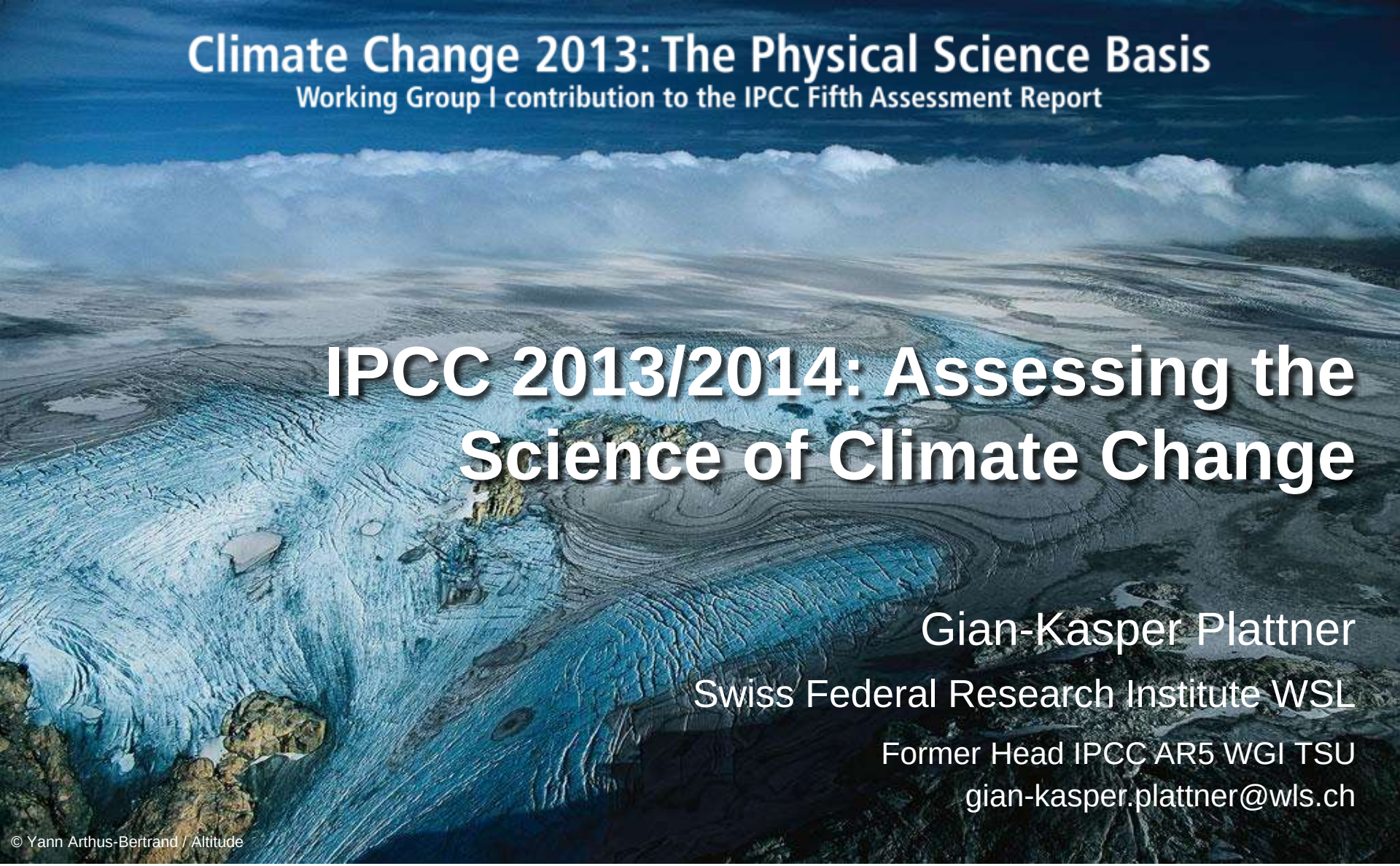

IPCC 2013/2014: Assessing the Science of Climate Change

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Observation

Understanding

Future

www.climatechange2013.org

Warming in the climate system is unequivocal, […]

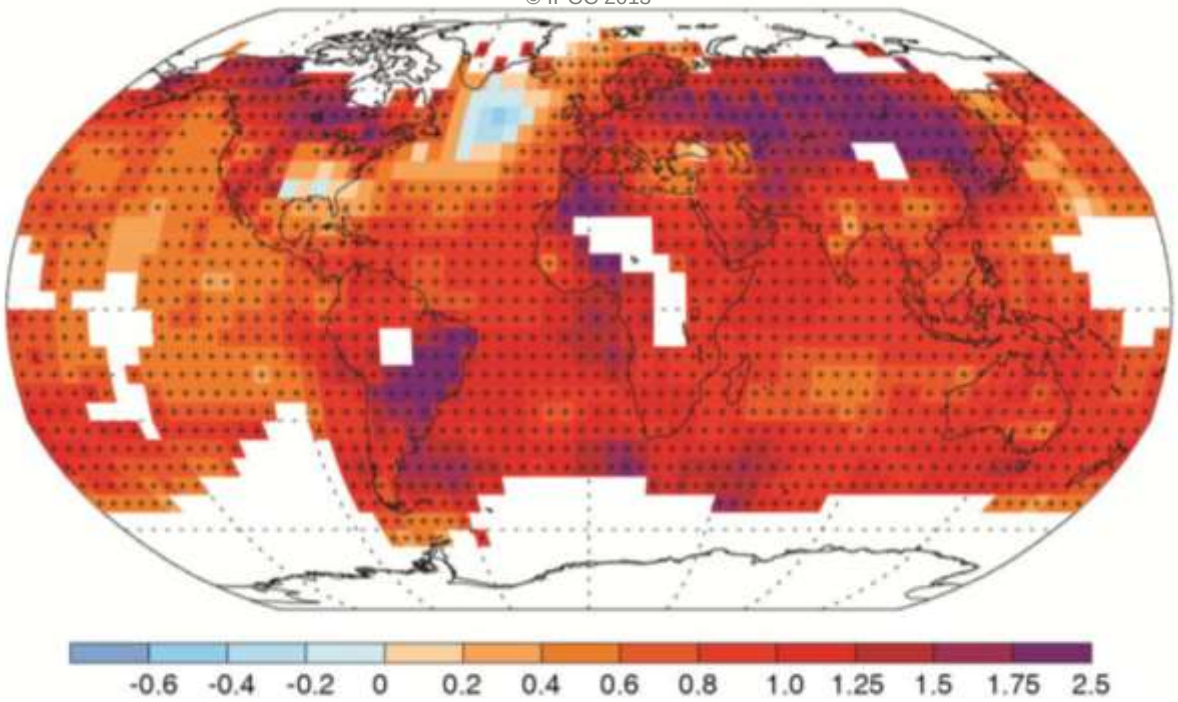
Human influence on the climate system is clear.

Limiting climate change will require substantial and sustained reductions of greenhouse gas emissions.

Observation

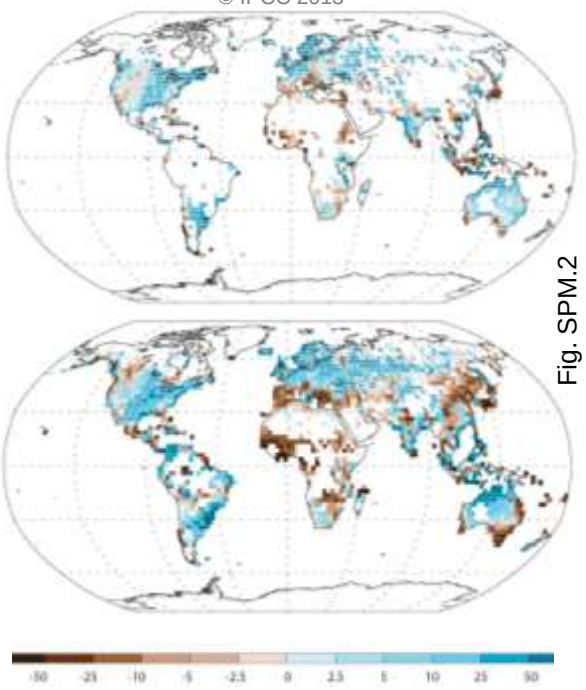
What has changed?

Fig. SPM.1b



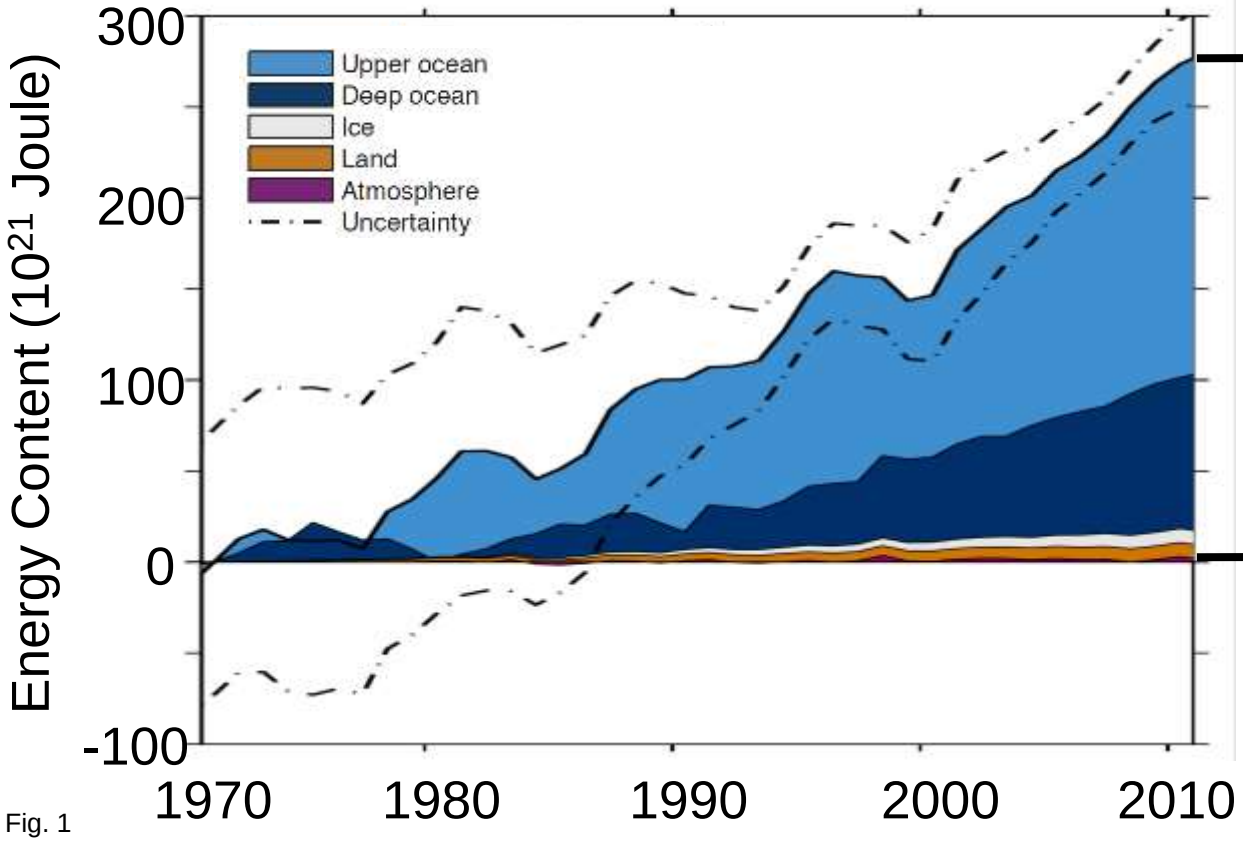
Temperature Difference 1901 to 2012 based on trend (°C)

Fig. SPM.2



Precipitation Trend (mm/yr per decade)

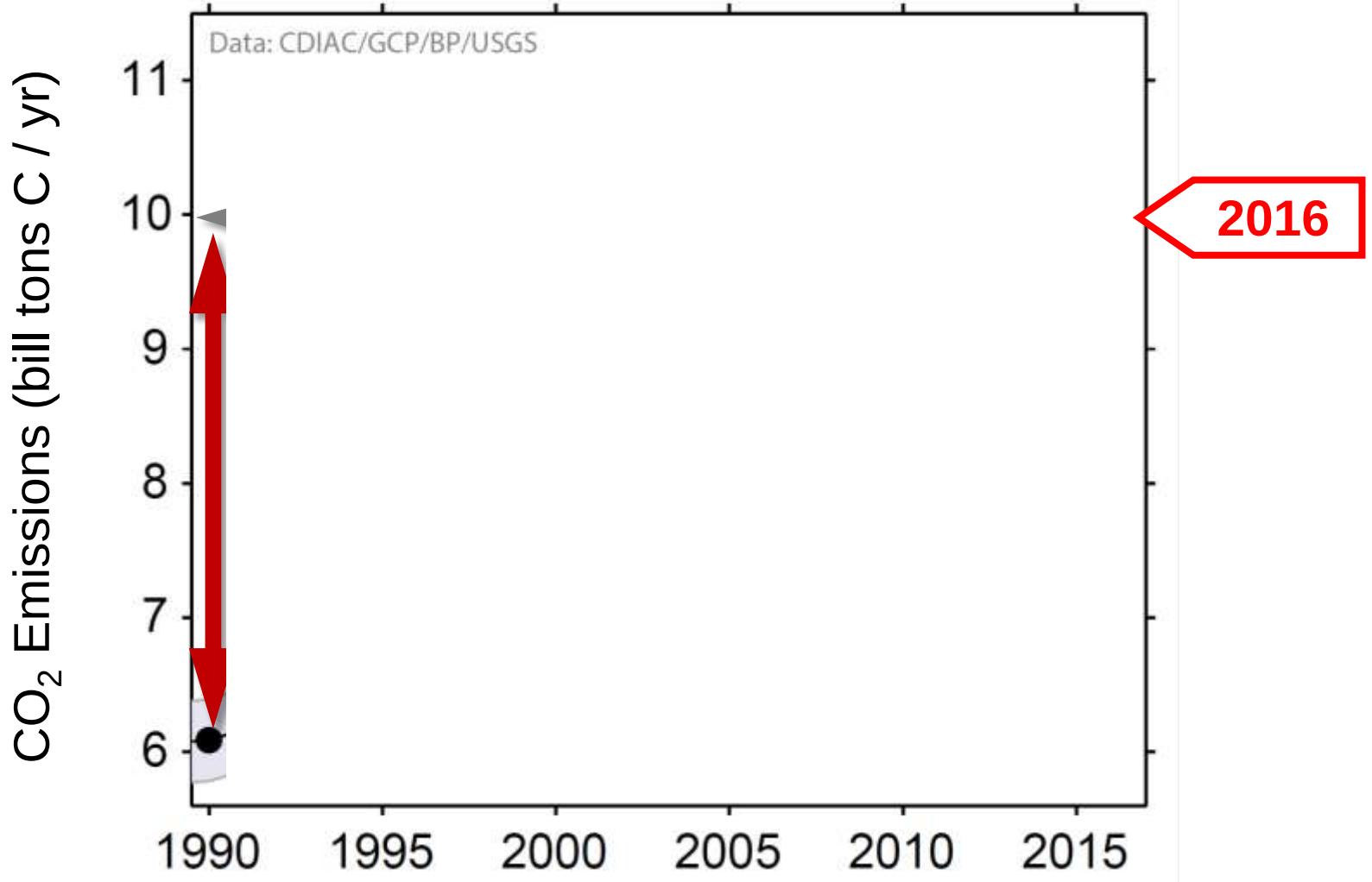
Warming of the climate system is unequivocal, […]



70 Mill. TWh

Box 3.1, Fig. 1

Ocean warming dominates the increase in energy stored in the climate system.



(modified from Global Carbon Project, LeQuéré et al. 2016)

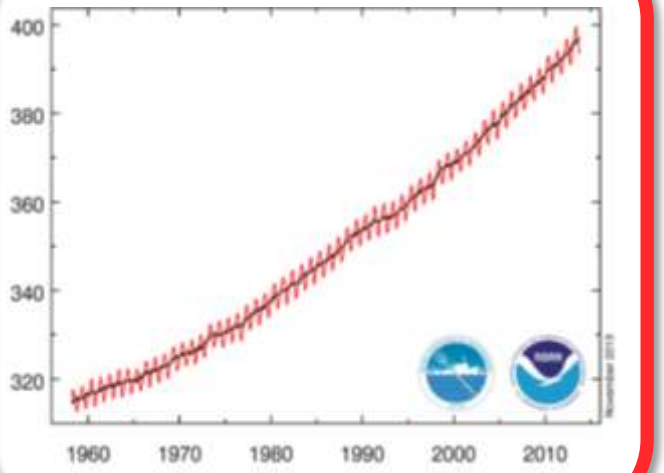
Manmade CO_2 emissions are higher than ever before.

Understanding

Why has it changed?

Worldwide Effects

Cause



- atmosphere, land, ocean
- extreme events
- water cycle
- sea ice, glaciers, ice sheets
- global mean sea level

Human influence on the climate system is clear.

Future

How will it change?

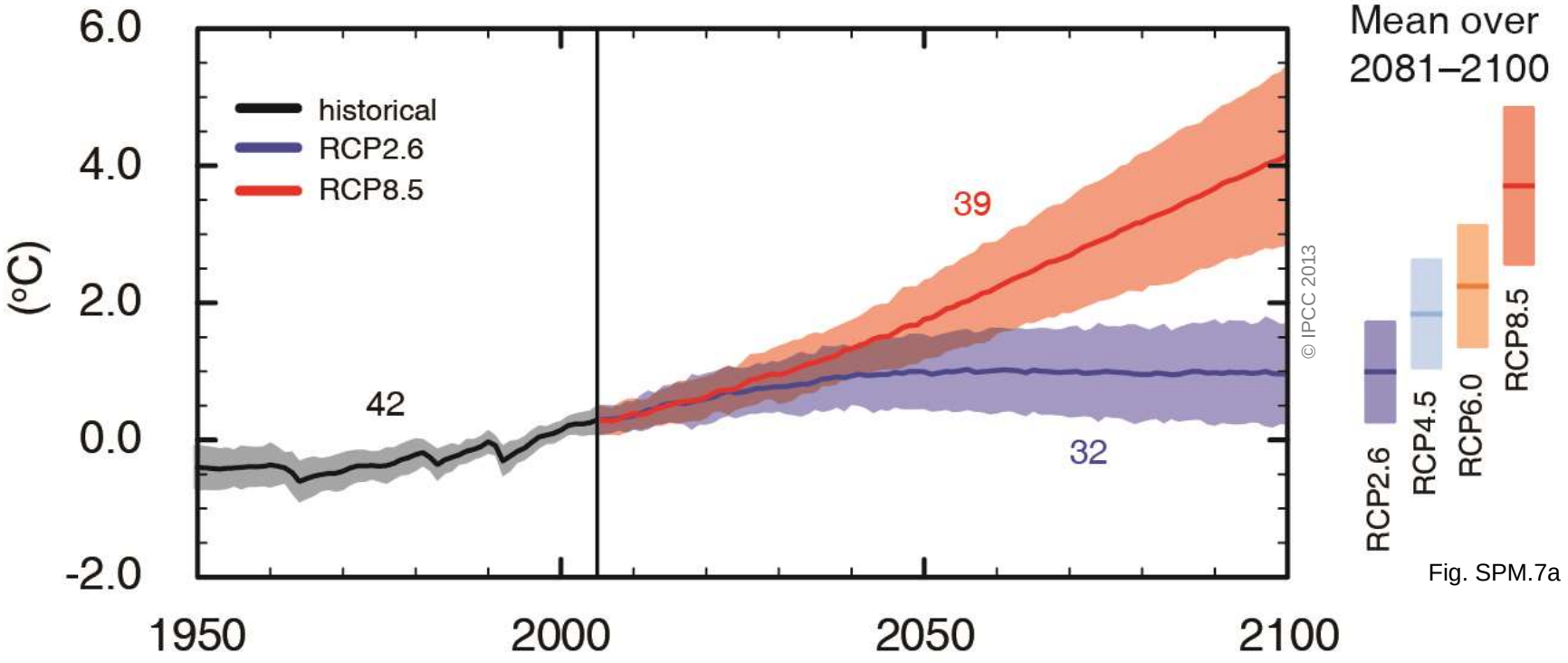
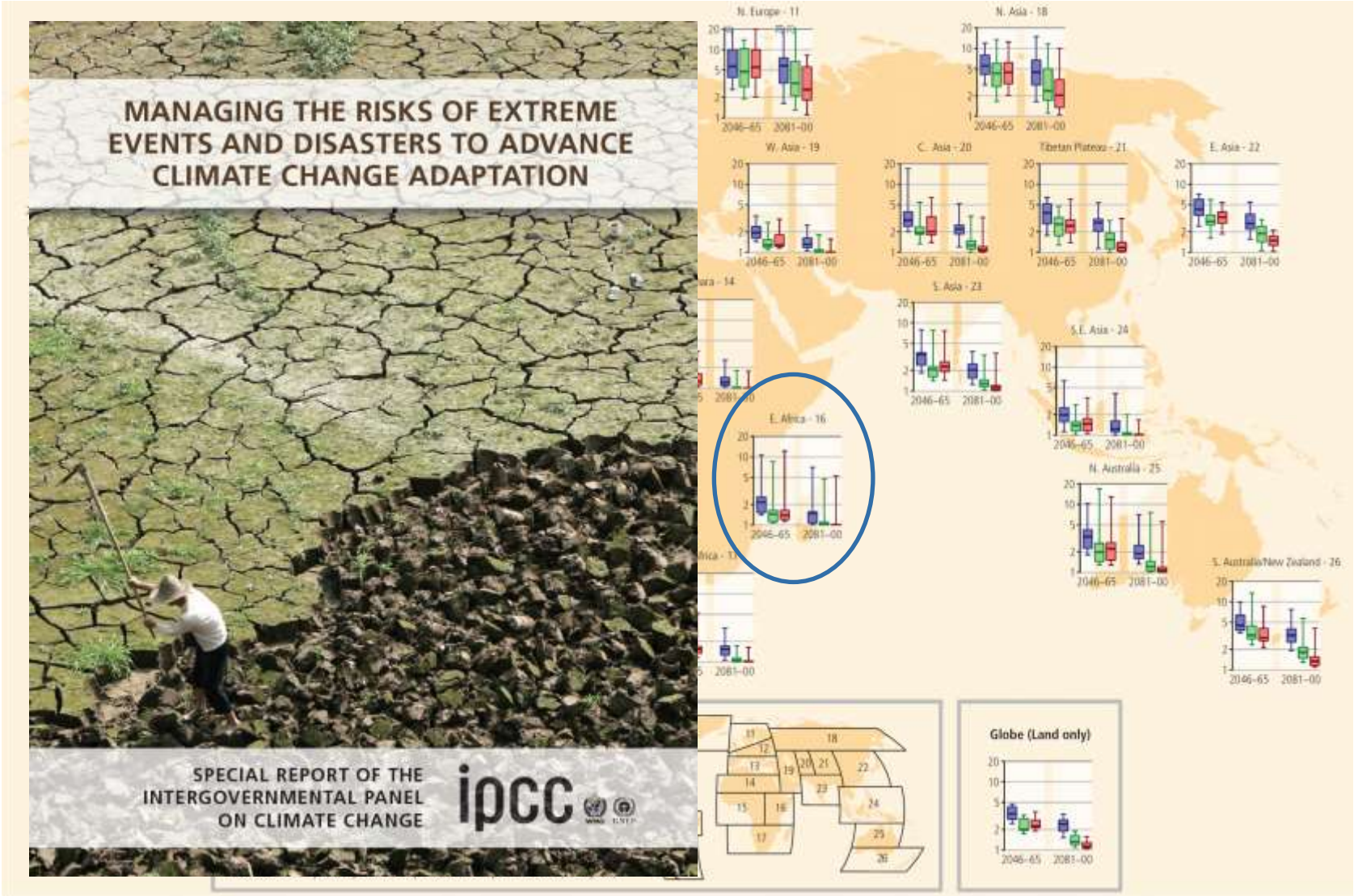


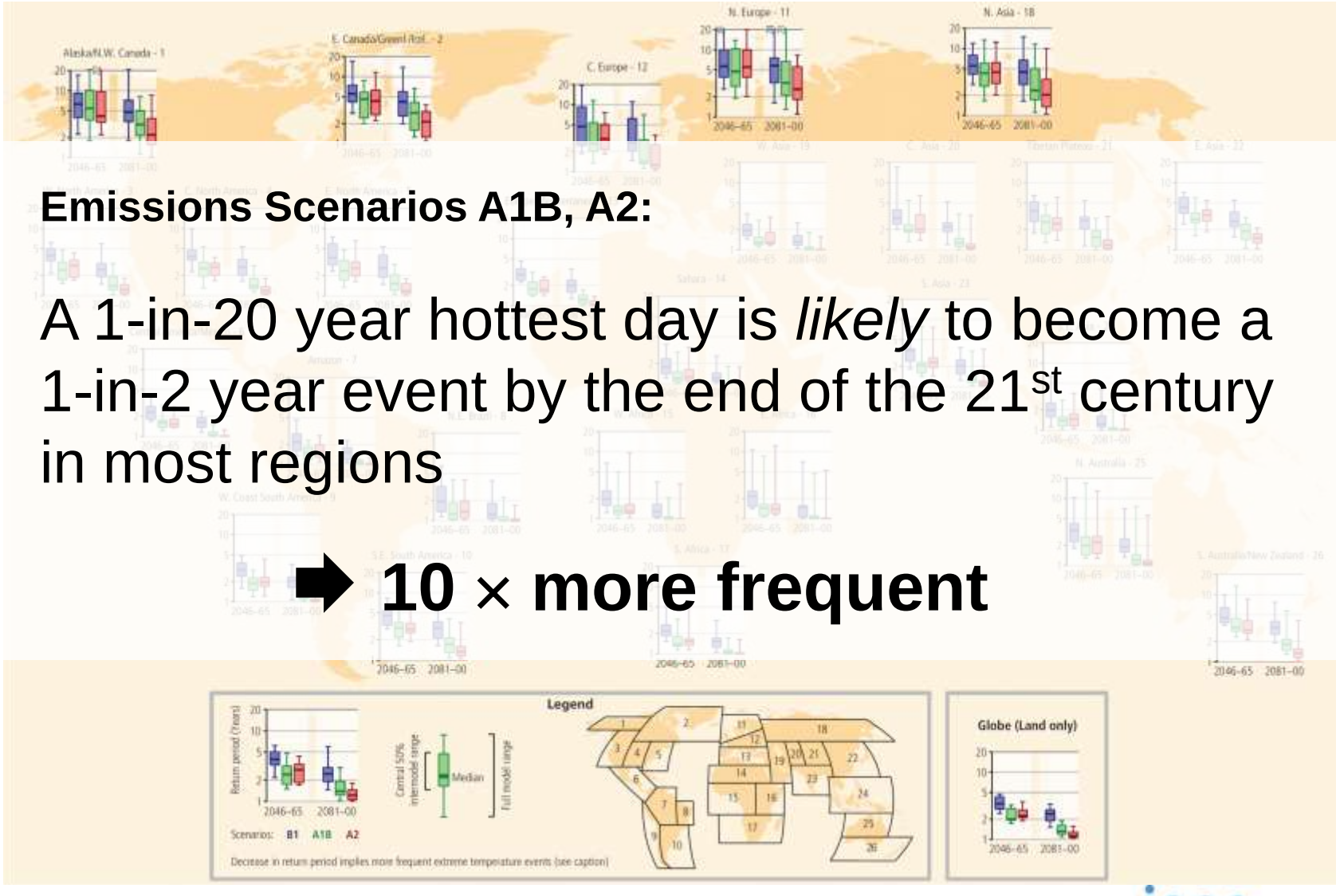
Fig. SPM.7a

Global surface temperature change for the end of the 21st century is *likely* to exceed 1.5°C relative to 1850−1900 for all scenarios except RCP2.6.

Extreme Events



Extreme Events



Emissions Scenarios A1B, A2:

A 1-in-20 year hottest day is *likely* to become a 1-in-2 year event by the end of the 21st century in most regions

➡ **10 × more frequent**

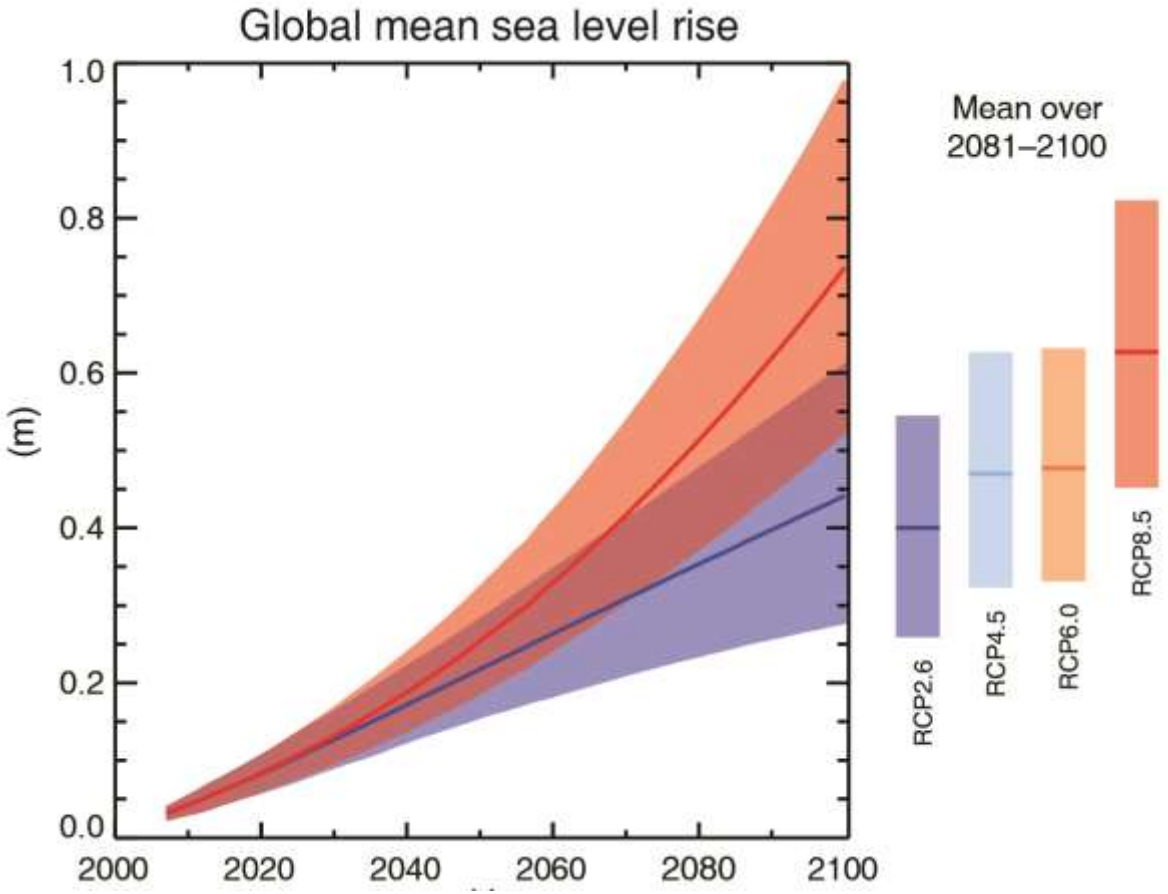


Fig. SPM.9

Global mean sea level will continue to rise over the 21st century.

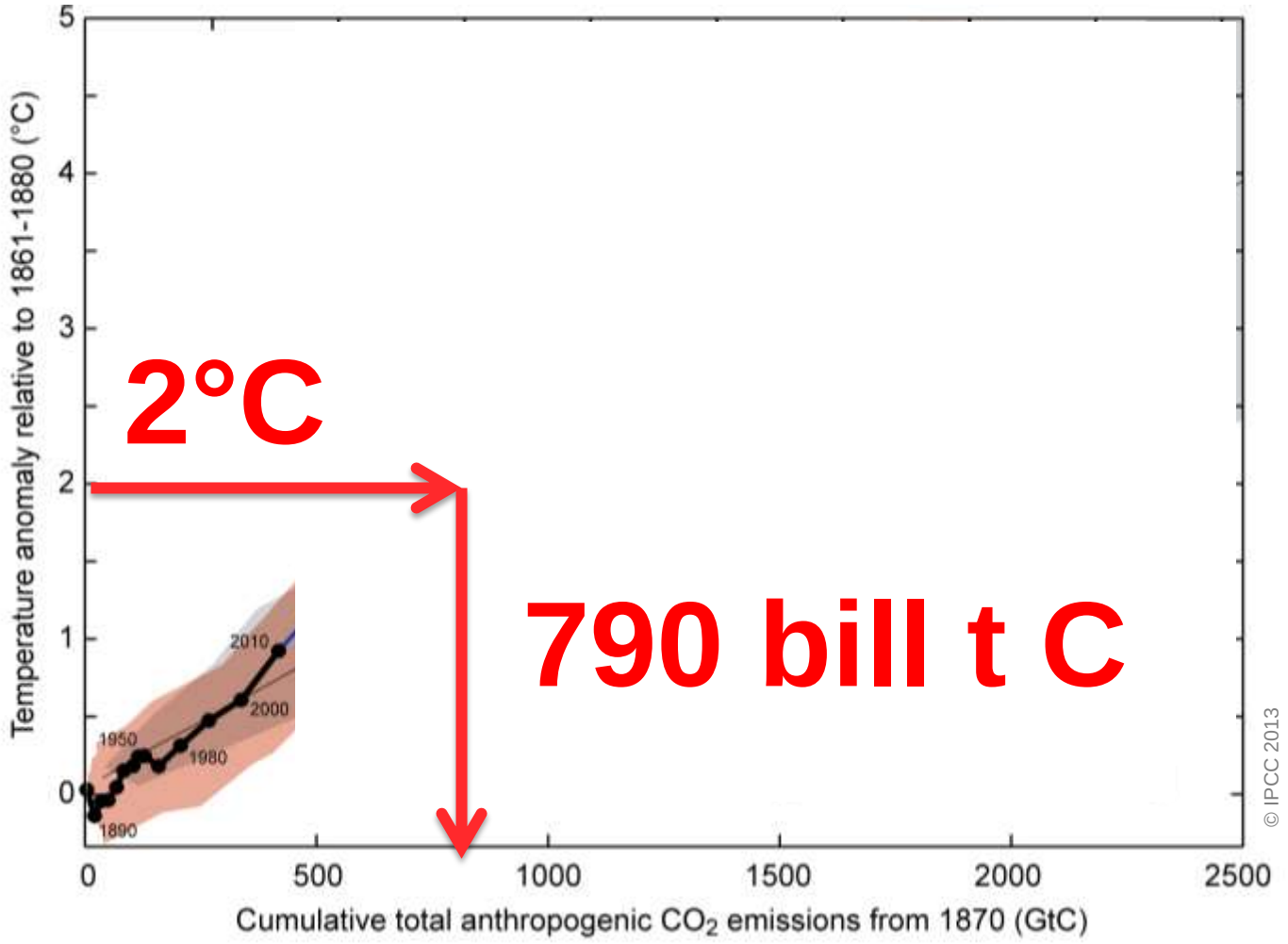
Cumulative emissions of CO_2 largely determine global mean surface warming by the late 21st century and beyond.

Warming of 0.8 to 2.5°C

Any **climate target** implies a limited **carbon budget**

1000 billion tons of carbon

Limiting human-induced warming

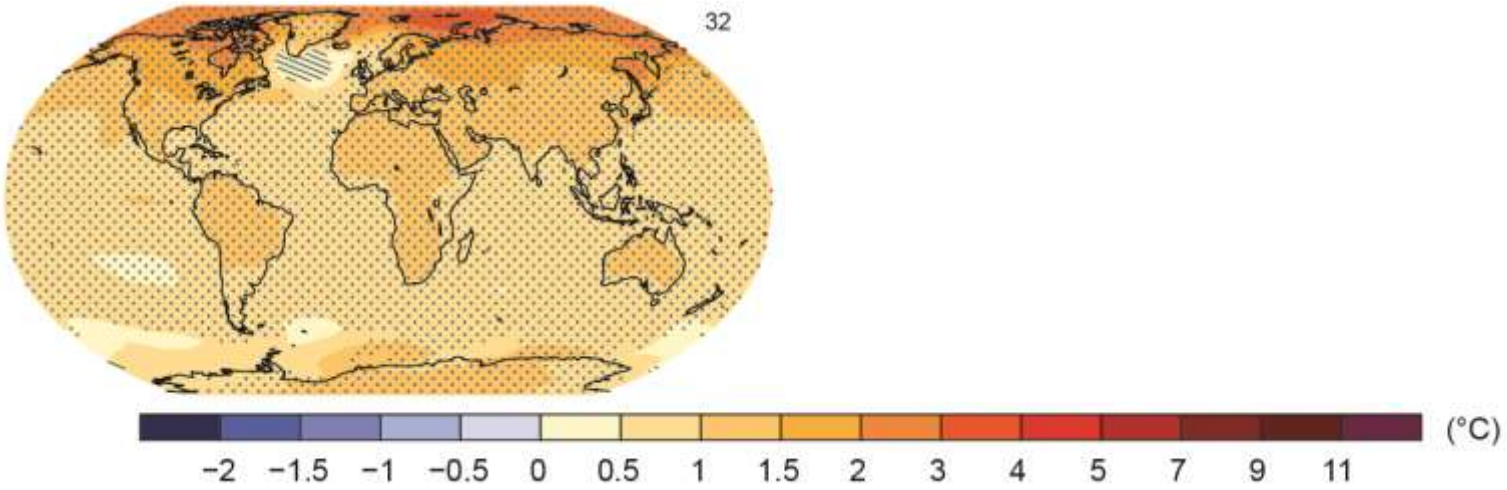


Budget for 2°C target:	790 bill t C
CO_2 emissions until 2016*:	−565 bill t C
Remaining CO_2 emissions:	**225 bill t C**
CO_2 emissions in 2016 *:	***9.9 bill t C***

* updated from IPCC 2013, WGI SPM

Limiting climate change will require substantial and sustained reductions of greenhouse gas emissions.

2°C world



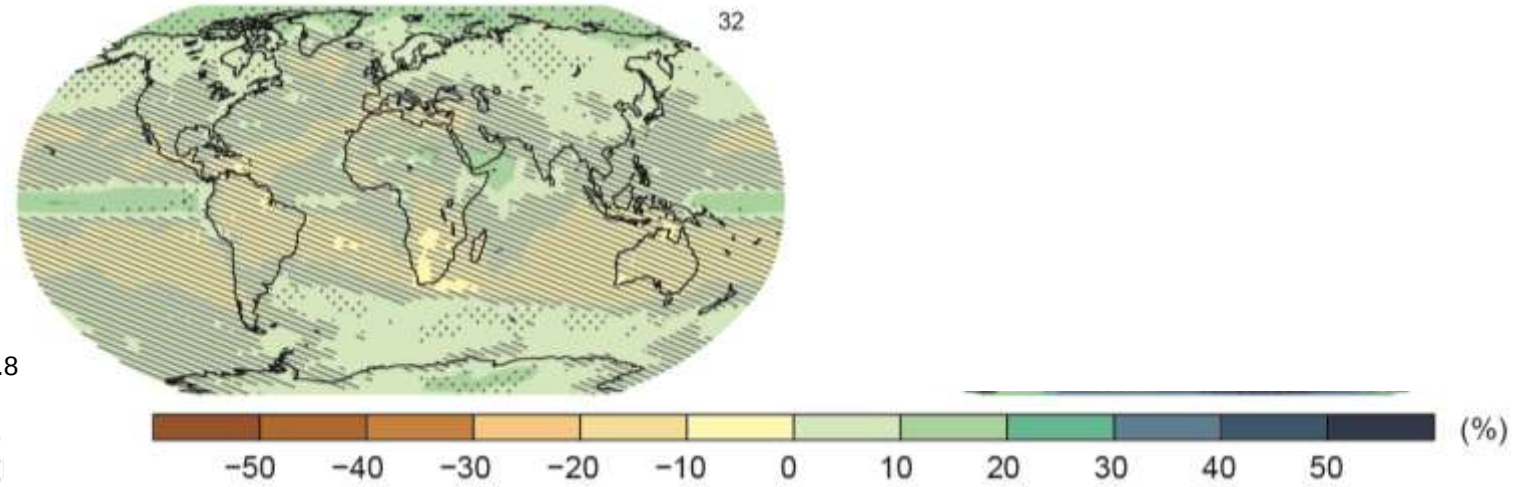


Fig. SPM.8

2°C world

4.5°C world

Today we have a choice.

Fig. SPM.8

Climate Change 2013: The Physical Science Basis

Working Group I contribution to the IPCC Fifth Assessment Report

Further Information

www.climatechange2013.org

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INTERGOVERNMENTAL PANEL ON climate change
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