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Solar Zenith Angle = 52
Aerosol Type = Biomass Burning

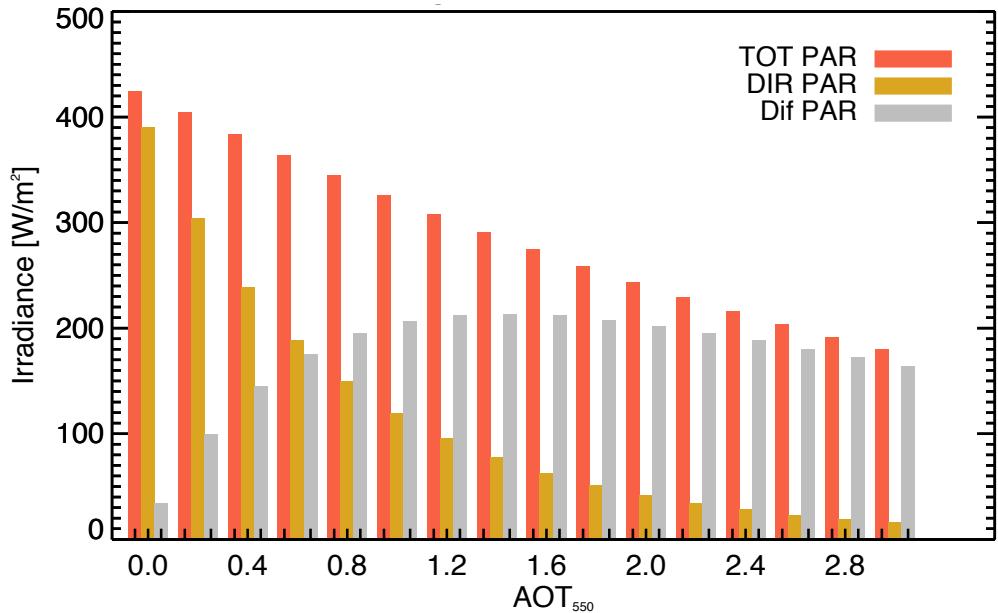


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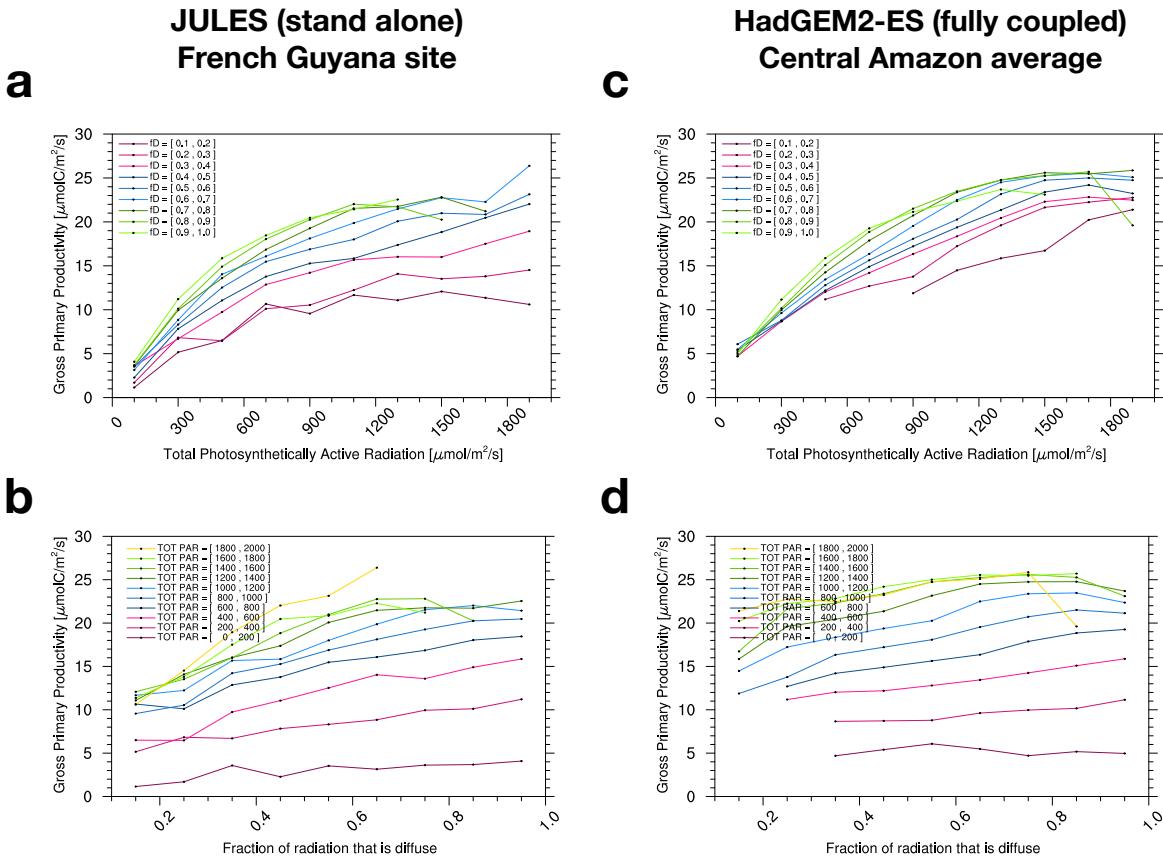


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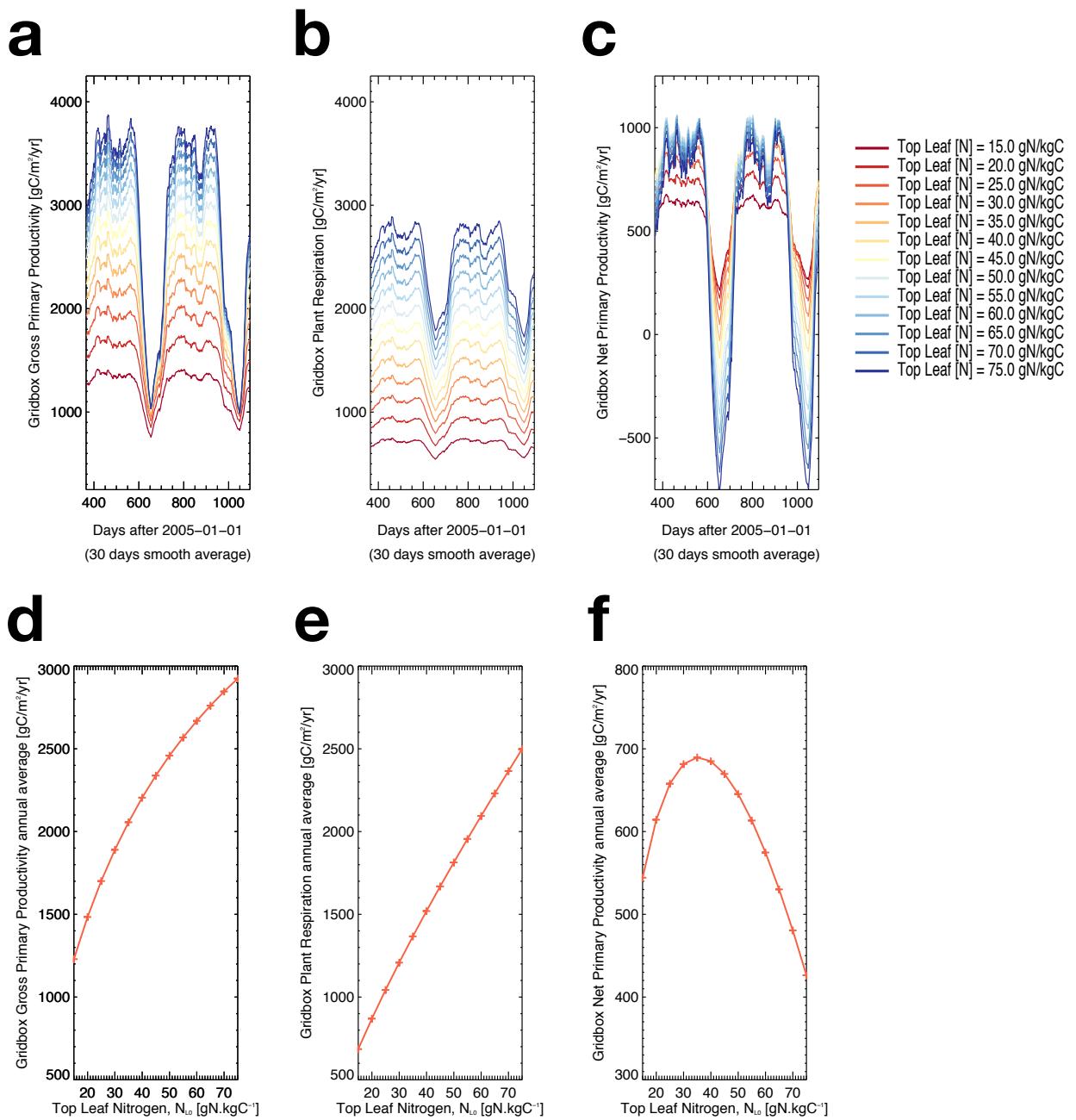


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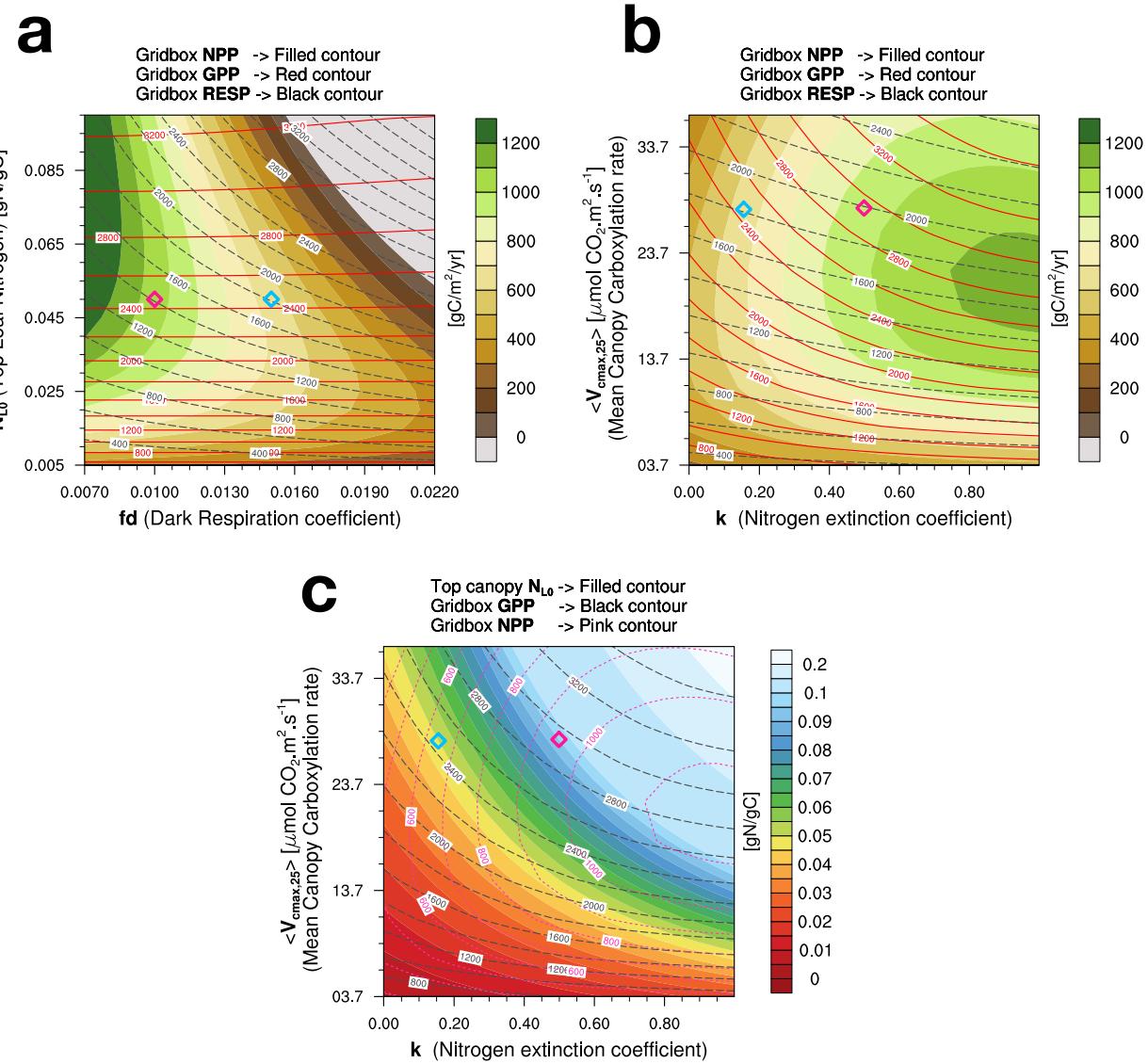
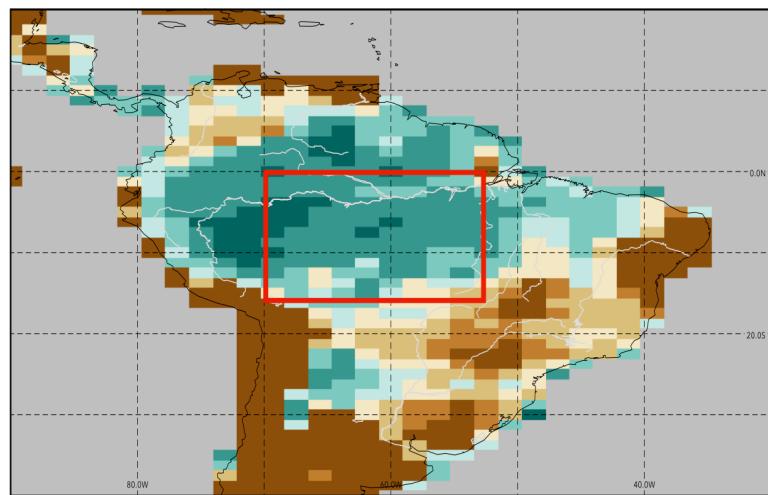


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a

SURFACE TILE FRACTIONS (PFT=1)

**b**

SURFACE TILE FRACTIONS (PFT=3)

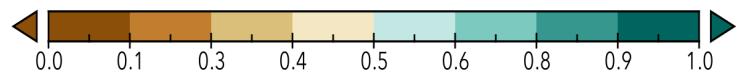
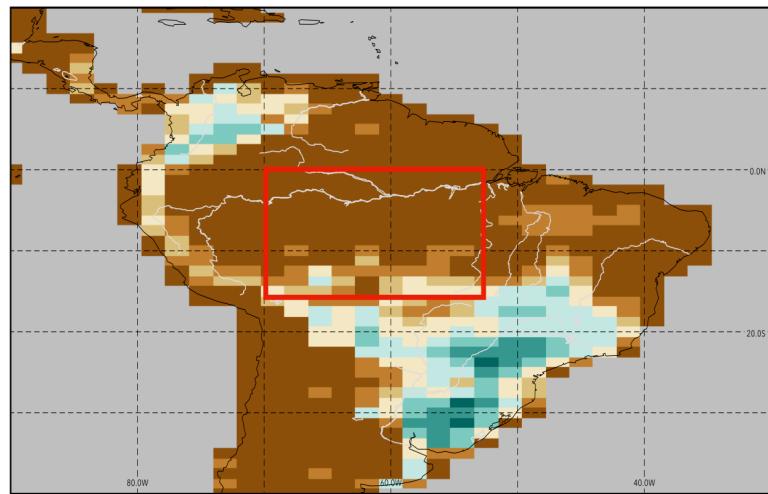


Figure S5: The tile fraction covered by broadleaf tree (a) and C3 grass (b).

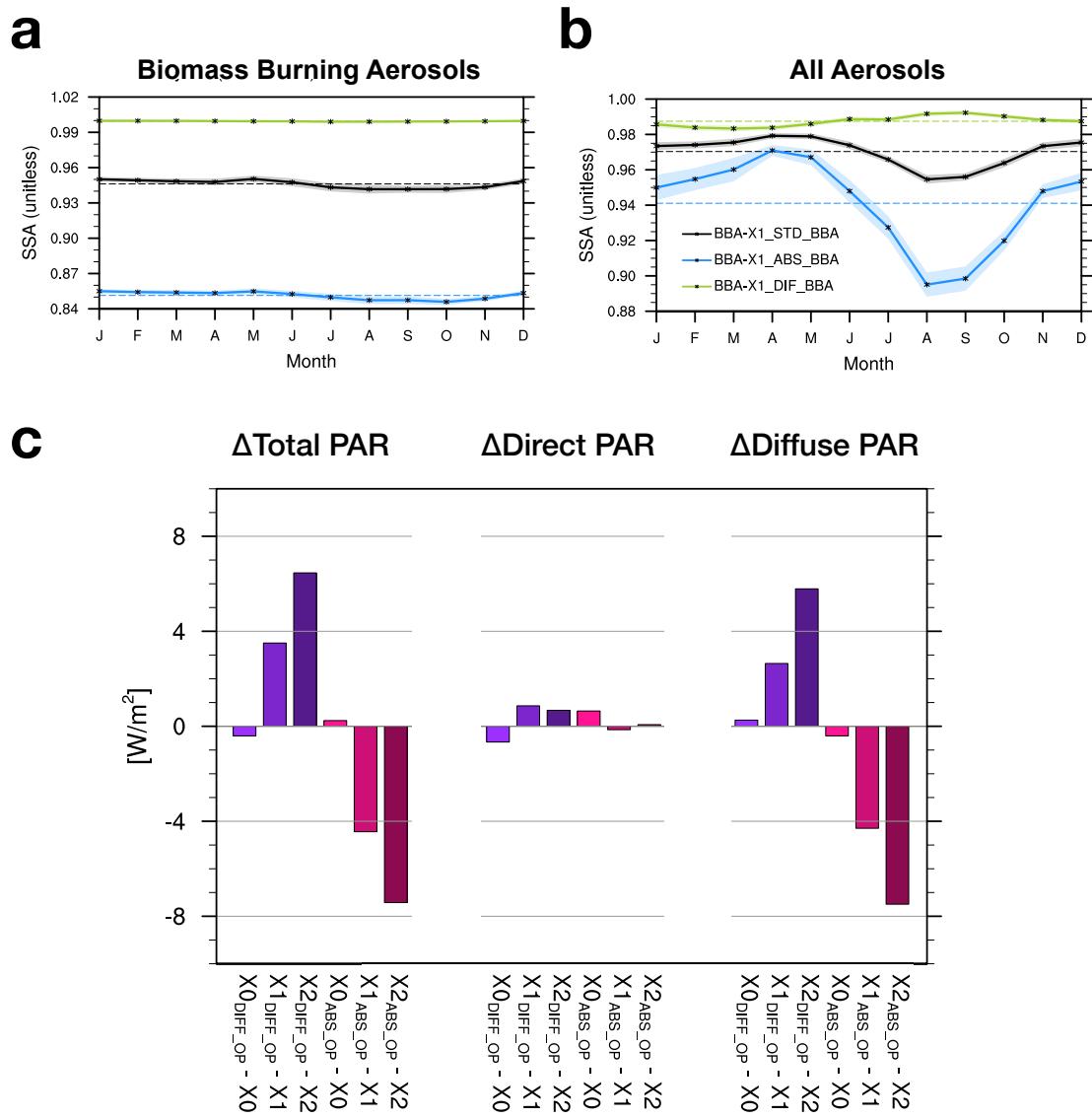


Figure S6: The modelled seasonal cycle of biomass burning aerosol SSA (a) and total aerosol SSA (b), for the BBAX1 run for different BBA absorption assumption (ABS is for more absorbing, DIFF is for more scattering)). Impact of varying BBA optical properties on the surface PAR fluxes (c).

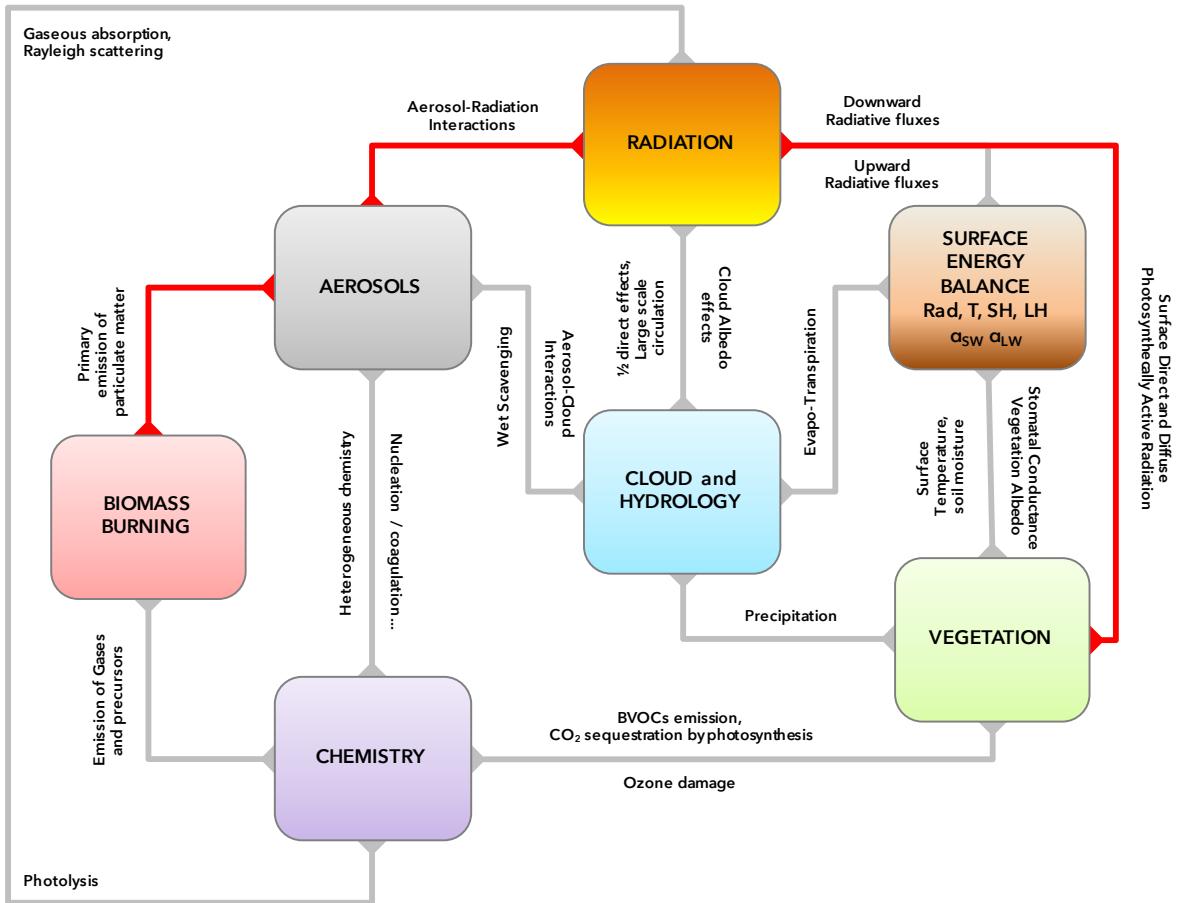


Figure S7: A simplified schematic showing some of the pathways of interaction between Biomass Burning and vegetated land surface.

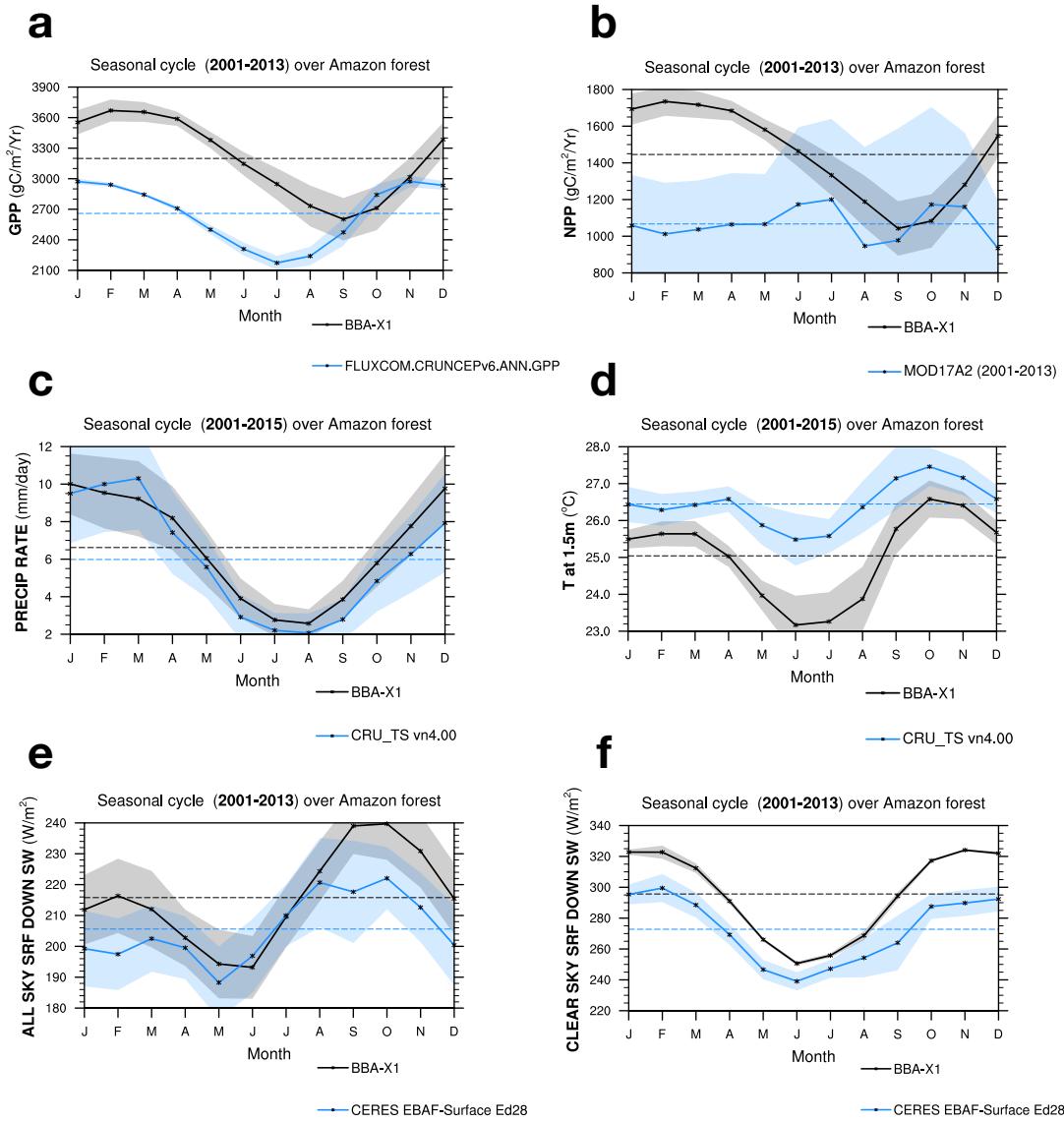
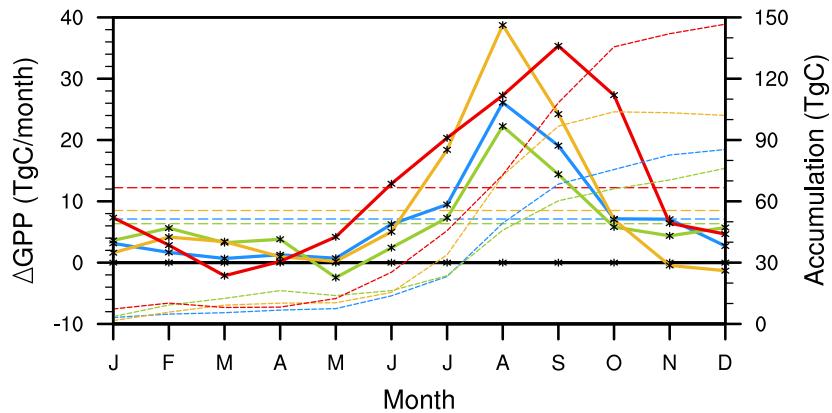


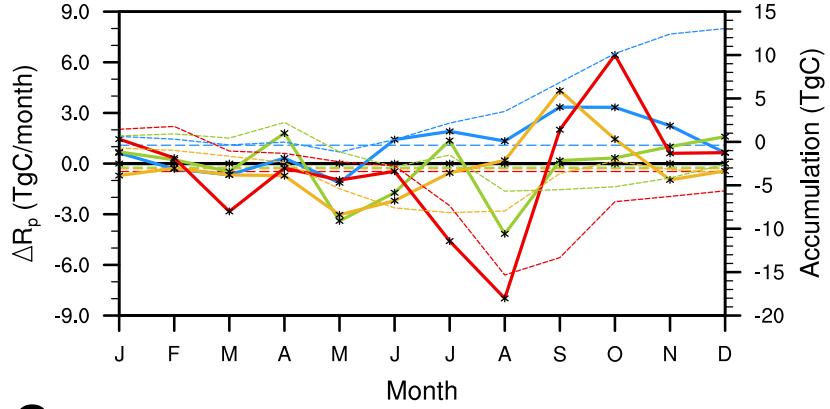
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a

Seasonal cycle (2001-2030) over central Amazon forest

**b**

Seasonal cycle (2001-2030) over central Amazon forest

**c**

Seasonal cycle (2001-2030) over central Amazon forest

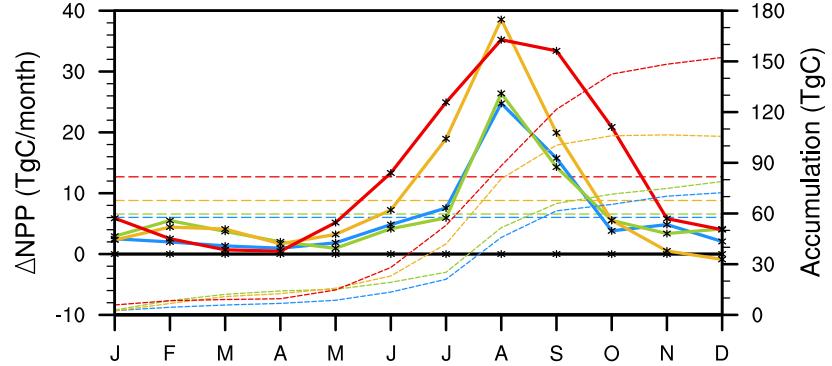


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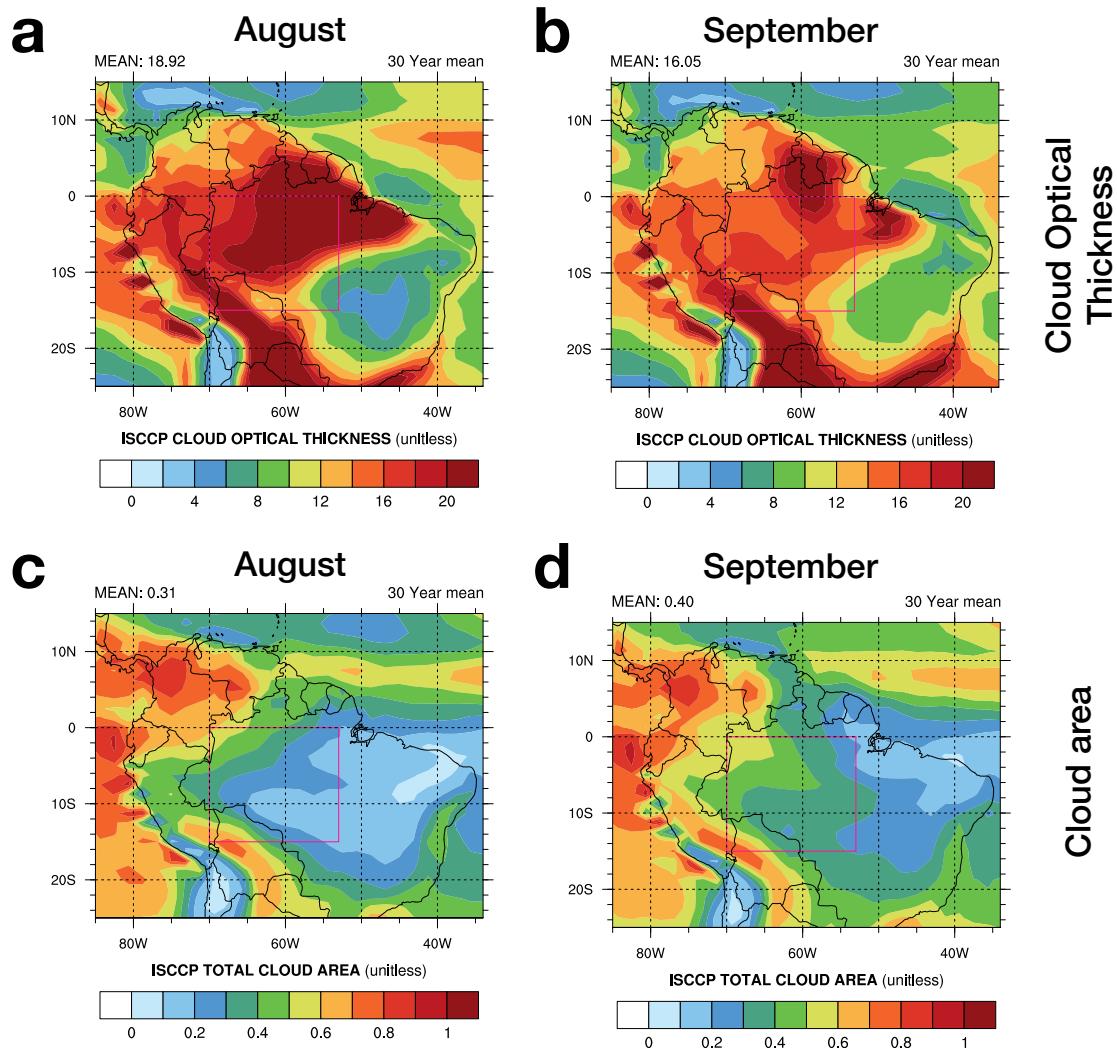


Figure S10: Showing the 30-year mean from the BBaX1 simulation of the in-cloud cloud optical thickness (a,b) and the total cloud fraction (c,d) for August (left) and September (right).

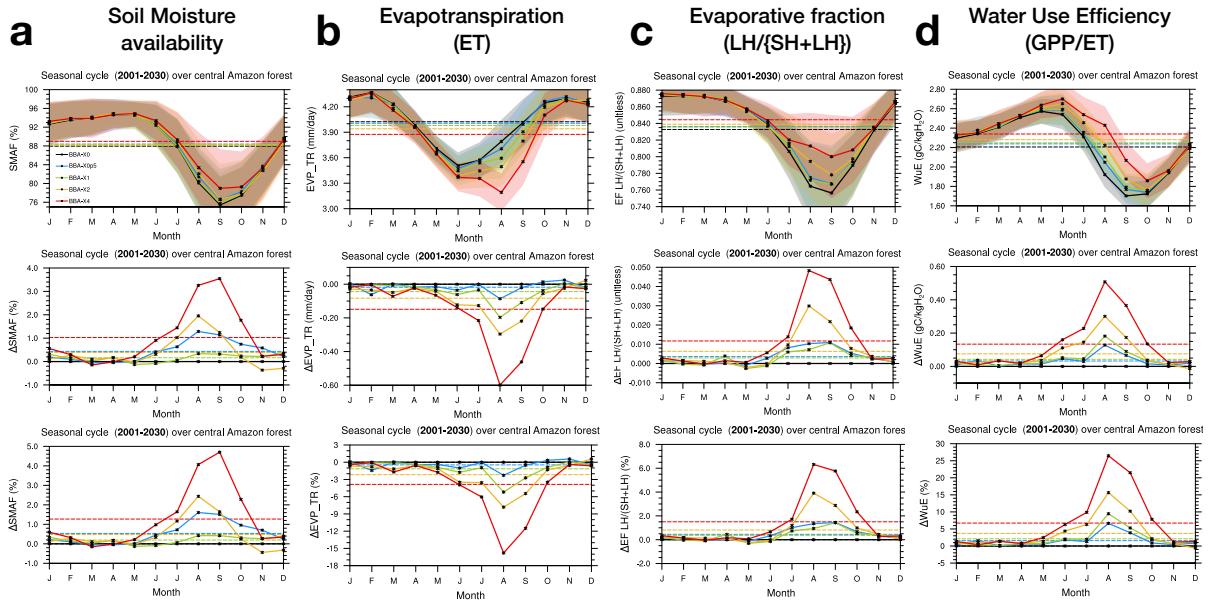


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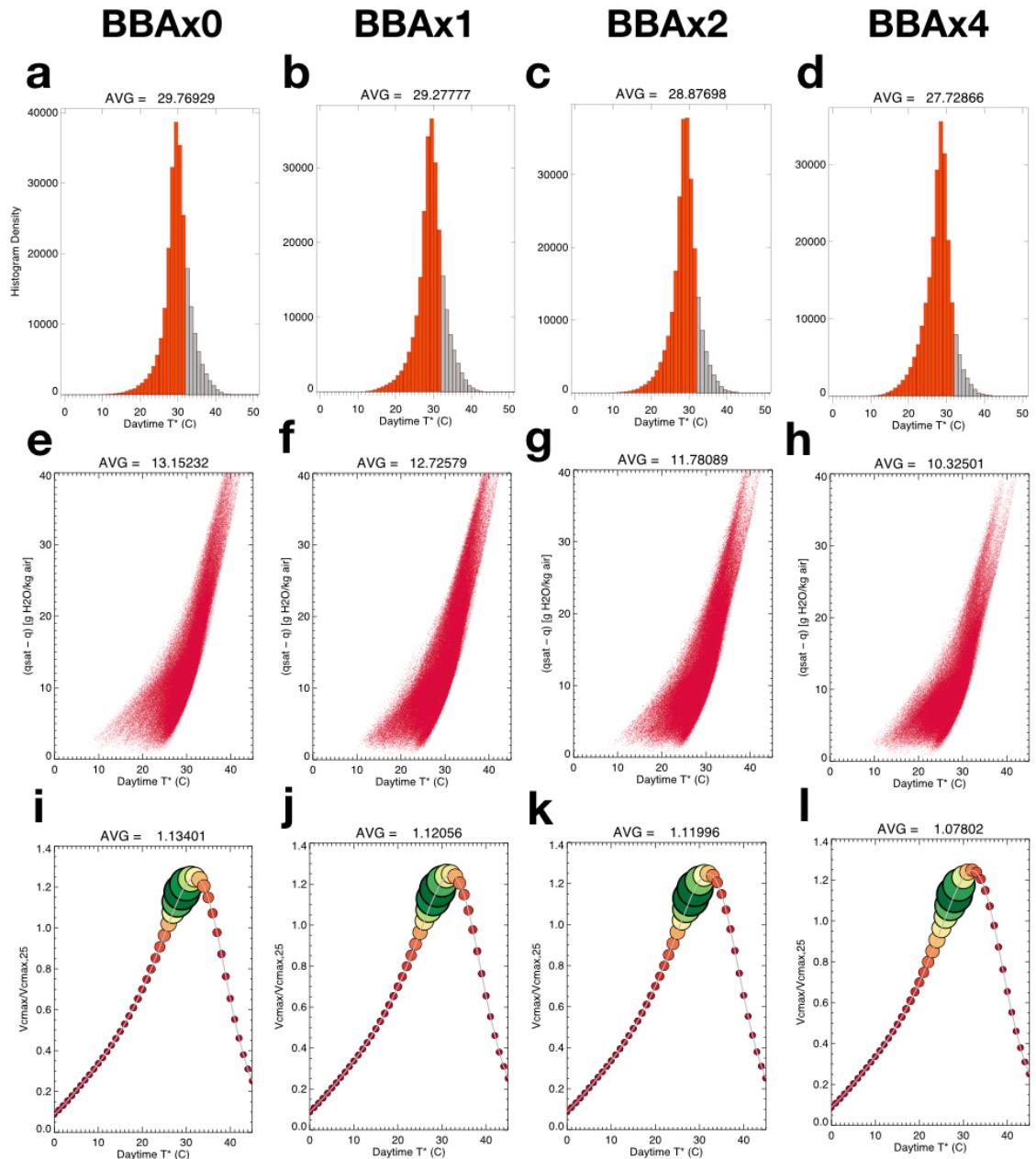


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