

CLIMATE CHANGE AND ENVIRONMENTAL SECURITY

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Chair, Working Group II of IPCC

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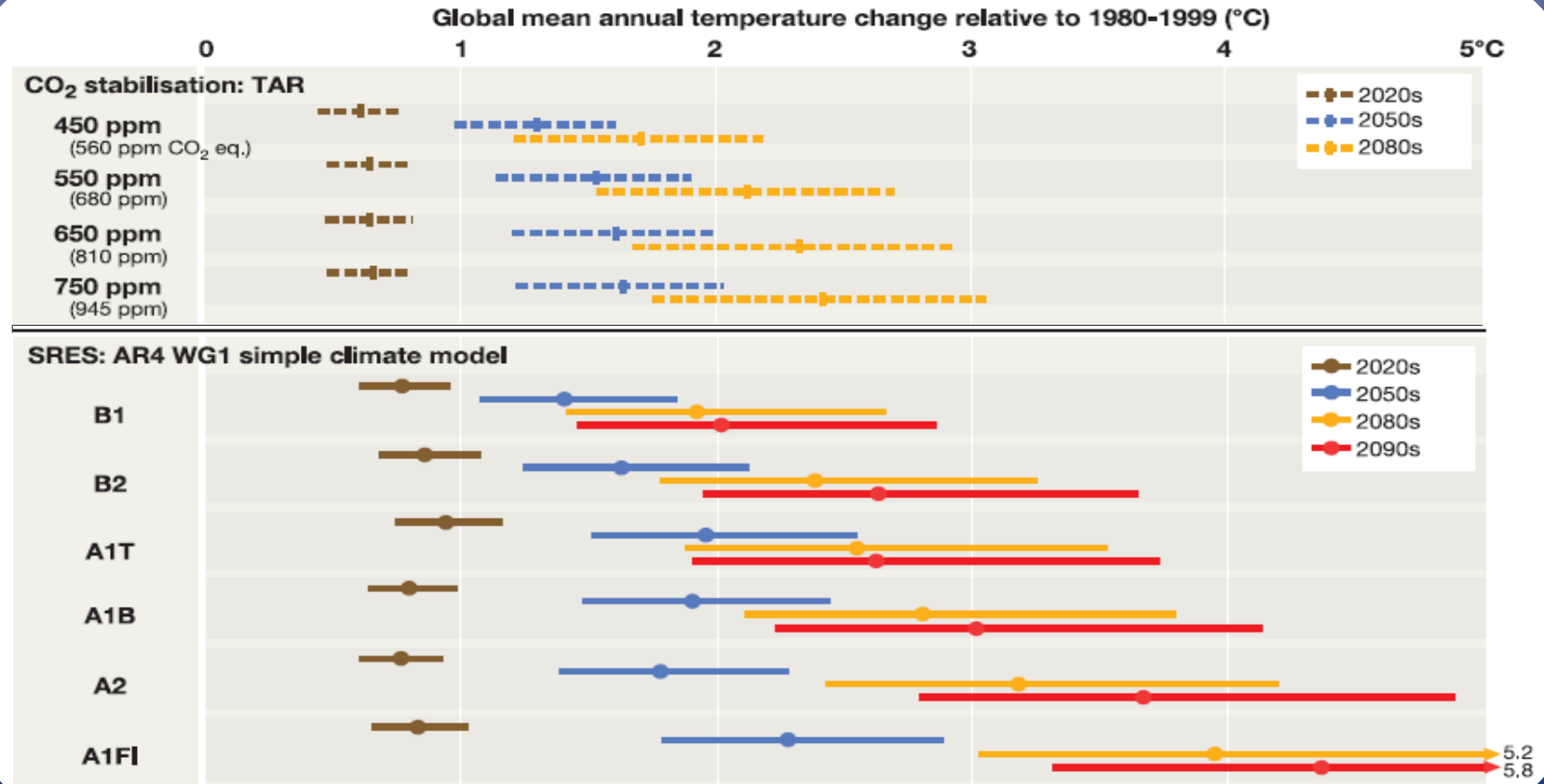
- A fundamental aspect of security is ensured access to essential resources, e.g. food, water, safe settlement
- Without this, there is greater risk of:
 - conflict over resources
 - environmental refugee movements
 - global instability
- Climate change threatens secure access to resources bringing increased risk :
 - of water shortage
 - of hunger
 - of flooding of coastal settlements
 - of disease and mortality



INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC)
Working Group II

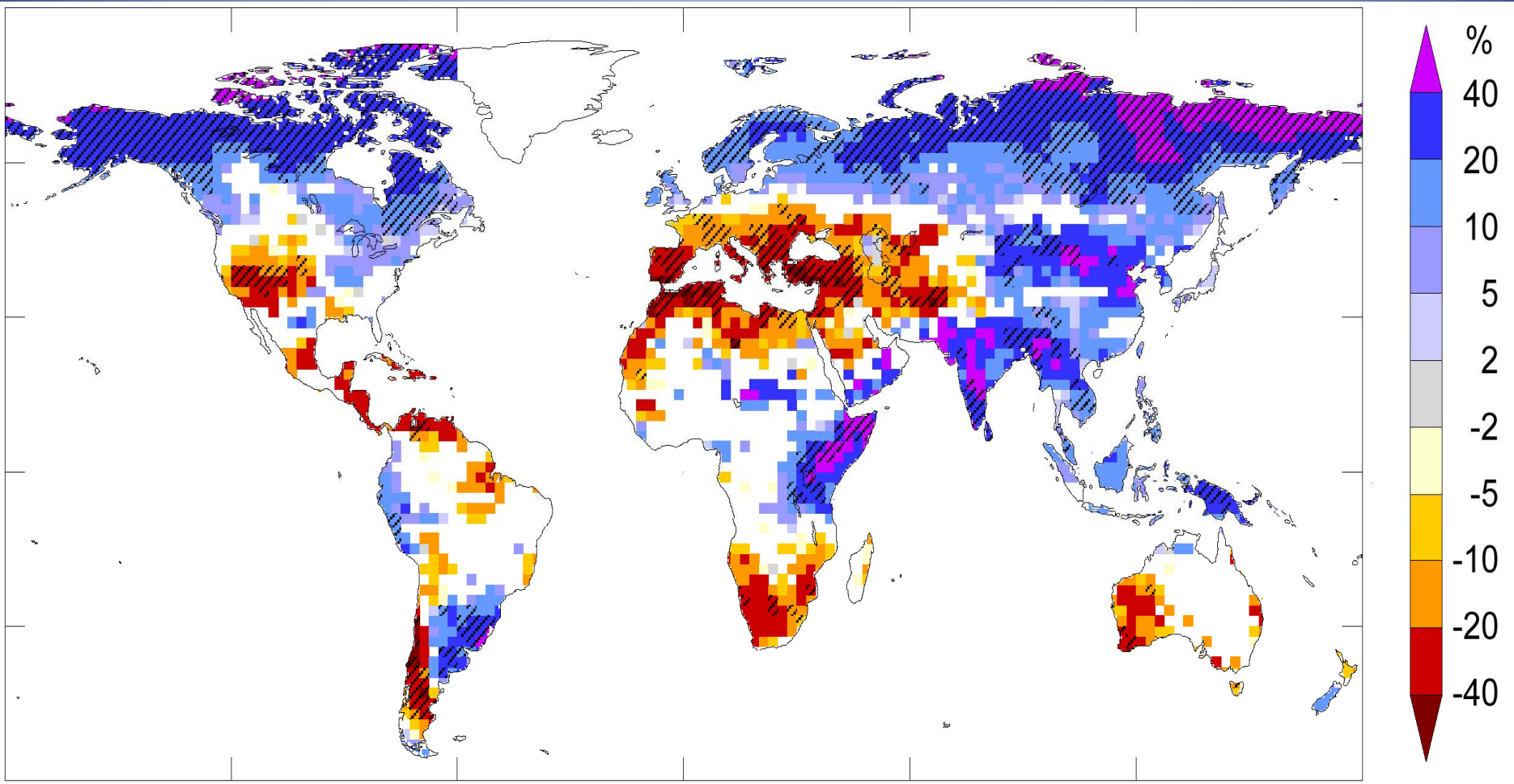


Global temperature changes estimated for different development pathways (bottom) and for different stabilisation targets (top)



1. WATER SHORTAGE

There is high confidence that hundreds of millions of people will be exposed to increased water stress. Changes in run-off, 21st century



Global mean annual temperature change relative to 1980-1999 (°C)

0 1 2 3 4 5°C

CO₂ stabilisation: TAR

450 ppm

(560 ppm CO₂ eq.)

550 ppm

(680 ppm)

650 ppm

(810 ppm)

750 ppm

(945 ppm)

2020s
2050s
2080s

WATER

Increased water availability in moist tropics and high latitudes¹

Decreasing water availability and increasing drought in mid-latitudes and semi-arid low latitudes²

0.4 to 1.7 billion³

1.0 to 2.0 billion³

1.1 to 3.2 billion³

Additional people
with increased
water stress

SRES: AR4 WGII simple climate model

B1

B2

A1T

A1B

A2

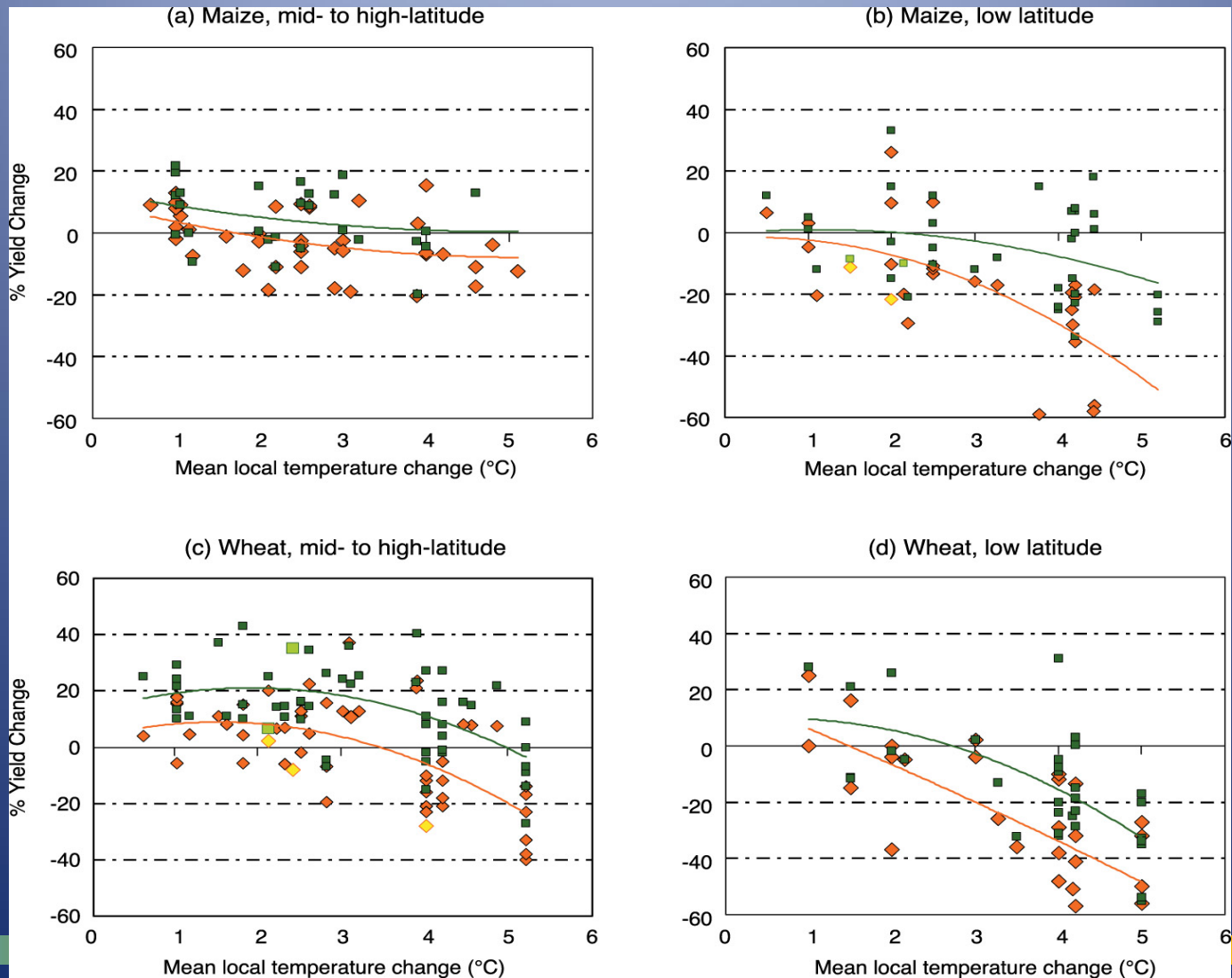
A1FI

2020s
2050s
2080s
2090s

5.2
5.8

2. FOOD POTENTIAL

Yields will decrease at lower latitudes, but at higher latitudes initially increase then decrease. Tens of millions will be additionally at risk of hunger



3. COASTAL SETTLEMENTS

Densely populated “megadeltas” especially in Asia and Africa, are most at risk. Tens of millions will be additionally at risk



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2020s

2050s

2080s

Increased damage from floods and storms¹⁰

COAST

About 30% loss of coastal wetlands¹¹

Additional people at risk of coastal flooding each year

0 to 3 million¹²

2 to 15 million¹²

SRES: AR4 WG I simple climate model

B1

B2

A1T

A1B

A2

A1FI

2020s

2050s

2080s

2090s

5.2

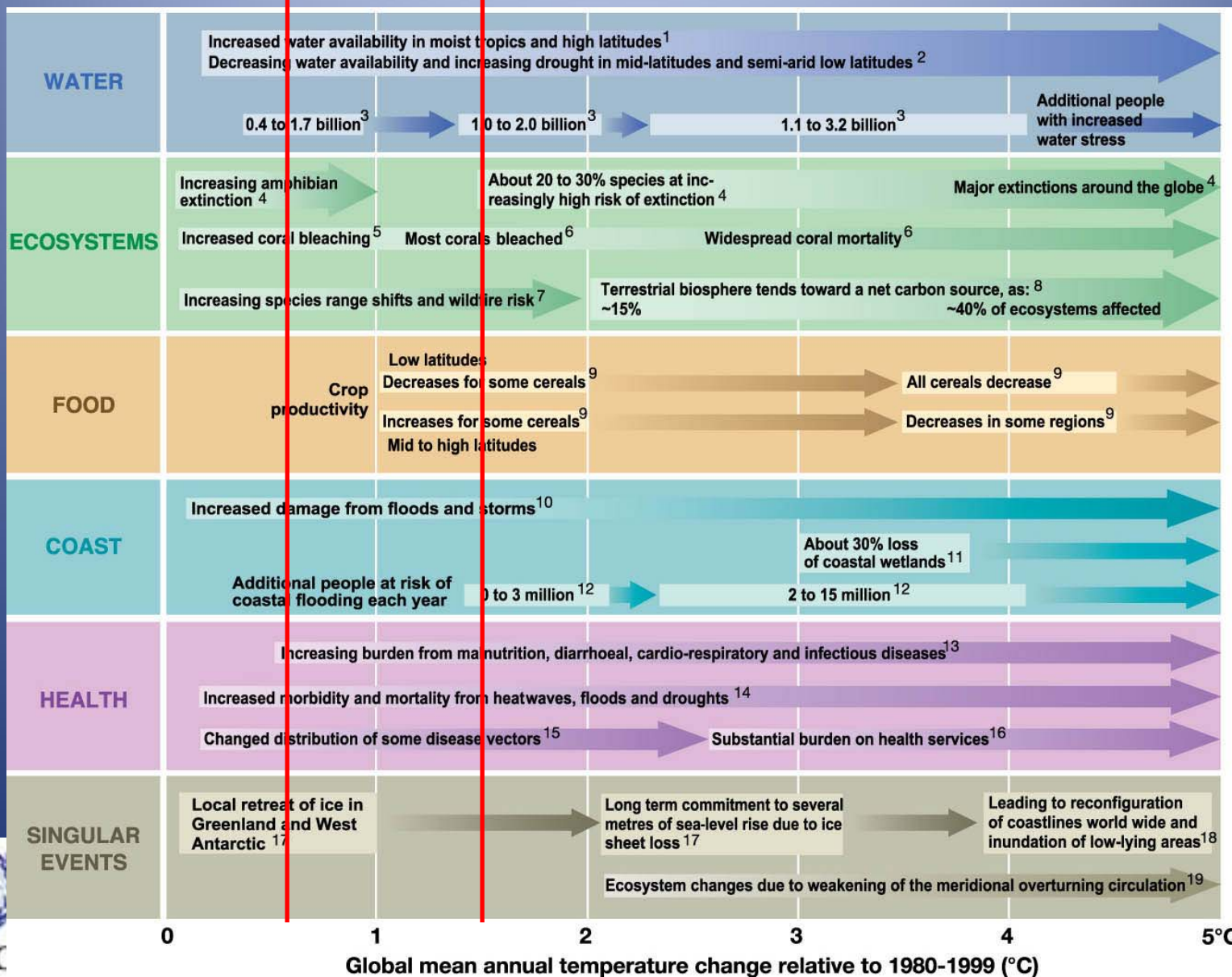
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4. HUMAN HEALTH:

Effects will be mainly adverse, and on elderly, poor, marginalised

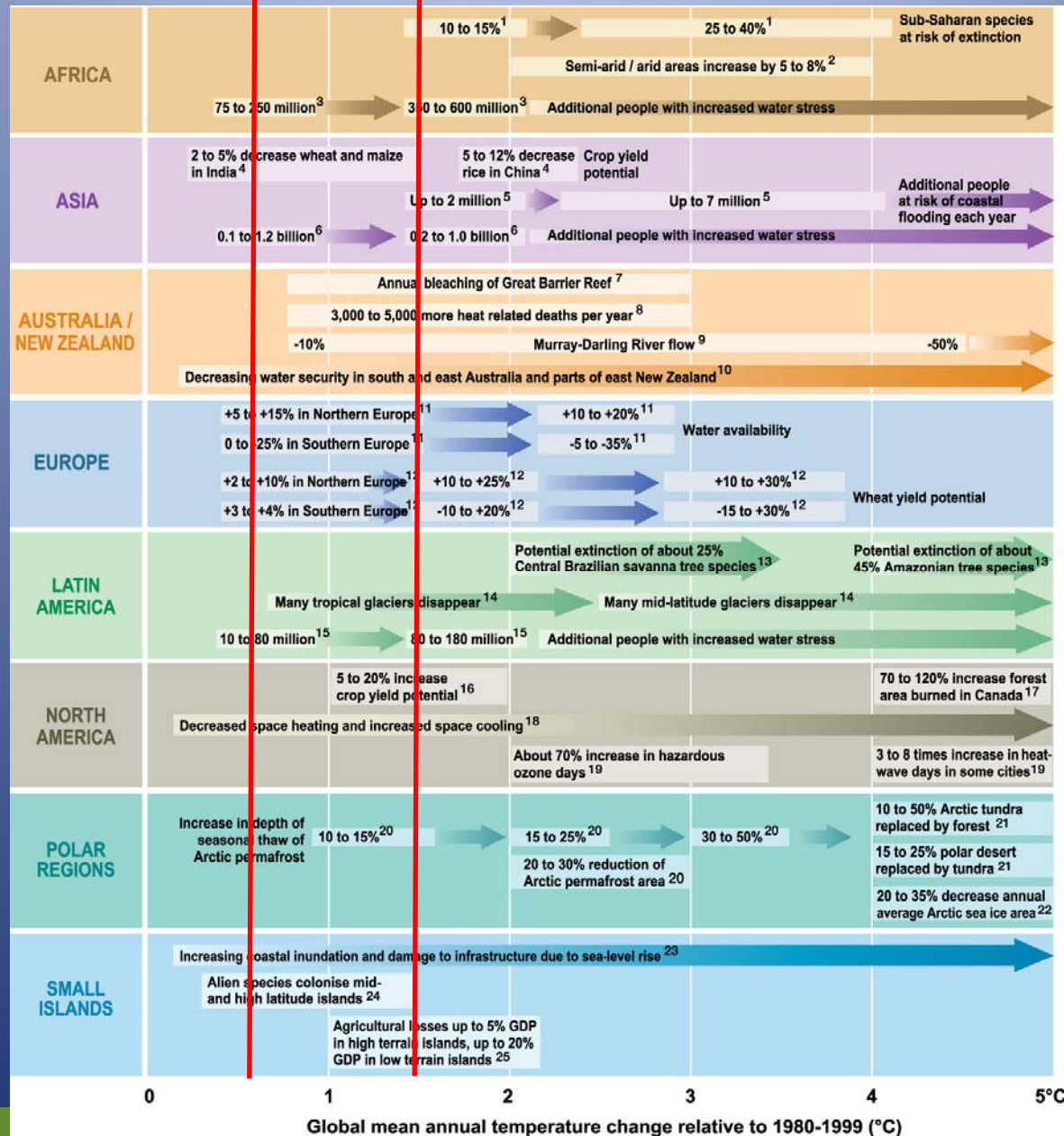
	Negative impact	Positive impact
Very high confidence		
Malaria: contraction and expansion, changes in transmission season		
High confidence		
Increase in malnutrition		
Increase in the number of people suffering from deaths, disease and injuries from extreme weather events		
Increase in the frequency of cardio-respiratory diseases from changes in air quality		
Change in the range of infectious disease vectors		
Reduction of cold-related deaths		
Medium confidence		
Increase in the burden of diarrhoeal diseases		

Committed 2.0°C target
0.6°C (pre-ind.)



Committed
0.6°C

2.0°C target
(pre-ind.)



Which places are most at risk?

- **Most vulnerable regions** are:
 - Africa, Asian mega-deltas, small islands, the Arctic
- **Most vulnerable sectors** are:
 - water in the dry tropics
 - agriculture in low latitudes
 - human health in poor countries
 - ecosystems at the margins: e.g. tundra, boreal, mountains or already stressed: e.g. mangroves, coral
- **In all regions**, even rich ones, there are vulnerable people: especially the old, the young, the poor and indigenous communities.



Conclusions and actions recommended

- Some impacts are occurring now
- Some further impacts are ‘in the pipeline’, are unavoidable, and must be adapted to.
- Early action on mitigation is needed to avoid or reduce even further impacts, otherwise climate change could exceed our capacity to adapt.
- Thus: both adaptation and mitigation are needed, now, to ensure continued secure access to essential resources.

