DETECTION AND PREDICTION OF CLIMATE CHANGE TAR and Beyond

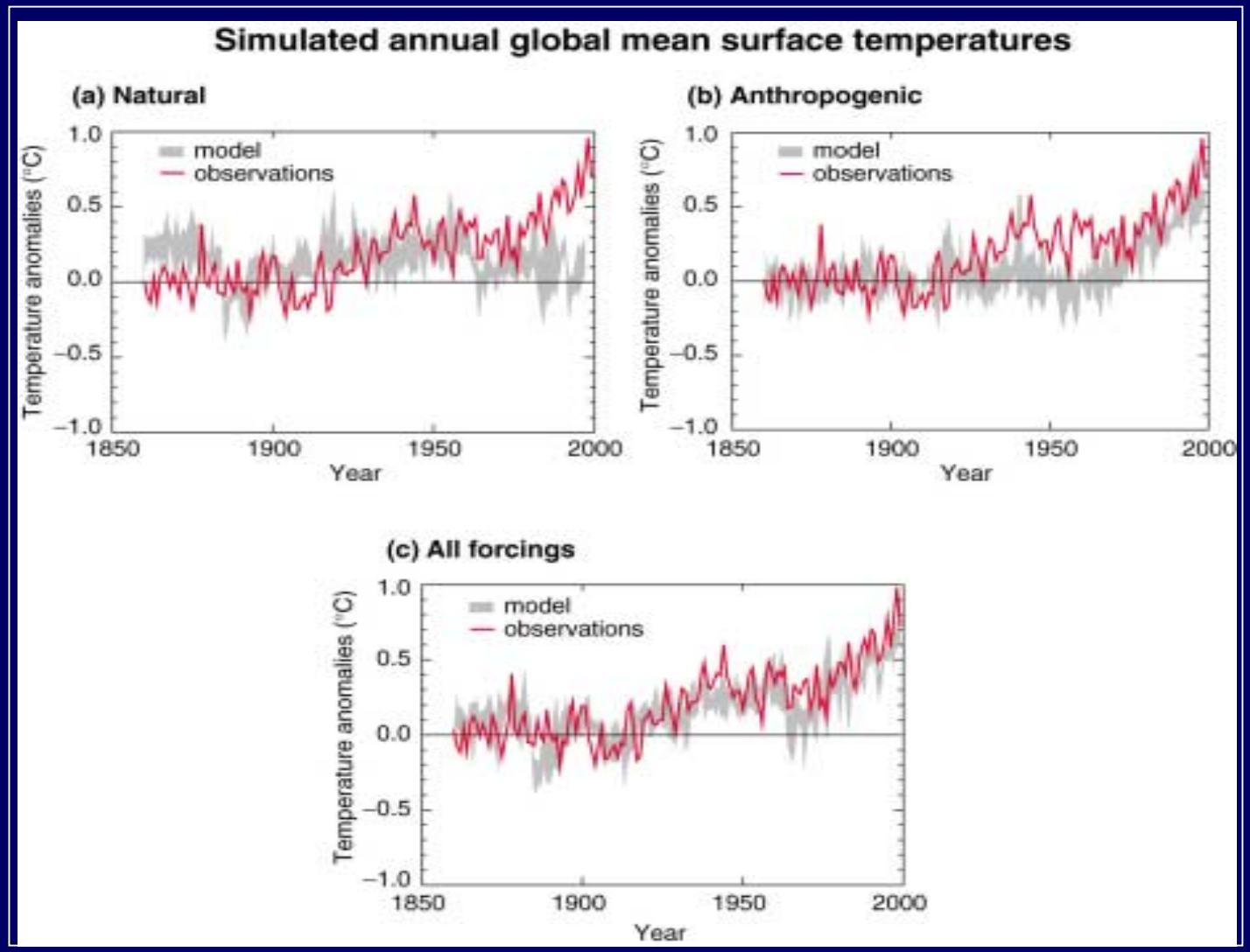
J F B Mitchell

April 2002

Hadley Centre for Climate Prediction and Research

Met Office

Model Simulations of the 20th Centrury



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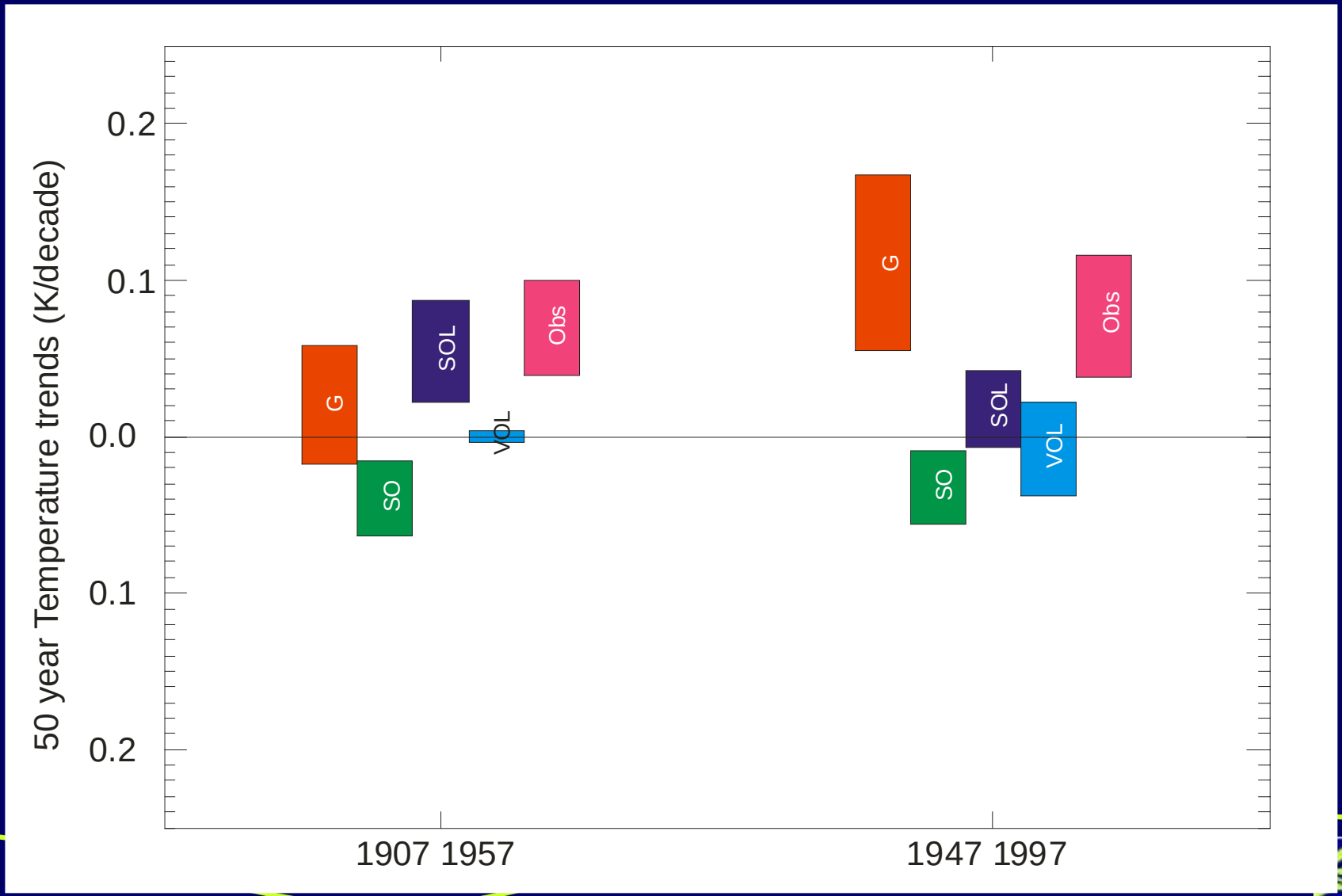
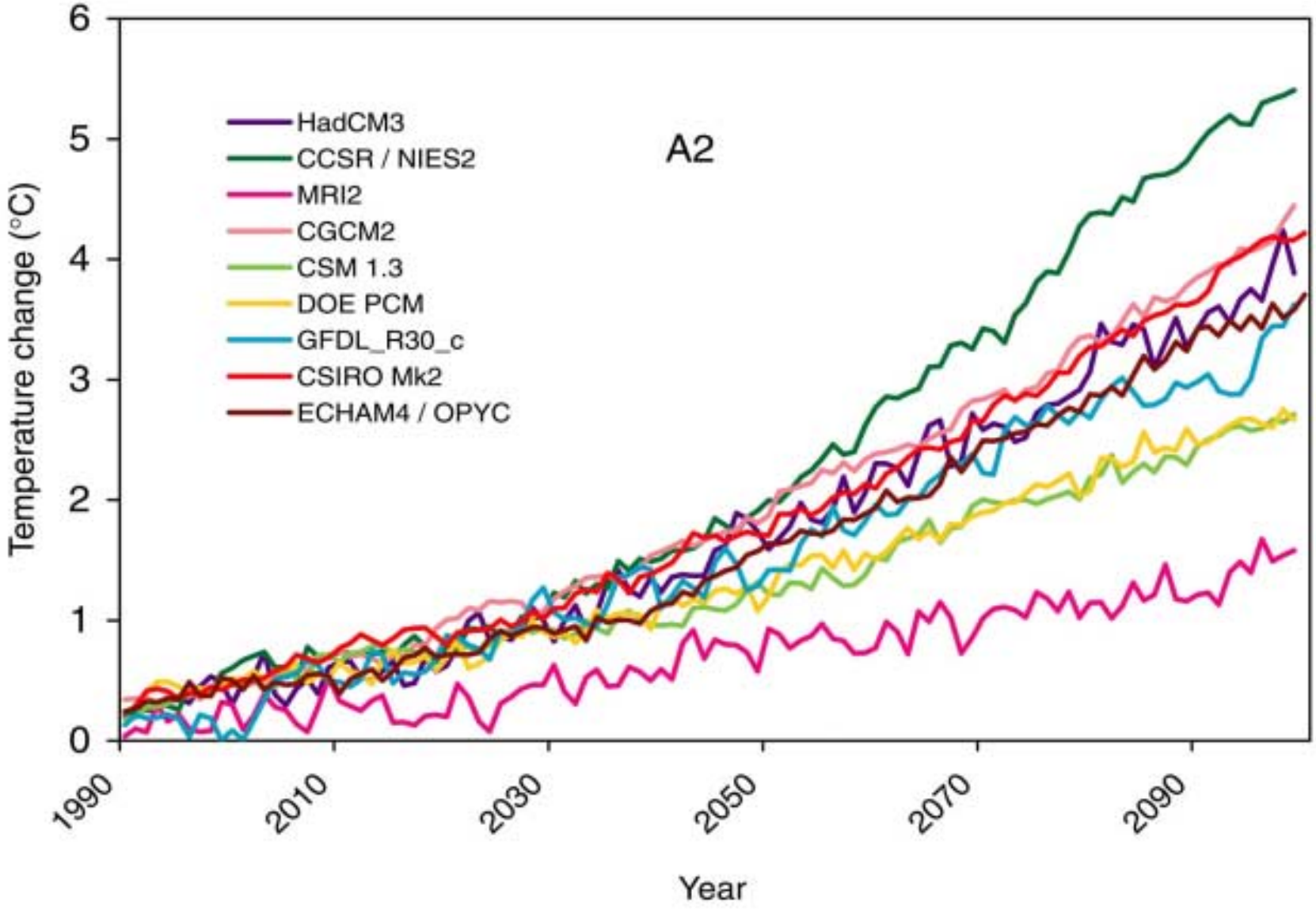
GLOABAL TEMPERATURE TRENDS DUE NATURAL AND HUMAN FORCING



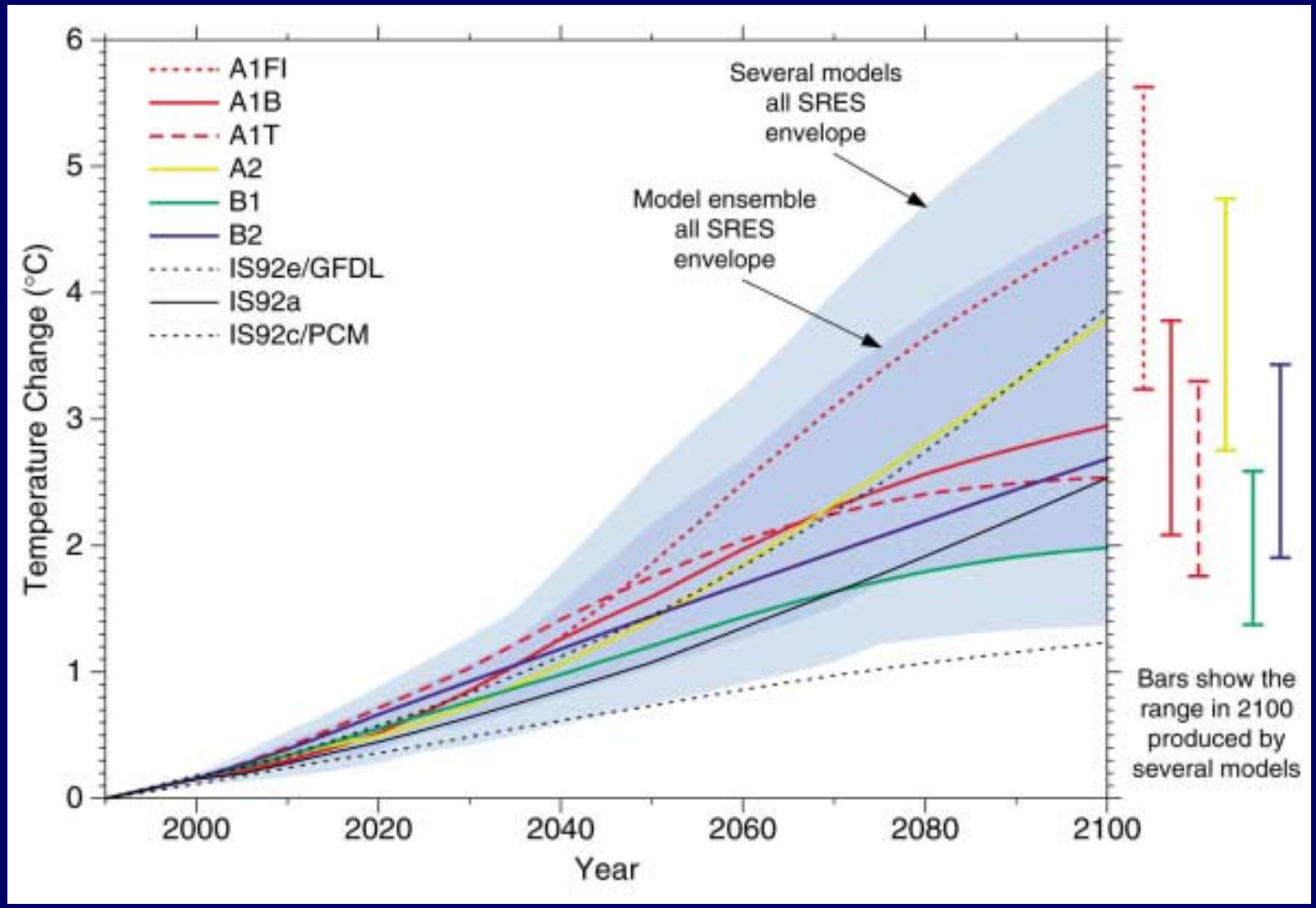
Stott et al, 2002

Temperature change, A2 scenario



Cubasch et al, 2001

Global mean temperature changes



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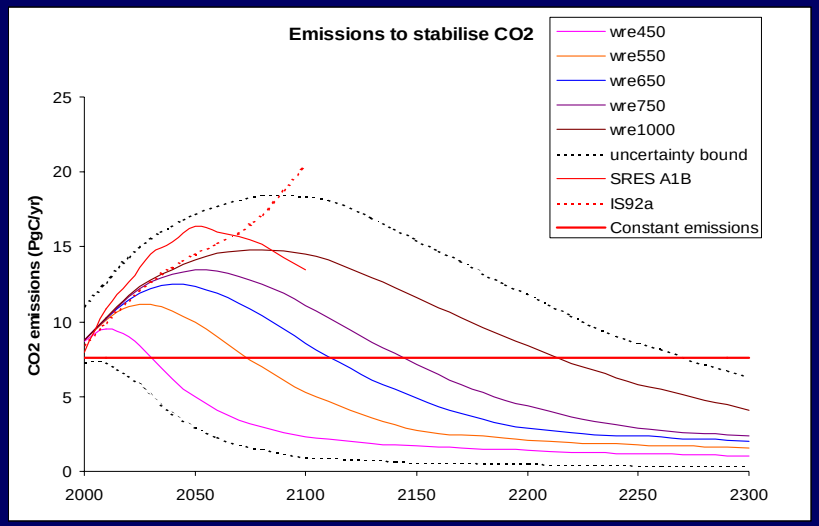
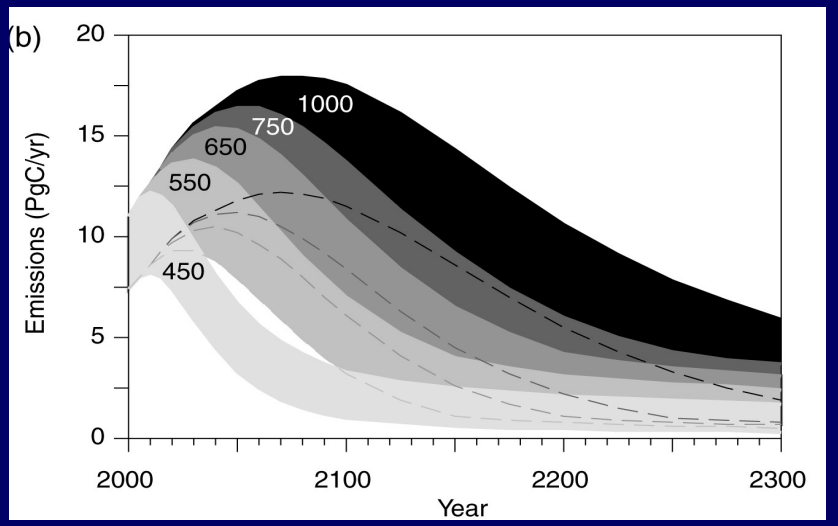
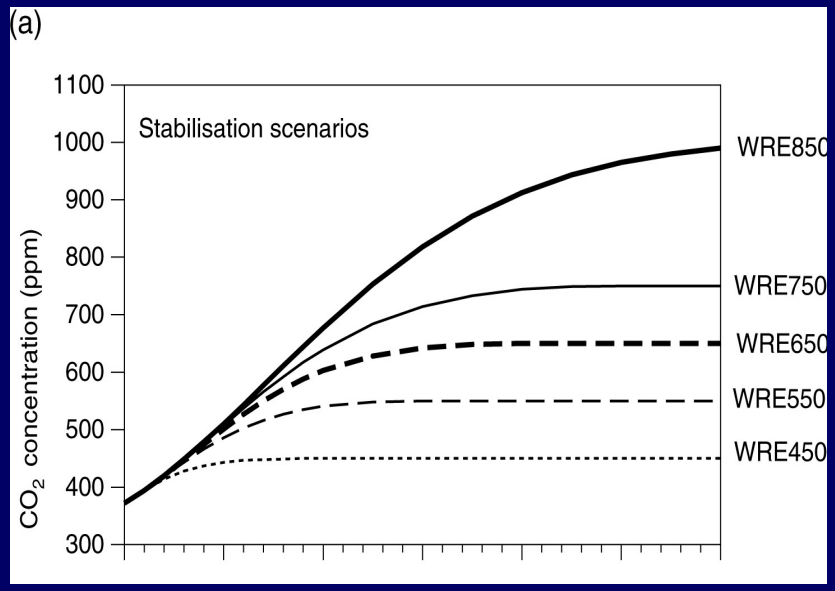
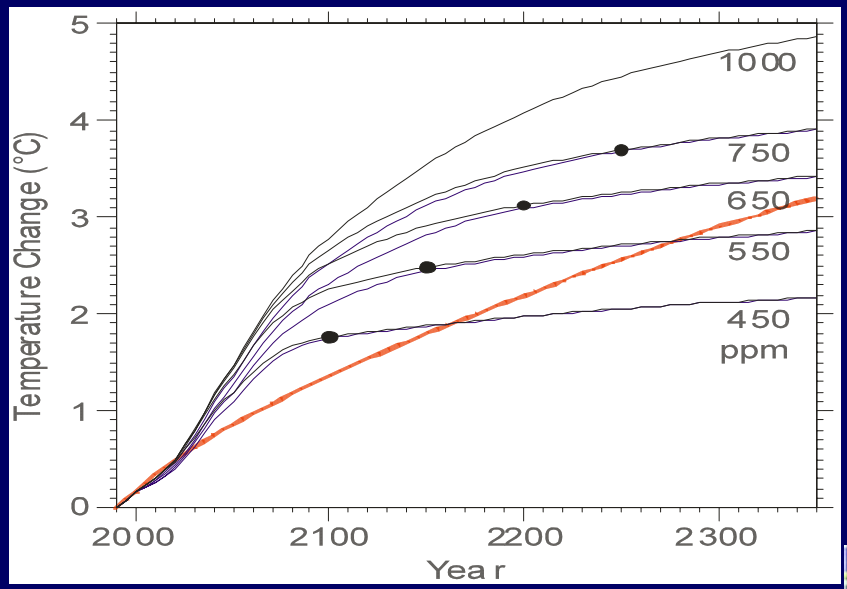
STABILIZATION of CONCENTRATIONS





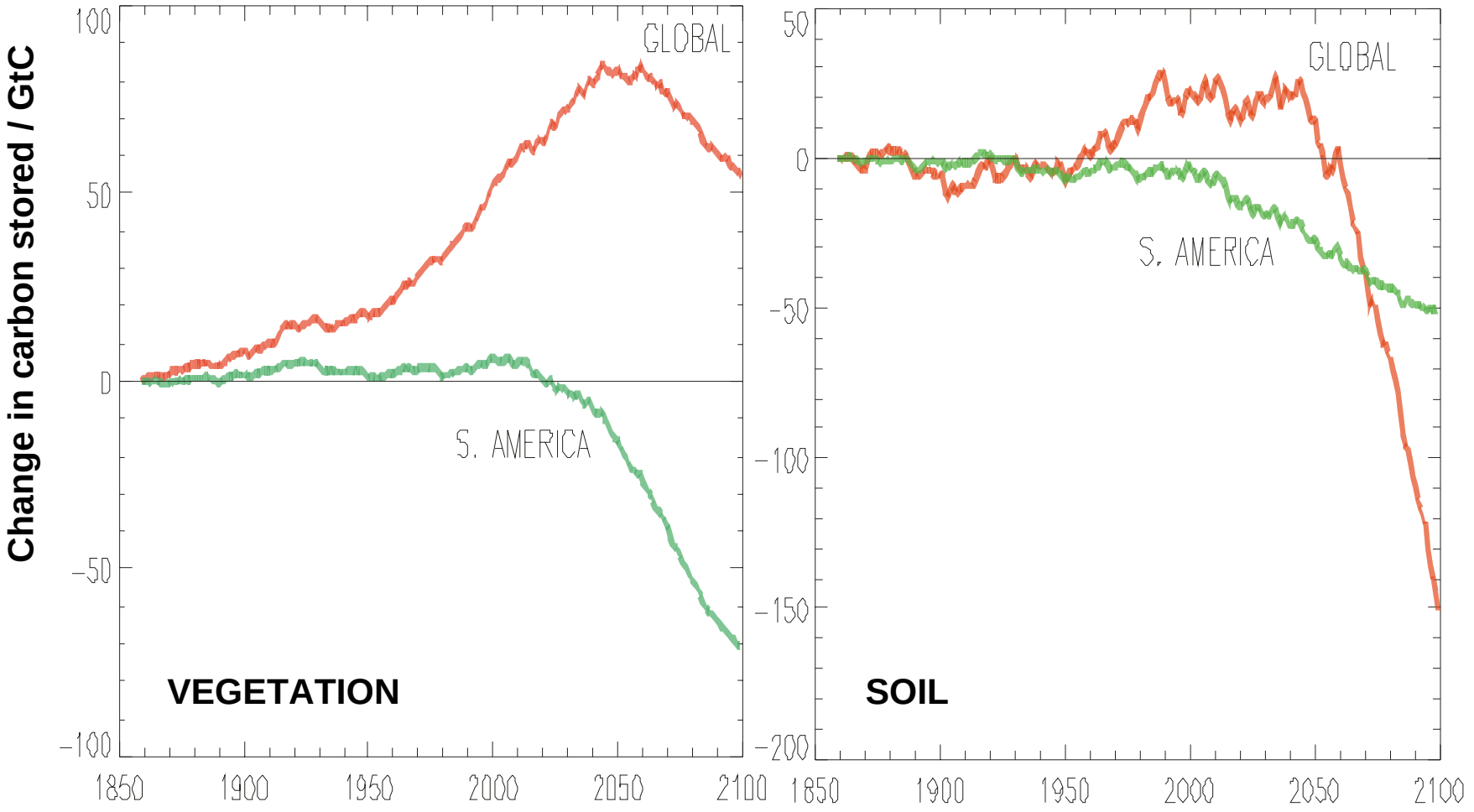




SOURCES OF UNCERTAINTY

- **ATTRIBUTION**
  - **Forcing eg aerosols**
  - **Natural variability**
- **PREDICTION**
  - **Emissions scenarios**
  - **Climate response**
    - **Cloud feedbacks etc**
    - **Biology, Chemsistry**

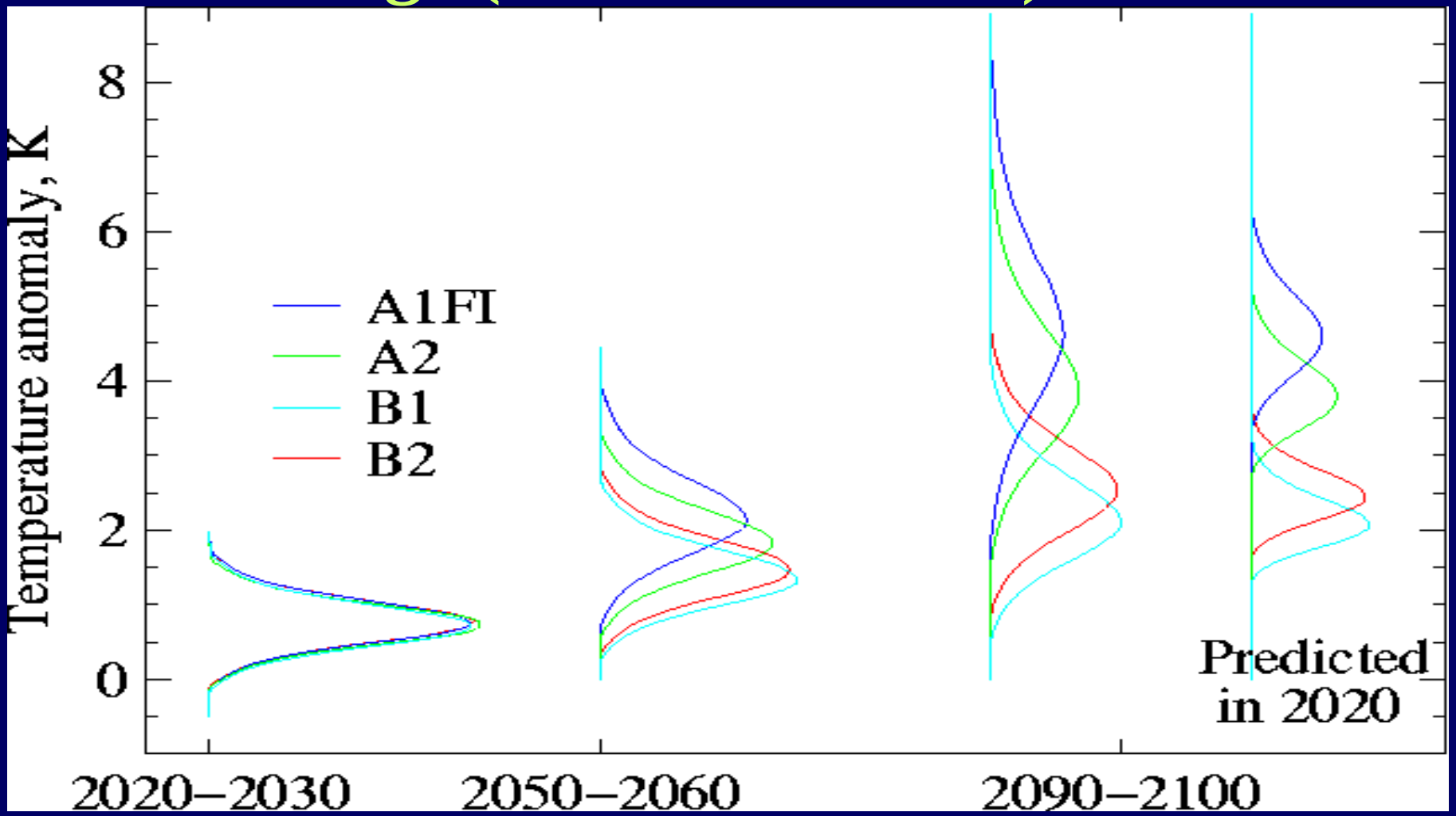
CHANGE IN CARBON STORAGE



Cox et al, 2000

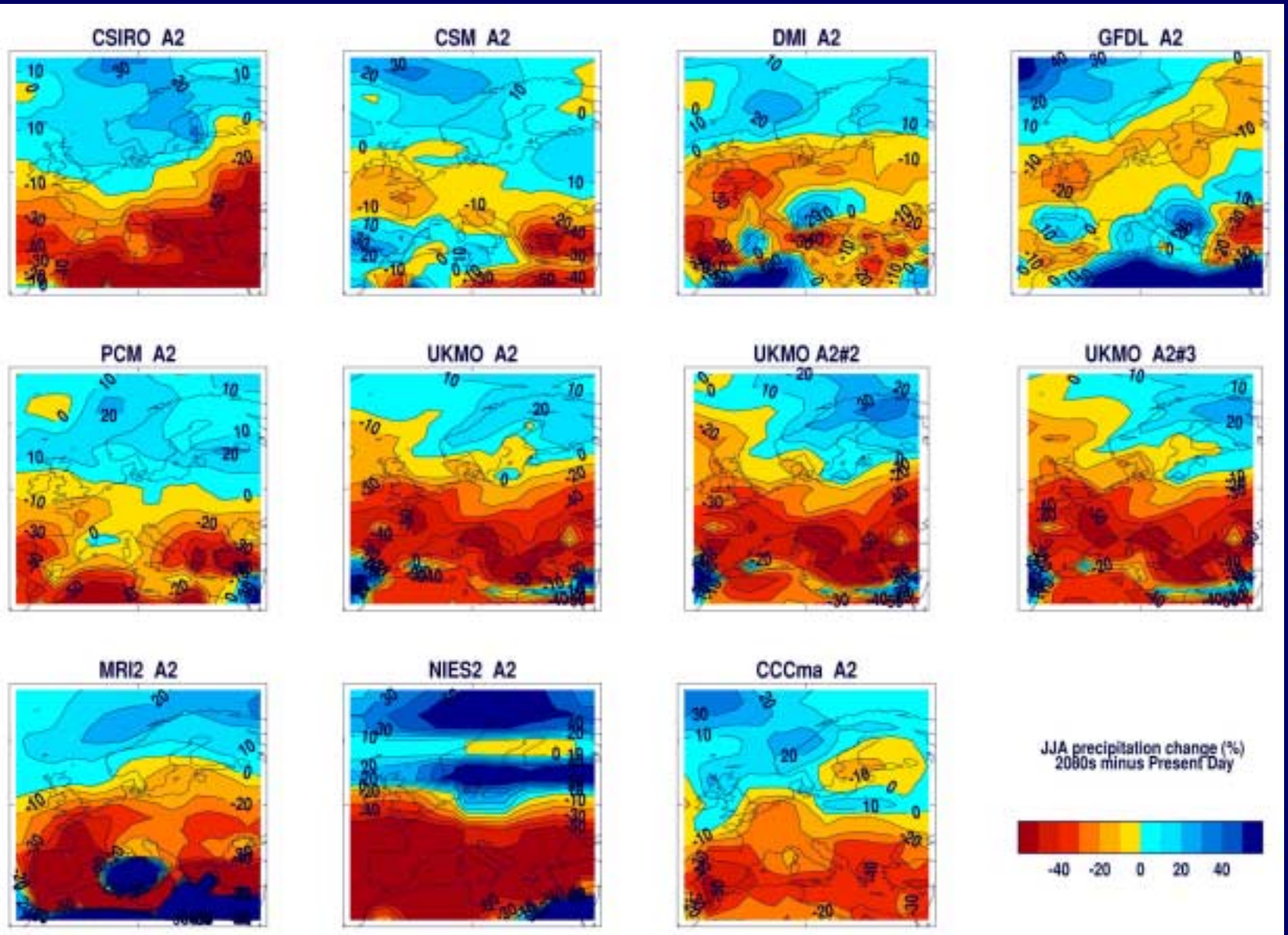
Met Office

Uncertainty in temperature change (SRES emissions)



Stott and Kettlebrorough, Nature, 2002

Met Office


CSIRO A2
CSM A2
DMI A2
GFDL A2
PCM A2
UKMO A2
UKMO A2#2
UKMO A2#3
MRI2 A2
NIES2 A2
CCCma A2
JJA precipitation change (%)
2080s minus Present Day
-40 -20 0 20 40

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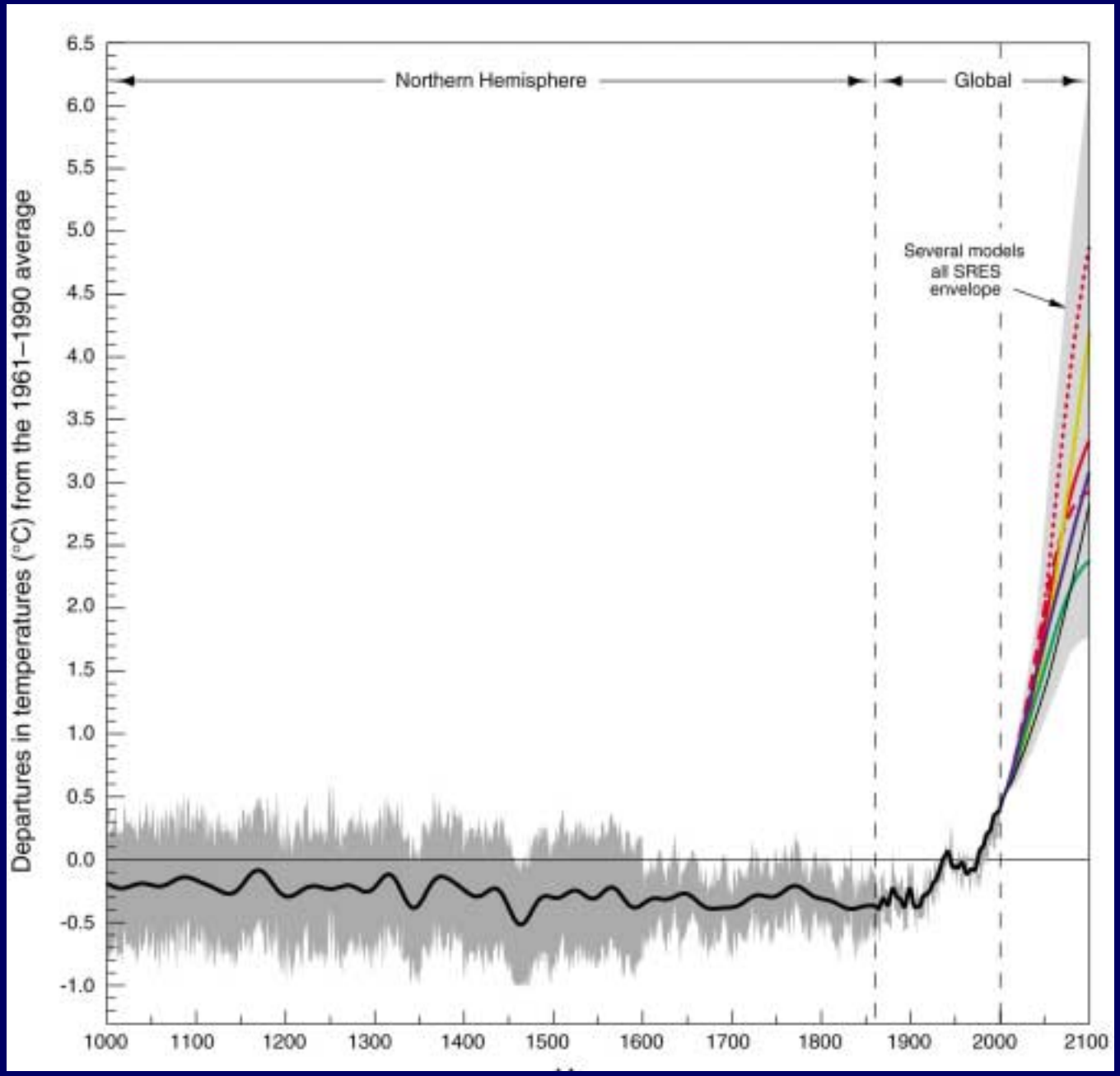

CLIMATE 1000 - 2100AD

Source: IPCC 2000

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Concluding remarks

- Emissions, climate response are main sources of uncertainty
- Need to quantify/reduce uncertainty
- Can use obs to constrain global mean response
- Patterns uncertain
- Several decades to produce difference