

CLIMATE CHANGE 2014

Synthesis Report

SYR Topic 2

Future Climate Changes,



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CLA Chapter 13 Livelihoods and
Poverty, WGII

Synthesis Report of the
Fifth Assessment Report of the
Intergovernmental Panel on Climate Change

ipcc
INTERGOVERNMENTAL PANEL ON climate change



Key Message

Continued emission of greenhouse gases will cause further warming and long-lasting changes in all components of the climate system, increasing the likelihood of severe, pervasive and irreversible impacts for people and ecosystems.

Limiting climate change would require substantial and sustained reductions in greenhouse gas emissions which, together with adaptation, can limit climate change risks.

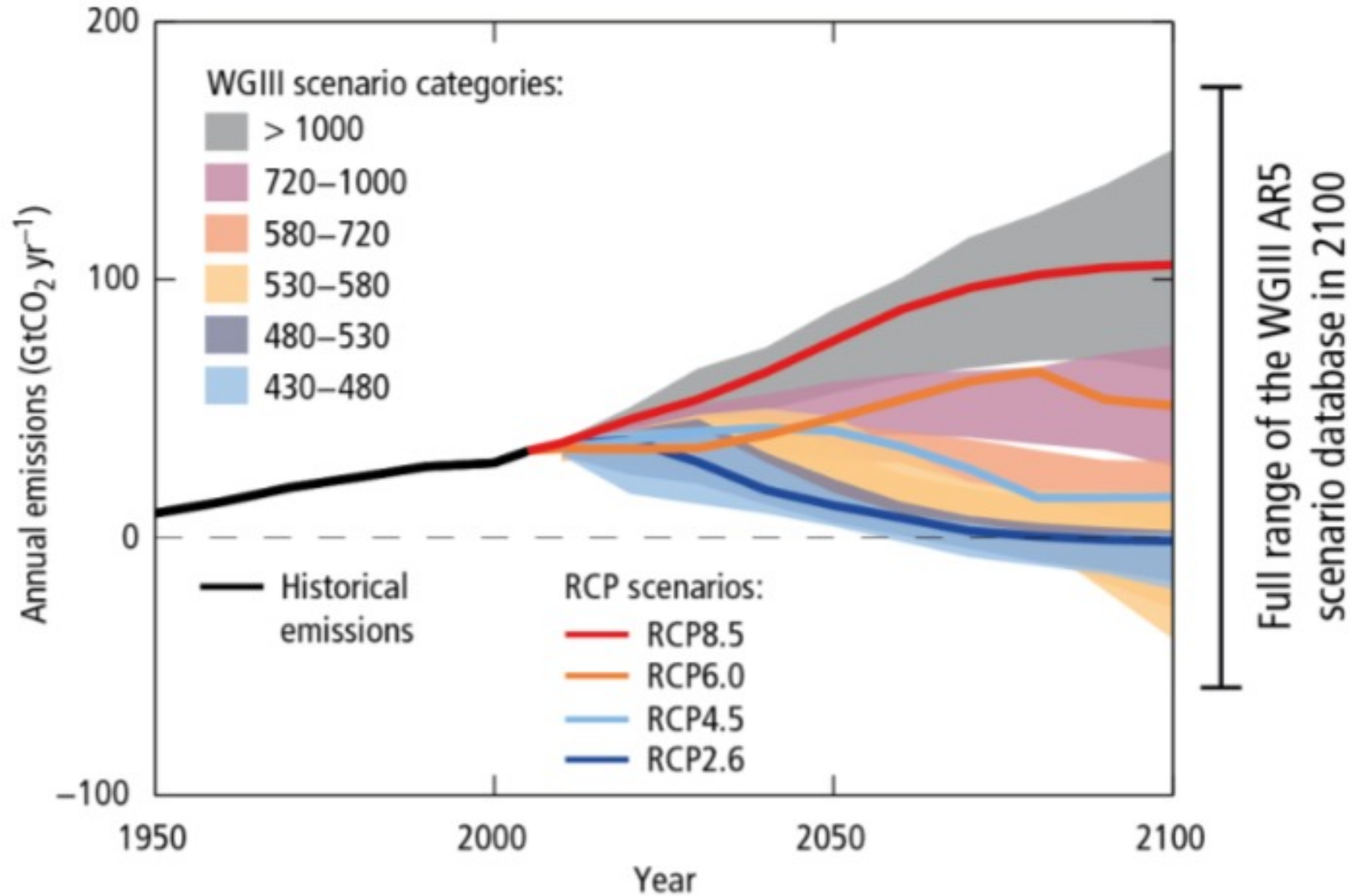
Climate Projections

Scenarios of future projections of greenhouse gas emissions vary over a wide range, depending on both socio-economic development and future climate policy.

Cumulative emissions of CO₂ largely determine global mean surface warming by the late 21st century and beyond.

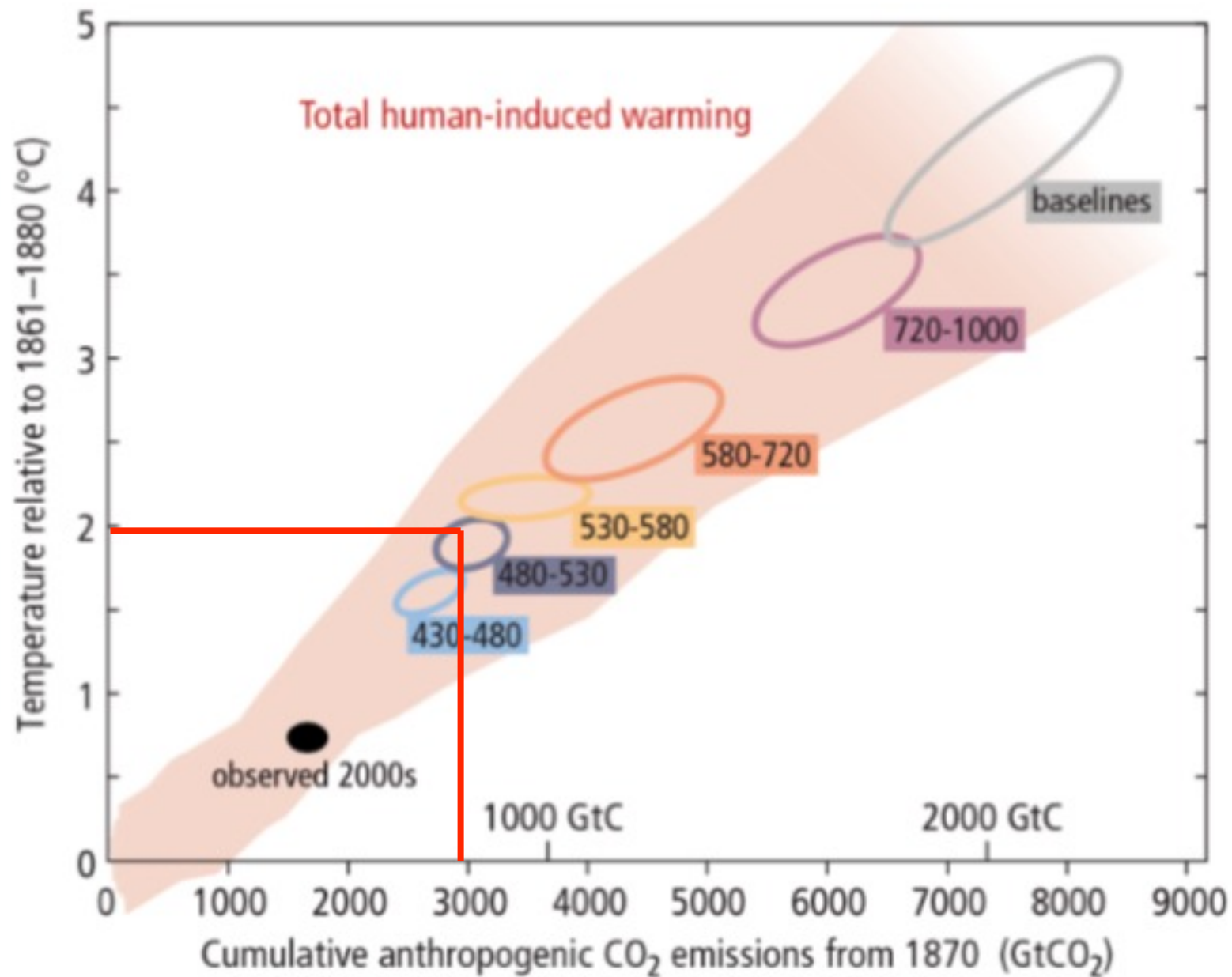
(a)

Annual anthropogenic CO₂ emissions



(b)

Warming versus cumulative CO₂ emissions



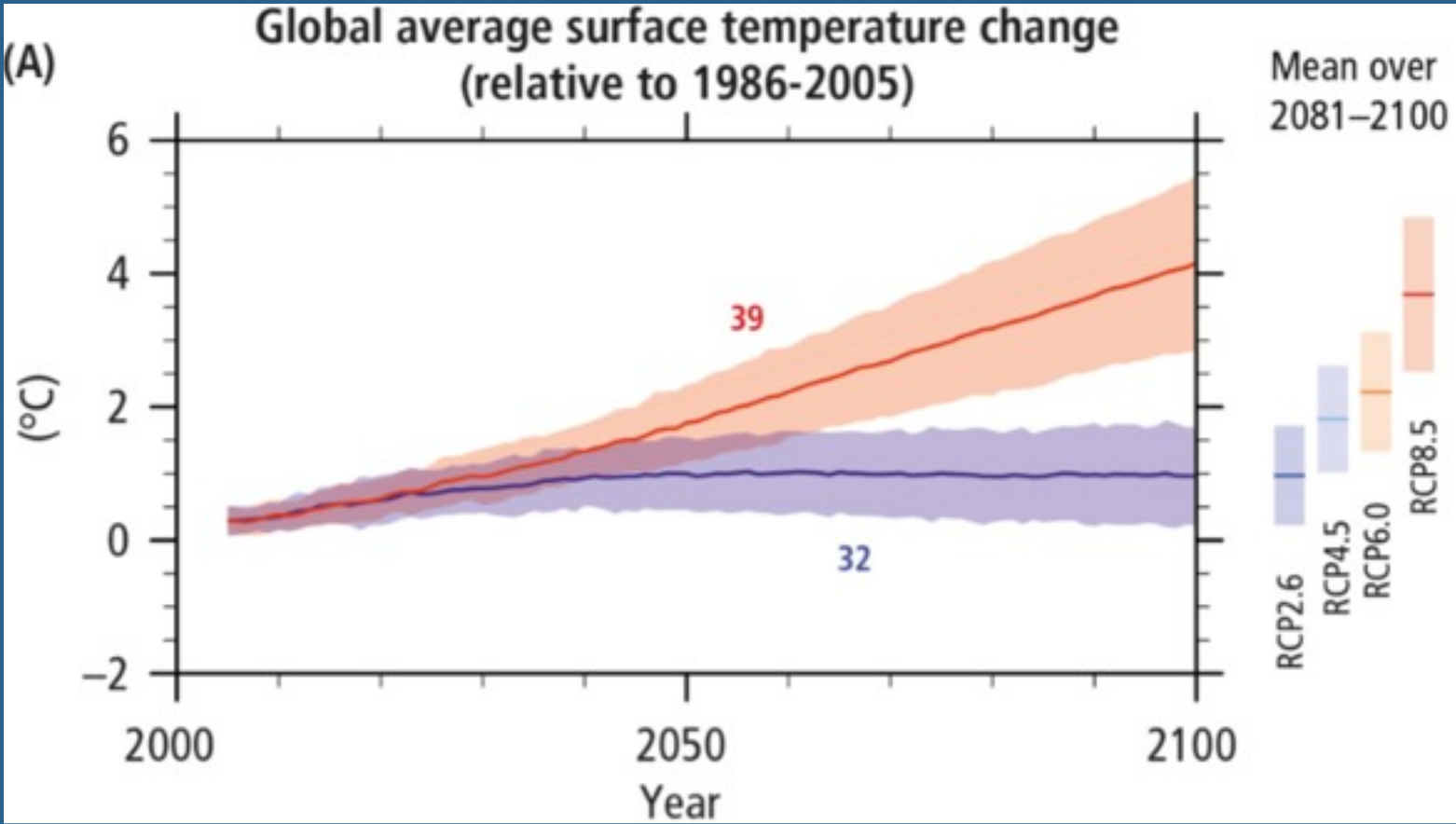
Projected Changes in the Climate System

Surface temperature is projected to rise over the 21st century under all assessed emission scenarios.

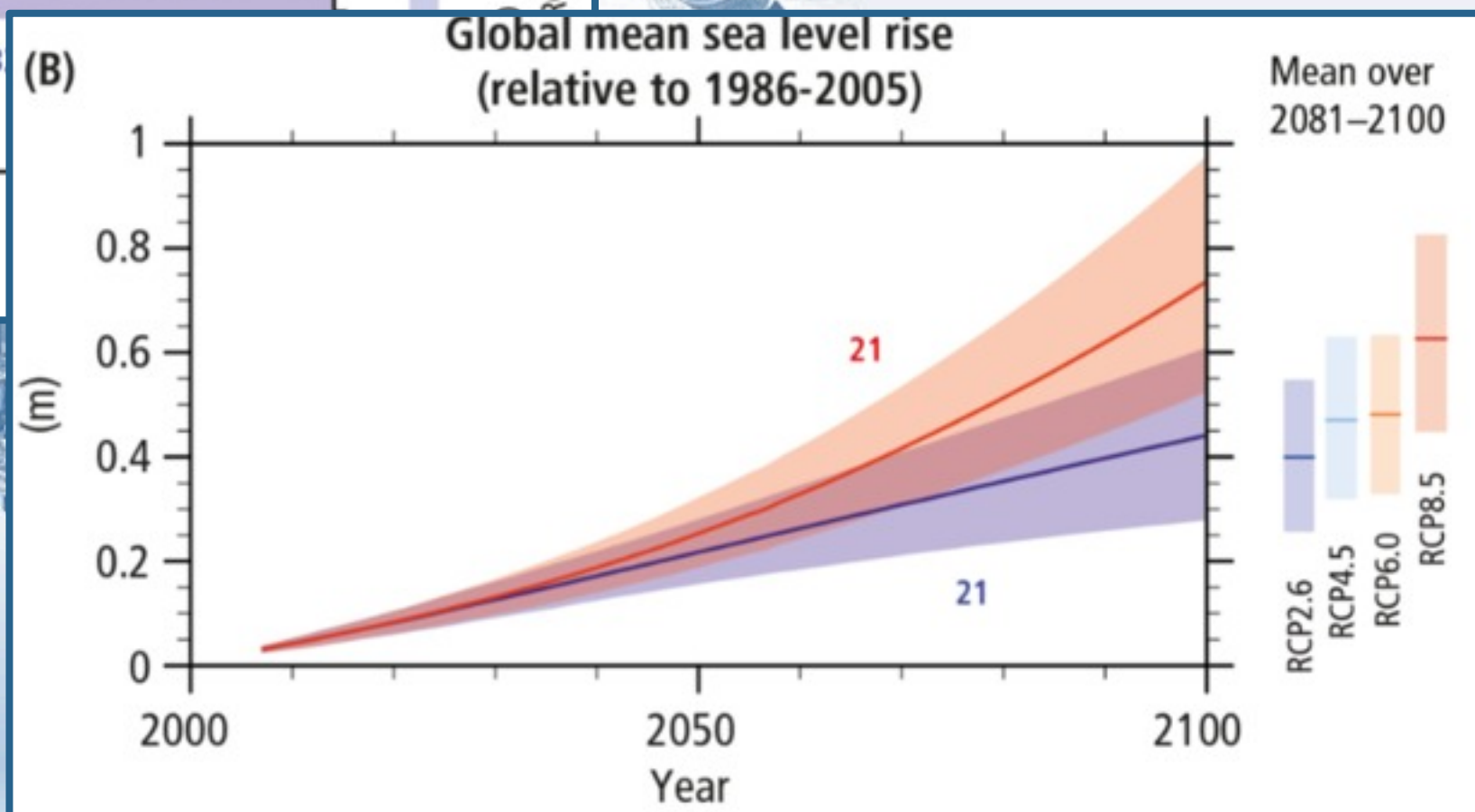
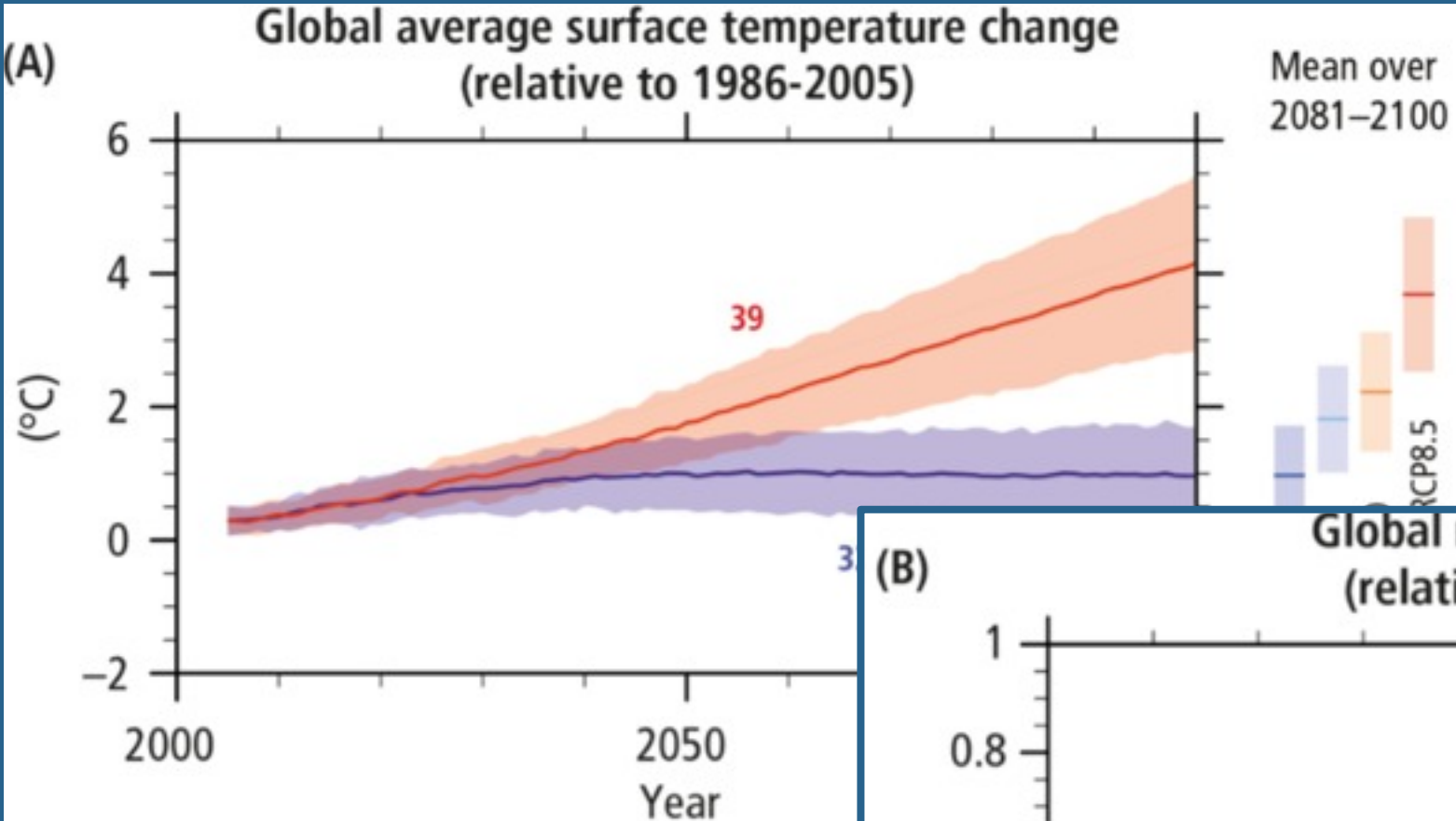
It is very likely that **heat waves** will occur more often and last longer, and that **extreme precipitation** events will become more intense and frequent in many regions.

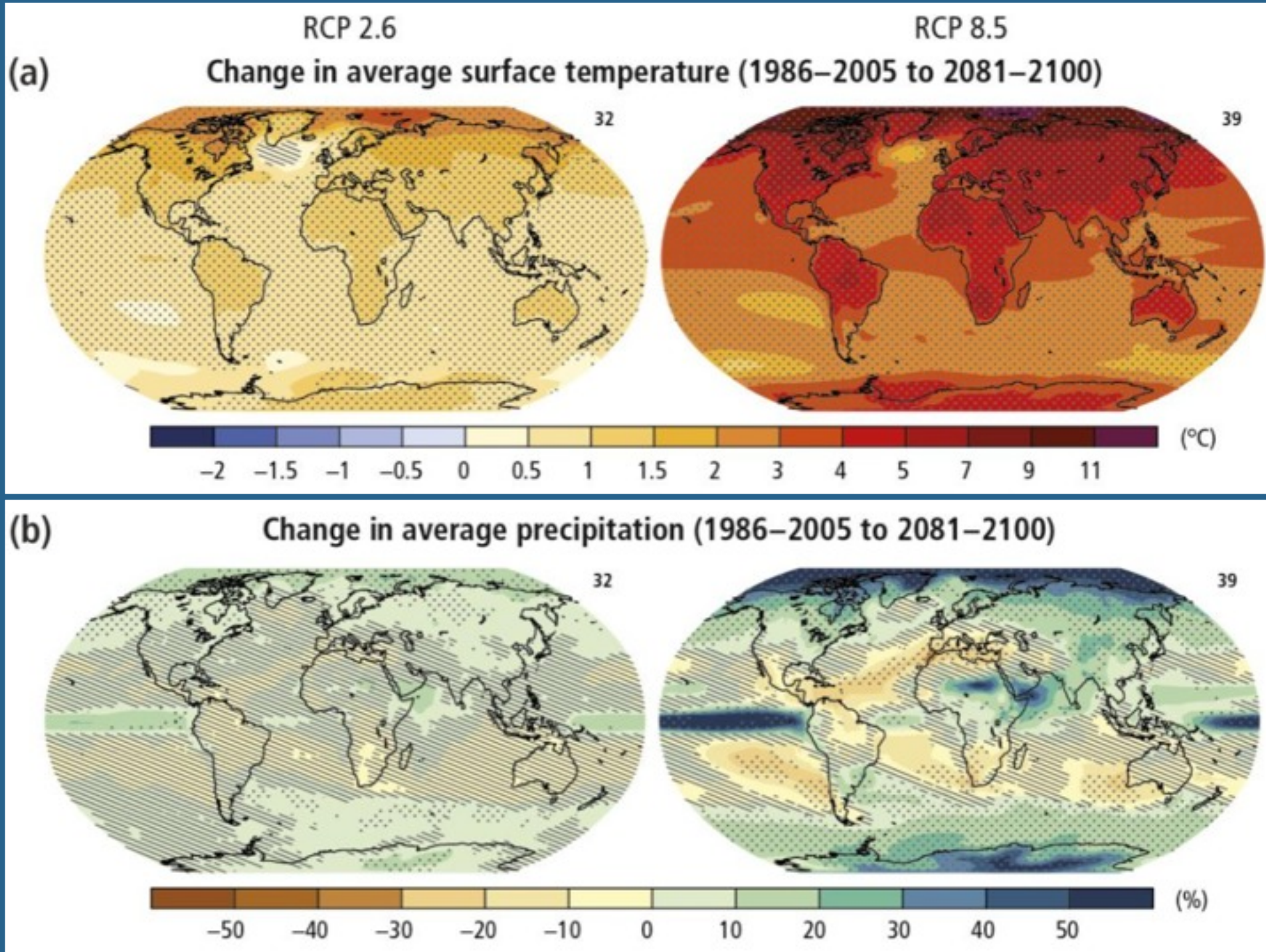
The **ocean** will continue to warm and acidify, and **global mean sea level** to rise.

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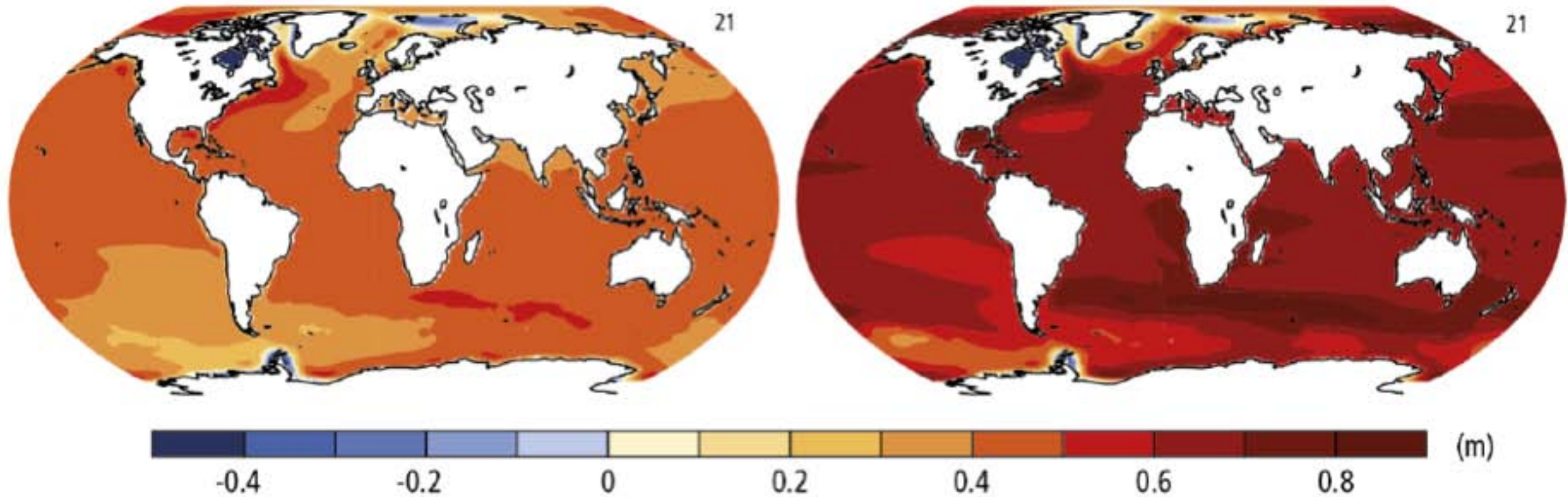


RCP 2.6


RCP 8.5

(c)

Change in average sea level (1986–2005 to 2081–2100)



Future Risks and Impacts

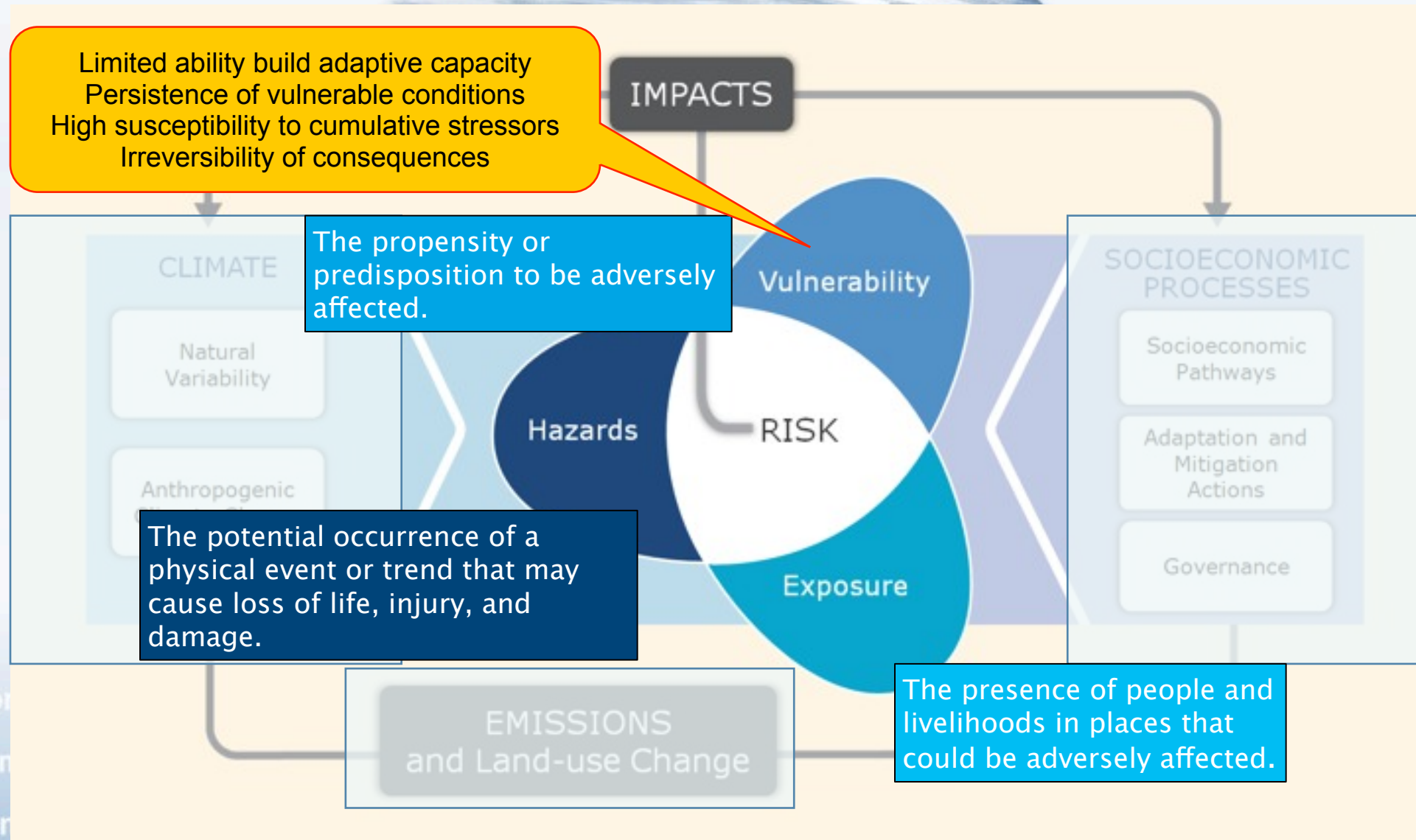


Climate change will **amplify existing risks** and **create new risks** for natural and human systems.

Risks are unevenly distributed and are generally greater for disadvantaged people and communities in countries at all levels of development.

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Highlighting Risk in the AR5 (WGII)



Understanding Vulnerability

AR4:



Vulnerability is the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes.

Some criteria of **key vulnerabilities**:

- size (magnitude)
- time
- persistence of impacts.

AR5:

Vulnerability is the propensity or predisposition to be adversely affected.

Much **stronger focus** on:

- (uneven) development processes
- inequalities in societies



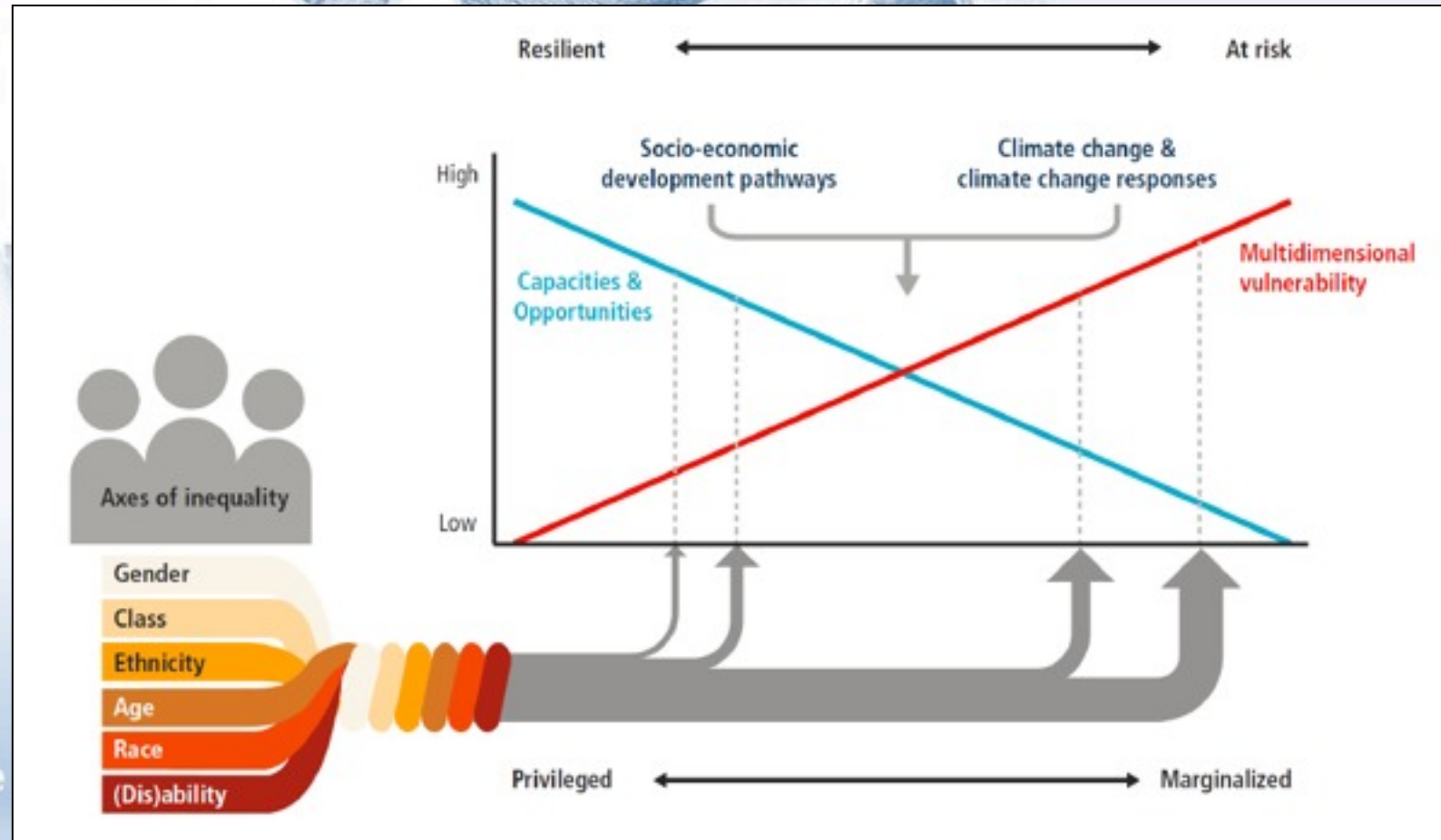
Heat wave 2003, France

African agricultural lands



Multidimensional Vulnerability

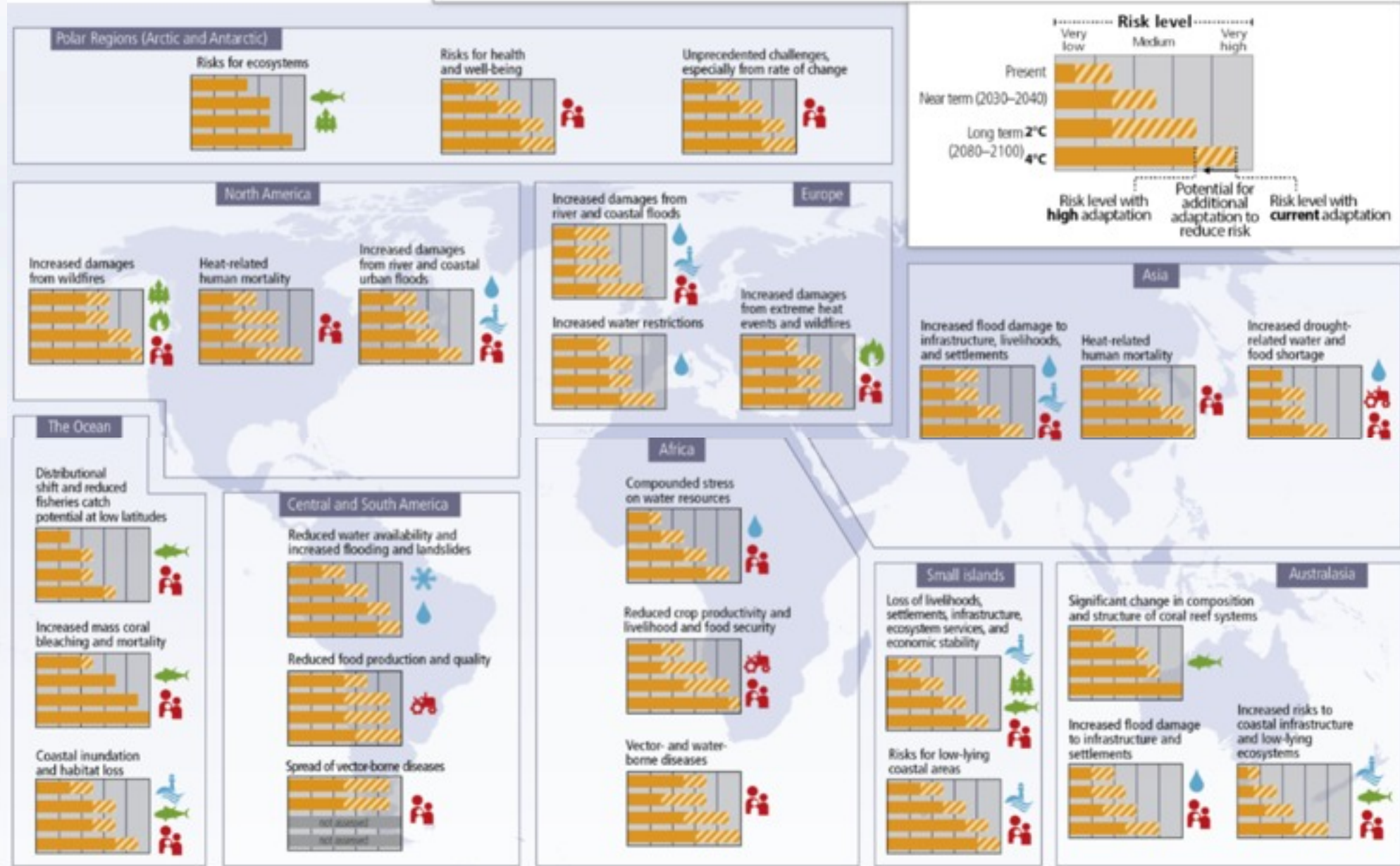
Inequalities



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Regional key risks and potential for risk reduction

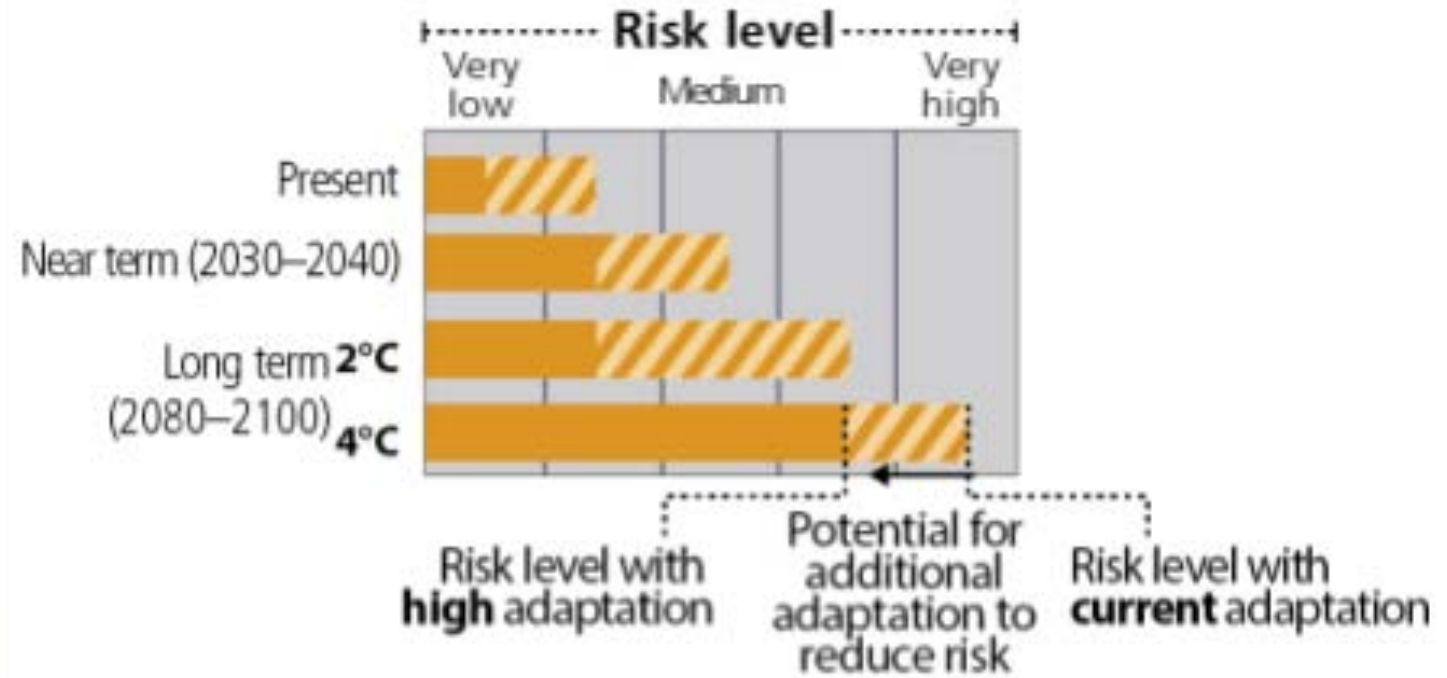
Representative key risks for each region for



Representative key risks for each region for



Regional key risks and potential for risk reduction



Increased damages from river and coastal floods



Increased damages from extreme heat events and wildfires



Increased water restrictions



Vector- and water-borne diseases



Risks for low-lying coastal areas



Increased flood damage to infrastructure and settlements



Increased risks to coastal infrastructure and low-lying ecosystems

Representative key risks for each region for



Africa

Compounded stress on water resources



Reduced crop productivity and livelihood and food security



Vector- and water-borne diseases



The Ocean

Distributional shift and reduced fisheries catch potential at low latitudes



Increased mass coral bleaching and mortality



Coastal inundation and habitat loss



Risk level

Very low Medium Very high

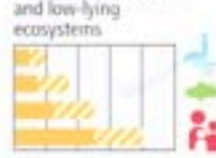
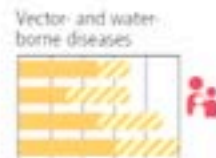
Present
Near term (2030–2040)
Long term 2°C
(2080–2100) 4°C



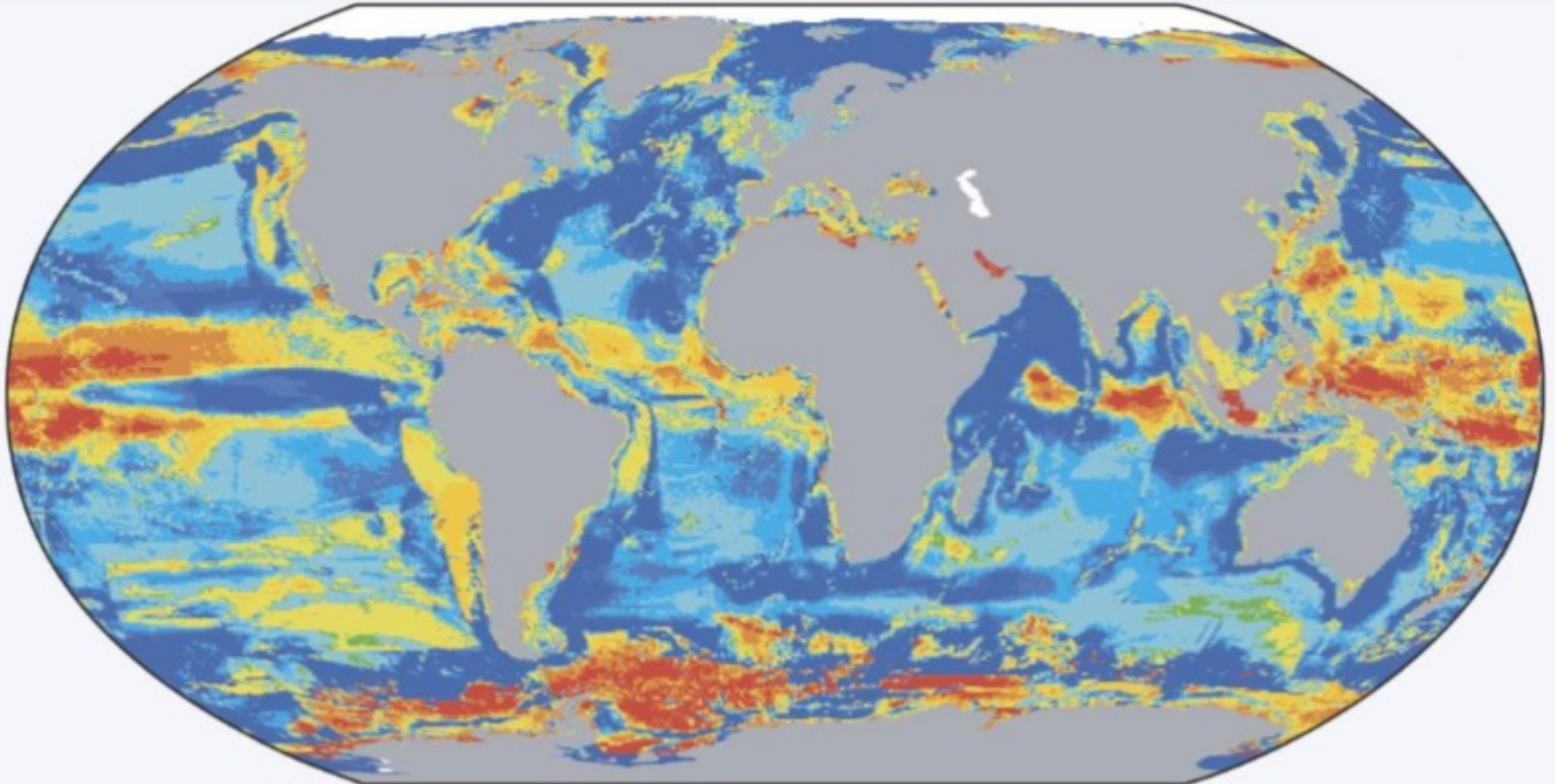
Risk level with high adaptation

Potential for additional adaptation to reduce risk

Risk level with current adaptation

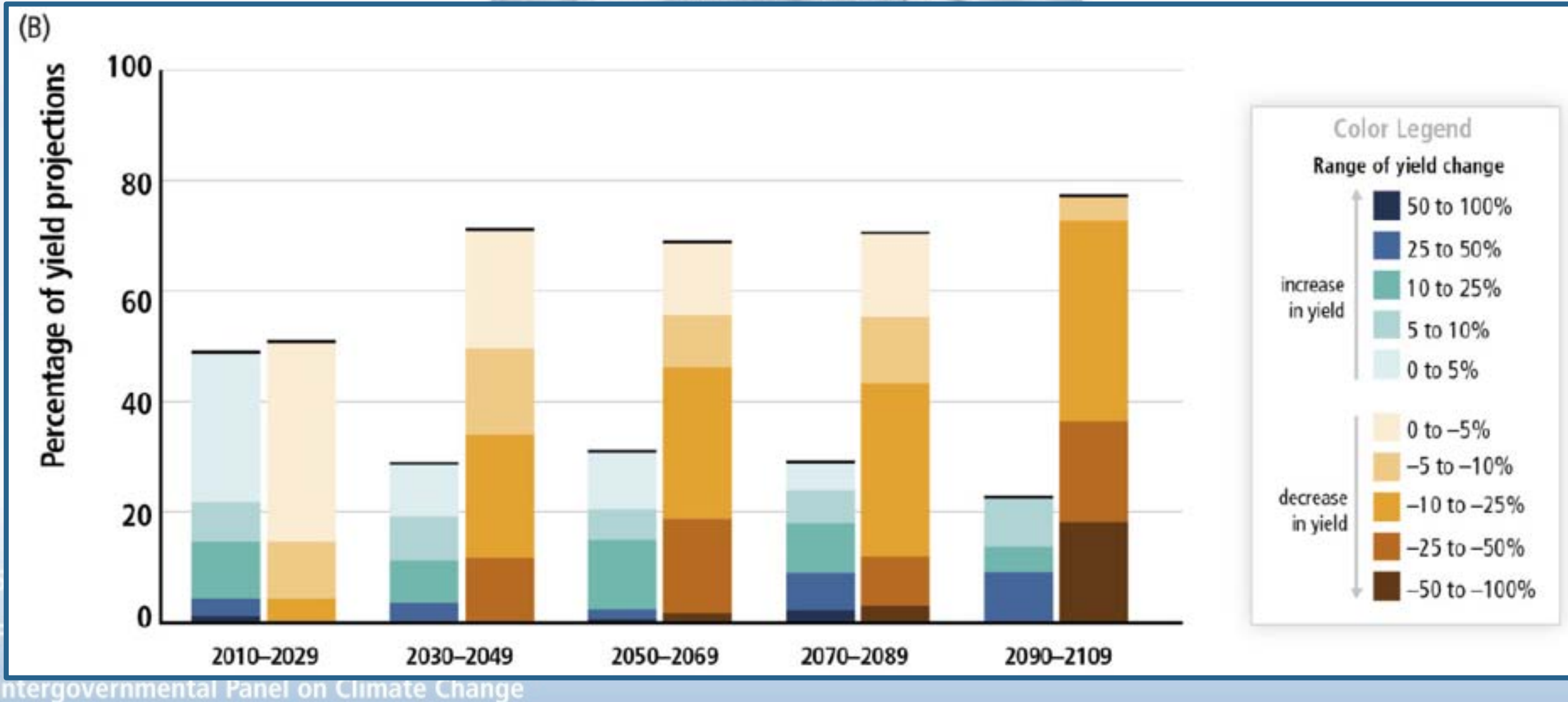


Change in maximum catch potential (2051–2060 compared to 2001–2010, SRES A1B)

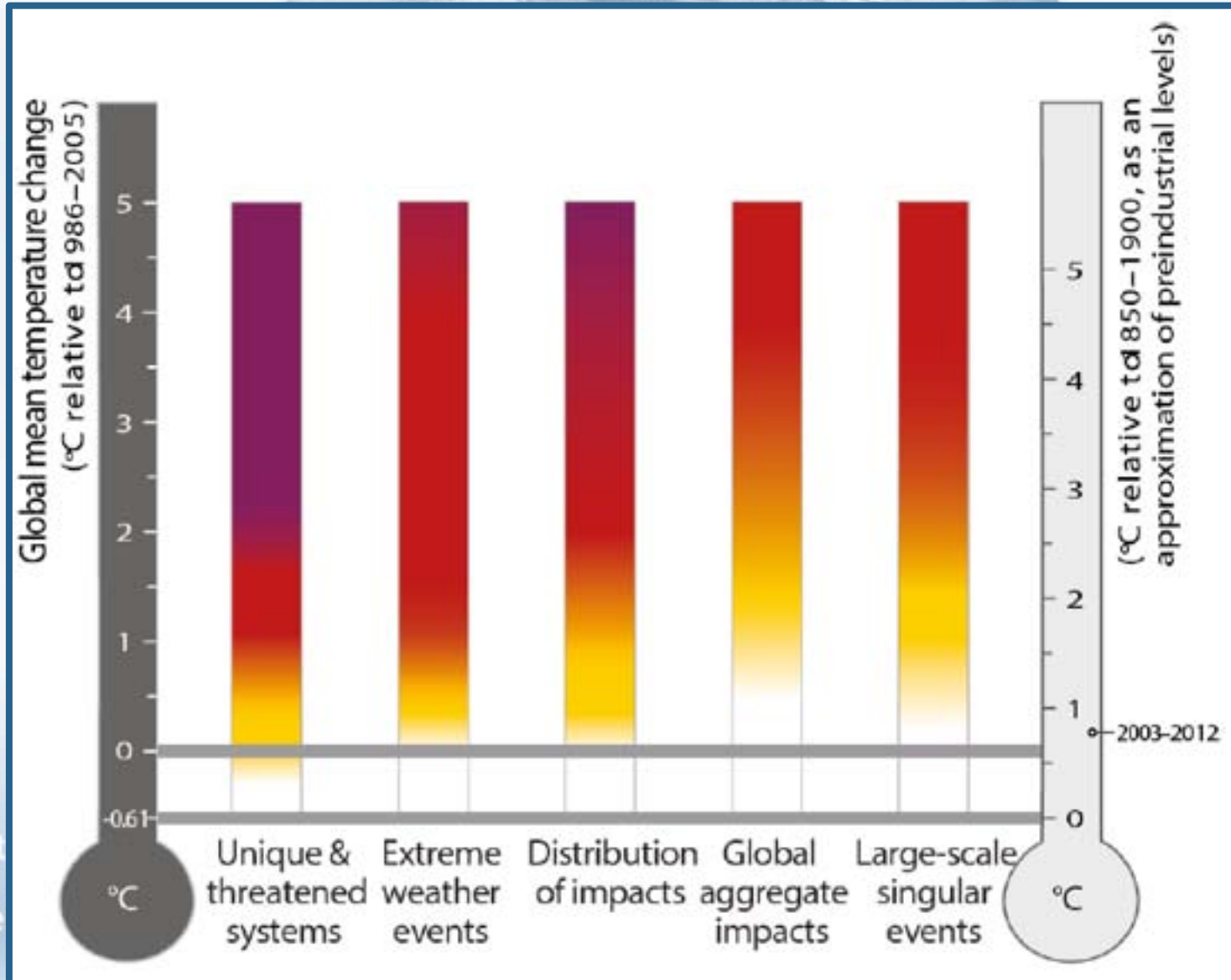


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Impacts for Food Security



Reasons for Concern



Level of additional risk due to climate change

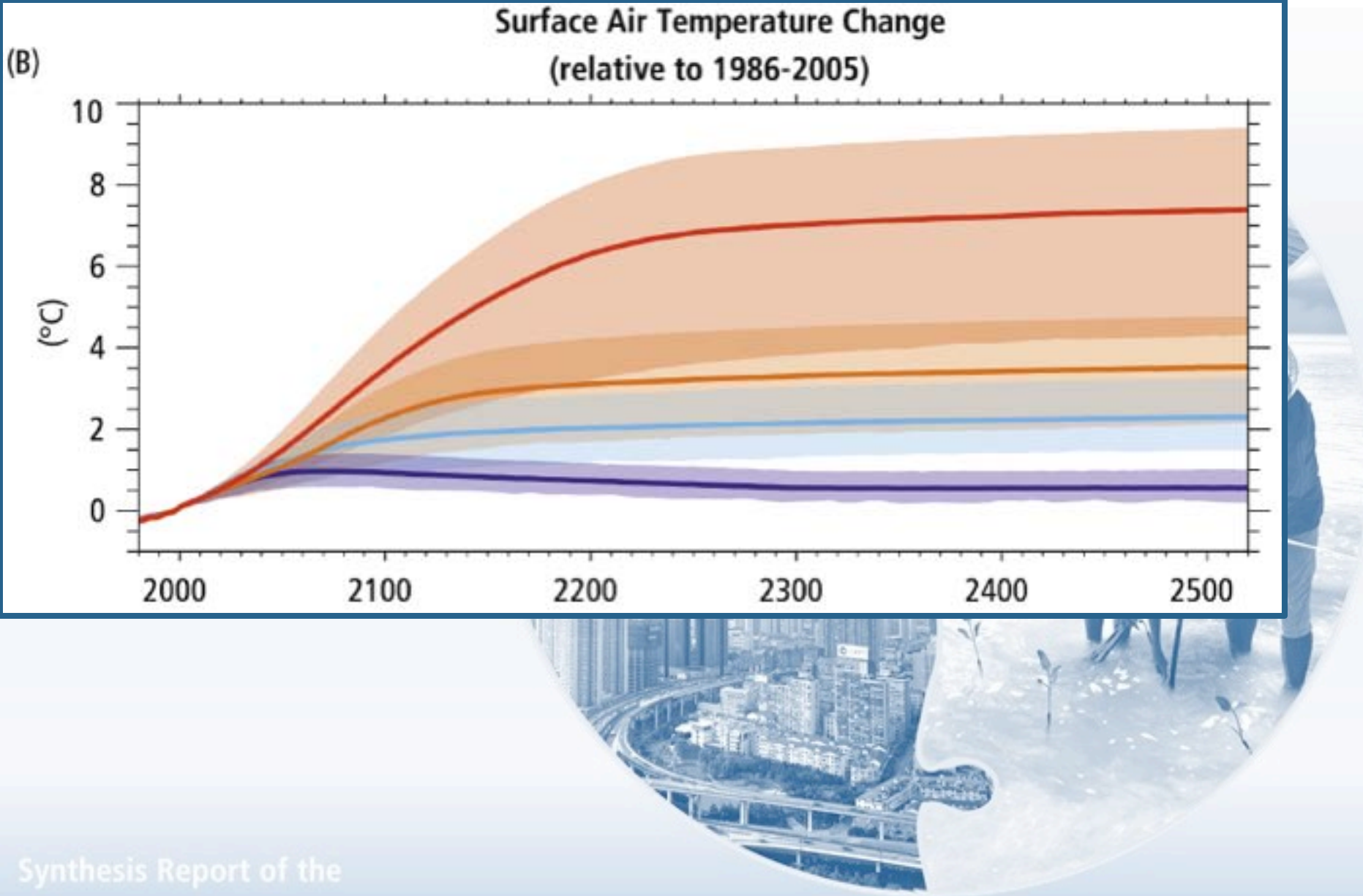
Undetectable Moderate High Very high

Climate Change Beyond 2100

Many aspects of climate change and associated impacts **will continue for centuries**, even if anthropogenic emissions of greenhouse gases are stopped.

The risks of abrupt or irreversible changes increase as the magnitude of the warming increases.

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