Supplement to

“Nine years of global hydrocarbon emissions based on source inversion of OMI formaldehyde observations"

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This supplement contains 1 table and 5 figures which support the main manuscript.

Table S1. Comparison between measured isoprene fluxes from various studies in South America with the isoprene fluxes from this work. The observed 24-hour flux (column 7) is equal to the observed averaged flux (column 5) divided by a diurnal correction factor (column 6) derived from the model.

Reference	Coordinates	Month(s)	Time (hr)	Observation	Correction factor	24h flux	A priori flux	OMI-based flux
Zimmerman et al. (1988)	2.95 S, 59.95 W	Jul-Aug	0-24	1.04	1	1.04	1.71	1.47
Davis et al. (1994)	id.	Jul-Aug	8-14	3.63	2	1.82	1.71	1.47
Andreae et al. (2002)	2.59 S, 60.2 W	Sep-Oct	12-13	2.88	3.65	0.79	2.28	2.00
Ciccioli et al. (2003)	2.59 S, 60.2 W	Jul	0-24	0.96	1	0.96	1.38	1.02
Greenberg et al. (2004)	1.98 S, 59.2 W	Mar	12-13	5.30	3.75	1.41	1.18	0.46
Karl et al. (2007)	2.61 S, 60.21 W	Sep	0-24	2.50	1	2.50	2.21	1.97
Kuhn et al. (2007)	2.59 S, 60.21 W	Jul	0-24	1.68	1	1.68	1.38	1.02
Kuhn et al. (2007)	id.	Jul	0-24	1.29	1	1.29	1.38	1.02
Kuhn et al. (2007)	id.	Jul	10-12	6.90	3	2.30	1.38	1.02
Rizzo et al. (2010)	2.61 S, 60.22 W	Sep	12-13	7.40	3.7	2.00	2.21	1.97
Alves et al. (2015)	2.59 S, 60.12 W	Sep	10-14	0.60	2	0.30	2.21	1.97
Alves et al. (2015)	id.	Oct	10-14	2.50	2	1.25	2.34	2.02
Alves et al. (2015)	id.	Nov	10-14	1.41	2	0.71	1.91	1.47
Alves et al. (2015)	id.	Dec	10-14	0.49	2	0.25	1.48	0.77
Alves et al. (2015)	id.	Jan	10-14	0.80	2	0.40	1.28	0.70
Rinne et al. (2002)	2.85 S, 54.97 W	Jul	6-18	0.58	2	0.29	0.67	0.50
Greenberg et al. (2004)	id.	Jan-Feb	12-13	2.20	3.6	0.61	0.54	0.33
Helmig et al. (1998)	4.59 S, 77.47 W	Jul	12-13	7.40	3.5	2.11	0.61	0.35
Helmig et al. (1998)	id.	Jul	12-13	8.10	3.5	2.31	0.61	0.35
Greenberg et al. (2004)	10.13 S, 61.9 W	Feb	12-13	9.8	3.6	2.72	1.25	0.59
Simon et al. (2005)	10.08 S, 61.93 W	Apr-May	0-24	2.32	1	2.32	1.39	0.81
Simon et al. (2005)	id.	Sep-Oct	0-24	3.17	1	3.17	2.77	1.77

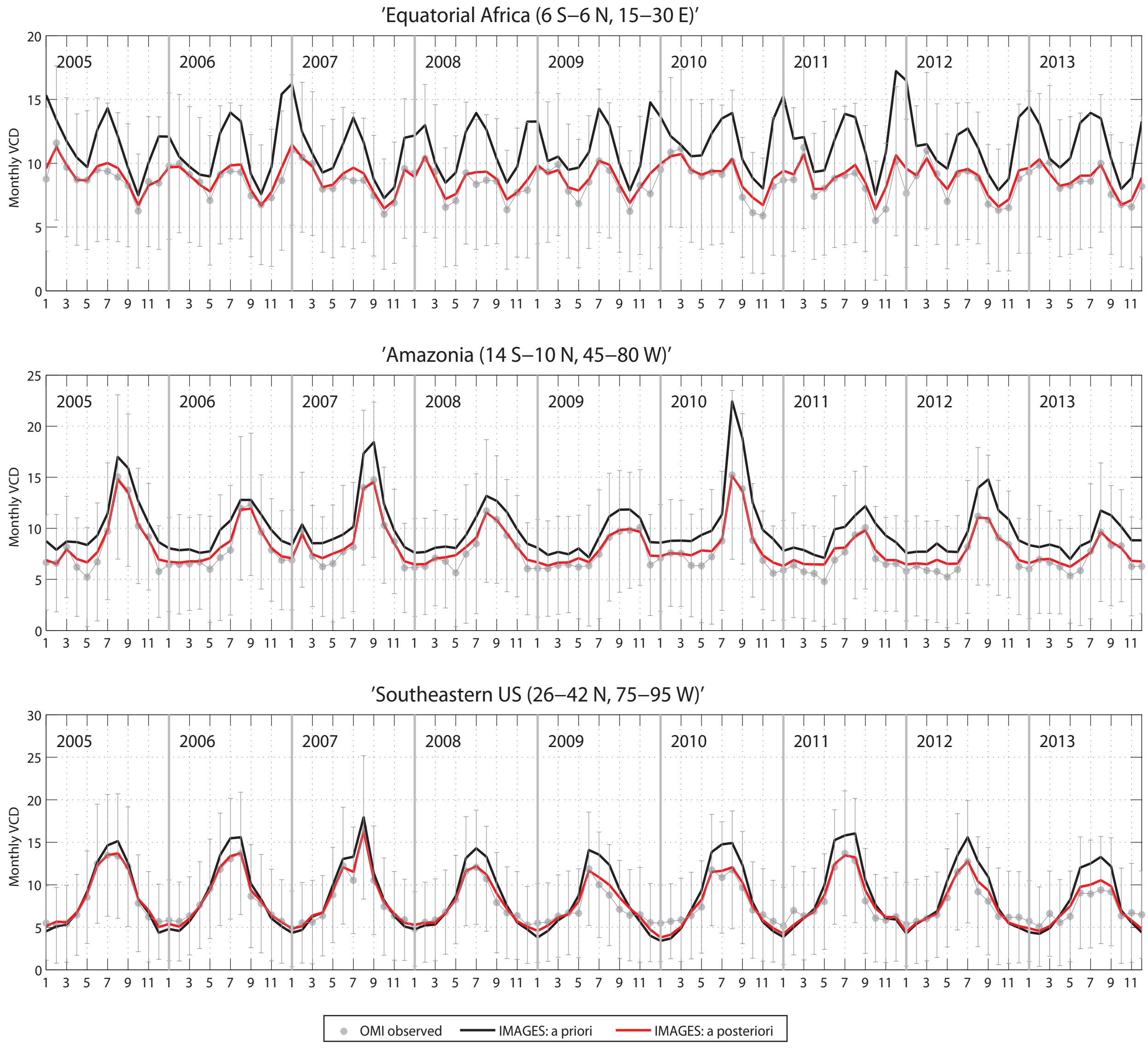

Figure S1. Monthly averaged HCHO column between 2005 and 2013, as observed by OMI and simulated by the a priori and the a posteriori model over Equatorial Africa (6S-6 N, 15-30 E), Amazonia (14 S-10 N, 45-80 W), and Southeastern US (26-42 N, 75-95 W). Columns are expressed in 10^{15} molec.cm^{-2}.

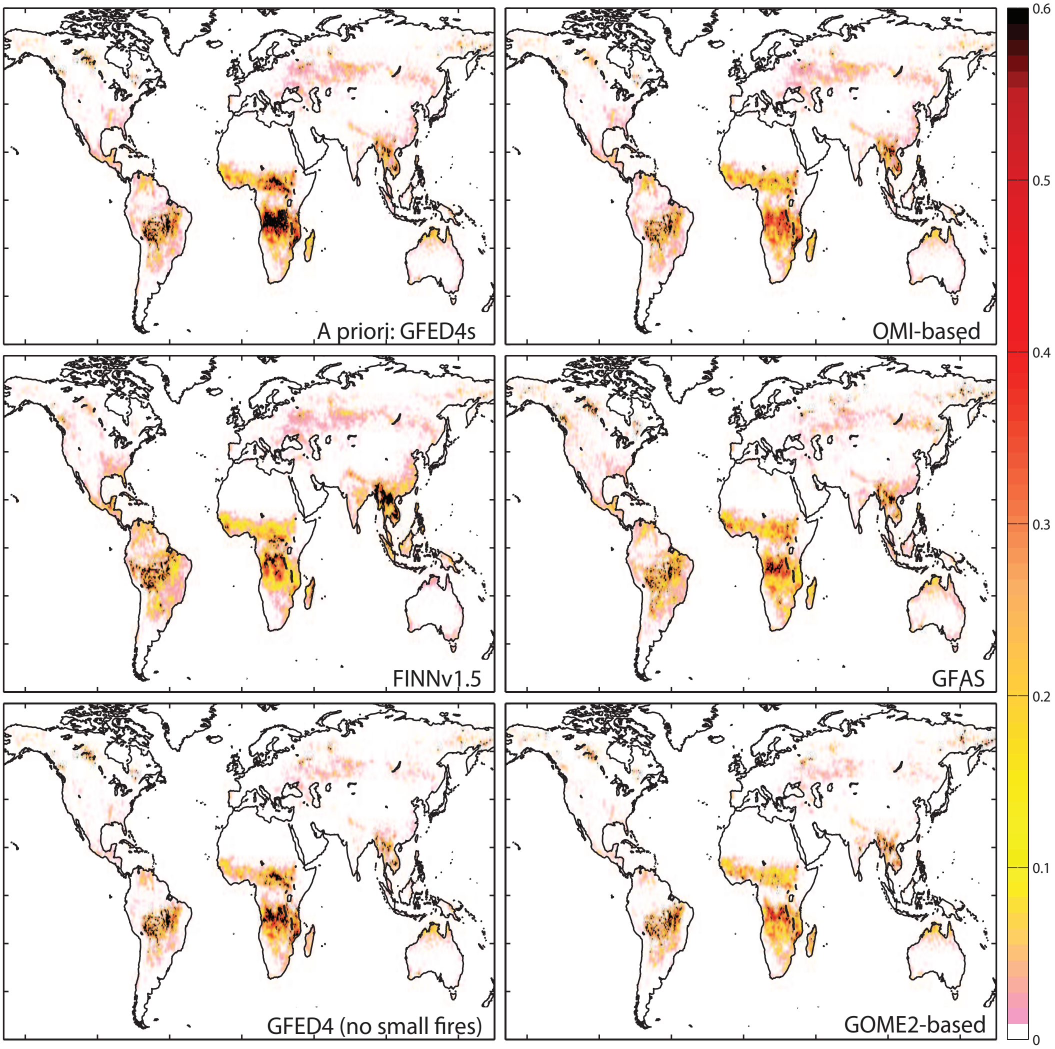

Figure S2. Annually averaged fire emissions in 0.5 degree resolution according to different emission inventories in 2005 expressed in Tg/yr.

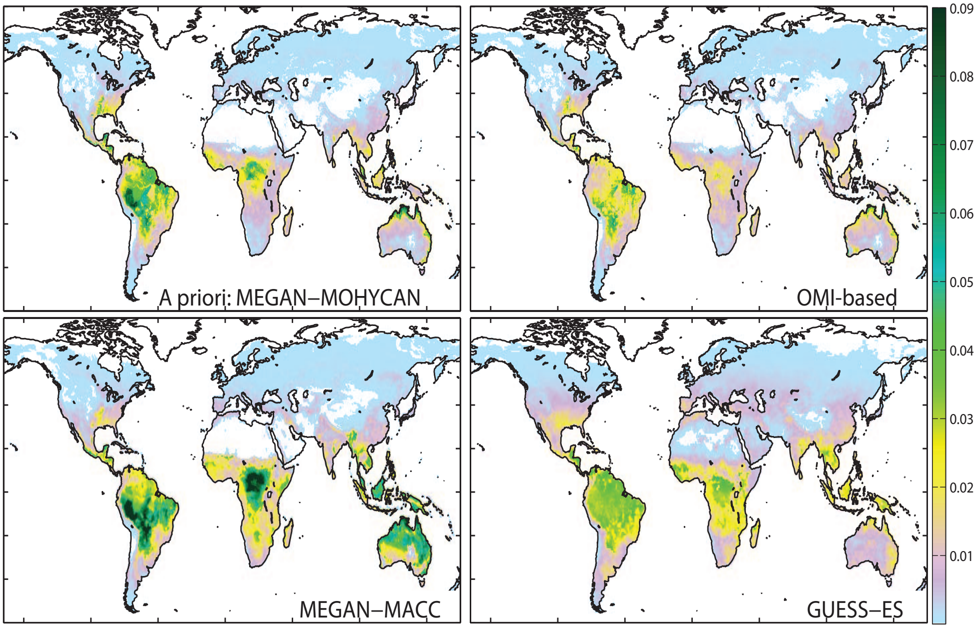

Figure S3. Annually averaged isoprene emissions in 0.5 degree resolution according to different emission inventories in 2005 expressed in Tg/yr.

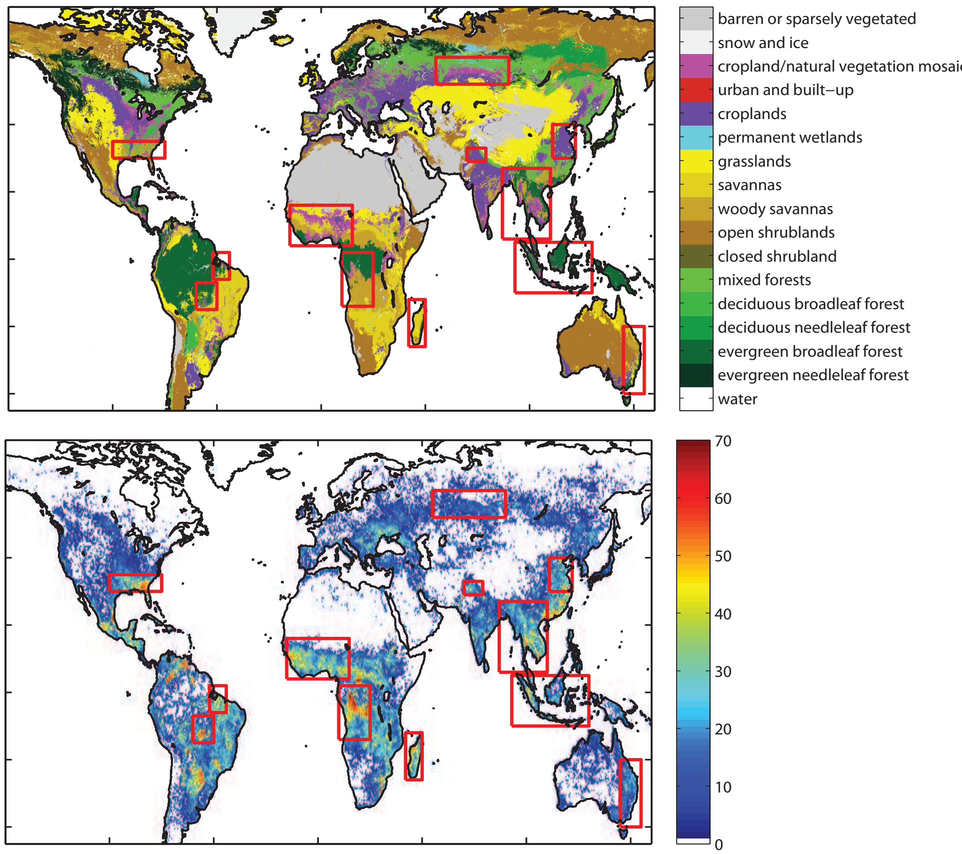

Figure S4. MODIS land cover map (top) and fraction of small fires according to the GFED4s inventory (bottom). The red rectangles show the regions associated to small fires that are used in Table 3 of the main manuscript for comparison between the a priori and the updated emission estimates to MODIS fire counts.

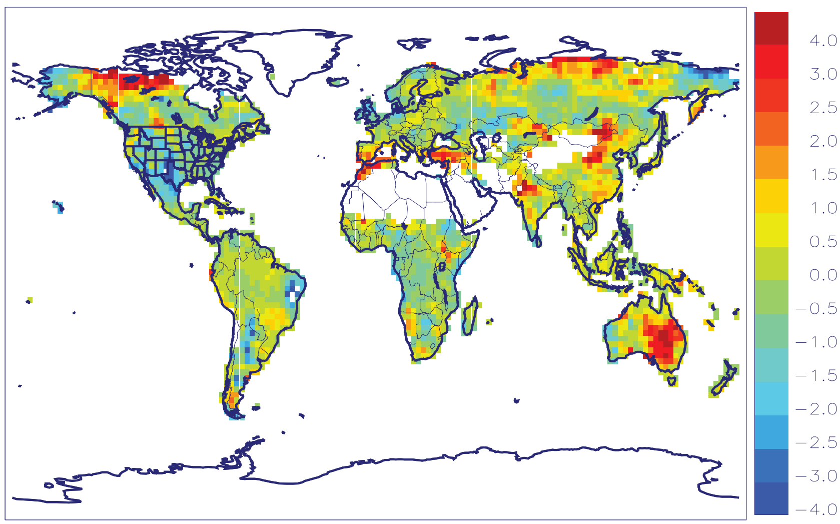

Figure S5. Global distribution of trends in MODIS leaf area index between 2005 and 2013 in %/yr.

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