Symbol	Value	Units	Description	Source(s)
τ_{veg}	10	years (converted into seconds)	biomass residence time	SimBA (all versions)
R_{d}	287.0	$\mathrm{J\,K^{-1}\,kg^{-1}}$	gas constant for dry air on Earth	–
ϵ_{max}	5.0×10^{-10}	$\mathrm{kg\,C\,J^{-1}}$	max. light use efficiency	model calibration
$\mathrm{CO2_{comp}}$	40	ppmv	CO_2 light compensation point	Franks et al. (2013)
T_{crit}	20	°C	temperature at which productivity limitation begins	see Sect. 2.2.3
k_{veg}	1	–	light extinction coefficient	see Sect. 2.2.3
Ω_{c}	0.7	–	clumping index	Pisek et al. (2010); He et al. (2012)
co2conv	4.15×10^{-7}	$\mathrm{kg\,C\,kg\,air^{-1}\,ppmv^{-1}}$	unit conversion factors	manipulation of Eq. (B7) from Raupach (1998)
$\frac{c_{\mathrm{i}}}{c_{\mathrm{a}}}$	0.80	–	ratio of intercellular to atmospheric CO_2	somewhat common daytime value for C3 plants
$r_{\mathrm{ss}}\mathrm{min}$	10	$\mathrm{s\,m^{-1}}$	minimum soil surface resistance	van de Griend and Owe (1994)
$r_{\mathrm{ss}}\mathrm{max}$	10^{30}	$\mathrm{s\,m^{-1}}$	maximum soil surface resistance	–
ρ_{w}	1000	$\mathrm{kg\,m^{-3}}$	density of liquid water	–
$f_{\mathrm{snow\,for}}$	0.12	–	snow-covered fraction of the forest cover	see Sect. 2.2.5
trmax	2.78×10^{-7}	$\mathrm{m\,s^{-1}}$	max. transpiration rate	Knorr (2000)
$r_{\mathrm{cmin_{min}}}$	0	$\mathrm{s\,m^{-1}}$	absolute min. canopy resistance	–
$r_{\mathrm{c}}\mathrm{max}$	10^{30}	$\mathrm{s\,m^{-1}}$	max. canopy resistance	–
c_8	≈ 43.3 (see Sect. 2.2.7)	–	for normalizing 10 °C soil respiration to that of SimBA	
c_9	106	K	for soil respiration	Jenkinson et al. (1990)
$\mathrm{LAI_{min}}$	0.05	–	min. leaf area index in wet soils	–
$\mathrm{LAI_{max}}$	7	–	max. leaf area index in wet soils	model calibration
c_6	0.195	$\mathrm{kg\,C^{-1}\,m^2}$	biomass to LAI conversion	model calibration
$W_{\mathrm{frac_{crit,lai}}}$	0.05	–	critical soil wetness fraction for commencement of leaf fall	model calibration
c_1	0.2	$\mathrm{kg\,C^{-1}\,m^2}$	biomass–forest-cover relationship	see Sect. 2.2.9
c_2	1.0	$\mathrm{kg\,C\,m^{-2}}$	biomass threshold for forest cover commencement	see Sect. 2.2.9
c_7	9	$\mathrm{kg\,C\,m^{-2}}$	soil organic carbon saturation value with respect to soil albedo	see Sect. 2.3.1
α_{sand}	0.32	–	sandy soil albedo	see Sect. 2.3.1
α_{peat}	0.12	–	albedo of organic-matter-rich soil	see Sect. 2.3.1
c_4	1.5	$\mathrm{kg\,C^{-1}\,m^2}$	shape parameter for snow-covered albedo	model calibration
c_5	1.5	$\mathrm{kg\,C\,m^{-2}}$	biomass threshold for snow masking	model calibration
$\alpha_{\mathrm{min\,deep\,snow\,flat}}$	0.40	–	albedo of warm, deep, pure snow	Roesch et al. (2001)
$\alpha_{\mathrm{max\,deep\,snow\,flat}}$	0.80	–	albedo of cold, deep, pure snow	Roeckner et al. (2003)
$\alpha_{\mathrm{max\,snow\,for}}$	0.30	–	maximum albedo of snow-covered forest	Moody et al. (2007)
c_{12}	0.10	$\mathrm{kg\,C^{1/2}}$	conversion of biomass into soil bucket depth	model calibration
$W_{\mathrm{max_{min}}}$	0.05	m	minimum soil bucket depth	see Sect. 2.3.2
$z_{0\mathrm{min}}$	0.01	m	surface roughness for bare soil	Oke (1987)
$z_{0\mathrm{const}}$	≈ 0.035	m	biomass–roughness relationship	see Sect. 2.3.3
c_{15}	8	$\mathrm{kg\,C\,m^{-2}}$	biomass–roughness relationship	model calibration
c_{16}	0.5	$\mathrm{kg\,C^{-1}\,m^2}$	biomass–roughness relationship	model calibration
c_{17}	2.5	m	$\approx$ surface roughness for fully forested land	typical value for tropical rain forests (Sellers et al., 1996b)