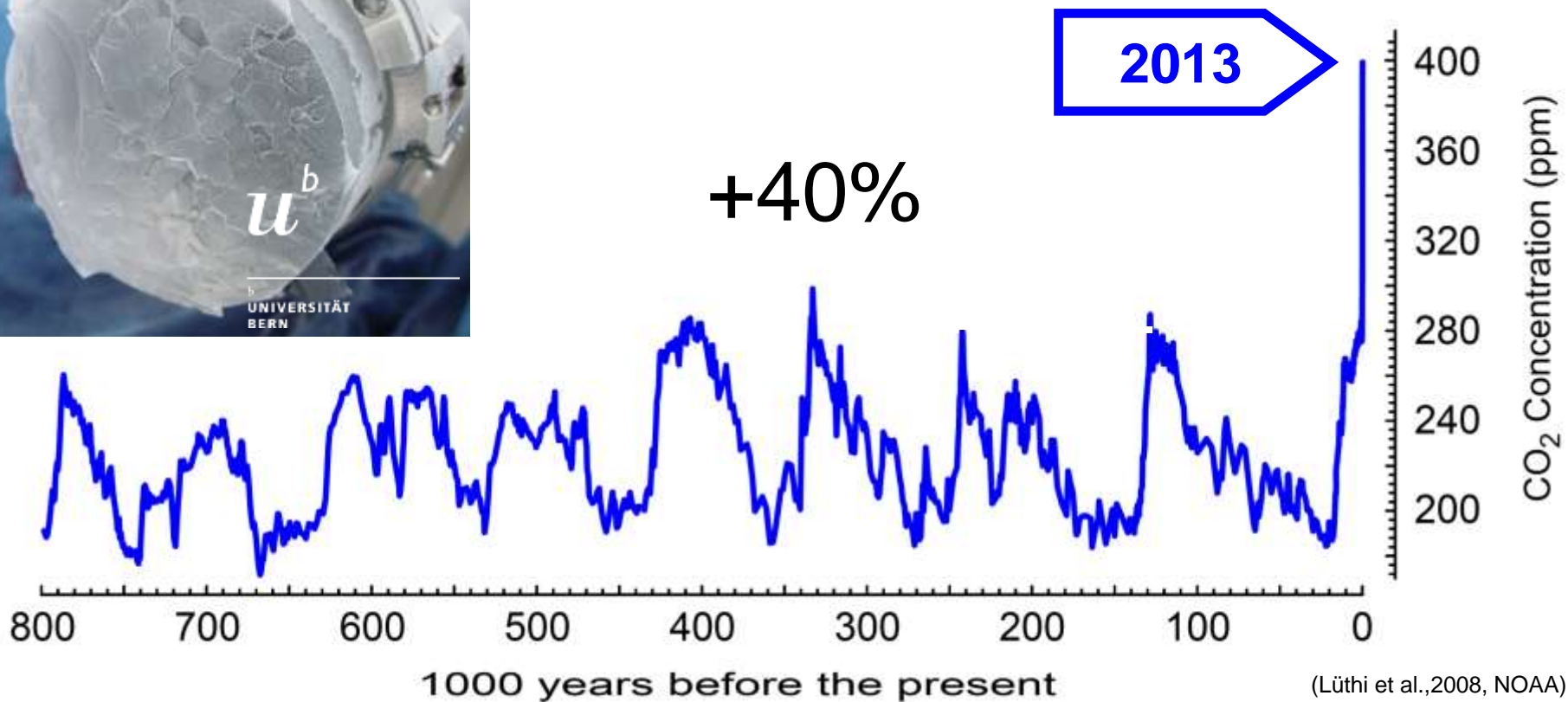




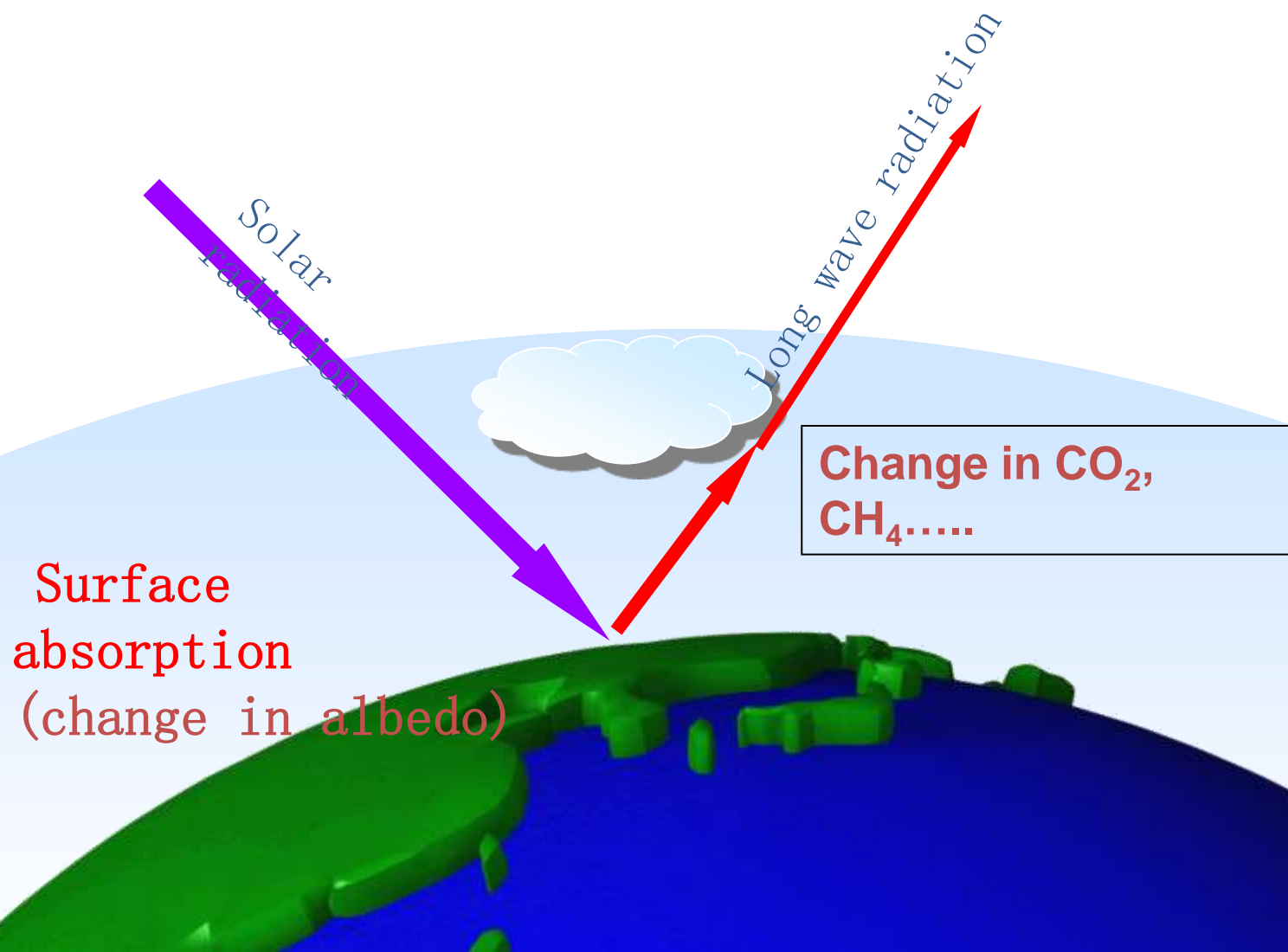
Basic Issues in Climate Science : Green House Effect, Evidence of Change and Causes

Panmao Zhai
Co-Chair IPCC WGI

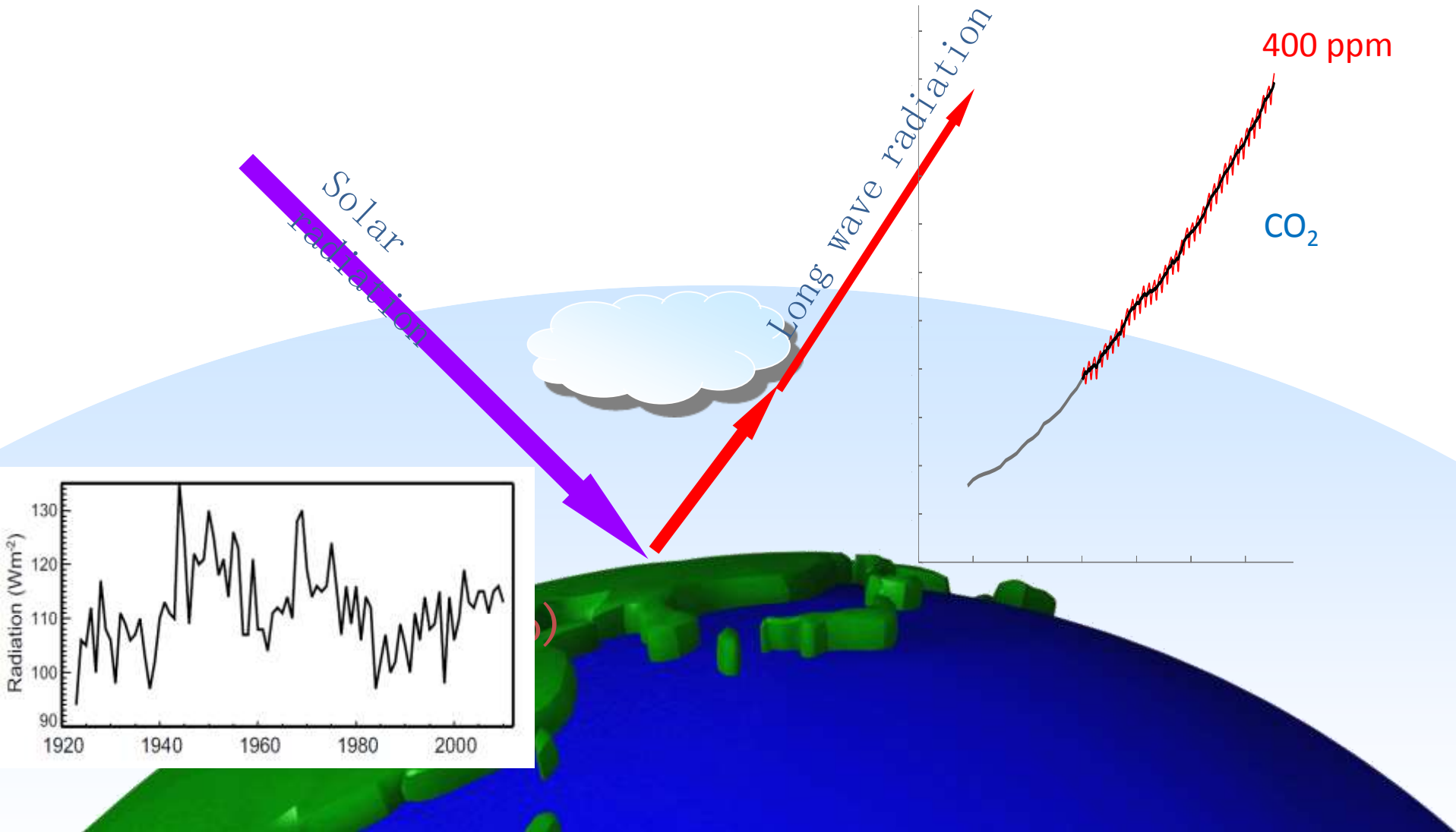


The atmospheric concentrations of carbon dioxide, methane, and nitrous oxide have increased to levels unprecedented in at least the last 800,000 years.

Warming of the earth surface depends on radiation budget of the Climate System.



Warming of the earth surface depends on radiation budget of the Climate System.



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

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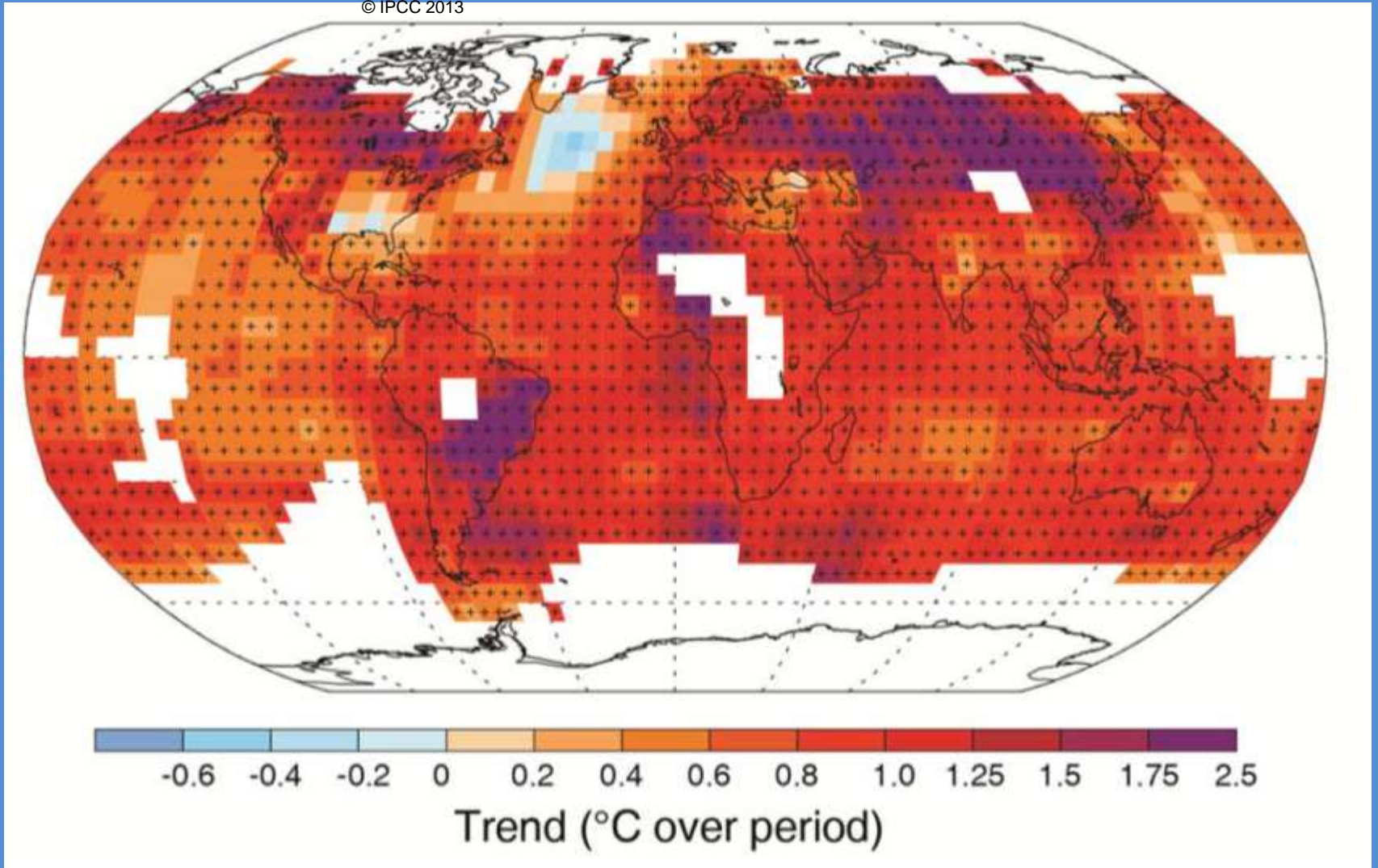
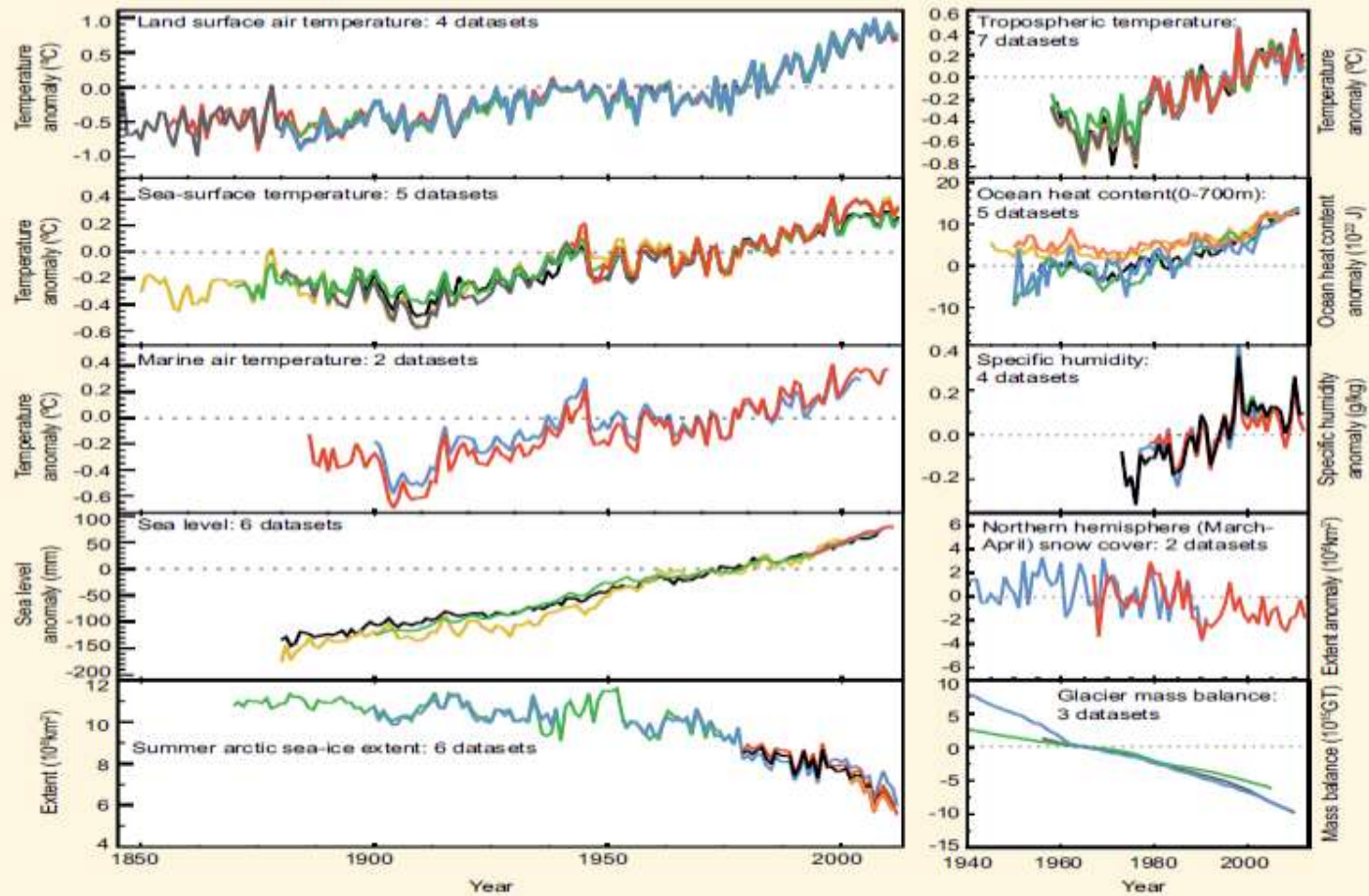


Fig. SPM.1b

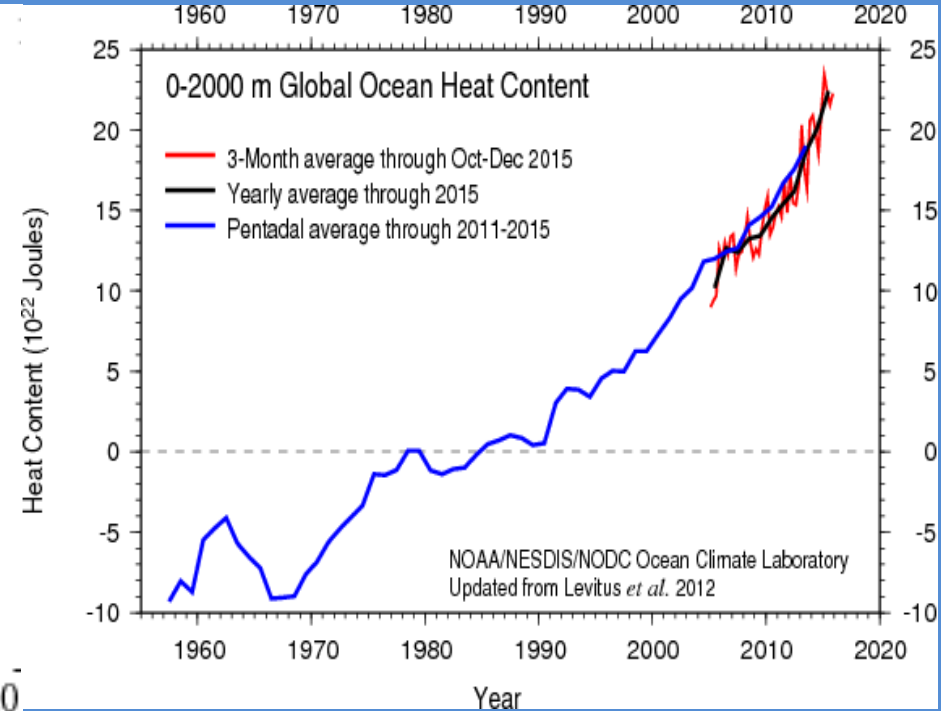
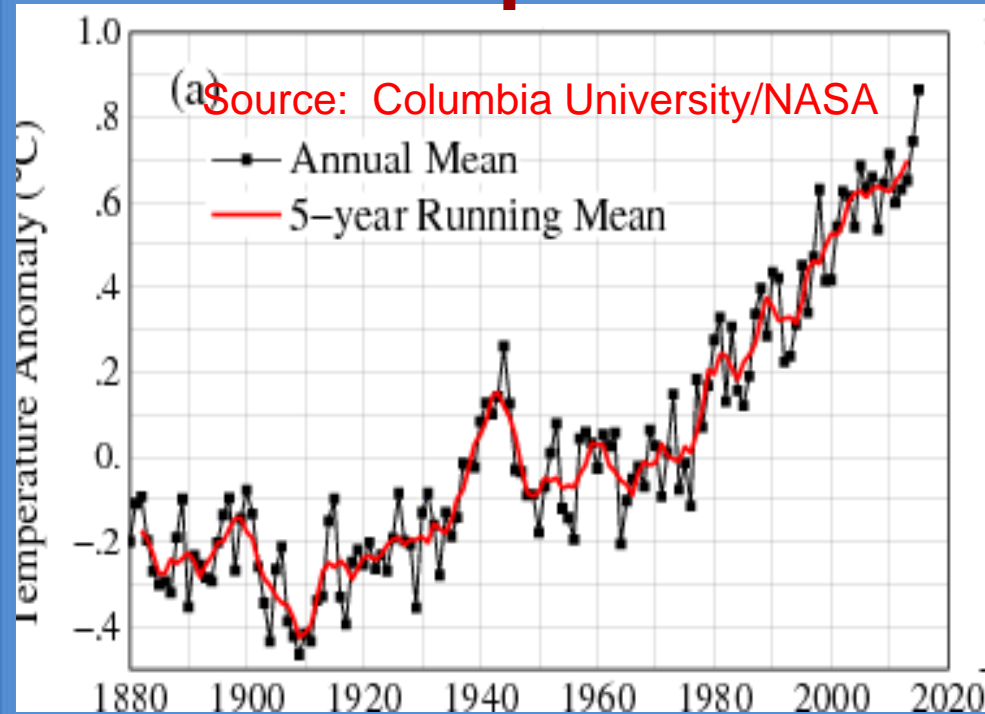
Warming of the climate system is unequivocal!



Multiple Lines of Evidence for Climate Change :

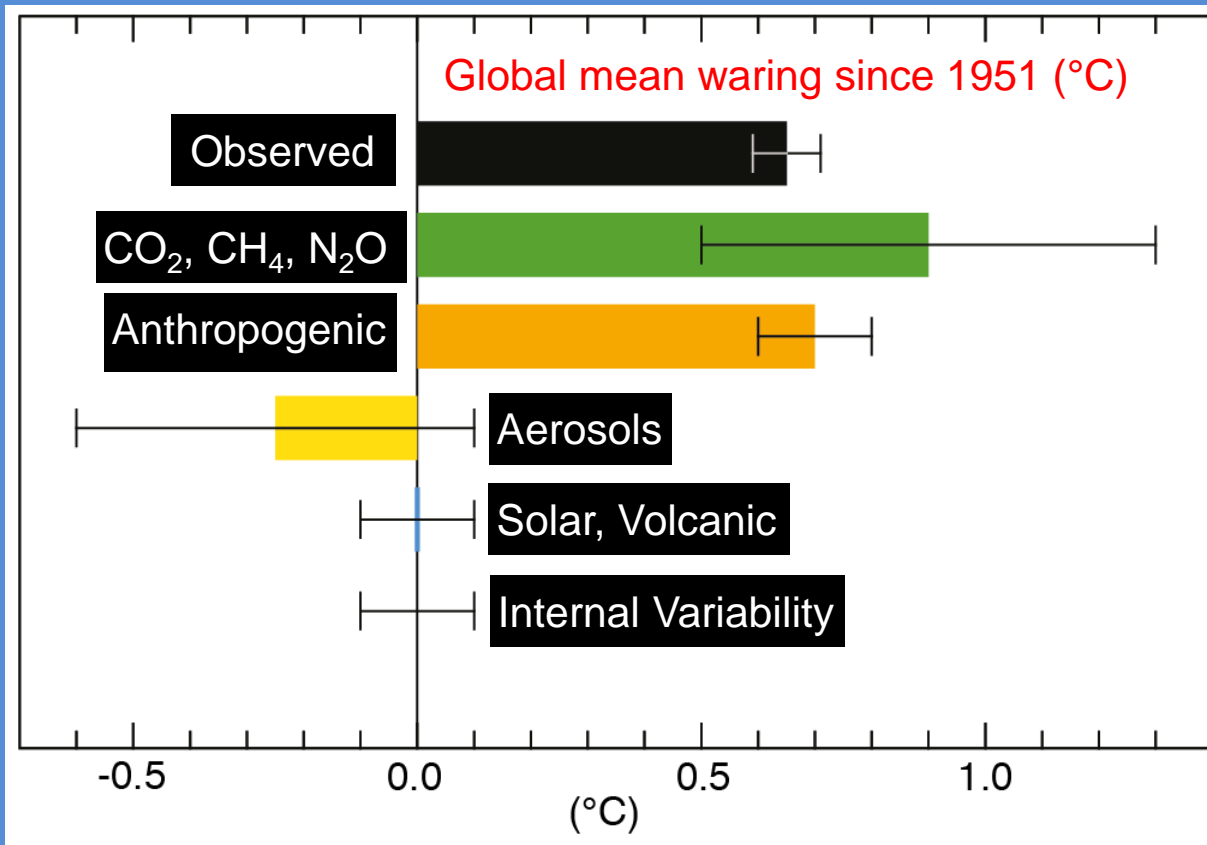
- Warming atmosphere & ocean, snow and ice melting, sea level rising , GHG increasing,, all reflect consistent warming trend.

Updated Monitoring on changes in global mean temperature and ocean heat content



- ❖ Recent observations confirm the warming trend continues!
- ❖ More than 90% of the energy stored in the ocean!





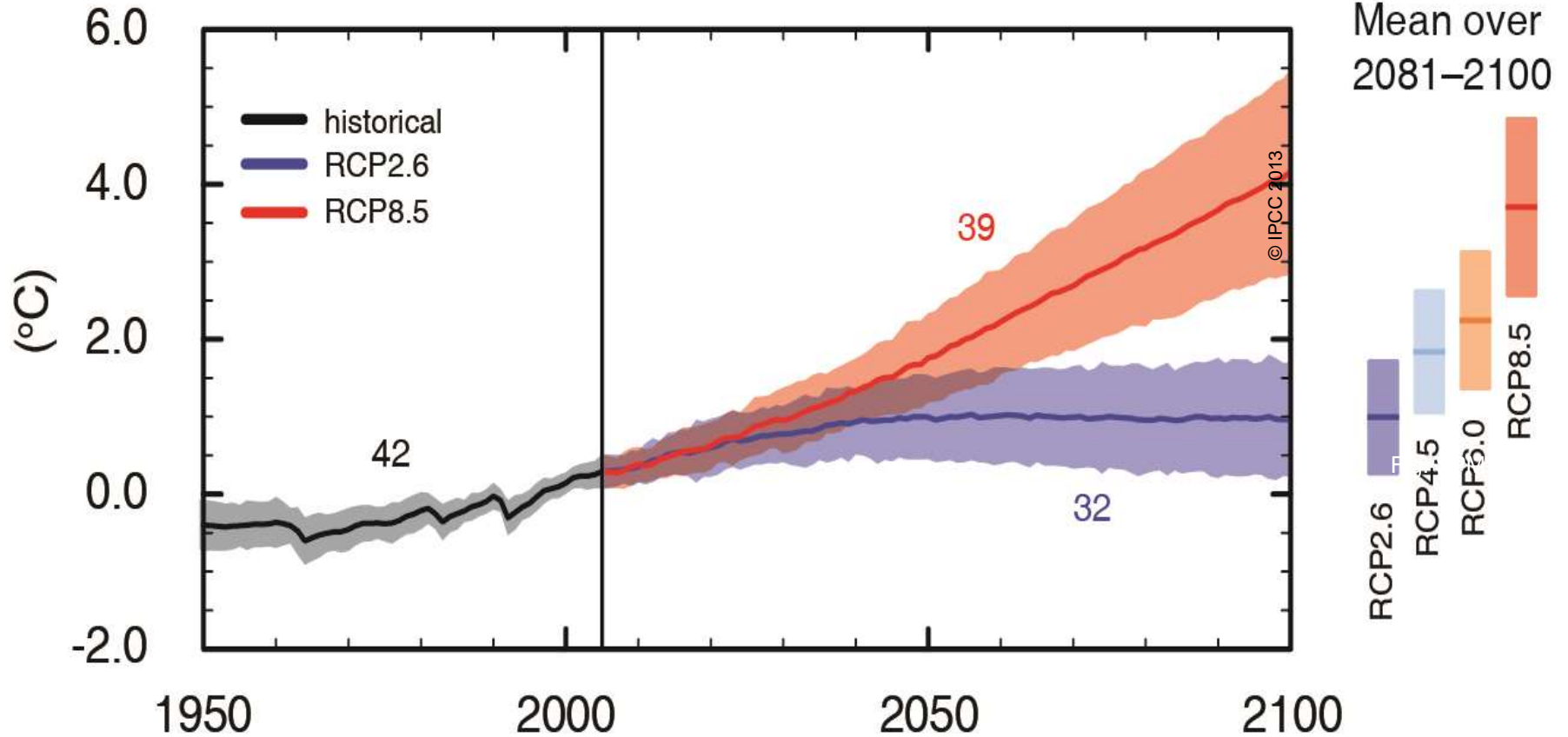
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Fig. TS.10

Human influence on the climate system is clear.

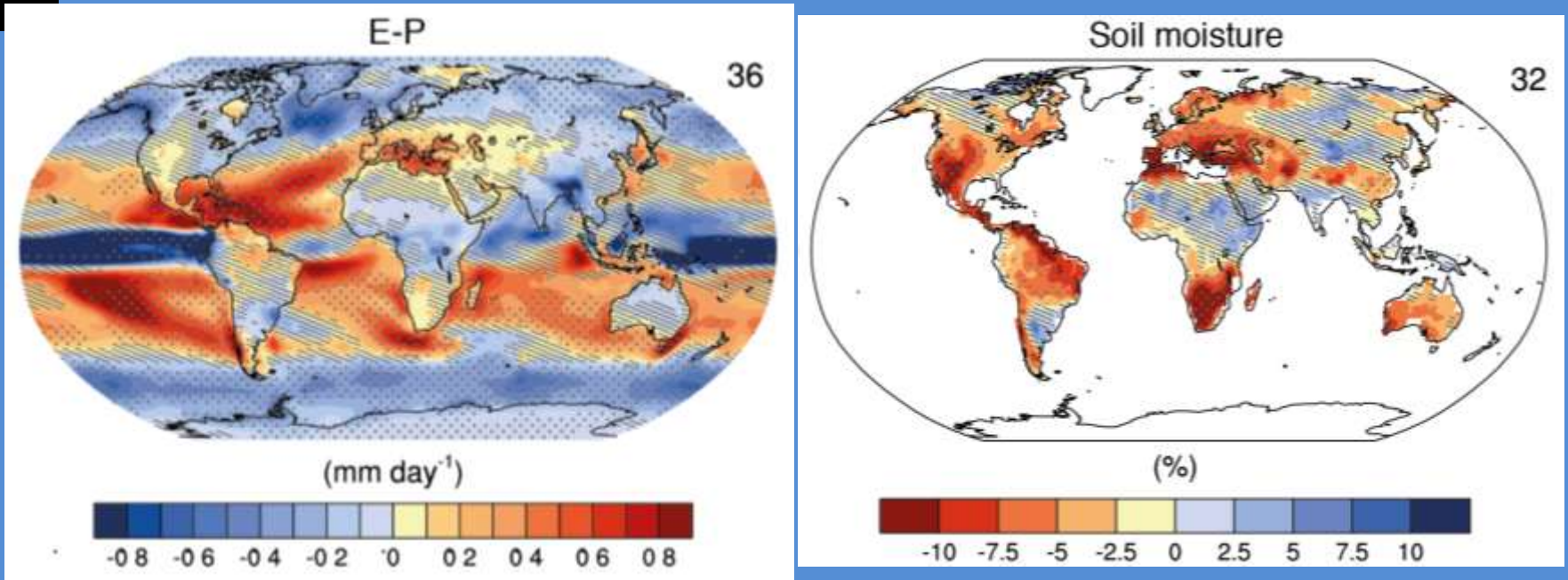
Global mean surface temperature (GMST) change from 1986-2005

Global average surface temperature change



GMST change for the end of the 21st century is likely to exceed 1.5°C relative to 1850-1900 for all RCPs except under mitigation scenario with very low forcing level.

Change in water cycle properties from 1986-2005 to 2081-2100 in RCP8.5



The contrast in precipitation between wet and dry regions and between wet and dry seasons will increase, [...]

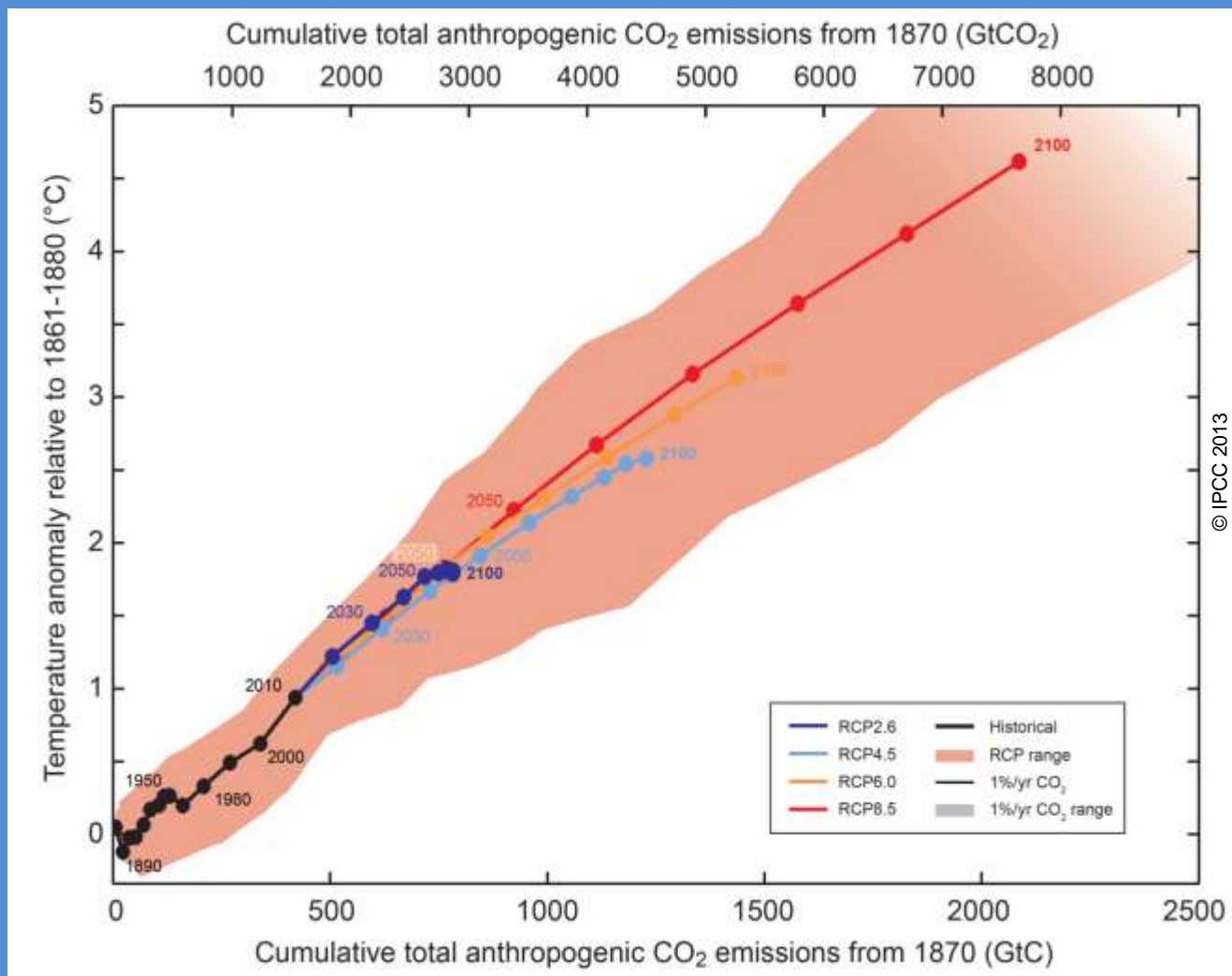


Fig. SPM.10

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

THANK YOU FOR YOUR ATTENTION!

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INTERGOVERNMENTAL PANEL ON climate change

