

Role of CO₂, climate and land use in regulating the seasonal amplitude increase of carbon fluxes in terrestrial ecosystems: a multimodel analysis

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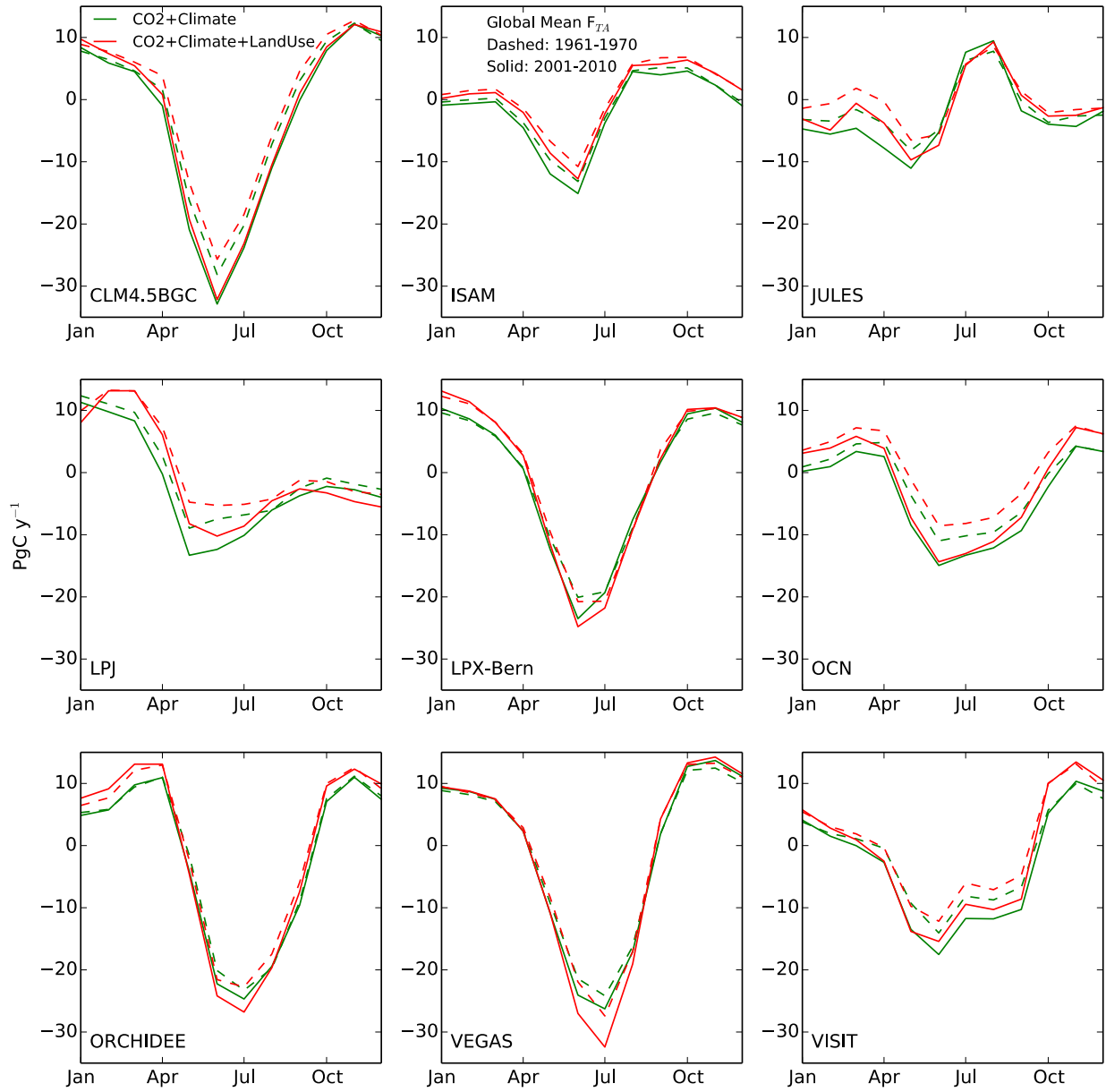


Figure S1. Mean seasonal cycle of global net carbon flux from nine TRENDY models for the S2 (green) and S3 (red) experiments, averaged over 2001-2010 (solid) and 1961-1970 (dashed).

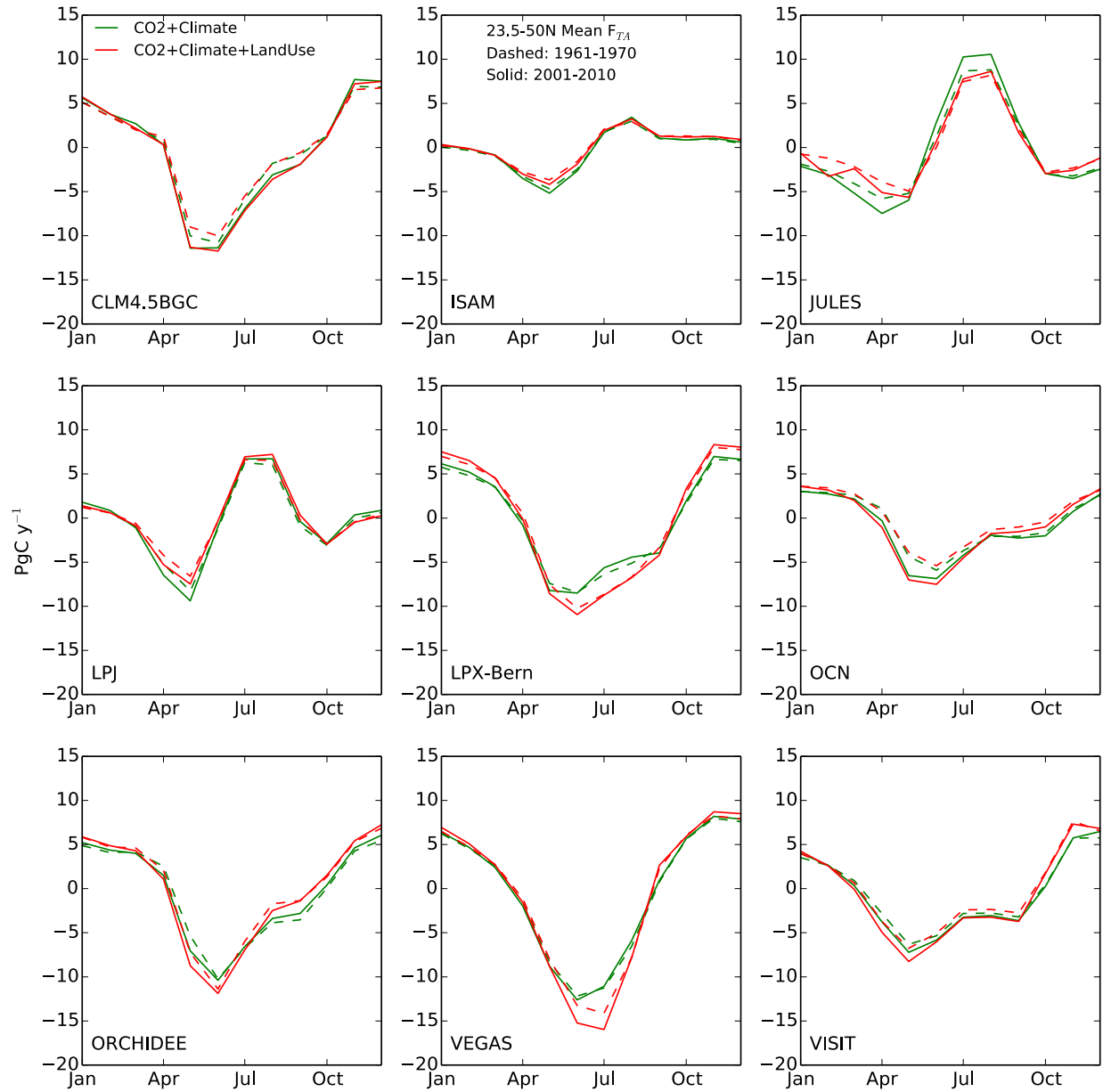


Figure S2. Mean seasonal cycle of northern temperate (23.5-50N) net carbon flux from nine TRENDY models for the S2 (green) and S3 (red) experiments, averaged over 2001-2010 (solid) and 1961-1970 (dashed).

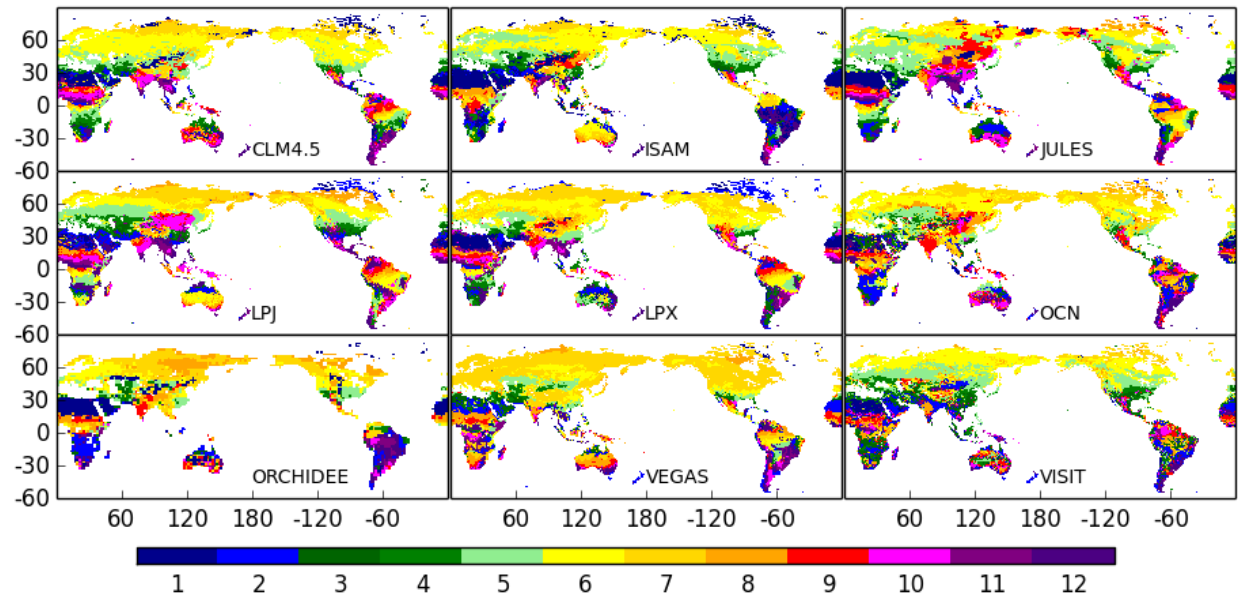


Figure S3. The F_{TA} minimum (peak carbon uptake) month for the 2001-2010 average for each spatial grid based on the S3 experiment results from the nine TRENDY models.

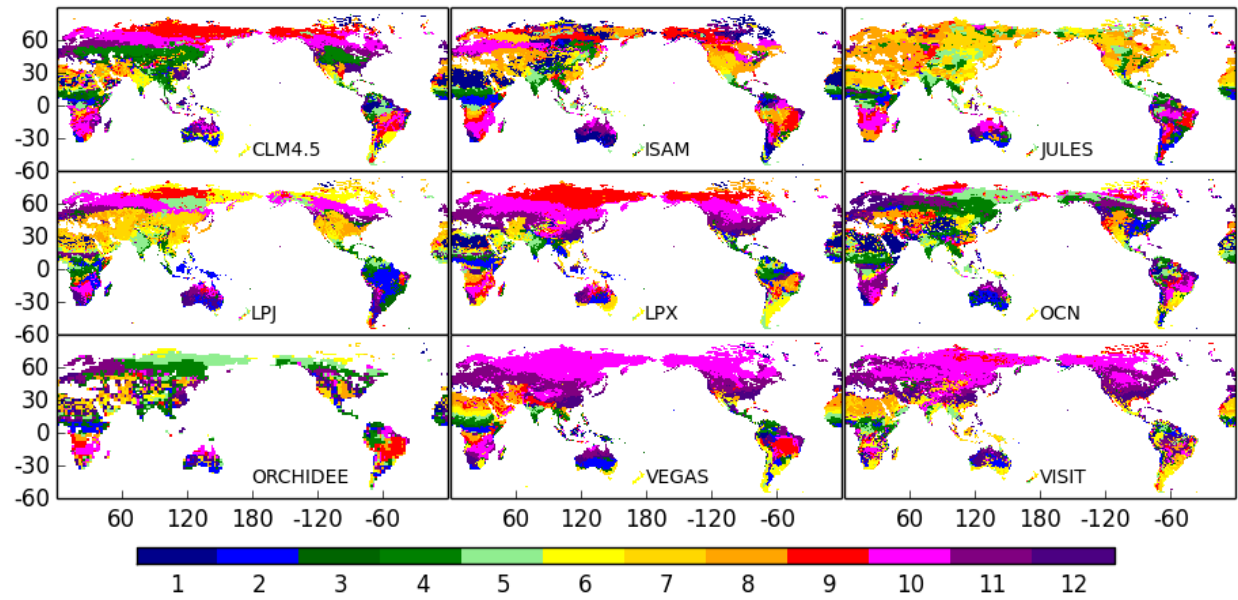


Figure S4. The F_{TA} maximum (peak carbon release) month for the 2001-2010 average for each spatial grid based on the S3 experiment results from the nine TRENDY models.

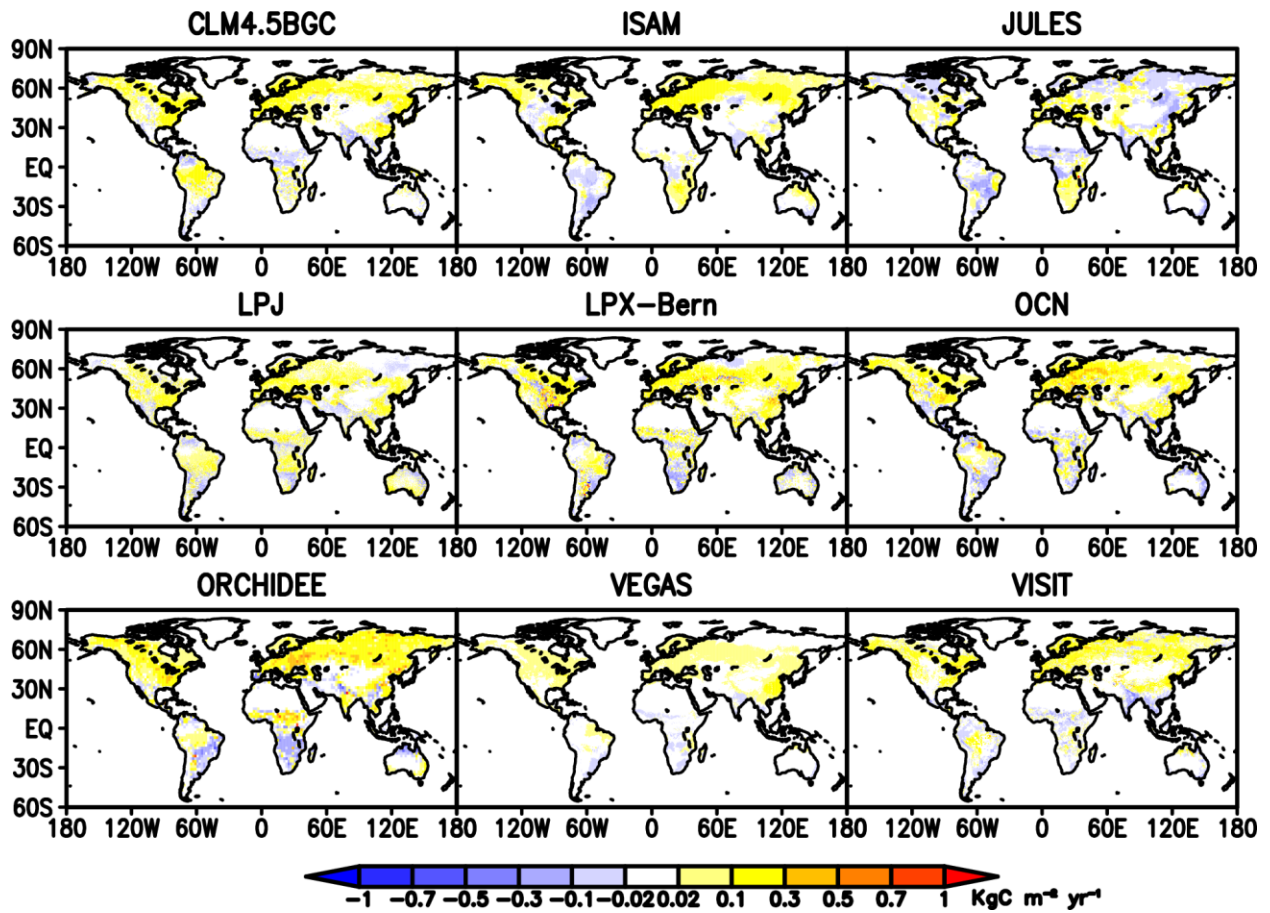


Figure S5. Contribution of trends for seasonal amplitude of global land-atmosphere carbon flux from TRENDY models in the S1 experiment (changing CO₂ only). Trends are calculated for the period 1961-2012 for the F_{KA}^1 (refer to Methodology section for definition).

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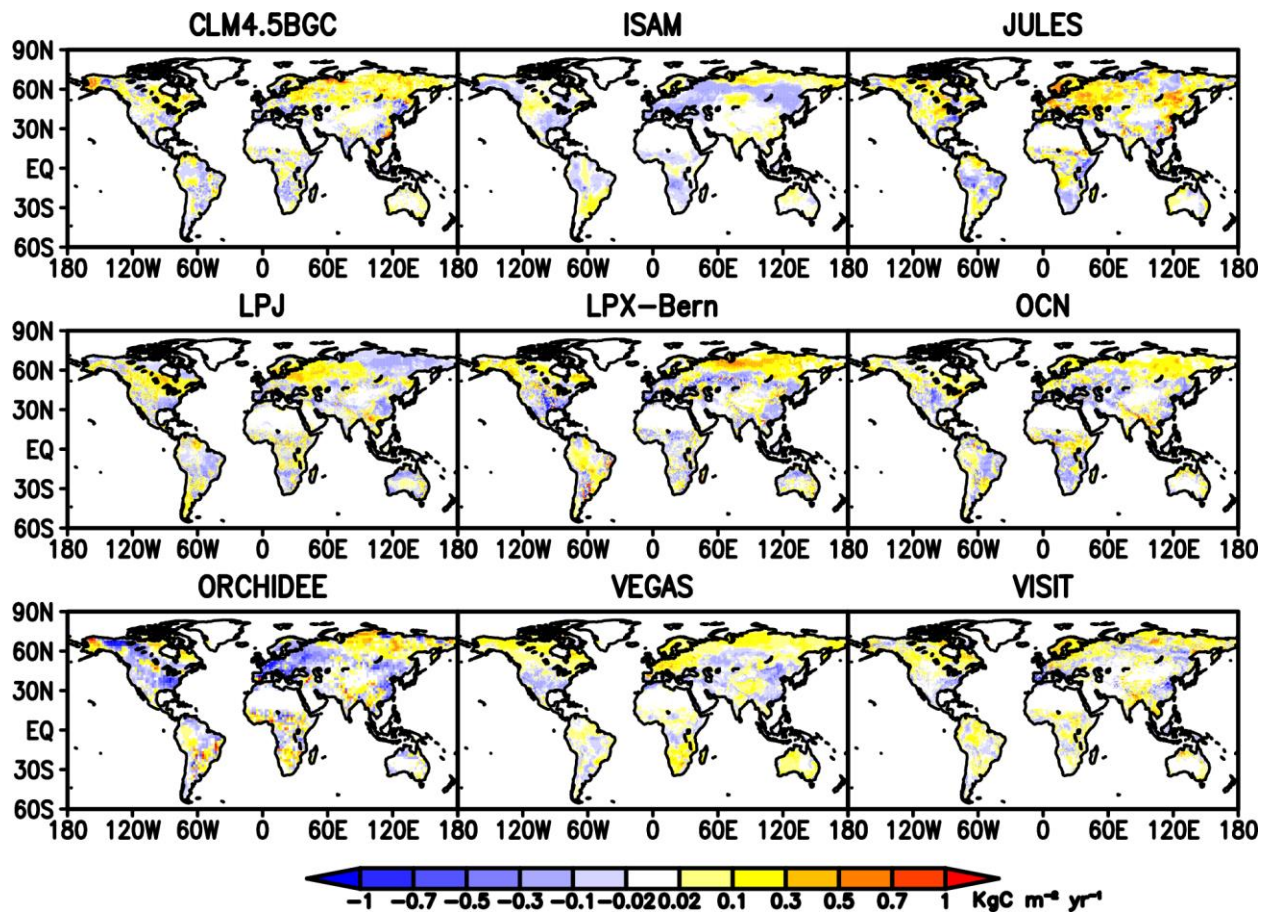


Figure S6. Similar as Figure S5, but for trends in the S2 experiment (changing CO₂ and climate) subtracting trends in S1, therefore representing effect of climate change with the linear assumption.

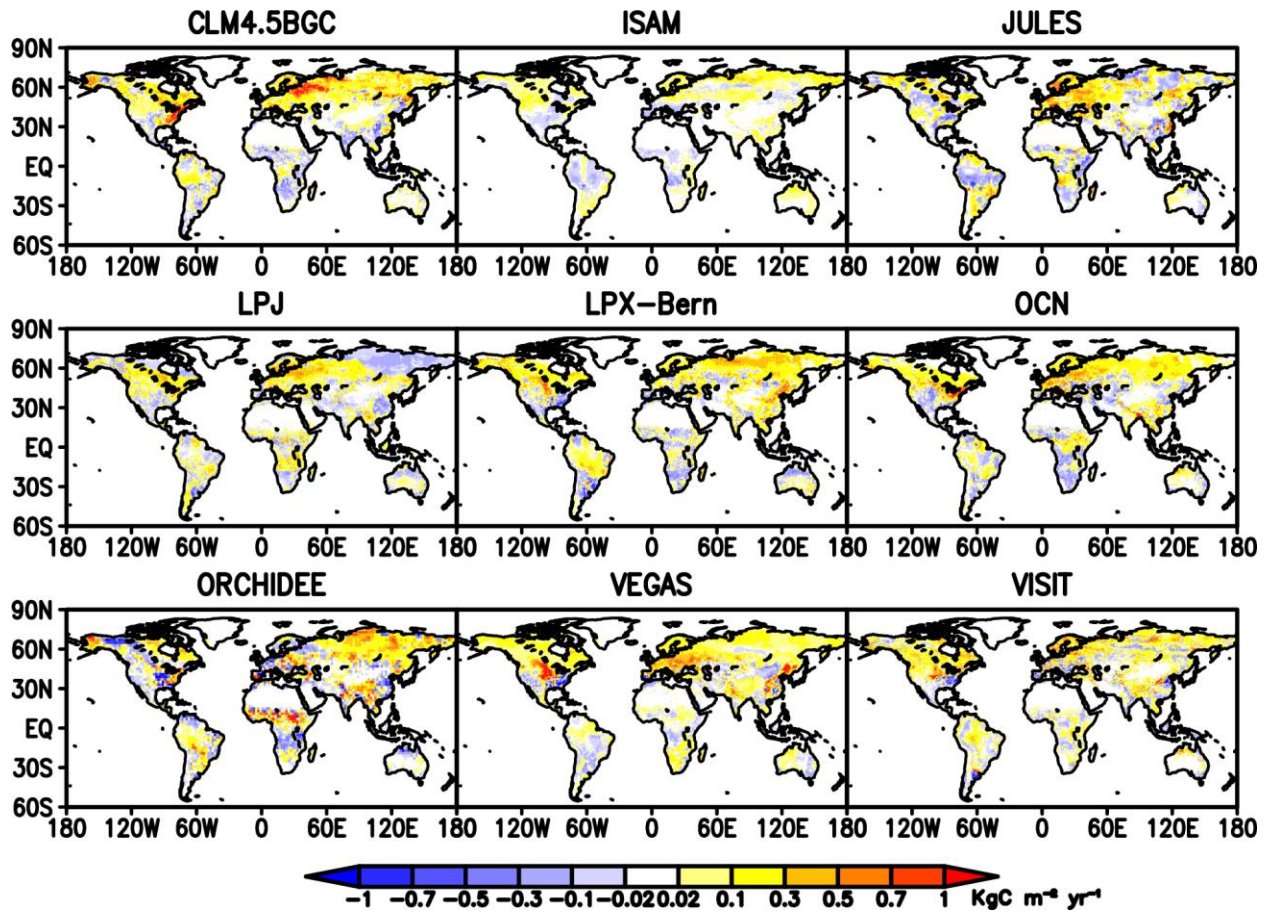


Figure S7. Similar as Figure S5, but for trends in the S3 experiment (changing CO₂, climate and land use/cover).

Model	Global				Boreal				Northern Temperate				Northern Tropics				Southern Tropics				Southern extra-Tropics			
	CO2	CLIM	LU	ALL	CO2	CLIM	LU	ALL	CO2	CLIM	LU	ALL	CO2	CLIM	LU	ALL	CO2	CLIM	LU	ALL	CO2	CLIM	LU	ALL
OCN	0.68	-0.33	0.30	0.65	0.50	0.16	0.12	0.78	0.52	-0.18	0.32	0.65	0.16	0.12	0.05	0.34	0.24	0.00	-0.07	0.17	0.52	-0.17	-0.09	0.26
LPJ	0.45	-0.07	0.12	0.50	0.33	-0.04	0.02	0.32	0.02	0.26	0.01	0.29	0.17	0.01	0.00	0.19	0.21	-0.24	0.39	0.36	0.02	-0.05	-0.16	-0.18
JULES	-0.10	0.61	-0.08	0.43	-0.02	0.49	-0.02	0.45	0.09	0.40	-0.17	0.32	0.02	-0.02	-0.07	-0.08	0.12	0.06	0.02	0.20	0.06	-0.30	0.05	-0.19
VISIT	0.28	0.21	-0.05	0.43	0.24	0.16	-0.07	0.33	0.27	-0.06	0.04	0.25	0.27	-0.07	-0.08	0.12	0.02	0.15	-0.06	0.11	0.31	-0.06	0.19	0.44
CLM4.5BGC	0.23	0.02	0.08	0.34	0.16	0.14	0.08	0.38	0.23	-0.03	0.18	0.37	0.22	0.19	0.10	0.50	0.35	-0.28	0.01	0.08	0.07	0.01	0.06	0.14
VEGAS	0.09	0.11	0.13	0.32	0.07	0.19	0.11	0.38	0.11	-0.08	0.22	0.25	0.22	0.27	-0.26	0.23	0.24	0.58	-0.35	0.47	0.11	-0.25	0.23	0.09
LPX-Bern	0.30	-0.12	0.05	0.22	0.20	0.06	0.02	0.28	0.33	-0.25	0.05	0.12	0.19	0.06	0.00	0.24	0.19	0.00	-0.09	0.10	0.23	-0.11	0.20	0.32
ORCHIDEE	0.32	-0.25	0.15	0.21	0.29	-0.12	0.09	0.27	0.31	-0.18	-0.02	0.11	0.18	-0.01	0.09	0.26	0.24	-0.05	-0.10	0.08	0.20	0.42	-0.02	0.60
ISAM	0.26	-0.03	-0.03	0.19	0.32	-0.02	0.00	0.30	0.24	-0.01	-0.01	0.22	0.24	-0.10	-0.06	0.08	0.28	-0.24	-0.11	-0.08	0.22	-0.01	-0.52	-0.31
Ensemble	0.28	0.02	0.07	0.37	0.23	0.11	0.04	0.39	0.24	-0.01	0.07	0.29	0.19	0.05	-0.03	0.21	0.21	0.00	-0.04	0.17	0.19	-0.06	-0.01	0.13

Table S1. Global and regional attribution of CO₂, climate change and land use/cover change effects on the relative amplitude changes of F_{TA} simulated by the TRENDY models, and the ensemble mean of the relative changes during 1961-2012 period (% y⁻¹). The models are listed in the order of simulated S3 global relative amplitude increase for this period (most to least).