

About the next IPCC Special Report :

Global warming of 1.5°C

(...) in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty

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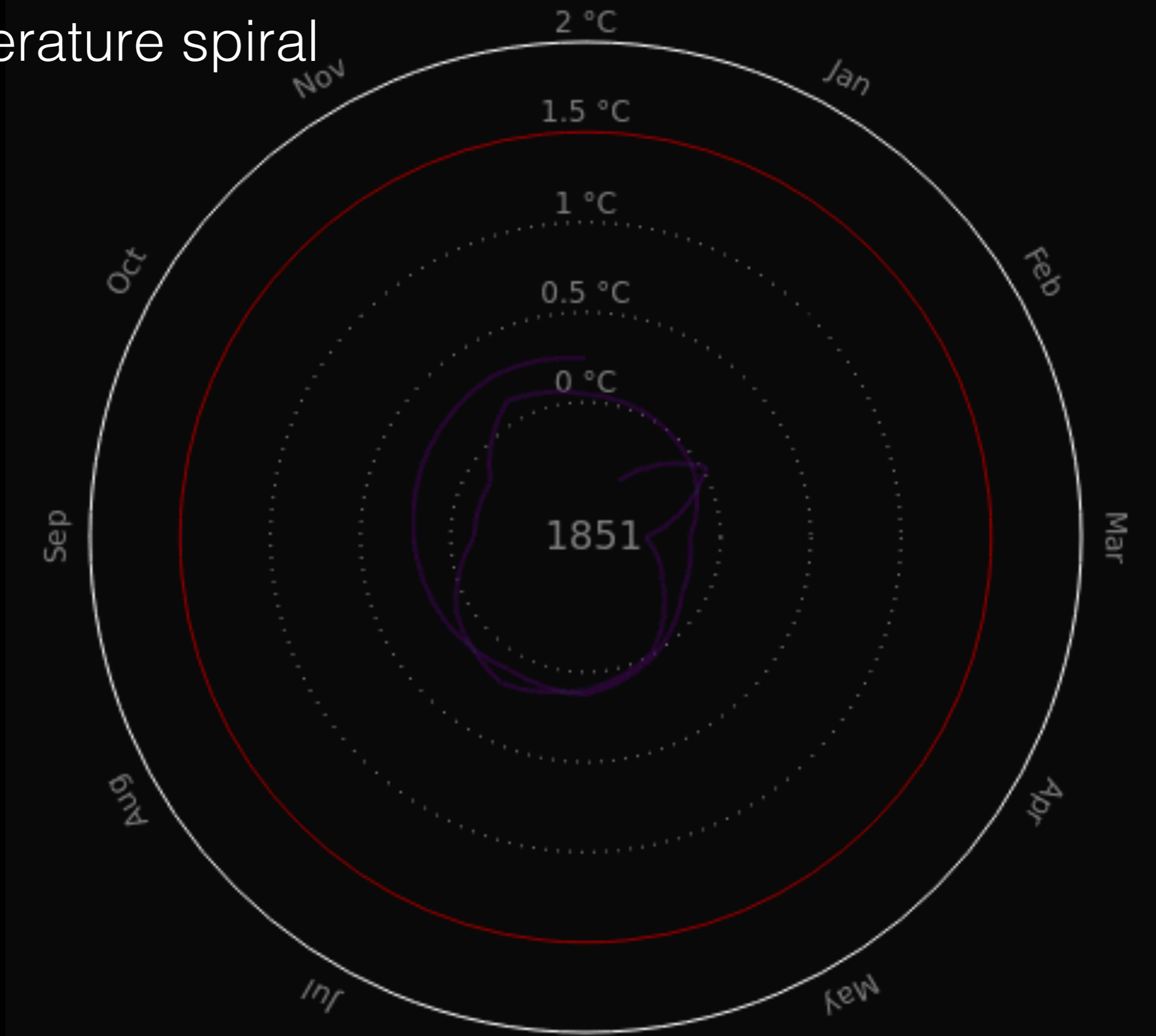
Stakeholders Dialogue, CCPIE/CCIM, Brussels,

25 January 2018

(*) Twitter: @JPvanYpersele, Former IPCC Vice-Chair (2008-2015)

Thanks to the Walloon government (funding the Walloon Platform for IPCC) for its support

Temperature spiral



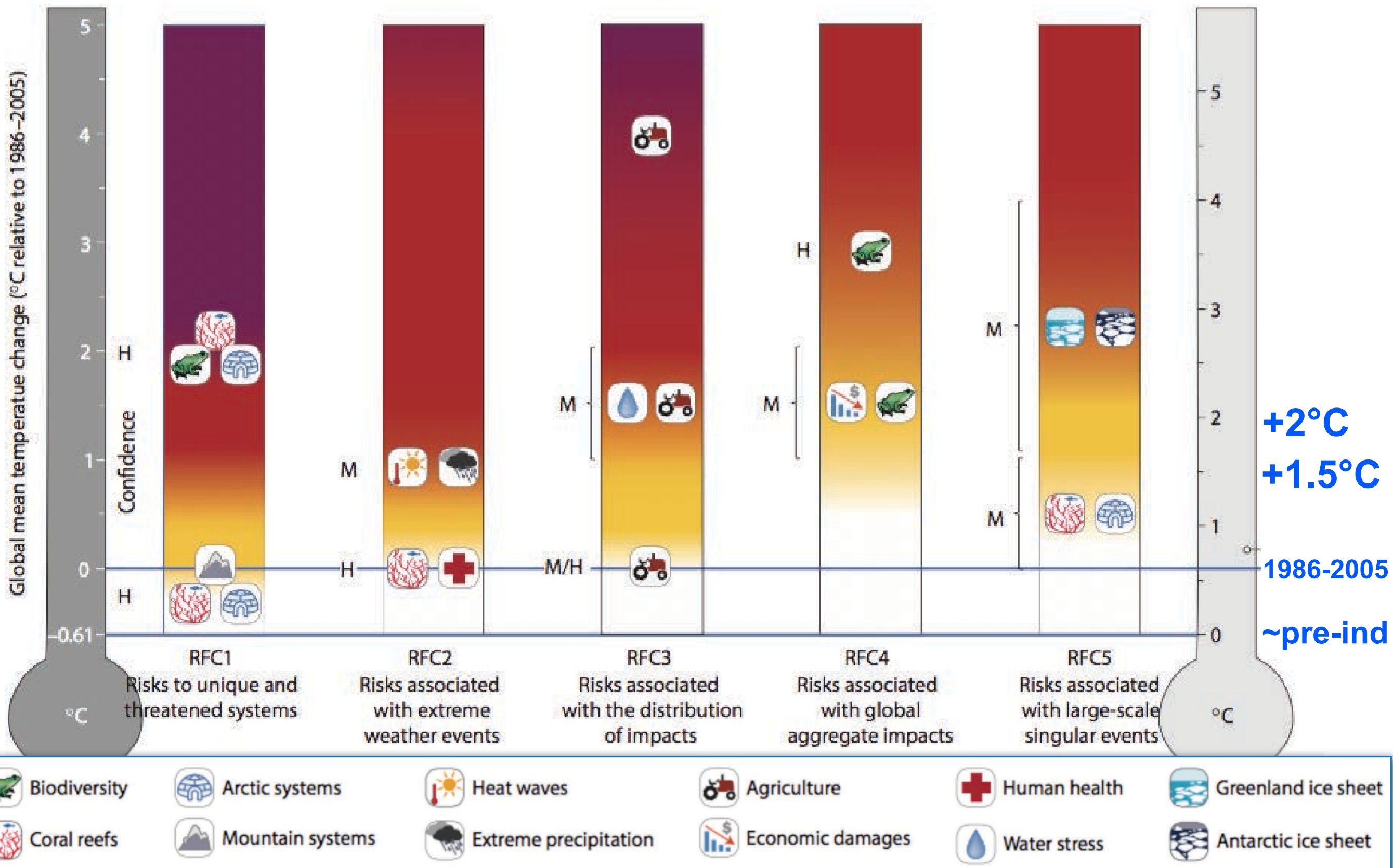
Global Mean Temperature in °C relative to 1850 – 1900

Graph: Ed Hawkins (Climate Lab Book) – Data: HadCRUT4 global temperature dataset

Available on <http://openclimatedata.net/climate-spirals/temperature>

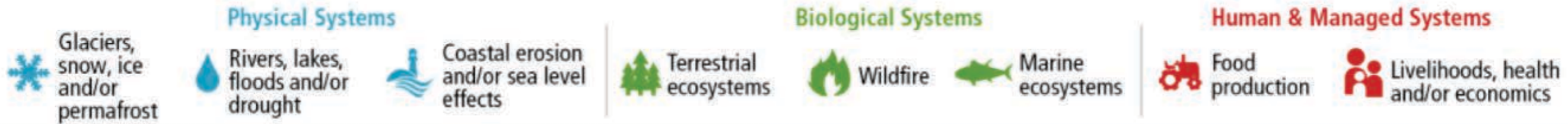
IPCC reasons for concern / climate change risks

(Nat Climate Change 2017)

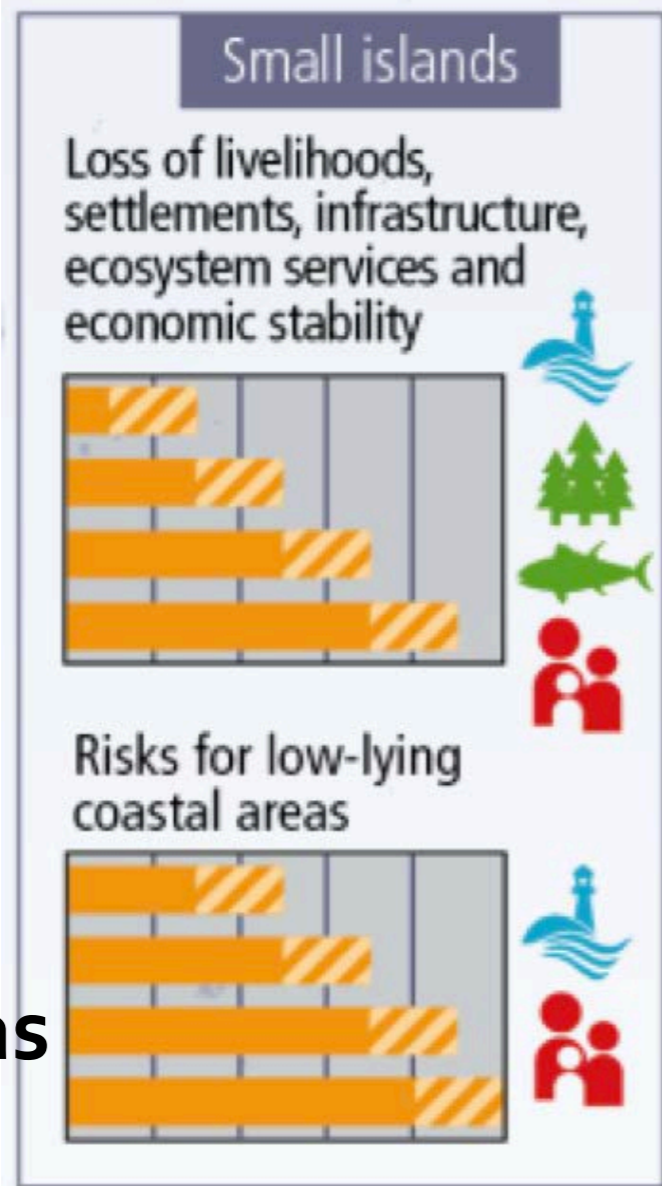


Regional key risks and potential for risk reduction: Small Islands

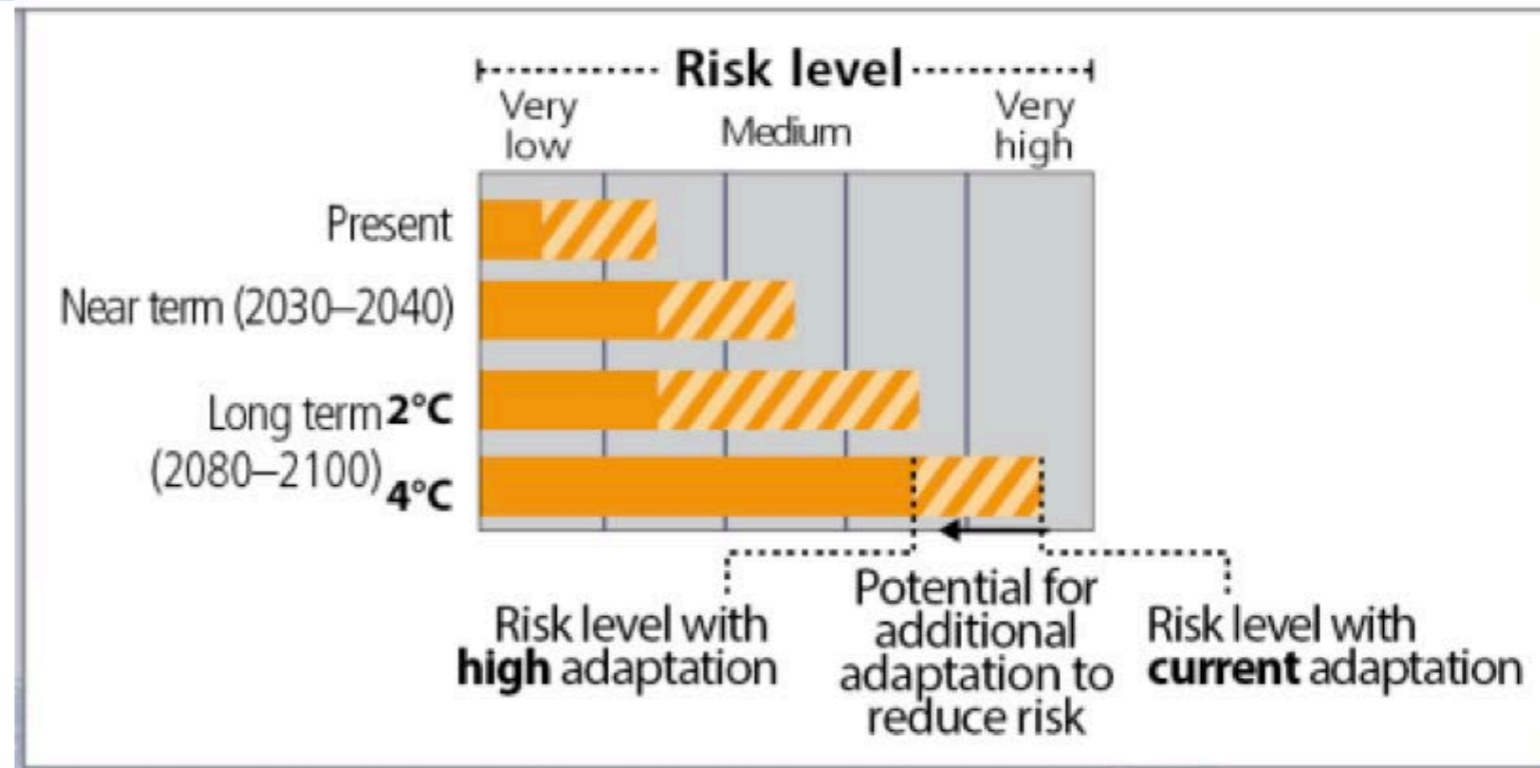
Representative key risks for each region for



Losses



Risk to coastal areas

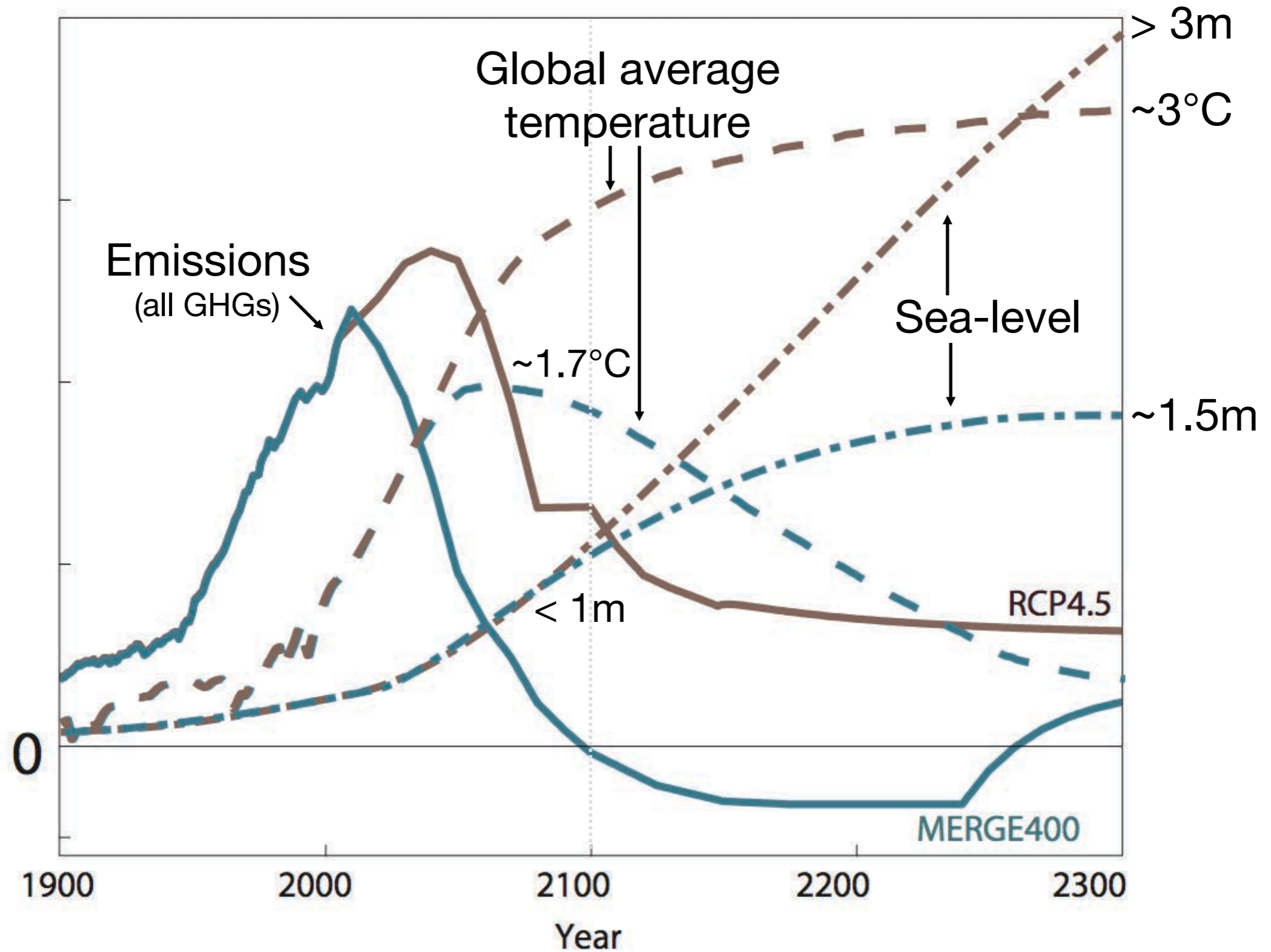


ipcc

INTERGOVERNMENTAL PANEL ON climate change

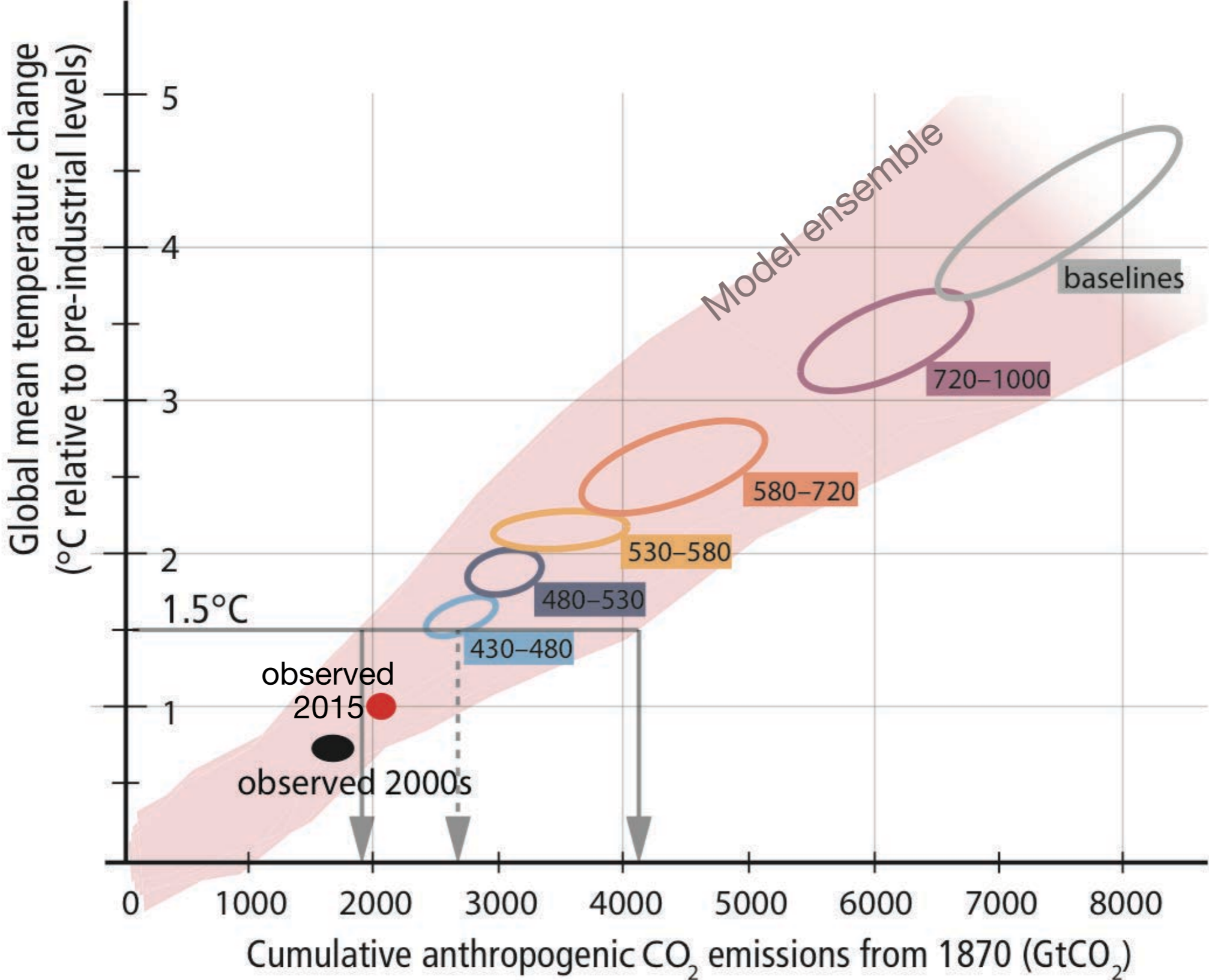


Emissions (-> concentrations) -> temperature -> sea-level



Source: adapted from Schaeffer et al., Nature clim. chg. (2012)

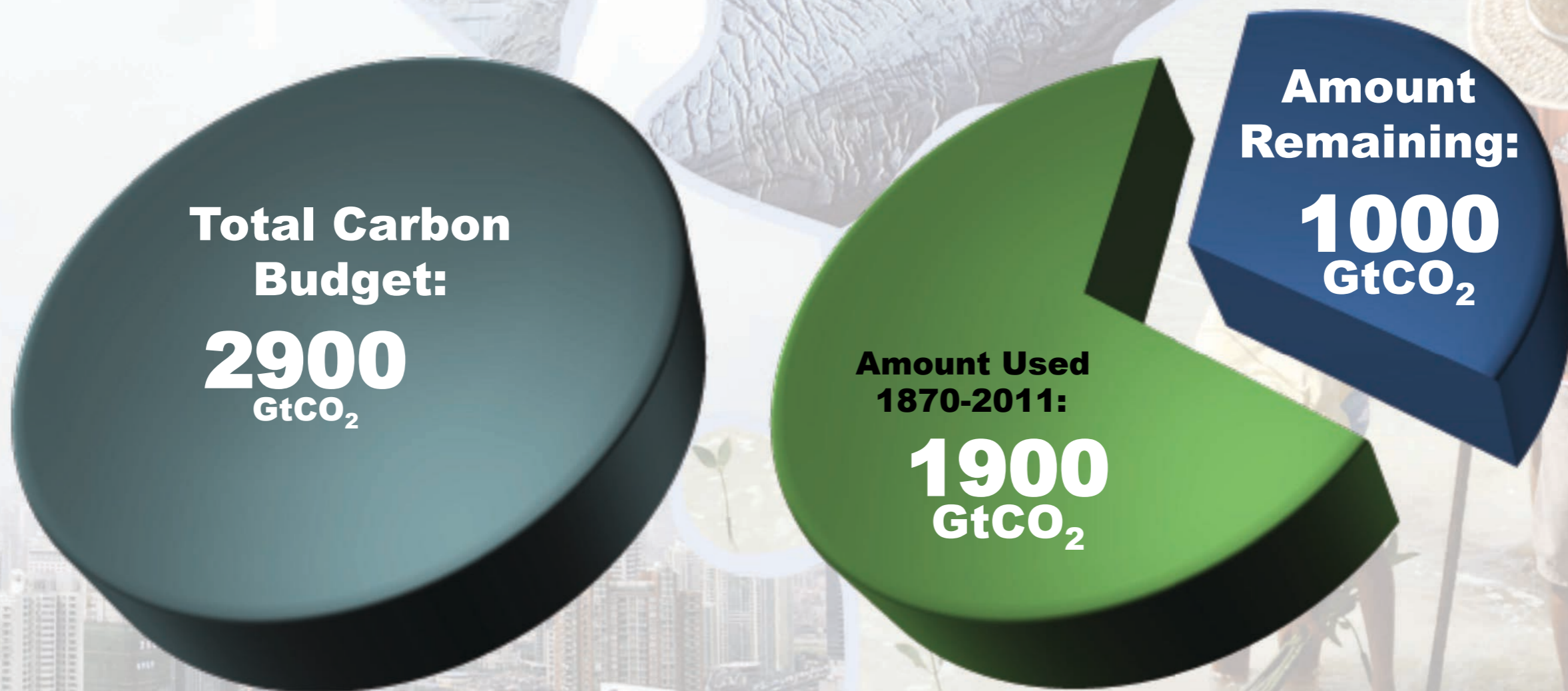
Cumulative emissions (budgets) approximately determine global warming



Based on IPCC AR5, Synthesis report (2014)

The window for action is rapidly closing

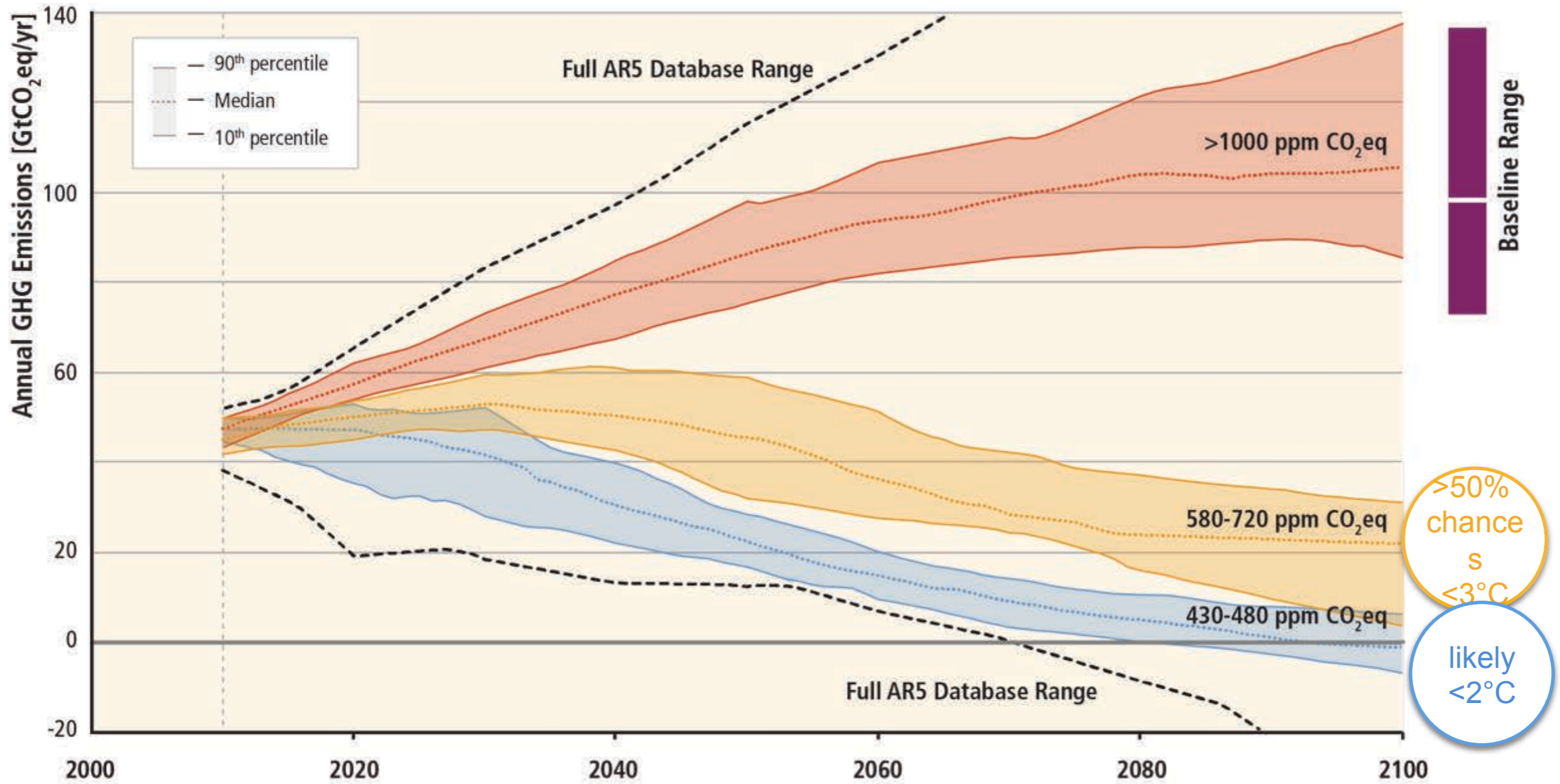
65% of the carbon budget compatible with a 2°C goal is already used
NB: this is with a probability greater than 66% to stay below 2°C



NB: Emissions in 2011: 38 GtCO₂/yr

AR5 WGI SPM

Stabilization of atmospheric concentrations requires moving away from the baseline – regardless of the mitigation goal



Based on AR5 WGIII Figure 6.7

WGIII Scenarios groups : key characteristics

CO ₂ eq Concentrations in 2100 (CO ₂ eq) Category label (conc. range)	Subcategories	Change in CO ₂ eq emissions compared to 2010 (in %)		Temperature change in 2100 - median climate sensitivity	Likelihood of staying below specific temperature levels (relative to 1850-1900 = « pre-industrial »)
		2050	2100		
< 430	<i>Only a limited number of individual model studies have explored levels below 430 ppm CO₂eq</i>				
450 (430 – 480)	Total range ¹	-72 to -41	-118 to -78	1.5-1.7	Likely (66%) to stay below 2°C, < 50% chances to stay below 1.5°C
500 (480 – 530)	No overshoot of 530 ppm CO ₂ eq	-52 to -42	-107 to -73	1.7-1.9	> 50% chances to stay below 2°C
	Overshoot of 530 ppm CO ₂ eq	-55 to -25	-114 to -90	1.8-2.0	About 50% chances to stay below 2°C
550 (530 – 580)	No overshoot of 580 ppm CO ₂ eq	-47 to -19	-81 to -59	2.0-2.2	Likely (66%) to stay below 3°C, < 50% chances to stay below 2°C
	Overshoot of 580 ppm CO ₂ eq	-16 to 7	-183 to -86	2.1-2.3	
(580 – 650)	Total range	-38 to 24	-134 to -50	2.3-2.6	

Based WGIII table SPM.1 (incomplete : higher emissions scenarios not shown)

AR5 SYR: Carbon dioxide « budgets »

ΔT (see AR5 SYR)

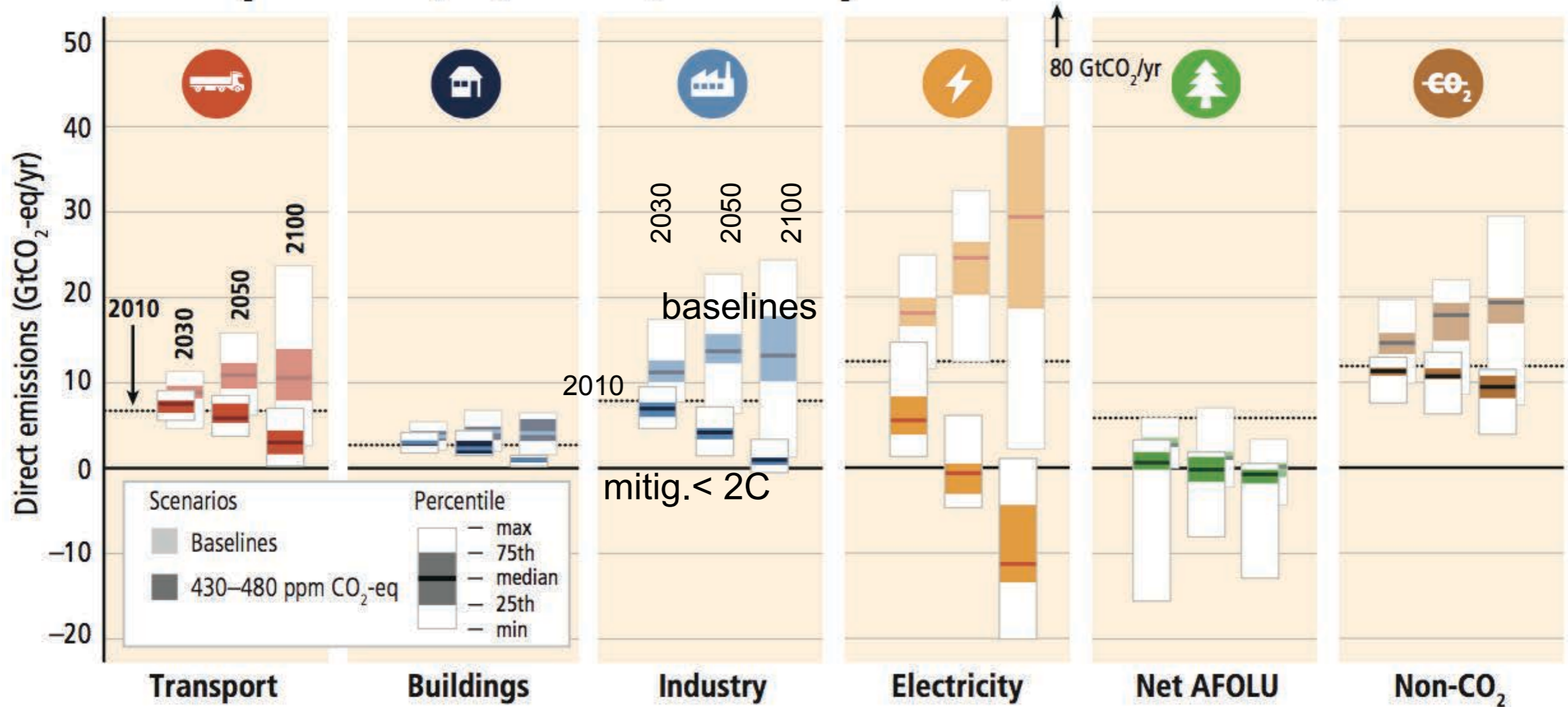
Cumulative CO ₂ emissions from 1870 in GtCO ₂						
Net anthropogenic warming ^a	<1.5°C			<2°C		
Fraction of simulations meeting goal ^b	66%	50%	33%	66%	50%	33%
Complex models, RCP scenarios only ^c	2250	2250	2550	2900	3000	3300
Simple model, WGIII scenarios ^d	No data	2300 to 2350	2400 to 2950	2550 to 3150	2900 to 3200	2950 to 3800
Cumulative CO ₂ emissions from 2011 in GtCO ₂						
Complex models, RCP scenarios only ^c	400	550	850	1000	1300	1500
Simple model, WGIII scenarios ^d	No data	550 to 600	600 to 1150	750 to 1400	1150 to 1400	1150 to 2050

possible?
implications?

ranges likely to change
at least due to more studies

Emissions in sectors: baselines and « likely < 2°C »

Direct CO₂ emissions by major sectors, and non-CO₂ emissions, for baseline and mitigation scenarios



Paris agreement

- Article 2:
 - ◆ (...) to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty, including by:
 - ▶ Holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change;
 - ▶ Increasing the ability to adapt (...) and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production;
 - ▶ Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development

Global warming of 1.5°C

*A IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, **in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty***

Proposed outline (as adopted in October 2016; report to be finalized in 2018) :

- Summary for policy makers (max 10 pages)
- Chapters :
 - ▶ 1. Framing and context
 - ▶ 2. Mitigation pathways compatible with 1.5°C in the context of sustainable development
 - ▶ 3. Impacts of 1.5°C global warming on natural and human systems
 - ▶ 4. Strengthening and implementing the global response to the threat of climate change
 - ▶ 5. Sustainable development, poverty eradication and reducing inequalities
- Boxes (integrated case studies/regional and cross-cutting themes),
- FAQs (10 pages)

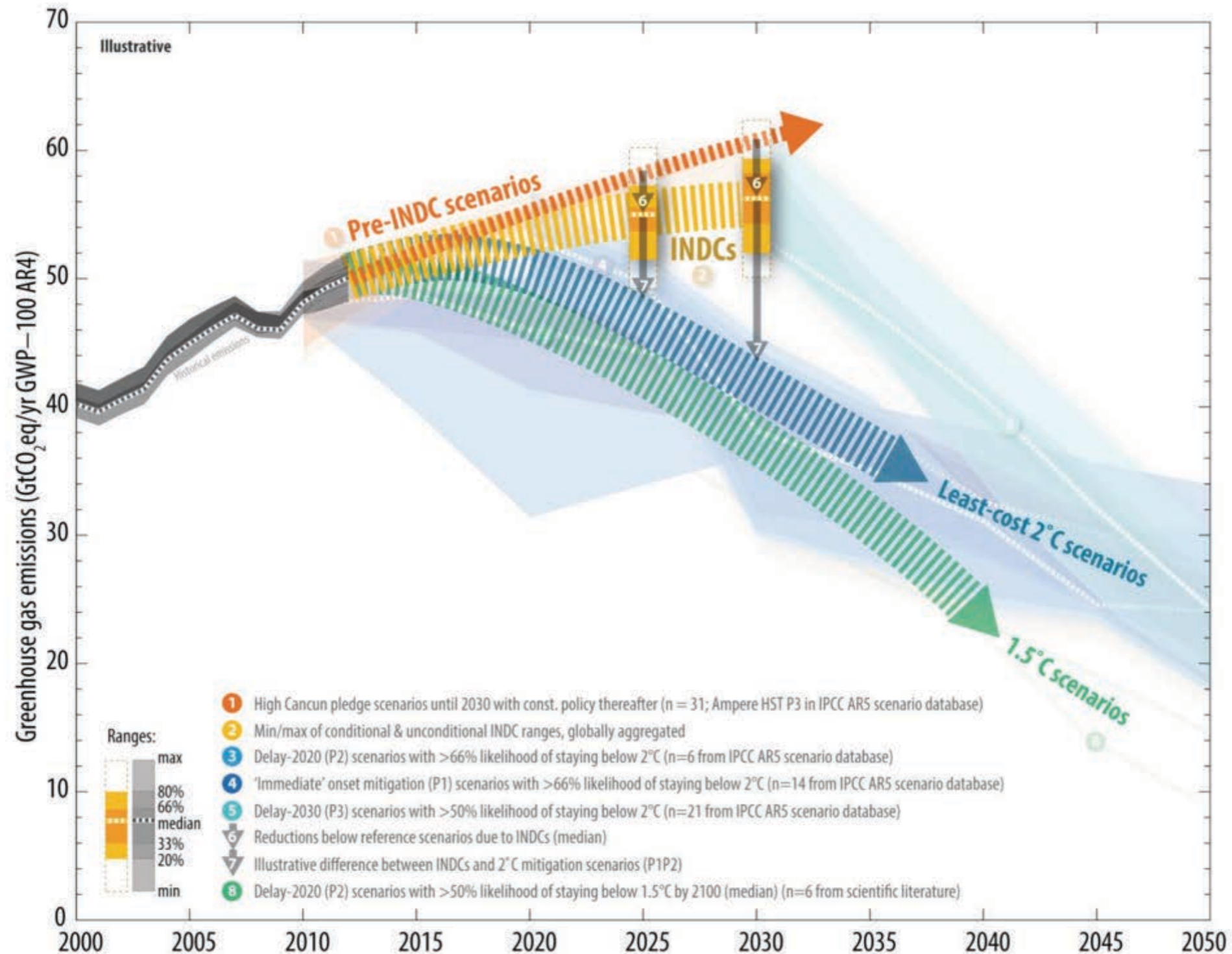
Global warming of 1.5°C

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- Summary for policy makers (max 10 pages)
- Chapters :
 - ▶ 1. Framing and context
 - ▶ 2. Mitigation pathways compatible with 1.5°C in the context of sustainable development and just transition
Understanding 1.5°C; reference levels, probability, transience, overshoot, stabilization (...)
 - ▶ 3. Impacts of 1.5°C and 2°C compared with 1.5°C compared with 2°C (...)
Pathways compatible with 1.5°C compared with 2°C (...)
Technological, environmental, institutional
 - ▶ 4. Strengthening resilience and climate change adaptation
Key global and regional climate changes, vulnerabilities, impacts, and risks at 1.5°C, taking account of
 - ▶ 5. Sustainable development and climate change adaptation
Current and emerging adaptation and mitigation options, including negative emission technologies, and their synergies and trade-offs
Linkages between achieving SDGs and 1.5°C (...)
- Boxes (integrated into chapters)
- FAQs

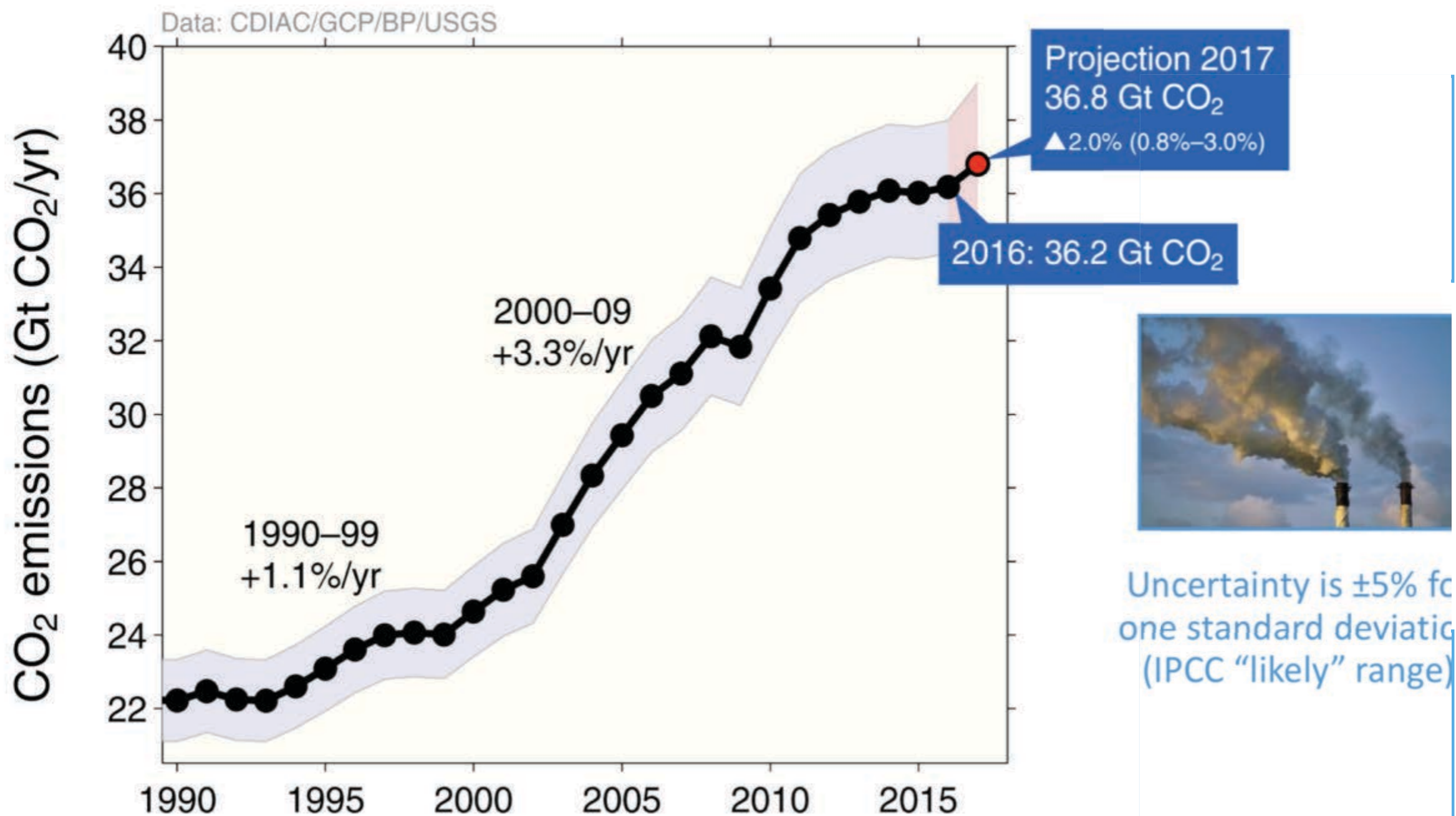
Comparison of global emission levels in 2025 and 2030 resulting from the implementation of the intended nationally determined contributions



Total global emissions

Global emissions from fossil fuel and industry: 36.2 ± 2 GtCO₂ in 2016, 62% over 1990

● Projection for 2017: 36.8 ± 2 GtCO₂, 2.0% higher than 2016



Tentative and personal conclusions

(The SR1.5 has not been finalized yet!)

1.5°C matters: reducing the warming, even by tenths of a °C, can make large differences for impacts, as many of these are non-linear, that is they worsen faster with warming than the warming itself.

The probability of extremes (heat waves, drought, floods, extreme sea level) is significantly lower in a 1.5°C world than in a 2°C world

1.5°C is much safer than 2°C in terms of long-term sea-level rise associated to ice-sheet processes, particularly for low-lying regions

Tentative and personal conclusions

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1.5°C lower impacts will make adaptation less costly than in 2°C world, even if there is a temporary overshoot above 1.5°C

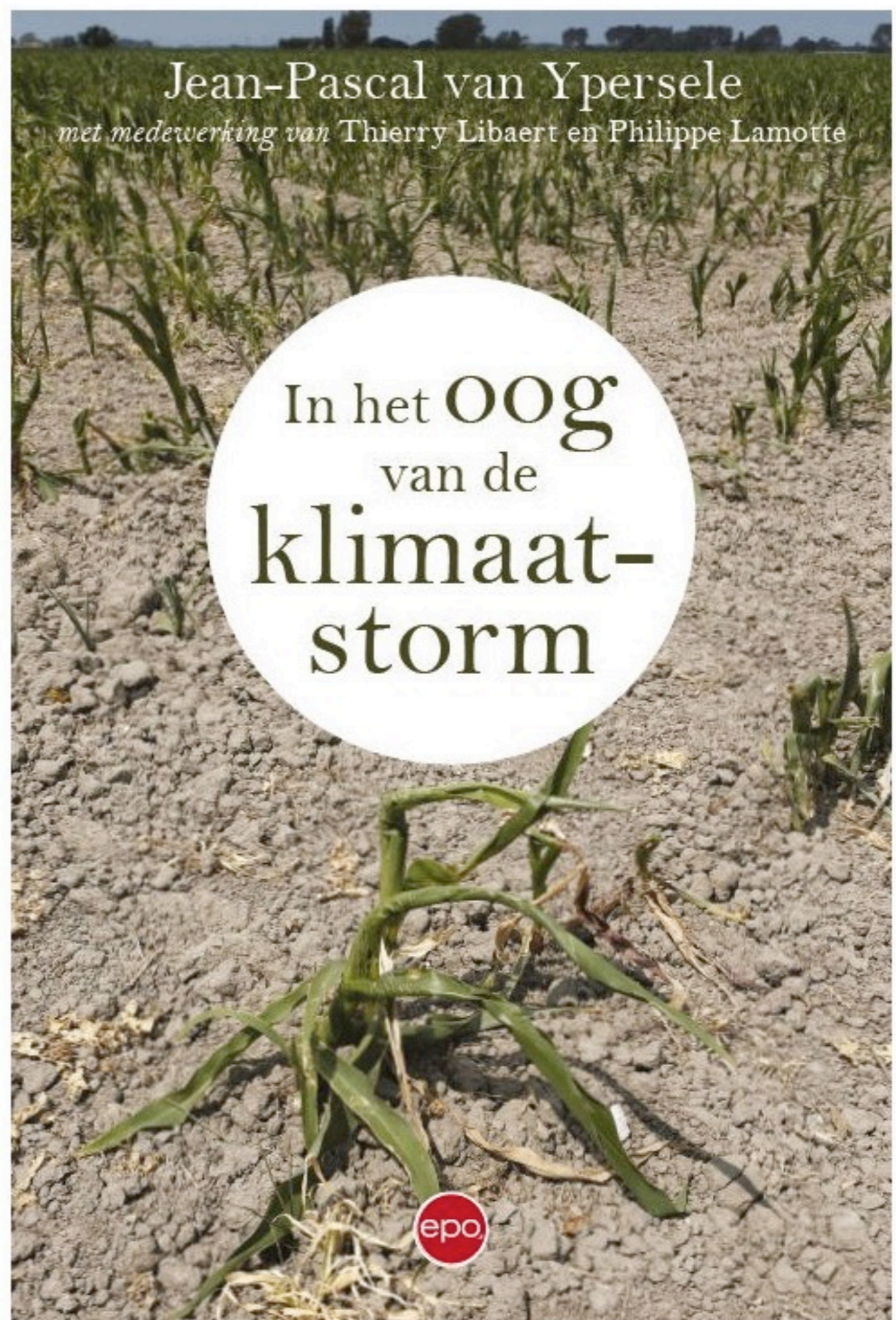
It is very ambitious to reduce emissions fast enough to ZERO for a 1.5°C long-term average temperature above pre-industrial objective; a little easier with overshoot above 1.5°C for a short period

The slower radical changes in emission patterns take place, the more we may need uncertain or risky technologies, such as large use of carbon dioxide removal from the atmosphere (possibly at the expense of bio-energy competition with food production)

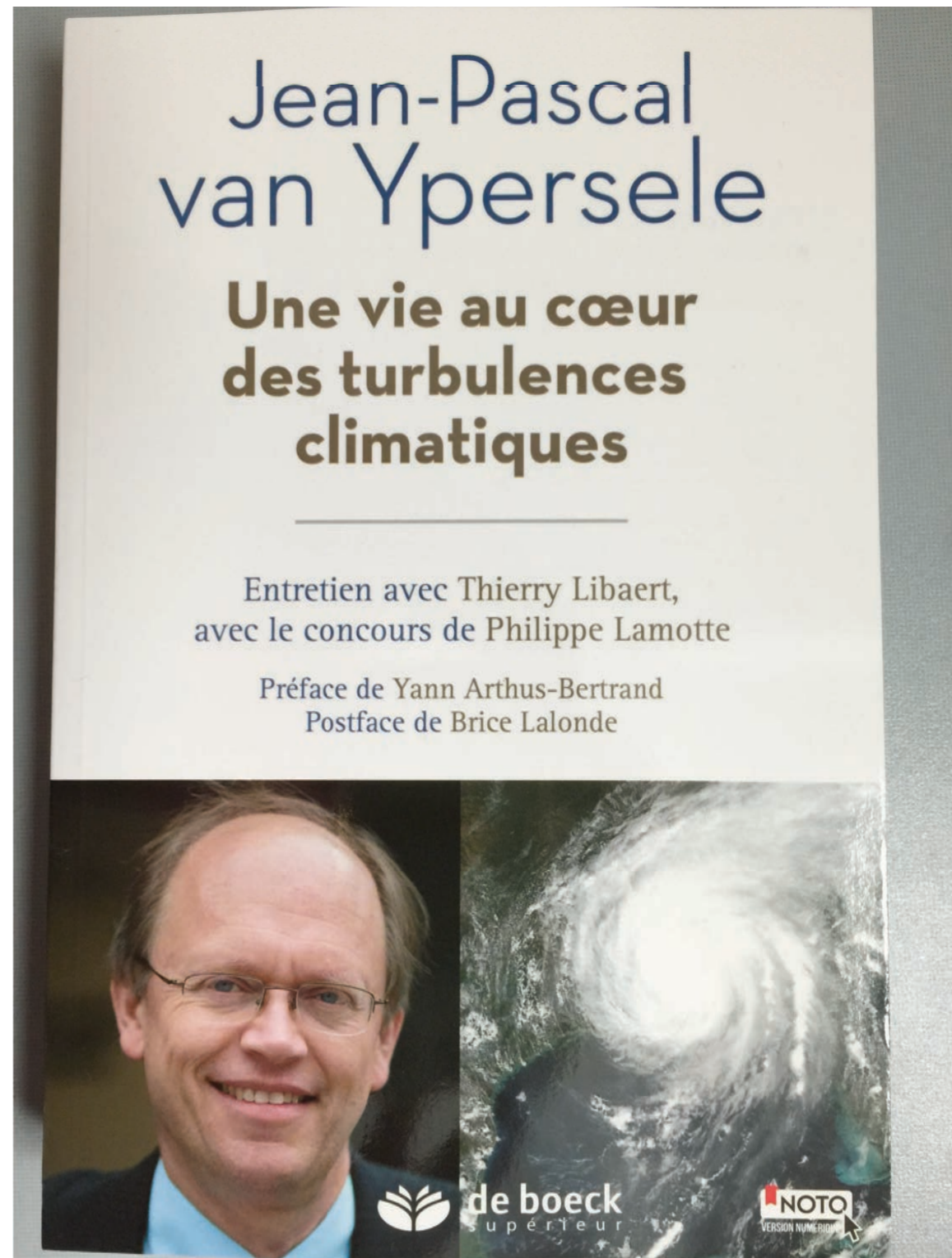
Decision making needs the best scientific information possible – the IPCC SR 1.5 will be essential, but much can be done to raise ambition without waiting for it

**Straks bij EPO
(februari 2018)**

**Voorwoord:
Jill Peeters**



**Publié chez De Boeck
supérieur,
octobre 2015**



Pour en savoir plus :

- www.ipcc.ch : GIEC ou IPCC
- www.climate.be/vanyp : beaucoup de medias
- www.plateforme-wallonne-giec.be : Plateforme wallonne pour le GIEC (e.a., Lettre d'information)
- www.skepticalscience.com : réponses aux semeurs de doute
- **Sur Twitter: @JPvanYpersele**
@IPCC_CH