

Supplement of Geosci. Model Dev., 10, 2567–2590, 2017  
<https://doi.org/10.5194/gmd-10-2567-2017-supplement>  
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*Supplement of*

## **The carbon cycle in the Australian Community Climate and Earth System Simulator (ACCESS-ESM1) – Part 1: Model description and pre-industrial simulation**

**R. M. Law et al.**

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Table S1: Values of coefficients (a, b) in the regression between leaf v<sub>max</sub> and leaf nitrogen per unit leaf area. Values are based on Kattge et al. (2009) except for C4 grass.

Vegetation type	a	b	c
Evergreen needleleaf	6.32	18.15	0.80
Evergreen broadleaf	4.19	26.19	1.00
Deciduous needleleaf	6.32	18.15	2.00
Deciduous broadleaf	5.73	29.81	1.00
Shrub	14.71	23.15	1.00
C3 grass	6.42	40.96	1.00
C4 grass	2.00	8.00	0.50
Tundra	14.71	23.15	1.00
C3 crop	4.71	59.23	0.34
Wetland	14.71	23.15	1.00
Bare ground	14.71	23.15	1.00

Kattge, J., Knorr, W., Raddatz, T. and Wirth, C.: Quantifying photosynthetic capacity and its relationship to leaf nitrogen content for global-scale terrestrial biosphere models, *Glob. Change Biol.*, 15, 976-991, 2009.

## CABLE vegetation parameter file

Note that blocks of data have been removed for vegetation types that are not used (veg type = 10, 12, 13, 15). Not all parameters listed are used.

### CSIRO veg type parameters

```
17 ! number of vegetation types
1 forest evergreen_needleleaf ! veg number, type and name
17.0 0.01 0.001 0.055 0.0 ! canopy hgt(m), leaf angle, lf width(m), lf length(m), C4 fraction
0.062 0.302 0.010 0.160 0.390 0.010 ! rholeaf-vis, nir, therm, rhowood-vis, nir, therm
0.050 0.100 0.010 0.001 0.001 0.010 ! tauleaf-vis, nir, therm, tauwood-vis, nir, therm
0.100 0.225 0.020 1.00 ! rho soil-vis, nir, therm; xalbnir
8.6 1.0 0.10 2.0 9.0 0.001 ! LAImax(m2/m2), WoodAI(m2/m2), canst1, shelrb, vegcf, extkn
40.0e-6 3.0000 0.0832 1.0 ! vcmax(mol/m2/s), rp20, rpccoeff(/oC), rs20
-15 -10 2.0 0.943 ! tvjmin(oC), tvjmax(oC), vbeta, betaroot
200 10217 876 184 367 ! pool: leaf, wood, root, soilfast, soilslow (gC/m2)
1.0 0.03 0.14 2.0 0.5 ! rate: leaf, wood, root, soilfast, soilslow (/year)
2 forest evergreen_broadleaf
35.0 0.10 0.050 0.100 0.0 ! canopy hgt(m), leaf angle, lf width(m), lf length(m), C4 fraction
0.076 0.350 0.010 0.160 0.390 0.010 ! rholeaf-vis, nir, therm, rhowood-vis, nir, therm
0.050 0.250 0.010 0.001 0.001 0.010 ! tauleaf-vis, nir, therm, tauwood-vis, nir, therm
0.100 0.225 0.020 1.00 ! rho soil-vis, nir, therm; xalbnir
20.0 1.0 0.10 2.0 14.0 0.001 ! LAImax(m2/m2), WoodAI(m2/m2), canst1, shelrb, vegcf, extkn
55.0e-6 0.600 0.0832 1.0 ! vcmax(mol/m2/s), rp20, rpccoeff(/oC), rs20
-15 -10 2.0 0.962 ! tvjmin(oC), tvjmax(oC), vbeta, betaroot
300 16833 1443 303 606 ! pool: leaf, wood, root, soilfast, soilslow (gC/m2)
1.0 0.03 0.14 2.0 0.5 ! rate: leaf, wood, root, soilfast, soilslow (/year)
3 deciduous deciduous_needleleaf
15.5 0.01 0.001 0.040 0.0 ! canopy hgt(m), leaf angle, lf width(m), lf length(m), C4 fraction
0.056 0.275 0.010 0.160 0.390 0.010 ! rholeaf-vis, nir, therm, rhowood-vis, nir, therm
0.045 0.144 0.010 0.001 0.001 0.010 ! tauleaf-vis, nir, therm, tauwood-vis, nir, therm
0.100 0.225 0.020 1.00 ! rho soil-vis, nir, therm; xalbnir
4.6 1.0 0.10 2.0 9.00 0.001 ! LAImax(m2/m2), WoodAI(m2/m2), canst1, shelrb, vegcf, extkn
40.0e-6 3.0000 0.0832 1.0 ! vcmax(mol/m2/s), rp20, rpccoeff(/oC), rs20
5 10 2.0 0.966 ! tvjmin(oC), tvjmax(oC), vbeta, betaroot
200 5967 511 107 214 ! pool: leaf, wood, root, soilfast, soilslow (gC/m2)
1.0 0.03 0.14 2.0 0.5 ! rate: leaf, wood, root, soilfast, soilslow (/year)
4 deciduous deciduous_broadleaf
20.0 0.25 0.080 0.150 0.0 ! canopy hgt(m), leaf angle, lf width(m), lf length(m), C4 fraction
0.092 0.380 0.010 0.160 0.390 0.010 ! rholeaf-vis, nir, therm, rhowood-vis, nir, therm
0.050 0.250 0.010 0.001 0.001 0.010 ! tauleaf-vis, nir, therm, tauwood-vis, nir, therm
0.100 0.225 0.020 1.00 ! rho soil-vis, nir, therm; xalbnir
8.6 1.0 0.10 2.0 8.0 0.001 ! LAImax(m2/m2), WoodAI(m2/m2), canst1, shelrb, vegcf, extkn
60.0e-6 2.2000 0.0832 1.0 ! vcmax(mol/m2/s), rp20, rpccoeff(/oC), rs20
5 15 2.0 0.961 ! tvjmin(oC), tvjmax(oC), vbeta, betaroot
300 12000 1029 216 432 ! pool: leaf, wood, root, soilfast, soilslow (gC/m2)
1.0 0.03 0.14 2.0 0.5 ! rate: leaf, wood, root, soilfast, soilslow (/year)
5 shrub shrub
0.6 0.01 0.005 0.100 0.0 ! canopy hgt(m), leaf angle, lf width(m), lf length(m), C4 fraction
```

0.100	0.400	0.010	0.200	0.430	0.010	!	rholeaf-vis,nir,therm,	rhowood-vis,nir,therm
0.050	0.240	0.010	0.005	0.001	0.010	!	tauleaf-vis,nir,therm,	tauwood-vis,nir,therm
0.100	0.400	0.020	1.00			!	rholeaf-vis,nir,therm;	xalbnir
4.4	0.0	0.10	2.0	5.00	0.001	!	LAImax(m2/m2),WoodAI(m2/m2),canst1,shelrb,vegcf,extkn	
40.0e-6		1.0000	0.0832	1.0		!	vcmax(mol/m2/s),rp20,rpcoeff(/oC),rs20	
-15	-10	4.0	0.964			!	tvjmin(oC),tvjmax(oC),vbeta,betaroot	
159	5000	500	100	250		!	pool: leaf, wood, root, soilfast, soilslow (gC/m2)	
1.0	0.03	0.14	2.0	0.5		!	rate: leaf, wood, root, soilfast, soilslow (/year)	
6	grass	C3	grassland					
0.567	-0.30	0.010	0.300	0.0		!	canopy hgt(m),leaf angle,lf width(m),lf length(m),C4 fraction	
0.110	0.470	0.010	0.360	0.580	0.010	!	rholeaf-vis,nir,therm,	rhowood-vis,nir,therm
0.070	0.250	0.010	0.220	0.380	0.010	!	tauleaf-vis,nir,therm,	tauwood-vis,nir,therm
0.100	0.250	0.020	1.00			!	rholeaf-vis,nir,therm;	xalbnir
6.0	0.0	0.10	2.0	7.0	0.001	!	LAImax(m2/m2),WoodAI(m2/m2),canst1,shelrb,vegcf,extkn	
60.0e-6		1.5000	0.0832	1.0		!	vcmax(mol/m2/s),rp20,rpcoeff(/oC),rs20	
-15	-10	4.0	0.943			!	tvjmin(oC),tvjmax(oC),vbeta,betaroot	
250	0	500	275	314		!	pool: leaf, wood, root, soilfast, soilslow (gC/m2)	
1.0	0.03	0.14	2.0	0.5		!	rate: leaf, wood, root, soilfast, soilslow (/year)	
7	grass	C4	grassland					
0.567	-0.30	0.010	0.300	1.0		!	canopy hgt(m),leaf angle,lf width(m),lf length(m),C4 fraction	
0.100	0.400	0.010	0.360	0.580	0.010	!	rholeaf-vis,nir,therm,	rhowood-vis,nir,therm
0.100	0.150	0.010	0.220	0.380	0.010	!	tauleaf-vis,nir,therm,	tauwood-vis,nir,therm
0.100	0.250	0.020	1.00			!	rholeaf-vis,nir,therm;	xalbnir
6.0	0.0	0.10	2.0	7.00	0.001	!	LAImax(m2/m2),WoodAI(m2/m2),canst1,shelrb,vegcf,extkn	
10.0e-6		2.8000	0.0832	1.0		!	vcmax(mol/m2/s),rp20,rpcoeff(/oC),rs20	
-15	-10	4.0	0.943			!	tvjmin(oC),tvjmax(oC),vbeta,betaroot	
250	0	500	275	314		!	pool: leaf, wood, root, soilfast, soilslow (gC/m2)	
1.0	0.03	0.14	2.0	0.5		!	rate: leaf, wood, root, soilfast, soilslow (/year)	
8	grass	Tundra						
0.567	-0.30	0.010	0.300	0.0		!	canopy hgt(m),leaf angle,lf width(m),lf length(m),C4 fraction	
0.117	0.343	0.010	0.360	0.580	0.010	!	rholeaf-vis,nir,therm,	rhowood-vis,nir,therm
0.080	0.124	0.010	0.220	0.380	0.010	!	tauleaf-vis,nir,therm,	tauwood-vis,nir,therm
0.100	0.250	0.020	1.00			!	rholeaf-vis,nir,therm;	xalbnir
6.0	0.0	0.10	2.0	5.00	0.001	!	LAImax(m2/m2),WoodAI(m2/m2),canst1,shelrb,vegcf,extkn	
40.0e-6		2.5000	0.0832	1.0		!	vcmax(mol/m2/s),rp20,rpcoeff(/oC),rs20	
-15	-10	4.0	0.943			!	tvjmin(oC),tvjmax(oC),vbeta,betaroot	
250	0	500	275	314		!	pool: leaf, wood, root, soilfast, soilslow (gC/m2)	
1.0	0.03	0.14	2.0	0.5		!	rate: leaf, wood, root, soilfast, soilslow (/year)	
9	crop	C3	cropland					
0.55	-0.30	0.010	0.300	0.0		!	canopy hgt(m),leaf angle,lf width(m),lf length(m),C4 fraction	
0.100	0.400	0.010	0.327	0.548	0.010	!	rholeaf-vis,nir,therm,	rhowood-vis,nir,therm
0.100	0.150	0.010	0.184	0.317	0.010	!	tauleaf-vis,nir,therm,	tauwood-vis,nir,therm
0.100	0.225	0.020	1.00			!	rholeaf-vis,nir,therm;	xalbnir
6.0	0.0	0.10	2.0	7.00	0.001	!	LAImax(m2/m2),WoodAI(m2/m2),canst1,shelrb,vegcf,extkn	
80.0e-6		1.5000	0.0832	1.0		!	vcmax(mol/m2/s),rp20,rpcoeff(/oC),rs20	
-15	-10	2.0	0.961			!	tvjmin(oC),tvjmax(oC),vbeta,betaroot	
150	0	607	149	300		!	pool: leaf, wood, root, soilfast, soilslow (gC/m2)	
1.0	0.03	0.14	2.0	0.5		!	rate: leaf, wood, root, soilfast, soilslow (/year)	
11	wetgrass	wetland						
0.567	-0.30	0.010	0.300	0.0		!	canopy hgt(m),leaf angle,lf width(m),lf length(m),C4 fraction	
0.108	0.343	0.010	0.360	0.580	0.010	!	rholeaf-vis,nir,therm,	rhowood-vis,nir,therm

```

0.075 0.146 0.010 0.220 0.380 0.010 ! tauleaf-vis,nir,therm, tauwood-vis,nir,therm
0.100 0.225 0.020 1.00 ! rhoil-vis,nir,therm; xalbnir
  6.0 0.0 0.10 2.0 7.00 0.001 ! LAImax(m2/m2),WoodAI(m2/m2),canst1,shelrb,vegcf,extkn
60.00e-6 1.5000 0.0832 1.0 ! vcmax(mol/m2/s), rp20, rpccoeff(/oC), rs20
  -15 -10 4.0 0.943 ! tvjmin(oC), tvjmax(oC), vbeta, betaroot
    250 0 500 275 314 ! pool: leaf, wood, root, soilfast, soilslow (gC/m2)
1.0 0.03 0.14 2.0 0.5 ! rate: leaf, wood, root, soilfast, soilslow (/year)
14 noveg barren
  0.2 0.00 0.001 0.030 0.0 ! canopy hgt(m),leaf angle,lf width(m),lf length(m),C4 fraction
0.238 0.457 0.010 0.081 0.196 0.010 ! rhoil-vis,nir,therm, rhoil-vis,nir,therm
0.039 0.189 0.010 0.001 0.001 0.010 ! tauleaf-vis,nir,therm, tauwood-vis,nir,therm
0.100 0.151 0.020 1.00 ! rhoil-vis,nir,therm; xalbnir
  0.0 0.0 0.10 2.0 1.00 0.001 ! LAImax(m2/m2),WoodAI(m2/m2),canst1,shelrb,vegcf,extkn
  1.70e-5 1.0000 0.0832 0.0 ! vcmax(mol/m2/s), rp20, rpccoeff(/oC), rs20
  -15 -10 4.0 0.961 ! tvjmin(oC), tvjmax(oC), vbeta, betaroot
    0 0 0 1 1 ! pool: leaf, wood, root, soilfast, soilslow (gC/m2)
1.0 0.03 0.14 2.0 0.5 ! rate: leaf, wood, root, soilfast, soilslow (/year)
16 noveg lakes
  0.2 0.00 0.001 0.030 0.0 ! canopy hgt(m),leaf angle,lf width(m),lf length(m),C4 fraction
0.143 0.275 0.010 0.081 0.196 0.010 ! rhoil-vis,nir,therm, rhoil-vis,nir,therm
0.023 0.113 0.010 0.001 0.001 0.010 ! tauleaf-vis,nir,therm, tauwood-vis,nir,therm
0.100 0.225 0.020 1.00 ! rhoil-vis,nir,therm; xalbnir
  0.0 0.0 0.10 2.0 1.00 0.001 ! LAImax(m2/m2),WoodAI(m2/m2),canst1,shelrb,vegcf,extkn
  1.70e-5 1.0000 0.0832 0.0 ! vcmax(mol/m2/s), rp20, rpccoeff(/oC), rs20
  -15 -10 4.0 0.961 ! tvjmin(oC), tvjmax(oC), vbeta, betaroot
    1 0 1 1 1 ! pool: leaf, wood, root, soilfast, soilslow (gC/m2)
1.0 0.03 0.14 2.0 0.5 ! rate: leaf, wood, root, soilfast, soilslow (/year)
17 noveg ice
  0.2 0.00 0.001 0.030 0.0 ! canopy hgt(m),leaf angle,lf width(m),lf length(m),C4 fraction
0.159 0.305 0.010 0.081 0.196 0.010 ! rhoil-vis,nir,therm, rhoil-vis,nir,therm
0.026 0.113 0.010 0.001 0.001 0.010 ! tauleaf-vis,nir,therm, tauwood-vis,nir,therm
0.100 0.225 0.020 1.00 ! rhoil-vis,nir,therm; xalbnir
  0.0 0.0 0.10 2.0 1.00 0.001 ! LAImax(m2/m2),WoodAI(m2/m2),canst1,shelrb,vegcf,extkn
  1.70e-5 1.0000 0.0832 0.0 ! vcmax(mol/m2/s), rp20, rpccoeff(/oC), rs20
  -15 -10 4.0 0.961 ! tvjmin(oC), tvjmax(oC), vbeta, betaroot
    0 0 0 1 1 ! pool: leaf, wood, root, soilfast, soilslow (gC/m2)
1.0 0.03 0.14 2.0 0.5 ! rate: leaf, wood, root, soilfast, soilslow (/year)

```

## CABLE biogeochemistry parameter file

Note that blocks of data have been removed which were not used in the ACCESS-ESM1 configuration (e.g. initial pool values which are only required if no restart file is available). Lines from each block of data have been removed for vegetation types that are not used (veg type = 10, 12, 13, 15). Not all parameters listed are used.

CSIRO vegetation type

CSIRO (ice,water,urban:0)/grass:1/shrub:2/woody:3

CSIRO type

1 3 Evergreen Needleleaf Forest  
 2 3 Evergreen Broadleaf Forest  
 3 3 Deciduous Needleleaf Forest  
 4 3 Deciduous Broadleaf Forest  
 5 2 shrub  
 6 1 C3 grass  
 7 1 C4 grass  
 8 2 tundra  
 9 1 C3 crop  
 11 0 wetland  
 14 0 barren  
 16 0 lakes  
 17 0 ice

nv1	Kroot	rootdep	kupt	Krootlen	KminN	Kuplabp	FracHerb	LeafAge	WoodAge	RootAge	MetAge	StrAge	CwdAge	MicAge	SlowAge	PassAge	klabile	SLA
	1/m	m		m/g C	gN/m2	gP/m2		year	year	year	year	year	year	year	year	year	year	m2/gc
1	5.5	1.5	2	14.87805	2	0.5	0.068	3	70	18	0.04	0.23	0.824	0.137	5	222.22	0.2	0.007179
2	3.9	1.5	1.9	14.38596	2	0.5	0.406	2	60	10	0.04	0.23	0.824	0.137	5	222.22	0.2	0.015319
3	5.5	1.5	2	14.02597	2	0.5	0.068	0.499772	80	10	0.04	0.23	0.824	0.137	5	222.22	0.2	0.023103
4	3.9	1.5	2	18.94737	2	0.5	0.134	0.517723	40	10	0.04	0.23	0.824	0.137	5	222.22	0.2	0.026465
5	2	0.5	1.8	32.30769	2	0.5	0.022	1.439682	40	5	0.04	0.23	0.824	0.137	5	222.22	0.2	0.00992
6	5.5	0.5	2	84	2	0.5	0.109	0.5	1	3	0.04	0.23	0.824	0.137	5	222.22	0.2	0.02959
7	5.5	0.5	2	84	2	0.5	0.109	0.5	1	3	0.04	0.23	0.824	0.137	5	222.22	0.2	0.022418
8	5.5	0.5	2	84	2	0.5	0.109	0.75	1	3	0.04	0.23	0.824	0.137	5	222.22	0.2	0.026704
9	5.5	0.5	1.6	120.5	2	0.5	0.14	0.37	1	0.884227	0.04	0.23	0.824	0.137	5	222.22	0.2	0.02959
11	5.5	0.5	1.6	0	2	0.5	0	1	1	1	0.04	0.23	0.824	0.137	5	222.22	0.2	0.02
14	2	0.5	1.8	30.76923	2	0.5	0.01	0.460803	5	4	0.04	0.23	0.824	0.137	5	222.22	0.2	0.024471
16	5.5	1.5	1.8	0	2	0.5	0	1	1	1	0.04	0.23	0.824	0.137	5	222.22	0.2	0.02
17	5.5	0.5	1.8	0	2	0.5	0	1	1	1	0.04	0.23	0.824	0.137	5	222.22	0.2	0.02

NV2	Calloc_l	Calloc_w	Calloc_f	rmleaf	rmwood	rmfroot	rmclabile
	Fraction	fraction	fraction	1/year	1/year	1/year	1/year
1	0.3	0.4	0.3	0.1	2	10	0.5
2	0.25	0.35	0.4	0.1	1.5	2	0.5
3	0.4	0.3	0.3	0.1	1.5	7.5	0.5
4	0.45	0.25	0.3	0.1	0.8	2.5	0.5
5	0.45	0.25	0.3	0.1	0.5	4.5	0.5
6	0.5	0	0.5	0.1	0.5	4.5	0.5
7	0.5	0	0.5	0.1	0.4	4	0.5
8	0.55	0.1	0.35	0.1	1.8	4.5	0.5
9	0.7	0	0.3	0.1	2	5	0.5
11	0.5	0	0.5	0.1	1	10	0.5
14	0.25	0.25	0.5	0.1	1	0.5	0.5
16	0.6	0.4	0	0.1	1	10	0.5
17	0.5	0	0.5	0.1	1	10	0.5

nv3	C:N leaf	wood	froot	Ntr_l	Ntr_w	Ntr_frt	lignin_l	lignin_CWD	lignin_frt	mic	slow	pass	mic	slow	pass	mic	slow	pass	Laimax	Laimin
	gC/gN	gC/gN	gC/gN	frac	frac	frac	g	gC/gN	gC/gN	gC/gN	gC/gN	gC/gN	gC/gN	gC/gN	gC/gN	gC/gN	gC/gN	gC/gN	m2/m2	m2/m2
1	49.8	238.1	73.7	0.5	0.95	0.9	0.25	0.4	0.25	8	16.1	16.1	3	12	7	15	30	15	7	1
2	23.1	134.9	61.2	0.5	0.95	0.9	0.2	0.4	0.2	8	12.8	12.8	3	12	7	15	30	15	7	1

3	59.3	243.8	75	0.5	0.95	0.9	0.2	0.4	0.2	8	24.8	24.8	3	12	7	15	30	15	7	0.5
4	31.4	156.2	63.2	0.5	0.95	0.9	0.2	0.4	0.2	8	30	30	3	12	7	15	30	15	7	0.5
5	37.6	142.1	67.1	0.5	0.95	0.9	0.2	0.4	0.2	8	19.3	19.3	3	12	7	15	30	15	3	0.1
6	34.8	150	64.5	0.5	0.95	0.9	0.1	0.4	0.1	8	13.1	13.1	3	12	7	15	30	15	3	0.1
7	44	150	62.7	0.5	0.95	0.9	0.1	0.4	0.1	8	13.1	13.1	3	12	7	15	30	15	3	0.1
8	49.2	147.3	69	0.5	0.95	0.9	0.1	0.4	0.1	8	13.1	13.1	3	12	7	15	30	15	3	0.1
9	21.6	150	60.7	0.5	0.95	0.9	0.1	0.4	0.1	8	13.2	13.2	3	12	7	15	30	15	6	0.1
11	30	150	71	0.5	0.95	0.9	0.15	0.4	0.15	8	13.1	13.1	3	12	7	15	30	15	5	0.05
14	50	150	71	0.5	0.95	0.9	0.15	0.4	0.15	8	26.8	26.8	3	12	7	15	30	15	1	0.05
16	40	135	71	0.5	0.95	0.9	0.25	0.4	0.25	8	20	20	3	12	7	15	30	15	1	0.05
17	40	150	71	0.5	0.95	0.9	0.1	0.4	0.1	8	20	20	3	12	7	15	30	15	0	0

	N/Cleafmin gN/gC	N/Cleafmax gN/gC	N/Cwoodmin gN/gC	N/Cwoodmax gN/gC	N/Cftrtmin gN/gC	N/Cftrtmax gN/gC	xNminloss fraction	xNleach 1/year	nfixrate gN/m2/yr
1	0.02	0.024	0.004	0.0048	0.012820513	0.015384615	0.05	0.05	0.08
2	0.04	0.048	0.006666667	0.008	0.014705882	0.017647059	0.05	0.05	2.6
3	0.016666667	0.02	0.004	0.0048	0.012820513	0.015384615	0.05	0.05	0.21
4	0.028571429	0.034285714	0.005714286	0.006857143	0.014084507	0.016901408	0.05	0.05	1.64
5	0.025	0.03	0.006666667	0.008	0.014084507	0.016901408	0.05	0.05	0.37
6	0.026315789	0.031578947	0.006666667	0.008	0.014084507	0.016901408	0.05	0.05	0.95
7	0.02	0.024	0.006666667	0.008	0.014084507	0.016901408	0.05	0.05	0.95
8	0.02	0.024	0.006666667	0.008	0.014084507	0.016901408	0.05	0.05	0.95
9	0.04	0.048	0.008	0.0096	0.014084507	0.016901408	0.05	0.05	4
11	0.033333333	0.04	0.006666667	0.008	0.014084507	0.016901408	0.05	0.05	0
14	0.018181818	0.022222222	0.006666667	0.008	0.014084507	0.016901408	0.05	0.05	0.35
16	0.025	0.03	0.007407407	0.008888889	0.014084507	0.016901408	0.05	0.05	0
17	0.025	0.03	0.006666667	0.008	0.014084507	0.016901408	0.05	0.05	0

	N/Pleafmin gN/gP	N/Pleafmax gN/gP	N/Pwdmin gN/gP	N/Pwdmax gN/gP	N/Pftrtmin gN/gP	N/Pftrtmax gN/gP	fpptoL:leaf fraction	wood fraction	froot fraction	(leaf N:P ratio was optimized)
1	10.92308	12.07288	20.30167	22.43869	20.29341	22.42955	0.5	0.95	0.9	
2	15.95339	17.6327	15.89425	17.56733	15.87155	17.54224	0.5	0.95	0.9	
3	9.254839	10.22903	17.48344	19.3238	17.39767	19.229	0.5	0.95	0.9	
4	12.73848	14.07938	19.08018	21.08862	19.0601	21.06643	0.5	0.95	0.9	
5	12.07217	13.34292	22.46035	24.8246	22.49363	24.86138	0.5	0.95	0.9	
6	13.51473	14.93733	15	15	15.63498	17.28077	0.5	0.95	0.9	
7	14.05	15.52895	15	15	16.08255	17.77545	0.5	0.95	0.9	
8	12.578	13.902	15.96	17.64	14.49241	16.01793	0.5	0.95	0.9	
9	15.12262	16.71447	20.52	20.52	22.69109	25.07962	0.5	0.95	0.9	
11	13	13	15	15	15	15	0.5	0.95	0.9	
14	16.2336	17.9424	17.5275	19.3725	22.13268	24.46244	0.5	0.95	0.9	
16	10	10	15	15	15	15	0.5	0.95	0.9	
17	10	10	15	15	15	15	0.5	0.95	0.9	

soilorder	xkmlabp gP/m2	xpsorbmax gP/m2	xfpleach no dimen	N:P soil mic	slow	pass
1	74.5408	745.408	0.0005	4	5	5
2	68.1584	788.0815	0.0005	4	5	5
3	77.952	1110.816	0.0005	4	5	5
4	64.41918	744.847	0.0005	4	15	15
5	64.41918	744.847	0.0005	4	5	5
6	70.5856	816.146	0.0005	4	5	5
7	64.5888	746.8081	0.0005	4	5	5
8	54.1692	722.256	0.0005	4	5	5
9	9.7704	293.112	0.0005	4	7	7
10	28.29	311.19	0.0005	4	7	7
11	63.963	373.1175	0.0005	4	7	7
12	32.402	615.6381	0.0005	4	7	7

Supplementary Figure

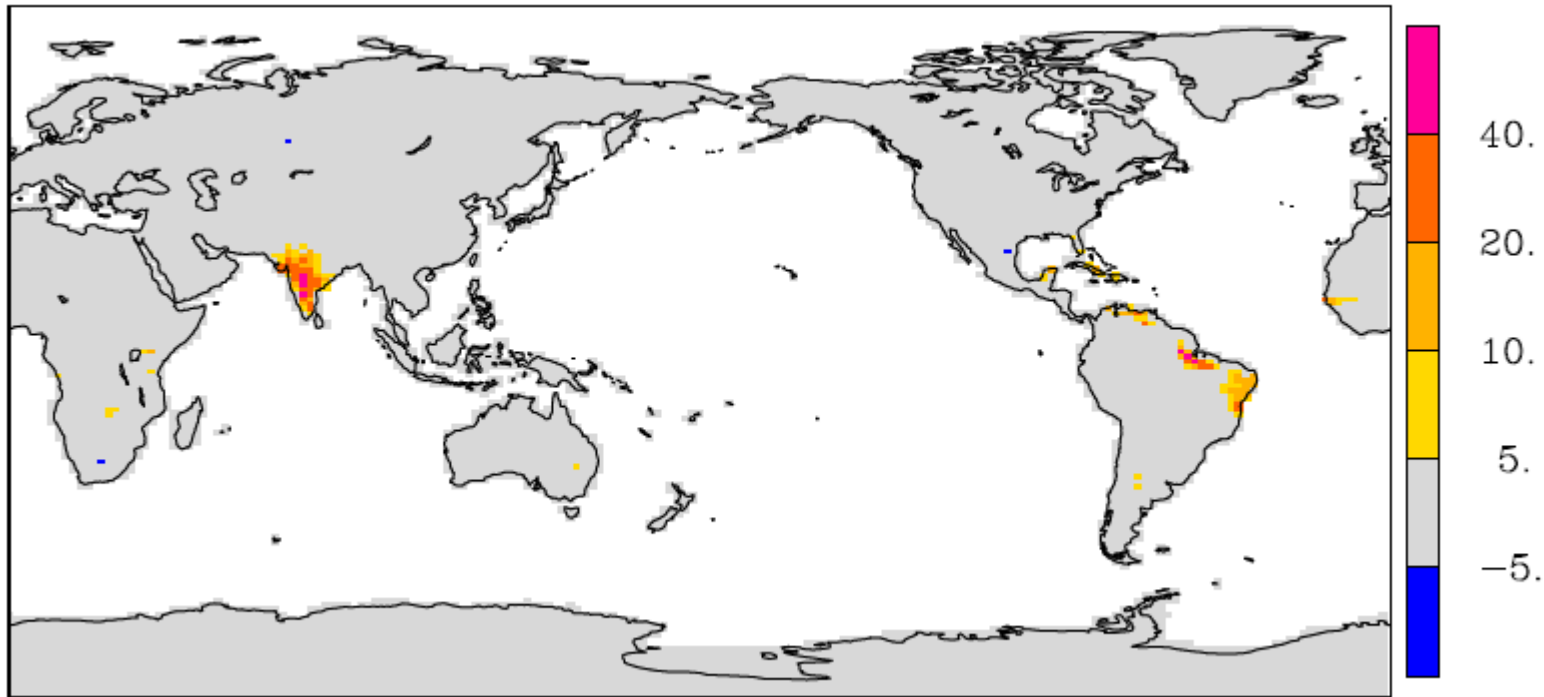


Figure S1: Year 501-1000 mean net ecosystem exchange (NEE) in  $\text{gCm}^{-2}\text{yr}^{-1}$ . Large imbalances are due to non-conservation of land carbon rather than slow carbon flux equilibration.