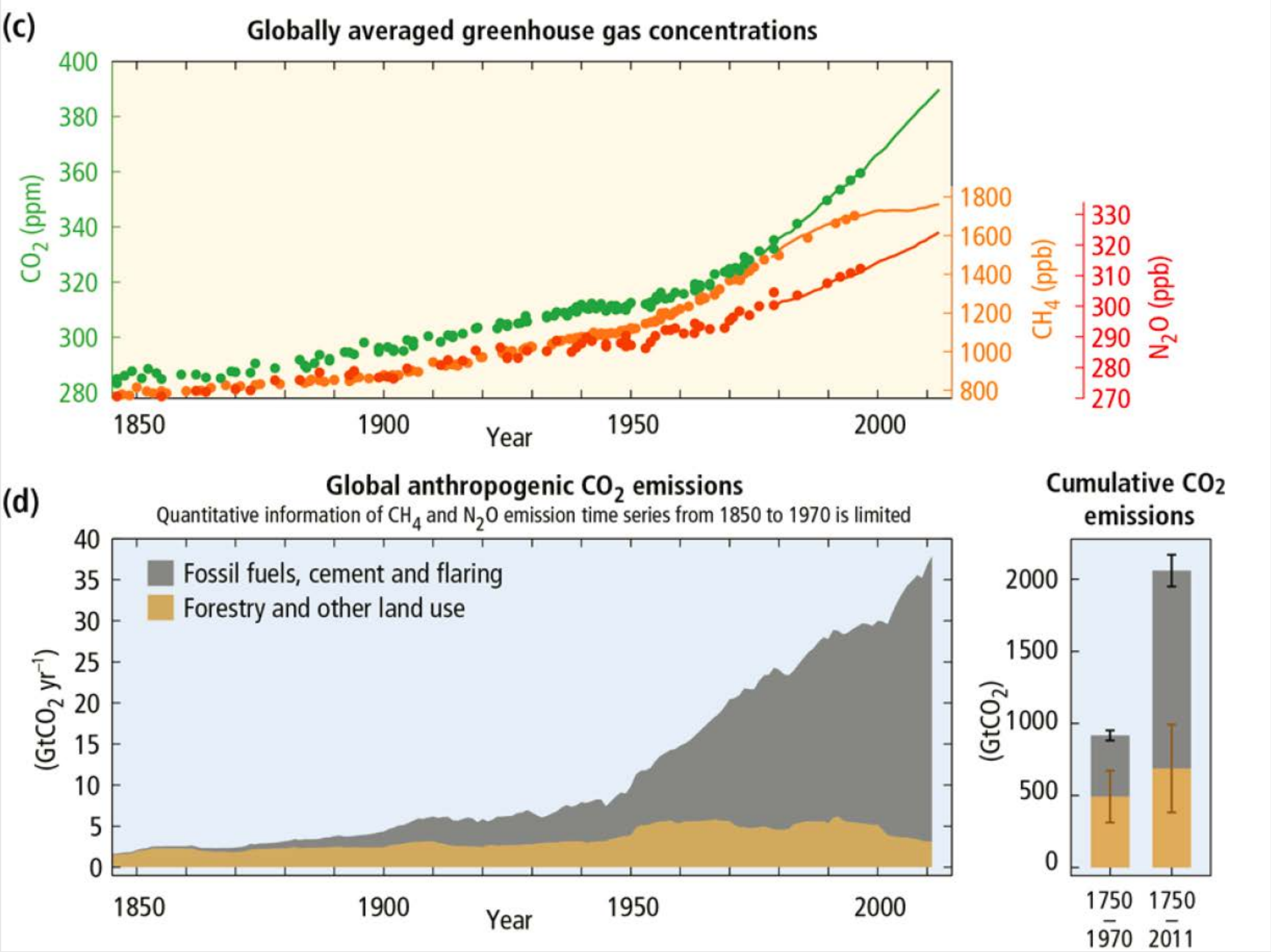
Global Mean Temperature, Sea Level Changing



Greenhouse gas emissions, largely from fossil fuels, responsible



Sources of emissions

Energy production remains the primary driver of GHG emissions

35% Energy Sector

24% Agriculture, forests and other land uses

21% Industry

14% Transport

6.4% Building Sector

2010 GHG emissions

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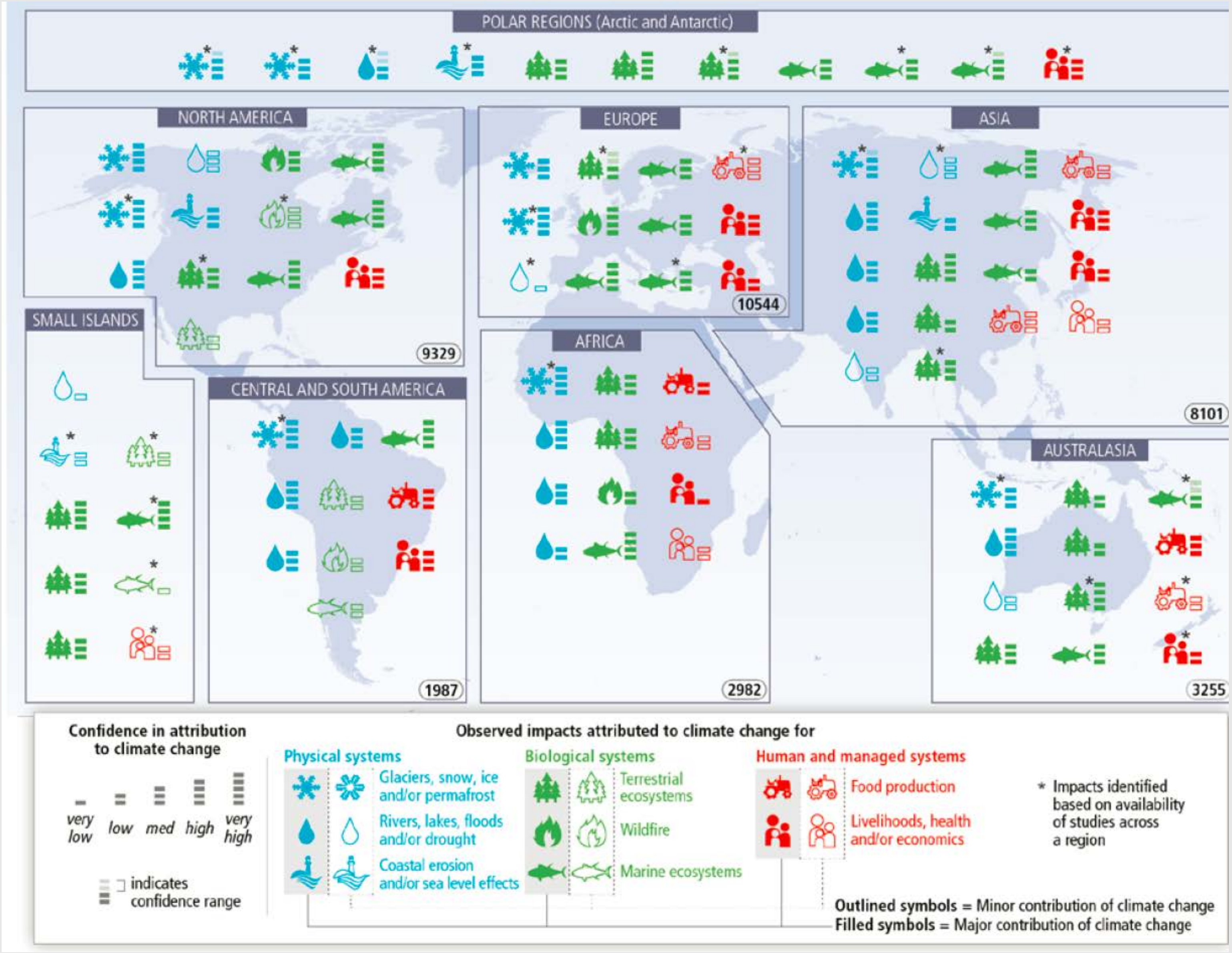
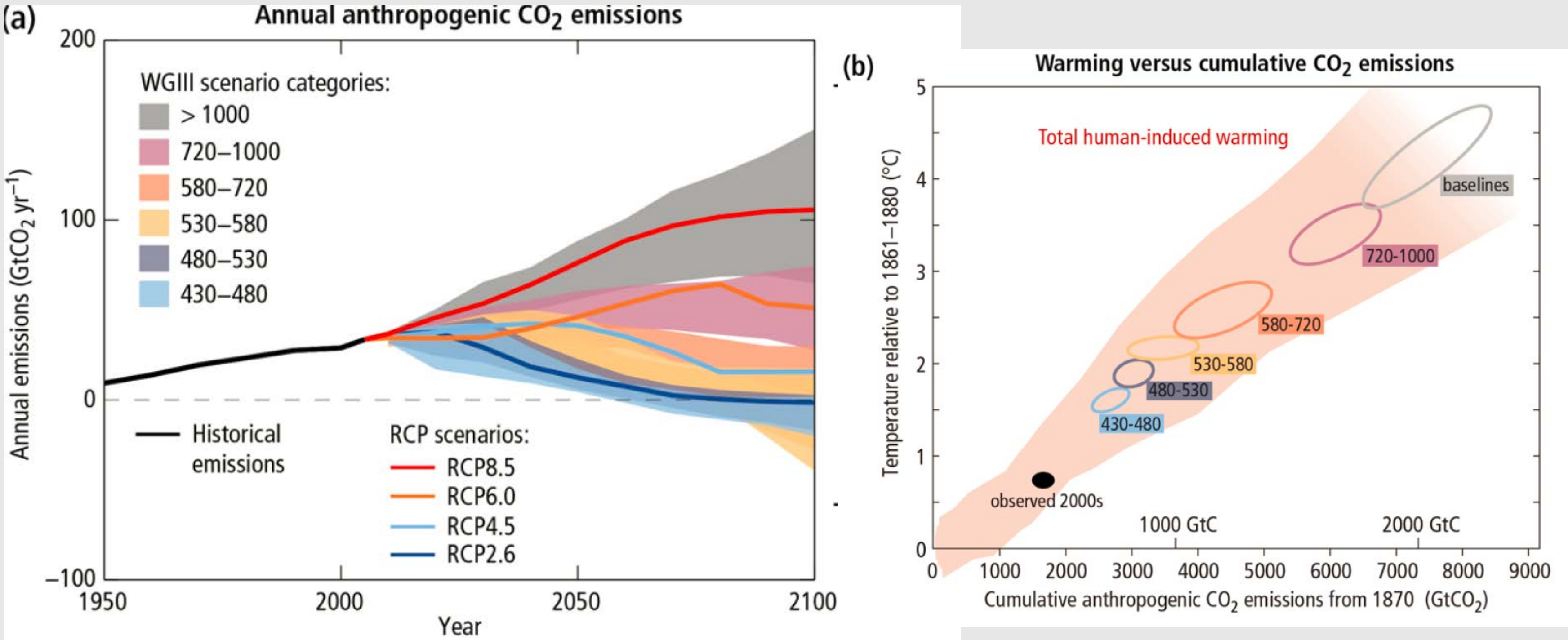
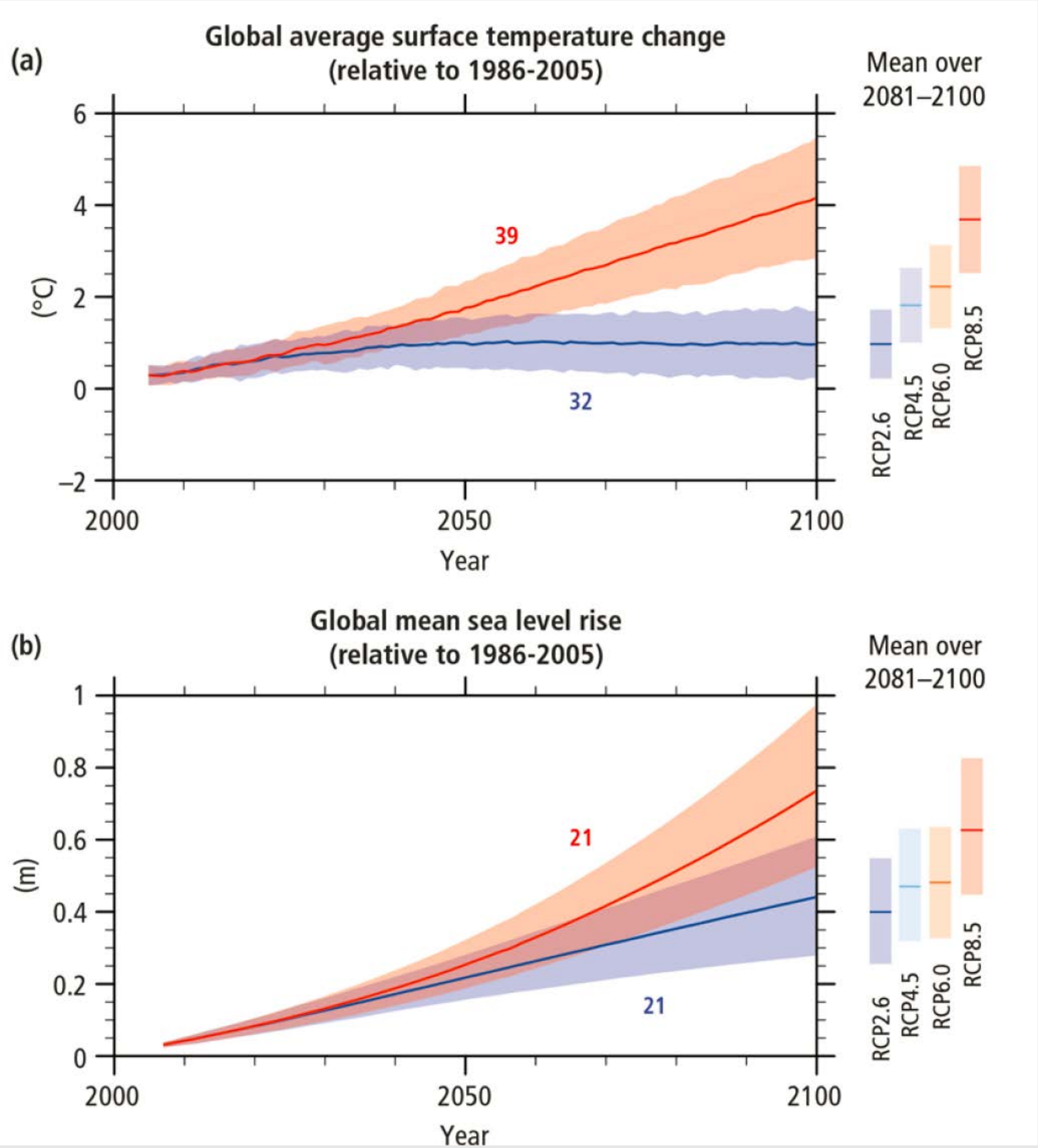
Many Impacts Now Attributable to Climate Change



Emission Scenarios and Warming

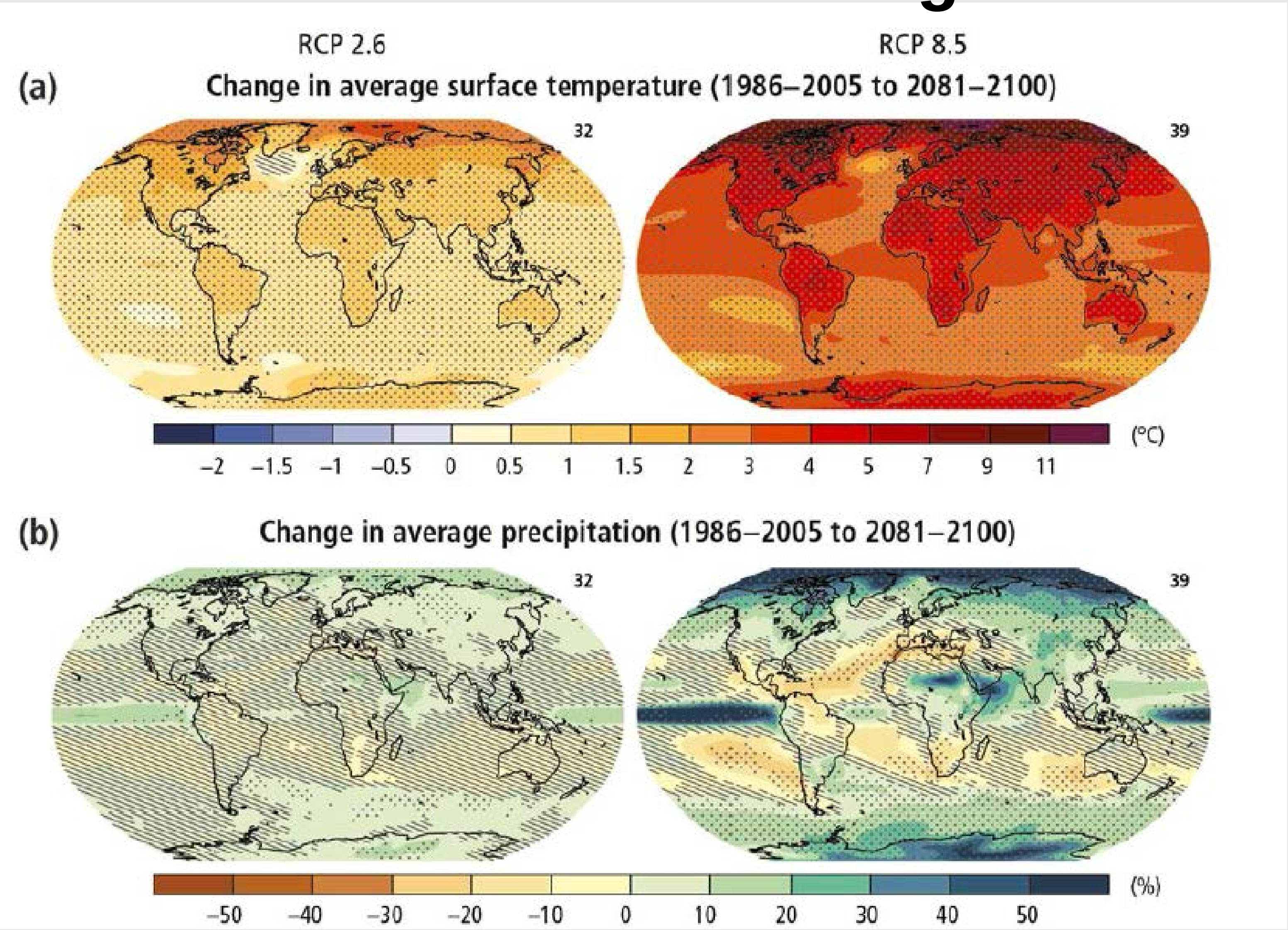




Projected Warming and Sea Level Rise

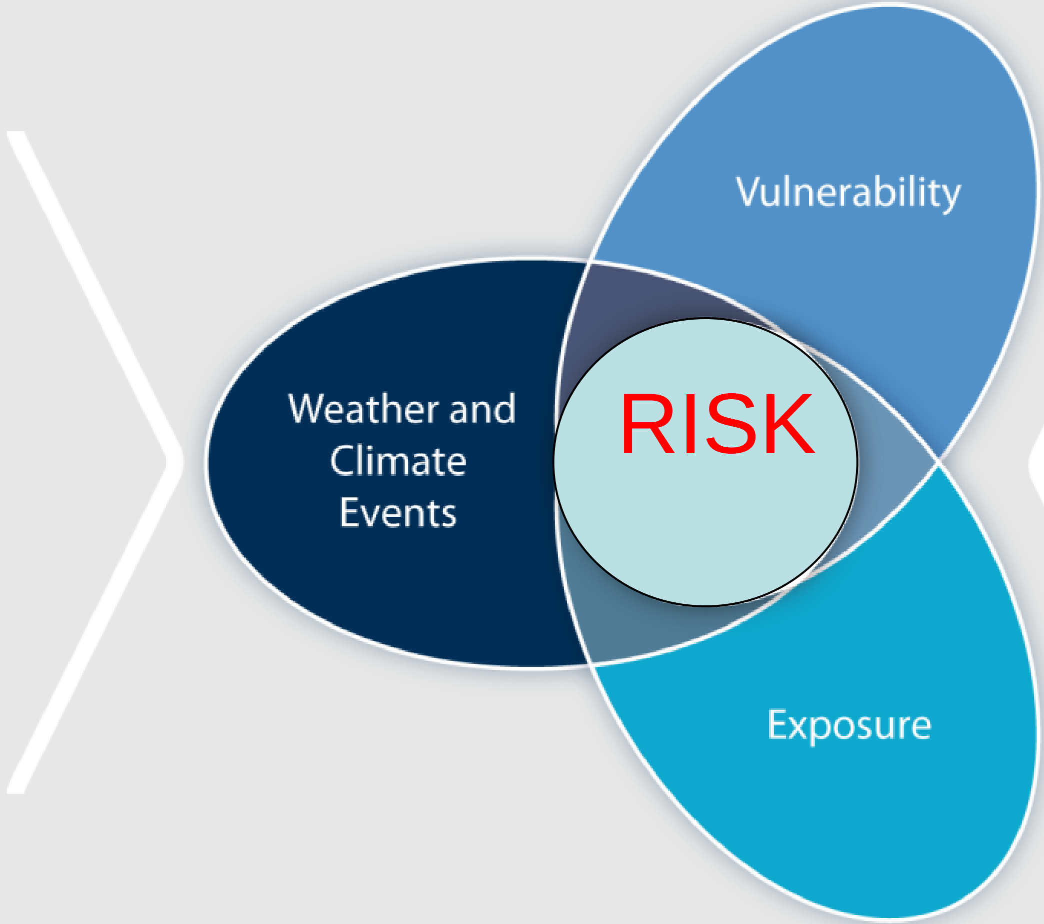
Geographic Picture of Warming

Low **High**



When Considering Potential Impacts:

Adaptation (reducing vulnerability and exposure) is Critical but Usually Suboptimal



Vulnerability:

The predisposition of a person or group to be adversely affected

Exposure:

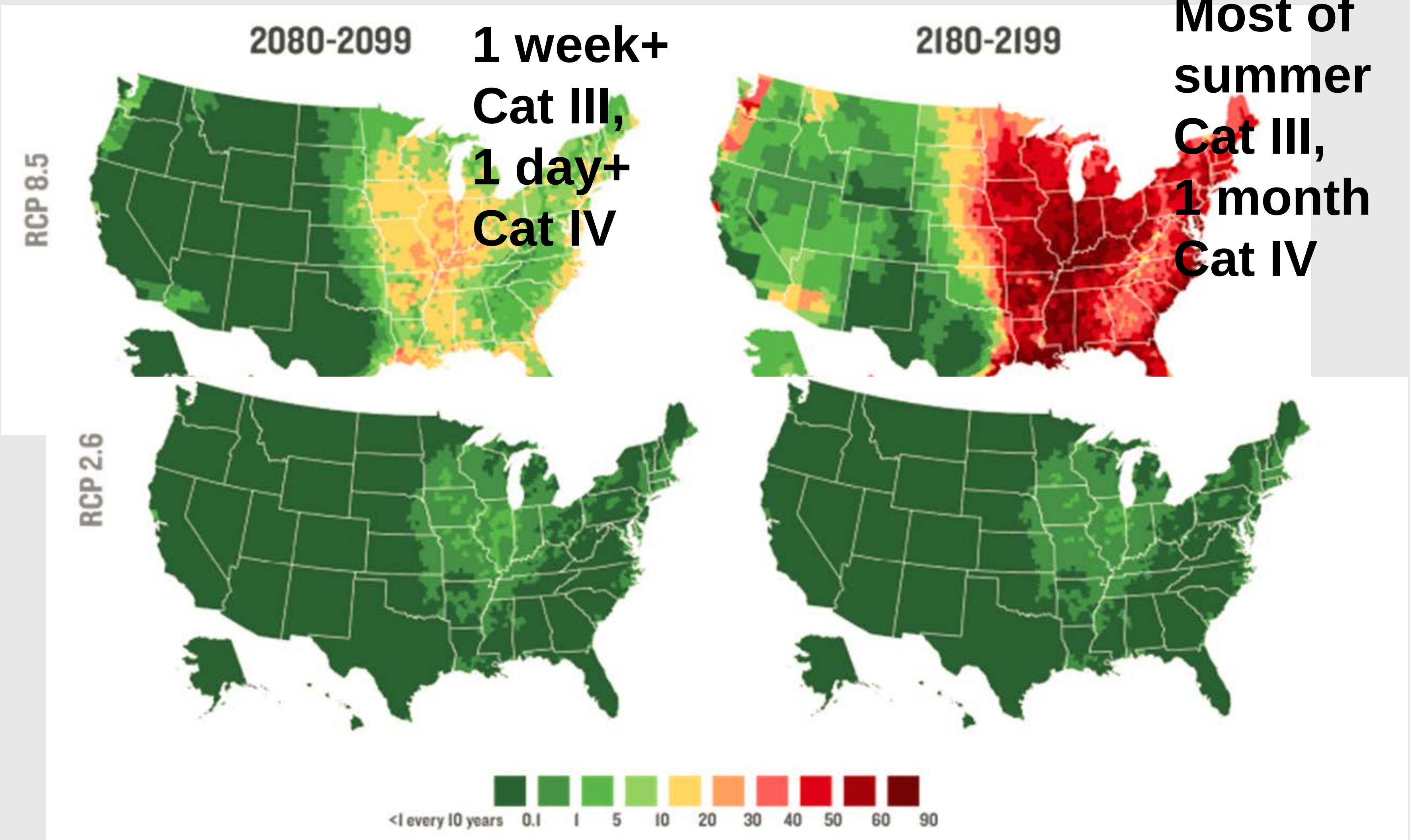
Being in the wrong place at the wrong time

A Key Risk:
Heat Index
(From “Risky Business”, Not IPCC)

Table 4.1 The ACP Humid Heat Stroke Index

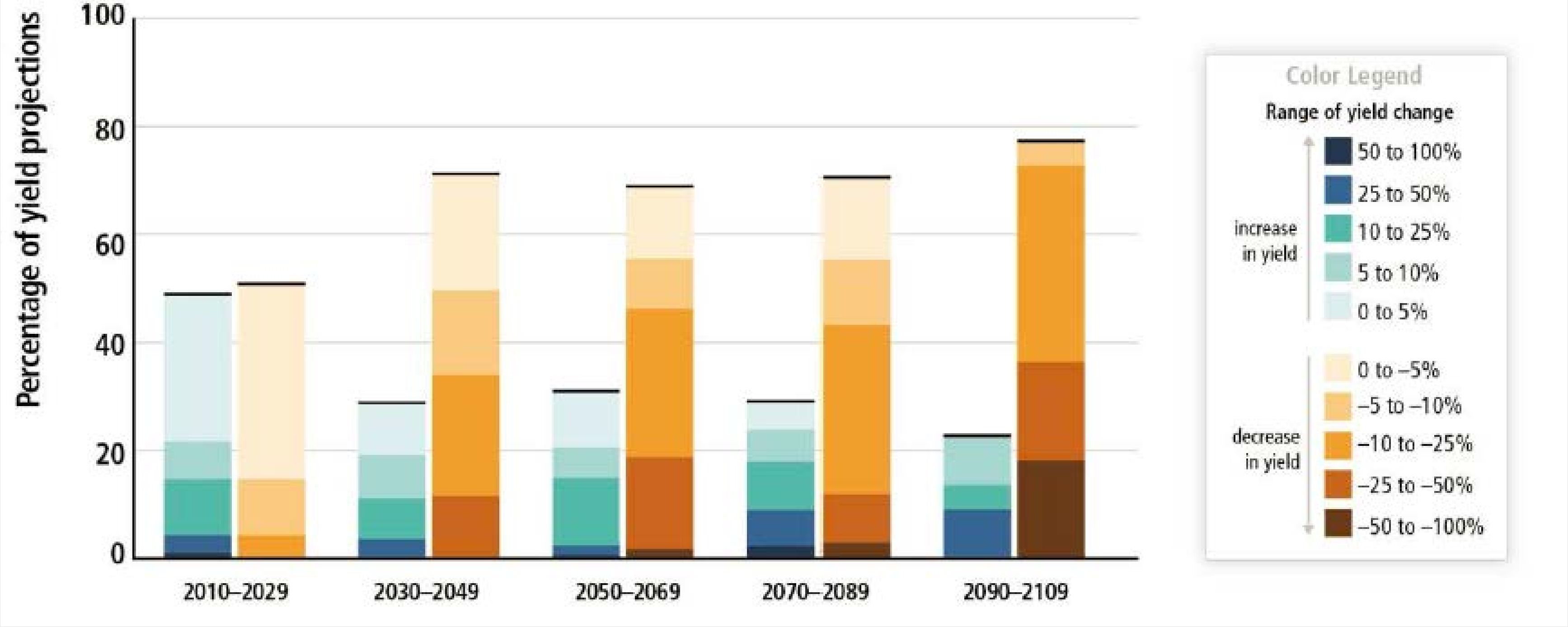
ACP Humid Heat Stroke Index	Peak Wet-Bulb Temperature	Characteristics of the hottest part of day
I	74°F to 80°F	Uncomfortable. Typical of much of summer in the Southeast.
II	80°F to 86°F	Dangerous. Typical of the most humid parts of Texas and Louisiana in hottest summer month, and the most humid summer days in Washington and Chicago.
III	86°F to 92°F	Extremely dangerous. Comparable to Midwest during peak days of 1995 heat wave.
IV	>92°F	Extraordinarily dangerous. Exceeds all US historical records. Heat stroke likely for fit individuals undertaking less than one hour of moderate activity in the shade.

US Extreme Heat Risk
(from “Risky Business”, not IPCC)



Category III+ Wet-bulb Temperature

Crop Yield Declines Outpace Increases



All emission scenarios and adaptation levels Relative to late 20th C

Coastal Flooding:

Flood frequency multiplier for 0.5m global mean sea level rise

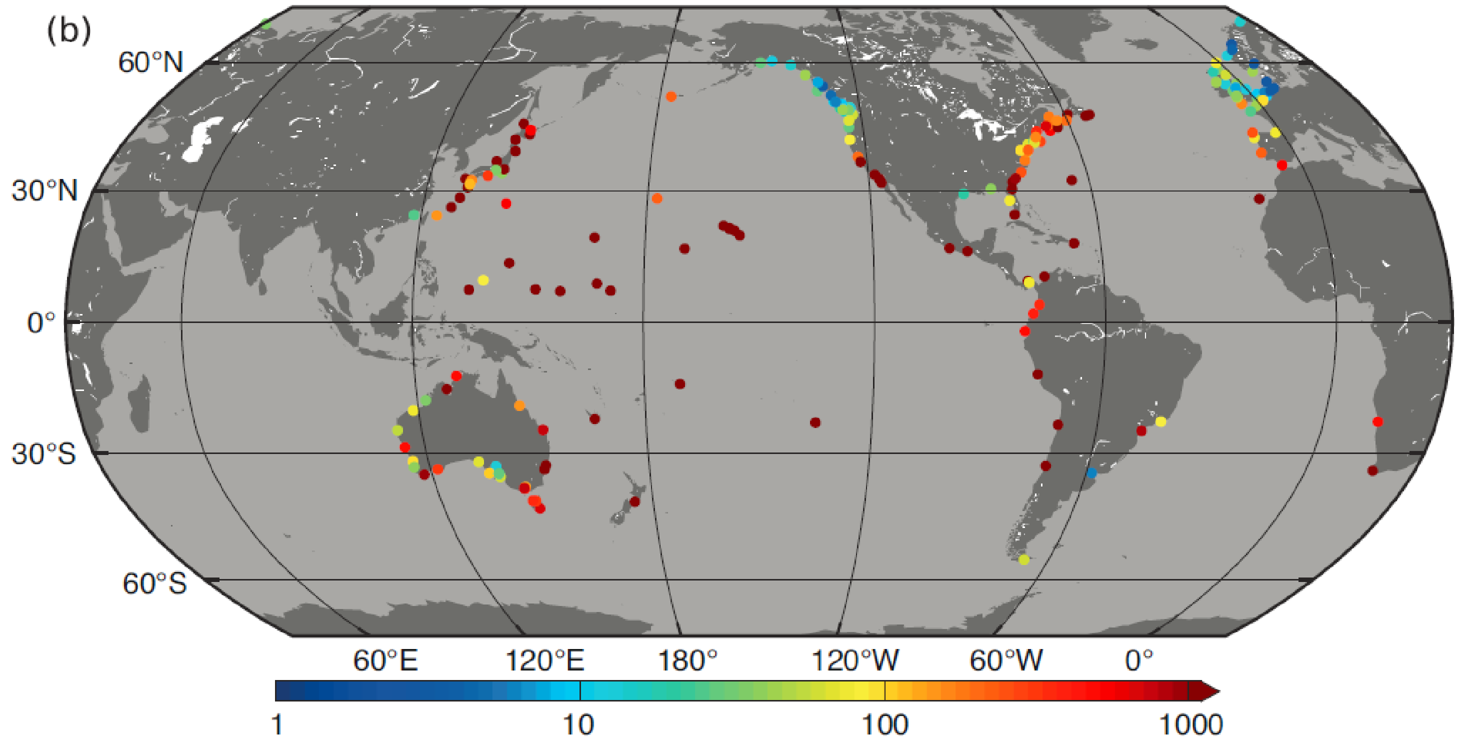
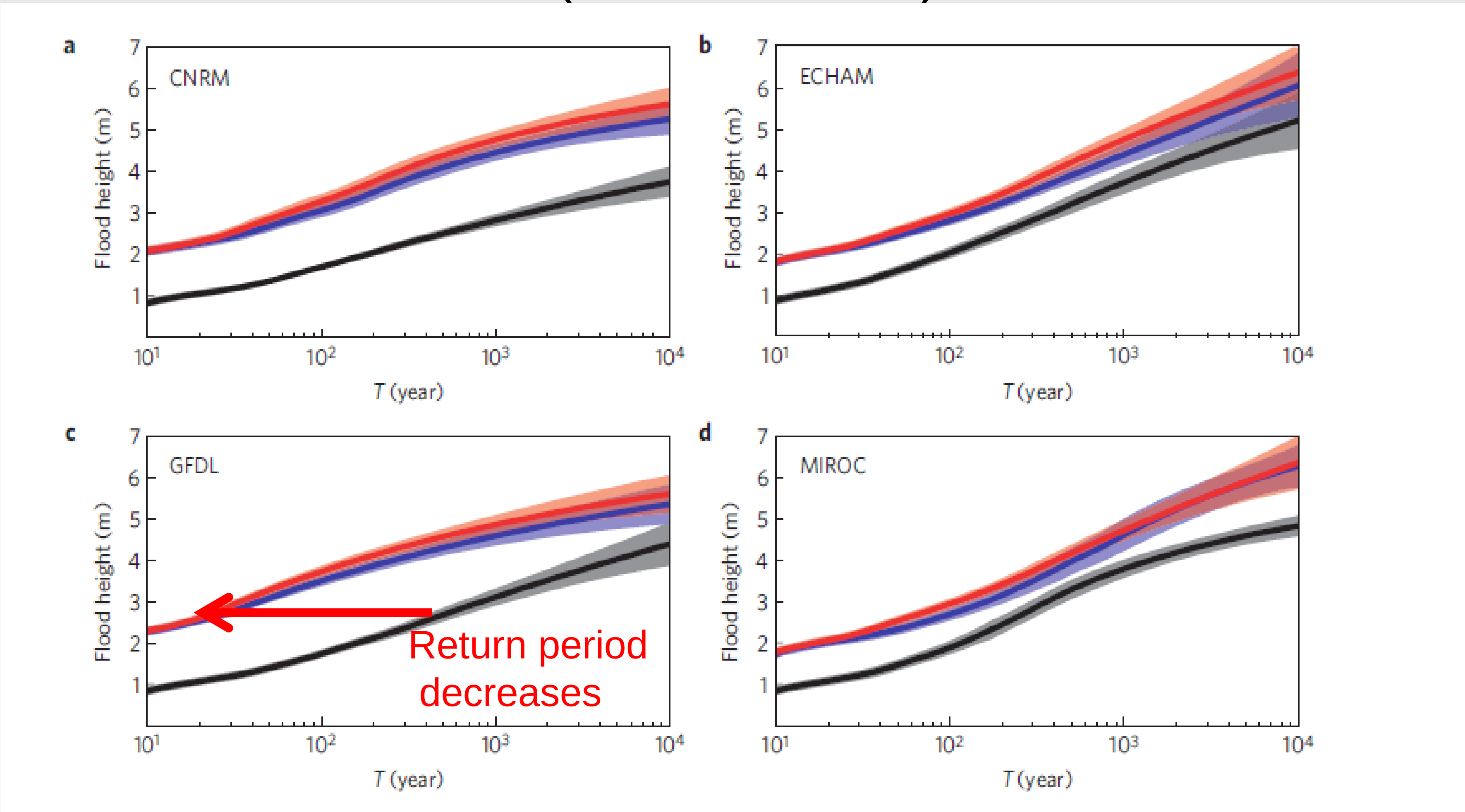


Figure 13.25 | The estimated multiplication factor (shown at tide gauge locations by colored dots), by which the frequency of flooding events of a given height increase for (a) a mean sea level (MSL) rise of 0.5 m (b) using regional projections of MSL for the RCP4.5 scenario, shown in Figure13.19a.

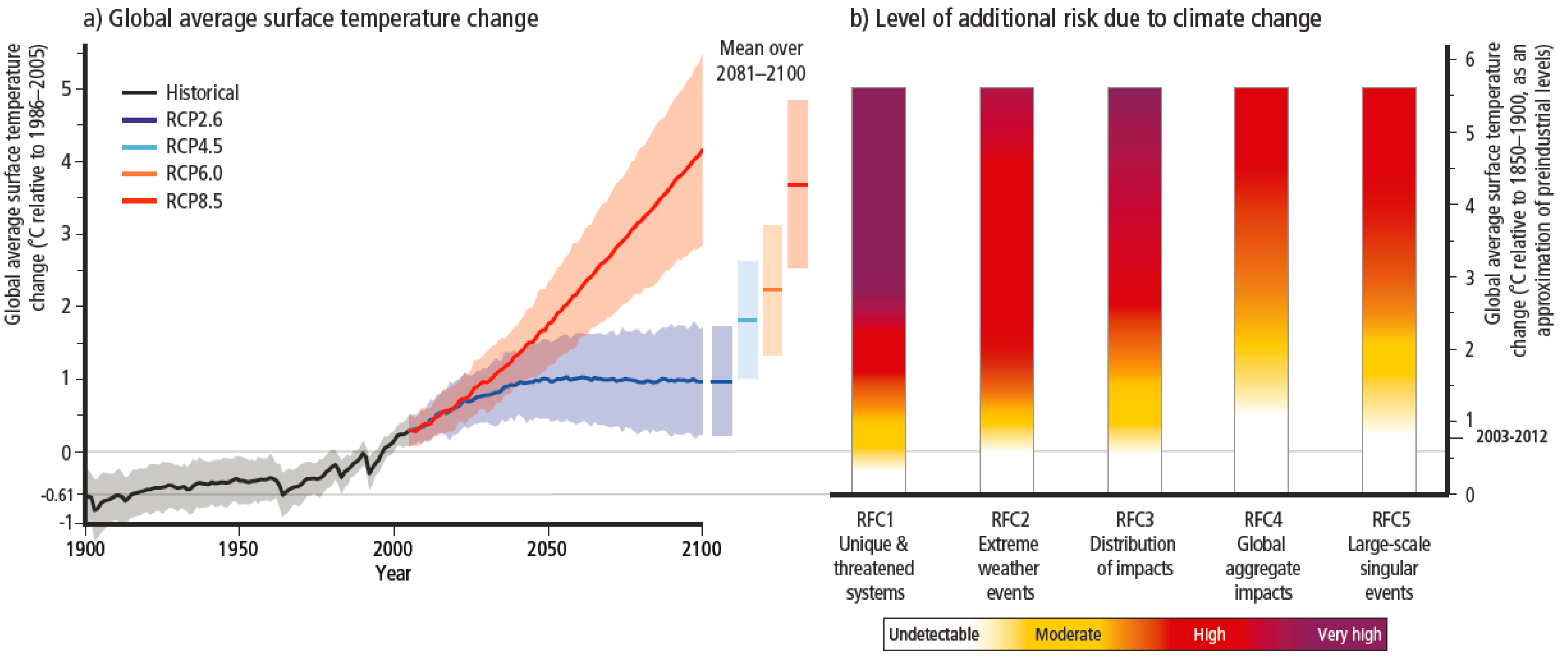
Example: Hurricane Sandy

Sandy-like flood (3.7m) returns more often due to higher sea level (up to 1m) and strong tropical cyclones (Lin et al 2012)

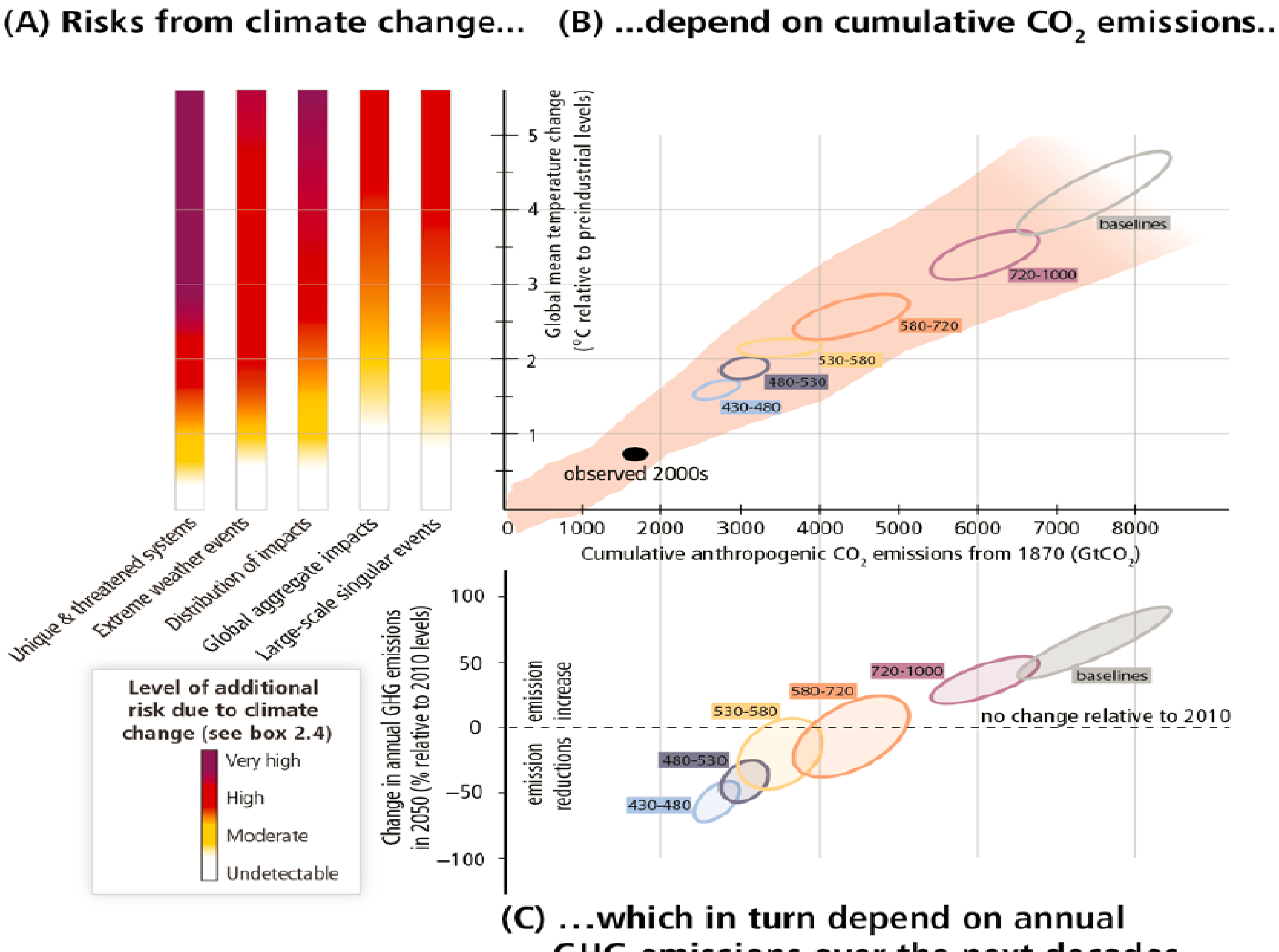
(Not from IPCC)



An Aggregation of Risk



Implied Emissions Reductions



Limiting Temperature Increase to 2°C

Global GHG emissions reduction of 40-70 % in 2050 compared to 2010

Net zero or negative GHG emissions in 2100

Global emissions to curb within next 5-15 years

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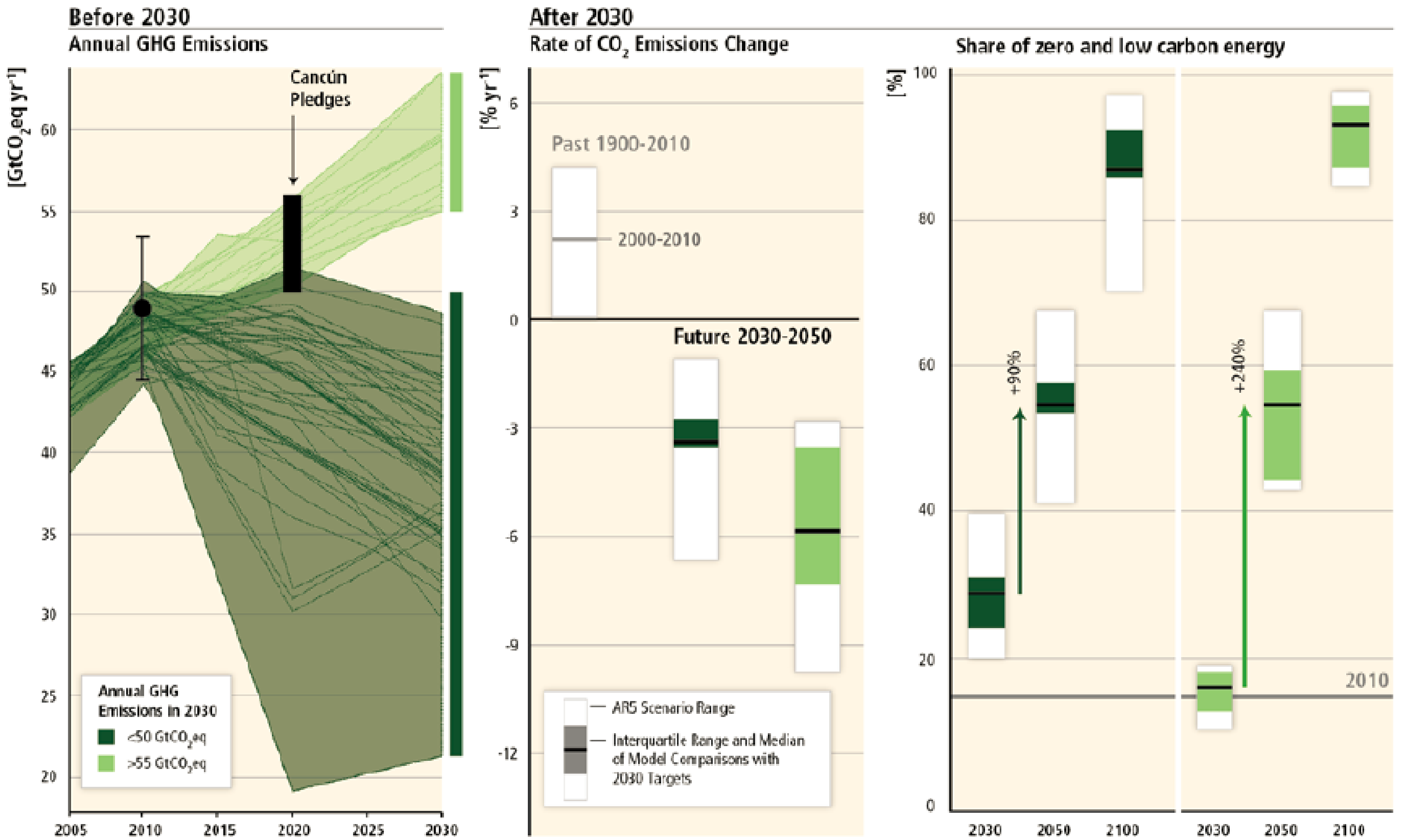
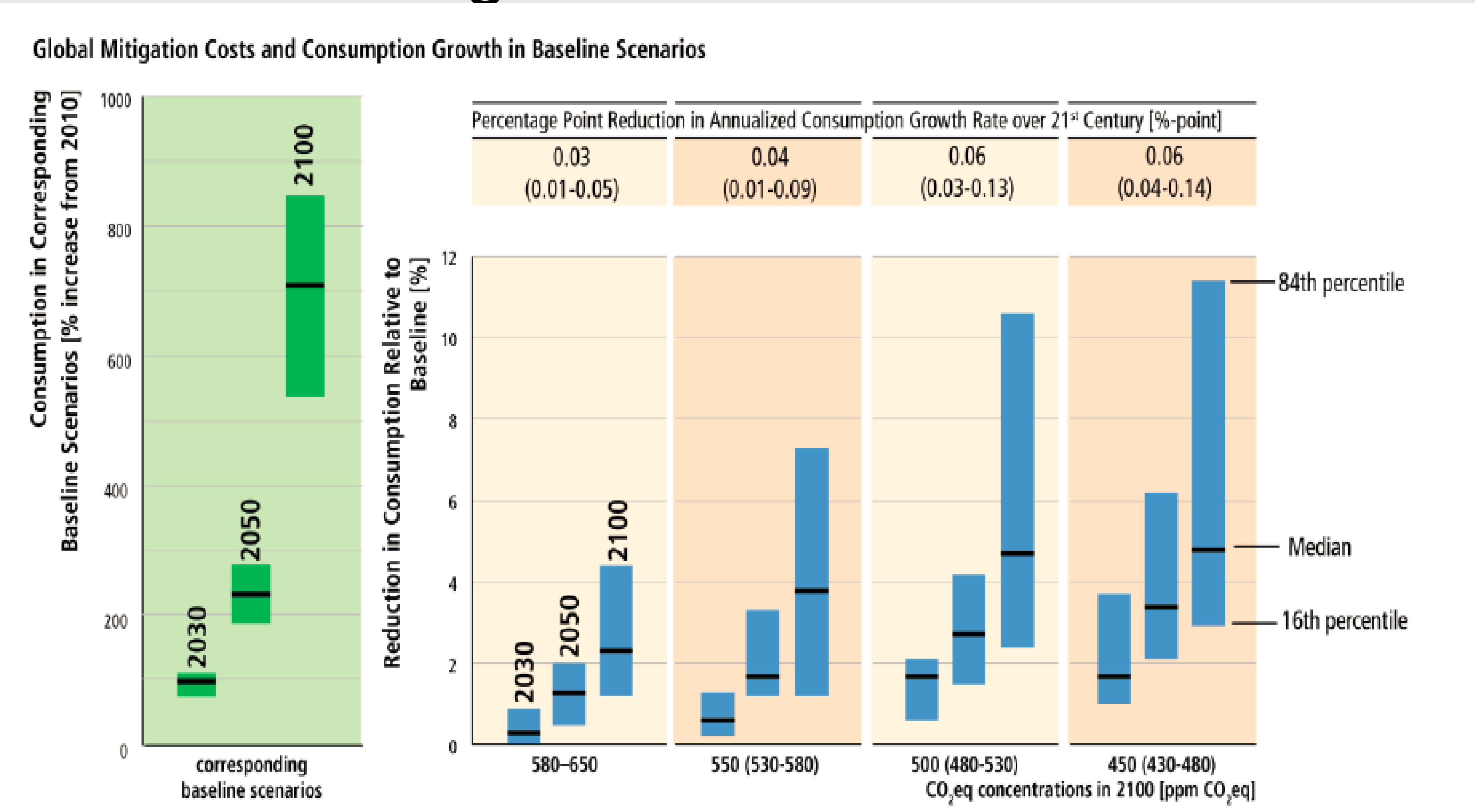
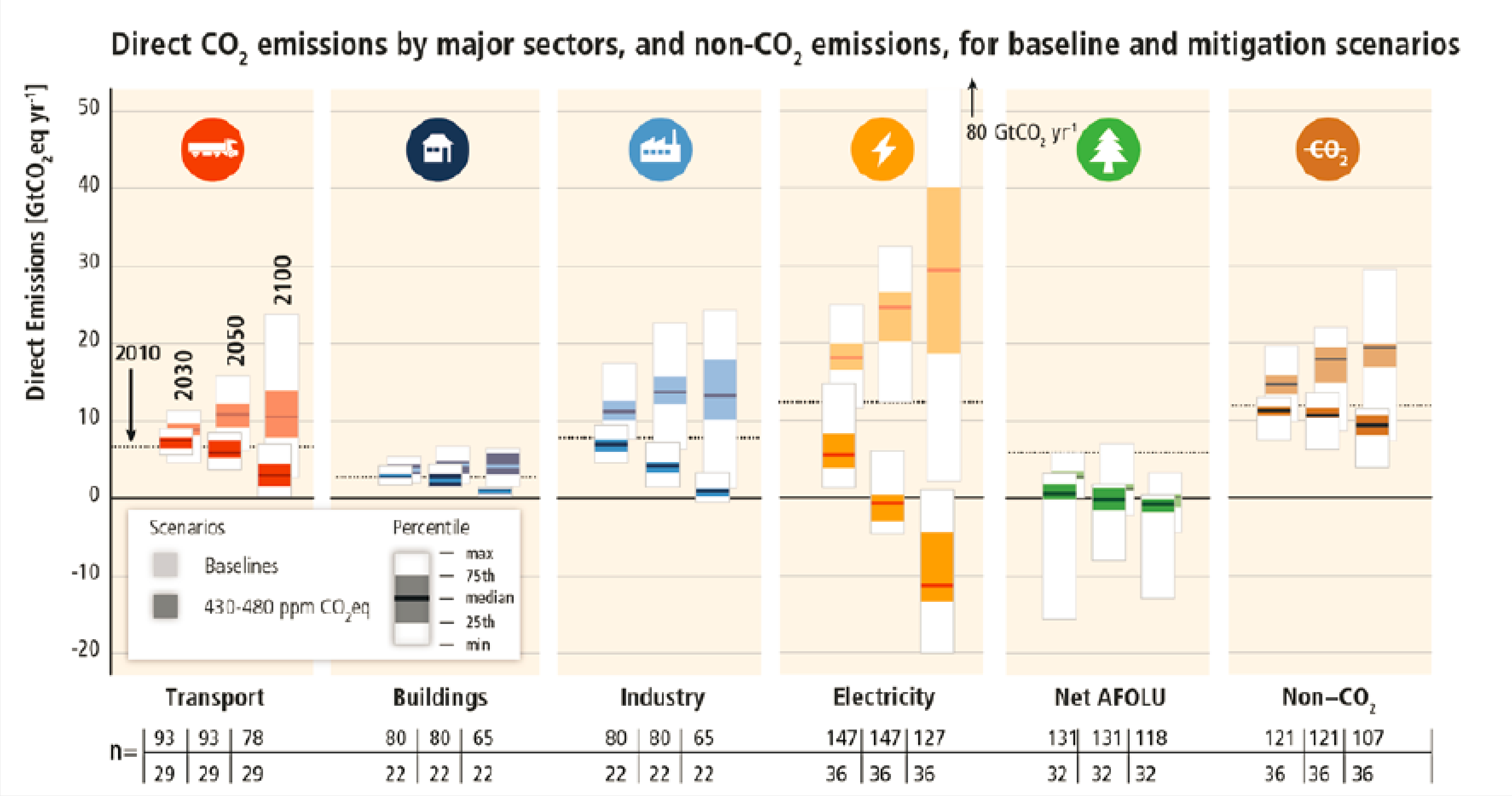
Act Aggressively Now?



Aggregate Cost of Emissions Mitigation, in Context

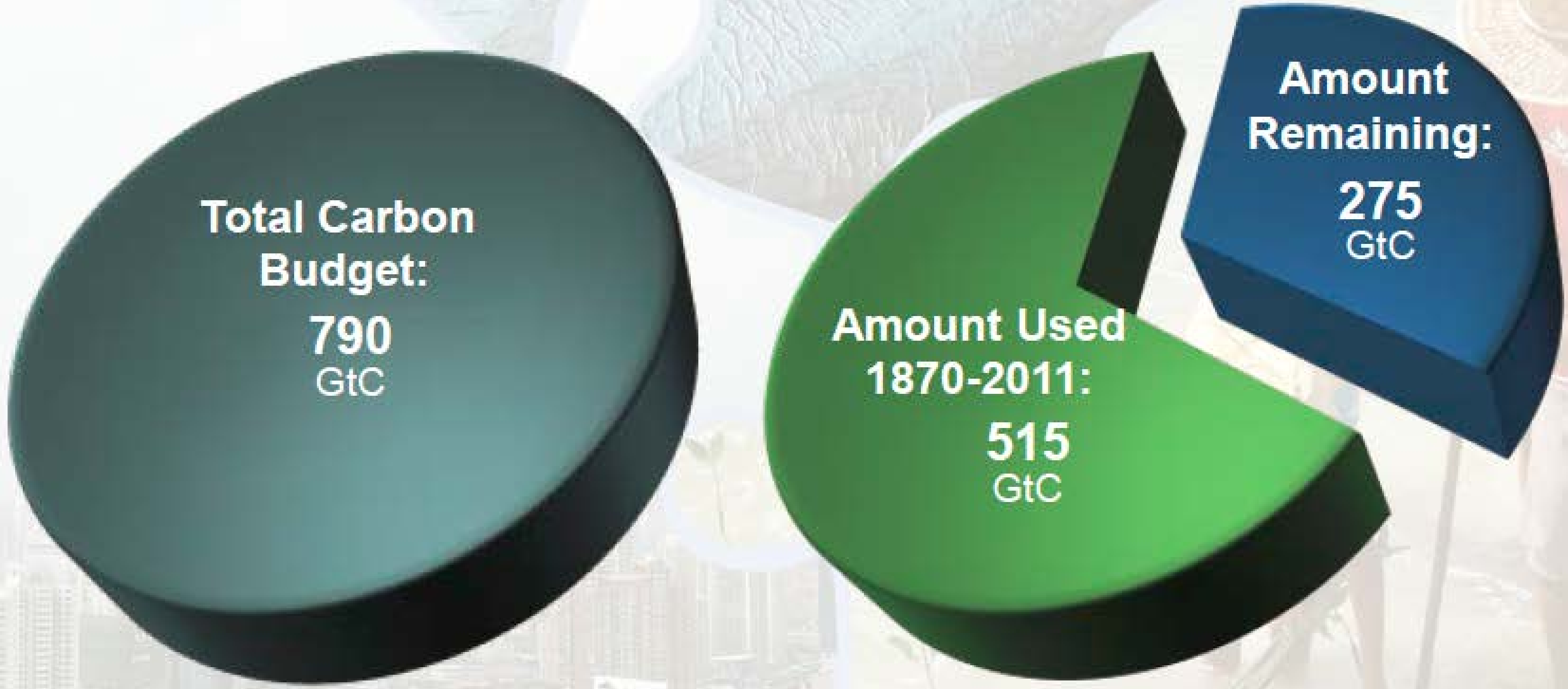


Where Reductions Fall, by Sector



The window for action is rapidly closing

65% of our carbon budget compatible with a 2° C goal already used



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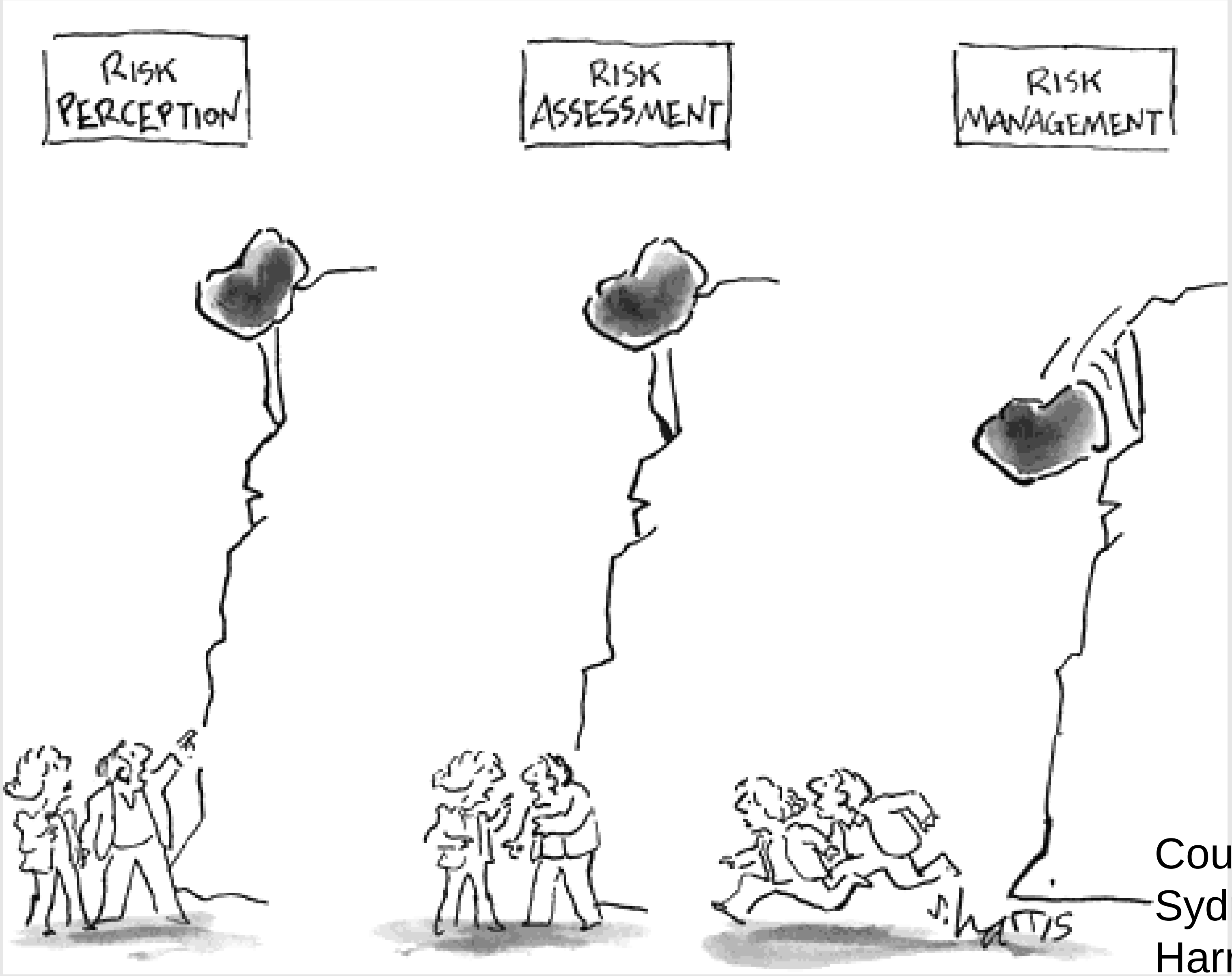
Can policy makers think ahead?



Courtesy Sydney Harris