

CLIMATE CHANGE AND ENVIRONMENTAL IMPACT ASSESSMENT

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OVERVIEW

- Climate Change
 - Recent Climate Changes
 - Future Climates
- Challenges for EIA
- Concluding Comments

THE ANTHROPOGENIC FINGERPRINT ON THE EARTH'S CLIMATE

CLIMATE SCIENCE 2007

Warming of the climate system is unequivocal ... the observed increase in global temperature since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations

CLIMATE CHANGE 2007 - THE PHYSICAL SCIENCE BASIS

CLIMATE CHANGE 2007
THE PHYSICAL SCIENCE BASIS



Working Group I Contribution to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.



Summary for Policymakers, Technical Summary and Frequently Asked Questions

PLANETARY GUARDRAILS BREACHED

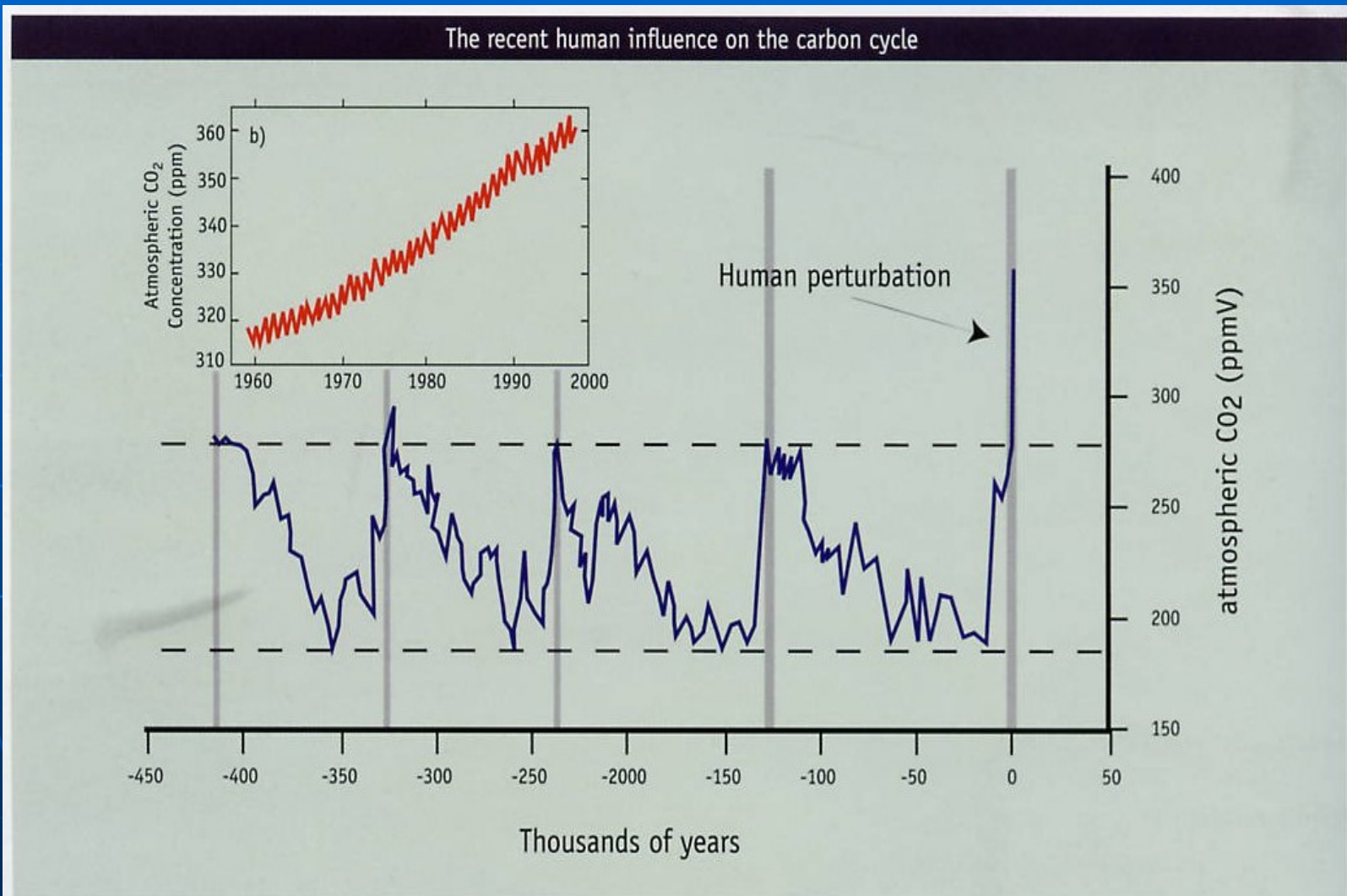
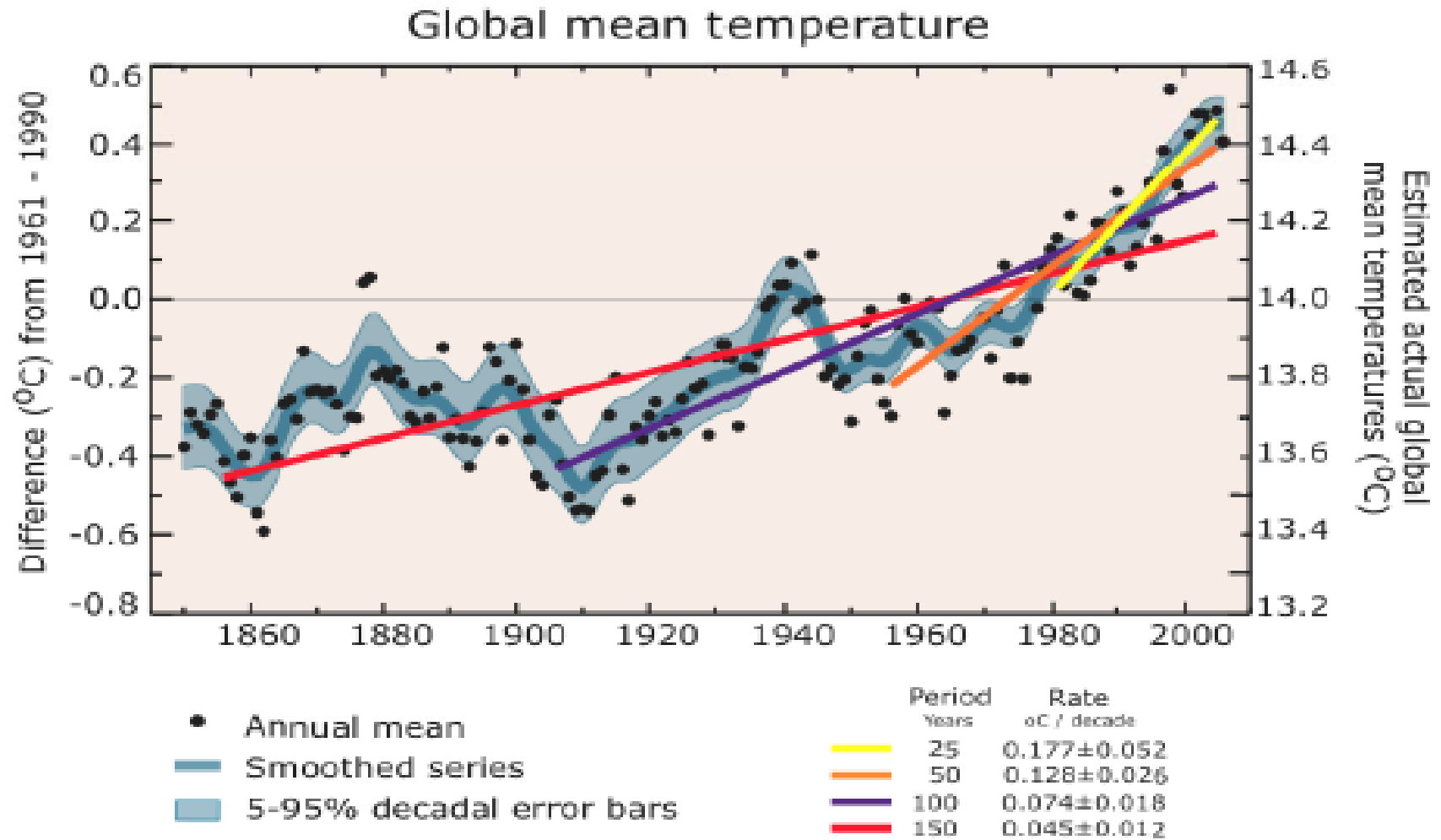


Figure 2 Atmospheric CO₂ concentration from the Vostok ice core record with the recent human perturbation superimposed. The inset shows the observed contemporary increase in atmospheric CO₂ concentration from the Mauna Loa (Hawaii) Observatory.

ources: Petit et al. (1999) *Nature* 399, 429-436 and National Oceanic and Atmospheric Administration (NOAA), USA

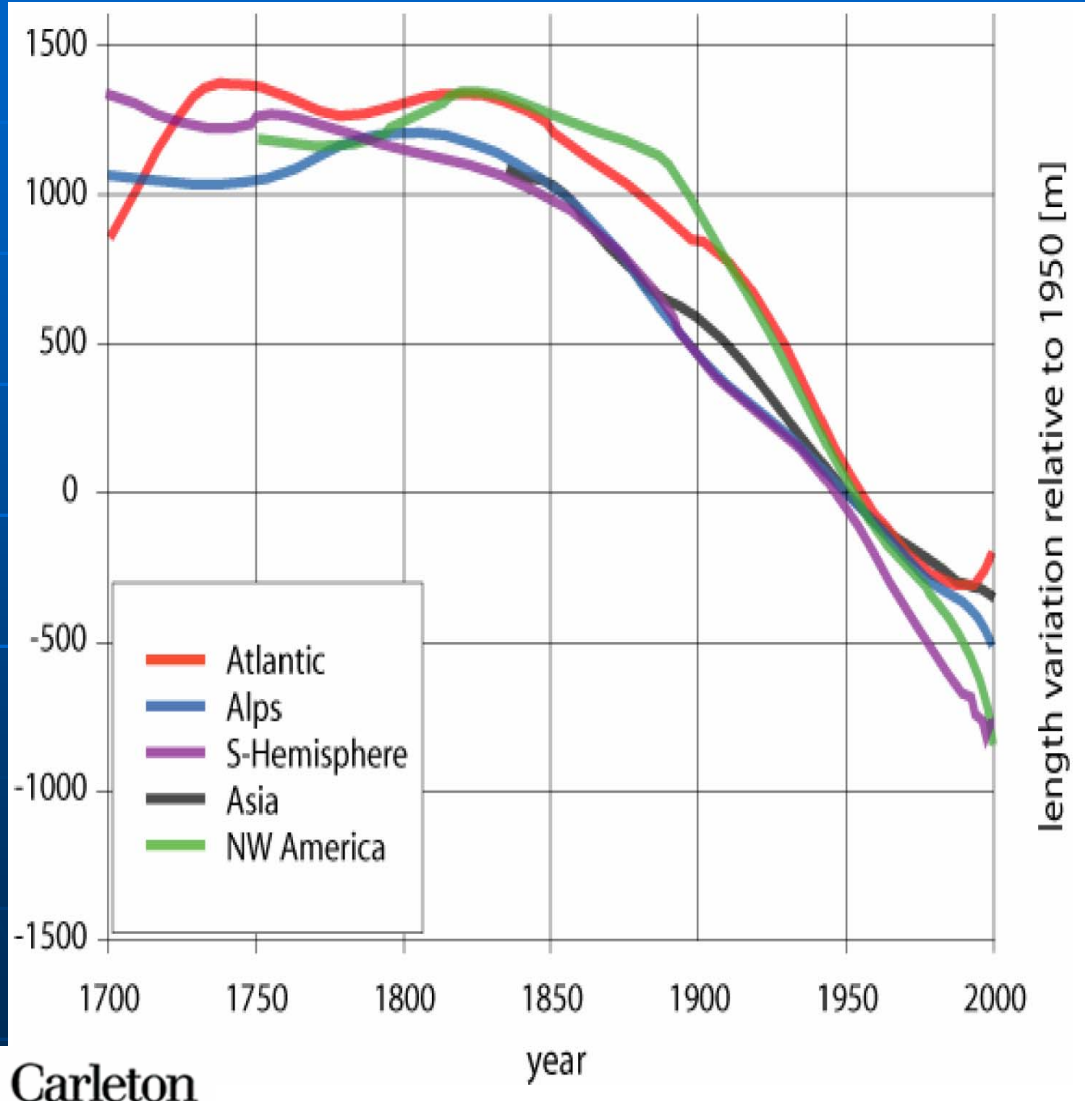
TEMPERATURE RISING

(IPCC WG1 AR4)

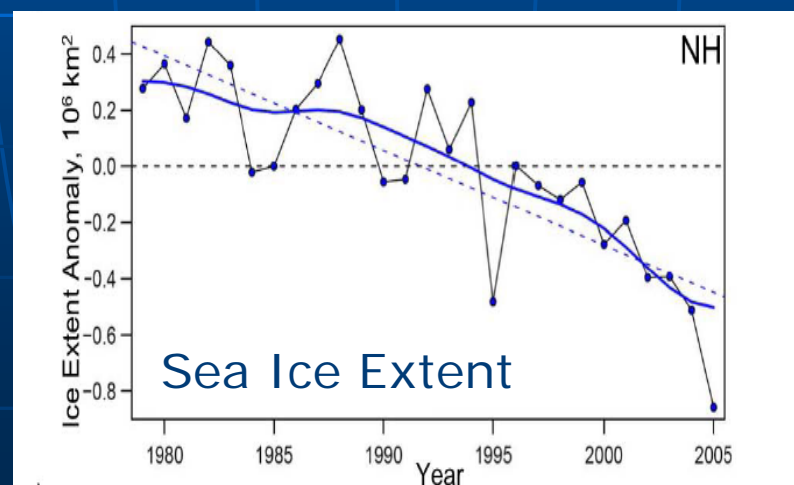
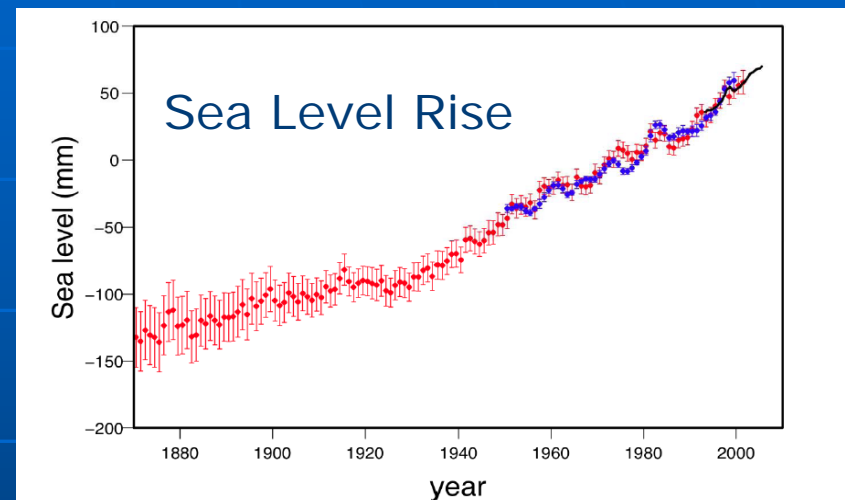
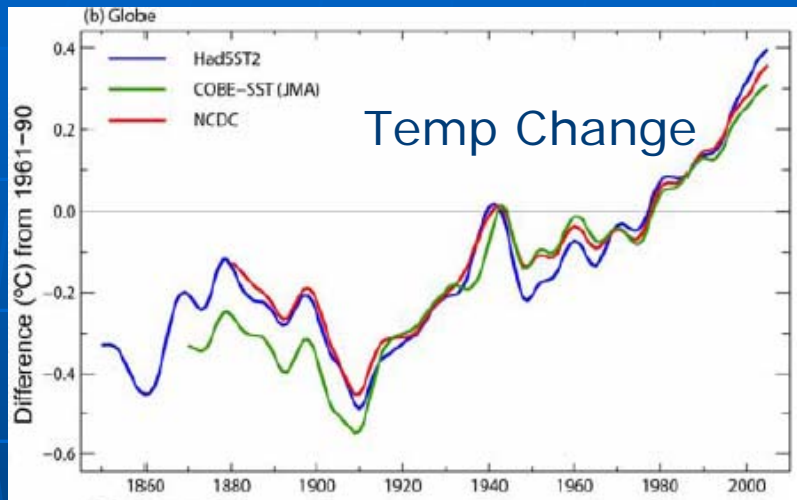


RECEDING GLACIER 'TONGUES'

(IPCC WG1 AR4)



IS THE CLIMATE SYSTEM ACCELERATING? (IPCC WG1 AR4)



FUTURE CLIMATES: POTENTIAL STORYLINES

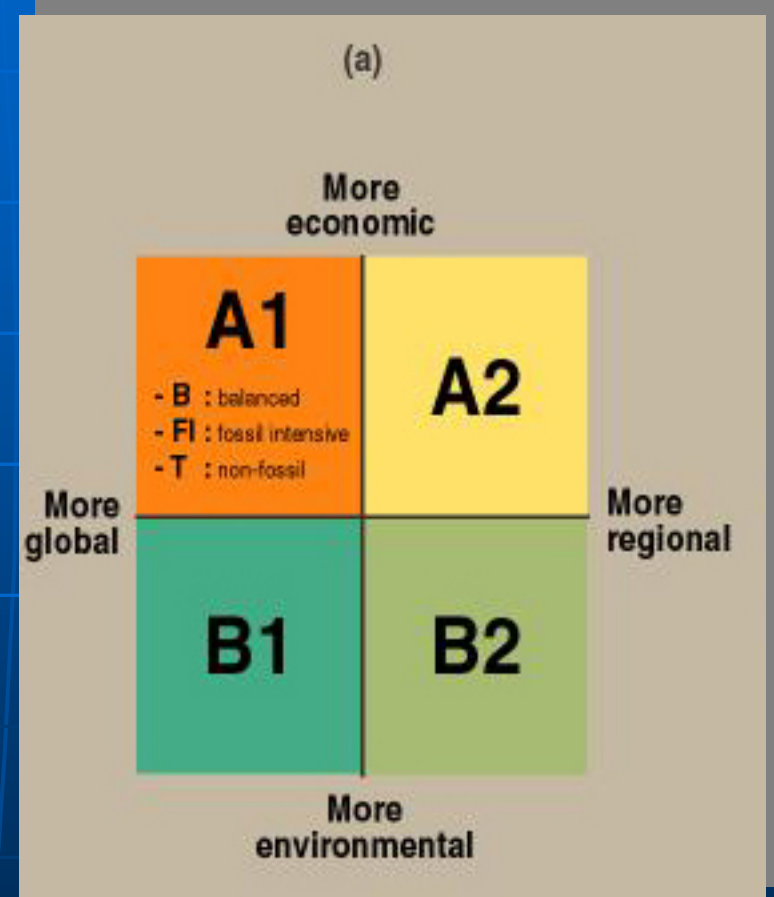
IPCC SCENARIOS

A1: A world of rapid economic growth and rapid introductions of new and more efficient technologies

A2: A very heterogeneous world with an emphasis on family values and local traditions

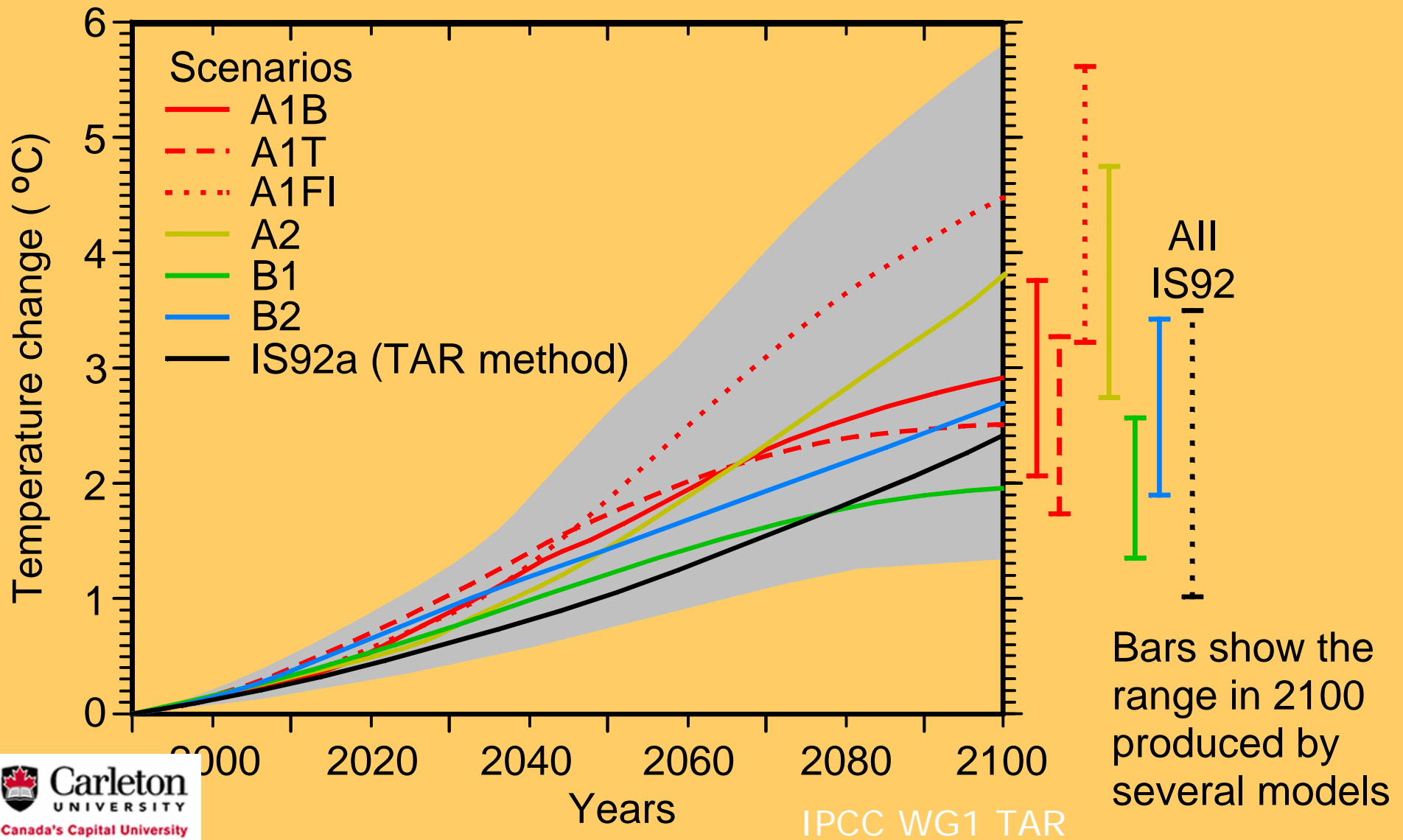
B1: A world of „dematerialization“ and introduction of clean technologies

B2: A world with an emphasis on local solutions to economic and environmental sustainability



IPCC WG1 TAR

IPCC SCENARIOS cont'd



CHALLENGES FOR ENVIRONMENTAL IMPACT ASSESSMENT

ENVIRONMENTAL SYSTEM LAGS

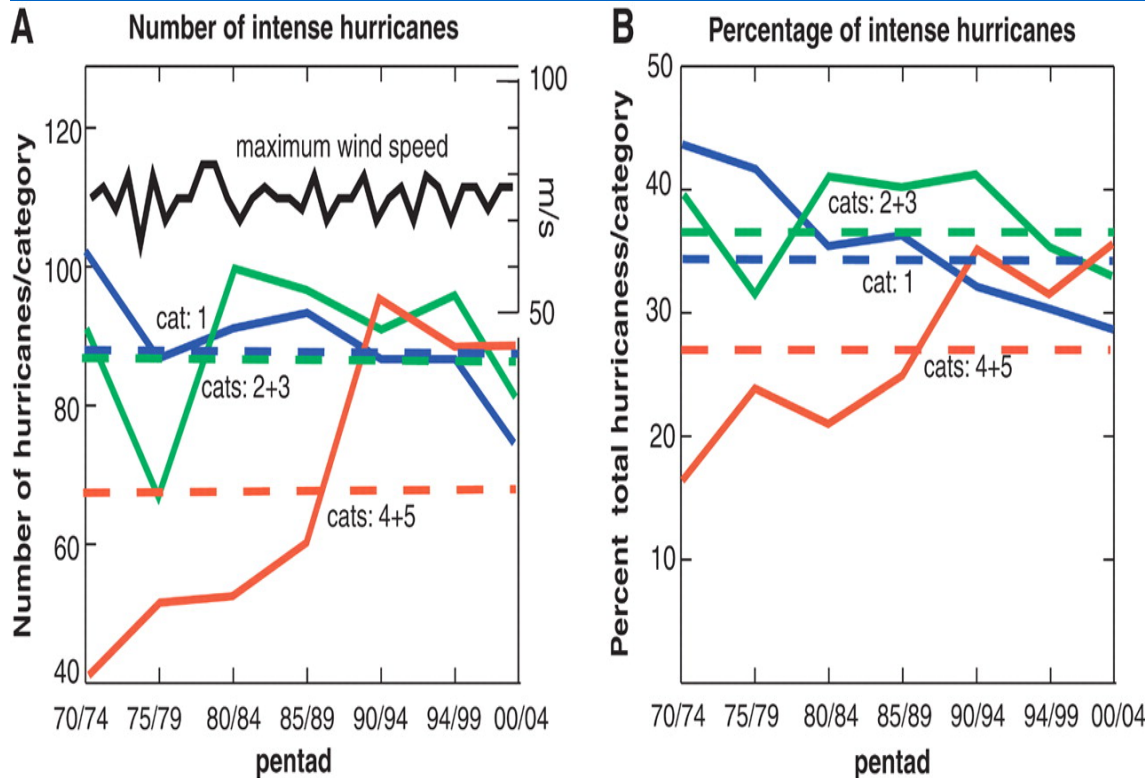
"the half-life of carbon dioxide is on the order of a century. Most of the carbon dioxide we release today will still linger in the atmosphere in 2075 and even 2100."

source: www.climate.org

Challenge 1: Urgency to reduce GHG emissions

Challenge 2: Committed to future climate change

INCREASING ENVIRONMENTAL STRESS



“Climate change means more strange weather”

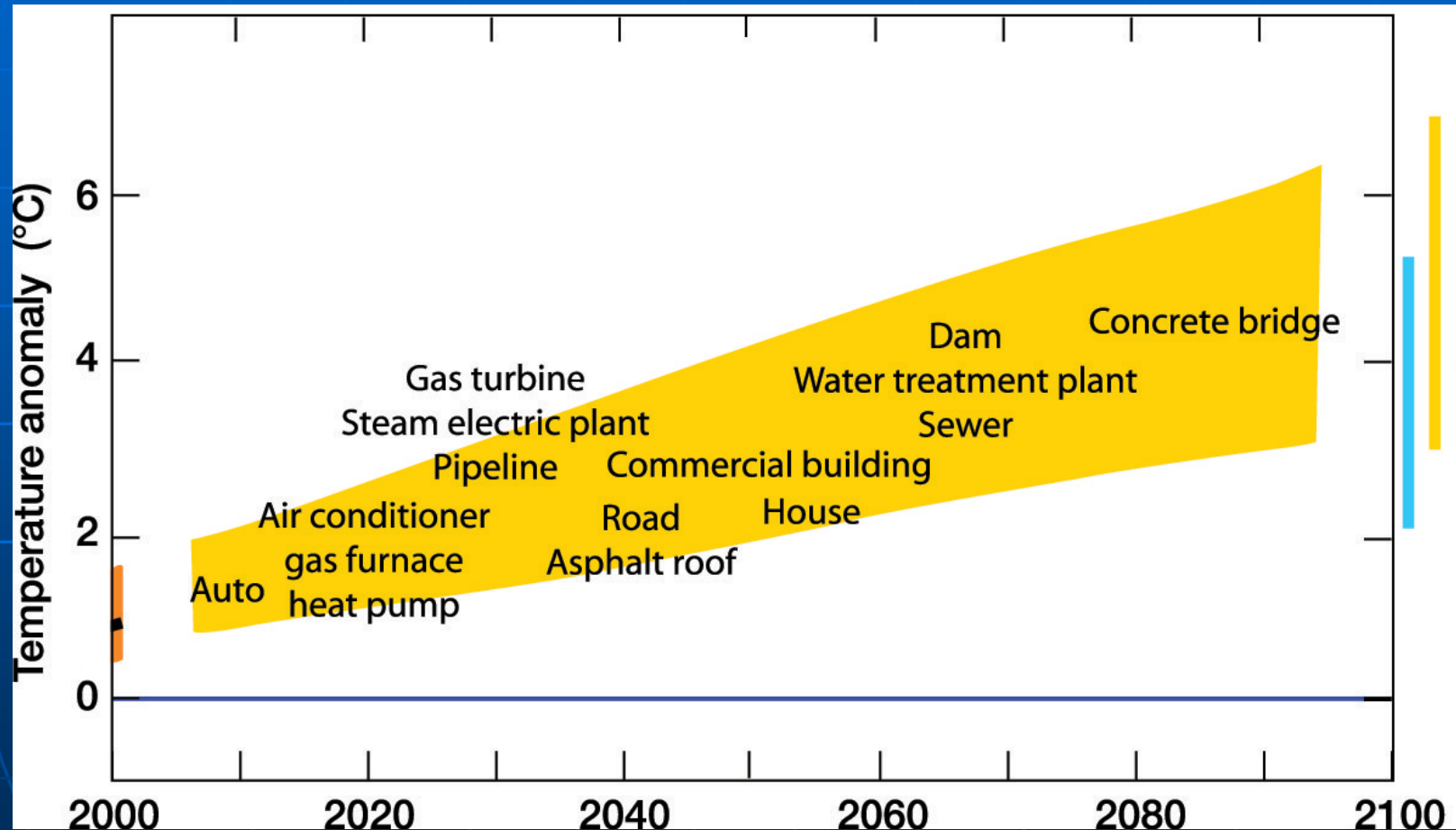
CBC Radio Interview with Manager of the Hardwood Hills Ski & Bike Centre, Barrie, ON. 18 Nov 2008

P. J. Webster et al. 2005

Challenge 3: Plan for less predictable and more severe weather

INFRASTRUCTURE PLANNING

Life Span of Infrastructure from 2000



IPCC Working group WG2 AR4

ADAPTATION CAPACITY

North America's coping capacity
is not always sufficient

Saguenay 1996

Katrina 2005

Challenge 5: Enhance coping & adaptation capacity

COASTS UNDER STRESS

- Current coastal “squeeze”
- Future sea level rise
- Uneven readiness
- Differentiated vulnerabilities

Challenge 6: Factor climate change into integrated coastal development

WATER SUPPLY CONCERNS

- Seasonal shifts in mountain water supply
- Ground water reductions in central & SW NA
- More difficult to meet water “Q&Q needs”

**Challenge 7: Factor climate change
into water resource planning**

CONCLUDING COMMENTS

- Pace of climate change is faster than originally thought
- Committed to long-term human-induced climate change
- Two major contributions for EIA
 - Reducing future GHG emissions
 - Enhancing adaptation capacities