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Six global biomass burning emission datasets: intercomparison and application in one global aerosol model

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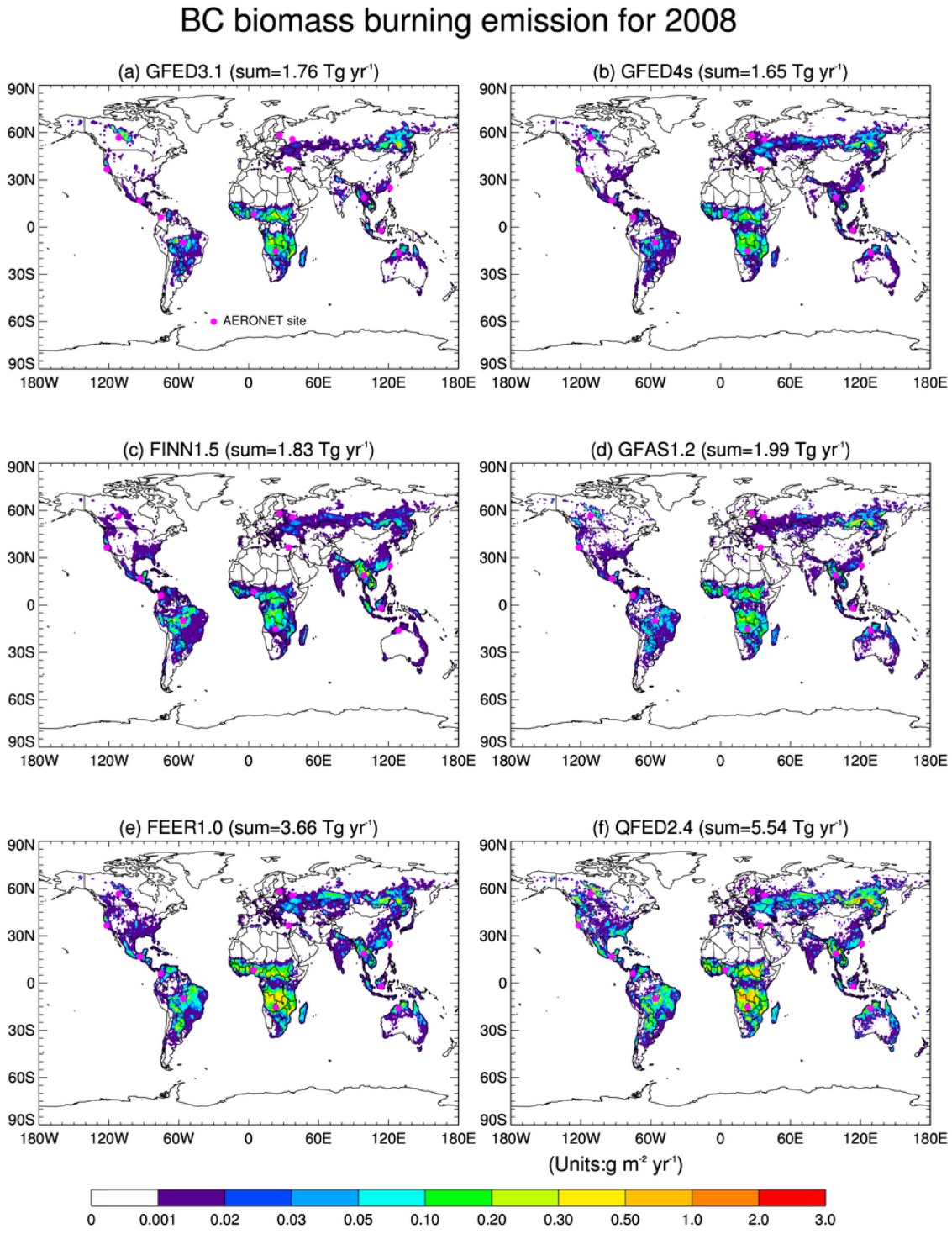

Figure S1. The spatial distribution of annual total black carbon (BC) biomass burning emissions for 2008 estimated by six biomass burning emission datasets. The global total amount is indicated in the parentheses. The fourteen selected AERONET sites are labeled as magenta dots.

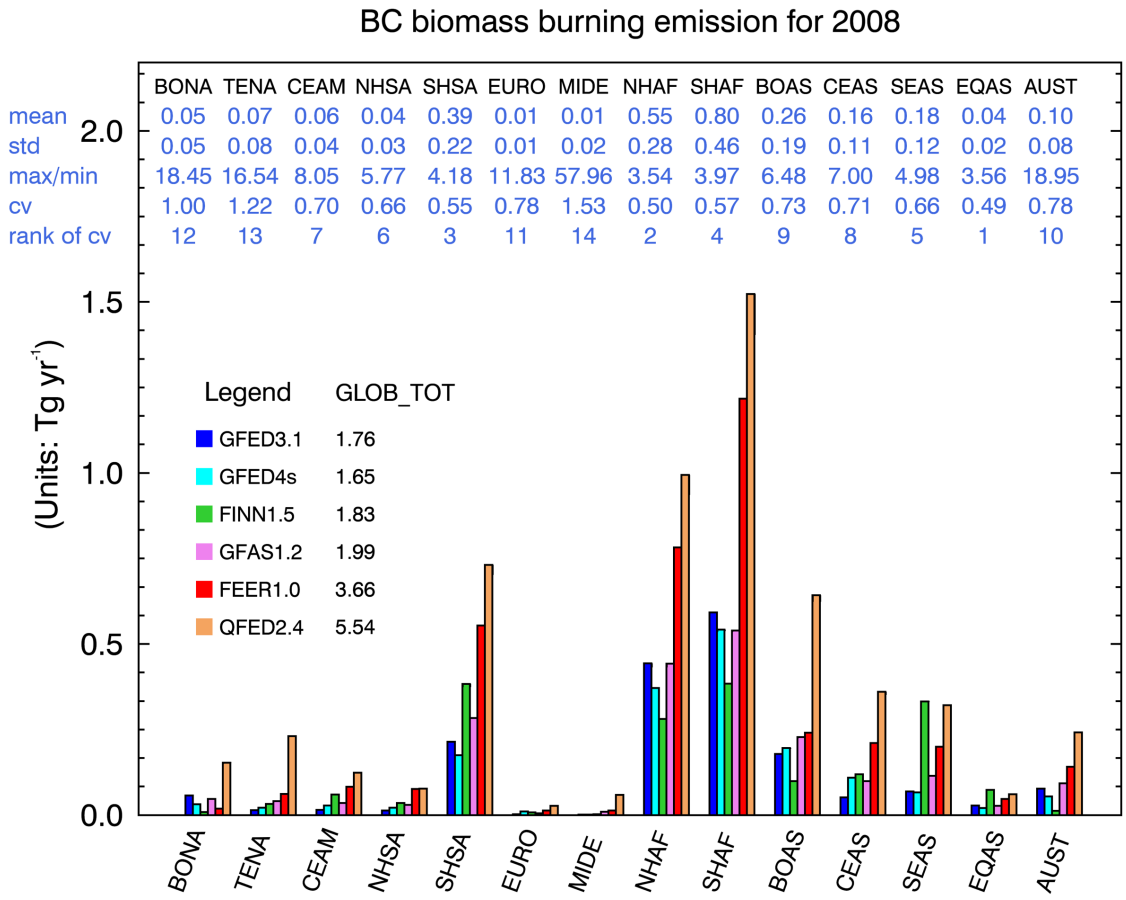

Figure S2. The regional annual total black carbon (BC) biomass burning emissions for 2008 in six biomass burning emission datasets in 14 regions (units: Tg yr^{-1}). The global annual total amount is listed after the name of each dataset (GLOB_TOT). Relevant statistics for the six BB emission datasets in each region are also listed at the top of the panel in blue under the short name of each region, with the mean of the six BB emission datasets in the first row. Three different methods to measure the dispersion of the six BB emission datasets are shown as well: one absolute method, i.e., the standard deviation (std) in the second row, and two relative methods, i.e., the ratio of max (maximum) to min (minimum) shown in the third row, and the coefficient of variation (cv), defined as the ratio of the std to the mean, in the fourth row. The rankings of the regions reflecting the dispersion of the BB emissions datasets according to cv are shown in the fifth row (i.e., a ranking of 1 means that this region shows the least spread among the six BB emissions datasets, while a ranking of 14 indicates this region has the largest spread in the 14 regions).

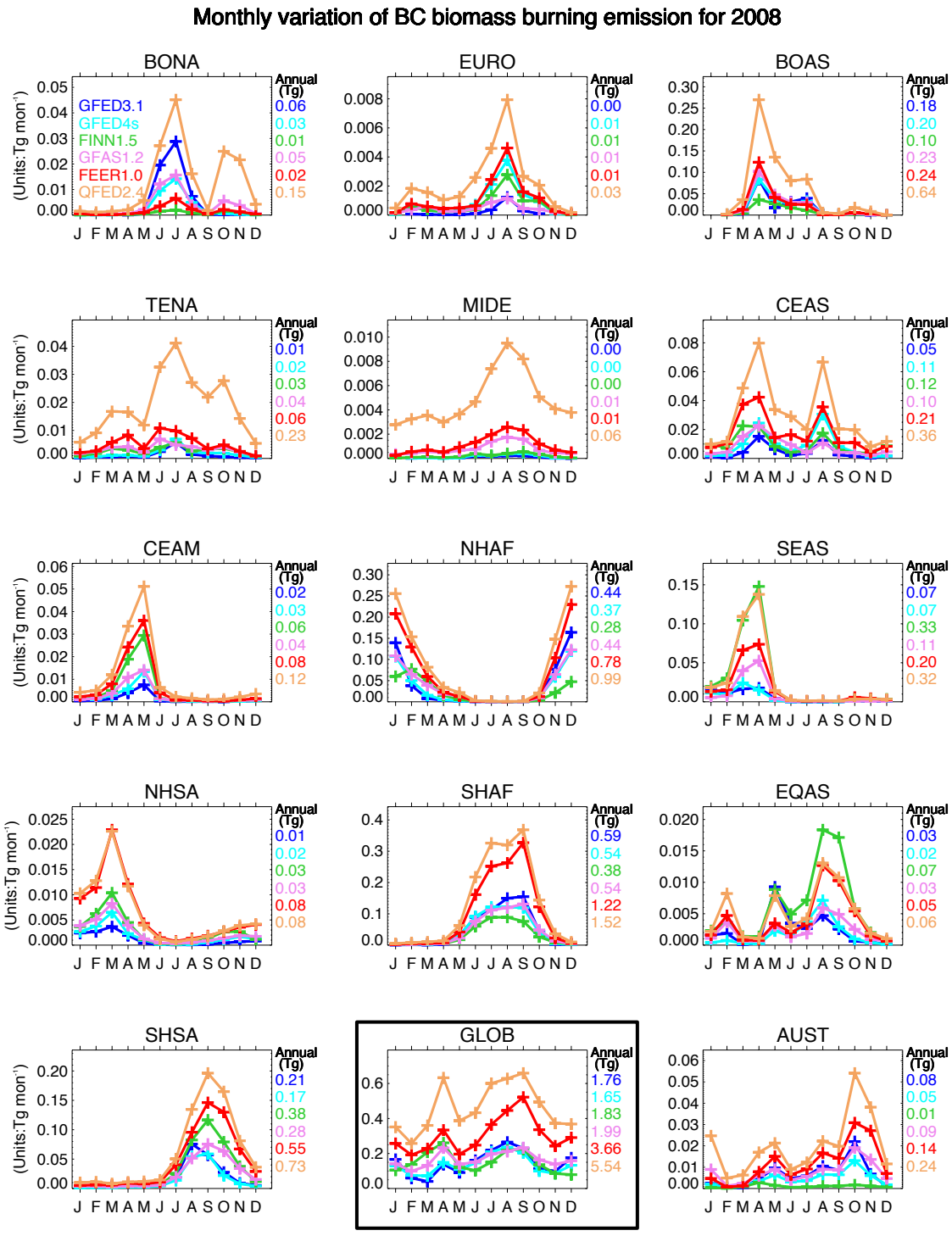

Figure S3. Monthly variation of black carbon (BC) biomass burning emissions for 2008 in six biomass burning emission datasets in 14 regions and the global (GLOB, highlighted with a black box). The annual total emission is listed in the right side of each panel.

Table S1. The regionally-averaged monthly mean AOD from MISR along with model biases (i.e., model minus MISR) in seven model experiments, i.e., NOBB, GFED3.1, GFED4s, FINN1.5, GFAS1.2, FEER1.0, and QFED2.4, for September and April 2008.

Dataset	*BONA*	*TENA*	*CEAM*	*NHSA*	*SHSA*	*EURO*	*MIDE*	*NHAF*	*SHAF*	*BOAS*	*CEAS*	*SEAS*	*EQAS*	*AUST*	*GLOB*
September 2008															
MISR	0.127	0.129	0.133	0.141	0.188	0.139	0.334	0.411	0.331	0.135	0.219	0.257	0.138	0.085	0.218
NOBB	0.04	0.011	-0.031*	-0.083	-0.132	0.084	-0.013	-0.05	-0.283	0.043	0.053	0.025	-0.047	-0.031	-0.029
GFED3.1	0.042	0.013	-0.031	-0.074	-0.078	0.085	-0.012	-0.046	-0.178	0.048	0.055	0.026	-0.039	-0.02	-0.012
GFED4s	0.044	0.014	-0.031	-0.075	-0.081	0.085	-0.012	-0.047	-0.208	0.047	0.056	0.025	-0.04	-0.023	-0.015
FINN1.5	0.041	0.013	-0.031	-0.07	-0.04	0.08	-0.013	-0.047	-0.21	0.045	0.05	0.016	-0.033	-0.025	-0.012
GFAS1.2	0.042	0.013	-0.031	-0.074	-0.08	0.08	-0.013	-0.047	-0.208	0.046	0.05	0.016	-0.029	-0.02	-0.016
FEER1.0	0.044	0.016	-0.03	-0.061	-0.021	0.088	-0.009	-0.039	-0.079	0.049	0.061	0.027	-0.032	-0.01	0.006
QFED2.4	0.058	0.04	-0.023	-0.058	0.02	0.097	-0.004	-0.035	-0.044	0.058	0.068	0.028	-0.029	-0.002	0.02
April 2008															
MISR	0.192	0.16	0.182	0.207	0.067	0.148	0.381	0.446	0.096	0.221	0.324	0.363	0.118	0.049	0.242
NOBB	-0.041	-0.016	-0.083	-0.086	-0.016	0.077	-0.059	-0.082	-0.042	-0.005	0.017	-0.074	-0.028	-0.004	-0.029
GFED3.1	-0.023	-0.008	-0.077	-0.082	-0.014	0.079	-0.058	-0.078	-0.04	0.104	0.055	-0.057	-0.027	-0.002	-0.015
GFED4s	-0.026	-0.008	-0.076	-0.081	-0.015	0.081	-0.057	-0.079	-0.039	0.095	0.05	-0.063	-0.027	-0.002	-0.016
FINN1.5	-0.031	-0.006	-0.056	-0.072	-0.013	0.075	-0.055	-0.068	-0.037	0.041	0.069	0.014	-0.024	-0.002	-0.008
GFAS1.2	-0.014	-0.005	-0.07	-0.075	-0.014	0.073	-0.057	-0.073	-0.039	0.164	0.07	-0.058	-0.025	-0.001	-0.008
FEER1.0	-0.017	0.003	-0.054	-0.059	-0.011	0.089	-0.053	-0.068	-0.036	0.162	0.083	-0.028	-0.024	0	-0.001
QFED2.4	0.018	0.027	-0.026	-0.054	-0.008	0.099	-0.047	-0.059	-0.032	0.329	0.17	0.038	-0.022	0.004	0.031

**Highlighted in blue if negative bias.*