# Mid-Holocene and Last Glacial Maximum climate simulations with the IPSL model: new features with the IPSL_CM5 version

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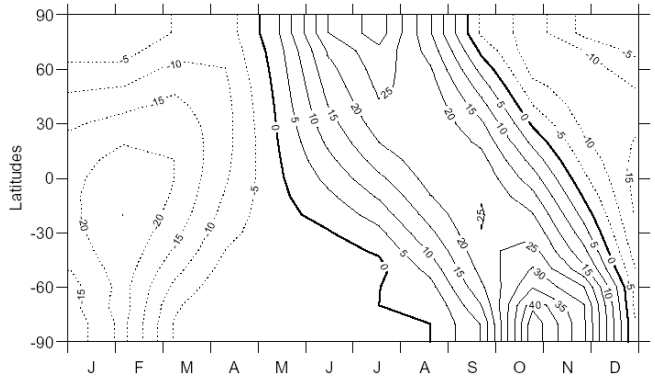
# The mid Holocene and Last Glacial Maximum in brief

**Mid Holocene, 6000 years ago**

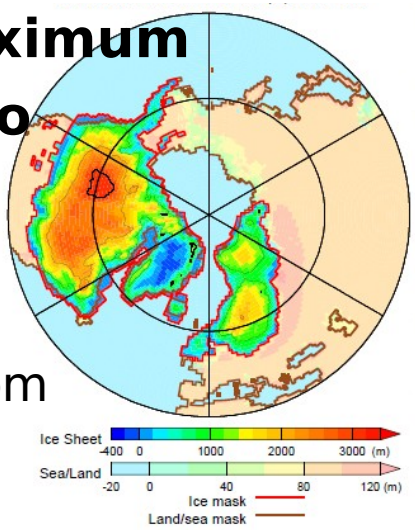
Change in insolation forcing



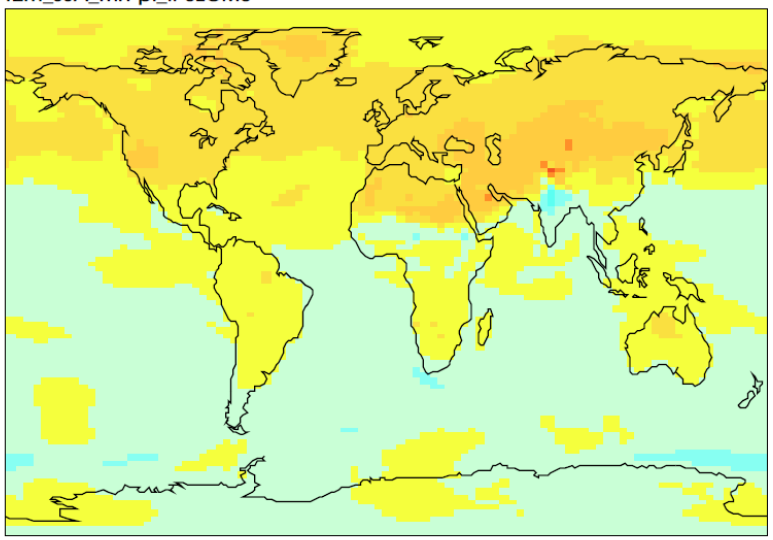

**Last Glacial Maximum**

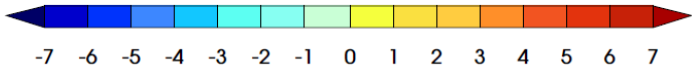
**21000 years ago**

Changes in
- ice-sheets
- GHG forcings:
  CO2 = 185ppm
- coastlines



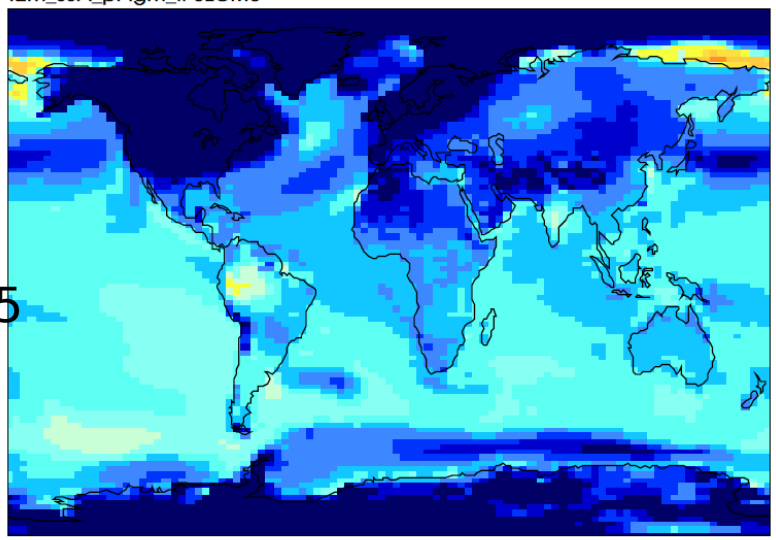

t2m_JJA_mh-pi_IPSLCM5

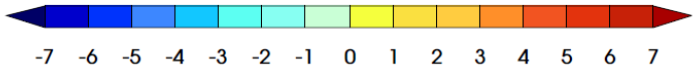




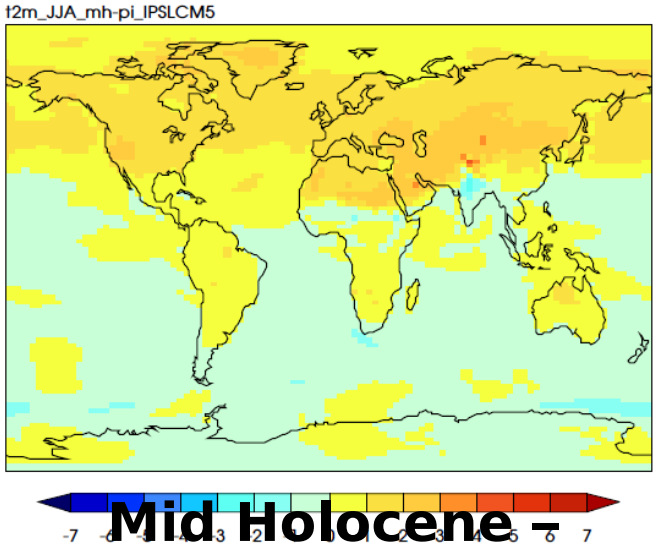

ΔT(JJA)
IPSLCM5

t2m_JJA_pi-lgm_IPSLCM5



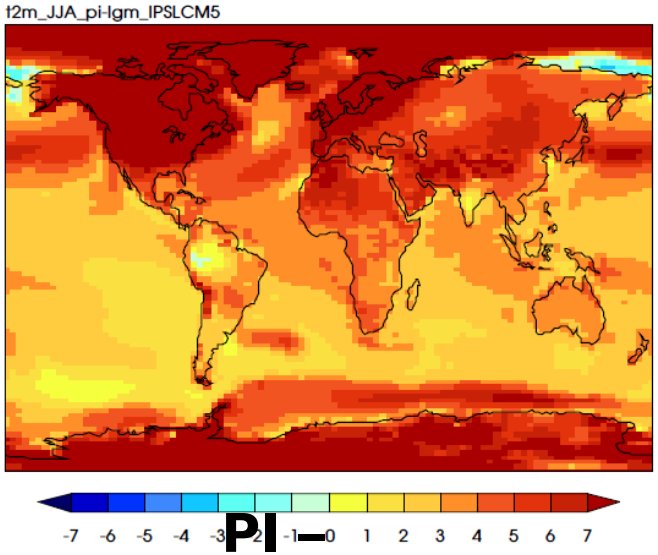


# IPSL_CM5 vs IPSL_CM4: T_JJA

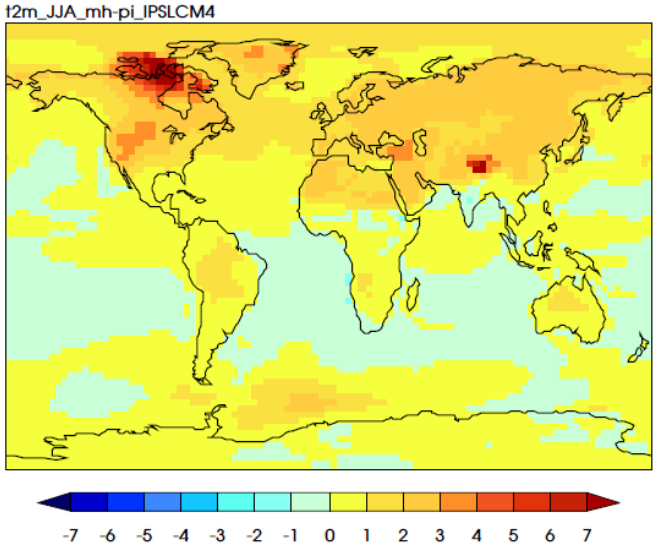



**Mid Holocene – PI**

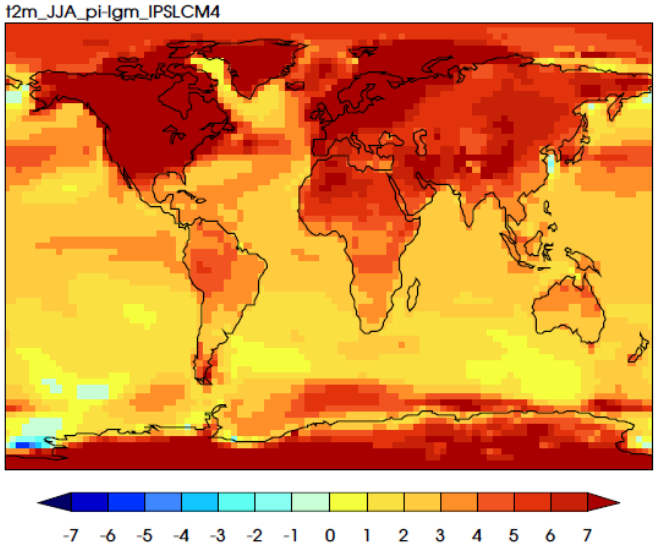
**CM 5**



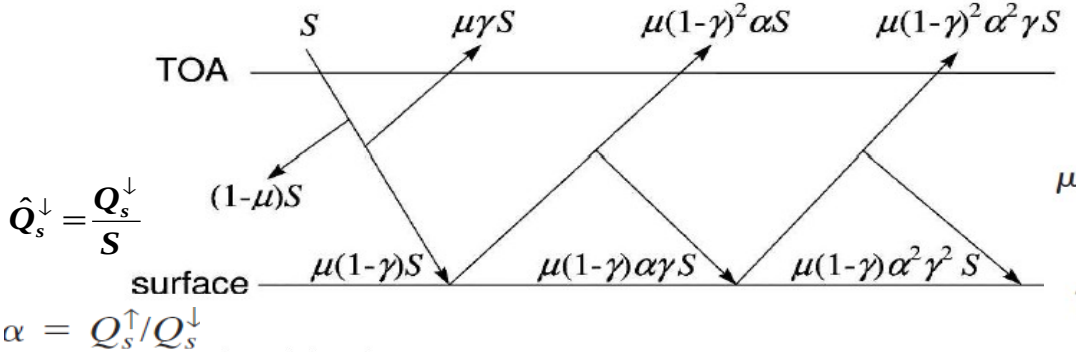

**PI – LGM**




**CM 4**



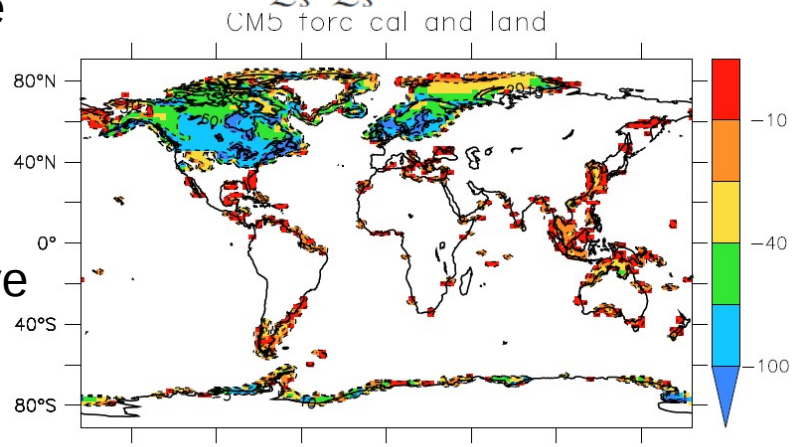
# Analyses of the forcings (following Taylor et al. 2007)

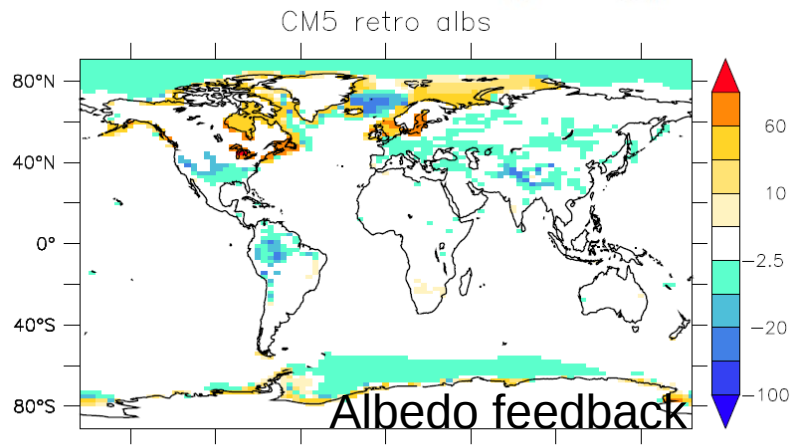


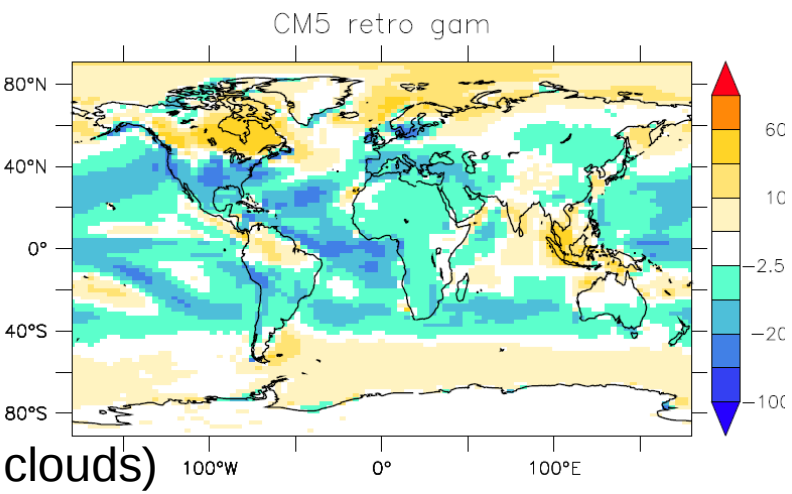

LGM case vs. PI

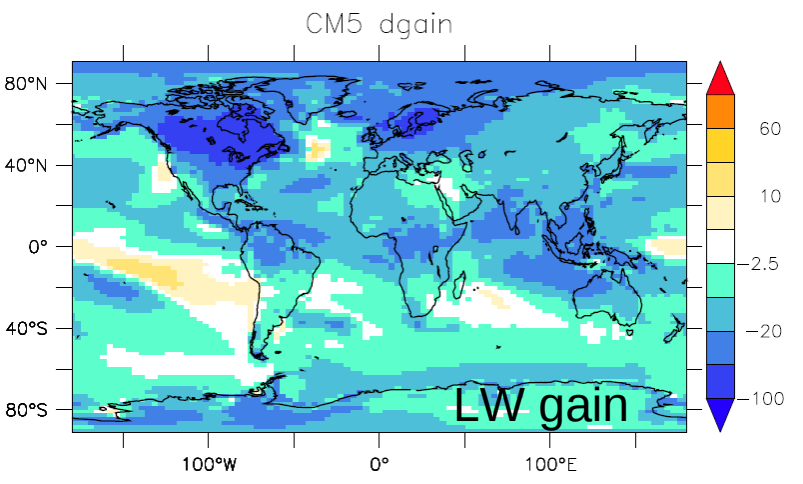
Shortwave forcing

SW scattering (including clouds)



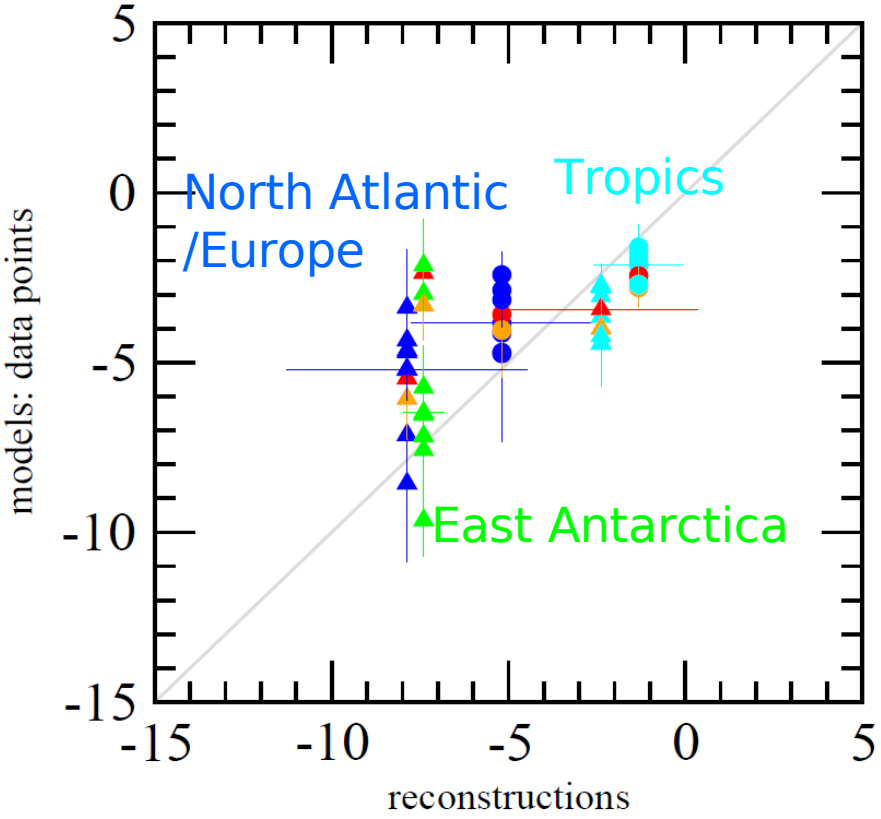



# Model data comparisons and land-ocean relationships

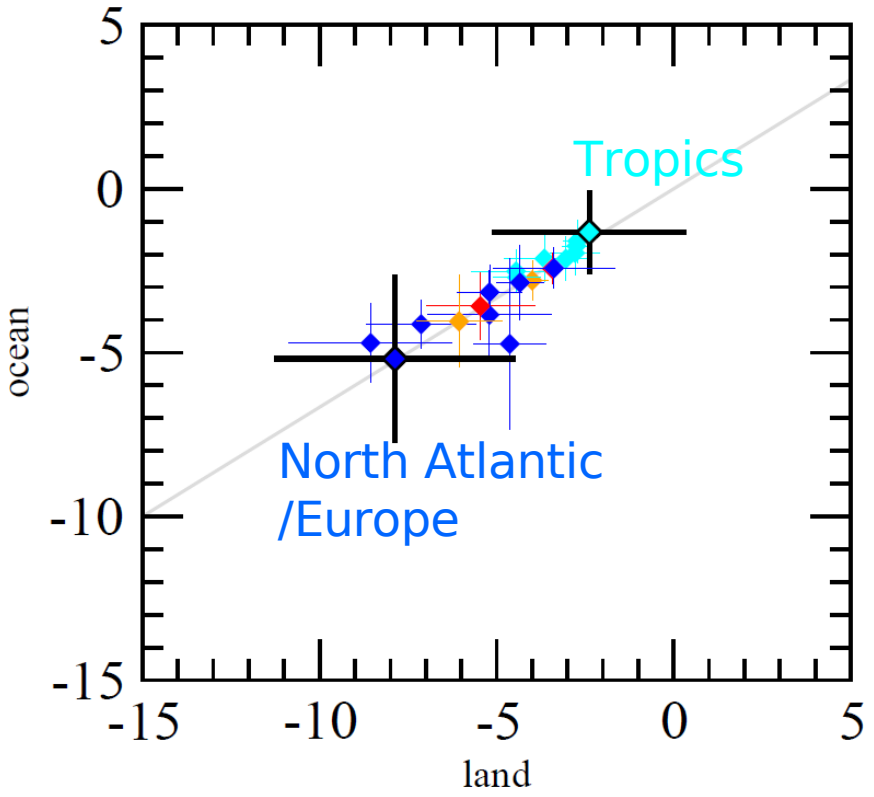
**PMIP2 data base, LGM data, Mean Annual Temperature**




Circles = ocean -
Triangles= land

**Land vs ocean**

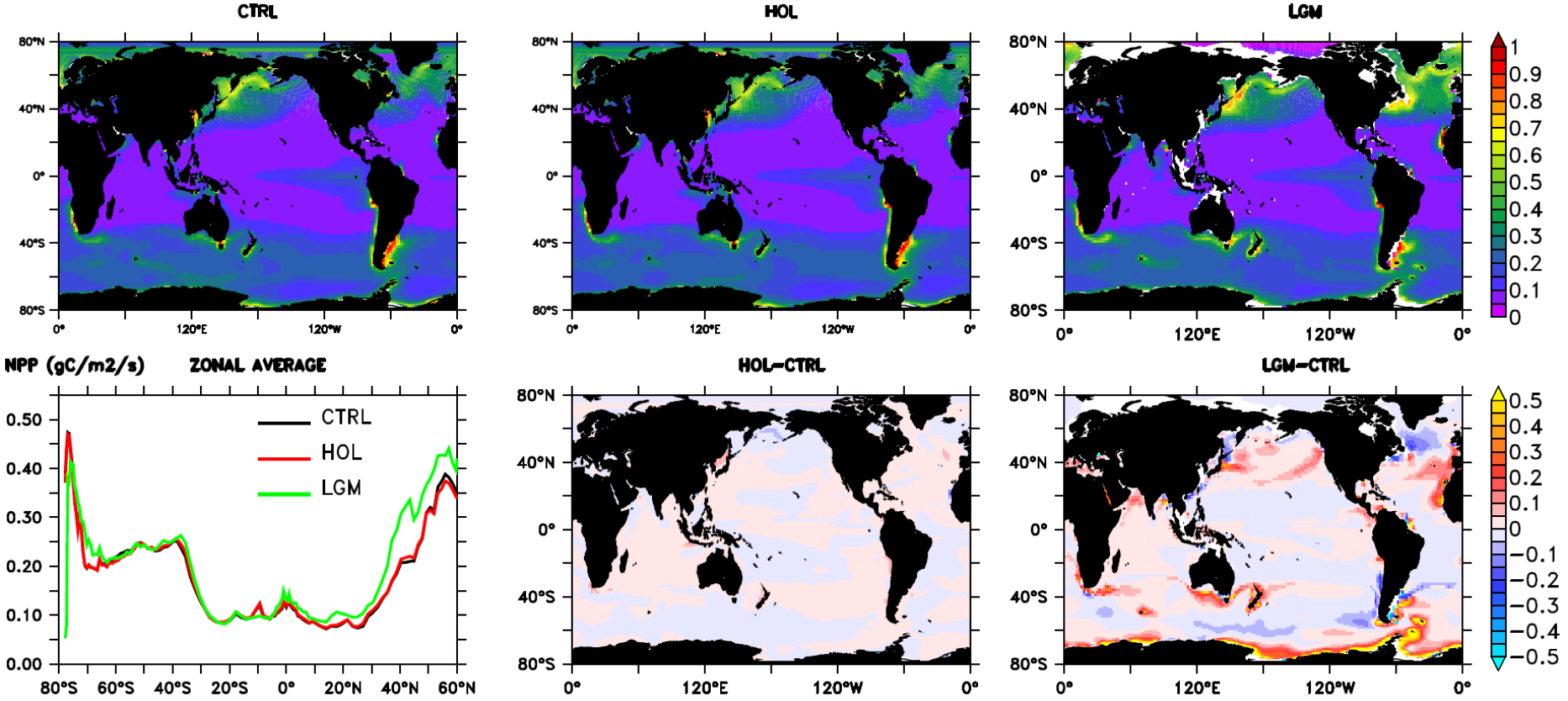
**mean annual temperature changes**




Black error bars = data

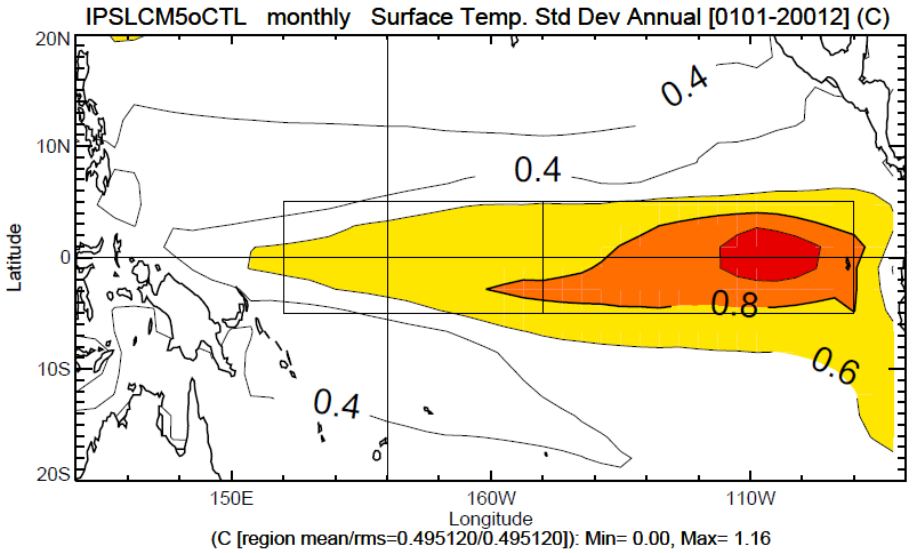
# What's really new: biogeochemistry

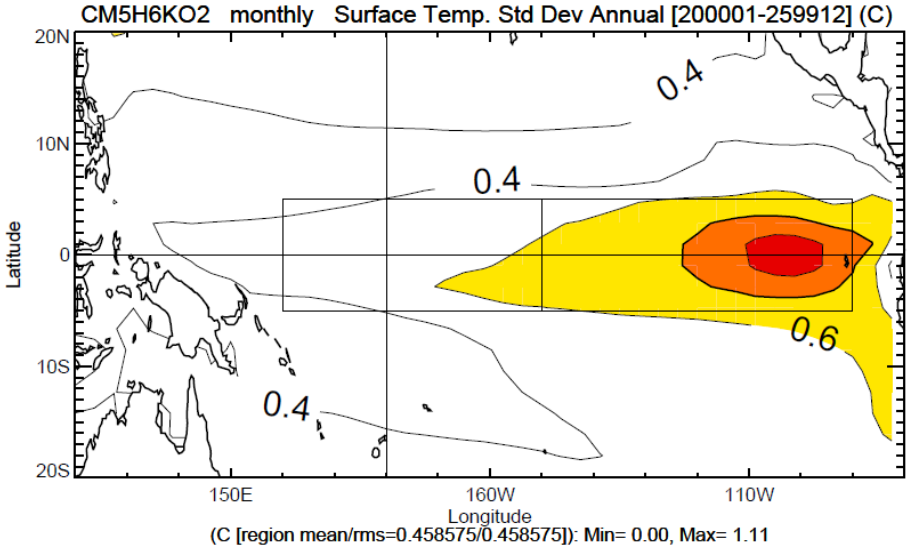
**Example: NPP computed by PISCES**

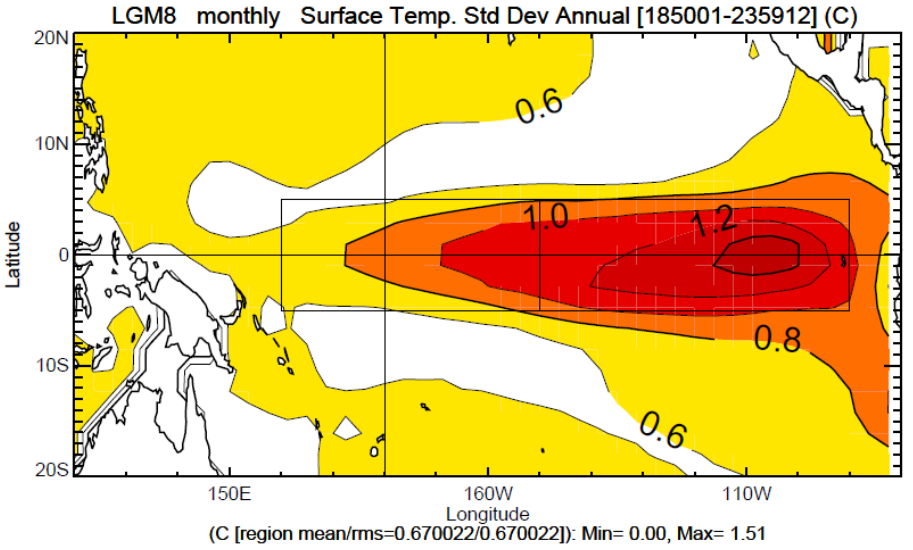



→ Plan to compute distribution of foraminifera to compare with marine data

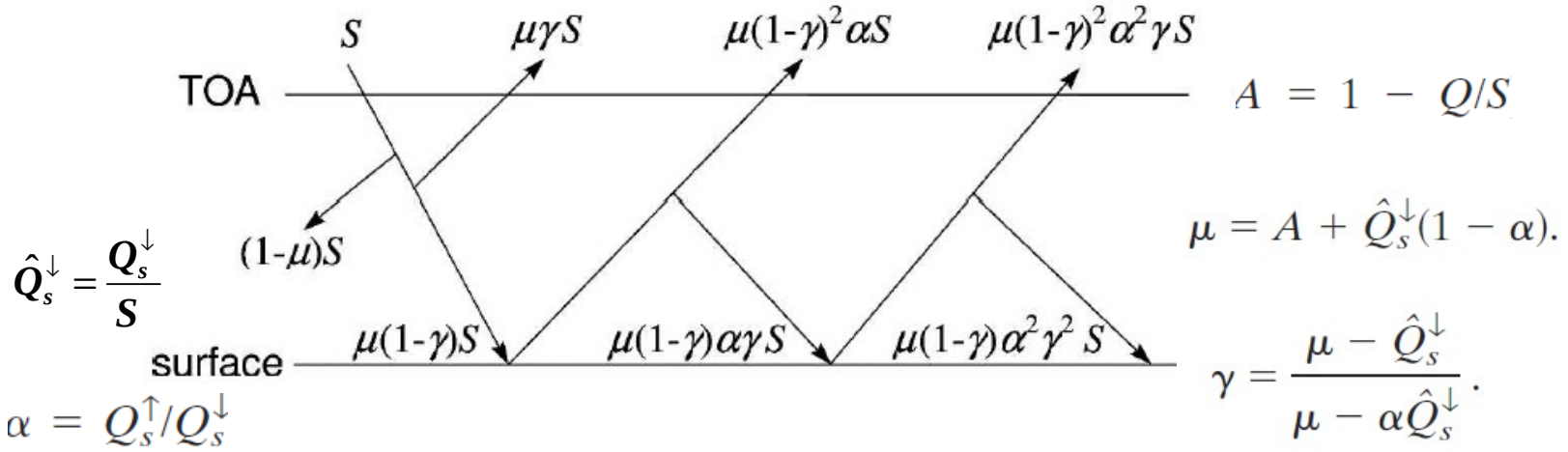
# Relationship with tropical variability?



Merci!




Taylor et al. 2007