



Supplement of

Sensitivity of simulated CO₂ concentration to sub-annual variations in fossil fuel CO₂ emissions

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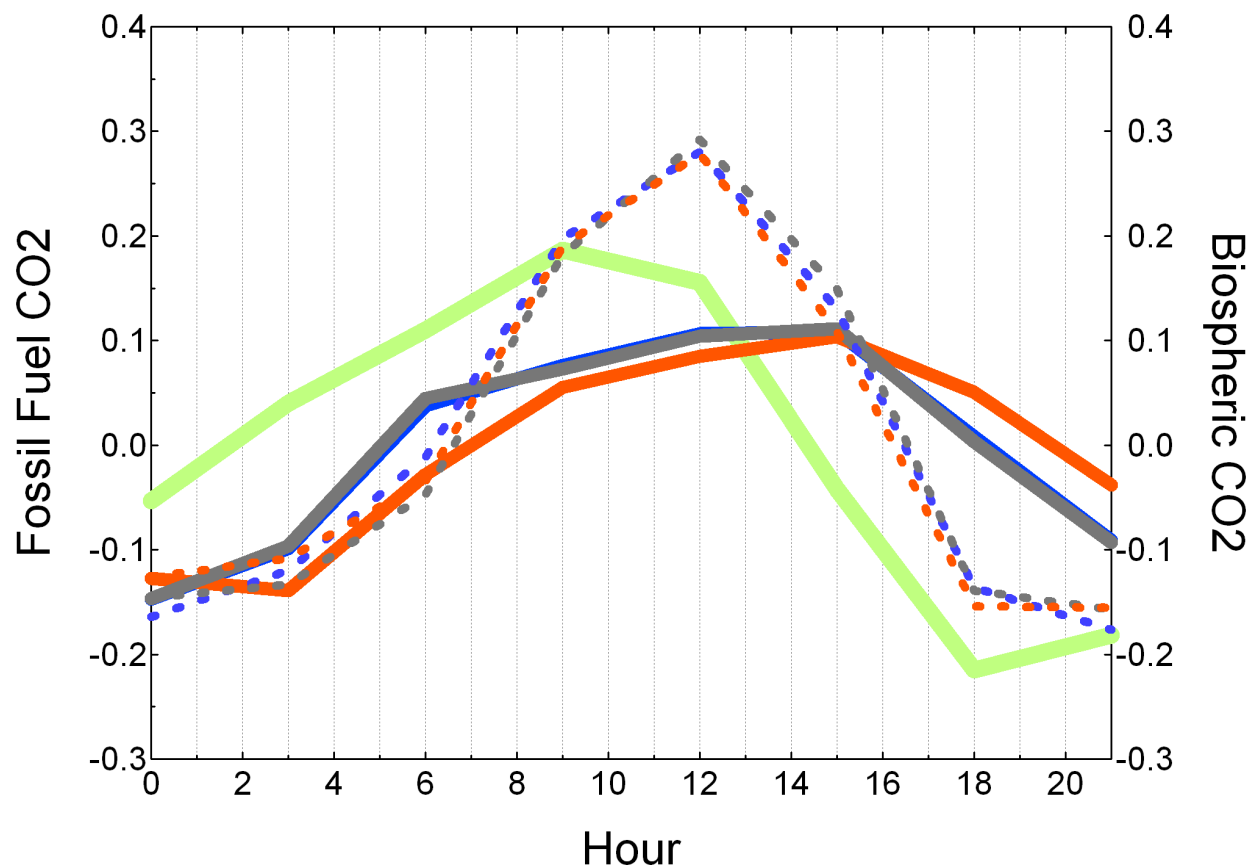


Figure S1 Normalized diurnal cycle of FFCO₂ emissions over three large source regions (US: solid gray, Western Europe: solid blue; China: solid orange) and the normalized diurnal cycle of biospheric fluxes for the tropics and northern middle latitude (20°S~50°N) (solid green). Also plotted are the normalized diurnal cycle of planetary boundary layer height for the three LSRs (US: dashed gray; Western Europe: dashed blue; China: dashed orange) and that for the region of biospheric fluxes (dashed green).

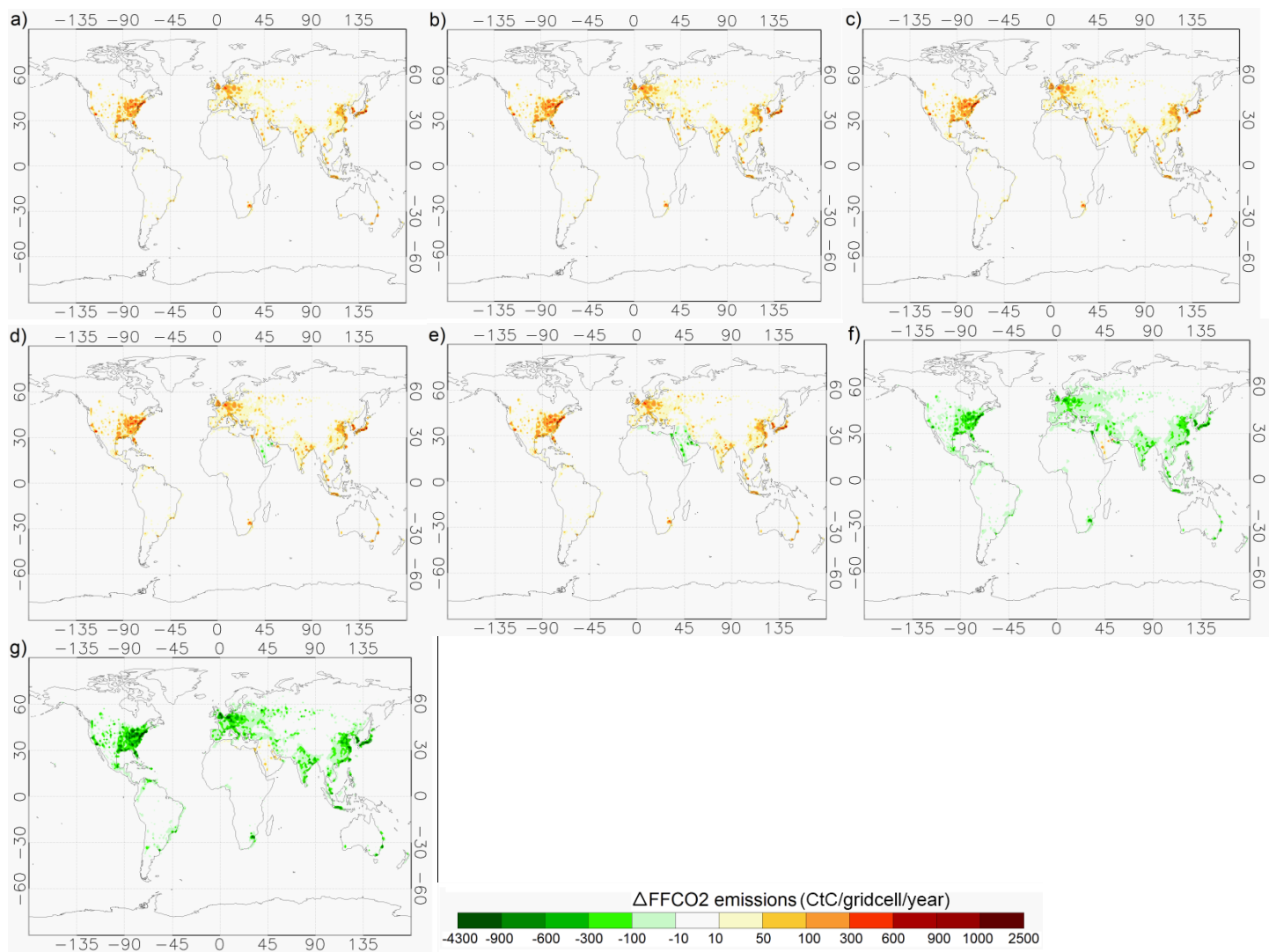


Figure S2 Daily FFCO₂ emissions for each day of the week: a) for Monday, b) for Tuesday, c) for Wednesday, d) for Thursday, e) for Friday, f) for Saturday and g) for Sunday.

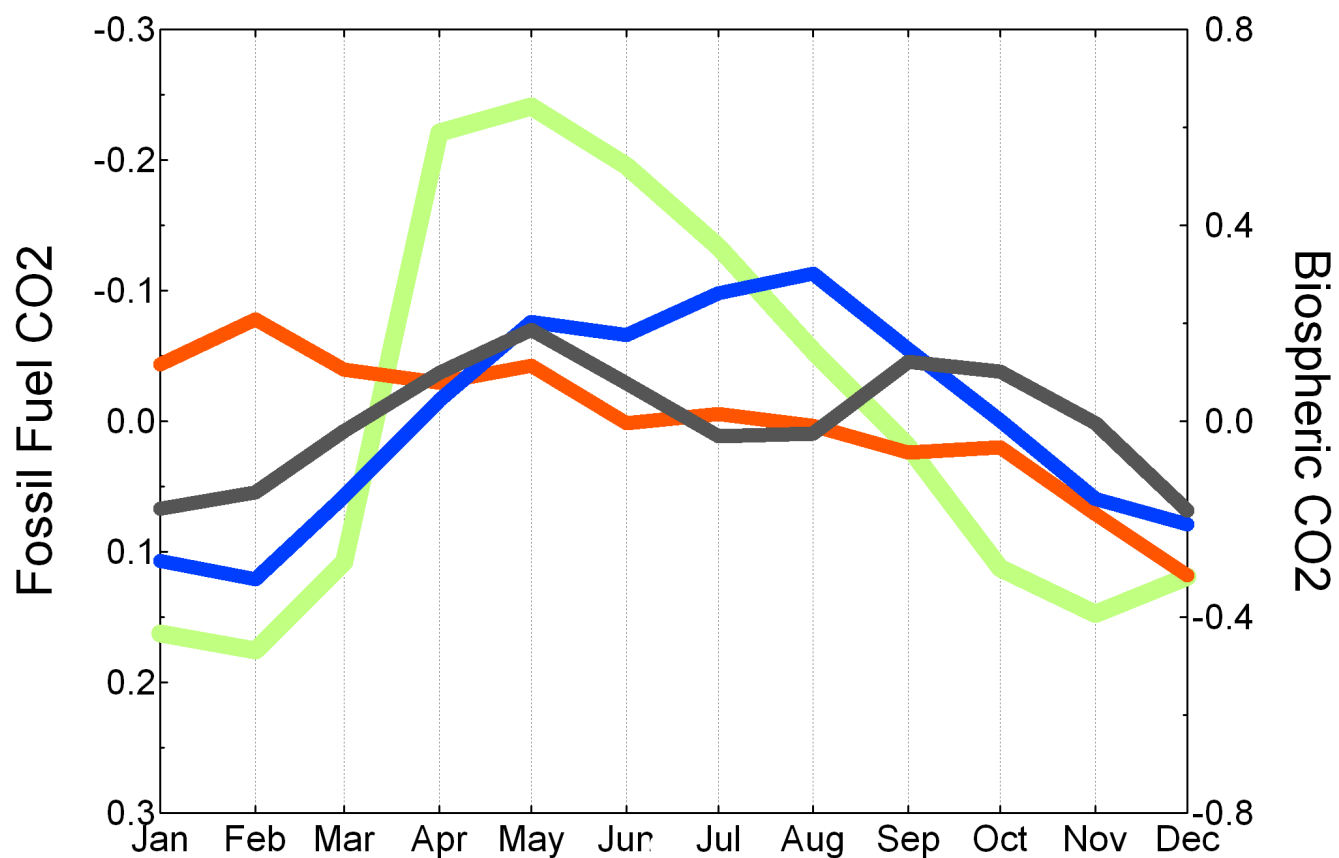


Figure S3 Normalized monthly FFCO₂ emissions for three large source regions (US: solid gray, Western Europe: solid blue and China: solid orange) and normalized monthly biospheric fluxes for the tropics and northern middle latitude (20°S~ 50°N) (solid green).

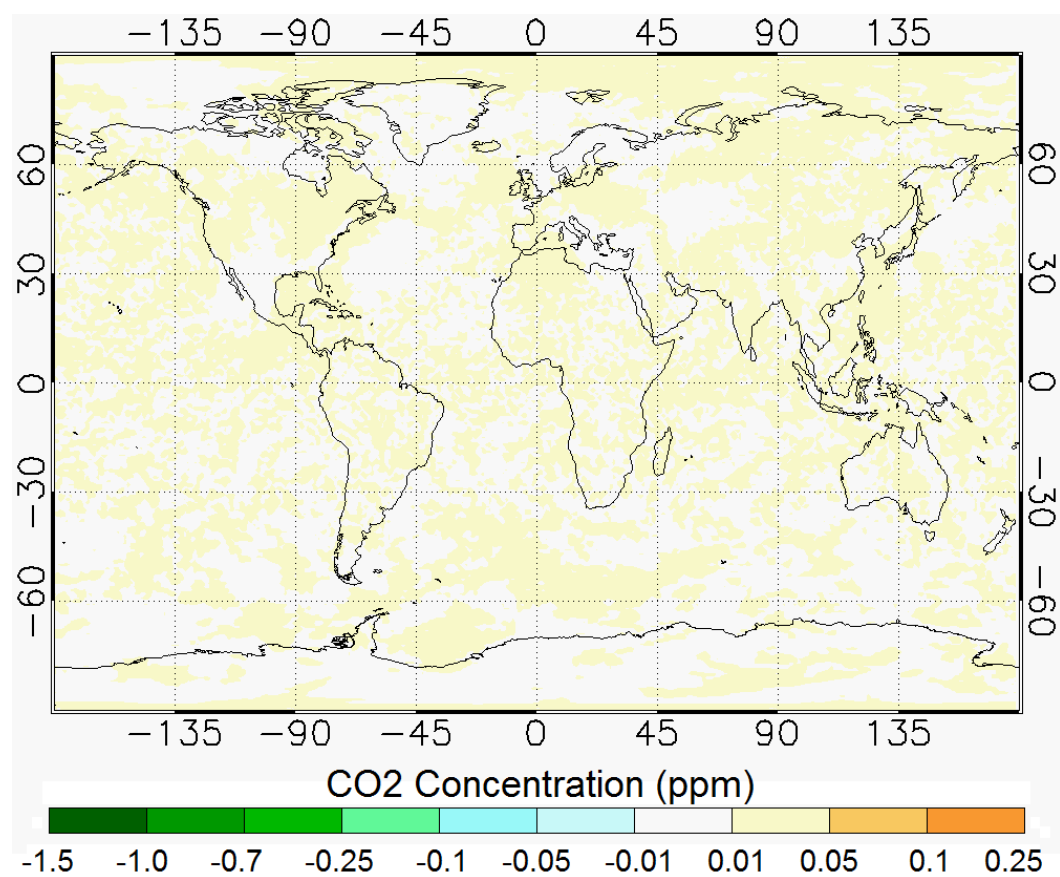


Figure S4 Annual mean surface FFCO₂ concentration difference between the WCE and FE FFCO₂ emission fields.

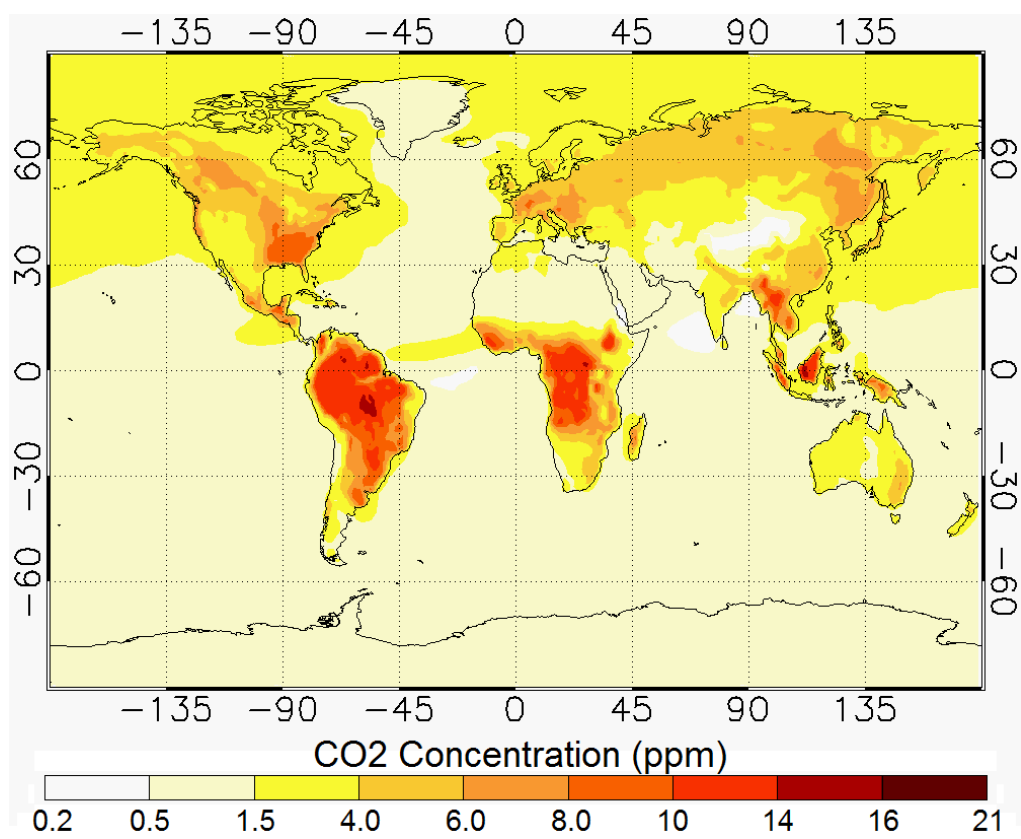


Figure S5 Annual mean surface CO₂ concentration difference between the biospheric fluxes and the 350 ppmv initial condition.

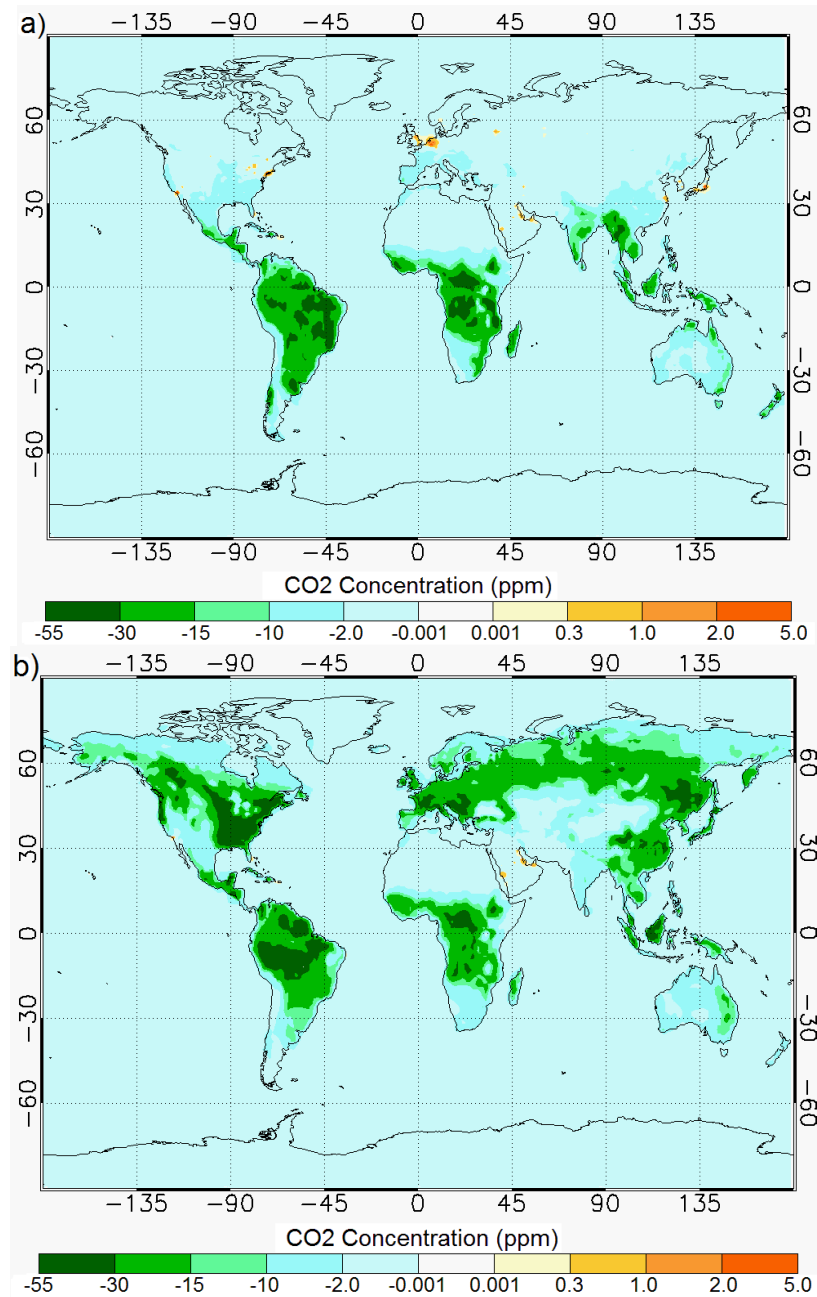


Figure S6 Difference in diurnal peak-to-peak amplitude of surface FFCO₂ concentration between diurnal FFCO₂ simulation and biospheric simulation (FFCO₂ minus biospheric CO₂). In the figure, a) for January and b) for July.

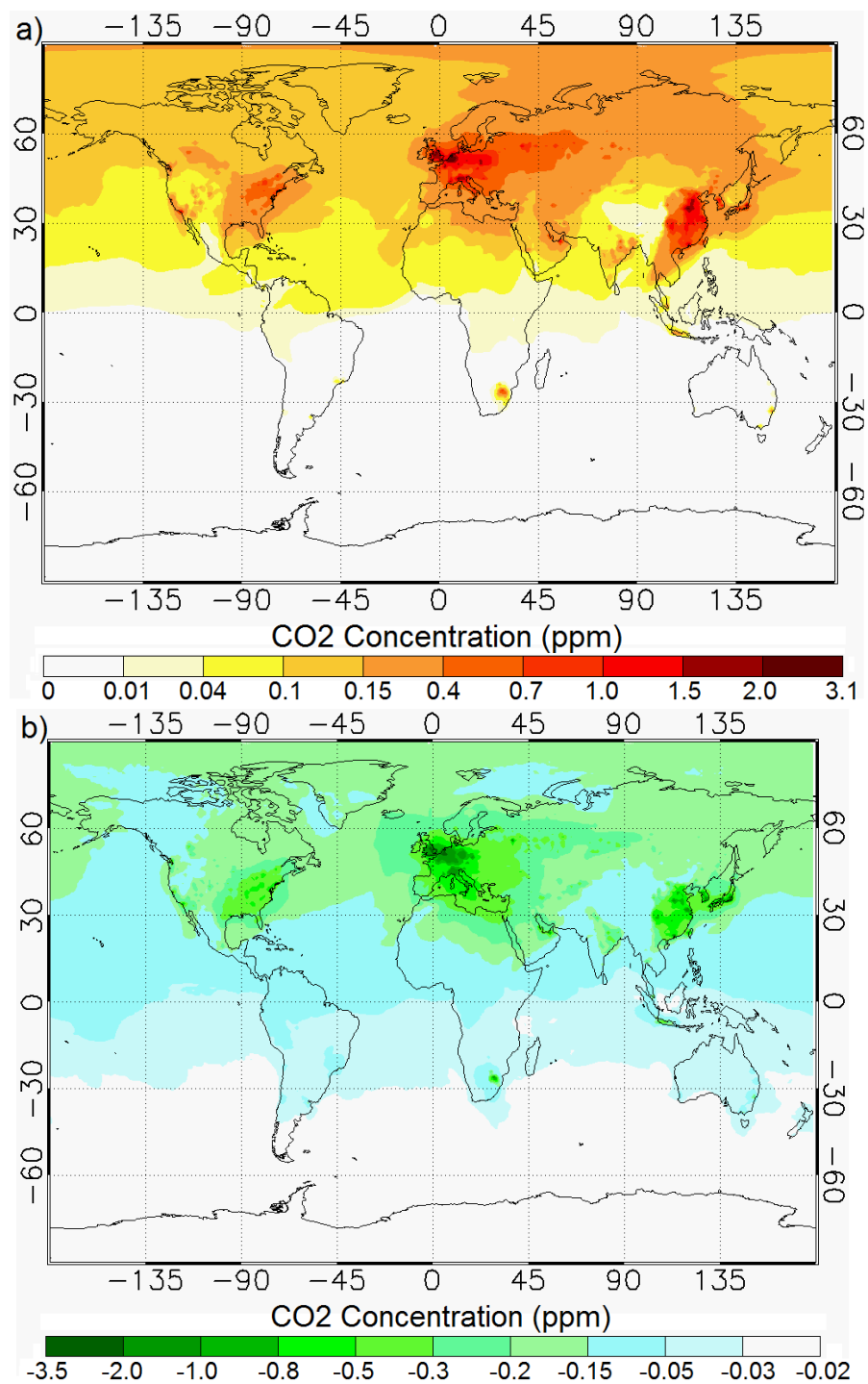


Figure S7 Maximum and minimum of seasonal surface FFCO₂ concentration difference between monthly cycle emissions (MCE) and flat emissions (FE) (MCE minus FE). a) seasonal maximum; b) seasonal minimum.

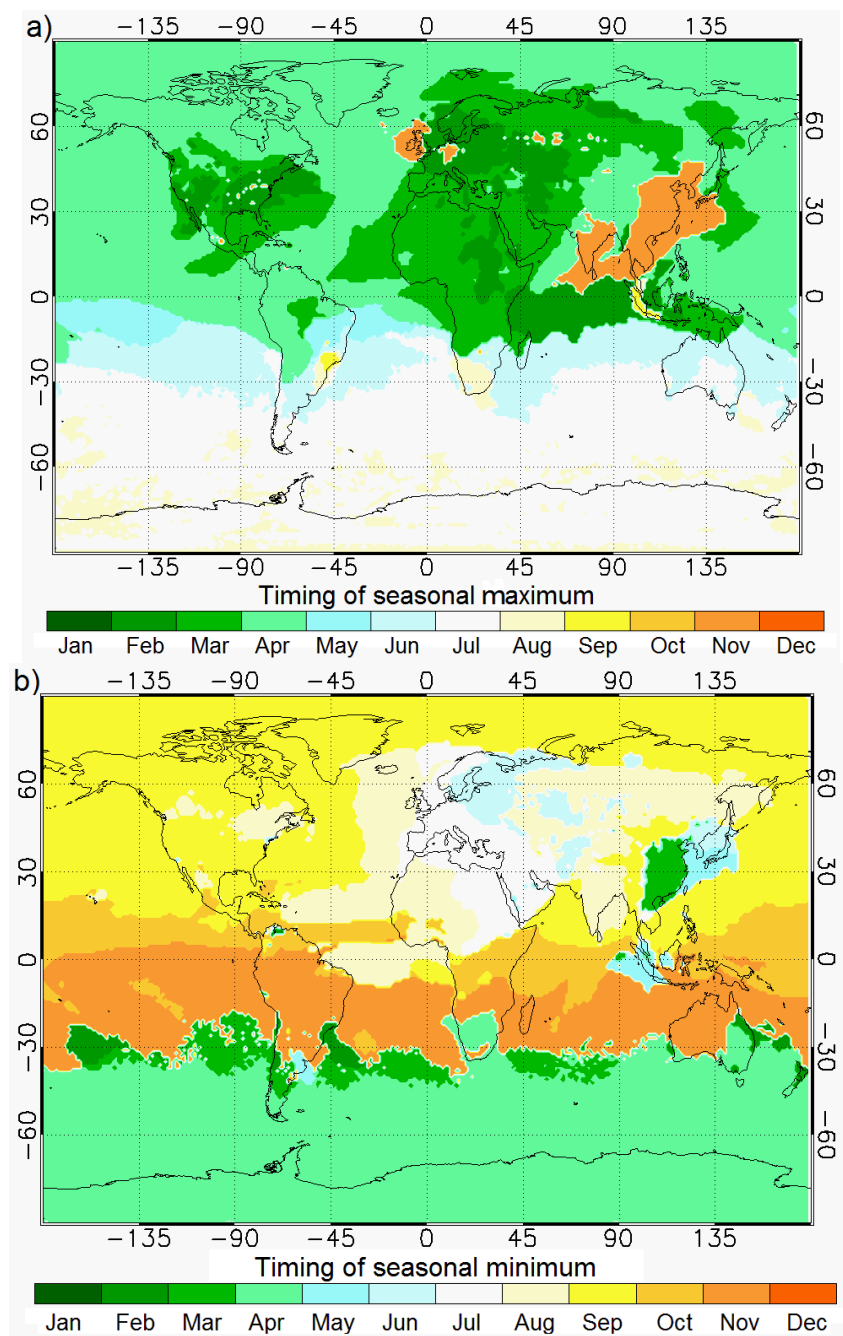


Figure S8 Timing of seasonal maximum and minimum of surface FFCO₂ concentration difference between monthly FFCO₂ emissions (MCE) and flat FFCO₂ emissions (FE). In the figure, a) maximum; b) minimum.

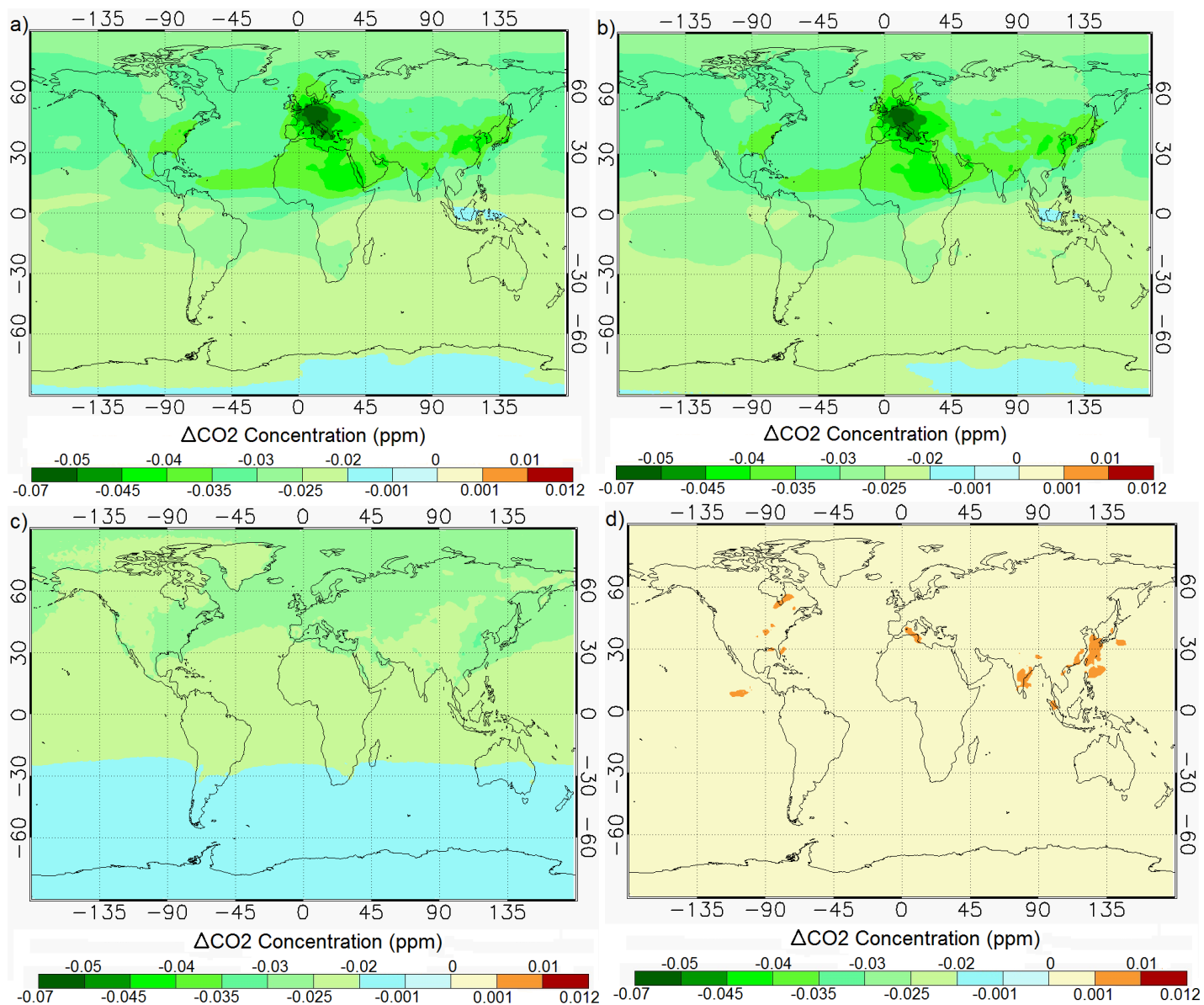


Figure S9 Column-averaged annual mean FFCO₂ concentration difference between cyclic FFCO₂ emissions and flat emissions. In the figure, a) for all time cycle emissions (ACE); b) for monthly emissions (MCE); c) for diurnal cycle emissions (DCE) and d) for weekly cycle emissions (WCE).