

Emissions
(GtC/yr)



Concentrations
(ppmv)

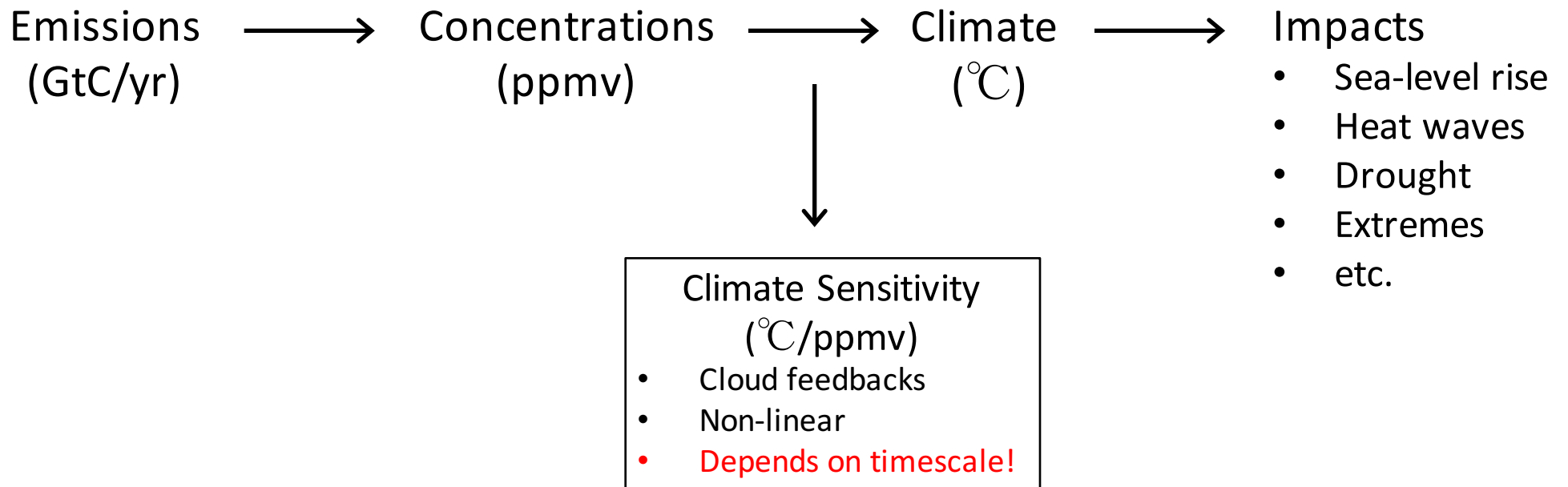


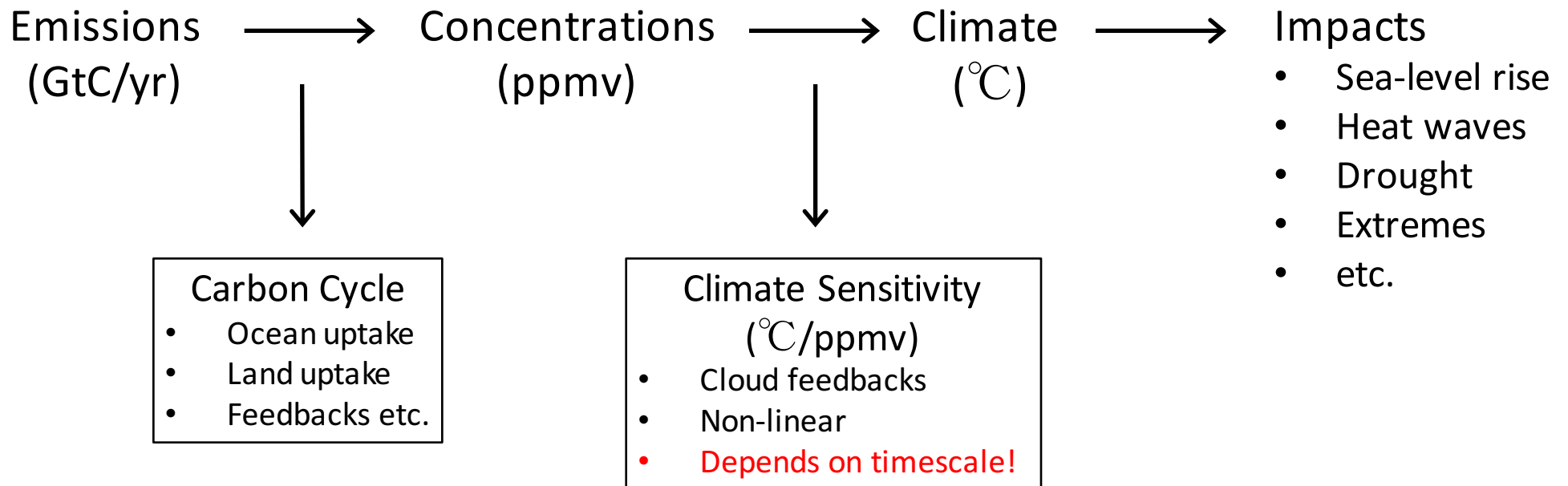
Climate
(°C)

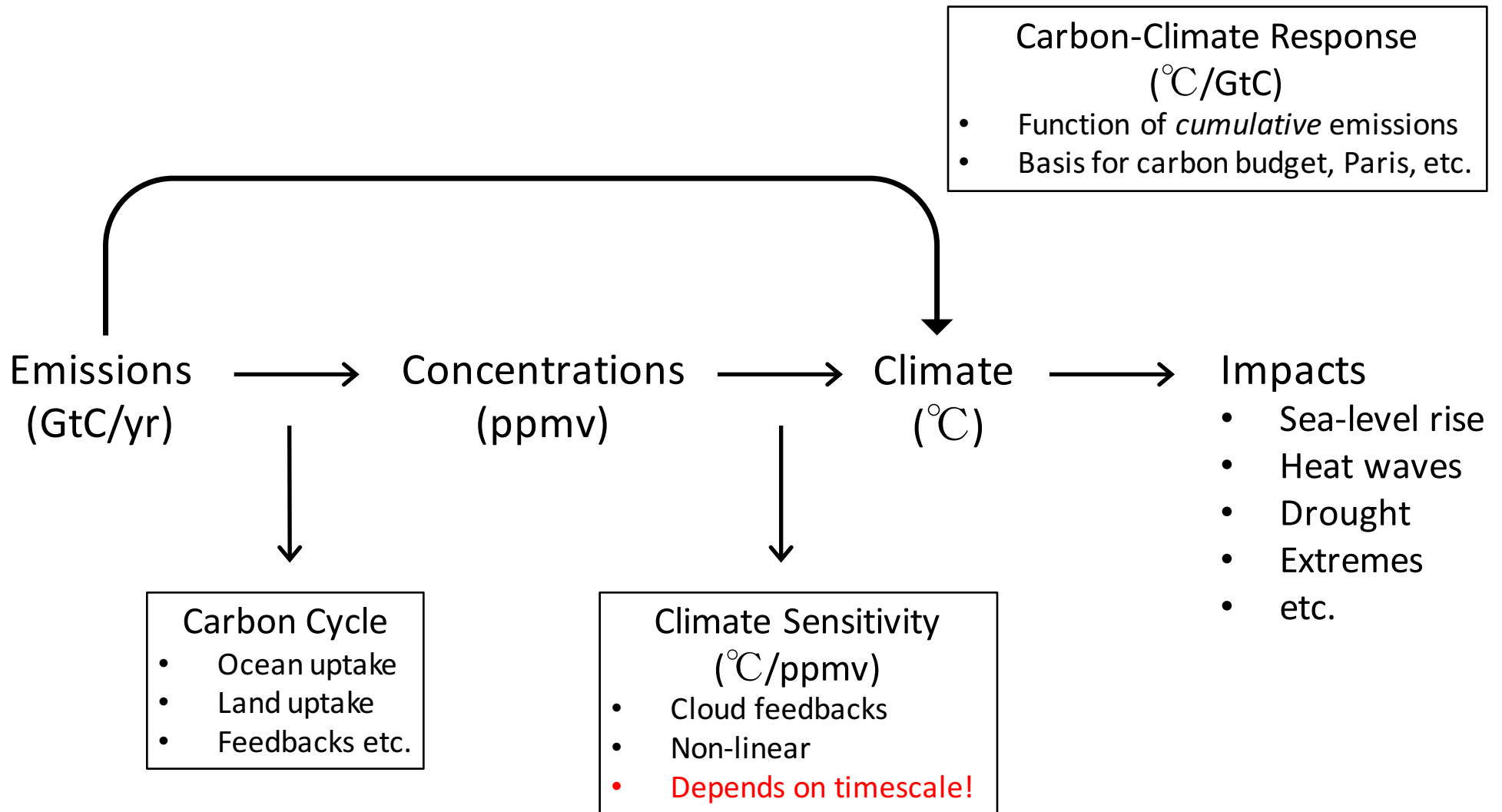


Impacts

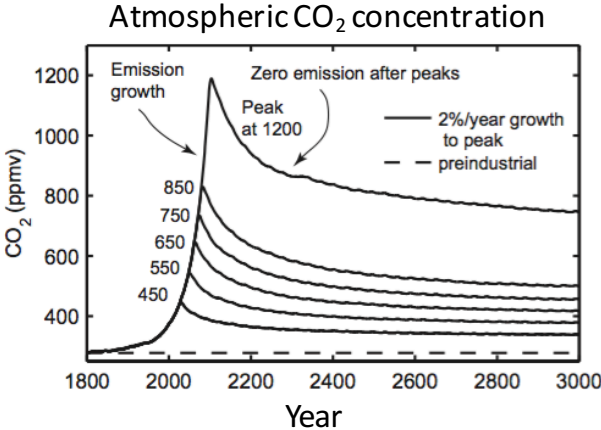
- Sea-level rise
- Heat waves
- Drought
- Extremes
- etc.





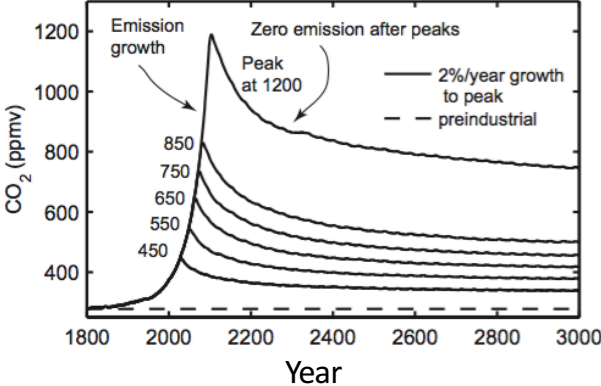


Solomon 2009, PNAS

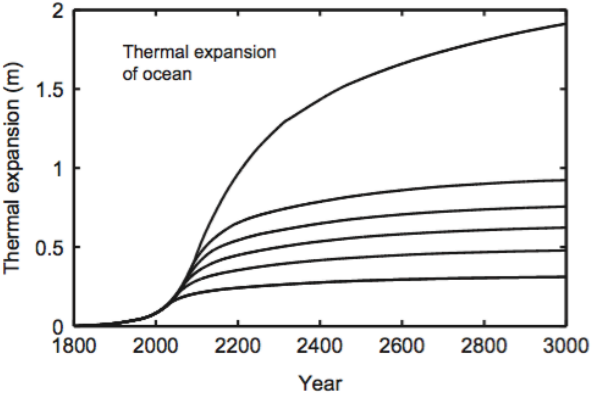


Solomon 2009, PNAS

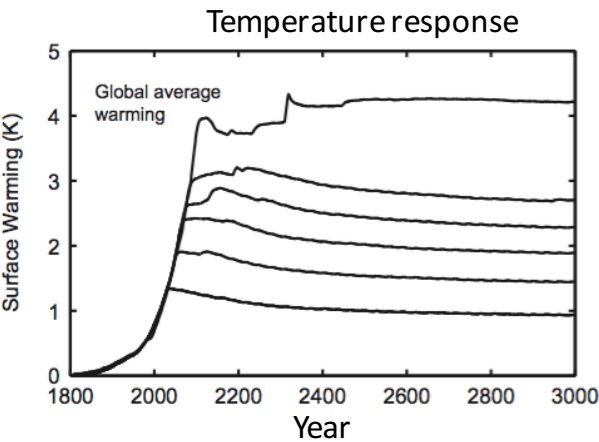
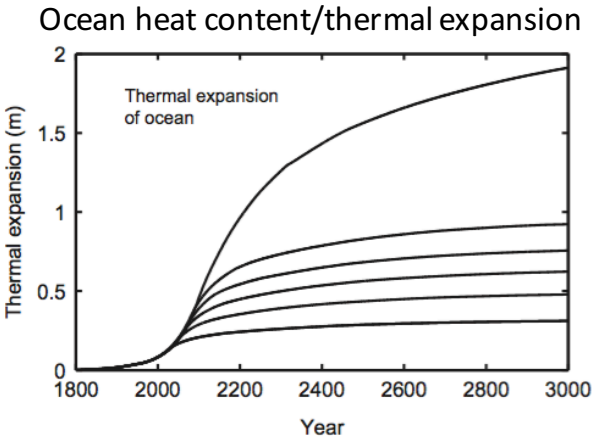
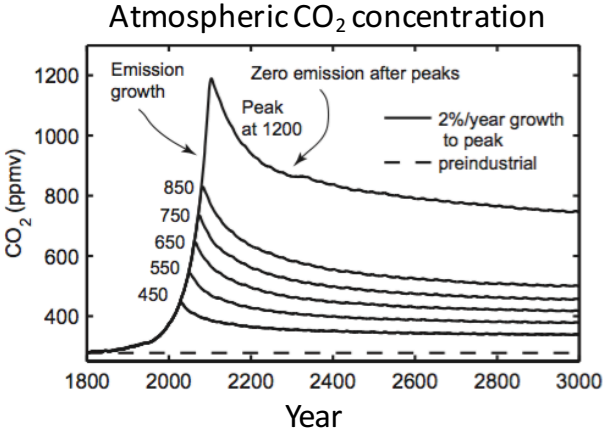
Atmospheric CO₂ concentration



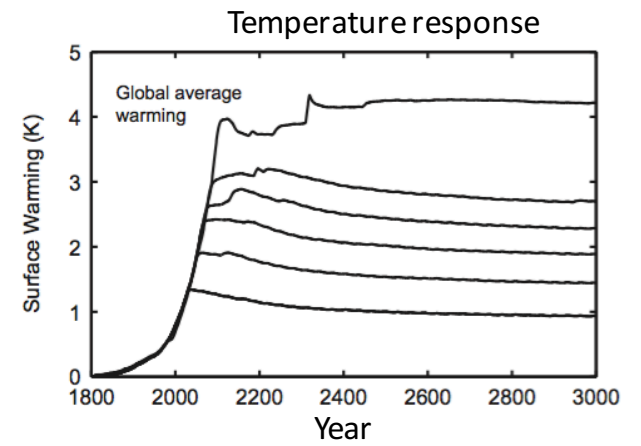
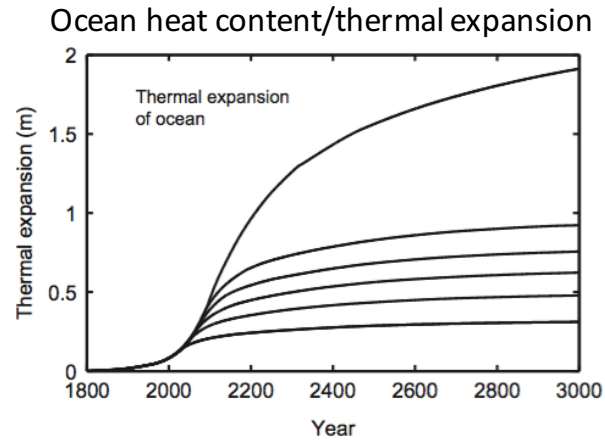
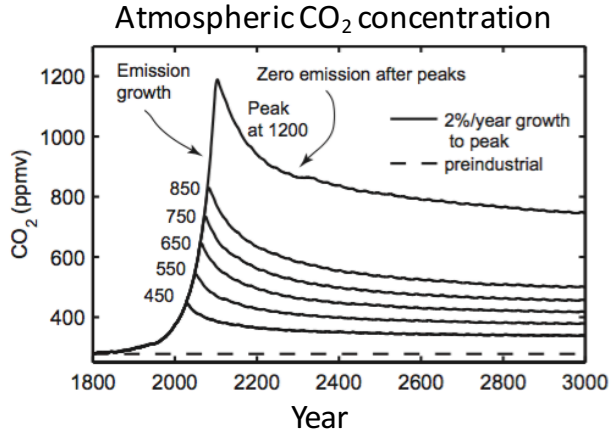
Ocean heat content/thermal expansion



Solomon 2009, PNAS

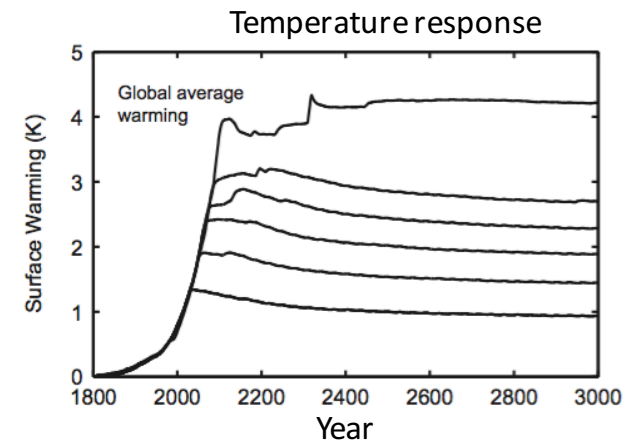
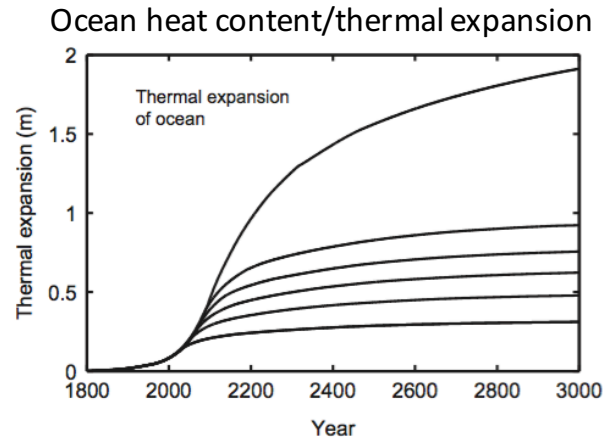
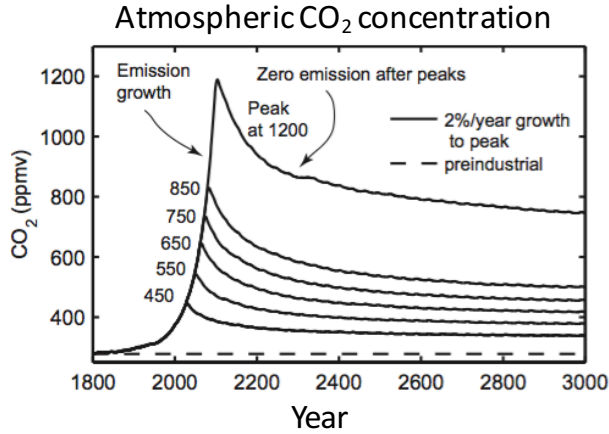


Solomon 2009, PNAS



Ocean **carbon** uptake + Ocean **heat** uptake = **Constant temp. response!**

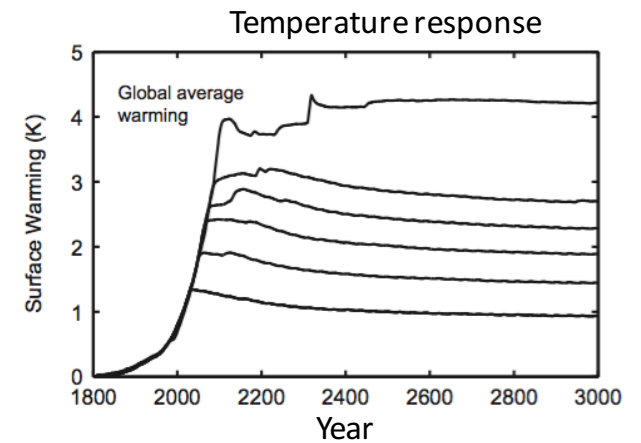
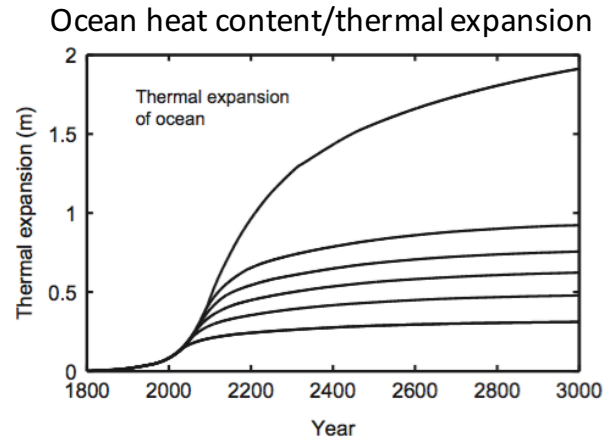
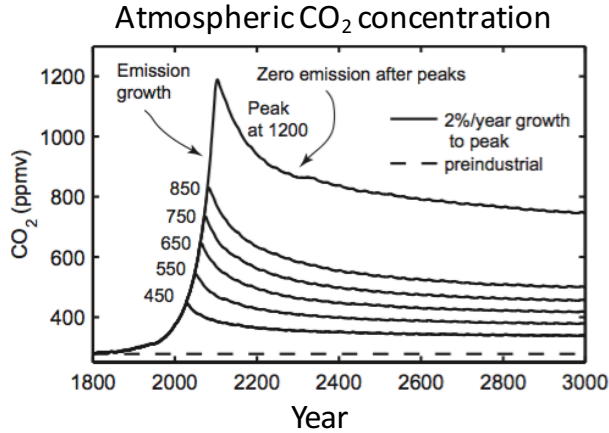
Solomon 2009, PNAS



Ocean carbon uptake + Ocean heat uptake = Constant temp. response!

Ceasing emissions today will fix surface temperatures at today's values, for hundreds of years.

Solomon 2009, PNAS

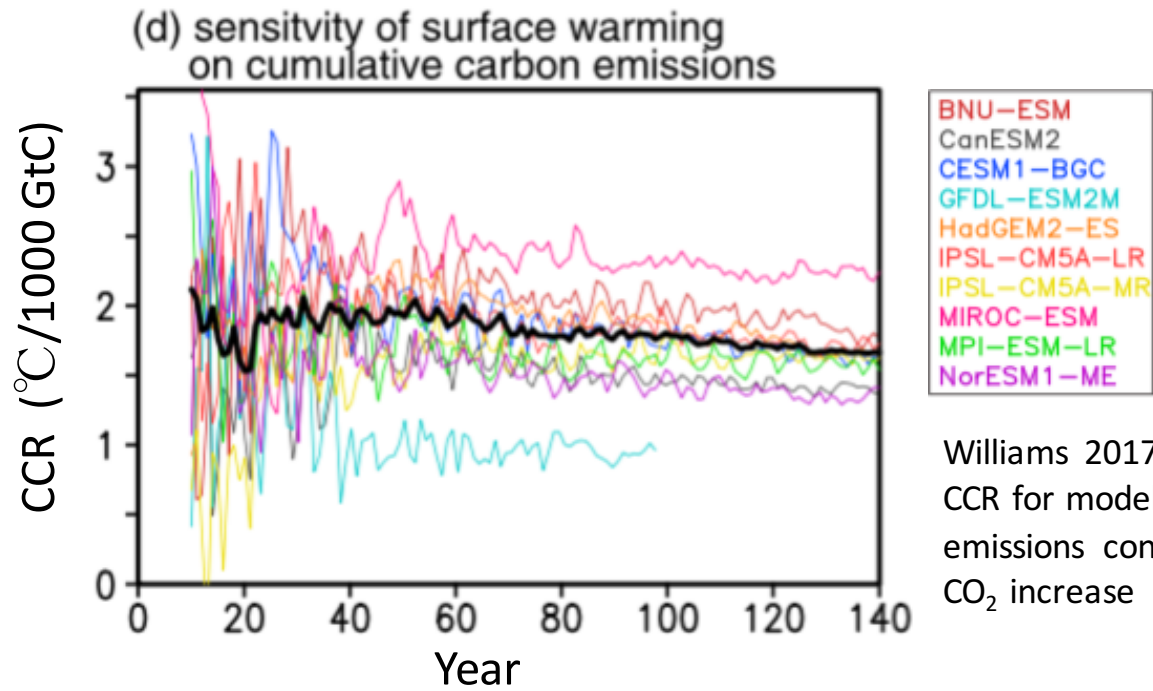


Ocean carbon uptake + Ocean heat uptake = Constant temp. response!

Ceasing emissions today will fix surface temperatures at today's values, for hundreds of years.

(sea level and deep ocean temps, however, will continue to rise)

Value of CCR ?



Williams 2017, *Journal of Climate*
CCR for model ensemble under
emissions consistent with 1%/yr
 CO_2 increase

