**Appendix A. Spinup simulation**

Before the model initialization a spinup simulation was perfomed to determine the initial carbon content in the plant compartments. This spinup was run until the stability attainment of the total biomass (i.e. the sum of carbon in all plant compartments; Eq. XXX) in all the grid cells (the aggregation process from individuals PFT/PLS to grid cells is described in section 2.2.2.), with a sensibility of 10% of difference between and . Thus, the initial amount of carbon (; kgCm-2; Eq. A1) in each plant compartment in an specific PFT or PLS in a given time :

(A1)

where (%, Table XXX; Table XXX) is the fraction of NPP allocated to a plant compartment in each PFT/PLS and (years; Table XXX; Table XXX) represents the carbon residence time in a compartment. Here, NPP is a potential NPP (; kgCm-2year-1) calculated from the model CPTEC Potential Vegetation Model 2 (CPTEC-PVM2; LAPOLA; OYAMA & NOBRE, 2009)⁠, a precursor model for CAETÊ. The potential NPP was calculated using the same climatology applyed to CAETÊ and it was necessary given that this version of the model is not dynamic.

**Appendix B. Physiological formulations**

(J C ; molCO 2 m -2 s -1 ; Eq. A2) (B1)

( J L ; molCO 2 m -2 s -1 ; Eq. A4) (B2)

(; molCO2m-2s-1; Eq. (B3))

(molCO2m-2s-1 ; Eq. (B4))

(Eq. (BXX)) and (Eq. (BXX)) A parte sun visa

representar a parte do dossel em que a radiação incide diretamente em um ângulo de 90o

em relação à superfície. Já a parte shade visa representar a parte sombreada do dossel, em

que o sol atinge a superfície em um ângulo de 20o representando a chegada de menos

radiação solar. A redução da radiação solar que atinge a parte sombreada se deve,

sobretudo, à absorção de grande parte dessa radiação pelas folhas da porção iluminada do

dossel.

(; mmH2Oday-1; Eq. (BXX))

(; dimensionless; Eq. (BXX))

LAIsun

LAIshade

temperatura do solo