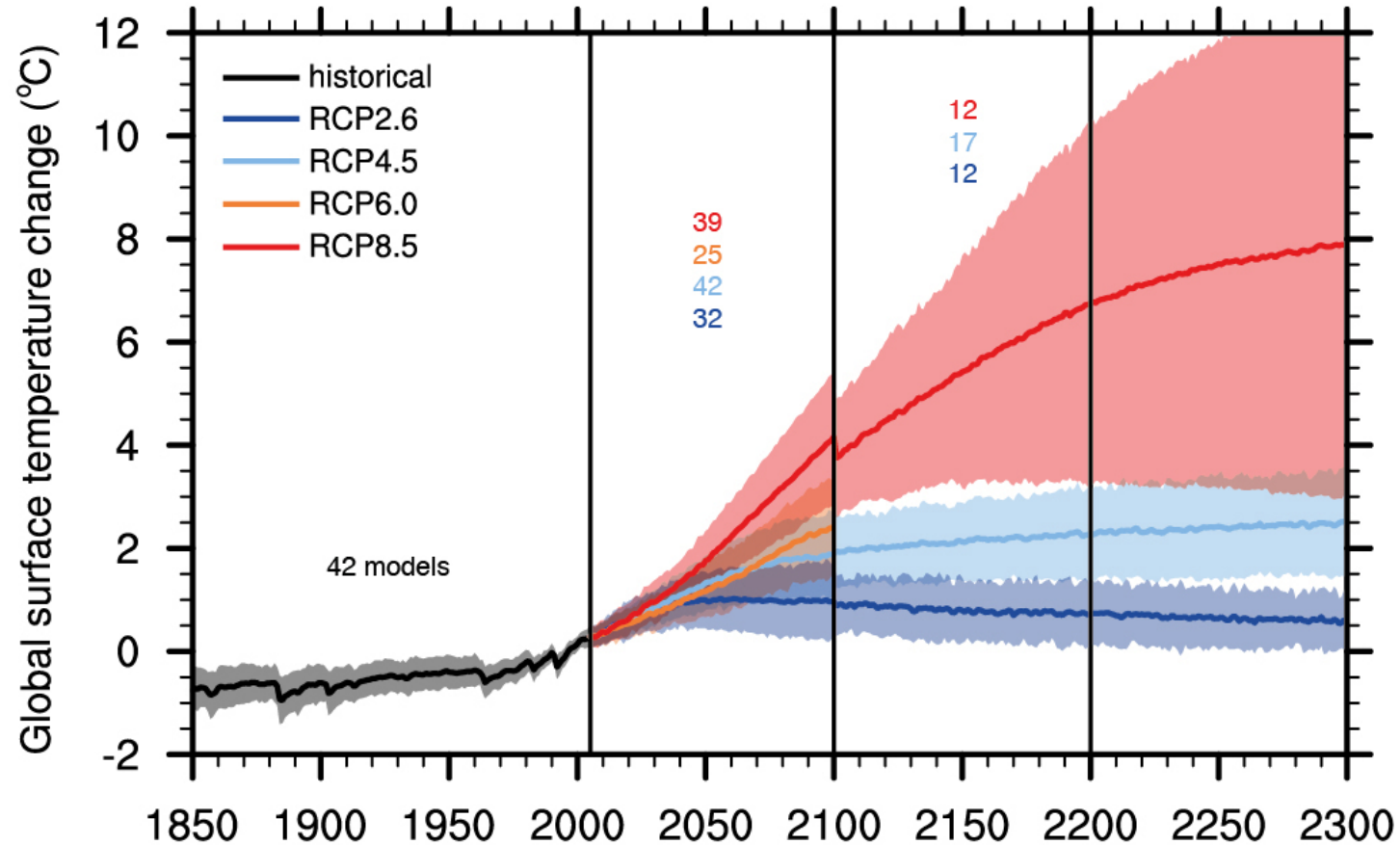
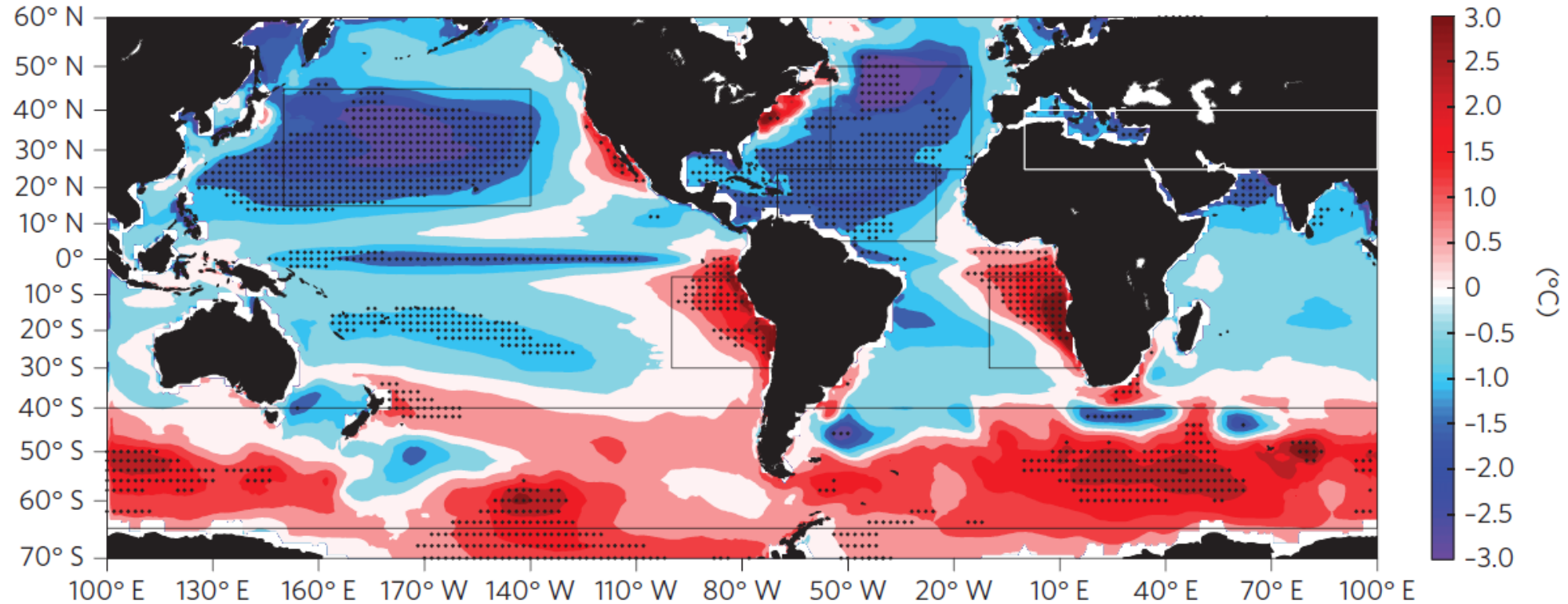


How much confidence can we have in our climate models?

Mojib Latif, GEOMAR Helmholtz Centre for Ocean Research Kiel and Kiel University

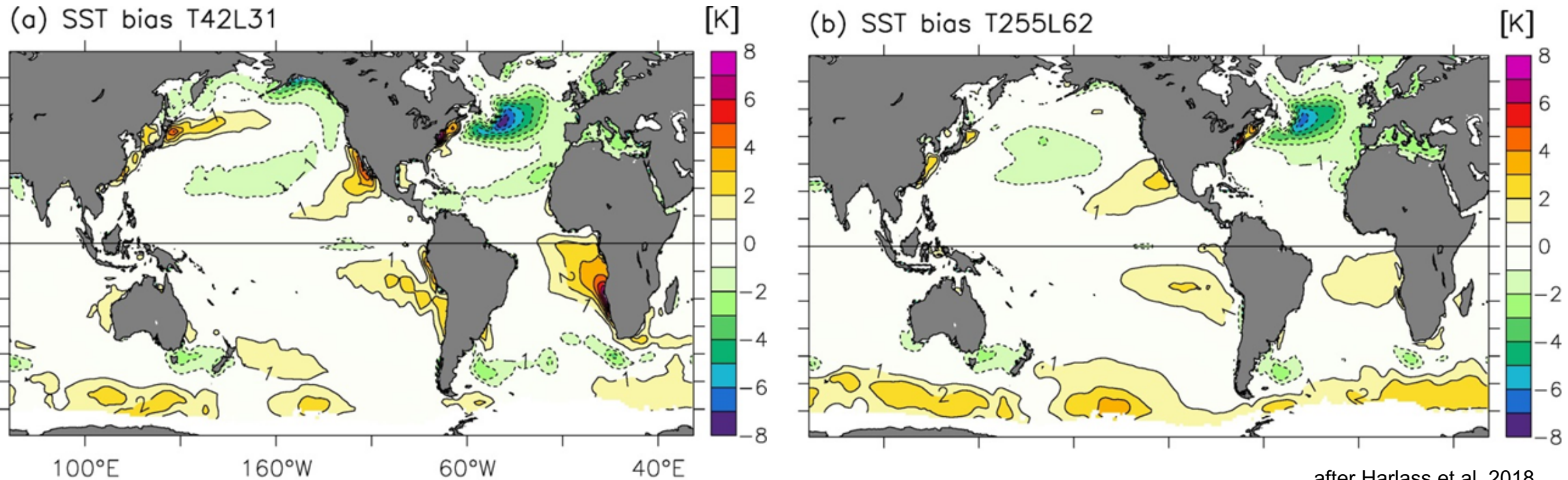


SST bias averaged over 22 CMIP5 models



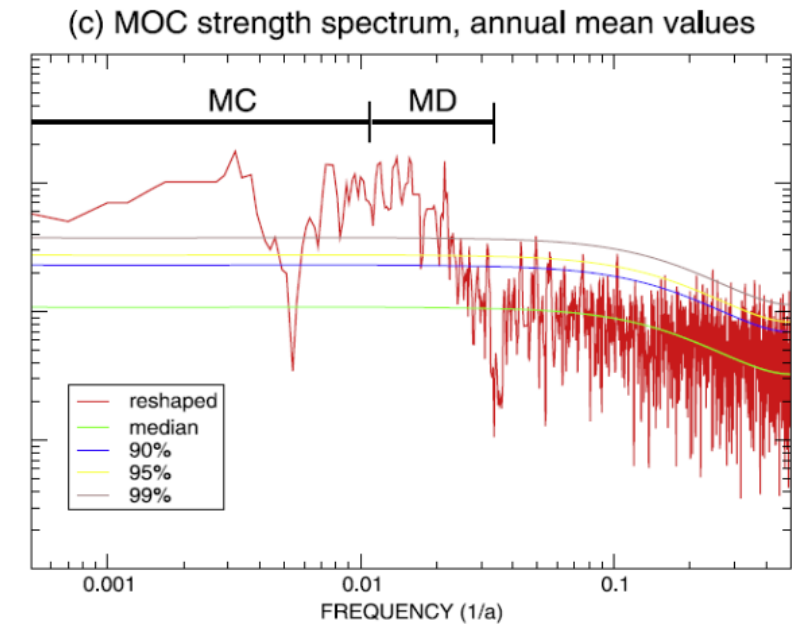
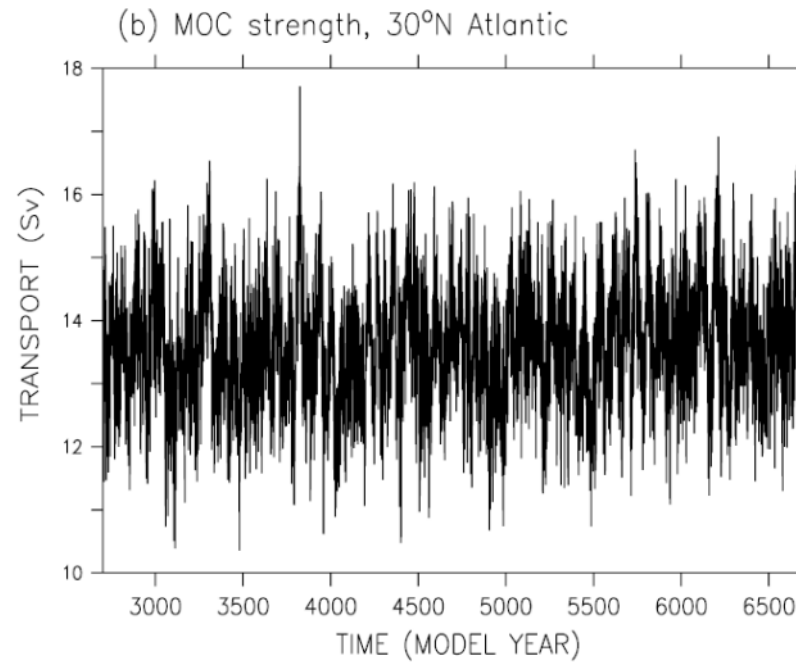
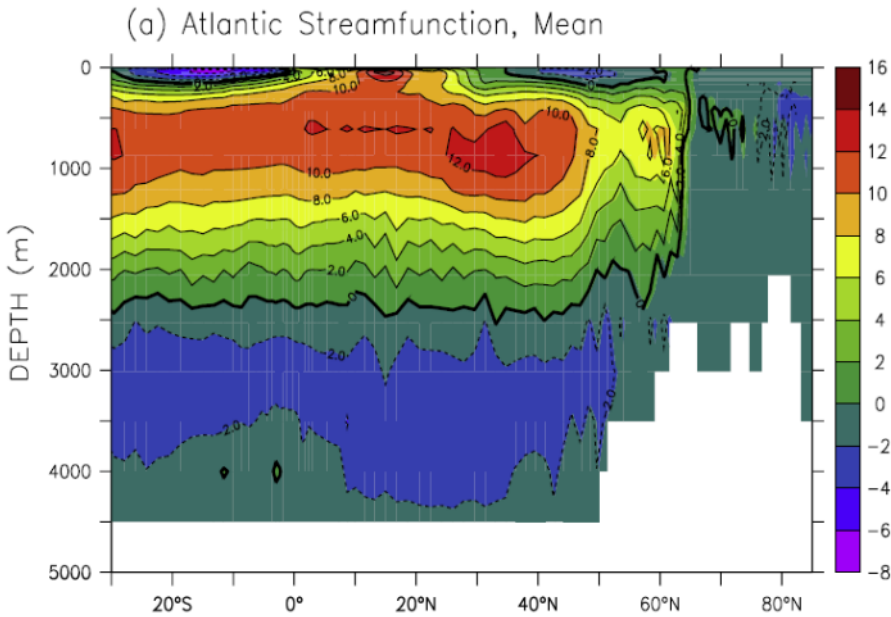
Wang et al. 2014, Nature Climate Change

Enhancing atmosphere model resolution helps to reducing tropical SST biases



SST biases in KCM versions with low (T42L31) and high resolution (T255L62) its AGCM

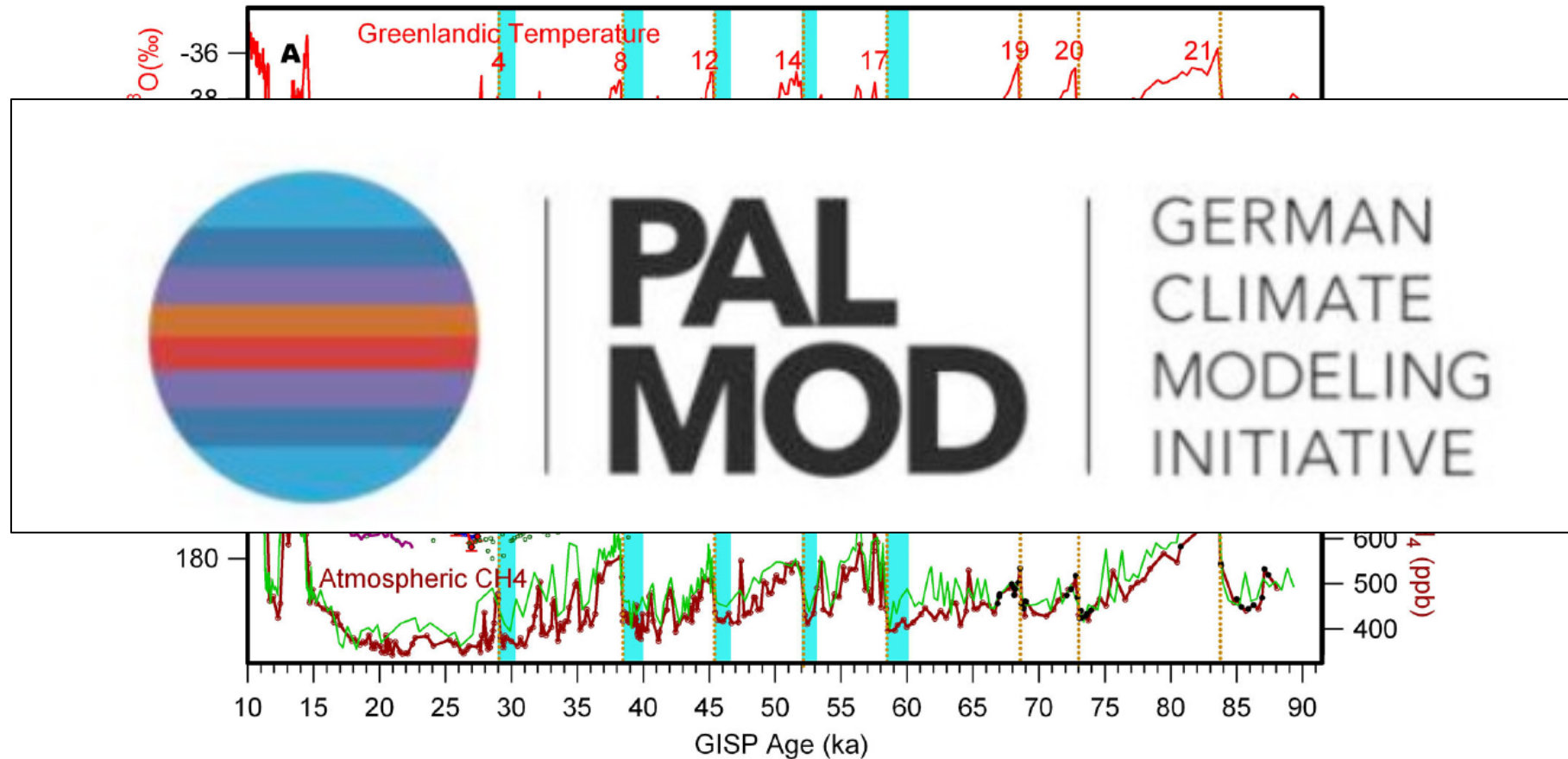
Multidecadal to centennial variability



Park and Latif 2008

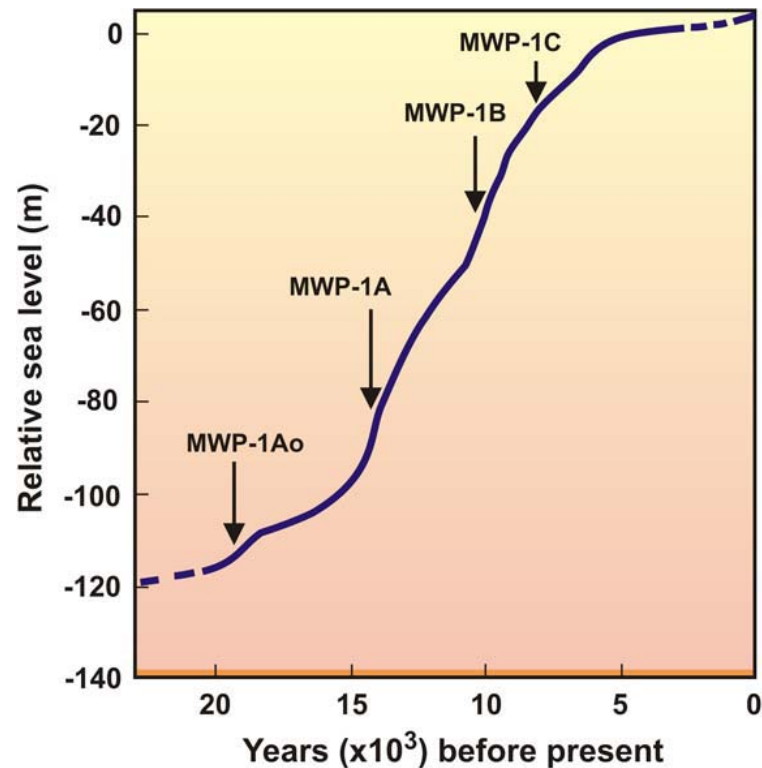
Lack of understanding of Earth system dynamics

We do not understand the big signals in the past



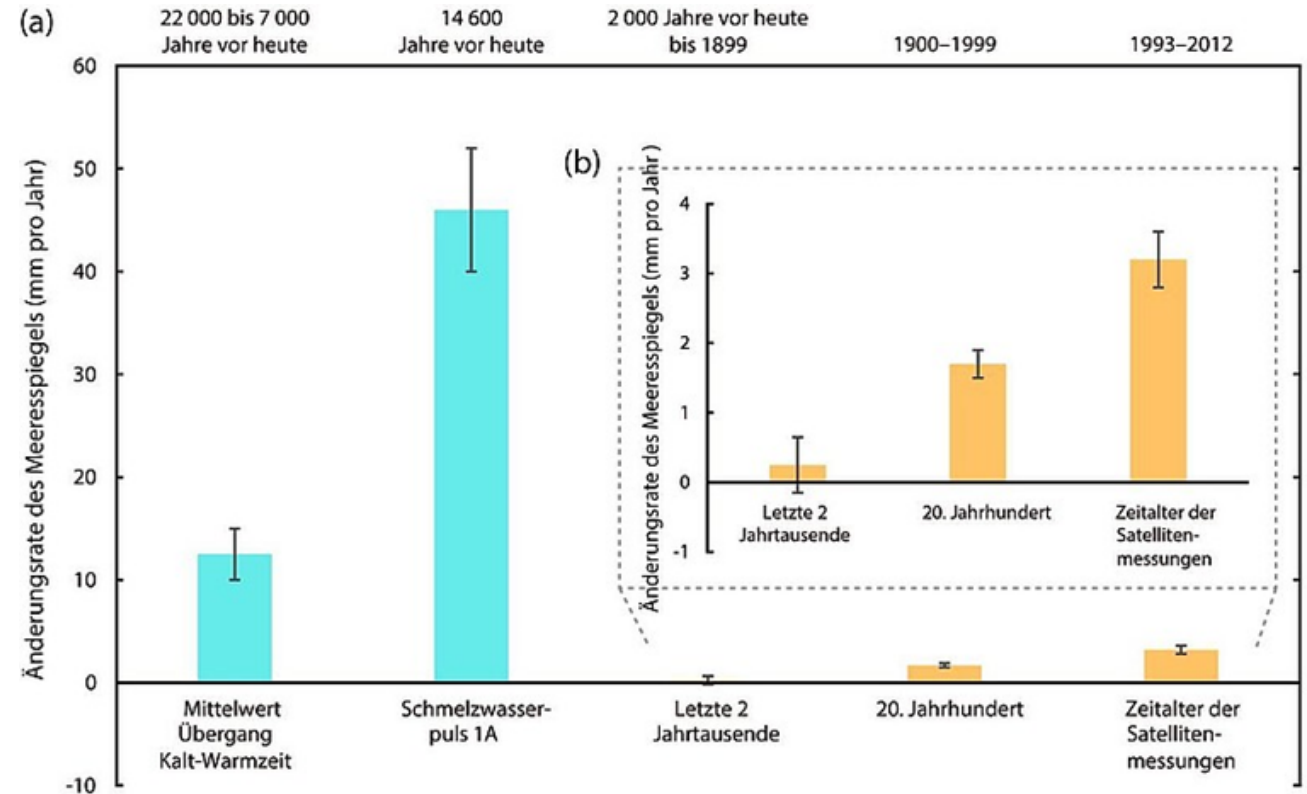
Ahn and Brook 2008

sea level rise since the last ice age



https://www.giss.nasa.gov/research/briefs/gornitz_09/

post-glacial sea level rise



after IPCC AR5

What do we need to do?

- care for (reduce) obvious biases
- process understanding and high resolution modeling
- natural multidecadal to centennial variability
- link to paleoclimate community
- ocean observations