

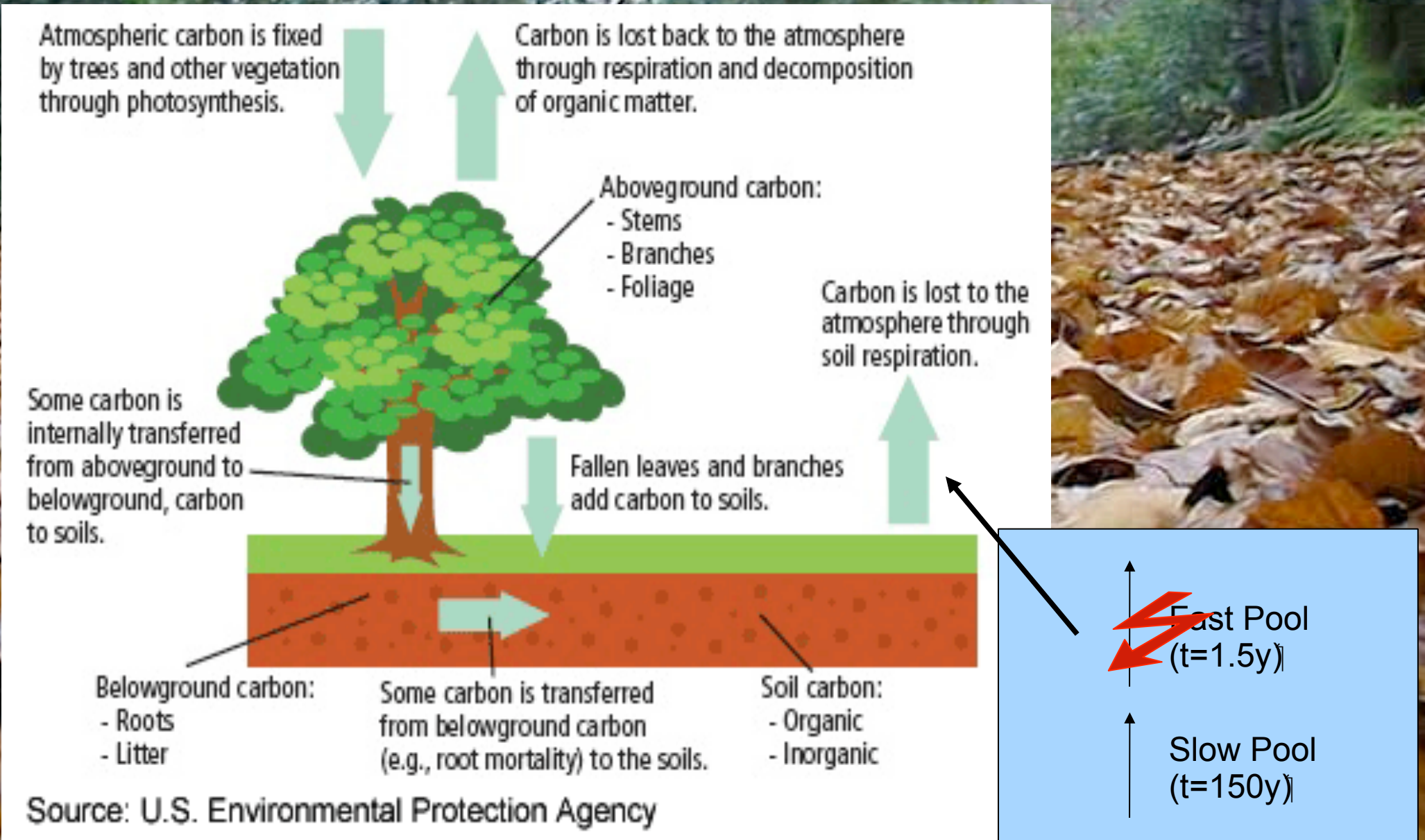
# The Soil Respiration Experiment

Group2/Group8

Sardu Bajracharya, Gerard Devine, Juan Pablo Boisier,  
Janina Körper

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7.8.2009

# Cutting the fast pool of leaf litter respiration

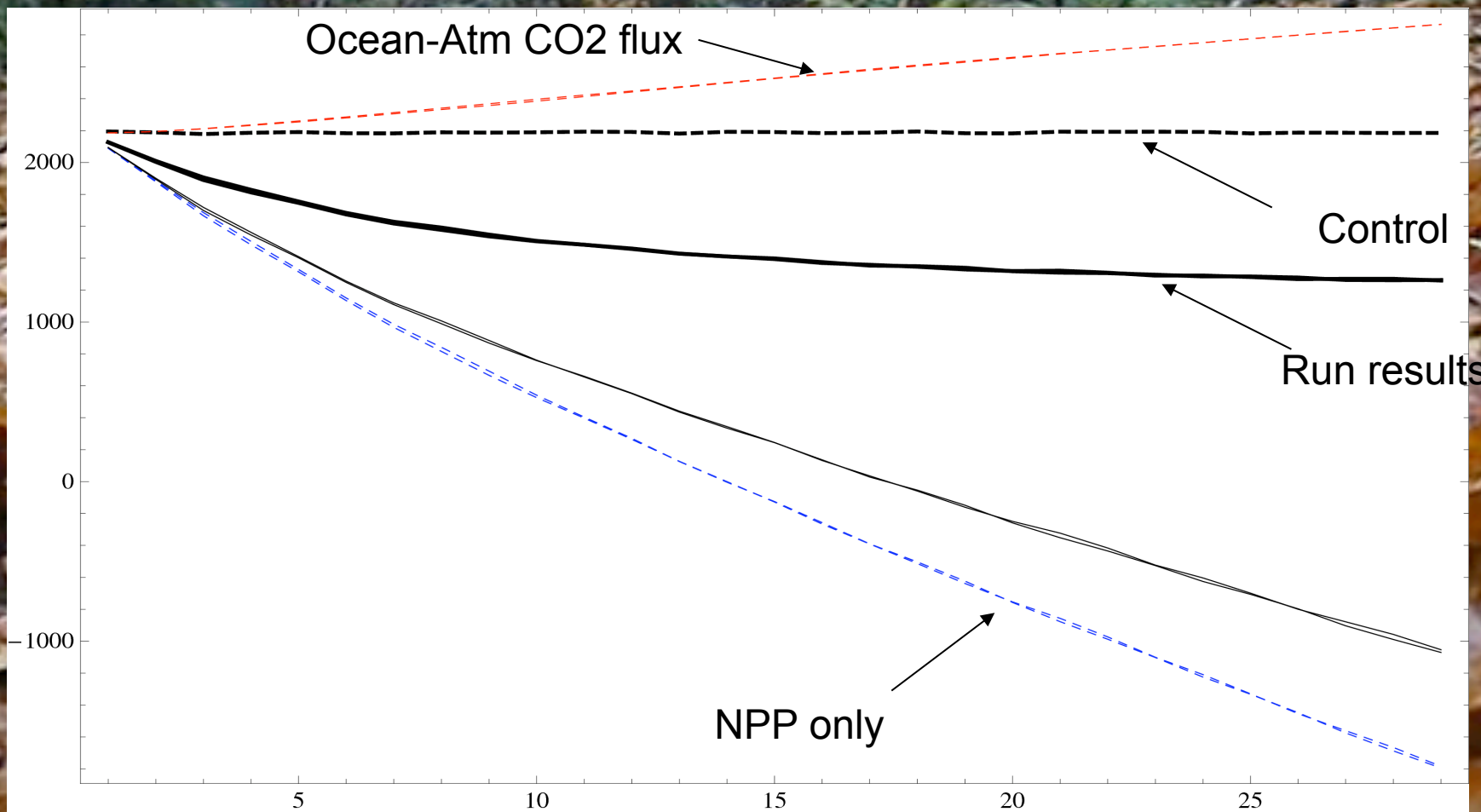


# What did we think would happen?

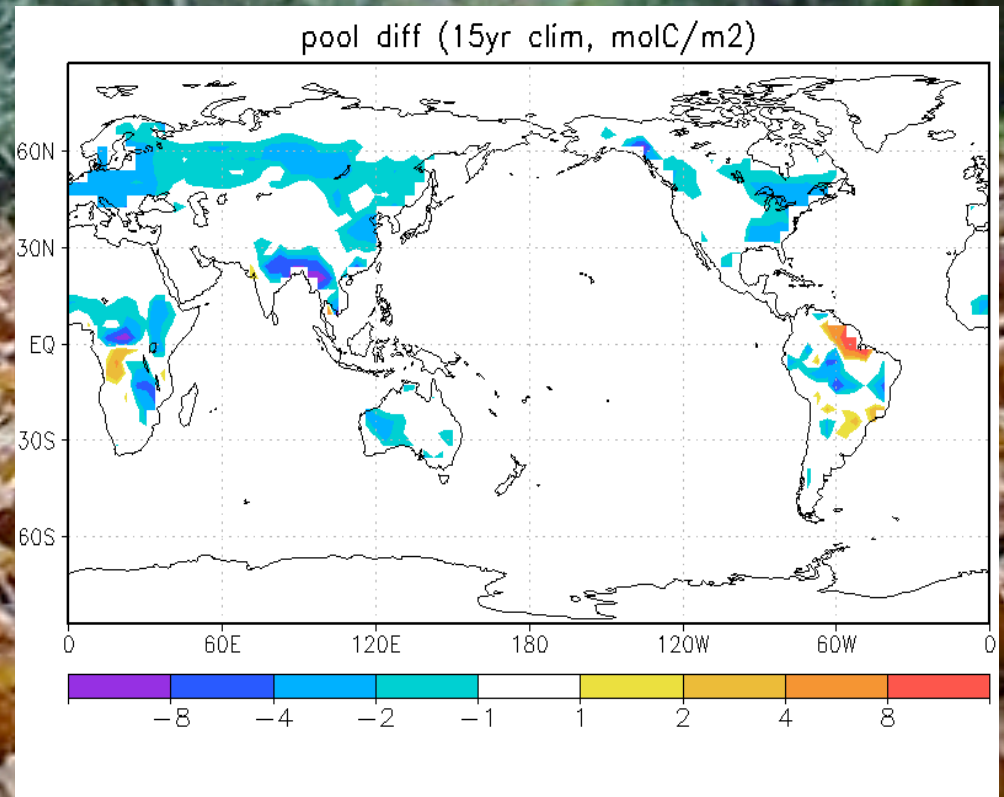
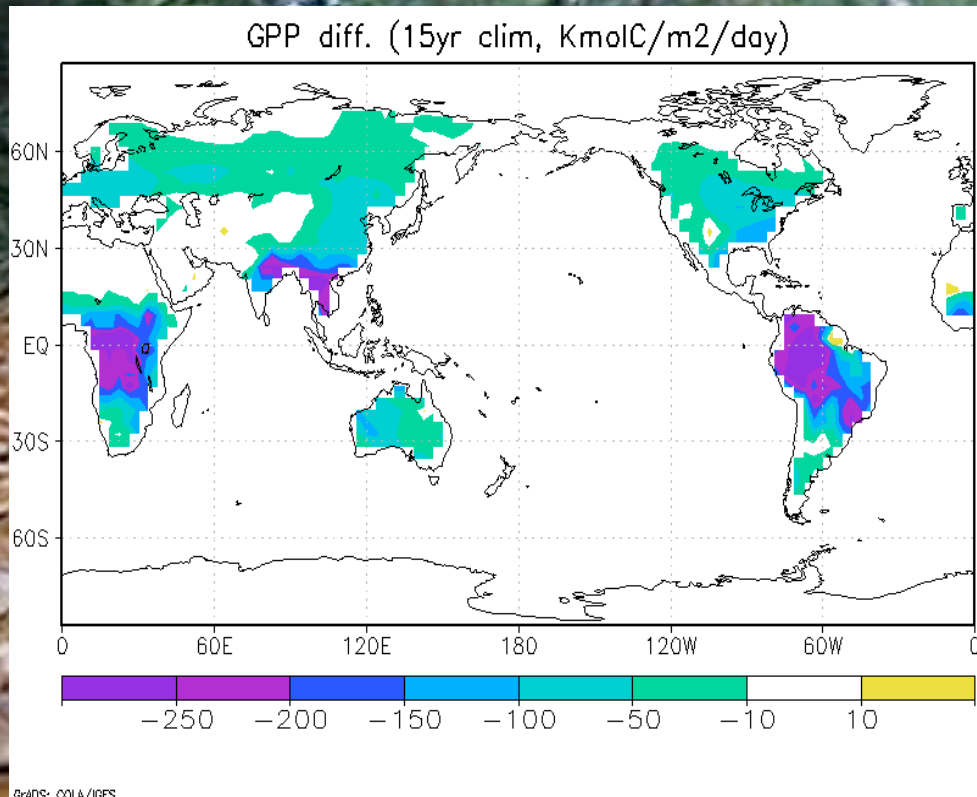
- Reduction in the amount of carbon in the atmosphere
  - Lower atmospheric temperature and SST
  - More sea ice and increase in albedo
- Decrease in GPP. More tree mortality in the boreal forests – New equilibrium

# Carbon Cycle

Atmospheric CO2 burden [Kg]

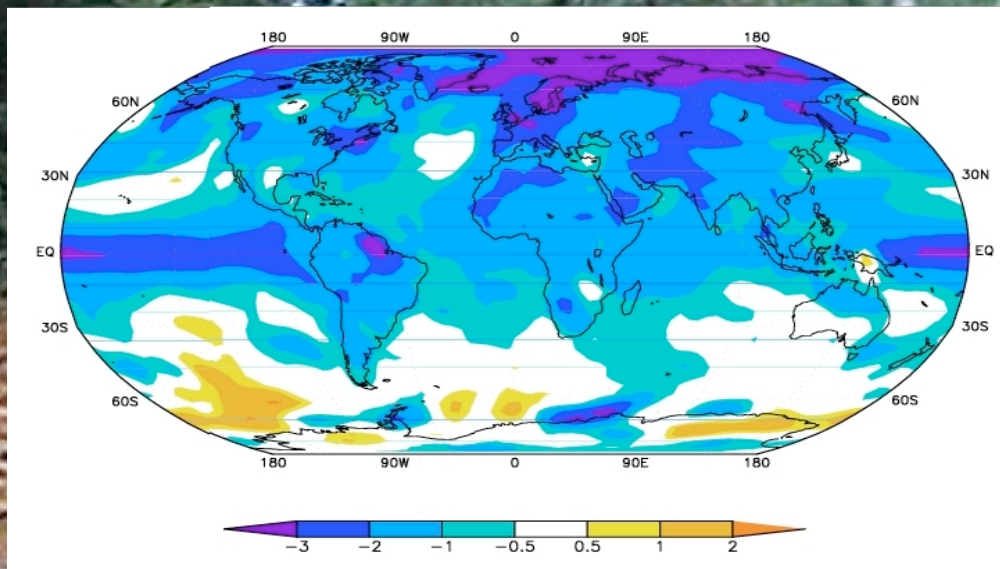


# Vegetation response

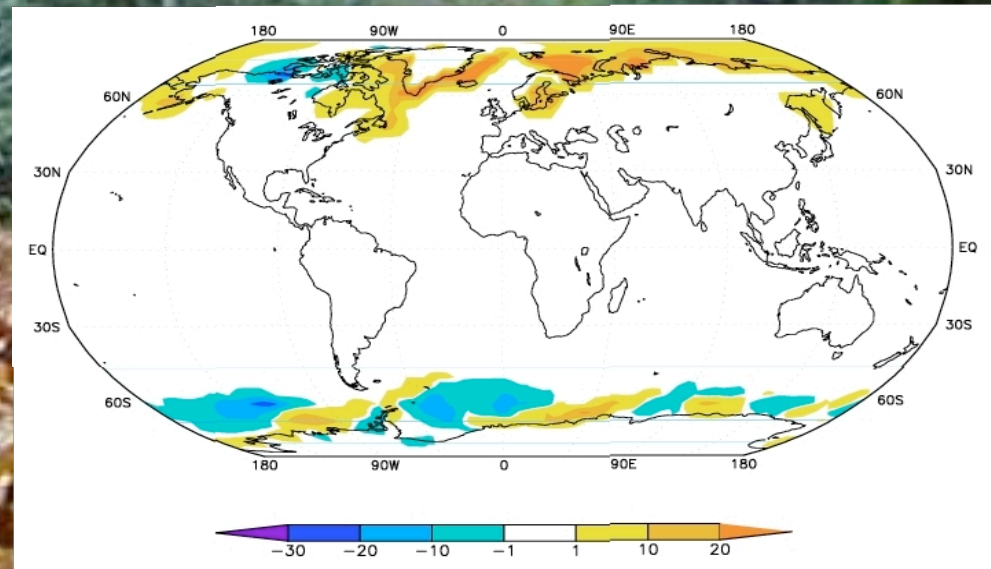


# Patterns of Climate Change

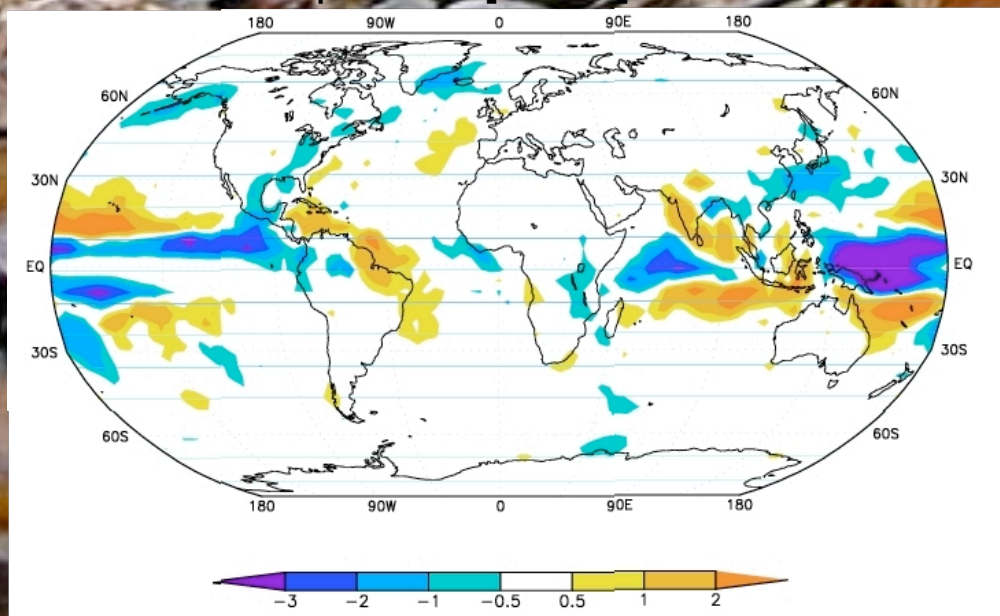
2mT [K]



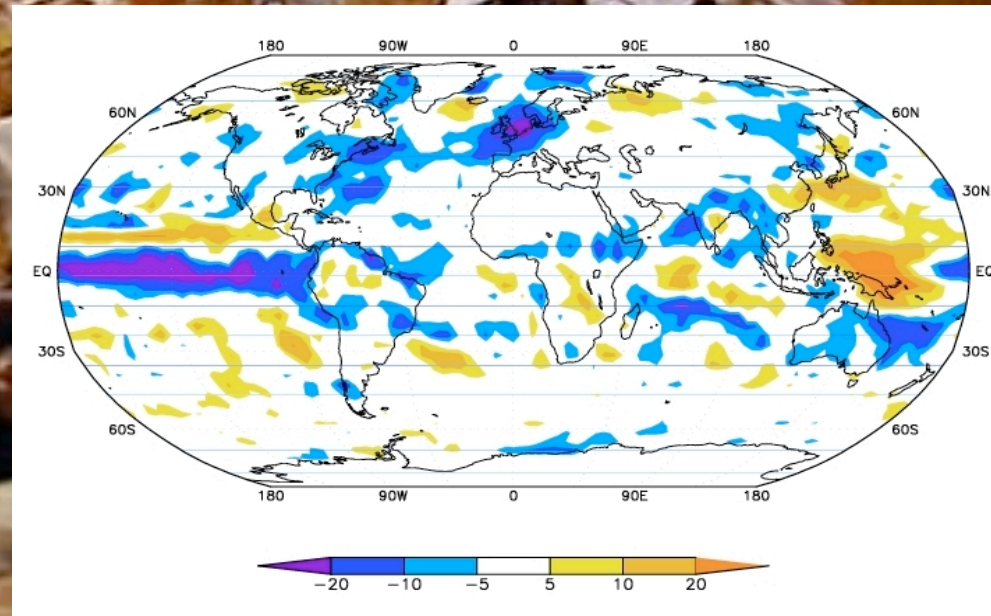
Sea Ice

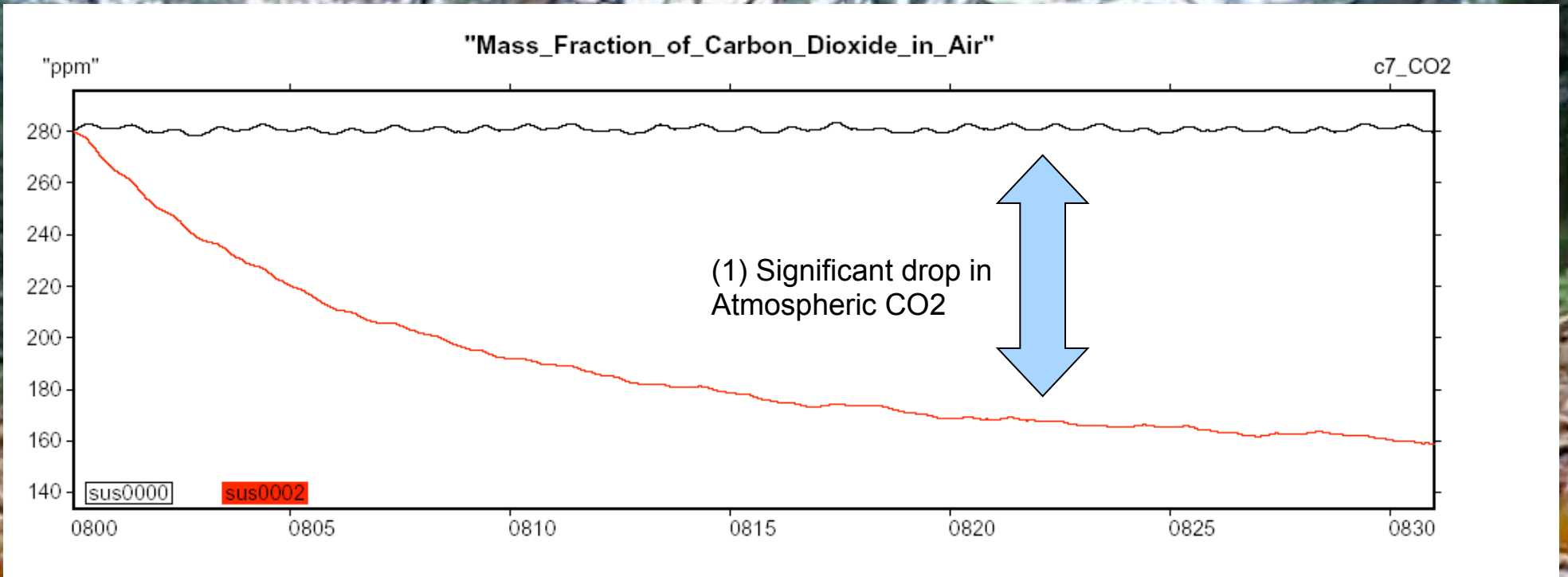


Precipitation [mm/d]

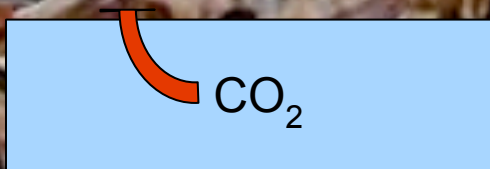


Net Top SW Radiation [W/m<sup>2</sup>]

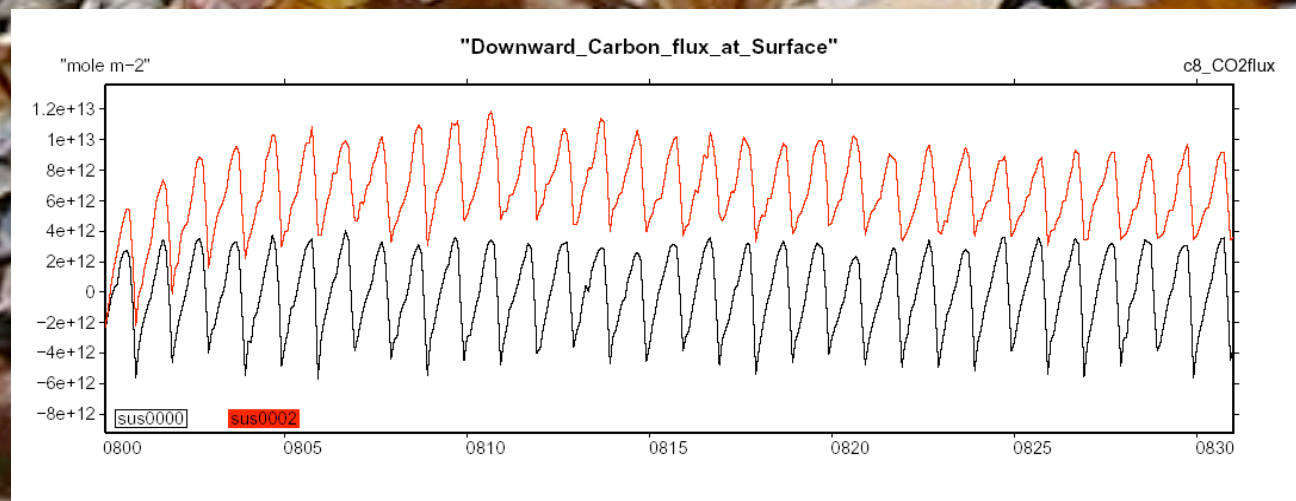




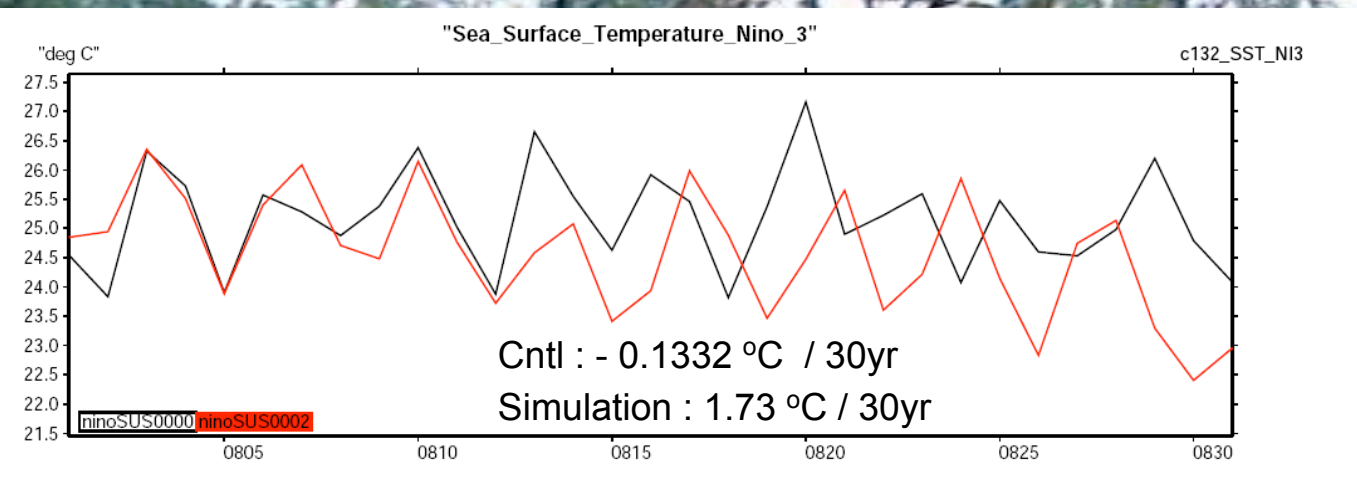
(2) Enhanced difference in CO<sub>2</sub><sub>(ocean)</sub> and CO<sub>2</sub><sub>(Atmosphere)</sub>



$$(3) F = K (CO_{2(ocean)} - CO_{2(Atmosphere)})$$



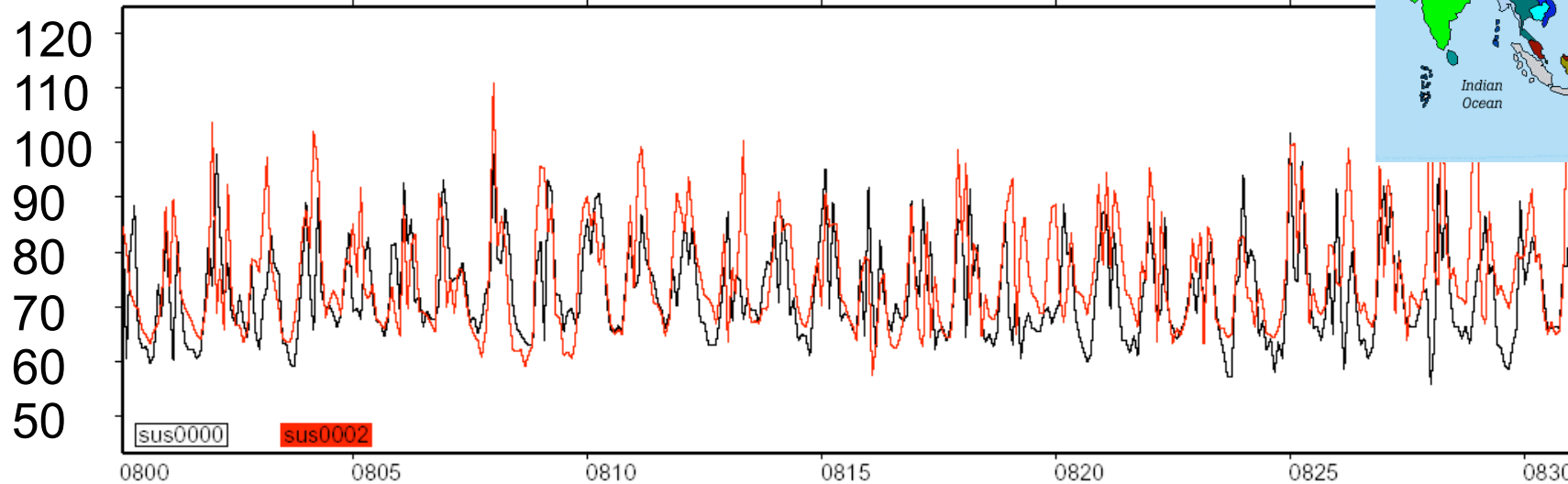
# Is an enhanced Kuroshio current the reason for colder equatorial SSTs?



Sverdrups

"m<sup>3</sup> s<sup>-1</sup>"

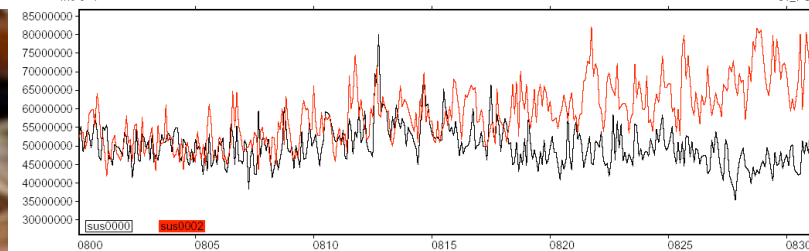
"Maximum\_of\_Barotropic\_Streamfunction\_in\_Subtropical\_Pacific"



"Maximum\_of\_Barotropic\_Streamfunction\_in\_Subtropical\_Atlantic"

"m<sup>3</sup> s<sup>-1</sup>"

c1\_PSIGULF



Effect much less than in the Atlantic although  
not altered in Equatorial Atlantic

# Summary/Conclusions

- Reduction in CO<sub>2</sub> and temperature 😊
- La Niña like pattern (precip and SST)
- Higher sensitivity in NH
- Less GPP 😊
- Ocean outgassing increases 😞
  - Gradient induced outgassing m
  - are dominant than uptake due to temperature drop

# What are we missing?

- What happens in the equatorial Pacific ?
  - cooler SSTs and less water vapor but more clouds
- Feedback from Aerosol effect (not in the model)