Supplement of Atmos. Chem. Phys., 21, 14177–14197, 2021
https://doi.org/10.5194/acp-21-14177-2021-supplement

Atmospheric Chemistry and Physics
Open Access
EGU

Supplement of

The response of the Amazon ecosystem to the photosynthetically active radiation fields: integrating impacts of biomass burning aerosol and clouds in the NASA GEOS Earth system model

Huisheng Bian et al.

Correspondence to: Huisheng Bian (huisheng.bian@nasa.gov)

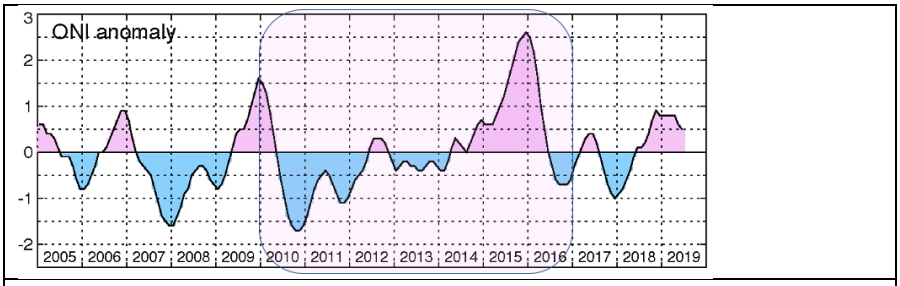

Figure S1. Ocean Niño Index (ONI) anomaly, Jan 2004-July 2019. Source: https://origin.cpc.ncep.noaa.gov/. El Nino or La Nina is identified when the ONI anomaly exceeds ±0.5° C for at least five consecutive months. The study period (2010-2016) covers La Niña (2010-2011), normal (2012-2014), and El Niño years (2015-2016).

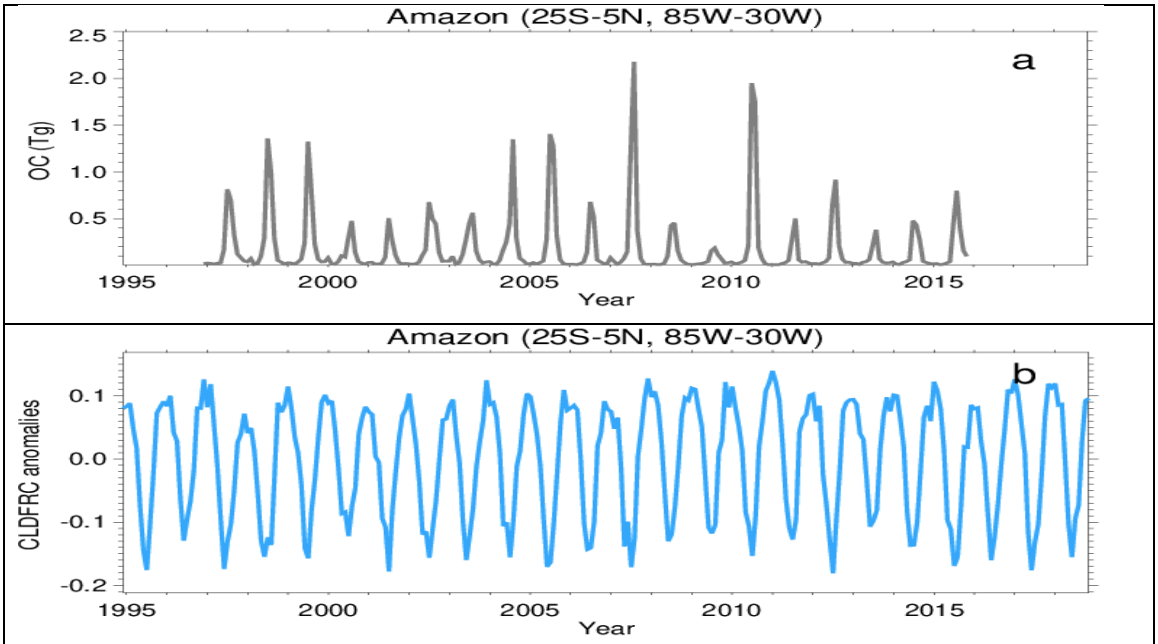

Figure S2. (a) GFED4.1s monthly biomass burning OC emission during 1997-2016 over the Amazon region. The year 2010 has a second largest emission and 2013 has a second lowest emission during the years when GFED4.1s has emission record. (b) MERRA2 monthly cloud fraction anomalies over the Amazon region during 1995-2018. The cloud fraction was highest in December 2010 and lowest in July 2012.

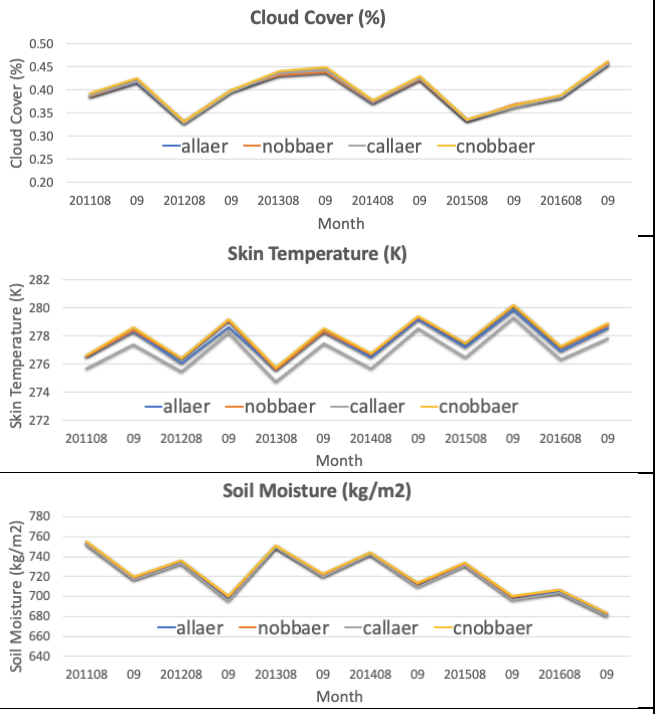

Figure S3: Cloud cover, skin temperature, and soil moisture during 2011-2016 over the Amazon region from all pari1 and pari2 experiments.

9

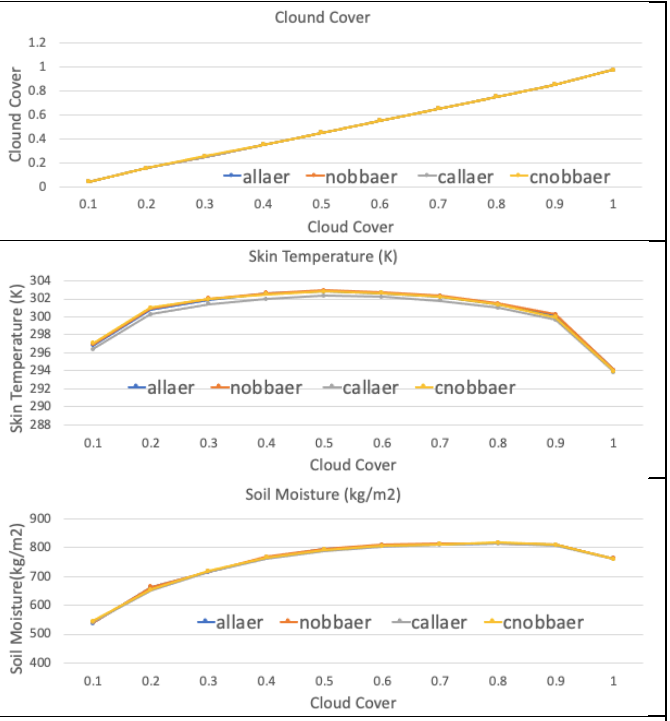

Figure S4: Cloud cover, skin temperature, and soil moisture over the Amazon region, which are sorted out based on the values of grid box cloud fraction on a daily basis during the Aug-Sept 2013, from all the pair1 and pair2 experiments.

10

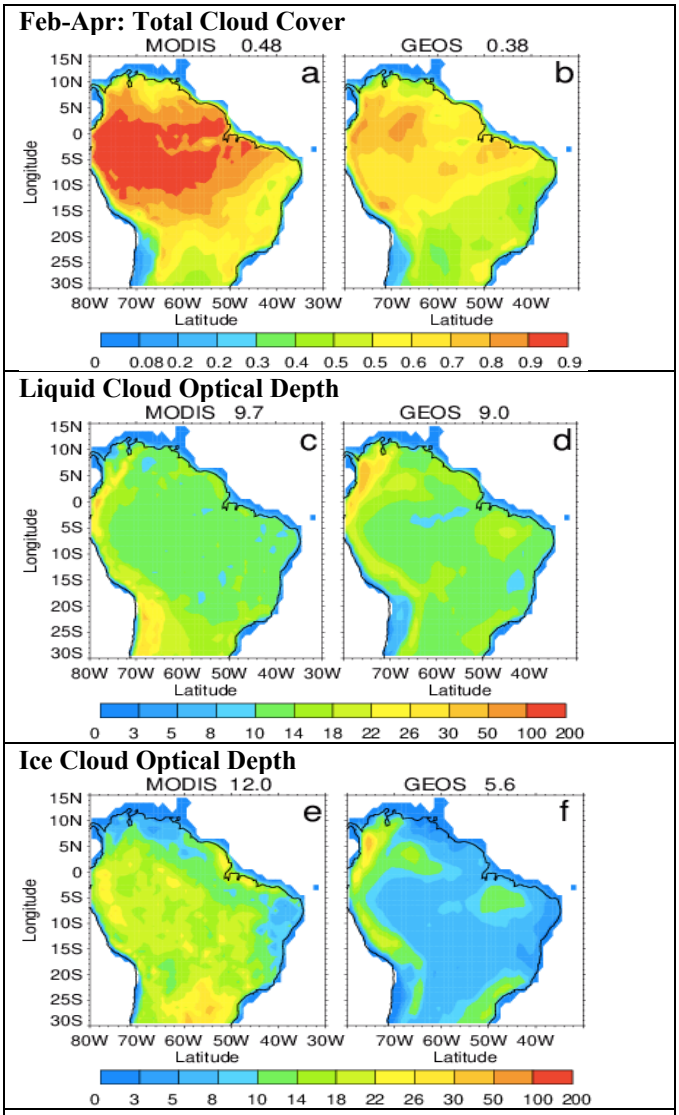

Figure S5a. Multiyear seasonal (Feb-Apr, 2010-2016) cloud field comparison between MODIS retrieved (a,c,e) and GEOS simulated (b, d, f) total cloud cover (a,b), liquid cloud optical depth (c, d), and ice cloud optical depth (e, f).

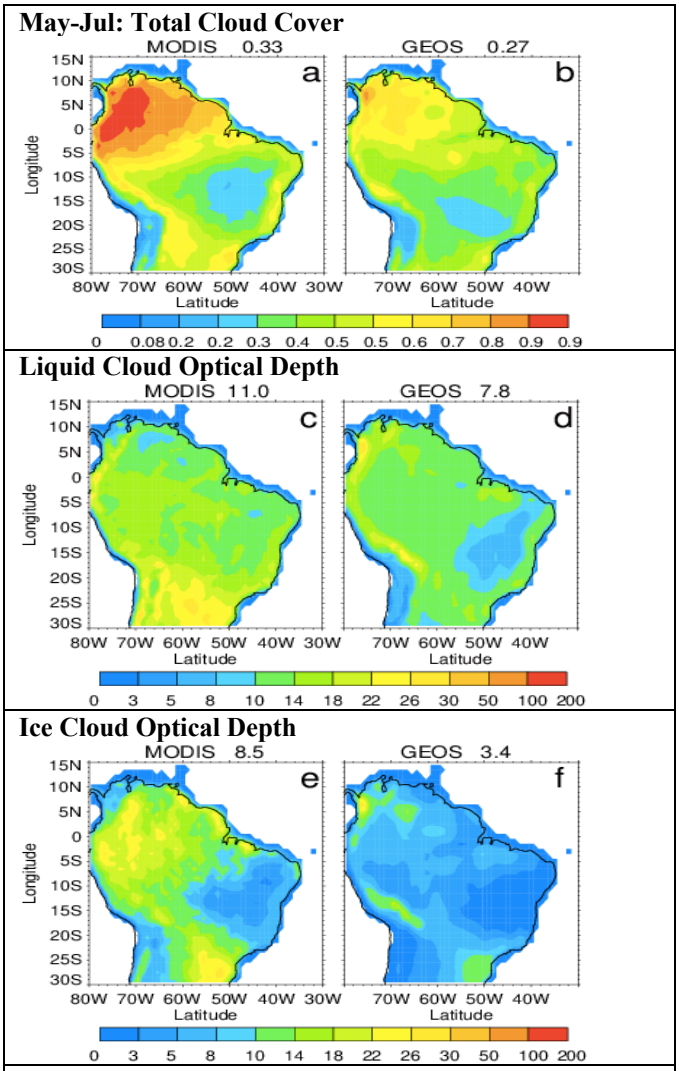

Figure S5b. Multiyear seasonal (May-Jul, 2010-2016) cloud field comparison between MODIS retrieved (a,c,e) and GEOS simulated (b, d, f) total cloud cover (a,b), liquid cloud optical depth (c, d), and ice cloud optical depth (e, f).

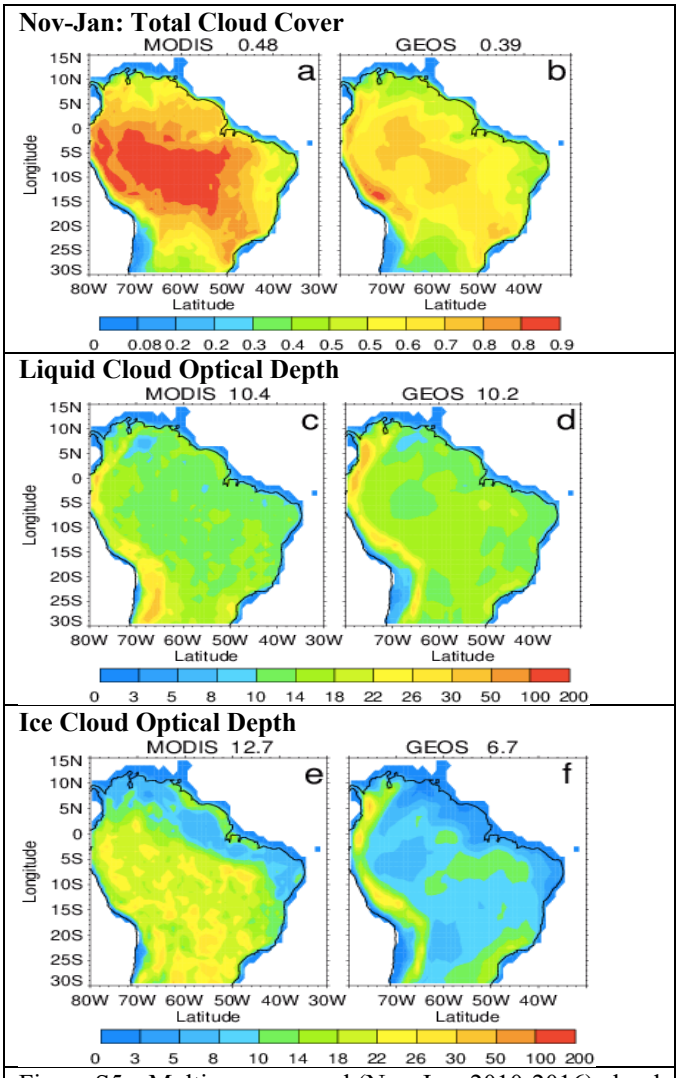

Figure S5c. Multiyear seasonal (Nov-Jan, 2010-2016) cloud field comparison between MODIS retrieved (a,c,e) and GEOS simulated (b, d, f) total cloud cover (a,b), liquid cloud optical depth (c, d), and ice cloud optical depth (e, f).

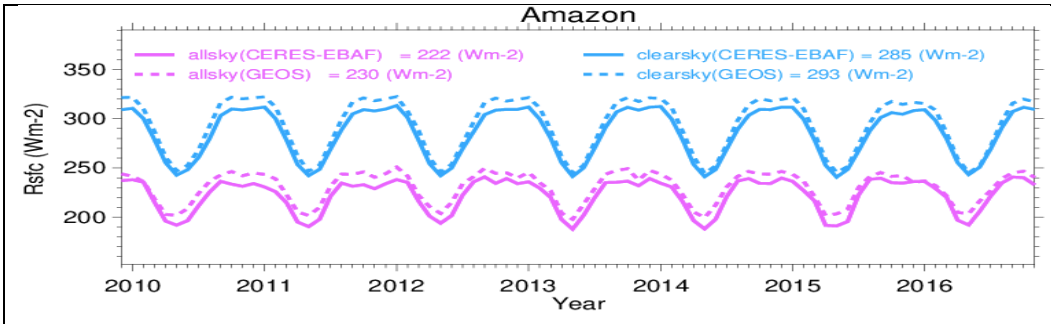

Figure S6. The model-CERES shortwave surface downward radiation (Rsfc, W m^{-2}) comparison for 2010-2016 monthly mean time series over the Amazon region. The values given in legend are the multiyear average Rsfcs from the model and observation for all-sky and clear-sky conditions.

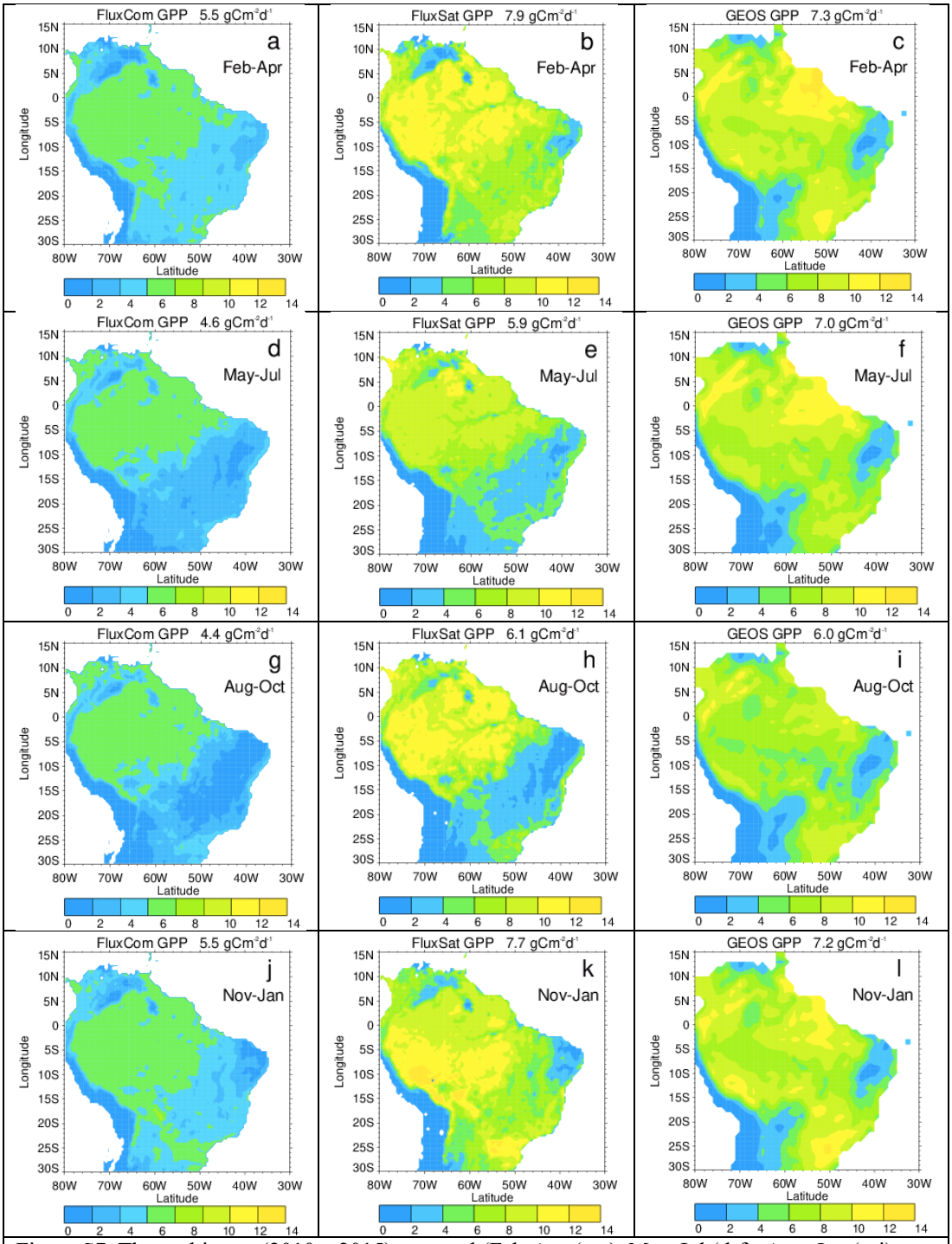

Figure S7. The multi-year (2010 – 2015) seasonal (Feb-Apr (a-c), May-Jul (d-f), Aug-Oct (g-i), and Nov-Jan (j-l)) mean Amazon GPP from FluxCom (a, d, g, j) (Jung et al., 2020), FluxSat (b, e, h, k) (Joiner et al., 2018) and the GEOS ecosystem simulation (c, f, i, l) with unit of gC m^{-2} day^{-1}. The Amazon regional average value is shown in the top.

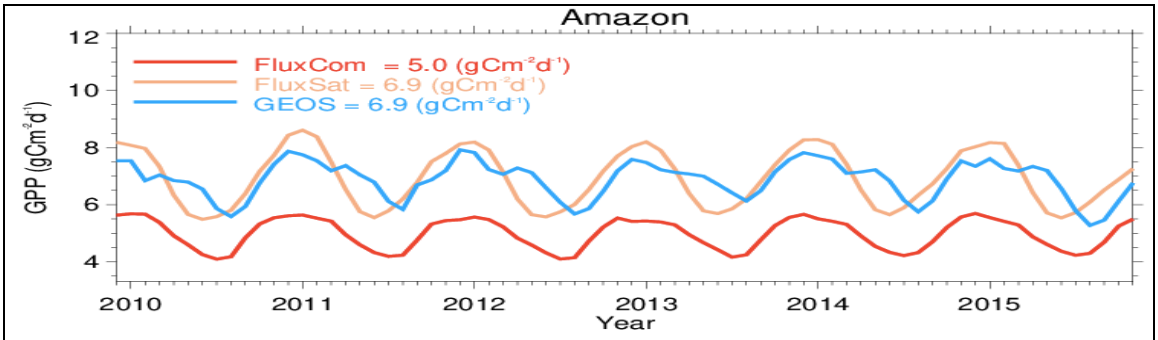

Figure S8. The GPP comparison for 2010-2015 monthly mean time series over the Amazon region among FluxCom, FluxSat, and GEOS. The multiyear average GPP (gC m^{-2} d^{-1}) are given in legend.

Table S1a. monthly data of DRPAR, DFPAR, GPP, CLDFRC, BBAOD from a pair of experiments (allaer vs nobbaer) at the clear sky conditions during 2010-2016.

Clear Sky													
Year	Mon	GPP			DRPAR			DFPAR			CLDFRC	BBAOD	Frequency*
		Pg/Amazon/mon		%	W/m^2		%	W/m^2		%			
		nobbaer	allaer	diff	nobbaer	allaer	diff	nobbaer	allaer	diff	allaer	allaer	
2010	8	1.05	1.28	22.4	96.3	76.6	-20.5	26.4	31.9	20.8	0.04	0.229	0.121
	9	0.63	0.73	17.4	108.4	90.9	-16.1	27.6	33.1	19.8	0.04	0.177	0.088
2011	8	1.05	1.07	1.8	95.2	93.3	-2.0	25.4	26.2	3.3	0.05	0.015	0.109
	9	0.69	0.73	6.8	107.9	100.9	-6.5	26.7	29.5	10.7	0.04	0.057	0.094
2012	8	1.14	1.19	4.2	97.6	93.4	-4.3	24.2	26.0	7.3	0.04	0.032	0.161
	9	0.78	0.85	8.6	106.5	95.3	-10.5	28.6	32.6	14.0	0.05	0.101	0.089
2013	8	0.93	0.96	2.9	98.7	96.1	-2.7	24.1	25.3	5.0	0.04	0.020	0.086
	9	0.74	0.77	4.1	110.8	105.7	-4.7	27.3	29.6	8.4	0.04	0.038	0.082
2014	8	1.00	1.05	5.0	96.3	90.8	-5.8	25.3	27.5	8.6	0.04	0.048	0.125
	9	0.77	0.80	4.2	107.0	102.2	-4.5	27.3	29.3	7.5	0.05	0.038	0.074
2015	8	1.03	1.06	3.6	94.2	90.0	-4.4	25.8	27.5	6.4	0.04	0.037	0.153
	9	0.74	0.79	7.3	104.9	96.0	-8.5	29.8	33.2	11.2	0.04	0.077	0.119
2016	8	0.95	1.00	5.5	93.6	87.3	-6.7	25.4	27.9	9.8	0.04	0.055	0.135
	9	0.54	0.58	6.8	105.9	97.9	-7.5	27.5	30.7	11.9	0.04	0.066	0.072

*Frequency: the occurrence frequency of clear sky condition over the Amazon region in the interested period

Table S1b. similar as Table S1a but at cloudy sky condition with CLDFRC between 0.1-0.3.

CLDFRC: 0.1-0.3													
Year	Mon	GPP			DRPAR			DFPAR			CLDFRC	BBAOD	Frequency
		Pg/Amazon/mon		%	W/m^2		%	W/m^2		%			
		nobbaer	allaer	diff	nobbaer	allaer	diff	nobbaer	allaer	diff	allaer	allaer	
2010	8	1.50	1.71	14.5	91.9	75.5	-17.8	28.2	33.3	18.2	0.19	0.210	0.194
	9	0.99	1.13	13.4	100.7	85.6	-15.0	30.2	35.0	15.9	0.19	0.181	0.148
2011	8	1.58	1.61	1.6	91.0	89.1	-2.1	28.4	29.2	2.9	0.19	0.019	0.213
	9	1.26	1.32	4.3	99.7	94.0	-5.8	31.3	33.7	7.7	0.19	0.059	0.171
2012	8	1.64	1.73	5.1	92.4	86.8	-6.1	27.8	30.2	8.4	0.19	0.055	0.264
	9	1.25	1.33	6.8	100.2	90.8	-9.4	31.6	35.1	11.2	0.19	0.101	0.189
2013	8	1.53	1.56	1.9	91.1	89.0	-2.3	27.8	28.7	3.4	0.19	0.019	0.189
	9	1.32	1.36	3.0	101.1	97.2	-3.8	30.8	32.6	5.7	0.19	0.038	0.173
2014	8	1.61	1.67	3.9	90.4	85.0	-6.0	29.1	31.3	7.5	0.19	0.058	0.217
	9	1.22	1.26	3.4	98.4	93.8	-4.6	31.4	33.4	6.2	0.19	0.046	0.198
2015	8	1.57	1.61	2.9	88.2	83.9	-4.9	29.9	31.6	5.8	0.19	0.047	0.237
	9	1.27	1.34	5.5	96.7	88.9	-8.0	33.7	36.6	8.5	0.19	0.088	0.192
2016	8	1.38	1.45	4.8	89.1	82.7	-7.1	29.4	31.8	8.4	0.19	0.072	0.197
	9	1.06	1.13	6.2	99.2	91.7	-7.6	31.3	34.3	9.6	0.19	0.080	0.155

Table S1c. similar as Table S1a but at cloudy sky condition with CLDFRC between 0.3-0.6.

CLDFRC: 0.3-0.6													
Year	Mon	GPP			DRPAR			DFPAR			CLDFRC	BBAOD	Frequency
		Pg/Amazon/mon		%	W/m^2		%	W/m^2		%			
		nobbaer	allaer	diff	nobbaer	allaer	diff	nobbaer	allaer	diff	allaer	allaer	
2010	8	1.87	2.05	9.9	79.5	67.5	-15.1	32.1	35.4	10.5	0.41	0.199	0.336
	9	1.53	1.67	9.3	86.1	73.8	-14.4	36.1	39.5	9.4	0.42	0.210	0.322
2011	8	1.96	1.99	1.5	77.6	75.8	-2.3	33.6	34.3	2.1	0.41	0.023	0.357
	9	1.67	1.72	3.1	83.7	79.0	-5.6	36.1	37.9	5.1	0.41	0.066	0.337
2012	8	1.95	2.03	4.3	77.1	71.5	-7.2	33.1	35.2	6.4	0.40	0.075	0.338
	9	1.61	1.68	4.4	83.0	75.3	-9.2	36.7	39.3	7.2	0.41	0.120	0.353
2013	8	2.03	2.06	1.5	76.5	74.9	-2.1	33.4	34.1	2.1	0.41	0.021	0.372
	9	1.75	1.79	1.9	81.6	78.5	-3.8	36.6	37.8	3.5	0.42	0.046	0.353
2014	8	1.94	1.99	2.7	76.3	72.4	-5.2	33.8	35.3	4.5	0.41	0.056	0.349
	9	1.65	1.69	2.2	81.2	77.3	-4.7	37.4	38.9	4.0	0.41	0.060	0.362
2015	8	1.85	1.90	2.5	73.8	70.0	-5.2	35.0	36.4	4.0	0.40	0.056	0.346
	9	1.58	1.63	3.2	78.6	72.7	-7.5	38.1	40.1	5.2	0.41	0.101	0.337
2016	8	1.73	1.79	3.3	75.1	69.8	-7.0	34.2	36.0	5.5	0.41	0.085	0.333
	9	1.54	1.59	3.3	80.7	75.4	-6.6	37.2	39.2	5.4	0.42	0.087	0.357

Table S1d. similar as Table S1a but at cloudy sky condition with CLDFRC > 0.6.

CLDFRC: > 0.6													
Year	Mon	GPP			DRPAR			DFPAR			CLDFRC	BBAOD	Frequency
		Pg/Amazon/mon		%	W/m^2		%	W/m^2		%			
		nobbaer	allaer	diff	nobbaer	allaer	diff	nobbaer	allaer	diff	allaer	allaer	
2010	8	2.17	2.28	5.0	59.8	52.7	-12.0	37.6	38.8	3.1	0.69	0.174	0.349
	9	1.92	1.99	3.9	54.5	46.0	-15.6	43.7	44.2	1.2	0.69	0.282	0.442
2011	8	2.29	2.30	0.6	57.3	55.9	-2.4	39.9	40.3	1.0	0.67	0.029	0.321
	9	2.15	2.16	0.8	53.4	50.6	-5.3	44.2	44.8	1.2	0.69	0.088	0.398
2012	8	2.24	2.29	2.3	53.6	49.4	-7.8	40.3	41.3	2.4	0.68	0.093	0.237
	9	2.07	2.10	1.4	51.9	47.4	-8.9	43.7	44.6	2.0	0.69	0.144	0.369
2013	8	2.43	2.45	0.8	52.1	50.8	-2.4	41.9	42.2	0.7	0.70	0.026	0.353
	9	2.23	2.25	0.9	53.1	50.8	-4.3	44.8	45.4	1.3	0.69	0.063	0.391
2014	8	2.31	2.34	1.6	51.1	48.8	-4.5	41.2	41.7	1.1	0.69	0.061	0.309
	9	1.92	1.94	0.9	53.5	50.5	-5.5	45.1	45.8	1.5	0.68	0.083	0.365
2015	8	2.01	2.05	1.6	51.6	48.6	-5.8	42.7	43.3	1.4	0.68	0.079	0.263
	9	1.83	1.85	1.2	50.7	46.9	-7.6	44.2	44.9	1.6	0.67	0.133	0.352
2016	8	2.05	2.08	1.1	48.3	45.3	-6.2	40.6	41.0	1.0	0.69	0.116	0.335
	9	1.96	1.99	1.4	49.3	46.0	-6.8	43.5	44.1	1.4	0.70	0.114	0.416

Table S1e. similar as Table S1a but at all sky condition.

All Sky												
Year	Mon	GPP			DRPAR			DFPAR			CLDFRC	BBAOD
		Pg/Amazon/mon		%	W/m^2		%	W/m^2		%		
		nobbaer	allaer	diff	nobbaer	allaer	diff	nobbaer	allaer	diff	allaer	allaer
2010	8	1.91	2.10	9.9	78.3	66.0	-15.7	32.2	35.5	10.29	0.38	0.190
	9	1.70	1.83	7.5	77.6	66.5	-14.3	37.6	40.2	6.99	0.45	0.206
2011	8	2.01	2.04	1.2	76.0	74.3	-2.2	33.5	34.1	1.90	0.39	0.022
	9	1.79	1.83	2.5	78.9	74.7	-5.3	36.7	38.3	4.23	0.42	0.061
2012	8	1.94	2.01	3.7	79.3	74.6	-6.0	31.4	33.2	5.78	0.33	0.063
	9	1.68	1.75	3.9	79.7	72.5	-9.1	36.4	38.8	6.64	0.40	0.113
2013	8	2.13	2.16	1.3	72.6	71.0	-2.3	34.3	35.0	1.87	0.43	0.021
	9	1.87	1.91	1.7	77.0	74.0	-4.0	37.7	38.9	3.19	0.44	0.046
2014	8	1.97	2.03	2.7	75.0	71.2	-5.1	33.3	34.7	4.19	0.37	0.053
	9	1.73	1.77	1.9	76.9	73.4	-4.6	38.0	39.3	3.41	0.42	0.059
2015	8	1.86	1.90	2.3	76.0	72.4	-4.8	33.5	34.8	3.93	0.33	0.052
	9	1.59	1.64	3.2	80.0	74.2	-7.3	37.2	39.2	5.33	0.37	0.093
2016	8	1.77	1.82	2.9	73.4	68.7	-6.4	33.8	35.4	4.79	0.38	0.076
	9	1.68	1.72	2.7	73.7	68.7	-6.7	37.8	39.5	4.40	0.46	0.089

Table S2a. similar as Table S1a but for a pair of experiments of callaer and cnobbaer.

Clear Sky													
Year	Mon	GPP			DRPAR			DFPAR			CLDFRC	BBAOD	Frequency
		Pg/Amazon/mon		%	W/m^2		%	W/m^2		%			
		cnobbaer	callaer	diff	cnobbaer	callaer	diff	cnobbaer	callaer	diff	callaer	callaer	
2010	8	1.05	1.29	22.2	96.2	76.6	-20.4	26.4	31.8	20.7	0.04	0.229	0.123
	9	0.63	0.74	17.3	108.0	90.7	-16.1	27.6	33.1	19.7	0.04	0.176	0.088
2011	8	1.04	1.19	13.5	94.7	80.5	-15.0	25.4	30.0	18.3	0.04	0.152	0.110
	9	0.71	0.85	19.2	106.2	88.0	-17.1	27.7	33.3	20.3	0.04	0.203	0.097
2012	8	1.15	1.30	12.8	97.2	84.6	-13.0	24.4	29.0	18.8	0.04	0.123	0.163
	9	0.79	0.91	15.2	105.6	88.0	-16.7	29.3	34.6	18.0	0.05	0.191	0.091
2013	8	0.93	1.07	14.9	98.6	84.3	-14.4	24.4	29.7	21.5	0.04	0.144	0.087
	9	0.76	0.86	12.3	110.3	95.5	-13.5	27.6	33.4	21.3	0.04	0.138	0.082
2014	8	1.01	1.21	19.4	95.8	79.5	-17.1	25.6	30.9	20.9	0.04	0.179	0.126
	9	0.77	0.88	13.9	105.9	91.1	-14.0	27.8	32.7	17.5	0.04	0.156	0.076
2015	8	1.03	1.17	14.3	93.8	79.5	-15.3	26.0	30.4	16.9	0.04	0.169	0.155
	9	0.76	0.87	14.6	104.1	89.1	-14.4	30.3	35.0	15.5	0.04	0.160	0.122
2016	8	0.95	1.07	11.8	92.9	79.6	-14.3	25.8	30.1	16.5	0.04	0.148	0.138
	9	0.57	0.67	18.4	104.5	85.1	-18.5	28.7	34.9	21.6	0.04	0.212	0.074

Table S2b. similar as Table S2a but at cloudy sky condition with CLDFRC between 0.1-0.3.

CLDFRC: 0.1-0.3													
Year	Mon	GPP			DRPAR			DFPAR			CLDFRC	BBAOD	Frequency
		Pg/Amazon/mon		%	W/m^2		%	W/m^2		%			
		cnobbaer	callaer	diff	cnobbaer	callaer	diff	cnobbaer	callaer	diff	callaer	callaer	
2010	8	1.50	1.72	14.3	91.9	75.6	-17.8	28.2	33.4	18.2	0.19	0.210	0.195
	9	1.00	1.12	12.9	100.7	85.8	-14.9	30.3	35.0	15.5	0.19	0.180	0.148
2011	8	1.56	1.73	11.1	90.4	77.4	-14.4	28.4	32.7	15.2	0.19	0.174	0.209
	9	1.26	1.42	12.3	98.8	82.5	-16.5	31.7	37.1	17.0	0.19	0.222	0.167
2012	8	1.65	1.87	12.9	91.9	78.2	-14.9	28.3	32.9	16.2	0.19	0.177	0.265
	9	1.26	1.40	10.9	99.4	85.0	-14.5	32.1	36.6	14.2	0.19	0.187	0.189
2013	8	1.52	1.73	13.5	90.3	77.2	-14.4	27.7	32.4	16.7	0.19	0.174	0.184
	9	1.31	1.45	10.2	100.2	87.0	-13.2	30.8	35.9	16.5	0.19	0.171	0.168
2014	8	1.59	1.81	14.0	89.9	74.8	-16.8	29.2	34.2	17.0	0.19	0.205	0.212
	9	1.23	1.36	10.6	97.2	84.0	-13.6	31.9	36.1	13.3	0.19	0.188	0.194
2015	8	1.55	1.73	12.0	87.8	74.0	-15.7	30.0	34.0	13.5	0.19	0.206	0.235
	9	1.28	1.41	10.4	96.0	83.0	-13.5	34.0	37.9	11.5	0.19	0.190	0.192
2016	8	1.38	1.54	11.4	88.4	74.5	-15.8	29.7	33.7	13.7	0.19	0.207	0.196
	9	1.07	1.22	14.9	97.5	80.3	-17.7	32.1	37.5	16.8	0.19	0.239	0.153

Table S2c. similar as Table S2a but at cloudy sky condition with CLDFRC between 0.3-0.6.

CLDFRC: 0.3-0.6													
Year	Mon	GPP			DRPAR			DFPAR			CLDFRC	BBAOD	Frequency
		Pg/Amazon/mon		%	W/m^2		%	W/m^2		%			
		cnobbaer	callaer	diff	cnobbaer	callaer	diff	cnobbaer	callaer	diff	callaer	callaer	
2010	8	1.87	2.05	9.8	79.5	67.5	-15.1	32.0	35.4	10.6	0.41	0.198	0.335
	9	1.54	1.67	9.0	86.2	73.7	-14.4	36.1	39.5	9.4	0.42	0.209	0.324
2011	8	1.95	2.12	8.6	77.1	66.1	-14.3	33.3	36.5	9.5	0.41	0.196	0.354
	9	1.68	1.83	8.6	82.9	69.4	-16.2	36.2	40.1	10.7	0.41	0.251	0.333
2012	8	1.95	2.16	10.5	76.6	63.8	-16.8	33.4	36.9	10.5	0.40	0.240	0.333
	9	1.62	1.73	6.8	82.5	70.7	-14.3	37.0	40.3	9.0	0.41	0.216	0.352
2013	8	2.03	2.22	9.2	75.5	63.9	-15.3	33.2	36.6	10.2	0.42	0.214	0.365
	9	1.76	1.88	6.9	80.3	69.4	-13.6	36.3	39.8	9.6	0.42	0.222	0.340
2014	8	1.93	2.11	9.0	75.6	63.4	-16.1	33.8	37.2	10.1	0.41	0.221	0.345
	9	1.66	1.76	6.5	80.3	70.0	-12.9	37.4	40.3	7.8	0.41	0.212	0.355
2015	8	1.85	2.00	8.2	73.5	61.7	-16.1	34.9	37.7	8.2	0.40	0.230	0.348
	9	1.57	1.66	5.9	78.2	67.8	-13.2	38.2	40.9	6.9	0.41	0.223	0.335
2016	8	1.73	1.86	7.6	74.4	63.2	-15.0	34.4	37.2	8.2	0.41	0.229	0.329
	9	1.54	1.66	8.0	79.8	67.0	-16.0	37.2	40.9	9.8	0.42	0.260	0.350

Table S2d. similar as Table S2a but at cloudy sky condition with CLDFRC >0.6.

CLDFRC >0.6													
Year	Mon	GPP			DRPAR			DFPAR			CLDFRC	BBAOD	Frequency
		Pg/Amazon/mon		%	W/m^2		%	W/m^2		%			
		cnobbaer	callaer	diff	cnobbaer	callaer	diff	cnobbaer	callaer	diff	callaer	callaer	
2010	8	2.18	2.28	4.63	59.7	52.5	-12.0	37.6	38.8	3.0	0.69	0.174	0.348
	9	1.91	1.99	4.06	54.4	45.9	-15.6	43.7	44.3	1.3	0.69	0.282	0.441
2011	8	2.28	2.34	2.43	55.3	47.5	-14.0	39.0	40.0	2.8	0.68	0.236	0.329
	9	2.16	2.17	0.48	50.9	43.2	-15.1	43.5	43.3	-0.4	0.69	0.354	0.406
2012	8	2.24	2.36	5.25	52.4	43.7	-16.6	40.5	41.0	1.4	0.68	0.296	0.241
	9	2.08	2.11	1.58	51.1	43.9	-14.1	43.9	44.6	1.5	0.69	0.262	0.370
2013	8	2.38	2.43	2.12	49.1	41.4	-15.6	40.4	40.8	1.0	0.70	0.279	0.365
	9	2.22	2.25	1.18	49.7	42.3	-14.8	43.2	43.5	0.6	0.70	0.322	0.411
2014	8	2.30	2.36	2.32	48.6	41.9	-13.7	40.5	40.7	0.5	0.69	0.248	0.319
	9	1.94	1.98	1.75	51.7	44.4	-14.1	44.5	45.0	1.2	0.68	0.282	0.376
2015	8	1.98	2.06	3.87	50.0	41.4	-17.1	42.1	42.0	-0.1	0.68	0.312	0.264
	9	1.85	1.88	1.58	49.5	42.9	-13.3	44.0	44.4	0.9	0.67	0.283	0.354
2016	8	2.07	2.10	1.33	46.6	40.2	-13.8	40.3	40.3	-0.2	0.69	0.304	0.339
	9	1.94	1.98	2.04	47.5	40.0	-15.8	42.6	42.9	0.7	0.70	0.338	0.424

Table S2e. similar as Table S2a but for a pair of experiments of callaer and cnobbaer.

All Sky												
Year	Mon	GPP			DRPAR			DFPAR			CLDFRC	BBAOD
		Pg/Amazon/mon		%	W/m^2		%	W/m^2		%		
		cnobbaer	callaer	diff	cnobbaer	callaer	diff	cnobbaer	callaer	diff	callaer	callaer
2010	8	1.91	2.10	9.7	78.3	66.0	-15.7	32.2	35.5	10.3	0.38	0.190
	9	1.70	1.83	7.4	77.6	66.4	-14.4	37.6	40.2	7.0	0.45	0.206
2011	8	2.00	2.15	7.2	74.9	64.3	-14.0	33.0	35.9	8.7	0.39	0.191
	9	1.80	1.92	6.7	77.1	65.3	-15.3	36.5	39.5	8.3	0.42	0.238
2012	8	1.93	2.11	9.2	79.0	67.5	-14.5	31.6	35.0	10.7	0.33	0.187
	9	1.69	1.79	6.1	79.1	67.8	-14.3	36.7	39.7	8.3	0.40	0.203
2013	8	2.11	2.26	6.8	70.6	60.3	-14.6	33.7	36.4	7.8	0.44	0.214
	9	1.88	1.98	5.0	74.6	64.5	-13.6	36.9	39.8	7.8	0.44	0.220
2014	8	1.97	2.15	8.9	73.8	62.2	-15.7	33.2	36.3	9.6	0.38	0.207
	9	1.74	1.83	5.5	75.6	65.9	-12.8	37.8	40.3	6.6	0.43	0.210
2015	8	1.85	2.00	8.3	75.5	64.1	-15.1	33.3	36.1	8.7	0.33	0.202
	9	1.59	1.69	6.4	79.8	69.5	-12.9	37.2	39.9	7.3	0.36	0.195
2016	8	1.77	1.88	6.4	72.4	62.3	-14.0	33.8	36.3	7.3	0.38	0.205
	9	1.67	1.77	6.0	72.2	60.8	-15.8	37.6	40.4	7.4	0.46	0.267